Native Village of Alatna
Tribal Hazard Mitigation Plan

Prepared by
The Alatna Tribe
Hazard Mitigation Planning Team

June 2018

This document was prepared under a grant from the Federal Emergency Management Agency (FEMA)'s Grant Programs Directorate, U.S. Department of Homeland Security, and the Alaska Division of Homeland Security and Emergency Management. Points of view or opinions expressed in this document are those of the authors and do not necessarily represent the official position or policies of FEMA's Grant Programs Directorate, the U.S. Department of Homeland Security, or the State of Alaska.

Front Cover Photo Acknowledgment:

1. Old Tribal Hall; Photo by Jessica Evans
2. New Tribal Hall, Photo by Jessica Evans

U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

JUL 05 2018

The Honorable Harding Sam
President, Native Village of Alatna Tribal Council
P.O. Box 70
Allakaket, Alaska 99720

Dear President Sam:

Congratulations, on July 3, 2018, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) Region 10 approved the Native Village of Alatna's Hazard Mitigation Plan as a Tribal Mitigation Plan, in accordance with Code of Federal Regulations Title 44 Part 201.

An approval provides the Native Village of Alatna eligibility to apply directly with FEMA for Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) programs, i.e., Pre-Disaster Mitigation project grants, Public Assistance (Categories C-G), Fire Management Assistance and Hazard Mitigation Grant Program (HMGP) projects through July 2, 2023. Recipients are required to develop and maintain hazard mitigation plans compliant with FEMA standards as a condition for receiving funds. To continue eligibility, within five years from date of this letter, tribes must review, revise as appropriate and re-submit plans for approval. For further assistance on hazard mitigation planning, please contact our Regional Mitigation Planning Program Manager, Brett Holt, at (425) 487-4553.

FEMA's approval of your updated plan as a Tribal Mitigation Plan provides the Native Village of Alatna eligibility to apply for various Stafford Act programs. FEMA evaluates applications for funding according to the specific requirements of the applicable program. A mitigation action identified in the plan may, or may not, meet a program's eligibility requirements. For assistance with hazard mitigation grant funding, please contact Braden Allen, Hazard Mitigation Assistance Programs Specialist, at (425) 487-4749.

We look forward to continuing a productive relationship between FEMA Region 10 and the Native Village of Alatna. Our Regional Tribal Liaison Ramona VanCleve, at 907-271-4302, is available to facilitate this relationship and delivery of our programs. You are also welcome to contact me directly, at (425) 487-4604.

Sincerely,

Sharon Loper

Sharon Loper
Deputy Regional Administrator

Enclosures

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

Table of Contents

Tables

Figures

Appendices

Acronyms/Abbreviations

°F	Degrees Fahrenheit
ACCIMP	Alaska Climate Change Impact Mitigation Program
ACWF	Alaska Clean Water Fund
ADWF	Alaska Drinking Water Fund
AECOM	AECOM, Consultant, or Contractor
AEIC	Alaska Earthquake Information Center
AFG	Assistance to Firefighters Grant
AICC	Alaska Interagency Coordination Center
AK	Alaska
ANA	Administration for Native Americans
ANTHC	Alaska Native Tribal Health Consortium
AVCP	Association of Village Council Presidents
AVO	Alaska Volcano Observatory
B/C	Benefit vs. Cost or Benefit/Cost
BCA	Benefit Cost Analysis
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BRV	Building Replacement Value
CDBG	Community Development Block Grant
CFR	U.S. Code of Federal Regulations
CIG	Conservation Innovation Grant
City	City of Allakaket
CWSRF	Clean Water State Revolving Fund
DCCED	Alaska Department of Commerce, Community, and Economic Development
DCRA	Division of Community and Regional Affairs
DEC	Alaska Department of Environmental Conservation
Denali	Denali Commission
DHS	U.S. Department of Homeland Security
DHS&EM	Division of Homeland Security and Emergency Management
DHSS	Alaska Department of Health and Social Services
DGGS	Division of Geological and Geophysical Survey
DMA 2000	Disaster Mitigation Act Of 2000
DMVA	Alaska Department of Military and Veterans Affairs
DNR	Alaska Department of Natural Resources
DOC	U.S. Department of Commerce
DOE	U.S. Department of Energy
DOF	Division of Forestry
DOL	Alaska Department of Labor
DOT/PF	Alaska Department of Transportation and Public Facilities
DSPR	DEC Division of Spill Prevention and Response
EAS	Emergency Alert System
EF&S	Emergency Food and Shelter
EMPG	Emergency Management Performance Grant

Acronyms/Abbreviations

ENSO	El Niño/La Niña Southern Oscillation
EOC	Emergency Operations Center
EP	Energy Program
EPA	US Environmental Protection Agency
EQ	Earthquake
EQIP	Environmental Quality Incentives Program
EWP	Emergency Watershed Protection Program
FEMA	Federal Emergency Management Agency
FFE	First Floor Elevation
FL	Flood
FMA	Flood Mitigation Assistance
FP&S	Fire Prevention and Safety
ft	Feet
g	Gravity
GF	Ground Failure
GI	Geophysical Institute
GIS	Geospatial Information System
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HSGP	Homeland Security Grant Program
HUD	U.S. Department of Housing and Urban Development
ICS	Incident Command System
IGAP	Indian General Assistance Program
IHBG	Indian Housing Block Grant
IHP	Indian Housing Plan
LFGP	Lindbergh Foundation Grant Program
M	Magnitude
MAP	Mitigation Action Plan
mb	Millibar
MMI	Modified Mercalli Intensity
mph	Miles Per Hour
NAHASDA	Native American Housing Assistance and Self Determination Act
NAFSMA	Native American Housing Assistance and Self Determination Act
NEHRP	National Earthquake Hazards Reduction Program
NFIP	National Flood Insurance Program
NIMS	National Incident Management System
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
PDM	Pre-Disaster Mitigation
PGA	Peak Ground Acceleration

Acronyms/Abbreviations

PNP	Private Non-Profits
POP	Period of Performance
PPD-8	President signed Presidential Policy Directive 8
RCASP	Remote Community Alert Systems
RD	Rural Development
REAA	Regional Educational Attendance Area
Risk MAP	Risk Mapping, Assessment, and Planning
RFC	Repetitive Flood Claims
RFG	Rasmuson Foundation Grants
RL	Repetitive Loss
RurALCAP	Rural Alaska Community Action Program Incorporated
SAFER	Staffing For Adequate Fire and Emergency Response
SBA	U.S. Small Business Administration
SHMAC	Alaska State Hazard Mitigation Advisory Council
SHMO	State Hazard Mitigation Officer
SHMP	Alaska State Hazard Mitigation Plan
SHSP	State Homeland Security Program
sq.	Square
SRL	Severe Repetitive Loss
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
SWP	Solid Waste Program
TF	Technical Feasibility
THMP	Tribal Hazard Mitigation Plan
UAF	University of Fairbanks
US or U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C	United States Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USHA	United States Housing Act
VFA-RFA	Volunteer Fire Assistance and Rural Fire Assistance Grant
Village	Native Village of Alatna
VSW	Village Safe Water
WARN	Warning, Alert, and Response Network
WSO	Weather Service Office
WSP	Watershed Planning

Section One provides a brief introduction to hazard mitigation planning, the grants associated with these requirements, and a description of this Tribal Hazard Mitigation Plan (THMP).

1.1 OVERVIEW

In recent years, local and tribal hazard mitigation planning has been driven by federal law. On October 30, 2000, Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390) which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (Title 42 of the United States Code [USC] 5121 et seq.) by repealing the act's previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). This new section emphasized the need for State, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts. In addition, it provided the legal basis for the Federal Emergency Management Agency's (FEMA) mitigation plan requirements for mitigation grant assistance.

Indian Tribal Government Defined:

For consistency and ease of reference, the term Indian Tribal government is used throughout this document. As defined in 44 Code of Federal Regulations (CFR) 201.2:

"Indian Tribal government means any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals."

To implement these planning requirements, FEMA published an Interim Final Rule in the Federal Register on February 26, 2002 (FEMA 2002), 44 CFR Part 201.6 (local government) and 201.7 (tribal government) requirements with subsequent updates specific to each government entity. The tribal planning requirements are described in detail in Section 2 and are identified in their appropriate sections throughout this HMP.

In October 2007 and July 2008, FEMA combined and expanded flood mitigation planning requirements with local and tribal hazard mitigation plans (44 CFR §201.6 and 201.7 respectively). Furthermore, all hazard mitigation assistance program planning requirements were combined eliminating duplicated mitigation plan requirements. This change also required participating National Flood Insurance Program (NFIP) communities' risk assessments and mitigation strategies to identify and address repetitively flood damaged properties. Local hazard mitigation plans now qualify communities for several Federal Hazard Mitigation Assistance (HMA) grant programs.

The mitigation planning process encourages coordination among Indian tribal authorities and other governmental agencies, tribal members, local residents, businesses, academia, and nonprofit groups and promotes their participation in the plan development and implementation process. This broad-based approach enables the development of mitigation actions that are supported by tribal members and other stakeholders and that reflect the needs of the Indian Tribal government as a whole.

This Tribal Hazard Mitigation Plan complies with Title 44 CFR current as of March 11, 2015 and applicable guidance documents. (FEMA 2015a)

1.2 AUTHORITIES

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) 42 U.S.C. 5165, as amended by the Disaster Mitigation Act of 2000 (DMA) (P.L. 106-390), provides for States, Indian Tribal governments, and local governments to undertake a risk-based approach to reducing risks to natural hazards through mitigation planning. The National Flood Insurance Act of 1968, 42 U.S.C. 4001 et seq., as amended, further reinforces the need and requirement for mitigation plans, linking flood mitigation assistance programs to State, Tribal, and Local Mitigation Plans.

FEMA has implemented the various hazard mitigation provisions through 44 CFR Part 201. These regulations emphasizes the need for State, local, and Indian Tribal governments to closely coordinate mitigation planning and implementation efforts and describe the requirement for a State, Local, or Tribal Mitigation Plan as a condition of pre- and post-disaster assistance.

In recognition of tribal sovereignty and the government-to-government relationship that FEMA has with Indian Tribal governments, FEMA amended 44 CFR Part 201 at 72 Fed. Reg. 61720, on October 31, 2007, and again at 74 Fed. Reg. 47471, on September 16, 2009, to consolidate and clarify the requirements for Indian Tribal governments, to establish Tribal Mitigation Plans separately from State and Local Mitigation Plans, and finalize the Mitigation Planning rule.

Indian Tribal governments with an approved Tribal Mitigation Plan in accordance with 44 CFR 201.7 may apply for assistance from FEMA as a grantee. If the Indian Tribal government coordinates with the State for review of their Tribal Mitigation Plan, then the Indian Tribal government also has the option to apply as a sub-grantee through a State or another tribe. A grantee is an entity such as a State, territory, or Indian Tribal government to which a grant is awarded and that is accountable for the funds provided. A sub-grantee is an entity, such as a community, local, or Indian Tribal government; State-recognized tribe; or a private nonprofit (PNP) organization to which a sub-grant is awarded and that is accountable to the grantee for use of the funds provided.

If the Indian Tribal government is eligible as a grantee or sub-grantee because it has an approved Tribal Mitigation Plan and has coordinated with the State for review, it can decide which option it wants to take on a case-by-case basis with respect to each Presidential Disaster Declaration, and for each grant program under a Declaration, but not on a project-by-project basis within a grant program. For example, an Indian Tribal government can participate as a sub-grantee for Public Assistance, but as a grantee for the Hazard Mitigation Grant Program (HMGP) under the same Declaration. However, the Indian Tribal government would not be able to request grantee status under HMGP for one HMGP project, then request sub-grantee status for another HMGP project under the same Declaration.

Under the Stafford Act and the National Flood Insurance Act, Indian Tribal governments must have an approved, adopted Tribal Mitigation Plan to meet the eligibility requirements for certain types of assistance, which may differ depending on whether the Indian Tribal government intends to apply as a grantee or sub-grantee, as outlined in the following table.

Table 1-1 Tribal HMP Authorities and Requirements

Program	Enabling Legislation	Funding Authorization	Tribal Mitigation Plan Required (✓)	
			Grantee Status	Sub-grantee Status
Public Assistance (Categories A, B: e.g., debris removal, emergency protective measures)	Stafford Act	Presidential Disaster Declaration	No Plan Required	No Plan Required
Public Assistance (Categories C-G: e.g., repairs to damaged infrastructure, publicly owned buildings)	Stafford Act	Presidential Disaster Declaration	✓	No Plan Required
Individual Assistance (IA)	Stafford Act	Presidential Disaster Declaration	No Plan Required	No Plan Required
Fire Management Assistance Grants	Stafford Act	Fire Management Assistance Declaration	✓	No Plan Required
Hazard Mitigation Grant Program (HMGP) Planning Grant	Stafford Act	Presidential Disaster Declaration	✓	No Plan required
HMGP Project Grant	Stafford Act	Presidential Disaster Declaration	✓	✓
Pre-Disaster Mitigation (PDM) Planning Grant	Stafford Act	Annual Appropriation	No Plan required	No Plan required
PDM Project Grant	Stafford Act	Annual Appropriation	✓	✓
Flood Mitigation Assistance (FMA)	National Flood Insurance Act	Annual Appropriation	✓	✓
Severe Repetitive Loss (SRL)	National Flood Insurance Act	Annual Appropriation	✓	✓
Repetitive Flood Claims (RFC)	National Flood Insurance Act	Annual Appropriation	✓	No Plan Required
Fire Management Assistance Grants	Stafford Act	Fire Management Assistance Declaration	✓	No Plan Required

1.3 GRANT PROGRAMS WITH MITIGATION PLAN REQUIREMENTS

FEMA HMA grant programs provide funding to States, Tribes, and local entities that have a FEMA-approved State, Tribal, or Local Mitigation Plan. Two of the grants are authorized under the Stafford Act and DMA 2000, while the remaining three are authorized under the National Flood Insurance Act and the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act. Excerpts from FEMA's 2015 HMA Guidance, Part I, is as follows:

> *"The U.S. Department of Homeland Security (DHS) FEMA HMA programs present a critical opportunity to reduce the risk to individuals and property from natural hazards, while simultaneously reducing reliance on Federal disaster funds. On March 30, 2011, the President signed Presidential Policy Directive 8 (PPD-8): National Preparedness,*

and the National Mitigation Framework was finalized in May 2013. The National Mitigation Framework comprises seven core capabilities, including:

- *Threats and Hazard Identification*
- *Risk and Disaster Resilience Assessment*
- *Planning*
- *Community Resilience*
- *Public Information and Warning*
- *Long-Term Vulnerability Reduction*
- *Operational Coordination*

HMA programs provide funding for eligible activities that are consistent with the National Mitigation Framework's Long-Term Vulnerability Reduction capability. HMA programs reduce community vulnerability to disasters and their effects, promote individual and community safety and resilience, and promote community vitality after an incident. Furthermore, HMA programs reduce response and recovery resource requirements in the wake of a disaster or incident, which results in a safer community that is less reliant on external financial assistance.

Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects. This definition distinguishes actions that have a long-term impact from those that are more closely associated with immediate preparedness, response, and recovery activities. Hazard mitigation is the only phase of emergency management specifically dedicated to breaking the cycle of damage, reconstruction, and repeated damage. Accordingly, States, territories, federally-recognized tribes, and local communities are encouraged to take advantage of funding that HMA programs provide in both the pre- and post-disaster timelines.

In addition to hazard mitigation, FEMA's Risk Mapping, Assessment, and Planning (Risk MAP) Program provides communities with education, risk communication, and outreach to better protect its citizens. The Risk MAP project lifecycle places a strong emphasis on community engagement and partnerships to ensure a whole community approach that reduces flood risk and builds more resilient communities. Risk MAP risk assessment information strengthens a local community's ability to make better and more informed decisions. Risk MAP allows communities to better invest and determine priorities for projects funded under HMA. These investments support mitigation efforts under HMA that protect life and property and build more resilient communities.

The whole community includes children, individuals with disabilities, and others with access and functional needs; those from religious, racial, and ethnically diverse backgrounds; and people with limited English proficiency. Their contributions must be integrated into mitigation/resilience efforts, and their needs must be incorporated as the whole community plans and executes its core capabilities.

WHOLE COMMUNITY

A. HMA Commitment to Resilience and Climate Change Adaptation

FEMA is committed to promoting resilience as expressed in PPD-8: National Preparedness; the President's State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience; the Administrator's 2011 FEMA Climate Change Adaptation Policy Statement (Administrator Policy 2011-OPPA-01); and the 2014–2018

FEMA Strategic Plan. Resilience refers to the ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies. The concept of resilience is closely related to the concept of hazard mitigation, which reduces or eliminates potential losses by breaking the cycle of damage, reconstruction, and repeated damage. Mitigation capabilities include, but are not limited to, community-wide risk reduction projects, efforts to improve the resilience of critical infrastructure and key resource lifelines, risk reduction for specific vulnerabilities from natural hazards and climate change, and initiatives to reduce future risks after a disaster has occurred.

FEMA is supporting efforts to streamline the HMA programs so that these programs can better respond to the needs of communities nationwide that are addressing the impacts of climate change. FEMA, through its HMA programs:

- *Develops and encourages adoption of resilience standards in the siting and design of buildings and infrastructure*
- *Modernizes and elevates the importance of hazard mitigation*

FEMA has issued several policies that facilitate the mitigation of adverse effects from climate change on the built environment, structures and infrastructure. Consistent with the 2014–2018 FEMA Strategic Plan, steps are being taken by communities through engagement of individuals, households, local leaders, representatives of local organizations, and private sector employers and through existing community networks to protect themselves and the environment by updating building codes, encouraging the conservation of natural and beneficial functions of the floodplain, investing in more resilient infrastructure, and engaging in mitigation planning. FEMA plays an important role in supporting community-based resilience efforts, establishing policies, and providing guidance to promote mitigation options that protect critical infrastructure and public resources.

FEMA encourages better integration of Sections 404 and 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (Stafford Act), Title 42 of the United States Code (USC.) 5121 et seq., to promote more resilience during the recovery and mitigation process. FEMA regulations that implement Sections 404 and 406 of the Stafford Act allow funding to incorporate mitigation measures during recovery activities. Program guidance and practice limits Section 406 mitigation to the damaged elements of a structure. This limitation to Section 406 mitigation may not allow for a comprehensive mitigation solution for the damaged facility; however, Section 404 funds may be used to mitigate the undamaged portions of a facility.

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:

- *Incorporating sea level rise in the calculation of Benefit-Cost Analysis (BCA)*
- *Publishing a new HMA Job Aid on pre-calculated benefits for hurricane wind retrofit measures, see HMA Job Aid (Cost Effectiveness Determination for Residential Hurricane Wind Retrofit Measures Funded by FEMA)*
- *Encouraging floodplain and wetland conservation associated with the acquisition of properties in green open space and riparian areas*
- *Reducing wildfire risks*
- *Preparing for evolving flood risk*

- *Encouraging mitigation planning and developing mitigation strategies that encourage community resilience and smart growth*
- *Encouraging the use of building codes and standards (the American Society of Civil Engineers/Structural Engineering Institute [ASCE/SEI] 24-14, Flood Resistant Design and Construction) wherever possible.*

For additional information, see http://www.fema.gov/climate-change" (FEMA 2015b).

1.3.1 Hazard Mitigation Assistance (HMA) Grant Programs

HMA grant program activities include:

Table 1-2 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	✓	✓	✓
Generators	✓	✓	
Localized Flood Risk Reduction Projects	✓	✓	✓
Non-localized Flood Risk Reduction Projects	✓	✓	
Structural Retrofitting of Existing Buildings	✓	✓	✓
Non-structural Retrofitting of Existing Buildings and Facilities	✓	✓	✓
Safe Room Construction	✓	✓	
Wind Retrofit for One- and Two-Family Residences	✓	✓	
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	
Post-Disaster Code Enforcement	✓		
Advance Assistance	✓		
5 Percent Initiative Projects	✓		
Miscellaneous/Other[1]	✓	✓	✓
2. Hazard Mitigation Planning	✓	✓	✓
Planning Related Activities	✓		
3. Technical Assistance			✓
4. Management Cost	✓	✓	✓

[1] Miscellaneous/Other indicates that any proposed action will be evaluated on its own merit against program requirements. Eligible projects will be approved provided funding is available.

(FEMA 2015b)

The Hazard Mitigation Grant Program (HMGP) is a competitive, disaster funded, grant program. Whereas the other Unified Mitigation Assistance Programs: Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) programs although competitive, rely on specific pre-disaster grant funding sources, sharing several common elements. The 2015 HMA Guidance provides the following programmatic information:

> *"HMGP is authorized by Section 404 of the Stafford Act, 42 U.S.C. 5170c. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster.*
>
> *HMGP funding is available, when authorized under a Presidential major disaster declaration, in the areas of the State requested by the Governor. Federally-recognized tribes may also submit a request for a Presidential major disaster declaration within their impacted areas (see http://www.fema.gov/media-library/assets/documents/85146). 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. The formula provides for up to 15 percent of the first $2 billion of estimated aggregate amounts of disaster assistance, up to 10 percent for amounts between $2 billion and $10 billion, and up to 7.5 percent for amounts between $10 billion and $35.333 billion. For States with enhanced plans, the eligible assistance is up to 20 percent for estimated aggregate amounts of disaster assistance not to exceed $35.333 billion.*
>
> *The Period of Performance (POP) for HMGP begins with the opening of the application period and ends no later than 36 months from the close of the application period.*
>
> *PDM is designed to assist States, territories, federally-recognized tribes, and local communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters. Congressional appropriations provide the funding for PDM.*
>
> *The total amount of funds distributed for PDM is determined once the appropriation is provided for a given fiscal year. It can be used for mitigation projects and planning activities.*
>
> *The POP for PDM begins with the opening of the application period and ends no later than 36 months from the date of subapplication selection.*
>
> *FMA is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4104c, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act of 1994. The Biggert-Waters Flood Insurance Reform Act of 2012 (Public Law 112-141) consolidated the Repetitive Flood Claims and Severe Repetitive Loss grant programs into FMA. FMA funding is available through the National Flood Insurance Fund for flood hazard mitigation projects as well as plan development and is appropriated by Congress. States, territories, and federally-recognized tribes are eligible*

The Native Village of Alatna is located out of the floodplain and therefore does not currently participate in the NFIP

to apply for FMA funds. Local governments are considered subapplicants and must apply to their Applicant State, territory, or federally-recognized tribe.

The POP for FMA begins with the opening of the application period and ends no later than 36 months from the date of subapplication selection" (FEMA 2015b).

As the Alaska State Hazard Mitigation plan states:

"The Flood Mitigation Assistance Program (FMA) provides pre-disaster grants to State and local governments for planning and flood mitigation projects. Created by the National Flood Insurance Reform Act of 1994, its goal is to reduce or eliminate the long-term risk of flood damage to insured structures. FMA provides an annual amount of $10,000 for planning and $100,000 for projects. Distributions of remaining funds are based upon the number of NFIP policies, repetitive loss structures, and other factors contributing to a disaster resistant community. Residential and non-residential properties may apply for FMA grants through their NFIP community and are required to have NFIP insurance to be eligible. FMA grant funds may be used to develop the flood portions of hazard mitigation plans or to do flood mitigation projects. FMA grants are funded 75% Federal and 25% applicant.

The Biggert-Waters Flood Insurance Reform Act of 2012 eliminated the Repetitive Flood Claims (RFC) and Severe Repetitive Loss grant programs (SRL). Elements of these flood programs have been incorporated into FMA. The FMA program now allows for additional cost share flexibility:

- *Up to 100-percent Federal cost share for severe repetitive loss properties.*
- *Up to 90-percent Federal cost share for repetitive loss properties.*
- *Up to 75-percent Federal cost share for NFIP insured properties.*

The FMA program is available only to communities participating in the NFIP. In the State of Alaska, the Department of Commerce, Community, and Economic Development (DCCED) manages this program" (DHS&EM 2013).

Tribal Hazard Mitigation Plan Layout Description

This THMP consists of the following sections and appendices:

Section 1 Introduction

Section one defines what a hazard mitigation plan is, delineates federal requirements and authorities, and introduces the Hazard Mitigation Assistance program listing the various grant programs and their historical funding levels.

Section 2 Community Description

Section two provides a general history and background of the Village of Alatna (Village), including historical trends for population and the demographic and economic conditions that have shaped the area.

Section 3 Planning Process

Section three describes the HMP update's planning process, identifies the planning team members, the meetings held as part of the planning process, and the key stakeholders within the community and the surrounding area. This section documents public outreach activities (support documents are located in Appendix D); the review and incorporation of relevant plans, reports, and other appropriate information; actions the Native Village of Alatna plans to implement to assure continued public participation; and their methods and schedule for keeping the plan

current. In addition, this section documents the changes and updates from the legacy (2010) Hazard Mitigation Plan.

This section also describes the planning team's formal plan maintenance process to ensure that the THMP remains an active and applicable document throughout its five-year lifecycle. The process includes monitoring, reviewing, evaluating (Appendix F – Maintenance Documents), updating the THMP; and implementation initiatives.

Section 4 Jurisdictional Adoption

Section four describes the community's Tribal Hazard Mitigation Plan adoption process (support documents are located in Appendix C).

Section 5 Hazard Analysis

Section five describes the process through which the planning team identified, screened, and selected the hazards for profiling in this version of the Tribal Hazard Mitigation Plan. The hazard analysis includes the nature, previous occurrences (history), location, extent, impact, and future event recurrence probability for each hazard. In addition, historical impact and hazard location figures are included when available.

Section 6 Vulnerability Assessment

Section six identifies the Native Village of Alatna potentially vulnerable assets—people, residential and nonresidential buildings, critical facilities, and critical infrastructure. The resulting information identifies the full range of hazards that the community could face and potential social impacts, damages, and economic losses. Land use and development trends are also discussed.

Section 7 Mitigation Strategy

Section seven defines the mitigation strategy which provides a blueprint for reducing the potential losses identified in the vulnerability analysis. This section lists the community's governmental authorities, policies, programs, and resources.

The planning team developed a list of mitigation goals and potential actions to address the risks facing the Native Village of Alatna. Mitigation actions include preventive actions, property protection techniques, natural resource protection strategies, structural projects, emergency services, and public information and awareness activities. Mitigation strategies were developed to address NFIP insured properties (if applicable) while encouraging participation with the NFIP and the reduction of flood damage to flood-prone structures.

Section 8 References

Section eight lists reference materials and resources used to prepare this THMP.

Appendices

Appendix A: Delineates federal, State, and other potential mitigation funding sources. This section will aid the community with researching and applying for funds to implement their mitigation strategy.

Appendix B: Provides the FEMA Local Mitigation Plan Review Tool, which documents compliance with FEMA criteria.

Appendix C: Provides the adoption resolutions for the Native Village of Alatna.

Appendix D: Provides public outreach information, including newsletters.

Appendix E: Contains the Benefit-Cost Analysis Fact Sheet used to prioritize mitigation actions.

Appendix F: Provides the plan maintenance documents, such as an annual review sheet and the progress report form.

Section Two provides the location, geography, history, and demographic information of Alatna.

2.1 LOCATION, GEOGRAPHY, AND HISTORY

"Alatna is on the north bank of the Koyukuk river, southwest of its junction with the Alatna River, approximately 190 air miles northwest of Fairbanks and 57 miles upriver from Hughes." (DCRA 2016).

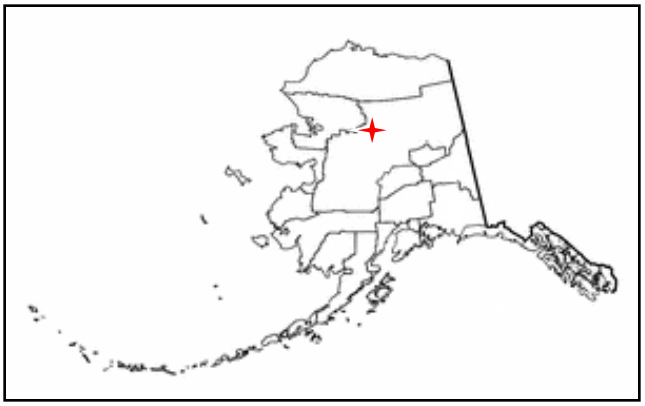


Figure 2-1 Alatna's Location Map

The community is mainly an Athabascan village located on the Koyukuk River. The area temperature varies from -40 degrees Fahrenheit (ºF) during the winter and has warm summers. The community's highest temperature reached 94 ºF and the lowest was -75 ºF. The community experiences a 13.5 inch annual precipitation and annual snowfall of approximately 71 inches. (DCRA 2016)

The Koyukon Athabascan, Kobuk, Selawik, and Nunamiut Eskimos inhabited the area as nomadic tribes following game and fish food sources to support their subsistence lifestyle. The tribes began to co-settle at the future site of the Old Allakaket town site around 1851. The various bands established joint settlements after 1851. The old site of Alatna was a traditional trading center for Athabascans and Eskimos.

- 1906 – The first mission on the Koyukuk River, St. John's-in-the-Wilderness Episcopal Mission.
- 1925 – A post office was opened.
- 1938 – The name Alatna was assumed by a small Eskimo community, across the river from the Athabascan community of Allakaket (the old name for the mission).
- 1957 – The first public school established.
- 1964 – Spring flood impacted the majority of the community.
- 1975 – The community incorporated as a city, including both settlements of Alatna and Allakaket.
- 1978 – A clinic and airport were built in 1978.
- 1979 – A new school and community roads were built in 1979.
- 1994 – the "1995 Fall Flood" event destroyed the City
- 1995 on – Residents rebuilt near the old City site, but Alatna is now located outside of the Allakaket City limits.

2.2 DEMOGRAPHICS

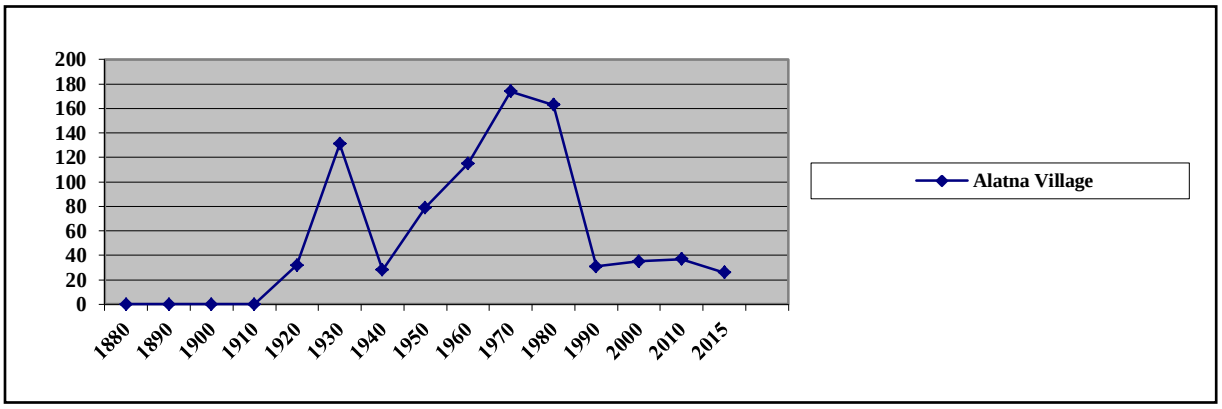


Figure 2-2 Alatna's Historic Population

The 2010 census recorded 37 residents, of which the median age is 28, indicating a relatively young population. The population of Alatna is expected to remain steady because over half of the population is under 40 years of age. Alatna is principally consists of descendants of Kobuk Eskimos, and about 97 percent of residents recognize themselves as such. The male and female composition is approximately 59 and 41 percent respectively. The 2010 census revealed that there are 12 households with the average household having approximately 3 individuals. The most recent 2015 DCRA estimated population is 26. Figure 2-2 illustrates the historic population of the community. (DCRA 2016).

2.3 ECONOMY

The community's economic structure is a mixture of cash and subsistence and is based on seasonal requirements with limited government based employment. Summer subsistence consists of harvesting salmon, whitefish, moose, caribou (when available), bear, small game, and berries. The oil and gas industry, education, and medical services, along with government-based work enable community members to earn much needed income (DCRA 2016).

According to the According to U.S. Census Bureau's 2010-2014 American Community Survey 5-Year Estimates, the median household income in Alatna was $27,000. Approximately 12.5 percent were reported to be living below the poverty level. The potential work force (those aged 16 years or older) in Alatna was estimated to be 9, of which 5 were actively employed. In 2015 there were 5 unemployment claims; however, this rate included part-time and seasonal jobs (DCRA 2016).

Figure 2-3 depicts an aerial photograph of the community.

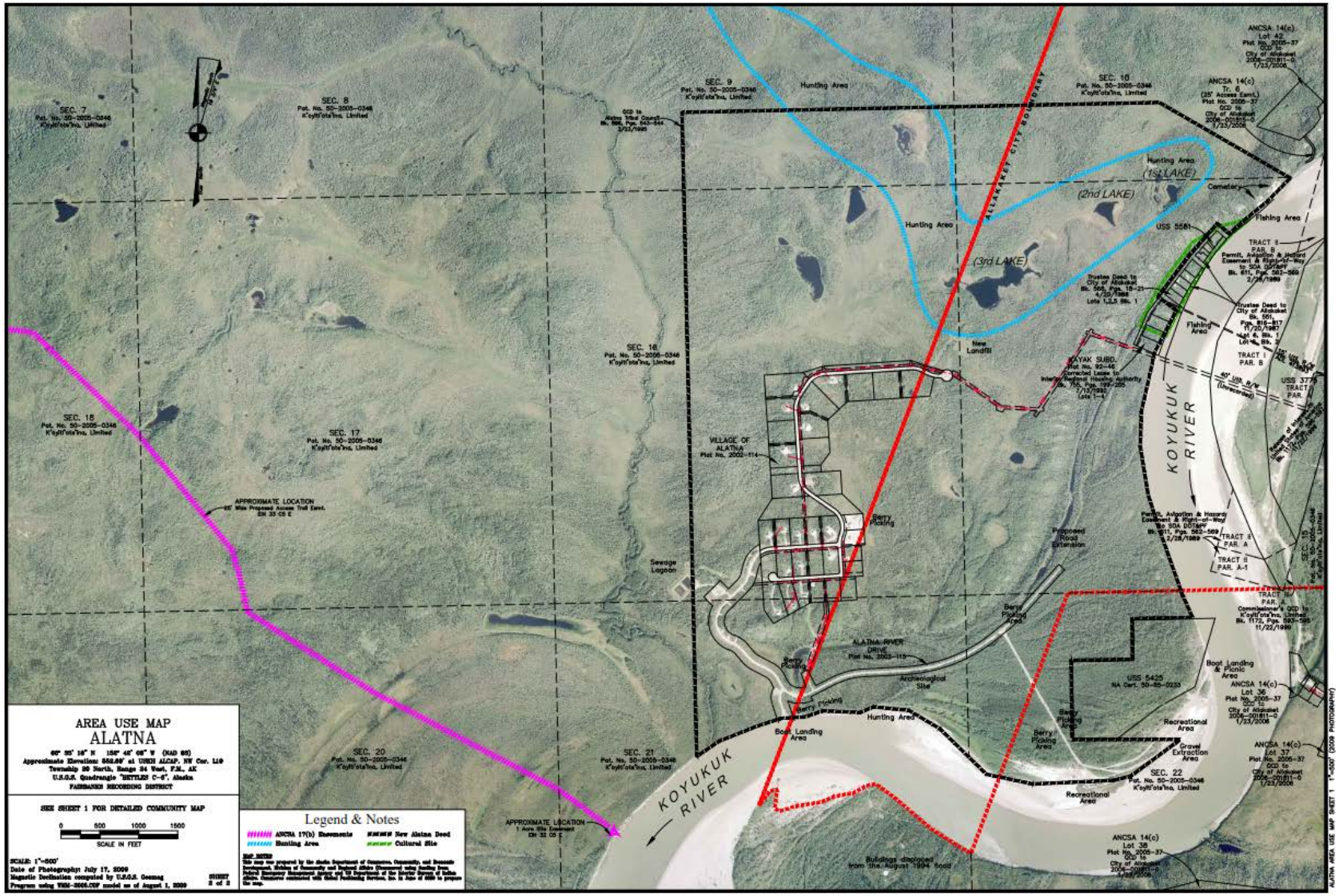


Figure 2-3 Aerial View of Alatna (DCRA 2009)

This page intentionally left blank

Section Three provides an overview of the planning process; identifies the planning team members and key stakeholders; documents public outreach efforts; and summarizes the review and incorporation of existing plans, studies, and reports used to develop this THMP. Outreach support documents and meeting information regarding the planning team and public outreach efforts are provided in Appendix D.

DMA 2000 requirements and implementing Tribal governance regulations for describing the planning process include:

DMA 2000 Requirements
Local Planning Process §201.7(b): An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other tribal agencies, appropriate Federal agencies, adjacent jurisdictions, interested groups, and be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA mitigation programs and initiatives. Element §201.7(c)(1): [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was defined and involved. §201.7(c)(1)(i): An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval, including a description of how the Indian Tribal government defined "public;" and §201.7(c)(1)(ii): As appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process.
1. REGULATION CHECKLIST
ELEMENTS. Planning Process
A. Does the plan provide a narrative description of the process followed to prepare the new or updated plan? B. Does the new or updated plan indicate who was involved in the current planning process? C. Does the new or updated plan indicate how the "public" was defined and involved? How was the "public" defined? How was the "public" involved? Were they provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval? D. Does the new or updated plan discuss the opportunity for other Indian Tribal governments, tribal and regional agencies, businesses, academia, nonprofits, neighboring communities, and other affected stakeholders and interested parties to be involved in the planning process? E. Does the updated plan document how the planning team reviewed and analyzed each section of the plan? [Updates only.] F. Does the updated plan indicate for each section of the plan whether or not it was revised as part of the update process? [Updates only.]
Source: FEMA, March 2015.

3.1 OVERVIEW

The State of Alaska, Division of Homeland Security and Emergency Management (DHS&EM) provided funding and project oversight to a hazard mitigation planning consultant AECOM Corporation (AECOM) to facilitate and guide planning team development and THMP development.

The planning process began on November 2, 2016 with a teleconference with Michelle Moses (Tribal Administrator) to explain how Alatna was selected by the Division of Homeland Security and Emergency Management 2014 Pre-Disaster Mitigation Grant award. AECOM staff described the THMP development requirement to enable the community to qualify for Hazard Mitigation Grant Program grants and the overall THMP development process.

Ms. Moses was encouraged to develop a community planning team to assist the community's efforts to identify available resources and capabilities for THMP development. The planning

team would assist by acting as an advocate for the planning process, assist with gathering information, and provide support during public participation opportunities. They briefly discussed existing hazards that affect the community such as wildfires and heavy snow storms.

In follow-up teleconferences in December 2016 and January 2017, the planning team discussed the hazard mitigation planning process, identified the hazards that affect the community, identified residential and critical facilities in Alatna and Allakaket, and assisted the planning team with identifying and prioritizing mitigation actions for potential future mitigation project funding, and detailed applicable resources and capabilities. The planning team then discussed the community's roles such as: acting as an advocate for the planning process, assisting with gathering information, and supporting public participation opportunities.

In summary, the following five-step process took place from November 2016 through June 2017.

1. Organize resources: Members of the planning team identified resources, including staff, agencies, and local community members, who could provide technical expertise and historical information needed in the development of the hazard mitigation plan.
2. Monitor, evaluate, and update the plan: The planning team developed a process to ensure the plan was monitored to ensure it was used as intended while fulfilling community needs. The team then developed a process to evaluate the plan to compare how their decisions affected hazard impacts. They then outlined a method to share their successes with community members to encourage support for mitigation activities and to provide data for incorporating mitigation actions into existing planning mechanisms and to provide data for the plans five-year update.
3. Assess risks: The planning team identified the hazards specific to Alatna and with the assistance of AECOM, developed the risk assessment for five identified hazards. The planning team reviewed the risk assessment, including the vulnerability analysis, prior to and during the development of the mitigation strategy.
4. Assess capabilities: The planning team reviewed current administrative and technical, legal and regulatory, and fiscal capabilities to determine whether existing provisions and requirements adequately address relevant hazards.
5. Develop a mitigation strategy: After reviewing the risks posed by each hazard, the planning team developed a comprehensive range of potential mitigation goals and actions. Subsequently, the planning team identified and prioritized the actions for implementation.

3.2 PLANNING TEAM

The local planning team members include the Tribal President and other tribal council members, with assistance from the Tribal Administrator. Table 3-1 identifies the complete hazard mitigation planning team.

Table 3-1 Hazard Mitigation Planning Team

Name	Title	Key Input
Harding Sam	Tribal President	Planning team Lead, Tribal data input and HMP review.
Jared Sam	Tribal Member	Planning team member, data input and HMP review.

Table 3-1 Hazard Mitigation Planning Team

Name	Title	Key Input
Amelia Edwards	Tribal Member	Planning team member, data input and HMP review.
Michelle Moses	Tribal Administrator	Planning team member, data input and HMP review.
Jessica Evans	Hazard Mitigation Planner, AECOM Alaska	Temporary team member, responsible for HMP development, lead writer, project coordination.

3.3 PUBLIC INVOLVEMENT AND OPPORTUNITY FOR INTERESTED PARTIES TO PARTICIPATE

AECOM extended an invitation to all individuals and entities identified on the project mailing list, described the planning process, and announced the upcoming communities' planning activities. The announcement was emailed to relevant academia, nonprofits, and local, state, and federal agencies on October 13, 2016. The following agencies were invited to participate and review the HMP:

- University of Alaska Fairbanks, Geophysical Institute, Alaska Earthquake Information Center (UAF/GI/AEIC)
- Alaska Native Tribal Health Consortium-Community Development (ANTHC)
- Alaska Volcano Observatory (AVO)
- Association of Village Council Presidents (AVCP)
- Denali Commission
- Alaska Department of Environmental Conservation (DEC)
- DEC Division of Spill Prevention and Response (DSPR)
- DEC Village Safe Water (VSW)
- Alaska Department of Transportation and Public Facilities (DOT/PF)
- Alaska Department of Community, Commerce, and Economic Development (DCCED)
- DCCED, Division of Community Advocacy (DCRA)
- Alaska Department of Military and Veterans Affairs (DMVA)
- DMVA, Division of Homeland Security and Emergency Management (DHS&EM)
- US Environmental Protection Agency (EPA)
- National Weather Service (NWS) Northern Region
- NWS Southeast Region
- NWS Southcentral Region
- Natural Resources Conservation Service (NRCS)
- US Department of Agriculture (USDA)
- USDA Division of Rural Development (RD)
- US Army Corps Of Engineers (USACE)
- US Bureau of Indian Affairs (BIA)
- US Bureau of Land Management (BLM)
- US Department of Housing and Urban Development (HUD)
- US Fish & Wildlife Service (USFWS)

3.3.1 The Native Village of Alatna Tribe's "Public" Determination

The Alatna Tribe recognizes any tribal member, Alaska Native, community resident, or employee as a "public" member of the community. This assures that anyone within the community is eligible to attend and participate in tribal public meetings concerning hazard mitigation plan development and implementation activities.

3.4 LEGACY 2010 HMP REVIEW AND ANALYSIS.

Legacy Alatna THMP Lifecycle Planning Team Meeting Recommendations

44 CFR requires communities to schedule HMP planning team meetings and teleconferences to review, discuss, and determine mitigation implementation accomplishments, track data relevance for future HMP update inclusion and document recommendations for future HMP updates.

The Legacy 2010 HMP document was revised as described below.

Section 1. ***Introduction***: added entire new section explaining the plan process.

Section 2. ***Community Description***: updated and expanded community information, including new census and State data.

Section 3. ***Planning Process***: updated this section to reflect 2017 public process including newsletters, public meetings and 2017 planning team.

Section 4. ***Plan Adoption***: 2017 resolutions and dates.

Section 5. ***Hazard Profile Analysis***: reviewed hazard identification and risk assessment for earthquake, flooding, severe weather, ground failure (previously permafrost) and wildland/tundra fire descriptions and data. A new profile analysis of ground failure was added.

Section 6. ***Vulnerability Analysis***: added a new section to analyze vulnerability with 2016 critical facilities and infrastructure tables.

Section 7. ***Mitigation Strategy***: reviewed 2010 mitigation goals and actions and added new goals and actions for the 2017 Mitigation Action Plan.

Section 8. ***References***: revised to reflect 2017 Update.

The planning team did not complete their designated annual HMP integration into other planning mechanism, annual reviews or other plan maintenance activities. Therefore it became a primary consideration to update the legacy 2010 HMP to analyze city and tribal changes as well as all hazards that have, or could potentially have, impacted the community during the legacy HMP's five-year lifecycle.

Table 3-2 delineates planning team identified HMP components that necessitated information update. The team determined how community changes, construction and infrastructure conditions, climate change impacts, and population increases or decreases have influenced hazard risks and/or facility vulnerabilities.

The 2017 THMP update process included inviting new and existing stakeholders to review the legacy HMP to determine what was accomplished versus what was intended to accomplish. Pertinent section data are identified within Table 3-2, which provided the foundation for completing the 2017 THMP update.

Table 3-2 HMP Review and Update Needs Determination

2010 HMP Section	2010 HMP Items to be Updated	Status: F: Fulfilled NF: Not Fulfilled	2017 HMP Identified items for Deletion	Newly Identified Items to be Added for HMP Compliance	New Action Commitment
Planning Process	• Planning process obligations successes • Planning team membership • Mitigation resource list • Continue public outreach initiatives • HMP integration initiatives into other planning mechanisms • Plan Maintenance Activities	NF: Complete annual HMP review NF: Integrate any legacy HMP components into other planning mechanisms or initiatives NF: Continue public involvement during five-year life cycle	• None	• Refine plan maintenance processes and responsibilities	• Planning team will begin to hold annual review meetings • Strive to integrate HMP initiatives into other planning mechanisms
Hazard Profile Update	• Update hazard profile and new event history • Profile newly identified hazard risks	NF: Update hazard profile and new event history	• Mitigation projects that were deleted or combined due to similarity	• Identify new hazards • Update hazards' impacts • Determine mitigation project status as: deleted, deferred, or combined • Develop new MAP	• Define new actions within the MAP
Risk Analysis and Vulnerability Assessment	• Asset inventory • Vulnerability analysis & summaries	NF: Identify development and land use changes	• None	• Develop asset inventory • Determine infrastructure vulnerabilities • Determine residential structure vulnerabilities • Identify repetitive loss properties as appropriate	• Fill data gaps • Locate scientific information to augment these data. • Delineate climate change impacts to infrastructure
Mitigation Strategy	• Determine existing mitigation actions progress and current status • Define mitigation action implementation successes or barriers	NF: Did not track project implementation processes or progress	• Delete completed, combined, or deleted actions • Implemented & non-relevant mitigation actions	• Legacy (2009) HMP MAP initiatives' status • Identify new mitigation actions for newly identified hazard implementation • Develop community specific capability assessment(s)	• Annually review action's progress, status, and feasibility

3.5 2016 UPDATE HMP PLANNING ACTIVITIES

Table 3-3 lists the community's public involvement initiatives focused to encourage participation and insight for the HMP effort.

Table 3-3 Public Involvement Mechanisms

Mechanism	Description
Agency Involvement email (October 13, 2016)	Invited agencies to participate in mitigation planning effort and to review applicable newsletters located on the DHS&EM Local/Tribal All Hazard Mitigation Plan Development website at: https://ready.alaska.gov/plans/localhazmitplans
Newsletter #1 Distribution (February 16, 2017)	On February 16, 2017, the planning team hung a newsletter in the Tribal Hall. The newsletter encouraged the whole community to provide hazard and critical facility information.
Newsletter #2 Distribution (May, 2017)	In May 2017, the planning team distributed a second newsletter, describing the THMP's availability and potential THMP projects for review. The newsletter encouraged the whole community to provide comments or input. It was posted at the tribal office.
Public Comment Results	No public comments were received during development or during the draft HMP review period.

Initial contact was made with Tribal Administrator Michelle Moses in November, 2016; she was excited that Alatna was included within DHS&EM's Pre-Disaster Mitigation grant and the prospects of completing the hazard mitigation plan. She formed the planning team and began directing THMP data acquisition efforts. The planning team held conference calls in January 2017 and in February 2017 met in person in Alatna to discuss the plan update.

Copies of the first newsletter were placed on the DSH&EM website and posted in the Tribal Hall during that visit.

The planning team identified five natural hazards: earthquake, erosion/flood, ground failure, severe weather, and wildfire which periodically impact the Village.

AECOM described the specific information needed from the planning team to assess critical facility vulnerability and population risk by the location, value, and population within residential properties and critical facilities.

The risk assessment was completed after community asset data were collected by the planning team during 2017, which identified the assets that are exposed and vulnerable to specific hazards.

The planning team evaluated these facilities and their associated risks to facilitate creating a viable or realistic risk analysis and subsequent vulnerability assessment for Alatna.

In February of 2017, the planning team reviewed and prioritized the mitigation actions identified based on the results of the risk assessment. A second newsletter was prepared and delivered in May 2017 describing the process to date, presenting the prioritized mitigation actions, and announcing the availability of the draft HMP for public review and comment.

The planning team reviewed the draft THMP in June 2017 for accuracy and to ensure it meets the community's needs. After a work session, no changes were made.

Note: *Neither the City nor the Village received public comments either during HMP development or during the draft review period.*

3.6 PLAN MAINTENANCE

This section describes a formal plan maintenance process to ensure that the THMP remains an active and applicable document. It includes an explanation of how the community's planning team intends to organize their efforts to ensure that improvements and revisions to the THMP occur in a well-managed, efficient, and coordinated manner. The planning team will:

- Integrate HMP components into existing planning mechanisms
- Continue public involvement
- Monitor, review, evaluate, and update the HMP annually

3.6.1 Incorporating Existing Plans and Other Relevnat Information

DMA 2000 requirements and implementing Tribal governance regulations for reviewing and incorporating exiting information include:

DMA 2000 Requirements
Program Integration §201.7(c): An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other tribal agencies, appropriate Federal agencies, adjacent jurisdictions, interested groups, and be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA mitigation programs and initiatives. §201.7(c)(1)(iii); Review and incorporation, if appropriate, of existing plans, studies, and reports; and §201.7(c)(1)(iv); Be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives.
1. REGULATION CHECKLIST
ELEMENTS. Data Incorporation
A. Does the new or updated plan describe the review and incorporation, if appropriate, of existing plans, studies, and reports in the new or updated plan? B. Does the new or updated plan describe how the Indian tribal mitigation plan is integrated with other ongoing Indian tribal planning efforts? C. Does the new or updated plan describe how the Indian tribal mitigation planning process is integrated with FEMA mitigation programs and initiatives?
Source: FEMA, March 2015.

During the new HMP development and annual update planning process, the planning team reviewed and incorporated pertinent information from available since the legacy HMP received FEMA final approval. Data collected included newly available plans, studies, reports, and technical research listed in Table 3-4. The data were reviewed and referenced where applicable for the THMP's jurisdictional information, hazard profiles, risk analysis, and vulnerability assessment.

Table 3-4 Documents Reviewed

Existing plans, studies, reports, ordinances, etc.	Contents Summary (How will this information improve mitigation planning?)
Alatna: The Comprehensive Plan. A Constitutional Mandate for Long Term Survival. August 1995.	Documents the recovery of the 1994 flood, and contains long-term planning goals.
US Army Corps of Engineers, Alaska Baseline Erosion Assessment: Erosion Information Paper - Alatna, Alaska, 2008	Defined the community's erosion impacts
State of Alaska, Department of Commerce, Community and Economic Development Community Profile	Provided historical and demographic information
State of Alaska Hazard Mitigation Plan (SHMP), 2013	Defined statewide hazards and their potential locational impacts

A complete list of references is provided in Section 8.

3.6.2 Integrating THMP Precepts into Existing Planning Mechanisms

The City and Tribe have extremely limited and transient staff, with associated funding challenges preventing the planning team from integrating any legacy HMP components into other planning mechanisms or initiatives during the legacy HMP's 5-year lifecycle.

This section describes the requirements for coordinating, implementing, or integrating existing planning mechanisms into the THMP, as stipulated in the DMA 2000.

- Once the THMP is community adopted and receives FEMA's final approval, each planning team member ensures that the THMP, in particular each Mitigation Action Project, is incorporated or integrated into existing planning mechanisms whenever possible. Each member of the planning team has undertaking the following activities.
- Review community-specific regulatory tools to assess integrating HMP components. These regulatory tools are identified in the following capability assessment section
- Work with pertinent community departments to increase awareness of the THMP and provide assistance in integrating specific components such as the mitigation strategy (including the MAP) into relevant planning mechanisms.

Note: *Implementing these requirements may require updating or amending specific planning mechanisms*

3.6.3 Continued Public Involvement

DMA 2000 requirements and implementing Tribal governance regulations for continued public involvement include:

DMA 2000 Requirements
Continued Public Involvement §201.7(c)(4)(iv): *[The plan maintenance process shall include a] discussion on how the Indian Tribal government will continue public participation in the plan maintenance process.*

DMA 2000 Requirements
1. REGULATION CHECKLIST
ELEMENTS. Continued Public Involvement
A. Does the new or updated plan explain how continued public participation will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)
Source: FEMA, March 2015.

The Alatna planning teams did not conduct their HMP maintenance commitments, therefore neither was their "public" engaged during the legacy HMP's five-year life cycle.

The Village recognizes any Alatna tribal member, Alaska Native, community resident, or employee as a "Public" member of the community. This assures that anyone within the community is eligible to attend and participate in tribal public meetings concerning hazard mitigation plan development activities.

The community is recommitted to involving the public directly in the continual reshaping and updating the THMP. A paper copy of the THMP and any proposed changes will be available at the Tribal Hall. An address and phone number of the planning team leader to whom people can direct their comments or concerns will also be available at the Tribal Hall.

The planning team will strive to continue identifying opportunities to raise community awareness about the THMP and the hazards that affect the area. This effort could include attendance and provision of materials Tribal-sponsored events, outreach programs, and public mailings. Any public comments received regarding the THMP will be collected by the planning team leader, included in the annual report, and considered during future THMP updates.

3.6.4 Monitoring, Reviewing, Evaluating, and Updating the THMP

DMA 2000 requirements and implementing Tribal governance regulations for monitoring, reviewing, evaluating, and updating the THMP include:

DMA 2000 Requirements
Monitoring, Evaluating and Updating the Plan §201.7(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan.
1. REGULATION CHECKLIST
ELEMENTS
A. Does the new or updated plan describe the method and schedule for monitoring the plan, including how, when, and by whom (e.g., the responsible agency)?
B. Does the new or updated plan describe the method and schedule for evaluating the plan, including how, when, and by whom (e.g., the responsible agency)?
C. Does the new or updated plan describe the method and schedule for updating the plan, including how, when, and by whom (e.g., the responsible agency), within the 5-year cycle?
D. Does the updated plan include an analysis of whether the previously approved plan's method and schedule worked, and what elements or processes, if any, were changed for the next 5 years?
Source: FEMA, March 2015.

This section provides an explanation of how Alatna's planning team intends to organize their efforts to ensure that improvements and revisions to the HMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail here:

1. Reviewing and revising the HMP to reflect development changes, project implementation progress, project priority changes, and resubmittal.
2. HMP resubmittal at the end of the plan's five-year life cycle for State and FEMA review and approval.
3. Continued mitigation initiative implementation.

3.6.4.1 Planning Team Recommitment for THMP Maintenance

The City and Tribe has extremely limited and transient staff, with associated funding challenges preventing the planning team from completing their legacy 2010 HMP's five-year life cycle's annual plan maintenance activities.

Therefore, legacy HMP components were not integrated within other City or Tribal planning mechanisms.

Subsequently, each section of this 2018 HMP update was reviewed and edited to reflect changes since the 2010 legacy HMP was implemented.

Alatna's planning team intends to organize their efforts to ensure that improvements and revisions to the legacy HMP occur in a well-managed, efficient, and coordinated manner. The planning team will follow these three process steps:

1. Review and revise the 2017 HMP to reflect development changes, planning process, project implementation progress, project priority changes, and mitigation strategy progress
2. THMP submit at the end of the HMP's five year life cycle for State and FEMA review and approval
3. Continually strive to implement and integrate mitigation initiative within community documents

DMA 2000 Requirements
Monitoring Progress of Mitigation Activities §201.7(c)(4)(ii): [The plan maintenance process shall include a] system for monitoring implementation of mitigation measures and project closeouts. §201.7(c)(4)(v); *[The plan maintenance process shall include a] system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.*
1. REGULATION CHECKLIST
ELEMENTS. Plan Maintenance
A. Does the new or updated plan describe how mitigation measures and project closeouts will be monitored? B. Does the new or updated plan identify a system for reviewing progress on achieving goals and implementing activities and projects in the Mitigation Strategy? C. Does the updated plan describe any modifications, if any, to the system identified in the previously approved plan to track the initiation, status, and completion of mitigation activities? D. Does the updated plan discuss whether mitigation actions were implemented as planned?
Source: FEMA, March 2015.

3.6.4.2 Monitoring the THMP

The hazard mitigation planning team leader (or designee) will serve as the primary point of contact and will coordinate local efforts to monitor, evaluate, revise, and update THMP, and mitigation strategy actions' progress and status.

The THMP was prepared as a collaborative effort. To maintain momentum and build upon previous hazard mitigation planning efforts and successes, Alatna will continue to use the planning team to monitor, review, evaluate, and update the THMP. Each authority identified in the Mitigation Action Plan (MAP) matrix (Table 7-10) will be responsible for implementing the Mitigation Action Plan and determining whether their respective actions were effectively implemented.

3.6.4.3 Reviewing the THMP

The planning team did not integrate any legacy HMP components into other planning mechanisms or initiatives. Therefore the planning team recommits to reviewing their success for achieving the THMP's review, maintenance, and mitigation goals, activities and initiatives during the annual review process.

Additionally, during each annual review, each authority or agency administering a mitigation project will submit a Progress Report (Appendix F) to the planning team. The report will include the mitigation project's current status, including any project changes, a list of identified implementation problems (with an appropriate strategy (ies) to overcome them), and a statement of whether or not the project has helped achieve the appropriate goals identified in the plan. (See also Section 7.6).

3.6.4.4 Evaluating the THMP

The Annual Review Questionnaire (Appendix F) provides the basis for future THMP evaluations by guiding the planning team with identifying new or more threatening hazards, adjusting to changes to, or increases in, resource allocations, and garnering additional support for THMP implementation.

The planning team leader will initiate the annual review two months prior to the scheduled planning meeting date to ensure that all data are 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:

- Determine authorities, outside agencies, stakeholders, and resident's participation in THMP implementation success.
- Identify notable risk changes for each identified and newly considered natural or human-caused hazard.
- Consider land development activities and related programs' impacts on hazard mitigation.
- Mitigation Action Plan implementation progress (identify problems and suggest improvements as necessary).
- Evaluate HMP local resource implementation for HMP identified activities.

3.6.4.5 Updating the HMP

Alatna's planning team did not review nor integrate HMP components within community planning documents during the legacy 2010 HMP five-year life cycle. However, they recommitted to annually reviewing the THMP as described in Section 3.6.4.3 and update the

THMP every five years (or when significant events such as a disaster declaration or other changes are made). The planning team leader will review their Annual Review Questionnaires (Appendix F) to determine their success with integrating HMP components as well as implementing the THMP's Mitigation Action Plan.

Future annual reviews will reduce the planning team's efforts to update the THMP every five years.

During the HMP update process, planning team members will determine how the goals fulfilled their community's needs; the status of each listed mitigation action and indicate whether the actions were "completed, deleted, deferred, or combined" with other new or existing actions. The team will then provide an explanation as to their respective status.

The Annual Review Questionnaire will enable the team to identify possible changes in the THMP Mitigation Action Plan by refocusing on new or more threatening hazards, resource availability, and acquiring stakeholder support for the THMP project implementation.

No later than the beginning of the fourth year following THMP adoption, the planning team leader will undertake the following activities:

- Request grant assistance from DHS&EM to update the THMP (this can take up to one year to obtain and one year to update the plan).
- Ensure that each authority administering a mitigation project will submit a Progress Report to the planning team.
- Develop a chart to identify those THMP sections that need improvement, the section and page number of their location within the THMP, and describe the proposed changes.
- Thoroughly analyze and update the natural hazard risks.
    - Determine the current status of the mitigation projects.
    - Identify the proposed Mitigation Plan Actions (projects) that were completed, deleted, or delayed. Each action should include a description of whether the project should remain on the list, be deleted because the action is no longer feasible, or reasons for the delay.
    - Describe how each action's priority status has changed since the THMP was originally developed and subsequently approved by FEMA.
    - Determine whether or not the project has helped achieve the appropriate goals identified in the plan.
    - Describe whether the community has experienced any barriers preventing them from implementing their mitigation actions (projects) such as financial, legal, and/or political restrictions, and stating appropriate strategies to overcome them.
    - Update ongoing processes, and change the proposed implementation date/duration timeline for delayed actions the Village still desires to implement.
    - Prepare a "new" MAP matrix for Alatna.
- Prepare a new Draft Updated THMP
- Submit the updated draft THMP to DHS&EM and FEMA for review and approval

3.6.4.6 Formal State and FEMA HMP Review

Upon completion the Village (or its contractor) will submit the completed draft THMP to the Division of Homeland Security and Emergency Management (DHS&EM) for initial review and preliminary approval. When all corrections are made, DHS&EM will forward the THMP to FEMA for their review and conditional approval.

Once the plan has fulfilled all FEMA criteria, the Village will pass their formal THMP Adoption Resolutions. A copy will be sent to FEMA through DHS&EM for final THMP approval. The Village (or their contractor) will include a final copy of the FEMA approved document within the THMP.

FEMA's final approval assures the Village eligibility for applying for appropriate mitigation grant program funding.

FEMA will provide a formal HMP adoption letter back to the Village for inclusion within their HMP. FEMA's final approval ensures the Village's eligibility for applying for various agencies' mitigation grant programs.

3.6.5 Tribal or Native Village Mitigation Grant Application Process Considerations

The IRA Tribe can potentially qualify to either apply for applicable grant funding as a state sub-applicant; or apply directly to FEMA as an eligible federally Indian Reorganization Act (IRA) tribal government with sovereign authority working directly with government agencies.

Therefore, the Tribe can determine which of the two following options will best fit their needs. These options are:

Option 1:

> The Tribe can submit grant applications through the State with no loss in Tribal governance authorities.
>
> The Tribe submits their mitigation grant applications to the State Hazard Mitigation Officer (SHMO) for initial State review. This option could potentially enable the Tribe to avoid paying future mitigation project grant funding match.
>
> The SHMO will then coordinate tribal applications within their grant review and prioritization process for potential approval and award. DHS&EM will review, prioritize, and award grants assigning their most current grant recipient cost share requirements to successful grant awardees.

Option2:

> The Tribe can submit mitigation grant applications directly to FEMA or other granting agencies as a sovereign, IRA tribal government maintaining sovereign authority working directly with government agencies.
>
> As an IRA tribe, the Tribal Council submits their mitigation grant applications directly to FEMA with full knowledge the Tribe will be responsible for providing any applicable programmatic project matching funds.
>
> FEMA will review, prioritize, and award grants assigning their most current grant recipient cost share requirements to successful grant awardees.

This page intentionally left blank

Section Four is included to fulfill the Native Village of Alatna THMP promulgation requirements.

The Native Village of Alatna is represented in this THMP and meets the requirements of Section 409 of the Stafford Act and Section 322 of DMA 2000, and 44 CFR §201.7(c)(5) & (6).

4.1 ADOPTION BY TRIBAL GOVERNING BODY AND SUPPORTING DOCUMENTATION

DMA 2000 requirements and implementing Tribal governance regulations for the THMP adoption include:

DMA 2000 Requirements	
Local Plan Adoption §201.7(c)(5): The plan must be formally adopted by the governing body of the Indian Tribal government prior to submitting to FEMA for final review and approval §201.7(c)(6): [The plan must include] assurances that the Indian Tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 13.11(c) of this chapter. The Indian Tribal government will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes as required in 13.11(d) of this chapter.	
1. REGULATION CHECKLIST	
ELEMENT. Tribal HMP Adoption and Assurances	
A.	Has the Indian tribal governing body formally adopted the new or updated plan?
B.	Is supporting documentation, such as a resolution, included with the new or updated plan?
C.	Does the new or updated plan provide assurances that the Indian Tribal government will continue to comply 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)?
Source: FEMA, March 2015.	

Tribal Assurance: Evidenced by Section Four of this THMP update; by formal Tribal HMP adoption the Tribe formally adopted the jurisdictional THMP. The Tribal government therefore assures they will monitor the plan to evaluate progress and work with DHS&EM to update the plan every five years to comply with all applicable federal statutes and regulations in effect with respect to the periods for which it receives grant funding, including 2 CFR parts 200 and 3002. The Native Village of Alatna will amend its plan whenever necessary to reflect changes in tribal or federal laws and statutes as required in 2 CFR parts 200 and 3002, and 44 CFR 13.11(c), and 44 CFR 13.11(d).

The Alana Tribal Council formally adopted their Hazard Mitigation Plan on , 2018 and submitted the final draft to FEMA for formal approval.

A scanned copy of Alatna's formal adoption is attached (Appendix C).

This page intentionally left blank

Section Five identifies and profiles the hazards that could affect Native Village of Alatna.

5.1 OVERVIEW

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 and 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 profiling is accomplished by describing hazards in terms of their nature, history, magnitude, frequency, location, extent, and recurrence probability. Hazards are identified through historical and anecdotal information collection, existing plans, studies, and map reviews, and study area hazard map preparations when appropriate. Hazard maps are used to define a hazard's geographic extent as well as define the approximate risk area boundaries.

DMA 2000 and its implementing regulations for hazard identification:

DMA 2000 Requirements
Risk Assessment: 201.7(c)(2): [The plan shall include a] risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Tribal risk assessments must provide sufficient information to enable the Indian Tribal government to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.
Identifying Hazards
§201.7(c)(2)(i): The risk assessment shall include a] description of the type, location and extent of all natural hazards that can affect the tribal planning area. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.
1. REQUIREMENTS CHECKLIST
ELEMENTS. Planning Area and Natural Hazard Profiles
A. Does the new or updated plan describe the tribal planning area? B. Does the new or updated plan include a description of the types of all natural hazards that affect the tribal planning area?
Source: FEMA, March 2015.

5.2 HAZARD IDENTIFICATION AND SCREENING

The requirements for hazard identification, as stipulated in DMA 2000 and its implementing regulations, are described below.

For the first step of the hazard analysis, in January 2017 the planning team reviewed seven possible hazards that could affect the Yukon-Koyukuk Regional Education Attendance Area (REAA). They then evaluated and screened the comprehensive list of potential hazards based on a range of factors, including prior knowledge or perception of their threat and the relative risk presented by each hazard, the ability to mitigate the hazard, and the known or expected availability of information on the hazard (Table 5-1). The planning team determined that five hazards pose a great threat to the Village: earthquake, flood, ground failure, severe weather, and wildland fire; some of which are influenced by increasing changing climate conditions such as late ice formation, early thaw conditions, or increased, lack of, or inconsistent rain. The

remaining hazards excluded through the screening process were considered to pose a lower threat to life and property in the Village due to the low occurrence likelihood or the low probability that life and property would be significantly affected.

Table 5-1 Identification and Screening of Hazards

Hazard Type	Should It Be Profiled?	Explanation
Natural Hazards		
Earthquake	Yes	Periodic, unpredictable occurrences.
Flood (Riverine and/or coastal related floods and resultant erosive scour)	Yes	Snowmelt run-off and rainfall flooding occurs during spring thaw and the fall rainy season. Events occur from soil saturation. Several minor flood events cause damage. Severe damages occur from major floods. The cemetery is located on the hillside north of the Koyukuk River and the Old Alatna Village site. The lower portion of the cemetery is experiencing erosion caused by heavy rains and winter snowmelt run-off.
Ground Failure (Permafrost, Subsidence)	Yes	Ground Failure occurs throughout Alaska from avalanches, landslides, melting permafrost, and ground subsidence. However, subsidence and permafrost are the primary hazards, causing houses to shift due to ground sinking and upheaval and high ground water thawing the permafrost.
Severe Weather (Cold, Drought, Rain, Snow, Wind, etc.)	Yes	Severe weather impacts the community with climate change/global warming and changing El Niño/La Niña Southern Oscillation (ENSO) patterns generating increasingly severe weather events such as winter storms, extreme cold, heavy or freezing rain, thunderstorms and with subsequent secondary hazards such as riverine or coastal storm surge floods, landslides, snow, and wind etc. Annual weather patterns, severe cold, freezing rain, snow accumulations are predominate threats. The snowfall amount directly determines winter weather damages. Less snow causes frost line deepen resulting in frozen water and sewer pipes. More snow provides better ground insulation. Severe cold usually occurs during December-January. High winds typically occur from February-March and August-September. August experiences the most rain. Too much rain causes wild game to move to more distant dry ground way from the Village increasing resident travel to harvest subsistence foods. Heavy rain and spring thaw causes high river water which reduces the Village residents' capability to harvest King salmon for subsistence needs.
Tsunami (Seiche)	No	This hazard does not exist for this location.
Volcano	No	This hazard does not exist for this location.
Wildland/Tundra Fire	Yes	The community and the surrounding forest area become very dry in summer months with weather- (such as drought and lightening) and human-caused incidents igniting dry vegetation in the adjacent area.

5.3 HAZARD PROFILES

The requirements for hazard profiles, as stipulated in DMA 2000 and its implementing regulations are described below.

DMA 2000 Requirements
Profiling Hazards Requirement §201.7(c)(2)(i): [The risk assessment shall include a] description of the 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.
1. REGULATION CHECKLIST
ELEMENTS. Hazard Profiles
A. Does the risk assessment identify the location (i.e., geographic area affected) of each natural hazard addressed in the new or updated plan? B. Does the risk assessment identify the extent (i.e., magnitude or severity) of each hazard addressed in the new or updated plan? C. Does the new or updated plan provide information on previous occurrences of each hazard addressed in the plan? D. Does the new or updated plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the plan? E. Does the updated plan address data deficiencies, if any, noted in the previously approved plan?
Source: FEMA, March 2015.

The specific hazards selected by the planning team for profiling have been examined in a methodical manner based on the following factors:

- Nature (Type)
  - Potential climate change impacts are primarily discussed in the Severe Weather hazard profile but are also identified where deemed appropriate within each hazard profile.
- History (Previous Occurrences)
- Location
- Extent (breadth, magnitude and severity)
- Impact (Section 5 provides general impacts associated with each hazard. Section 6 provides detailed impacts to Alatna's residents and critical facilities)
- Recurrence Probability

NFIP insured Repetitive Loss Structures (RL) is addressed in Section 6.0, Vulnerability Analysis.

Each hazard is assigned a rating based on the following criteria for magnitude/severity (Table 5-2) and future recurrence probability (Table 5-3).

Estimating magnitude and severity are determined based on historic events using the criteria identified in the introductory narrative description of Section 5.2.

Table 5-2 Hazard Magnitude/Severity Criteria

Magnitude / Severity	Criteria
4 - Catastrophic	• Multiple deaths. • Complete shutdown of facilities for 30 or more days. • More than 50 percent 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 percent 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 percent 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 percent of property is severely damaged.

Similar to estimating magnitude and severity, recurrence probability is determined based on historic events, using the criteria identified above, to provide the likelihood of a future event (Table 5-3).

Table 5-3 Hazard Probability Criteria

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

The hazards profiled for the Village are presented throughout the remainder of Section 5.3. The presentation order does not signify their importance or risk level.

5.3.1 Earthquake

5.3.1.1 Nature

An earthquake is a sudden motion or trembling caused by a release of strain accumulated within or along the edge of the earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and after only a few seconds can cause massive damage and extensive casualties. The most common effect of earthquakes is ground motion, or the vibration or shaking of the ground during an earthquake.

Ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. An earthquake causes waves in the earth's interior (i.e., seismic waves) and along the earth's surface (i.e., surface waves). Two kinds of seismic waves occur: P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back and forth oscillation along the direction of travel (vertical motion), and S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side to side (horizontal motion). There are also two types of surface waves: Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

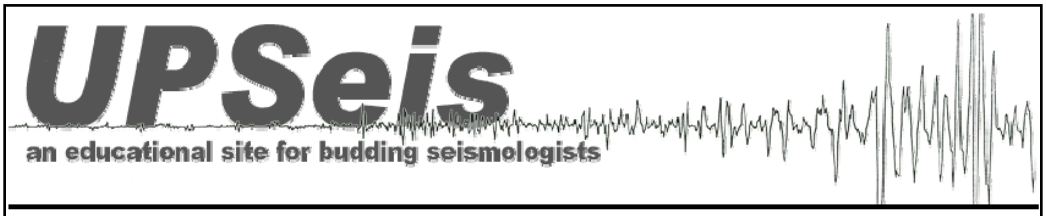
In addition to ground motion, several secondary natural hazards can occur from earthquakes such as:

- **Surface Faulting** is the differential movement of two sides of a fault at the earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g., up to 20 feet [ft]), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures, including railways, highways, pipelines, and tunnels.
- **Liquefaction** occurs when seismic waves pass through saturated granular soil, distorting its granular structure, and causing some of the empty spaces between granules to collapse. Pore water pressure may also increase sufficiently to cause the soil to behave like a fluid for a brief period and cause deformations. Liquefaction causes lateral spreads (horizontal movements of commonly 10 to 15 ft, but up to 100 ft), flow failures (massive flows of soil, typically hundreds of feet but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Liquefaction can cause severe damage to property.
- **Landslides/Debris Flows** occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter.

The severity of an earthquake can be expressed in terms of intensity and magnitude. Intensity is based on the damage and observed effects on people and the natural and built environment. It varies from place to place depending on the location with respect to the earthquake epicenter,

which is the point on the earth's surface that is directly above where the earthquake occurred. The severity of intensity generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. The scale most often used in the U.S. to measure intensity is the Modified Mercalli Intensity (MMI) Scale. As shown in Figure 5-1, the MMI Scale consists of 12 increasing levels of intensity that range from imperceptible to catastrophic destruction. Peak ground acceleration (PGA) is also used to measure earthquake intensity by quantifying how hard the earth shakes in a given location. PGA can be measured as acceleration due to gravity (g) (MMI 2017).

Magnitude (M) is the measure of the earthquake strength. It is related to the amount of seismic energy released at the earthquake's hypocenter, the actual location of the energy released inside the earth. It is based on the amplitude of the earthquake waves recorded on instruments, known as the Richter magnitude test scales, which have a common calibration.



Modified Mercalli Intensity Scale

Mercalli Intensity	Equivalent Richter Magnitude	Witness Observations
I	1.0 to 2.0	Felt by very few people; barely noticeable.
II	2.0 to 3.0	Felt by a few people, especially on upper floors.
III	3.0 to 4.0	Noticeable indoors, especially on upperfloors, but may not be recognized as an earthquake.
IV	4.0	Felt by many indoors, few outdoors. May feel like heavy truck passing by.
V	4.0 to 5.0	Felt by almost everyone, some people awakened. Small objects moved. trees and poles may shake.
VI	5.0 to 6.0	Felt by everyone. Difficult to stand. Some heavy furniture moved, some plaster falls. Chimneys may be slightly damaged.
VII	6.0	Slight to moderate damage in well built, ordinary structures. Considerable damage to poorly built structures. Some walls may fall.
VIII	6.0 to 7.0	Little damage in specially built structures. Considerable damage to ordinary buildings, severe damage to poorly built structures. Some walls collapse.
IX	7.0	Considerable damage to specially built structures, buildings shifted off foundations. Ground cracked noticeably. Wholesale destruction. Landslides.
X	7.0 to 8.0	Most masonry and frame structures and their foundations destroyed. Ground badly cracked. Landslides. Wholesale destruction.
XI	8.0	Total damage. Few, if any, structures standing. Bridges destroyed. Wide cracks in ground. Waves seen on ground.
XII	8.0 or greater	Total damage. Waves seen on ground. Objects thrown up into air.

Figure 5-1 Modified Mercalli Intensity Scale (MMI 2017)

5.3.1.2 History

Accurate seismology for Alaska is relatively young with historic data beginning in 1973 for most locations. Therefore, data are limited for acquiring long-term earthquake event data. The HMP's Alaska earthquake data are based on best available data; obtained from the US Geological Survey (USGS) and the State of Alaska, University of Alaska Fairbanks (UAF) Geophysical Institute's (GI) archives. USGS lists a total of 205 earthquakes with a magnitude > M3.5 that

were recorded within a 100-mile radius of the Native Village of Alatna since 1971. Table 5-4 lists the 19 historical events that exceeded M4.5. The largest event, occurring September 3, 1985 with a M6.2, is highlighted.

Therefore, the planning team determined that based on available recorded data, the Native Village of Alatna has a negligible concern for earthquake damages as they have experienced limed damaging impacts from their historical earthquake events and only need to be concerned with earthquakes with a magnitude > M5.0.

Table 5-4 Historical Earthquakes for Alatna

Date	Time	Latitude	Longitude	Magnitude	Distance (Miles)
1/17/2016	14:52:29	66.3805	-153.313	4.5	21
4/18/1995	9:56:37	66.789	-155.209	4.5	70
9/3/1994	1:07:08	65.775	-155.011	4.7	84
4/25/1989	0:02:59	66.926	-156.208	4.5	99
4/30/1989	0:48:21	66.978	-156.159	4.5	99
6/4/1986	15:48:20	65.636	-152.604	5.4	64
6/24/1986	20:46:02	66.133	-149.639	4.9	90
2/14/1985	5:04:02	66.196	-150.148	5.2	75
3/9/1985	22:34:47	66.148	-150.196	4.8	75
3/9/1985	16:21:21	66.335	-149.795	4.8	77
3/9/1985	15:46:57	66.176	-150.114	4.5	77
3/9/1985	14:16:25	66.291	-150.116	5.3	74
3/9/1985	13:57:58	66.261	-150.24	4.6	71
3/9/1985	13:30:29	66.136	-150.148	5.5	77
3/9/1985	14:08:04	66.239	-150.029	6.2	77
4/19/1984	18:39:46	66.41	-151.12	4.7	45
10/6/1980	19:42:25	66.924	-155.287	4.5	75
10/6/1980	14:57:35	66.729	-155.061	4.6	66

(USGS 2017)

The average magnitude of these earthquakes is M4.9. The largest recorded earthquake within 100 miles of the Village measured M6.0 on March 9, 1985, and caused no damage to critical facilities, residences, non-residential buildings, or infrastructure.

North America's strongest recorded earthquake occurred on March 27, 1964, measuring M9.2 and was felt by many residents throughout Alaska. The Village felt ground motion resulting from this historic event; however, no local damage occurred.

5.3.1.3 *Location, Extent, Impact, and Recurrence Probability*

Location

The entire geographic area of Alaska, and thus the Native Village of Alatna, is prone to earthquake effects. Figure 5-2 shows the locations of active and potentially active faults in Alaska.

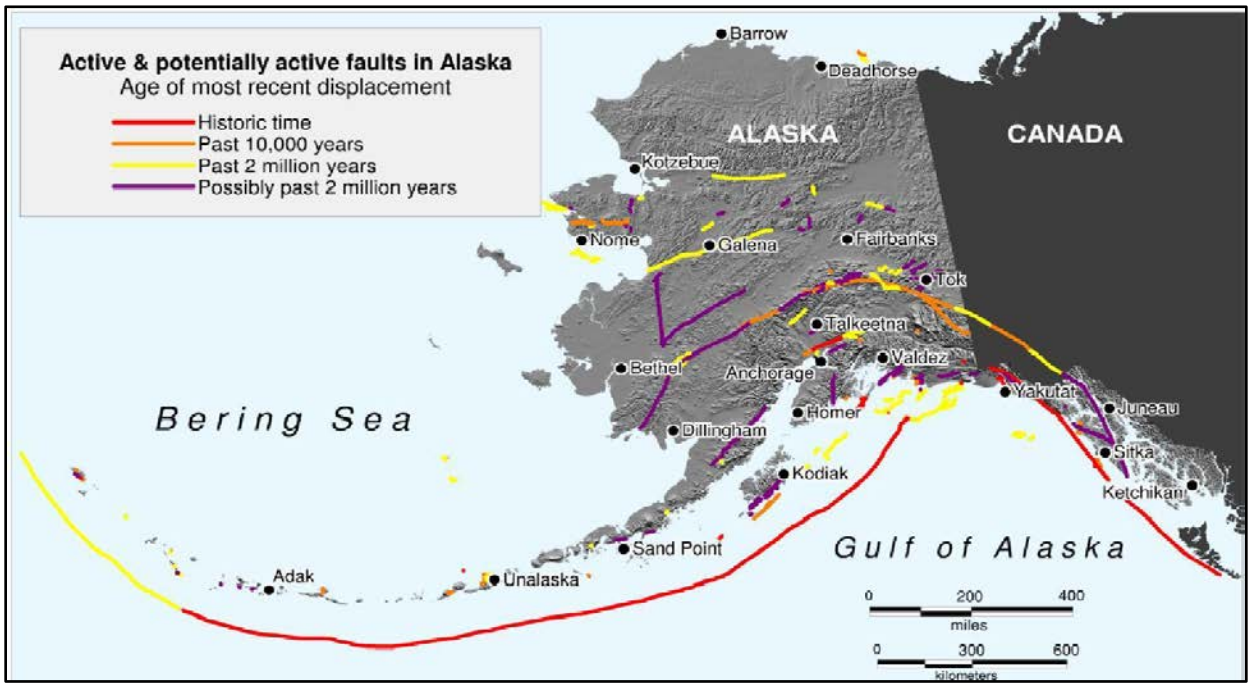


Figure 5-2 Active and Potentially Active Faults in Alaska (DGGS 2009)

Extent

The average distance of the 19 recorded earthquakes that exceeded M4.5 was 73 (with a range from 21 to 99) miles from the Village (USGS 2017).

The middle of the Kobuk Fault is located about 50 miles northwest of the Village and the middle of the Kaltag Fault is located approximately 170 miles southwest of the Village. As depicted in the Neotectonic Map clip (Figure 5-3) The Kaltag fault and Kobuk fault zone produce intraplate earthquake, which occur within a tectonic plate sometimes at great distance from the plate boundaries. These types of earthquakes can have magnitudes of 7.0 and greater. Shallow earthquakes in the Fairbanks area are an example of intraplate earthquakes (GSA 1998).

Earthquakes felt in the Village area have not exceeded M6.0 in the past 35 years, and damage has never been reported due to an earthquake event.

Based on historic earthquake events and the criteria identified in Table 5-2, the magnitude and severity of earthquake impacts in the Village are considered “Negligible” with minor injuries, the potential for critical facilities to be shut down for less than 24 hours, less than 10 percent of property or critical infrastructure being severely damaged, and little to no permanent damage to transportation or infrastructure or the economy.

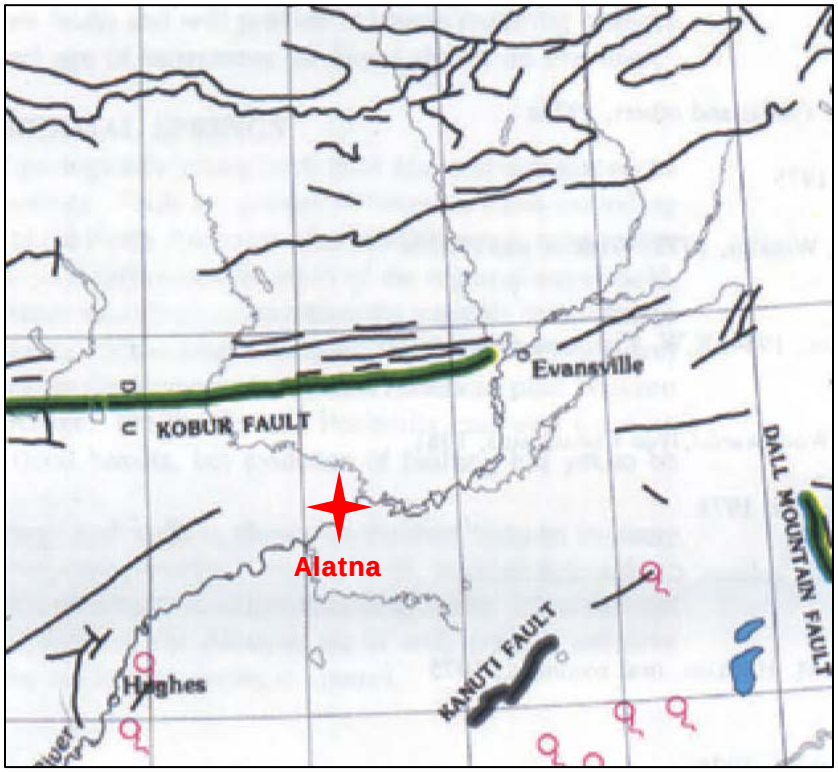


Figure 5-3 Earthquake Fault Proximity to Alatna. (Plafker et al 1993)

Impact

The Village is located in an area that is less active than others in the State, although the effects of earthquakes centered elsewhere are expected to be felt in the Village. Impacts to the community such as significant ground movement that may result in infrastructure damage are not expected. Minor shaking may be seen or felt based on past events. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated to remain the same.

Recurrence Probability

The below Shake Map was generated using the USGS Earthquake Mapping Model (Figure 5-4). This modelling effort incorporates current seismicity in its development and is the most current map available for this area. Peter Haeussler, USGS, Alaska Region, states it is a viable representation to support probability inquiries.

> *"The occurrence of various small earthquakes does not change earthquake probabilities. In fact, in the most dramatic case, the probability of an earthquake on the Denali fault was/is the same the day before the 2002 earthquake as the day afterward. Those are time-independent probabilities. The things that change the hazard maps is changing the number of active faults or changing their slip rate" (Haeussler 2009).*

As indicated in Figure 5-4, while it is not possible to predict when an earthquake will occur, the Shake Map was generated using the USGS Earthquake Mapping Model and indicates a 40 percent probability that a M5.0 or greater earthquake could occur within 50 years and 50 kilometers (31 miles) of the Village. (USGS 2009). Using the Hazard Recurrence Probability

Criteria in Table 5-3, within the next 10 years, the chance of an earthquake of M5.0 or greater occurring is "Possible" (1/5=20 percent) chance of occurring; due to an event history that is between 10 and 20 percent likely per year.

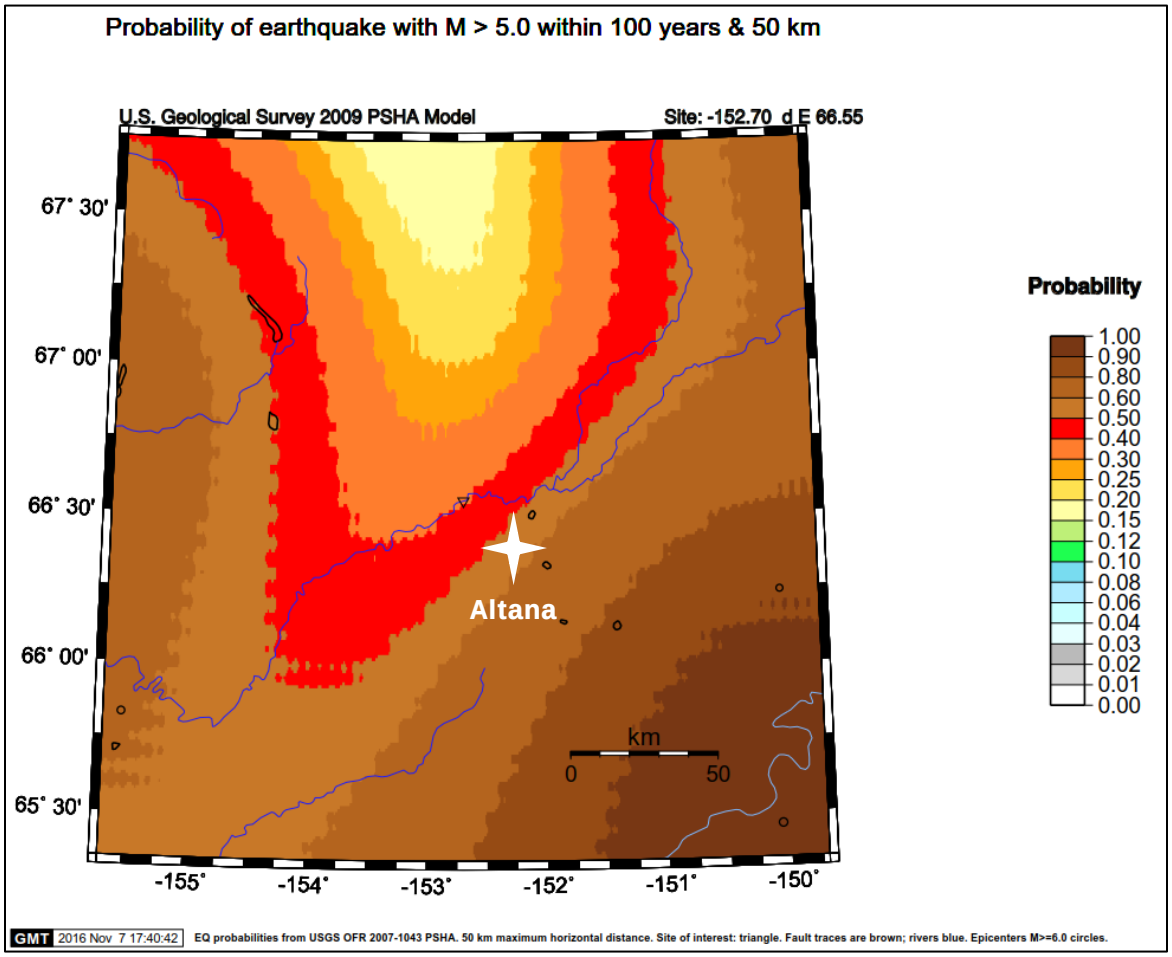


Figure 5-4 Alatna's Earthquake Probability (USGS 2009)

5.3.2 Flood

5.3.2.1 Nature

Flooding is the accumulation of water where usually none occurs or the overflow of excess water from a stream, river, lake, reservoir, glacier, or coastal body of water onto adjacent floodplains. Floodplains are lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected.

Flood events not only impact communities with high water levels, or fast flowing waters, but sediment transport also impacts infrastructure and barge and other river vessel access limitations. Dredging may be the only option to maintain an infrastructure's viability and longevity.

Four primary types of flooding occur in the Village: rainfall-runoff, snowmelt floods, ice jam floods, and ice override (aufeis) flooding. Riverine scour is also a concern for the community.

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. This type of flood event generally results from weather systems that have associated prolonged rainfall.

Snowmelt Floods typically occur from April through June. The depths of the snowpack and spring weather patterns influence the magnitude of flooding.

Ice-Jam floods occur when warming temperatures and rising water flows cause the ice to break-up and disconnect from the embankment. The large ice chunks begin to flow and move down river. The ice does not flow easily, often impacting with adjacent blocks resulting in occasional ice jams. Some ice jams quickly break apart. However, larger jams can occur which create small dams causing the water to exert increasing pressure on the jam and creating a damming effect. Water subsequently begins to build depth and often overtops adjacent embankments which flood upstream communities.

When the ice-jam breaks, the built-up water rushes downstream with great force. Ice blocks scour the embankment, destroying infrastructure such as fuel headers, barge landings, and boat mooring structures. Large house-sized ice blocks may even be driven above the embankment destroying any structure in its path. Communities are virtually helpless against such devastation. Notable large floods in recent years on the Kenai, Koyukuk, Kuskokwim, Susitna, and Yukon rivers were all caused by ice jams and snowmelt.

Ice Override is a phenomenon that occurs when motion of the sheet ice is initiated by wind stress acting on the surface of ice that is not confined. Onshore wind, coupled with conditions such as a smooth gradual sloping beach and high tides can cause ice sheets to slide up or "override" the beach and move inland as much as several hundreds of feet. Ice override typically occurs in fall and early winter (though events have been reported at other times) and is usually associated with coastal storms and storm surge but may also happen in calm weather.

Override advances are slow enough to allow people to move out of its path, and therefore poses little immediate safety hazard. Intact sheets of ice up to several feet thick moving into buildings or across roads and airports can however cause structural damage and impede travel. Shoreline protection in the form of bulkheads or other structures to break-up the ice can limit the movement of ice. In at least one occasion, a bulldozer was able to break-up the ice and prevent damage. In the mid 1980s, several homes in Fox suffered from an aufeis event occurring at the wellhead. The homes flooded 6 feet deep, and then froze.

Riverine Erosive Scour 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 or preclude any channel navigation or riverbank development. In less stable braided channel reaches, erosion, and material deposition constant issues. In more stable meandering channels, erosion episodes may only occasionally occur such as from human activities including boat wakes and dredging.

Attempts to control scour using shoreline protective measures such as groins, jetties, levees, or revetments can lead to increased losses downstream from these manmade structures.

Land surface loss results from flowing water across road surfaces due to poor or improper drainage during rain and snowmelt run-off which typically result from fall and winter sea storms.

Riverine scour rarely causes death or injury. However, scour causes property destruction, prohibits development, and impacts community infrastructure. Erosion is typically gradual land loss through wind or water scour. These damaging impacts can occur rapidly as the result of floods, storms, or other events or slowly as the result of long-term environmental changes such as melting permafrost. Scour is a natural process, but its effects can be easily exacerbated by human activity.

Event Occurrence Intervals

Many flood damages are predictable based on rainfall and seasonal thaw patterns. Most of the annual precipitation is received from April through October with August being the wettest. This rainfall leads to flooding in early/late summer and/or fall. Spring snowmelt increases runoff, which can cause excessive surface flooding. It also breaks riverine winter ice cover, exacerbating localized ice-jam flood or coastal ice override damage impacts.

5.3.2.2 History

A major flood event occurred on August 1, 1994 resulting from heavy rains delivering 12 inches in less than 30 days. Floodwaters rose and inundated Alatna with 6 to 10 feet of water. All but 4 of the log structures were lifted off their foundations, and several houses and the community center drifted for miles downstream onto a river bend known as South Allakaket. (USACE 2008). "The entire community was destroyed. Every structure was either swept downriver or dismantled beyond habitable standards... remarkably; no loss of life or serious injury occurred in either the flood or the process of airlifting the residents…." The State of Alaska received funding ($10,003,243) from FEMA during the DR-1039 declaration to relocate the Village to its current non-flood prone location (Alatna 1995).

The 2016 DHS&EM Disaster Cost Index delineates historical flood events affecting the Village. The index lists the event:

> ***173. 94 Fall Flood declared August 26, 1994 by Governor Hickle then FEMA declared (DR-1039) on September 12, 1994.*** *On August 26, 1994, the Governor declared disaster emergencies for the communities of Kobuk, Kiana, and Kotzebue as a result of flood damage. As a result of this disaster, the conditions continue to create unprecedented losses of personal and public properties. The communities of Allakaket and Alatna had to be evacuated under emergency life-threatening conditions on Sunday, August 28, 1994, Hughes was also evacuated several days later. Active duty military assets (CH-47 Chinook helicopters) were used to evacuate Allakaket and Alatna. Guard assets were used to evacuate Hughes. Also affected by this disaster were the communities of Bettles and Wiseman.* (DHS&EM 2016a)

A 2011 flood assessment by USACE noted that the village now lay on high ground, away from flood danger, and that no floods have occurred in this location. (USACE 2011).

The Village's new location prevents erosion damages from impacting the Villages infrastructure. However fish camps located adjacent to the river and the boat landing are continuously threatened and impacted by flood and erosion events (DHS&EM 2009). In addition, the Village relies on the community of Allakaket, across the river, for some of its critical facilities that historically have had damages from flood and erosion events.

5.3.2.3 Location, Extent, Impact, and Recurrence Probability

Location

The Village's 1995 Comprehensive Plan stated the Village is no longer threatened by flood events as they were relocated inland and uphill away from the floodplain as a result of the August 1994 Fall Flood event which totally destroyed the Village (Alatna 1995). The Village was relocated approximately 2 miles inland, uphill, and down river due to the flood that flood event. All buildings at the new village site are located on high ground. (USACE 2011)

Factors that influence Koyukuk River embankment erosion include rain induced flooding, spring break-up ice jam scour, and melting permafrost. For example the Village's cemetery is located on a hillside which is slowly eroding from heavy rain and snowmelt run-off (Figure 5-5). These events combined with the sloping hillside exacerbate the impact where graves along the lower boundary are becoming threatened. Heavy snowfall, coupled with spring rain creates serious damage to the Village's Old Cemetery and community roads. These infrastructures and the river embankment are essential to the lives of the residents and are susceptible to these erosion impacts.

Figure 5-5 Cemetery Bluff

There is also deterioration of the community boat landing site at the edge of the Koyukuk River from annual flooding and erosion is a current problem. The area typically has to be re-graded each year. Presently, the site needs to filled, re-compacted and graded (USASE 2008). This site is also important to the community as a cultural area.

Figure 5-6 is an aerial photo provided by the USACE from their 2009 Alaska Baseline Erosion Assessment of the Village showing its location adjacent to the Koyukuk River. The white areas adjacent to the river embankment are soil deposition and historical river channel locations. This photo further depicts the Village's hilltop location above, and away from, the flood and erosion hazard area.

Figure 5-6 Alatna Baseline Erosion Assessment Rate Estimate (USACE 2008)

Extent

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.

The following factors contribute to riverine flooding frequency and severity:

- Rainfall intensity and duration
- Antecedent moisture conditions
- Watershed conditions, including terrain steepness, soil types, amount, vegetation type, and development density
- The attenuating feature existence in the watershed, including natural features such as swamps and lakes and human-built features such as dams
- The flood control feature existence, such as levees and flood control channels
- Flow velocity
- Availability of sediment for transport, and the bed and embankment watercourse erodibility
- Village location related to the base flood elevation as indicated with their certified high water mark
- Village location related to identified historical flood elevation

Most of the community's structures are inland and above the level of the Koyukuk River floodplain. Consequently, there is no threat from this source. Flood related damages occur within 50 feet of the embankment threatening non-critical facilities such as the boat landing, fish camps, and recreation use facilities.

The Village has been rated as having a "Monitor Conditions" erosion classification by the USACE where the Village "reported significant impacts related to erosion but the impacts are not likely to affect the viability of the community. The erosion issue may warrant Federal, State, or other intervention. A Monitor Conditions Community should be watched. Taking action in a Monitor Conditions Community to prevent a problem from becoming worse would be prudent" (USACE 2009).

Based on the Village's new location and the criteria identified in Table 5-2, the extent of flood and erosion impacts in the Village are considered "Negligible" where injuries and/or illnesses are treatable with first aid, with minor quality of life loss, complete shutdown of critical facilities and services occurs for 24 hours or less, and less than 10 percent of property is severely damaged.

Impact

Nationwide, floods result in more deaths than any other natural hazard. Physical damage from floods includes the following:

- Structure flood inundation, causing water damage to structural elements and contents.
- High water flow storm surge flood scour damages to coastal embankments, coastal protection barriers, and result in infrastructure and residential property losses. Additional impacts can include roadway embankment collapse, foundations exposure, and damaging impacts.
- Damage to structures, roads, bridges, culverts, and other features from high-velocity flow and debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, decreasing water conveyance and increasing loads which may cause feature overtopping or backwater damages.
- Sewage, hazardous or toxic materials release, materials transport from wastewater treatment plant or sewage lagoon inundation, storage tank damages, and/or severed pipeline damages can be catastrophic to rural remote communities.

Floods also result in economic losses through business and government facility closure, and communications, utility (such as water and sewer), and transportation services disruptions. Floods result in excessive expenditures for emergency response, and generally disrupt the normal function of a community.

Impacts and problems also related to flooding are deposition as well wind scour. Deposition is the accumulation of soil, silt, and other particles on a river bottom or delta. Deposition leads to the destruction of fish habitat, presents a challenge for navigational purposes, and prevents access to historical boat and barge landing areas. Deposition also reduces channel capacity, resulting in increased flooding or bank erosion. Embankment damage involves material removal from the stream or river banks, diversion features, and river bed. When bank loss is excessive, it becomes a concern because it results in loss of embankment vegetation, fish habitat, and land, property, and essential infrastructure (BKP 1988).

The Village expressed concern that new structures and homes are planned to be built in areas of known riverine scour in areas they have no jurisdiction over.

Recurrence Probability

Based on previous occurrences, USACE Floodplain Manager's report, and criteria in Table 5-3, it is Alatna's flood threat is categorized at "Unlikely;" a flood event will have a minor impact to Alatna because of its new location away from the floodplain.

The Villages current flood event history is less than or equal to 10 percent likely per year. A flood event although possible within the next 10 years, (has up to a 1 in 10 years chance of occurring), it will not create major damages to the Village's infrastructure because it is located on a hill, two miles from the river.

However, it is "Likely" that erosion will occur to limited infrastructure (cemetery, roads, and boat landing) 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.

5.3.3 Ground Failure

5.3.3.1 Nature

Ground failure describes avalanche, landslide, subsidence, and unstable soils gravitational or other soil movement mechanisms. Soil movement influences can include rain, snow, and/or water saturation induced avalanches or landslides; as well as from seismic activity, melting permafrost, river or coastal embankment undercutting, or in combination with steep slope conditions.

Landslides are a dislodgment and fall of a mass of soil or rocks along a sloped surface, or for the dislodged mass itself. The term is used for varying phenomena, including mudflows, mudslides, debris flows, rock falls, rockslides, debris avalanches, debris slides, and slump-earth flows. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also be triggered or exacerbated by indiscriminate development of sloping ground, or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions.

Additionally, avalanches and landslides often occur secondary to other natural hazard events, thereby exacerbating conditions, such as:

- Earthquake ground movement can trigger events ranging from rock falls and topples to massive slides
- Intense or prolonged precipitation can cause slope over-saturation and subsequent destabilization failures such as avalanches and landslides.
- Climate change-related drought conditions may increase wildfire conditions where a wildland fire consumes essential stabilizing vegetation from hillsides significantly increasing runoff and ground failure potential.

Development, construction, and other human activities can also provoke ground failure events. Increased runoff, excavation in hillsides, shocks and vibrations from construction, non-engineered fill places excess load to the top of slopes, and changes in vegetation from fire,

timber harvesting and land clearing have all led to landslide events. Broken underground water mains can also saturate soil and destabilize slopes, initiating slides. Something as simple as a blocked culvert can increase and alter water flow, thereby increasing the potential for a landslide event in an area with high natural risk. Weathering and decomposition of geologic material, and alterations in flow of surface or ground water can further increase the potential for landslides.

The USGS identifies six landslide types, distinguished by material type and movement mechanism including:

- **Slides**, the more accurate and restrictive use of the term landslide, refers to a mass movement of material, originating from a discrete weakness area that slides from stable underlying material. A *rotational slide* occurs when there is movement along a concave surface; a *translational slide* originates from movement along a flat surface.
- **Debris Flows** arise from saturated material that generally moves rapidly down a slope. A debris flow usually mobilizes from other types of landslide on a steep slope, and then flows through confined channels, liquefying and gaining speed. Debris flows can travel at speeds of more than 35 miles per hour (mph) for several miles. Other types of flows include debris avalanches, mudflows, creeps, earth flows, debris flows, and lahars.
- **Lateral Spreads** are a type of landslide generally occurs on gentle slope or flat terrain. Lateral spreads are characterized by liquefaction of fine-grained soils. The event is typically triggered by an earthquake or human-caused rapid ground motion.
- **Falls** are the free-fall movement of rocks and boulders detached from steep slopes or cliffs.
- **Topples** are rocks and boulders that rotate forward and may become falls.
- **Complex** is any combination of landslide types.

In Alaska, earthquakes, seasonally frozen ground, and permafrost are often agents of ground failure. Permafrost is defined as soil, sand, gravel, or bedrock that has remained below 32 degrees Fahrenheit (°F) for two or more years. Permafrost can exist as massive ice wedges and lenses in poorly drained soils or as relatively dry matrix in well-drained gravel or bedrock. During the summer, the surficial soil material thaws to a depth of a few feet, but the underlying frozen materials prevent drainage. The surficial material that is subject to annual freezing and thawing is referred to as the “active layer”.

Seasonal freezing can cause frost heaves and frost jacking. Frost heaves occur when ice forms in the ground and separates sediment pores, causing ground displacement. Frost jacking causes unheated structures to move upwards. (DHS&EM 2013).

Indicators of a possible ground failure include:

- Springs, seeps, or wet ground that is not typically wet
- New cracks or bulges in the ground or pavement
- Soil subsiding from a foundation
- Secondary structures (decks, patios) tilting or moving away from main structures
- Broken water line or other underground utility

- Leaning structures that were previously straight
- Offset fence lines
- Sunken or dropped-down road beds
- Rapid increase in stream levels, sometimes with increased turbidity
- Rapid decrease in stream levels even though it is raining or has recently stopped and
- Sticking doors and windows, visible spaces indicating frames out of plumb

The State of Alaska 2013 State Hazard Mitigation Plan provides additional ground failure information defining mass movement types, topographic and geologic factors which influence ground failure which may pertain to Alatna.

5.3.3.2 History

There is no written record defining permafrost impacts. The Village was moved to its current location on the hillside above the Koyukuk River in 1995. The entire area has permafrost deposits with varying depths. Uneven settling and heaving has occurred throughout the years within the Village damaging buildings and roads due to the Village's permafrost locations.

5.3.3.3 Location, Extent, Impact, and Recurrence Probability

Location

There are various ground failure locations throughout Alatna. Frost heaves, thawing permafrost, and rain water soil saturation are the most common ground failure impacts.

The permafrost and ice conditions map developed for the National Snow and Ice Data Center/World Data Center for Glaciology (Figure 5-7) shows that Alatna is located in an area with continuous permafrost (Jorgensen et al. 2008). The Village's planning team stated that permafrost is located throughout the Village. Permafrost locations were confirmed in their 1995 Alatna Village Comprehensive Plan's geotechnical studies for infrastructure siting (Alatna 1995).

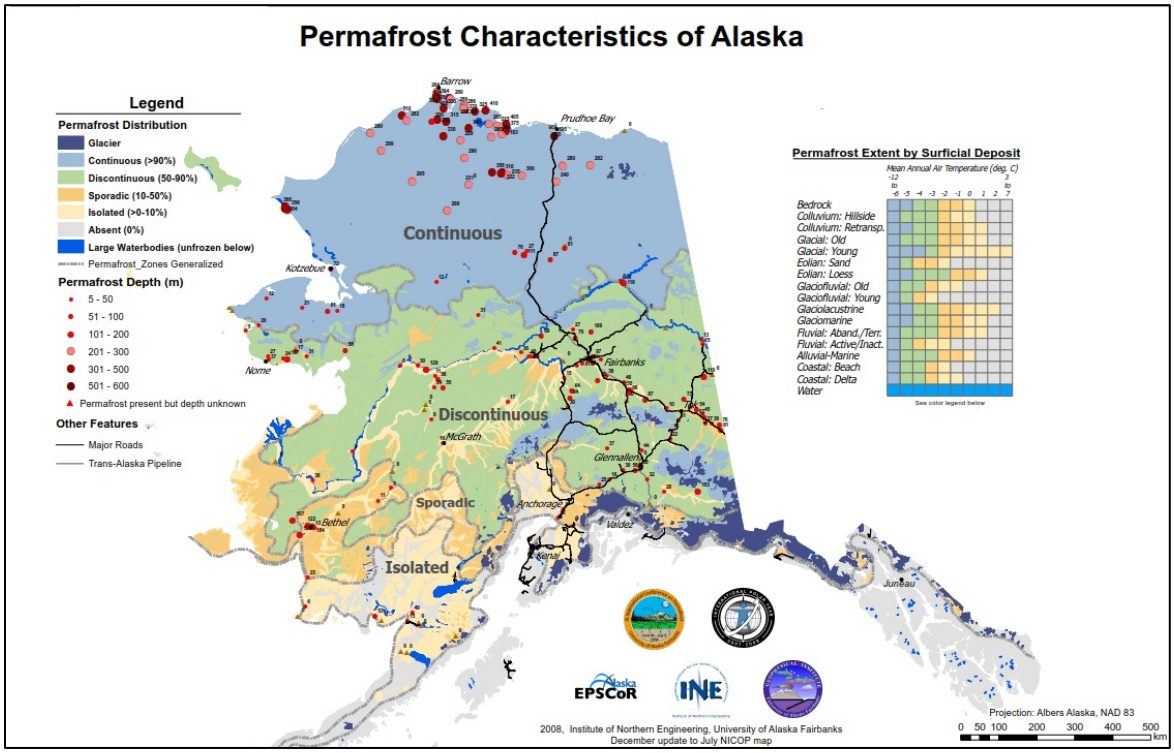


Figure 5-7 Permafrost and Ground Ice Map of Alaska (Jorgenson et al 2008)

Extent

The damage magnitude could range from minor with some repairs required and little to no damage to transportation, infrastructure, or the economy to major if a critical facility (such as the airport) were damaged and transportation was effected.

The following is an excerpt from the geotechnical report submitted for the Village's relocation and included in the 1995 Alatna Village Comprehensive Plan:

> *"The permafrost at the site has degraded to a depth of 8 to 10 feet below the ground surface with a median depth of about 13 feet. One exception was at Boring 17 on a knoll where the surface of frozen ground was found at a depth of 3.5 feet. The permafrost extends to the bottom of the borings and ground temperatures measured three weeks after the initial holes were drilled showed a ground temperature at depth of 31.5ºF. Large amounts of visible ice were found generally at depths of 20 feet, although the following plot of moisture contents measured in the laboratory indicates ice content as shallow as 14 feet….*
>
> *The surface of the permafrost has probably degraded because of the past forest fires and the resulting loss of forest canopy and organic ground which would result in a significantly warmer ground surface each summer. Clearing vegetation for the construction of houses and roadways along with the placement of gravel will result in even warmer summer temperatures…*
>
> *The continued degradation will result in a deepening of the surface of the permafrost. As the permafrost thaws, the interstitial ice disappears and the silt settles. The rate of settlement depends on the rate of thaw and the thaw strain for the thawing silt…If the*

foundation is supported above the silt that annually freezes and thaws, the foundation will annually heave and settle. Piling that penetrated through the seasonal layer could experience large frost heave forces."

The Long-Term Recovery Team selected the post and pad building foundation design which included excavating organics, placing 2 feet of gravel, and then placing 4-inch thick closed cell insulation, then covering with an additional 1 foot of gravel to minimize freeze thaw affects to the structures.

Based on research and the planning team's knowledge of past ground failure and various degradation events and the criteria identified in Table 5-2, the extent of ground failure impacts in the Village are considered "Negligible." Impacts would not occur quickly but over time with warning signs. Therefore this hazard would not likely to cause injuries or death, neither would it shut down critical facilities and services. Less than 10 percent of property could be severely damaged.

Impact

Impacts associated with ground failure include surface subsidence, infrastructure, building, and/or road damage. Ground failure does not typically pose a sudden and catastrophic hazard; however landslides and avalanches may. Ground failure damages occur from improperly designed and constructed buildings that settle as the ground subsides, resulting in structure loss or expensive repairs. It may also impact buildings, communities, pipelines, airfields, as well as road and bridge design costs and location. To avoid costly damage to these facilities, careful planning and location and facility construction design is warranted.

Recurrence Probability

Even though there are few written records defining direct ground failure impacts for the Village, the planning team stated that permafrost damage occurs annually to structures and roads throughout the Village. The planning team further stated the probability for ground failure follows the criteria in Table 5-3, the future damage probability resulting from ground failure is "Possible" in the next five years (event has up to 1 in 5 years chance of occurring) with a history of events greater than 10 percent but less than 20 percent likely per year.

5.3.4 Severe Weather

5.3.4.1 Nature

Severe weather occurs throughout Alaska with extremes experienced by the Village of Alatna that includes heavy and drifting snow, freezing rain/ice storm, and extreme cold. The Village experiences periodic severe weather events such as the following:

Climate Change influences the environment, particularly historical weather patterns. Climate change and El Niño/La Niña Southern Oscillation (ENSO) influences create increased weather volatility such as hotter summers (drought) and colder winters, intense thunderstorms, lightning, hail, snow storms, freezing rain/ice storms, high winds and even a few tornadoes within and around Alaska.

ENSO is comprised of two weather phenomena known as El Niño and La Niña. While ENSO activities are not a hazard, they can lead to severe weather events and large-scale damage

throughout Alaska's varied jurisdictions. Direct correlations were found linking ENSO events to severe weather across the Pacific Northwest, particularly increased flooding (riverine, coastal storm surge) and severe winter storms. Therefore, increased awareness and understanding how ENSO events potentially impact Alaska's vastly differing regional weather.

Climate change is described as a phenomenon of water vapor, carbon dioxide, and other gases in the earth's atmosphere acting like a blanket over the earth, absorbing some of the heat of the sunlight-warmed surfaces instead of allowing it to escape into space. The more gasses, the thicker the blanket, and the warmer the earth. Trees and other plants cannot absorb carbon dioxide through photosynthesis if foliage growth is inhibited. Therefore carbon dioxide builds up and changes precipitation patterns, increases storms, wildfires, and flooding frequency and intensity; and substantially changes flora, fauna, fish, and wildlife habitats.

The governor's Alaska's Climate, Ecosystems & Human Health Work Group is tasked with determining how the changing ecosystems may impact human health and to identify, prioritize, and educate Alaskans about the connection between their health and changing environmental patterns.

Heavy Snow generally means snowfall accumulating to four inches or more in depth in 12 hours or less or six inches or more in depth in 24 hours or less.

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

Freezing Rain and Ice Storms occur when rain or drizzle freezes on surfaces, accumulating 12 inches in less than 24 hours. Ice accumulations can damage trees, utility poles, and communication towers which disrupts transportation, power, and communications.

Extreme Cold definition varies according to the normal climate of a region. In areas unaccustomed to winter weather, near freezing temperatures are considered "extreme". In Alaska, extreme cold usually involves temperatures less than -40°F. Excessive cold may accompany winter storms, be left in their wake, or can occur without storm activity. Extreme cold accompanied by wind exacerbates exposure injuries such as frostbite and hypothermia. Extreme cold is a severe threat to Alatna.

High Winds occur in Alaska when there are winter low-pressure systems in the North Pacific Ocean and the Gulf of Alaska. Alaska's high wind can equal hurricane force but fall under a different classification because they are not cyclonic nor possess other hurricane characteristics. In Alaska, high winds (winds in excess of 60 mph) occur over the interior due to strong pressure differences, especially where influenced by mountainous terrain, but the windiest places in Alaska are generally along the coastlines. The Village's highest recorded wind speed reached approximately 50 mph. (NOAA 2017a).

Winter Storms include a variety of phenomena described above and as previously stated may include several components; wind, snow, and ice storms. Ice storms, which include freezing rain, sleet, and hail, can be the most devastating of winter weather phenomena and are often the cause of automobile accidents, power outages, and personal injury. Ice storms result in the accumulation of ice from freezing rain, which coats every surface it falls on with a glaze of ice. Freezing rain is most commonly found in a narrow band on the cold side of a warm front, where surface temperatures are at or just below freezing temperatures. Typically, ice crystals high in the

atmosphere grow by collecting water vapor molecules, which are sometimes supplied by evaporating cloud droplets. As the crystals fall, they encounter a layer of warm air where the particles melt and collapse into raindrops. As the raindrops approach the ground, they encounter a layer of cold air and cool to temperatures below freezing. However, since the cold layer is so shallow, the drops themselves do not freeze, but rather, are supercooled, that is, in liquid state at below-freezing temperature. These supercooled raindrops freeze on contact when they strike the ground or other cold surfaces.

Snowstorms happen when a mass of very cold air moves away from the polar region. As the mass collides with a warm air mass, the warm air rises quickly and the cold air cuts underneath it. This causes a huge cloud bank to form and as the ice crystals within the cloud collide, snow is formed. Snow will only fall from the cloud if the temperature of the air between the bottom of the cloud and the ground is below 40°. A higher temperature will cause the snowflakes to melt as they fall through the air, turning them into rain or sleet. Similar to ice storms, the effects from a snowstorm can disturb a community for weeks or even months. The combination of heavy snowfall, high winds and cold temperatures pose potential danger by causing prolonged power outages, automobile accidents and transportation delays, creating dangerous walkways, and through direct damage to buildings, pipes, livestock, crops and other vegetation. Buildings and trees can also collapse under the weight of heavy snow.

Figure 5-8 displays Alaska's annual rainfall map based on Parameter-elevation Regressions on Independent Slopes Model that combines climate data from the National Oceanic and Atmospheric Administration (NOAA) and Natural Resources Conservation Service (NRCS) climate stations with a digital elevation model to generate annual, monthly, and event-based climatic element estimates such as precipitation and temperature. Alatna receives approximately 10-15 inches of rainfall annually according to Figure 5-8.

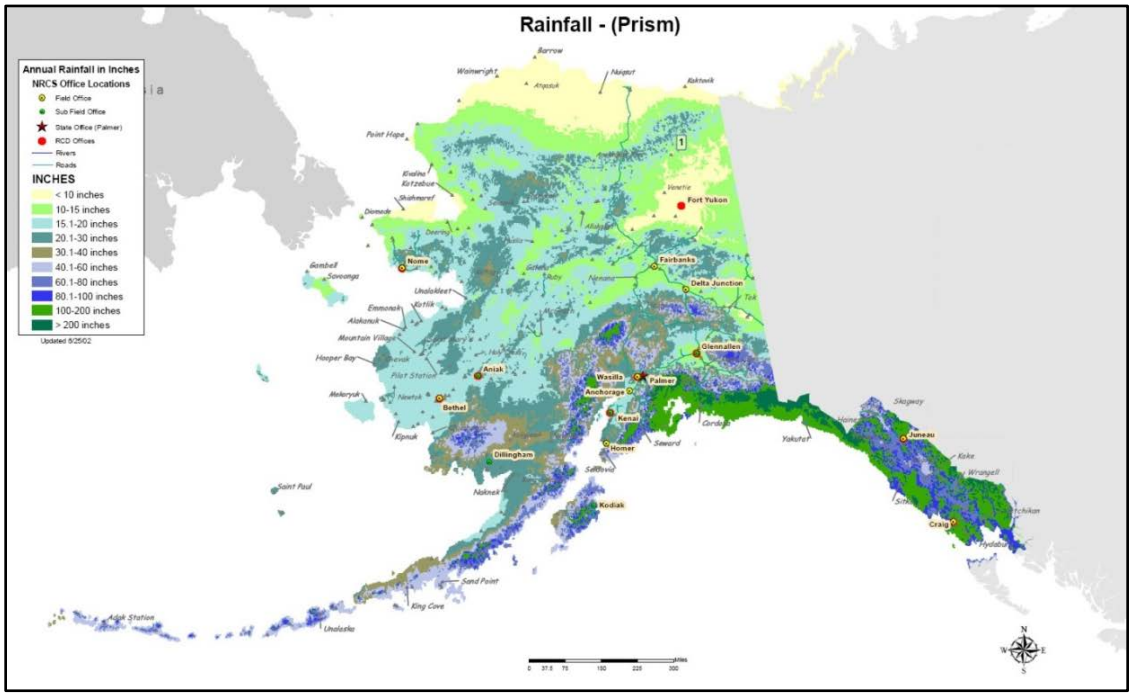


Figure 5-8 Statewide Rainfall Map (NRCS 2002)

5.3.4.2 History

The Village of Alatna is continually impacted by severe weather events. Snowfall and extreme cold typically have disastrous results.

Climate Change. The University of Alaska Fairbanks (UAF) Arctic Climate Impact Assessment describes recent weather changes and how they impact Alaska:

> *"18.3.3.1. Changes in climate*
>
> *Alaska experienced an increase in mean annual temperature of about 2 to 3 ºC between 1954 and 2003…Winter temperatures over the same period increased by up to 3 to 4 ºC in Alaska and the western Canadian Arctic, but Chukotka experienced winter cooling of between 1 and 2 ºC…*
>
> *The entire region, but particularly Alaska and the western Canadian Arctic, has undergone a marked change over the last three decades, including a sharp reduction in snow-cover extent and duration, shorter river- and lake ice seasons, melting of mountain glaciers, sea-ice retreat and thinning, permafrost retreat, and increased active layer depth. These changes have caused major ecological and socio-economic impacts, which are likely to continue or worsen under projected future climate change. Thawing permafrost and northward movement of the permafrost boundary are likely to increase slope instabilities, which will lead to costly road replacement and increased maintenance costs for pipelines and other infrastructure. The projected shift in climate is likely to convert some forested areas into bogs when ice-rich permafrost thaws. Other areas of Alaska, such as the North Slope, are expected to continue drying. Reduced sea-ice extent and thickness, rising sea level, and increases in the length of the open-water season in the region will increase the frequency and intensity of storm surges and wave development, which in turn will increase coastal erosion and flooding…*
>
> *18.3.3.4. Impacts on people's lives*
>
> *Traditional lifestyles are already being threatened by multiple climate-related factors, including reduced or displaced populations of marine mammals, seabirds, and other wildlife, and reductions in the extent and thickness of sea ice, making hunting more difficult and dangerous. Indigenous communities depend on fish, marine mammals, and other wildlife, through hunting, trapping, fishing, and caribou/reindeer herding. These activities play social and cultural roles that may be far greater than their contribution to monetary incomes. Also, these foods from the land and sea make significant contributions to the daily diet and nutritional status of many indigenous populations and represent important opportunities for physical activity among populations that are increasingly sedentary…" (ACIA 2013)*

Table 5-5 summarizes precipitation and snowfall trends for the Alatna area providing a representation of the typical weather events which may have impacted the Village. Table 5-6 summarizes temperatures for the Alatna area, providing a representation of typical temperatures which impact the community. Tables 5-5 and 5-6 delineate the Weather Service Office's (WSO) weather data. Actual community temperatures and depths may vary due to their relative proximity to the WSO.

Table 5-5 Precipitation and Snowfall Trends: Station: 500230; Allakaket

From Year=1949 To Year=1998														
Precipitation												Total Snowfall		
Month	Mean (in.)	High (in.)	Year	Low (In.)	Year	1 Day Max. (dd-yyyy)		>= 0.01 in. #Days	>= 0.10 in. #Days	>= 0.50 in. #Days	>= 1.00 in. #Days	Mean (in.)	High (in.)	Year
January	0.89	3.1	1963	0.11	1959	0.82	14/1957	6	3	0	0	12.6	31	1963
February	0.58	2.04	1959	0	1957	0.53	27/1970	5	2	0	0	8.1	29.5	1959
March	0.44	1.75	1955	0	1959	0.82	04/1955	4	2	0	0	6.3	17.1	1962
April	0.33	1.7	1979	0	1956	0.59	08/1959	4	1	0	0	2.4	11	1969
May	0.51	1.53	1975	0.06	1978	1.1	30/1975	6	2	0	0	0.1	2.6	1970
June	1.29	2.56	1950	0.18	1957	1.02	17/1958	9	4	0	0	0	0	1950
July	1.82	4.45	1981	0.37	1972	1.5	13/1968	10	5	1	0	0	0	1950
August	2.14	4.38	1961	0.03	1968	1.2	27/1960	13	7	1	0	0	0.3	1970
September	1.36	2.77	1961	0	1967	0.85	02/1962	10	5	0	0	0.7	7	1968
October	1.2	2.92	1955	0.01	1968	1.26	31/1976	9	5	0	0	9.7	35.6	1955
November	1.09	5.5	1966	0.02	1968	2.1	03/1966	7	4	0	0	10.9	22.2	1976
December	0.75	1.6	1970	0.2	1958	0.5	20/1954	7	3	0	0	10.5	18	1955
Annual	12.41	15.62	1955	10.25	1957	2.1	11/03/1966	88	42	4	0	61.3	107.1	1955
Winter	2.22	3.24	1960	1.19	1950	0.82	01/14/1957	18	8	0	0	31.2	52.3	1960
Spring	1.27	2.43	1979	0.5	1953	1.1	05/30/1975	13	4	0	0	8.8	19.4	1976
Summer	5.25	9.31	1981	1.95	1968	1.5	07/13/1968	32	16	2	0	0	0.3	1970
Fall	3.66	5.54	1976	1.47	1968	2.1	11/03/1966	25	13	1	0	21.3	48.6	1955

Table updated on Oct. 31, 2012

For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered.
Years with 1 or more missing months are not considered.
Seasons are climatological not calendar seasons.

Winter = Dec., Jan., and Feb.
Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug.
Fall = Sep., Oct., and Nov.

Source: WRCC 2012

Table 5-6 Temperature Trends: Station: 500230; Allakaket

From Year=1949 To Year=1998															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp		Min. Temp	
Month	Max. (ºF)	Min. (ºF)	Mean (ºF)	High (ºF)	Year	Low (ºF)	Year	Highest Mean (ºF)	Year	Lowest Mean (ºF)	Year	>= 90 (ºF) #Days	<= 32 (ºF) #Days	<= 32 (ºF) #Days	>= 0 (ºF) #Days
January	-10.3	-30.3	-20.5	36	1957	-75	1971	-4.1	1977	-44.9	1971	0	29.5	30.2	27.1
February	-2.1	-30.4	-15.3	35	1959	-70	1954	1.4	1959	-37.8	1974	0	26.9	27.2	24.7
March	13.9	-21.4	-3.7	43	1973	-63	1951	11.1	1981	-19.6	1972	0	27	29.5	25.1
April	33.6	4.1	19	59	1958	-42	1972	27.1	1969	7.5	1972	0	13	28.2	11.1
May	54.9	30	42.7	83	1960	-8	1982	49	1953	37.4	1968	0	0.1	18.2	0.3
June	68	42.3	55.2	90	1971	17	1978	60.6	1953	50.2	1954	0	0	2.1	0
July	70.7	44.9	57.9	94	1955	21	1974	64.5	1972	51.3	1981	0.4	0	1.2	0
August	65	39.3	52.2	88	1977	17	1974	55.5	1950	47.6	1981	0	0	5.2	0
September	50.6	27.7	39.4	76	1957	-4	1957	44.3	1949	30.6	1970	0	0.7	19.9	0.2
October	27	8.9	17.9	55	1969	-40	1975	27.8	1969	6.7	1958	0	21.9	30	8.1
November	4.2	-17.1	-6.3	41	1970	-59	1974	14.2	1979	-21.8	1955	0	28.3	29.4	23.4
December	-3.9	-29.6	-14.8	38	1973	-69	1954	1.6	1969	-25.4	1979	0	29.7	30.3	27.3
Annual	31	5.7	18.6	94	1955	-75	1971	18.2	1977	13.6	1971	0.5	177	251.5	147.2
Winter	-5.4	-30.1	-16.9	38	1973	-75	1971	-9.3	1977	-31.8	1971	0	86.1	87.8	79.1
Spring	34.2	4.2	19.3	83	1960	-63	1951	24.3	1953	9.7	1972	0	40.1	75.9	36.5
Summer	67.9	42.2	55.1	94	1955	17	1974	58.5	1972	50.3	1981	0.5	0	8.5	0
Fall	27.3	6.5	17	76	1957	-59	1974	25.5	1949	10.1	1956	0	50.9	79.3	31.7

Table updated on Oct. 31, 2012

For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered.
Years with 1 or more missing months are not considered.
Seasons are climatological not calendar seasons.

Winter = Dec., Jan., and Feb.
Spring = Mar., Apr., and May

Summer = Jun., Jul., and Aug.
Fall = Sep., Oct., and Nov

Source: WRCC 2012

Interior Alaska is continually impacted by severe weather. Figures 5-9 and 5-10 depict the Village's historic and future predicted precipitation and temperatures. Note the projected increasing precipitation and warmer temperatures due to climate changes. Increased rain and snow could dramatically increase flooding and erosion.

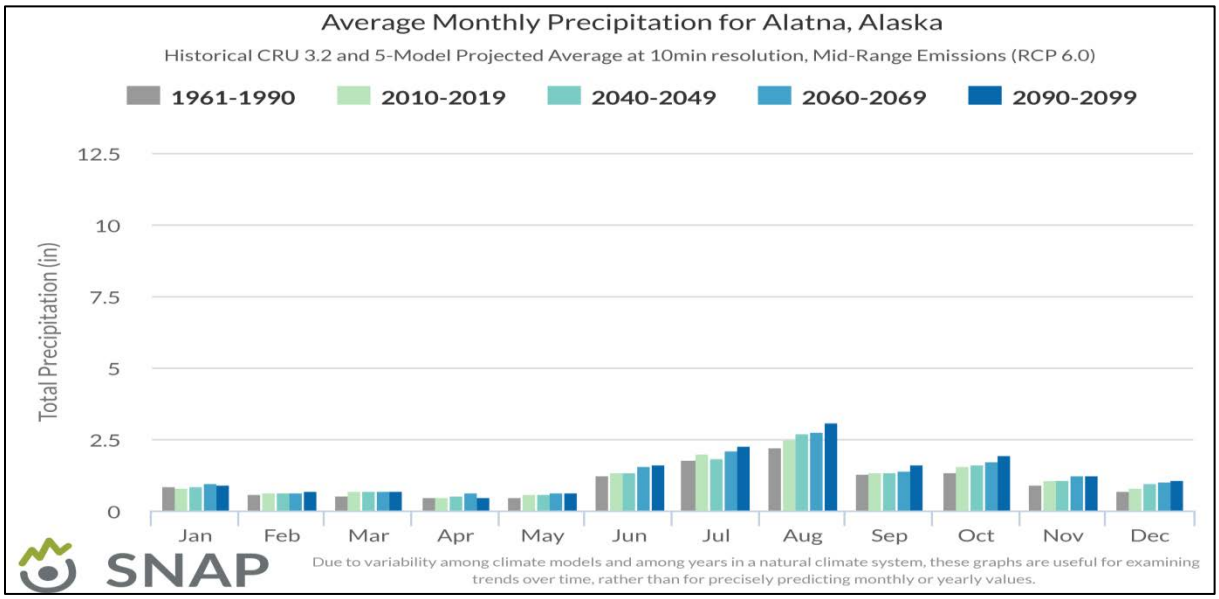


Figure 5-9 Alatna's Historic and Predicted Precipitation (UAF/SNAP 2017).

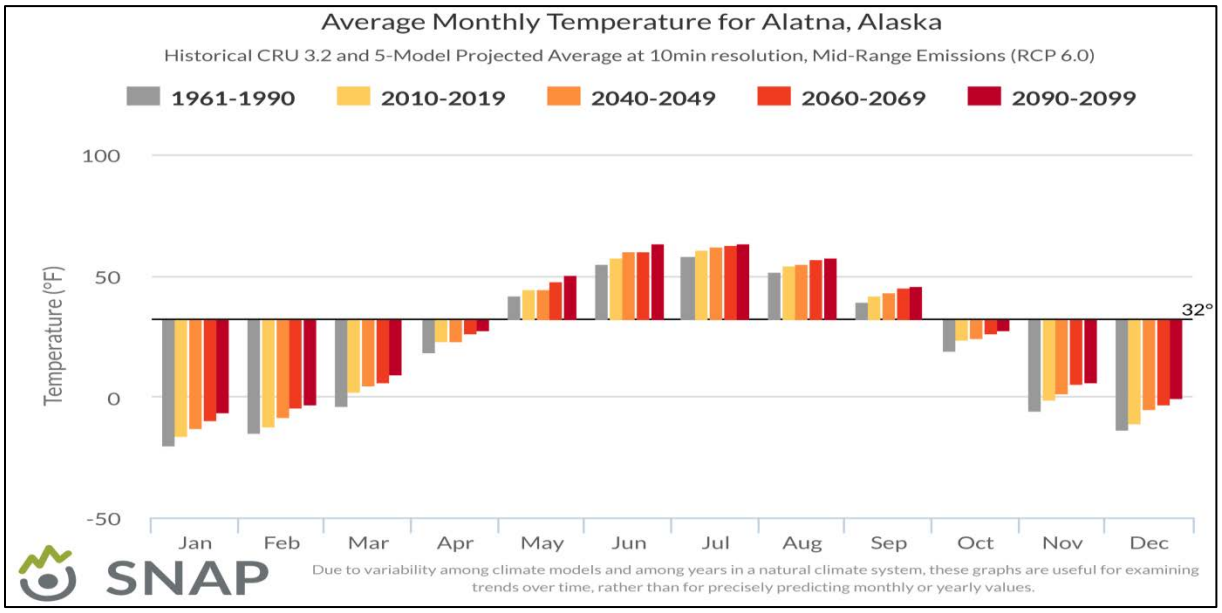


Figure 5-10 Alatna's Historic and Predicted Temperatures (UAF/SNAP 2017)

Table 5-7 lists a representative sample of major storm events in the last 15 years that NOAA has identified for the Upper Koyukuk Valley's Weather Zone. Each weather event may not have specifically impacted Alatna. These storm events are listed due to their close proximity to listed communities or by location within the identified zone.

Table 5-7 Severe Weather Events

Location	Date	Event Type	Magnitude
Upper Koyukuk Valley (Zone 219)	1/3/2005	Heavy Snow	An occluded front moved north from the Bering Sea over western Alaska on the 2nd and moved east across the North Slope and through the central Interior on the evening of the 2nd and on the 3rd, stalling near Fairbanks into the 4th until an Arctic cold front swept in from the west and pushed the old frontal system into Canada by the evening of the 4th. Snow lingered over the southeast interior behind the cold front until the morning of the 5th. Heavy Snow was reported at: **Zone 219:** Bettles Airport: 10.4 inches in 24 hours beginning 0000 AST on the 3rd.
Upper Koyukuk Valley (Zone 219)	10/9/2006	High Wind	A 1040 mb (millibar) high pressure center over the Arctic Ocean remained stationary while several weather fronts moved north over Alaska, causing high winds across the Arctic Coast, as well as at several locations in the interior. At Prudhoe Bay, dust and dirt was kicked up by the wind and covered the high-voltage insulators at the 13 power substations in the area. Rain during the period caused the resulting mud to be caked onto the insulators, making them fail and creating a power outage that lasted for several days beginning 3am AST on the 10th. **Zone 219:** Gobbler's Knob (a water and snow measuring site maintained by the USDA's Natural Resources Conservation Service) maximum gust 54 knots (62 mph).
Upper Koyukuk Valley (Zone 219)	1/1/2009	Extreme Cold/ Wind Chill	The significant cold snap that developed across interior Alaska on December 27th continued through January 12th. A cold upper level low across Siberia that moved into northern Alaska in late December was reinforced by another cold low that dropped south out of the high arctic and into interior Alaska on January 2nd. The low dropped south to near Yakutat by January 4th, and kept the cold air locked in place across most of interior Alaska through January 11th. The cold snap ended across most of the interior on the 11th, but lingered through the 12th on the Yukon Flats. Although the cold snap did not produce any record low temperatures, it was the most prolonged cold snap across interior Alaska since 1999. In Fairbanks and North Pole the cold snap was accompanied by a prolonged period of ice fog that frequently reduced the visibility to one quarter mile or less. There were 15 consecutive days where the low temperature was 40 below or colder at the Fairbanks International Airport, which was the most since 1973. Only 1964 and 1971 have had more consecutive days with a low temperature of 40 below or colder. The lowest temperature observed at the Fairbanks International Airport was 47 below, which was observed on January 6th and again on the 8th. Many spots in the deeper valleys around Fairbanks had several nights with low temperatures between 50 and 55 below. The lowest official temperature that was observed during the cold snap was 68 below at Chicken. Here are some notable temperatures that were observed through January 11th across interior Alaska: **Zone 219:** Bettles: 51 below, on the 4th.

Table 5-7 Severe Weather Events

Location	Date	Event Type	Magnitude
Upper Koyukuk Valley (Zone 219)	11/22/2010	Heavy Snow	A 955 mb near Nome at 9 am on the 11th tracked across the Seward Peninsula and slowly weakened to 982 mb near Selawik by 3 pm on the 12th. The low brought a moist westerly flow into the interior, and produced heavy snowfall in the Upper Koyukuk Valley, parts of the Central Interior, and across the higher elevations in the Middle Tanana Valley around Fairbanks. Here are some snowfall reports that were received from this event: **Zone 219:** Heavy snow fell in Bettles with a storm total of 25.3 inches (three day total from the 11th through the 13th). The heaviest snow fell on the 12th, with a 24-hour total of 14.2 inches.
Upper Koyukuk Valley (Zone 219)	11/22/2010	Freezing Rain	An extremely warm and moist air mass moving around a large ridge of high pressure in the north Pacific produced a prolonged period of freezing rain across much of interior Alaska on November 22-24, 2010. **Zone 219:** A mix of freezing rain and snow fell across The Upper Koyukuk Valley. The precipitation fell in the form of snow at Bettles with a storm total of 3 inches. The precipitation likely started as freezing rain in the valleys south of Bettles as well as across the higher elevations along the Dalton Highway where the Gobblers Knob Snotel observed 2 to 3 tenths of an inch of precipitation, which likely fell at least in part in the form of freezing rain.
Upper Koyukuk Valley (Zone 219)	2/23/2011	Winter Storm	A 968 mb low in the central Bering Sea at 9:00pm AKST on the 23rd moved to the Gulf of Anadyr as a 976 mb low at 9:00 am AKST on the 24th. The low tracked to the northeast as a 978 mb low in the southern Chukchi Sea at 9:00pm AKST on the 24th. The low then tracked to the east and passed just south of Banks Island as a 980 mb low by 9:00am AKST on the 25th. The storm produced widespread blizzard conditions along the west coast as well as the arctic coast and heavy snowfall and high winds in parts of the interior. There were also areas of flooding and high water observed along parts of the west coast. **Zone 219:** Heavy snowfall was observed on Bettles on the 23rd into the 24th. A total of 11.6 inches of snow fell on the 23rd, with an additional 9.9 inches on the 24th. Both were new daily snowfall records. A total of 21.5 inches of snow fell during the two days, and this was the 2nd highest two-day snowfall on record at Bettles. When the snow ended on the morning of the 25th the storm total for the event was 24 inches.

Table 5-7 Severe Weather Events

Location	Date	Event Type	Magnitude
Upper Koyukuk Valley (Zone 219)	12/3/2011	Heavy Snow	A 960 mb low approximately 200 miles west of Nunivak Island at 4:00pm AKST on the 3rd moved north to Saint Lawrence Island by 3:00s, AKST on the 4th as a 968 mb low. The low drifted slowly north to the Bering Strait as a 970 mb low by 3:00pm AKST on the 4th. The low then weakened to 997 mb near Barrow by 9:00am AKST on the 5th and dissipated as a new 968 mb low developed bear Banks Island by 3:00pm AKST on the 5th. The low produced heavy snow and blizzard conditions along much of the west coast and arctic coast. A strong Chinook produced high winds, freezing rain and snow in parts of the interior. **Zone 219:** Heavy snowfall was observed at Bettles from the late afternoon on the 3rd through the early afternoon on the 4th. A storm total of 14.4 inches was reported by the weather observer at the Bettles airport.
Upper Koyukuk Valley (Zone 219)	1/1/2012	Extreme Cold/ Wind Chill	All of northern Alaska was under the influence of a very cold air mass for nearly all of January 2012. The greatest temperature departures from normal occurred across the western interior where the sky was more persistently clear, which allowed strong inversions to form and temperatures remained very low for a prolonged period of time. Many communities along the west coast and across the western interior had the coldest or one of the top few coldest months on record. The duration of the cold weather was more notable than the absolute minimums, as relatively few daily record low temperatures were set at locations with more than 50 years of weather observations. **Zone 219:** At Bettles, January 2012 ended up as the coldest month on record. The average temperature of -35.6 degrees surpassed the old record of -34.0 in January 1971. The low temperature for the month was 61 below on the 31st. Three of the last 4 days of the month had a low temperature of 60 below, and all three were new daily temperature records. These were the first 60 below temperatures at Bettles since February 1999. Weather records at Bettles date back to 1951.
Upper Koyukuk Valley (Zone 219)	12/6/2013	Ice Storm	A 988 mb low pressure center moved into the western Bering Sea on the 5th of December. An associated warm front and warm air moved across the Bering strait on the 5th and over the west coast of Alaska on the 6th, then continued north over interior Alaska on the 6th and 7th before weakening. This warm front spread rain or freezing rain to the west coast and many locations across the northern interior. **Zone 219:** The weather observer at Bettles reported 0.27 inch of freezing fain.
Upper Koyukuk Valley (Zone 219)	11/21/2014	High Wind	A strong pressure gradient developed between a 1028 mb high pressure center over the eastern Arctic and a 961 mb low pressure center 150 nautical miles southwest of Kodiak Island on the 21st of November. A weather front moved north over the interior and North Slope during this time. High winds occurred over some interior summits, and blizzard conditions with local high winds occurred on the North Slope. **Zone 219:** The Indian Mountain AWOS reported a gust of 61 mph, and at Deadhorse and Kuparuk in zone 203.

Table 5-7 Severe Weather Events

Location	Date	Event Type	Magnitude
Upper Koyukuk Valley (Zone 219)	1/16/2015	High Wind	A strong 1056 mb high pressure center over the Yukon valley, and low pressure over the Gulf of Alaska set up a strong belt of winds near the southern slopes of the Brooks Range as well as the higher elevations of the Upper Koyukuk Valley area. High winds were reported at: **Zone 219:** The Indian Mountain AWOS reported a max gust of 60 mph.

(NOAA 2017b)

5.3.4.3 Location, Extent, Impact, and Recurrence Probability

Location

The entire Village of Alatna experiences periodic severe weather impacts such as freezing temperatures, blizzards, and high winds. The most common to the area are winter storms and heavy snow. Table 5-7 depicts weather events that have impacted the area since 2005 and are provided as a representative sample.

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. Consequently the data in Table 5-7 reflects different zone numbering patterns and should be used to depict weather events that have historically impacted the area; some of which may not have impacted the Village as severely as other areas within the same zone.

Extent

The entire Village is equally vulnerable to the effects of severe weather. Blizzard conditions and heavy snow depths for the area can reach 13 inches per storm event; wind speed can exceed 49 mph; and extreme low temperatures have reached -51ºF.

Based on past severe weather events and the criteria identified in Table 5-2, the extent of severe weather in the Village are considered “Limited” where injuries do not result in permanent disability, complete shutdown of critical facilities occurs for more than one week, and more than 10 percent of property is severely damaged.

Impact

The intensity, location, and the land’s topography influence a severe weather event’s impact within a community. Heavy rain and snow can be expected to impact the entire Village of Alatna.

Heavy snow can immobilize a community by bringing transportation to a halt. Until the snow can be removed, airports and roadways are impacted, even closed completely, stopping the flow of supplies and disrupting emergency and medical services. Accumulations of snow can cause roofs to collapse and knock down trees and power lines. Heavy snow can also damage light aircraft and sink small boats. A quick thaw after a heavy snow can cause substantial flooding. The cost of snow removal, repairing damages, and the loss of business can have severe economic impacts on cities and towns.

Injuries and deaths related to heavy snow usually occur as a result of vehicle and/or snowmachine accidents. Casualties also occur due to overexertion while shoveling snow and hypothermia caused by overexposure to the cold weather.

Extreme cold can also bring transportation to a halt. Aircraft may be grounded due to extreme cold and ice fog conditions, cutting off access as well as the flow of supplies to communities. Long cold spells can cause rivers to freeze, disrupting shipping and increasing the likelihood of ice jams and associated flooding.

Extreme cold also interferes with the proper functioning of a community's infrastructure by causing fuel to congeal in storage tanks and supply lines, stopping electric generation. Without electricity, heaters and furnaces do not work, causing water and sewer pipes to freeze or rupture. If extreme cold conditions are combined with low or no snow cover, the ground's frost depth can increase, disturbing buried pipes. The greatest danger from extreme cold is its effect on people. Prolonged exposure to the cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible. The risk of hypothermia due to exposure greatly increases during episodes of extreme cold, and carbon monoxide poisoning is possible as people use supplemental heating devices.

Recurrence Probability

Based on previous occurrences and the criteria identified in Table 5-3, it is "Likely" a severe storm event will occur in the next three years with an event having up to 1 in 3 years (1/3=33 percent) chance of occurring as the history of events is between 20 and 33 percent likely per year.

5.3.5 Wildland Fire

5.3.5.1 Nature

A wildland fire is a wildfire type that spreads through vegetation consumption. It often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildland fires can be caused by human activities (such as unattended burns or campfires) or by natural events such as lightning. Wildland fires often occur in forests or other areas with ample vegetation. In addition to wildland fires, wildfires can be classified as tundra fires, urban fires, interface or intermix fires, and prescribed burns.

The following three factors contribute significantly to wildland fire behavior and can be used to identify wildland fire hazard areas.

> **Topography** describes slope increases, which influences the rate of wildland fire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildland fire behavior. However, ridge tops may mark the end of wildland fire spread since fire spreads more slowly or may even be unable to spread downhill.
>
> **Fuel** is the type and condition of vegetation that plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the "fuel load"). The ratio of

living to dead plant matter is also important. Climate change is deemed to increase wildfire risk significantly during periods of prolonged drought as the moisture content of both living and dead plant matter decreases. The fuel load continuity, both horizontally and vertically, is also an important factor.

Weather is the most variable factor affecting wildland fire behavior. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildland fire activity. Climate change increases the susceptibility of vegetation to fire due to longer dry seasons. By contrast, cooling and higher humidity often signal reduced wildland fire occurrence and easier containment.

The frequency and severity of wildland fires is also dependent on other hazards, such as lightning, drought, and infestations (such as the damage caused by spruce-bark beetle infestations). If not promptly controlled, wildland fires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildland fires may severely affect wildlife and pets. Such events may require emergency water/food, evacuation, and shelter.

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 rivers 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.

5.3.5.2 History

The Alaska Interagency Coordination Center identified 224 tundra/wildland fires in close proximity to the Village since 1939. Table 5-8 lists 44 fires that exceeded 3,000 acres with the largest one (highlighted) burning 803,470 acres in 1969. Nearly all wildfires near Alatna are caused by lightning strikes.

Table 5-8 Wildfire Locations Since 1939 within 50 Miles of Alatna

Fire Name	Fire Year	Estimated Acres	Latitude	Longitude	Cause
Hogatza River	2016	52,334.7	66.7983611	-153.9683333	Lightning
Hog	2016	58,565.3	66.6175833	-154.0528889	Lightning
Sushgitit Hills	2015	276,038.2	66.0323056	-153.0223056	Lightning
Siruk Creek	2013	20,362.7	66.7408333	-153.65	Lightning
Peavey Creek	2010	30,238.9	66.6750031	-151.9052734	Lightning
Kanuti River	2009	3,225.2	66.2699966	-152.4511108	Lightning
Alatna Hills	2005	6,232.5	67.04195	-152.798	Lightning
Old Dummy	2005	231,821.8	66.16417	-152.0142	Undefined
Lake Todatonten	2004	12,377	66.13194	-152.9469	Undefined
Clawanmenka Lake	2004	108,577	66.52167	-151.4067	Lightning
Evansville	2004	135,627	66.91167	-151.5	Undefined

Table 5-8 Wildfire Locations Since 1939 within 50 Miles of Alatna

Fire Name	Fire Year	Estimated Acres	Latitude	Longitude	Cause
Jim River	2002	23,909	66.75	-151.25	Lightning
Siruk Creek	1999	3,132	66.7	-153.8333	Lightning
BTT S 49	1994	8,240.2	66.0833359	-151.5333405	Lightning
BTT S 48	1992	25,600	66.1833344	-152.3833313	Lightning
BTT SS 53	1991	14,390	66.0666656	-151.9333344	Lightning
131655	1991	27,000	66.9166641	-153.5333405	Lightning
BTT S 17	1991	43,952	66.6833344	-151.6000061	Lightning
BTT S 49	1991	51,280	66.0833359	-151.6833344	Lightning
131569	1991	249,784	66.7333298	-152.1166687	Lightning
BTT W 31	1990	3,100	66.7166672	-152.6666718	Lightning
031039	1990	4,100	66.7666702	-152.7666626	Lightning
BTT SW 53	1990	29,200	66.2833328	-153.1000061	Lightning
BTTS S 40	1990	400,182	66.25	-151.4499969	Lightning
Todatonten	1981	21,000	66.2833328	-152.9333344	Lightning
Rocky Bottom	1972	5,000	66.75	-152.6333313	Lightning
Kurti Flats	1972	25,000	66.5333328	-152.3333282	Lightning
Bergman Creek	1972	32,000	66.6666641	-153.0166626	Lightning
Bridge	1972	243,800	66.5	-152.3333282	Lightning
Todatontin	1969	3,000	66.1333313	-153.25	Lightning
Kilolitna	1969	4,000	66.0333328	-151.8999939	Lightning
Lake Creek	1969	40,000	67.0833359	-153.4666595	Lightning
Nitltoktalogi	1969	230,000	66.4666672	-153.5	Undefined
Holanada Creek	1969	803,470	66.0500031	-152.1833344	Lightning
Winter Trail	1968	10,000	66.6666641	-152.4499969	Lightning
Bettles #1	1959	4,500	66.7166672	-151.5500031	Lightning
Bettles #2	1959	7,700	66.6166687	-151.9666595	Lightning
Bettles W-40	1957	80,000	66.8166656	-152.5166626	Lightning
Alatna	1954	12,120	66.5	-152.5	Lightning
Kanuti River	1953	20,000	66.0833359	-151.8333282	Lightning
Alatna River	1946	30,720	66.8333359	-153.6333313	Lightning
Arctic City	1946	54,400	66.3333359	-153.8333282	Lightning
Kanuti Lake	1946	195,840	66.1666641	-152.8333282	Lightning
Betttles Field Fire	1946	253,952	66.9166641	-151.5166626	Lightning

(AICC 2017)

5.3.5.3 *Location, Extent, Impact, and Recurrence Probability*

Location

Under certain conditions wildland fires may occur near the Village when weather, fuel availability, topography, and ignition sources combine. Since fuels data is not readily available, for the purposes of this plan, all areas outside Village limits are considered to be vulnerable to wildland fire impacts. Since 1939, several wildland fire events have occurred within 50 miles of the Village (Figure 5-11).

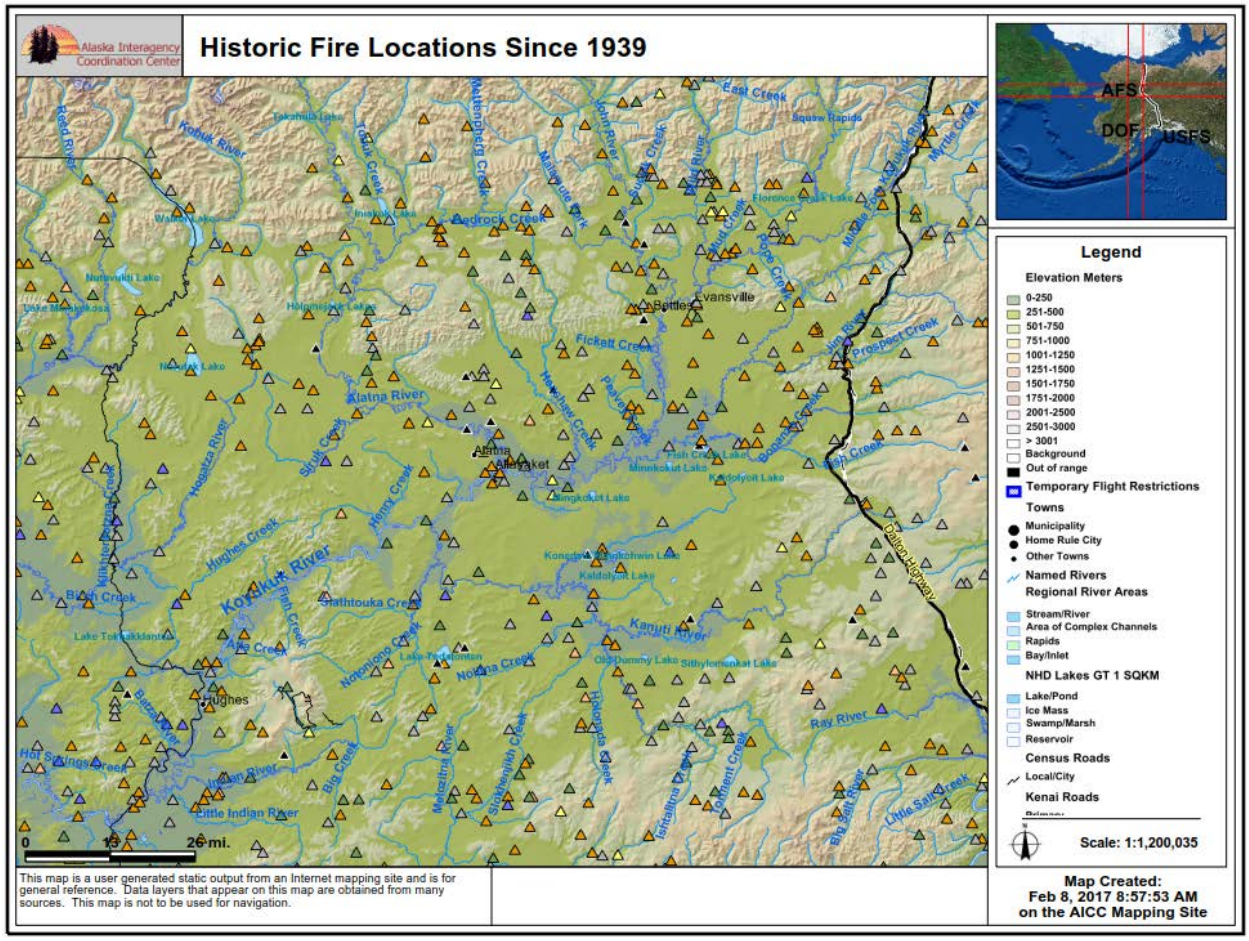


Figure 5-11 Alatna's Historical Wildfire Locations (AICC 2017)

Extent

Generally, fire vulnerability dramatically increases in the late summer and early fall as vegetation dries out, decreasing plant moisture content and increasing the ratio of dead fuel to living fuel. However, various other factors, including humidity, wind speed and direction, fuel load and fuel type, and topography can contribute to the intensity and spread of wildland fires. The common causes of wildland fires in Alaska include lightning strikes and human negligence.

Fuel, weather, and topography influence wildland fire behavior. Fuel determines how much energy the fire releases, how quickly the fire spreads, and how much effort is needed to contain the fire. Weather is the most variable factor. High temperatures and low humidity encourage fire

activity while low temperatures and high humidity retard fire spread. Wind affects the speed and direction of fire spread. Topography directs the movement of air, which also affects fire behavior. When the terrain funnels air, as happens in a canyon, it can lead to faster spreading. Fire also spreads up slope faster than down slope.

The 1969 Holanda Creek fire burned approximately 803,470 acres. Due to poor records, the location is approximate. The fire was caused by lightning. It is difficult to determine the average number of acres burned as the fires were vastly different for each of the 22 wildland fire events identified in Table 5-8. An average based on such diverse data would easily be overstated.

Based on the number of past wildland fire events and the criteria identified in Table 5-2, the magnitude and severity of impacts in the Village of Alatna are considered "Limited" with minor injuries, there is potential for critical facilities to be shut down for more than one week, more than 10 percent of property or critical infrastructure being severely damaged, and little to no permanent damage to transportation or infrastructure or the economy.

Impact

Impacts of a wildland fire that interfaces with the population center of the Village could grow into an emergency or disaster if not properly controlled. A small fire can threaten lives and resources and destroy property. In addition to impacting people, wildland fires may severely impact livestock and pets. Such events may require emergency watering and feeding, 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.

Fire is recognized as a critical feature of the natural history of many ecosystems. It is essential to maintain the biodiversity and long-term ecological health of the land. The role of wildland fire, as an essential ecological process and natural change agent, has been incorporated into the fire management planning process, The full range of fire management activities is exercised in Alaska, to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social consequences on firefighters, public safety and welfare; natural and cultural resources threatened; and the other values to be protected which dictate the appropriate management response to the fire(DOF 2016). In Alaska and near the Village of Alatna, the natural fire regime is characterized by a return interval of approximately 150 years due to their combined tundra and forested vegetation and topography.

Recurrence Probability

An important issue related to the wildland or tundra fire probability is the interface of increased development along the community's perimeter, accumulation of hazardous wildfire fuels, and the uncertainty of weather patterns that may accompany climate change. These three combined elements are reason for concern and heightened mitigation management of each community's wildland interface areas, natural areas, and open spaces.

Based on the history of wildland fires in the Alatna area and applying the criteria identified in Table 5-3, it is "Likely" a wildland fire event will occur within in the next three years. The event

has up to 1 in 3 years chance of occurring and the history of events is less than or equal to 33 percent likely each year. Climate change and flammable vegetation species are prolific throughout Alaska's forests and tundra locations. Fire frequency may increase in the future as a result.

Section Six outlines the vulnerability process for determining potential losses for the community from various hazard impacts.

6.1 OVERVIEW

A vulnerability analysis predicts the exposure extent that may result from a hazard event of a given intensity in a given area. This 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 eight steps:

1. Asset Inventory
2. Exposure Analysis for Current Assets
3. Repetitive Loss Properties
4. Land Use and Development Trends
5. Vulnerability Analysis Methodology
6. Data Limitations
7. Vulnerability Exposure Analysis
8. Future Development

DMA 2000 requirements and implementing Tribal governance regulations for current assets, and area future development initiatives:

DMA 2000 Recommendations
Assessing Vulnerability: Overview §201.7(c)(2)(ii): [The risk assessment **shall** include a] description of the Indian Tribal government'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 tribe.
1. REGULATION CHECKLIST
ELEMENTS. Hazard Impacts
A. Does the new or updated plan include an overall summary description of the Indian tribe's vulnerability to each hazard?
B. Does the new or updated plan address the impact of each hazard on the Indian tribe?
2. REGULATION CHECKLIST
Assessing Vulnerability: Estimating Potential Losses §201.7(c)(2)(ii)(A): [The plan **should** describe vulnerability in terms of the] types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.
ELEMENTS. Structural Vulnerability
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
B. Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?
3. REGULATION CHECKLIST
Assessing Vulnerability: Analyzing Development Trends §201.7(c)(2)(ii)(B): [The plan should describe vulnerability in terms of the] types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.
ELEMENTS. Methodology and Damage Estimates
A. Does the new or updated plan estimate potential dollar losses to vulnerable structures?
B. Does the new or updated plan describe the methodology used to prepare the estimate?
C. Does the updated plan reflect the effects of changes in development on loss estimates?

DMA 2000 Recommendations
4. REGULATION CHECKLIST
Assessing Vulnerability: Assessing Cultural and Sacred Sites §201.7(c)(2)(ii)(D): [The plan should describe vulnerability in terms of] cultural and sacred sites that are significant, even if they cannot be valued in monetary terms.
ELEMENTS. Culturally Sacred Sites
A. Does the new or updated plan describe significant cultural and sacred sites that are located in hazard areas?
Source: FEMA, March 2015.

Vulnerability assessment requirements include:

- 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 Repetitive Loss (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 6-1 lists the Village of Alatna's infrastructures' hazard vulnerability.

Table 6-1 Vulnerability Overview

Hazard	Area's Hazard Vulnerability			
	Percent of Jurisdiction's Geographic Area	Percent of Population	Percent of Building Stock	Percent of Critical Facilities and Utilities
Earthquake	100	100	100	100
Flood	10	100	10	41
Ground Failure	90	100	93	77
Severe Weather	100	100	100	100
Wildland Fire	100	100	100	100

6.2 CULTURALLY AND SACRED SITE SENSITIVITY

6.2.1 Location

The following sites possess a very important cultural significance for the Native Village of Alatna:

- Cemetery
- Picnic area by the Koyukuk River
- Fishing areas
- The Old Alatna site
- Archeological sites near Koyukuk River

** NOTE: Anyone desiring information concerning their respective culturally sensitive information must contact the appropriate tribal office for assistance.*

6.3 LAND USE AND DEVELOPMENT TRENDS

6.3.1 Land Use

Land use for the new Village site location resulted directly from an "informed planning process" described in their 1995 Comprehensive Plan. Residents determined the layout knowing they needed to be located safely away from the river which destroyed their community. They consequently developed a new townsite with 15 1.6-acre, four 1.2-acre, and 13 2- to 3-acre lots. This layout emphasized resident's preferences rather than simply allowing outsiders to determine how their community should be designed. The Village Tribal Council did not follow the normal convention for land ownership in their new location (Alatna 1995). There have been no changes to development since the legacy HMP.

Land use in the Village is predominately residential with no commercial and few community (or institutional) facilities. Suitable developable vacant land is in short supply within the boundaries of the Village with mostly open space surrounding the community.

The Village has adopted a floodplain ordinance and a Tribal Council resolution to prevent development in the floodplain. The Tribal Council strongly prevents development in the floodplain knowing that Federal agencies will deny future disaster damage reimbursement if they ignore the 1995 relocation assistance requirements. However there are no formal zoning or other land use controls. There are no commercial land use areas, emergency services, schools, airfields, or bridges within the Village. Figure 6-1 is a photograph of the community washeteria. Figure 6-2 shows the community layout and community land use.

Figure 6-1 Alatna's Washeteria

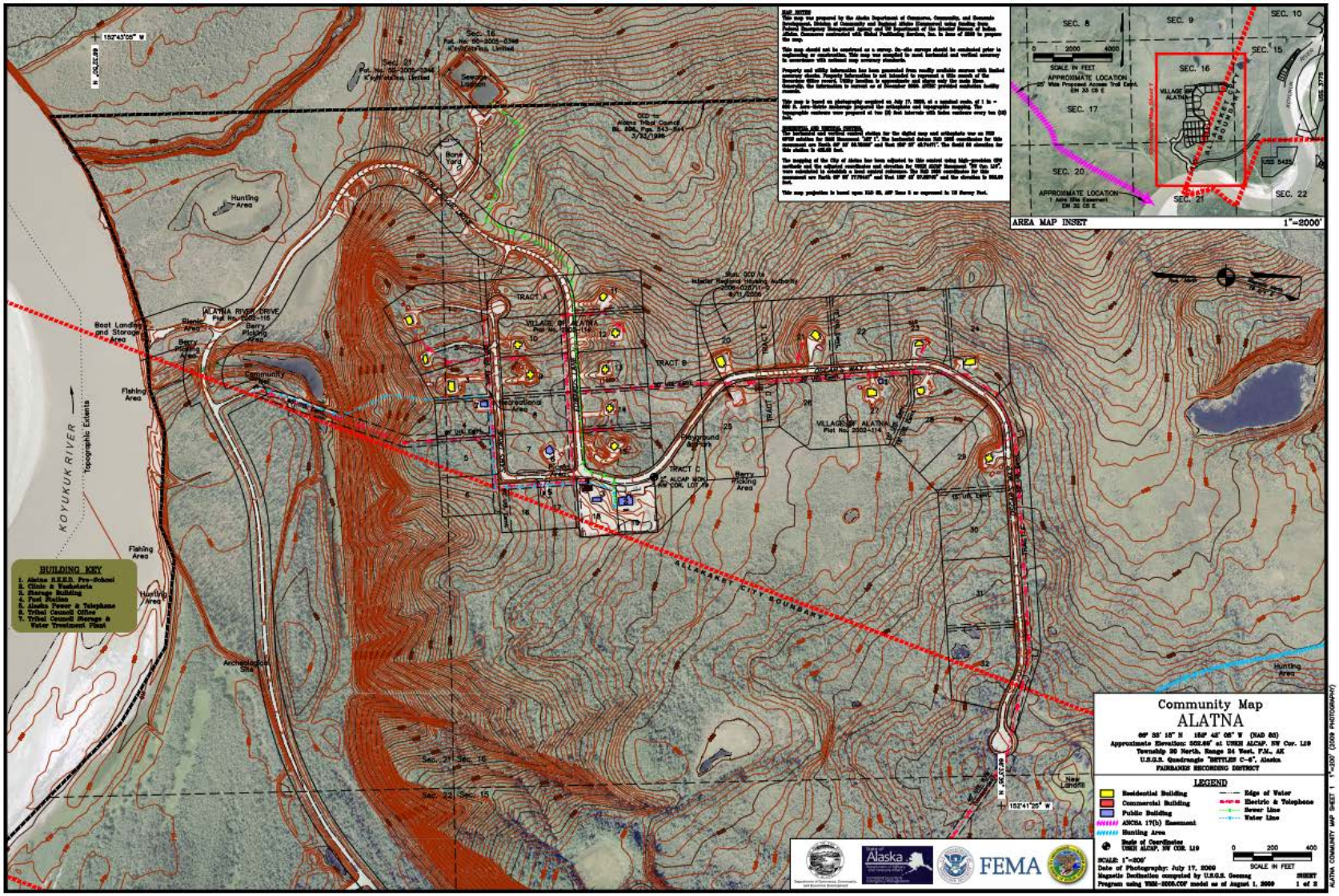


Figure 6-2 Native Village of Alatna (DCRA 2009)

6.4 CURRENT ASSET EXPOSURE ANALYSIS

6.4.1 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.

6.4.1.1 Population and Building Stock

Population data for the Village were obtained from the 2010 U.S. Census and the Department of Labor's 2016 estimate (DOL). The U.S. Census reports the Village's total population for 2010 as 328 and 2014 DOL data reported a population of 23 (Table 6-2). The community members reported a current population of 16. The project team estimated the number of residential buildings at 17.

Table 6-2 Estimated Population and Building Inventory

Population		Residential Buildings	
2010 Census	DOL 2016 Data	2017 Total Building Count	Total Value of Buildings
37	23	17	US Census $1,807,100 Village: $4,6750,000

Sources: Census 2010, and 2016 DCCED/DCRA identified Department of Labor's estimates. US Census listed housing value at $106,300. The Project Team determined that the average structural replacement value of all single-family residential buildings is $275,000.

Estimated replacement values for those structures, as shown in Table 6-2, were obtained from the U.S. Census 2010, and 2016 DCCED/DCRA identified Department of Labor's estimates.

The planning team stated that residential replacement values are generally understated because replacement costs exceed Census structure estimates due to material purchasing, barge or airplane delivery, and construction in rural Alaska. The planning team estimates an average 30ft by 40ft (1,200 sq ft) residential structure costs approximately $275,000.

6.4.1.2 Existing Infrastructure

Development trends in the Village will remain relatively flat with limited population growth expected. Alatna residents haul water and use honeybuckets or outhouses. None of the occupied homes have plumbing. Community members draw water from two community wells, and use pit privies (outhouses).

The Village of Alatna has benefited from funding opportunities to assist them with upgrading their infrastructure. However, since approximately 2010, the State Division of Community and Regional Affairs (DCRA) is no longer able to collect diverse agency project data for Alaskan communities. Therefore this plan update will only list Alatna's historically "completed" grant funded resources (Table 6-3). The older grants depict Alatna's ongoing efforts toward improving their aging infrastructure.

*(**Note:** recent infrastructure improvement projects are still ongoing; however there is no current information repository for these data.)*

Table 6-3 Alatna's Capital Improvement Project List

Recipient	Award Year	Project Description/Comments	Project Status	Award Amount	End Date
Alatna Tribal Council	2010	Purchase Bulk Fuel	Closed	$841	7/30/2010
City of Alatna	2010	Community Projects and Improvements	Closed	$0	Undefined
Alatna Village Council	2004	Temporary Fiscal Relief Grant	Closed	$3,500	Undefined
Alatna Village Council	2003	State Revenue Sharing	Closed	$3,631	3/31/2004
Alatna Village Council	1992	Cemetery Improvements	Closed	$10,500	6/30/1993

(DHS&EM 2016b)

6.4.1.3 Alatna's Critical Facilities

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 Village and fulfilling important public safety, emergency response, and disaster recovery functions. Due to many of Alaska's remote rural locations being a long distance from their nearest neighboring community, most all facilities are deemed "critical" to their survival. The critical facilities profiled in this plan include the following:

- Government facilities, such as a tribal office and a U.S. post office;
- Transportation facilities, including the airport;
- Emergency response facilities, including firefighting department;
- Educational facilities, including a K-12 school;
- Care facility, such as a medical clinic;
- Community gathering places, such as a community center; and
- Utilities, such as a tank farm and a well.

The Village's critical facilities and infrastructure are listed in Table 6-4.

Table 6-4 Alatna's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Wildland Fire
Government	3	Tribal Office Building	66.55364	-152.69959	125,000	W1	X		X	X	X
	2	VSPO office; Police Station (Allakaket)	62.546806	-152.644742	$275,000	W1	X		X	X	X
	1	U.S. Post Office (Allakaket)	66.56079	-152.65144	$250,000	W1	X	X		X	X
Transportation	2	Boat Landing	66.547817	-152.707369	$150,000	PWS	X	X	X	X	X
	0	Airstrip (Allakaket)	66.54989	-152.62284	$7,232,000	ARW	X		X	X	X
Emergency Response	10	Multi-Purpose Health Clinic, Washeteria Facility, Water Treatment Plant	66.55474	-152.69776	$3,000,000	W2	X		X	X	X
Education	60	Allakaket School (Allakaket)	66.563153	-152.644569	$6,700,000	W2	X	X		X	X
Medical	2	See Multi-Purpose Health Clinic Facility above	66.55474	-152.69776	N/A	W1	X		X	X	X
Community		Community Center: See Multi-Purpose Facility above	66.55474	-152.69776	N/A	W1	X		X	X	X
	0	Alatna Cemetery	66.568608	-152.66025		N/A	X	X	X	X	X
	0	Allakaket Cemetery (Allakaket)	66.568561	-152.650969		N/A	X	X	X	X	X
	5	Safehouse	66.558819	-152.704919	$275,000	W1	X		X	X	X
	2	Outdoor Cultural Area	66.548044	-152.7074			X	X	X	X	X
	5	Denaakekookoyaah Store (Allakaket)	66.56265	-152.65161	$444,000	W1	X	X	X	X	X
Roads and Bridges	~7 miles	Roads: Bureau of Indian Affairs	N/A	N/A	$3,500,000	HRD1	X	X	X	X	X

Table 6-4 Alatna's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Wildland Fire
Utilities	600 gal	Bulk Fuel Facility at the Washeteria	66.55474	-152.69776	$2,000,000	OTF	X		X	X	X
	10,500 gal, 5,000 gal gas	Alaska Power Company, Generator with Bulk Fuel storage	66.55371	-152.69802		OTF	X		X	X	X
	0	Community Well & Water Point	66.5528	-152.70112	$150,000	PWE	X	X	X	X	X
	0	Sewage Lagoon	66.55159	-152.71715	$410,000	WWTS	X		X	X	X
	0	Airport to Tank Farm pipeline-Start (Allakaket)	66.54858	-152.6287	$200,000	OIP	X			X	X
	0	Airport to Tank Farm pipeline-End (Allakaket)	66.54812	-152.63477		OIP	X			X	X
	10,000 gal	Airport Offloading Tank Fuel Storage (Allakaket)	66.547294	-152.636764	$500,000	OTF	X			X	X
	0	Alatna Landfill (Class III)	66.559864	-152.692775	$200,000	N/A	X			X	X
Total Occ.	**92**			**Potential Damages (Total)**	**$25,411,000**						

Building Type: ARW=Runway; HRD=Major Road; OIP=Fuel Pipelines OTF=Fuel Tank; PWE= Water Well; PWS=Waterfront Structure; W=Wood; WWTS=Wastewater Treatment

(DHS&EM 2016c, Community of Alatna)

6.5 NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATIOON

This section estimates the number and type of structures at risk to repetitive flooding. (Properties which have experienced RL, the extent of flood depth, and damage potential.) as required by DMA 2000 and its implementing regulations.

DMA 2000 Requirements
Repetitive Loss Strategy (Optional) §201.7(c)(3)(vi): An Indian Tribal government applying to FEMA as a grantee may request the reduced cost share authorized under 79.4(c)(2) of this chapter of the FMA and SRL programs if they have an approved Tribal Mitigation Plan meeting the requirements of this section that also identifies actions the Indian Tribal government has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the Indian Tribal government intends to reduce the number of such repetitive loss properties. [Note: While submittal of a Repetitive Loss Strategy is optional, if the Indian Tribal government wants to request the reduced cost share authorized under 44 CFR 79.4(c)(2) for the FMA and SRL programs as a grantee, then all of the following requirements must be met.]
1. REGULATION CHECKLIST
ELEMENTS. Repetitive Loss Requirements
A. Does the new or updated plan address repetitive loss properties in its risk assessment (see 201.7(c)(2))?
B. Does the new or updated plan describe the Indian Tribal government's mitigation goals that support the selection of mitigation activities for repetitive loss properties (see 201.7(c)(3)(i))?
C. Does the new or updated plan identify mitigation actions for repetitive loss properties (see 201.7(c)(3)(iii))?
D. Does the new or updated plan describe specific actions that have been implemented to mitigate repetitive loss properties, including actions taken to reduce the number of severe repetitive loss properties?
E. Does the new or updated plan consider repetitive loss properties in its evaluation of the Indian Tribal government's hazard management laws, regulations, policies, programs, and capabilities and its general description of mitigation capabilities (see 201.7(c)(3)(iv))?
F. Does the new or updated plan identify current and potential sources of Federal, tribal, or private funding to implement mitigation activities for repetitive loss properties (see 201.7(c)(3)(v))?
Source: FEMA, March 2015.

The Village was located uphill and inland from flood threats subsequent to the 1994 Fall Flood. Therefore there are no RL properties except fish camps located adjacent to the river which are exposed to flood threats. The Village does not participate because it cannot meet the requirements necessary for participation in NFIP. The Village is located entirely above and outside the floodplain and therefore does not have any properties to list in a RL property inventory.

6.5.1 Repetitive Loss Properties

The Native Village of Alatna does not participate in the NFIP, neither do they have a repetitive flood property inventory that meets NFIP criteria as the loss thresholds are substantially below FEMA values.

6.6 VULNERABILITY ANALYSIS METHODOLOGY

A conservative exposure-level analysis was conducted to assess the risks of the identified hazards. This analysis is a simplified assessment of the potential effects of the hazards on values at risk without consideration of probability or level of damage.

The methodology used a two pronged effort. First, the community planning team identified critical facilities, beginning with the State's Critical Facility Inventory and then updating it. The Project Team used locally obtained GPS coordinate data and personal observation to identify critical facility locations in relation to potential hazard's threat exposure and vulnerability. Second this data were used to develop a vulnerability assessment for those hazards where Geographic Information System (GIS) based hazard mapping information was available.

Combined structure and contents replacement values were determined by the community for their physical assets. The community's aggregate exposure was calculated by assuming the worst-case scenario (that is, the asset would be completely destroyed and would have to be replaced) 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 estimate of the number of potential injuries or deaths was prepared.

6.7 DATA LIMITATIONS

The vulnerability estimates provided herein use the best data currently available, and the methodologies applied result in a risk approximation. These estimates may be used to understand relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment, as well as the use of approximations and simplifications that are necessary for a comprehensive analysis.

It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of people, buildings, and critical facilities and infrastructure to the identified hazards. It was beyond the scope of this HMP to develop a more detailed or comprehensive assessment of risk (including annualized losses, people injured or killed, shelter requirements, loss of facility/system function, and economic losses). Such impacts may be addressed with future updates of the HMP.

6.8 VULNERABILITY EXPOSURE ANALYSIS

There are limited GIS data available for the Village of Alatna. The following discussion contains information obtained from the Project Team and their subsequent analysis. The results are summarized in Tables 6-5 and 6-6.

Table 6-5 Potential Hazard Exposure Analysis – Critical Facilities

		Government and Emergency Response		Educational		Medical		Community	
Hazard Type	Methodology	# Bldgs / # Occ	Value	# Bldgs / # Occ	Value	# Bldgs / # Occ	Value	# Bldgs / # Occ	Value
Earthquake	Descriptive	3/6	$650,000	1/60	$6,700,000	1/10	$3,000,000	5/12	$719,000
Flood or Erosion	Descriptive	1/1	$250,000	1/60	$6,700,000	0/0	$0	4/12	$719,000
Ground Failure	Descriptive	2/5	$400,000	0/0	$0	1/10	$3,000,000	5/12	$719,000
Severe Weather	Descriptive	3/6	$650,000	1/60	$6,700,000	1/10	$3,000,000	5/12	$719,000
Wildland Fire	Descriptive	3/6	$350,000	1/60	$6,700,000	1/10	$3,000,000	5/12	$719,000

Table 6-6 Potential Hazard Exposure Analysis – Critical Infrastructure

		Roads		Bridges		Transportation		Utilities	
Hazard Type	Methodology	Miles	Value	No.	Value	#Facilities / # Occ	Value	#Facilities / # Occ	Value
Earthquake	Descriptive	7	$3,500,000	0/0	$0	2/2	$7,382,000	8/0	$3,460,000
Flood or Erosion	Descriptive	7	$3,500,000	0/0	$0	1/0	$150,000	1/0	$150,000
Ground Failure	Descriptive	7	$3,500,000	0/0	$0	2/2	$7,382,000	4/0	$2,560,000
Severe Weather	Descriptive	7	$3,500,000	0/0	$0	2/2	$7,382,000	8/0	$3,460,000
Wildland Fire	Descriptive	7	$3,500,000	0/0	$0	2/2	$7,382,000	8/0	$3,460,000

6.8.1 Exposure Analysis – Hazard Narrative Summaries

Earthquake

The Village and surrounding area can expect to experience significant earthquake ground movement that may result in infrastructure damage. Intense shaking may be seen or felt based on past events. Although all structures are exposed to earthquakes, buildings constructed with wood have slightly less vulnerability to the effects of earthquakes than those with masonry.

Based on earthquake probability (PGA) maps produced by the USGS, the entire Village area is at risk of experiencing moderate or significant earthquake impacts as a result of its far proximity to known earthquake faults.

The probability is possible (see Section 5.3.1.3) that impacts to the community from ground movement may result in infrastructure damage and personal injury.

The entire existing, transient, and future Alatna population, residential structures, and critical facilities are exposed to the effects of "critical" earthquake events. This includes approximately:

- 16 people in 17 residences (approximate value $4,6750,000)
- 3 people in 6 government and emergency response facilities (approximate value $650,000)
- 60 people in 1 educational facility (approximate value $3,000,000)
- 10 people in 1 medical facility (approximate value $3,000,000)
- 12 people in 5 community facilities (approximate value $719,000)
- 7 road system miles (approximate value $3,500,000)
- 0 bridges (approximate value $0)
- 2 people in 2 transportation facilities (approximate value $7,382,000)
- 0 people in 8 utility facilities (approximate value $3,460,000)

Impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same historical impact level.

Flood

Typical flood impacts associated include structures and contents water damage, roadbed, embankment, and riverine erosion, boat strandings, and areas of standing water in roadways. Flood events may also damage or displace fuel tanks, power lines, or other infrastructure. Buildings on slab foundations, not located on raised foundations, and/or not constructed with materials designed to withstand flooding events (e.g., cross vents to allow water to pass through an open area under the main floor of a building) are more vulnerable to flood impacts (see Section 5.3.2.3).

No detailed 100-year flood analysis has been prepared for the Village. The USACE Floodplain Manager does not provide flood information or a 100-year floodplain map for Alatna.

This includes approximately:

- 0 people in 0 residences (approximate value $0)

- 1 person in 1 government and emergency response facility (approximate value $250,000)
- 60 people in 1 educational facility (approximate value $6,700,000)
- 0 people in 0 medical facilities (approximate value $0)
- 4 people in 12 community facilities (approximate value $719,000)
- 7 road system miles (approximate value $3,500,000)
- 0 bridges (approximate value $0)
- 0 people in 1 transportation facility (approximate value $150,000)
- 0 people in 1 utility facility (approximate value $150,000)

The Village anticipates that impacts to future populations, residential structures, critical facilities, and infrastructure will continue.

Ground Failure

Impacts associated with ground failure include surface subsidence, infrastructure, structure, and/or road damage. Buildings that are built on slab foundations and/or not constructed with materials designed to accommodate the ground movement associated with building on permafrost and other land subsidence and impacts are more vulnerable to damage.

The potential ground failure impacts from avalanches, landslides, and subsidence can be widespread. Potential debris flows and landslides can impact transportation, utility systems, and water and waste treatment infrastructure along with public, private, and business structures located adjacent to steep slopes, along riverine embankments, or within alluvial fans or natural drainages. Response and recovery efforts will likely vary from minor cleanup to more extensive utility system rebuilding. Utility disruptions are usually local and terrain dependent. Damages may require reestablishing electrical, communication, and gas pipeline connections occurring from specific breakage points. Initial debris clearing from emergency routes and high traffic areas may be required. Water and wastewater utilities may need treatment to quickly improve water quality by reducing excessive water turbidity and reestablishing waste disposal capability.

Ground Failure hazards periodically cause structure and infrastructure displacement due to ground shifting, sinking, and upheaval. According to mapping completed by Jorgensen et al. and the DHS&EM, Alatna has continuous permafrost (see Section 5.3.3.3).

There has been land subsidence in Alatna from thawing permafrost. Threatened facilities include:

- 16 people in 17 residences (approximate value $$4,6750,000)
- 5 people in 2 government and emergency response facilities (approximate value $400,000)
- 0 people in 0 educational facilities (approximate value $0)
- 10 people in 1 medical facility (approximate value $3,000,000)
- 12 people in 5 community facilities (approximate value $719,000)
- 7 road system miles (approximate value $3,500,000)
- 0 bridges (approximate value $0)

- 2 people in 2 transportation facilities (approximate value $7,382,000)
- 0 people in 4 utility facilities (approximate value $2,560,000)

Impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same impact level.

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 snowmachine or vehicle accidents, and 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, utility disruptions, and carbon monoxide poisoning. Additional impacts may occur from secondary weather hazards or complex storms such as extreme high winds combined with freezing rain, high seas, and storm surge. Section 5.3.4.3 provides additional detail regarding severe weather impacts. 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 severe weather damage.

Based on information provided by the Village of Alatna and the National Weather Service, the entire existing, transient, and future Alatna population, residential structures, and critical facilities are exposed to future severe weather impacts. This includes approximately:

- 16 people in 17 residences (approximate value $4,6750,000)
- 3 people in 6 government and emergency response facilities (approximate value $650,000)
- 60 people in 1 educational facility (approximate value $3,000,000)
- 10 people in 1 medical facility (approximate value $3,000,000)
- 12 people in 5 community facilities (approximate value $719,000)
- 7 road system miles (approximate value $3,500,000)
- 0 bridges (approximate value $0)
- 2 people in 2 transportation facilities (approximate value $7,382,000)
- 0 people in 8 utility facilities (approximate value $3,460,000)

Impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same historical impact level.

Wildland Fire

Impacts associated with a wildland fire event include the potential for loss of life and property. It can also impact livestock and pets and destroy forest resources and contaminate water supplies. Buildings closer to the outer edge of town, those with a lot of vegetation surrounding the structure, and those constructed with wood, are some of the buildings that are more vulnerable to the impacts of wildland fire. Section 5.3.5.3 provides additional detail regarding wildland fire impacts

According to the Alaska Fire Service, there have been several wildland fire areas within a 50-mile radius of Alatna (see Section 5.3.5.3). There is a potential for wildland fire to interface with the population center of the Village.

This area includes approximately:

- 16 people in 17 residences (approximate value $4,6750,000)
- 3 people in 6 government and emergency response facilities (approximate value $650,000)
- 60 people in 1 educational facility (approximate value $3,000,000)
- 10 people in 1 medical facility (approximate value $3,000,000)
- 12 people in 5 community facilities (approximate value $719,000)
- 7 road system miles (approximate value $3,500,000)
- 0 bridges (approximate value $0)
- 2 people in 2 transportation facilities (approximate value $7,382,000)
- 0 people in 8 utility facilities (approximate value $3,460,000)

Impacts to future populations, residential structures, critical facilities, and infrastructure are anticipated at the same historical impact level.

6.9 FUTURE DEVELOPMENT

Alatna continually seeks to maintain and upgrade their aging infrastructure. Section Seven, Hazard Mitigation Strategy defines how the community intends to continue improving their future development initiatives. These initiatives will culminate in their Mitigation Action Plan (MAP), Table 7-10.

As depicted in Table 6-7, Alatna has had minimal changes that would alter their projected hazard loss estimates.

Table 6-7 Planned and Funded Projects

Recipient	Award Year	Project Description/Comments	Project Status	Award Amount	End Date
Alatna Village	2013	Heavy Equipment Purchase and Freight	Active	$180,000	6/30/2017

(DCRA 2010)

This page intentionally left blank

Section Seven outlines the six-step process for preparing a mitigation strategy including:

7.1 OVERVIEW

The mitigation strategy provides the blueprint for implementing desired activities that will enable the community to continue to save lives and preserve infrastructure by systematically reducing hazard impacts, damages, and community disruption. A vulnerability analysis is divided into six steps:

1. Identifying each jurisdiction's existing authorities for implementing mitigation action initiatives.
2. NFIP Participation.
3. Developing Mitigation Goals.
4. Identifying Mitigation Actions.
5. Evaluating Mitigation Actions.
6. Implementing the Mitigation Action Plan.

DMA 2000 and its Tribal governance implementing regulations for comprehensive mitigation strategy development include:

DMA 2000 Requirements
Identification and Analysis of Mitigation Actions §201.7(c)(3): [The plan shall include the following:] A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs, and resources, and its ability to expand on and improve these existing tools. §201.7(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards. §201.7(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. §201.7(c)(3)(iii): [The hazard mitigation strategy shall include an] action plan, describing how the action identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs. §201.7(c)(3)(iv): [For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. Requirement §201.7(c)(4): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvements, when appropriate.
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?
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? *(Addressed in Section 6.4)*
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?
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?

DMA 2000 Requirements
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?
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?
Source: FEMA, March 2015.

7.2 NATIVE VILLAGE OF ALATNA'S CAPABILITY ASSESSMENT

This section defines the Village's capability to review its technical and fiscal resources available for DMA 2000 requirements and implementing Tribal governance regulations for THMP project implantation and management include.

DMA 2000 Requirements
Tribal Capability Assessment §201.7(c)(3)(iv): [The mitigation strategy shall include a] discussion of the Indian Tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; and a discussion of tribal funding capabilities for hazard mitigation projects.
REQUIREMENTS CHECKLIST
ELEMENT
A. Does the new or updated plan include an evaluation of the Indian Tribal government's pre-disaster hazard management laws, regulations, policies, programs, and capabilities?
B. Does the new or updated plan include an evaluation of the Indian Tribal government's post-disaster hazard management laws, regulations, policies, programs, and capabilities?
C. Does the new or updated plan include an evaluation of the Indian Tribal government's laws, regulations, policies, programs, and capabilities related to development in hazard prone areas?
D. Does the new or updated plan include a discussion of the Indian Tribal government's funding capabilities for hazard mitigation projects?
E. Does the updated plan address any hazard management laws, policies, programs, capabilities, or funding capabilities of the Indian Tribal government's that have changed since approval of the previous plan?
Source: FEMA, March 2015.

The THMP displays DMA 2000 and 44 CFR 201.7 (Alaska Native Village) requirements to guide THMP development throughout the plan. Pertinent support data follows each regulatory criteria text boxes, striving to fulfill regulatory criteria.

Note: *Rural Alaska cities and villages have very limited funding, staff, and formal government resources. They "make do with what they have" looking at life with survival ever present in their minds and hearts. Many communities' leadership positions are extremely transitory with sometimes rapid or frequent turn-over.*

The 2017 HMP planning process has edited their THMP to integrate the Mitigation Strategy with FEMA mitigation programs and initiatives.

Alatna's capability assessment reviews their pre- and post-disaster technical and fiscal resources available to the community.

DMA 2000 and its implementing Tribal governance regulations for technical and fiscal resources available to the community for THMP project implantation and management include:

Table 7-1 Alatna's Regulatory Tools

Regulatory Tools (ordinances, codes, plans)	Existing Yes/No?	Comments (Year of most recent update; problems administering it, etc.)
Comprehensive Plan	Yes	Alatna, The Comprehensive Plan, A Constitutional Mandate for Long Term Survival, August 1995 Defines community's long-term survival goals, community layout, community flood mitigation initiatives following the 1994 Fall Flood event which destroyed the entire community and facilitated its relocation out of the floodplain.
The Alatna Tribal Constitution	Yes	This Federally approved Tribal Constitution ensures fulfilling Federal requirements.
Tribal Council Floodplain Ordinance	Yes	Prohibits development in floodplain (at old townsite).
Tribal Council Floodplain Resolution	Yes	Prohibits permanent structure building at the Old Alatna townsite. The site can only be used for subsistence and recreation purposes.
Land Use Regulation	Yes	Guides land use to protect safety and welfare of residents.
Local Permitting Process	Yes	Defines safe building practices ensuring long-term community goals are not threatened.
Fire Break Plan	Yes	Protects community from future fire threats.
Flood and Erosion Map of Allakaket and Alatna, Alaska, August 1994 (calculated 100 year flood)	Yes	Defines 100 year flood hazard area.
Emergency Response Plan	No	Tanana Chiefs Conference is in the process of developing one for Alatna.

Local Resources

Alatna has limited "formal" planning and land management tools that will allow it to implement and integrate local hazard mitigation activities with FEMA mitigation actions and initiatives. However they work closely with State agencies such as the Division of Community and Regional affairs staff to guide them with funding and planning activities. The resources available in these areas have been assessed by the hazard mitigation planning team, and are summarized below.

Table 7-2 Alatna's Technical Specialists for Hazard Mitigation

Staff/Personnel Resources	Yes / No	Department/Agency and Position
Planner or engineer with knowledge of land development and land management practices	Yes	Tanana Chiefs Conference provides this service
Engineer or professional trained in construction practices related to buildings and/or infrastructure	Yes	Tribe consults with other parties for this information

Table 7-2 Alatna's Technical Specialists for Hazard Mitigation

Staff / Personnel Resources	Yes / No	Department / Agency and Position
Planner or engineer with an understanding of natural and/or human-caused hazards	Yes	Tribe consults with other parties for this information
Floodplain Manager	Yes	The Alatna Tribal Council
Surveyors	Yes	The Village consults with surveyors
Staff with education or expertise to assess the jurisdiction's vulnerability to hazards	No	The Village doesn't have staff with this knowledge
Personnel skilled in Geospatial Information System (GIS) and/or Hazards Us-Multi Hazard software	Yes	USKH Inc, Architecture and Engineering
Emergency Manager	Yes	Tribal Chief, Harding Sam
Finance (Grant writers)	Yes	Valerie Bergman
Public Information Officer	Yes	Tribal Chief, Harding Sam

DMA 2000 Requirements
Tribal Funding Sources §201.7(c)(3)(v): [The mitigation strategy shall include an] identification of current and potential sources of Federal, tribal, or private funding to implement mitigation activities.
REQUIREMENTS CHECKLIST
ELEMENT
A. Does the new or updated plan identify current sources of Federal, tribal, or private funding to implement mitigation activities?
B. Does the new or updated plan identify potential sources of Federal, tribal, or private funding to implement mitigation activities?
C. Does the updated plan identify the sources of mitigation funding used to implement activities in the mitigation strategy since approval of the previous plan?
Source: FEMA, March 2015.

Table 7-3 Tribal Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
Tribal funds	Yes, insufficient funds to enable extensive mitigation action implementation.
Indian Community Development Block Grants (ICDBG)	Provides operational funds for tribal management
EPA, Indian Environmental General Assistance Program (IGAP)	Provides funding for tribal environmental improvement activities
HUD, Indian Housing Block Grant (IHBG)	Assists IRA Tribes with obtaining adequate housing
HUD, Native American Housing Assistance and Self Determination Act (NAHASDA)	Assists IRA Tribes with housing management resources
DOL, Employment and Training Administration, Disaster Unemployment Assistance	Provides disaster related unemployment by supporting employment and training activities

FEMA and Other Mitigation Program and Initiative Eligibility

A FEMA approved and jurisdiction adopted THMP assures participant eligibility for FEMA mitigation grant programs and initiatives. The final THMP assures these jurisdictions can potentially fulfill grant management and integration requirements. Table 7-4 provides a representative sample of available funding opportunities.

Table 7-4 Federal Agency Mitigation Programs

Financial Resources	Accessible or Eligible to Use for Mitigation Activities
Hazard Mitigation Grant Program (HMGP)	FEMA funding available to eligible local and tribal jurisdictions after a Presidentially-declared disaster. It can be used to fund both pre- and post-disaster mitigation plans and projects.
Pre-Disaster Mitigation (PDM) grant program	FEMA funding available to eligible local and tribal jurisdictions on an annual basis. This grant can only be used to fund pre-disaster mitigation plans and projects only
Flood Mitigation Assistance (FMA) grant program	FEMA funding available to eligible local and tribal jurisdictions on an annual basis. This grant can be used to mitigate repetitively flooded structures and infrastructure to protect repetitive flood structures. ***Alatna is not within the floodplain; therefore does not participate in the NFIP.***
United State Fire Administration (USFA) Grants	The purpose of these grants is to assist state, regional, national or local organizations to address fire prevention and safety. The primary goal is to reach high-risk target groups including children, seniors and firefighters.
Fire Mitigation Fees	Finance future fire protection facilities and fire capital expenditures required because of new development within Special Districts.

7.3 DEVELOPING MITIGATION GOALS

The planning team developed the mitigation goals and potential mitigation actions to address identified potential hazard impacts for the Village of Alatna within Section 5.3.

The requirements for the local hazard mitigation goals, as stipulated in DMA 2000 and its implementing regulations are described below.

DMA 2000 Requirements
Local Hazard Mitigation Goals §201.7(c)(3)(i): The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
ELEMENT C. Mitigation Goals
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?
Source: FEMA, March 2015.

Mitigation goals are defined as general guidelines that describe what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide visions. The planning team developed the

mitigation goals and potential mitigation actions to address identified potential hazard impacts for the Native Village of Alatna.

The exposure analysis results were used as a basis for updating the mitigation goals and actions (Table 7-6). Additionally, the Native Village of Alatna desired to add three new Mitigation Action or Initiative categorizes classified as Multi-Hazard along with their identified natural hazard categories. These three Multiple (Multi-Hazard or MH) Categories include:

- Multi-Hazard (MH) 1: Provide outreach activities to educate and promote recognizing and mitigating natural hazards that affect the Alatna area.
- Multi-Hazard (MH) 2: Cross-reference mitigation goals and actions with other City and Tribal planning mechanisms and projects.
- Multi-Hazard (MH) 3: Develop construction activities that reduce possibility of losses from natural hazards that affect the Alatna area.

As such, Table 7-5 lists the communities nine newly refined strategic mitigation goals developed to reduce or avoid identified long-term hazard vulnerabilities. They form the Mitigation Strategy's foundation that culminates within the Mitigation Action Plan (MAP), Table 7-10.

Table 7-5 Mitigation Goals

No.	Goal Description
Multi-Hazards (MH)	
MH 1	Provide **outreach** activities to educate and promote recognizing and mitigating all natural hazards that affect the Native Village of Alatna (Village).
MH 2	**Cross-reference** mitigation goals and actions with other Tribal planning mechanisms and projects.
MH 3	Develop **construction** activities that reduce possibility of losses from all natural hazards that affect the Village.
Natural Hazards	
EQ 4	Reduce structural vulnerability to earthquake (EQ) damage.
FL 5	Reduce flood and erosion (FL) damage and loss possibility.
GF 6	Reduce ground failure (GF) damage and loss possibility.
SW 7	Reduce structural vulnerability to severe weather (SW) damage.
WF 8	Reduce structural vulnerability to tundra/wildland fire (WF) damage.

7.4 IDENTIFYING MITIGATION ACTIONS

The Tribal governance requirements for the identification and analysis of mitigation actions, as stipulated in DMA 2000 and its implementing regulations are described below.

DMA 2000 Requirements
Identification and Analysis of Mitigation Actions §201.7(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.
ELEMENT C. Mitigation Actions
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?
Source: FEMA, March 2015.

FEMA Hazard Mitigation Assistance Guidance and Addendum (HMA) states the importance of considering, evaluating, and implementing the most effective projects, activities, and potential alternatives:

> *"Reviewing and incorporating information from the State, tribal, or local mitigation plan can help an Applicant or subapplicant facilitate the development of mitigation project alternatives. Linking the existing mitigation plan to project scoping can support the Applicant and subapplicant in selecting the most appropriate mitigation activity that best addresses the identified hazard(s), while taking into account community priorities, climate change, and resiliency. In particular, the mitigation strategy section of the plan identifies a range of specific mitigation activities that can reduce vulnerability and includes information on the process that was used to identify, prioritize, and implement the range of mitigation actions considered…*
>
> *It is important to reference the mitigation plan as potential project alternatives may have been considered during the planning process. If the project alternatives were not considered during the mitigation planning process, they should be considered in the next mitigation plan update"* (FEMA 2015b)

DMA 2000 Requirements
Monitoring Progress of Mitigation Activities §201.7(c)(4)(ii): [The plan maintenance process shall include a] system for monitoring implementation of mitigation measures and project closeouts. §201.7(c)(4)(v); *[The plan maintenance process shall include a] system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.*
1. REGULATION CHECKLIST
ELEMENTS. Plan Maintenance
E. Does the new or updated plan describe how mitigation measures and project closeouts will be monitored? F. Does the new or updated plan identify a system for reviewing progress on achieving goals and implementing activities and projects in the Mitigation Strategy? G. Does the updated plan describe any modifications, if any, to the system identified in the previously approved plan to track the initiation, status, and completion of mitigation activities? H. Does the updated plan discuss whether mitigation actions were implemented as planned?
Source: FEMA, March 2015.

The planning team determined that Mitigation Strategy, Section 7.4, Table 7-6, is the most appropriate location to support DMA 2000 initiatives found in 44CFR §201.7(c)(4), Monitoring Progress of Mitigation Actions data. Table 7-5 provides the status of each legacy HMP project of initiative's current status.

In February 2017, the planning team assessed 12 legacy 2009 HMP's existing mitigation actions status and provided an explanation as to any changes that may have occurred. The planning team defined legacy HMP mitigation project's status as: "Completed," "Deleted," "Deferred," "Ongoing," and "Re-Defined" to better meet participant's needs.

The planning team selected 30 natural hazard mitigation actions for potential Mitigation Action Plan (MAP) implementation during the five-year life cycle of this HMP. The planning team placed particular emphasis on projects and programs that reduce the effects of hazards on both new and existing buildings and infrastructure as well as facilities located in potential flood zones.

The table breaks out the project criteria as selected, considered, completed, deferred, and ongoing. The planning team considered projects from a comprehensive list for each hazard type. They identified numerous "ongoing" mitigation actions currently in-process. These projects are listed in Table 7-6 below.

Table 7-6 Potential Mitigation Actions

(Ongoing and newly selected items will be carried forward into the MAP implementation)

Goals		Status		Actions
Goal No.	**Description**	**New** *Considered Selected* **Brought Forward** *Complete Deferred Deleted Ongoing*	**Explain Status**	**Description**
Multi- Hazards (MH)				
MH 1	Provide **outreach** activities to educate and promote recognizing and mitigating all natural and manmade hazards that affect the Native Village of Alatna.	Brought forward Ongoing	Recently held first occurrence	***Brought Forward - Formerly 1A.*** *Hold an annual or biennial "hazard meeting" to provide information to residents about recognition and mitigation of all natural hazards that affect the Village. Presented in the form of a brochure or written media so that residents can take information with them after the meeting. Example Topics: Safe fire practices, to help prevent wildland fires, etc.*
		Brought forward Ongoing	Combined similar projects to better meet village needs	***Brought Forward - Formerly 1B, 1C, 5A*** Identify and pursue funding opportunities to implement mitigation actions.
				Identify and pursue funding opportunities to implement mitigation actions.

Table 7-6 Potential Mitigation Actions

(Ongoing and newly selected items will be carried forward into the MAP implementation)

Goals		Status		Actions
Goal No.	**Description**	**New** *Considered Selected* **Brought Forward** *Complete Deferred Deleted Ongoing*	**Explain Status**	**Description**
		Selected	New Implemented after 2010 HMP adoption	Establish a formal role for the jurisdictional Hazard Mitigation Planning Committees to develop a sustainable process to implement, monitor, and evaluate community wide mitigation actions.
		Ongoing	Combined similar projects for simplicity	***Brought Forward - Formerly 4B*** Acquire, develop, produce, and distribute information materials, such as FEMA pamphlets concerning earthquake, flood, ground failure, and wildland fire mitigation, preparedness, and safety procedures for all natural hazards.
		Deleted	Deferred, Awaiting funding opportunity	***Brought Forward - Formerly*** *4B* *Develop outreach program to educate residents concerning benefits of increased seismic resistance and modern building code compliance during rehabilitation or major repairs for residences or businesses.*
		Ongoing	Seeking funding	***Brought Forward - Formerly 6B*** Develop an outreach program to educate public concerning **NFIP** participation benefits, floodplain development, land use regulation, and NFIP flood insurance availability to facilitate continued compliance with the **NFIP**.
		Ongoing	Active. Recently got a CB radio station.	***Brought Forward - Formerly 8B*** Develop and maintain severe winter storm public outreach program defining mitigation activity benefits through educational outreach aimed at households and businesses while targeting special needs populations.
		Ongoing	Active. Working with TCC to develop SCERP	***Brought Forward – Formerly 9B*** Develop outreach program to educate the public concerning warnings and evacuation procedure
		Ongoing	Need additional generators	Seek funding to purchase additional back-up power generators for critical facilities.

Table 7-6 Potential Mitigation Actions

(Ongoing and newly selected items will be carried forward into the MAP implementation)

Goals		Status		Actions
Goal No.	**Description**	**New** *Considered Selected* **Brought Forward** *Complete Deferred Deleted Ongoing*	**Explain Status**	**Description**
		Ongoing	New since 2010 HMP adoption, Ongoing Working with TCC to develop SCERP	Provide wildland fire information in an easily distributed format for all residents.
		Selected	New	Acquire emergency communication equipment, including a satellite phone and hand-held radios.
MH 2	Cross reference mitigation goals and actions with other Tribal planning mechanisms and projects.	Ongoing	Ongoing effort	***Brought Forward - Formerly 2A,*** Incorporate and integrate mitigation planning provisions into all community planning processes such as comprehensive, capital improvement, and land use plans, etc. to demonstrate multi-benefit considerations and facilitate using multiple funding source consideration.
		Selected	New	Integrate the Mitigation Plan findings for enhanced emergency planning.
MH 3	Develop **construction** activities that reduce possibility of losses from all natural hazards that affect the Village.	*Deleted*	*Not necessary at this time*	***Brought Forward - Formerly 3A, 6C*** *Acquire (buy-out), demolish, or relocate structures from hazard prone area. Property deeds shall be restricted for open space uses in perpetuity to keep people from rebuilding in hazard areas.*
Natural Hazards				
EQ 4	Actions shared with other hazards in MH series			
FL 5	Reduce flood (FL) and erosive scour damage and loss possibility.	Ongoing	Reworded to better meet Village needs Awaiting funding opportunity	***Brought Forward - Formerly 5D*** Determine best erosion mitigation measures for the Cemetery. For instance, consult about proper vegetation. ***Brought Forward - Formerly 5D*** Determine and implement most cost beneficial and feasible mitigation actions for locations with repetitive flooding and significant damages or road closures, embankment protection, such as vegetation, riprap, gabion baskets, sheet piling, and walls to reduce or eliminate erosion.

Table 7-6 Potential Mitigation Actions

(Ongoing and newly selected items will be carried forward into the MAP implementation)

Goals		Status		Actions
Goal No.	**Description**	**New** *Considered Selected* **Brought Forward** *Complete Deferred Deleted Ongoing*	**Explain Status**	**Description**
		Selected	New	Harden utility headers located along river embankments to mitigate potential flood, debris, and erosion damages.
GF 6	Reduce ground failure (GF) damage and loss possibility.	Ongoing	Seeking funding opportunity	***Brought Forward - Formerly 7A,*** Map existing permafrost areas to assist in critical facility relocation siting.
		Selected	New	Promote permafrost sensitive construction practices in permafrost areas.
		Selected	New	Put homes on piles to protect against permafrost thaw.
SW 7	Reduce structural vulnerability to severe weather (SW) damage.	*Complete*	*Delete List complete*	*Develop critical facility list needing emergency back-up power systems, prioritize, seek funding, and implement mitigation actions.*
		Selected	New since 2010 HMP adoption, Ongoing	Develop and implement tree clearing mitigation programs to keep trees from threatening lives, property, and public infrastructure from severe weather events.
WF 8	Reduce structural vulnerability to tundra/wildland fire (WF) damage.	Ongoing	Active. Working with TCC to develop SCERP	***Brought Forward - Formerly 9A*** Identify evacuation routes away from high hazard areas.
		Ongoing	New since 2010 HMP adoption, Ongoing Working with TCC to develop SCERP	Develop Community Wildland Fire Protection Plan.
		Ongoing	New since 2010 HMP adoption, Ongoing Working with TCC to develop SCERP	Provide wildland fire information in an easily distributed format for all residents.
		Complete Deleted	*Ordinances adopted*	*Develop, adopt, and enforce burn ordinances that require burn permits, restrict campfires, and*

Table 7-6 Potential Mitigation Actions

(Ongoing and newly selected items will be carried forward into the MAP implementation)

Goals		Status		Actions
Goal No.	Description	New *Considered Selected* Brought Forward *Complete Deferred Deleted Ongoing*	Explain Status	Description
				controls outdoor burning.
		Ongoing	New since 2010 HMP adoption, Ongoing	Conduct outreach program(s) to educate and encourage fire-safe construction practices for existing and new construction in high risk areas.
		Ongoing	Ongoing. Had one controlled burn for fuel reduction a few years ago but need to do again.	Identify, develop, implement, and enforce mitigation actions such as fuel breaks and reduction zones for potential wildland fire hazard areas.

7.5 EVALUATING AND PRIORITIZING MITIGATION ACTIONS

This section describes the Tribal governance requirements for evaluating and implementing mitigation actions, as stipulated in DMA 2000 and its implementing regulations.

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions
Implementation of Mitigation Actions §201.7(c)(3)(iii): [The hazard mitigation strategy shall include an] action plan, describing how the action identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.
1. REGULATION CHECKLIST
ELEMENTS. MITIGATION STRATEGY
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 §201.7(c)(3)(iv)); (Requirement §201.7(c)(3)(iii))
Source: FEMA, March 2015.

The planning team evaluated and prioritized each of the mitigation actions in February 2017 to determine which actions would be included in the Mitigation Action Plan. The Mitigation Action Plan represents mitigation projects and programs to be implemented through the cooperation of multiple entities in the Village. To complete this task, the planning team first prioritized the hazards that were regarded as the most significant within the community (earthquake, erosion, flood, ground failure, severe weather, and wildland fire).

The planning team reviewed the simplified social, technical, administrative, political, legal, economic, and environmental (STAPLEE) evaluation criteria (Table 7-7) and the Benefit-Cost Analysis Fact Sheet (Appendix E) to consider the opportunities and constraints of implementing each particular mitigation action. For each action considered for implementation, a qualitative statement is provided regarding the benefits and costs and, where available, the technical feasibility. A detailed cost-benefit analysis is anticipated as part of the application process for those projects the Village chooses to implement.

Table 7-7 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 personnel and administrative capabilities necessary to implement the action or whether outside help will be necessary.	Staffing Funding allocation Maintenance/operations
Political	What the community and its members feel about issues 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
Economic	If the action can be funded with current or future internal and external sources, if the costs seem reasonable for the size of the project, and 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

In February 2017, the hazard mitigation planning team prioritized natural hazard mitigation actions that were selected to carry forward into the Mitigation Action Plan (MAP).

The hazard mitigation planning team considered each hazard's history, extent, and recurrence probability to determine each potential action's priority. A rating system based on high, medium, or low was used.

- High priorities are associated with actions for hazards that impact the community on an annual or near annual basis and generate impacts to critical facilities and/or people.

- Medium priorities are associated with actions for hazards that impact the community less frequently, and do not typically generate impacts to critical facilities and/or people.
- Low priorities are associated with actions for hazards that rarely impact the community and have rarely generated documented impacts to critical facilities and/or people.

Prioritizing the mitigation actions within the MAP matrix (Table 7-9) was completed to provide the Village with an implementation approach.

7.6 MITIGATION ACTION PLAN

DMA 2000 Requirements
Tribal Funding Sources §201.7(c)(3)(v): [The mitigation strategy shall include an] identification of current and potential sources of Federal, tribal, or private funding to implement mitigation activities.
1. REGULATION CHECKLIST
ELEMENTS. FUNDING SOURCES
D. Does the new or updated plan identify current sources of Federal, tribal, or private funding to implement mitigation activities?
E. Does the new or updated plan identify potential sources of Federal, tribal, or private funding to implement mitigation activities?
F. Does the updated plan identify the sources of mitigation funding used to implement activities in the mitigation strategy since approval of the previous plan?
Source: FEMA, March 2015.

Table 7-7 delineates the acronyms used in the Mitigation Action Plan (Table 7-8). See Appendix A for summarized agency funding source descriptions, and internet links for more resources.

Table 7-8 Potential Funding Source Acronym List
(See complete funding resource description in Appendix A)

Native Village of Alatna's Tribal Council (Tribal Office, Tribe)

US Department of Homeland Security (DHS)
Emergency Alert System (EAS)

Federal Management Agency (FEMA) /
Hazard Mitigation Assistance Grant Programs (HMA)
Emergency Management Program Grant (EMPG)
National Flood Insurance Program (NFIP)

US Department of Commerce (DOC)
Remote Community Alert Systems (RCASP)

USDA, Natural Resources Conservation Service (NRCS)
Emergency Watershed Protection Program (EWP)
Watershed Planning (WSP)

US Department of Housing and Urban Development (HUD)

Assistance to Native Americans (ANA)
Native American Housing Assistance and Self Determination Act (NAFSMA)

Alaska Department of Military and Veterans Affairs (DMVA), Division of Homeland Security and Emergency Management (DHS&EM)
Mitigation Section (for PDM & HMGP projects and plan development)

Alaska Department of Community, Commerce, and Economic Development (DCCED)

Division of Community and Regional Affairs (DCRA) /
Community Development Block Grant (CDBG)

Alaska Division of Forestry (DOF) /
Volunteer Fire Assistance and Rural Fire Assistance Grant (VFA/RFA)
Assistance to Firefighters Grant (AFG)
Fire Prevention and Safety (FP&S)
Staffing for Adequate Fire and Emergency Response Grants (SAFER)
Emergency Food and Shelter (EF&S)

Alaska Division of Mining, Land, and Water /
Village Safe Water Program (VSW)
Alaska Native Tribal Health Consortium (ANTHC)

Alaska Department of Transportation and Public Facilities (DOT/PF)

Denali Commission (Denali)
Energy Program (EP)
Solid Waste Program (SWP)

Lindbergh Foundation Grant Programs (LFGP)

Rasmussen Foundation Grants (RFG)

The Alatna Mitigation Action Plan, Table 7-9, depicts how each mitigation action will be implemented and administered by the planning team. The MAP delineates each selected mitigation action, its priorities, the responsible entity, the anticipated implementation timeline, and provides a brief explanation as to how the overall benefit/costs and technical feasibility were taken into consideration.

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.1	***Brought Forward - Formerly 1A.*** Hold an annual or biennial "hazard meeting" to educate residents about recognizing and mitigating natural hazards that affect the Village. Presentations can be either brochure or other written media so residents can take information with them after the meeting. Example Topics: **NFIP** program participation benefits, safe fire practices, and erosion reduction, etc.	Medium	Alatna Tribal Council	Tribe, FEMA HMA, HMGP, FEMA Assistance to Firefighters Grant (AFG) Program's Fire Prevention and Safety Grant (FP&S) Program, and Staffing for Adequate Fire and Emergency Response (SAFER) Program, ANA Grant Programs, Emergency Food and Shelter Program (EF&S)	Ongoing	B/C: Sustained mitigation outreach program has minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters. TF: This low cost activity can be combined with recurring community meetings where hazard-specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.
MH 1.2	***Brought Forward - Formerly 1B, 1C, 5A*** Identify and pursue funding opportunities to implement mitigation actions.	High	Alatna Tribal Council	Alatna Tribal Council, Denali Commission, DCCED/CDBG	Ongoing	B/C: This ongoing activity is essential for the Village as there are limited funds available to accomplish effective mitigation actions. TF: This activity is ongoing demonstrating its feasibility.
MH 1.3	Establish a formal role for the jurisdictional Hazard Mitigation Planning Committees to develop a sustainable process to implement, monitor, and evaluate community wide mitigation actions.	Medium	Alatna Tribal Council	City, Tribe	1-3 years	B/C: The existing team has gained experienced throughout this process which can provide invaluable insight for ensuring a sustained effort toward mitigating natural hazard damages. TF: This is feasible to accomplish as no cost is associated with the action and only relies on member availability and willingness to serve their community.

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.4	***Brought Forward - Formerly 4B*** Acquire, develop, produce, and distribute information materials, such as FEMA pamphlets concerning earthquake, flood, ground failure, and wildland fire mitigation, preparedness, and safety procedures for all natural hazards.	Medium	Alatna Tribal Council	Tribe, Federal Emergency Management Agency (FEMA) HMA programs, AFG, FP&S, and SAFER	1-3 years	B/C: Sustained mitigation outreach programs have minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters. TF: This low cost activity can be combined with recurring community meetings where hazard specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.
MH 1.5	***Brought Forward - Formerly 6B*** Develop an outreach program to educate public concerning **NFIP** participation benefits, floodplain development, land use regulation, and NFIP flood insurance availability to facilitate continued compliance with the NFIP.	Low	Alatna Tribal Council	Alatna Tribal Council, FEMA HMA, HMGP, Denali Commission	1-3 years	B/C: Sustained mitigation outreach program has minimal cost and will help build and support area-wide capacity. Flood hazard mitigation is among FEMA's highest national priorities. FEMA provides free publications for community education purposes. TF: Low to no cost makes this outreach activity very feasible.

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.6	***Brought Forward - Formerly 8B*** Develop and maintain severe winter storm public outreach program defining mitigation activity benefits through educational outreach aimed at households and businesses while targeting special needs populations.	Medium	Alatna Tribal Council	Alatna Tribal Council, Denali Commission, DCCED/CDBG	1-3 years	B/C: Sustained mitigation outreach program has minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters. TF: This low cost activity can be combined with recurring community meetings where hazard specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.
MH 1.7	***Brought Forward – Formerly 9B*** Develop outreach program to educate the public concerning warnings and evacuation procedures	Medium	Alatna Tribal Council	Alatna Tribal Council, HMA, DOF: VFAG, RAGP	1-3 years	B/C: Sustained mitigation outreach program has minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters. TF: This low cost activity can be combined with recurring community meetings where hazard specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.8	Provide wildland fire information in an easily distributed format for all residents.	Medium	Alatna Tribal Council	Working with Tanana Chiefs Conference (TCC) to develop Small Community Emergency Response Plan (SCERP)	Ongoing	B/C: Sustained mitigation outreach program has minimal cost and will help build and support area-wide capacity. This type activity enables the public to prepare for, respond to, and recover from disasters. TF: This low cost activity can be combined with recurring community meetings where hazard specific information can be presented in small increments. This activity is ongoing demonstrating its feasibility.
MH 1.9	Acquire emergency communication equipment, including a satellite phone and hand-held radios.	Medium	City Mayor's Office or Tribal Council Office as applicable	City, Tribe, Lindbergh Grants Program, HMA, FP&S, SAFER, ANA, DHS, HSGP, EMPG, EOC	Ongoing	B/C: Sustained emergency warning, communication, and response activity capabilities enable communities to warn and protect their hazard threatened populations. This project will help build and support community capacity enabling the public to prepare for, respond to, and recover from disasters. TF: This project is technically feasible using specialty vendors and Tribal staff

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.10	Purchase and install generators with main power distribution disconnect switches for identified and prioritized critical facilities susceptible to short-term power disruption. (i.e., first responder and medical facilities, schools, correctional facilities, and water and sewage treatment plants, etc.)	High	Alatna Tribal Council	City, Tribe, Lindbergh Grants Program, HMA, FP&S, SAFER, ANA, DHS, HSGP, CCP, EMPG, EOC	1-5 years	B/C: Emergency power generation is a minor cost to ensure utility availability for use after a hazard strikes. TF: Installing emergency generators is technically feasible for this community as they already have staff to maintain existing community power generation facilities. This project typically needs to be associated with essential facility upgrades for FEMA funding
MH 2.1	***Brought Forward - Formerly 2A,*** Cross reference, incorporate, and integrate mitigation planning provisions into all community planning processes such as comprehensive, capital improvement, and land use plans, etc. to demonstrate multi-benefit considerations and facilitate using multiple funding source consideration.	Medium	Alatna Tribal Council	Alatna Tribal Council, Denali Commission, DCCED/CDBG	1-3 years	B/C: Coordinated planning ensures effective damage abatement and ensures proper attention is assigned to reduce losses and damage to structures and Village residents. TF: This is feasible to accomplish as no cost is associated with the action and only relies on member availability and willingness to serve their community.

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 2.2	Integrate the Mitigation Plan findings for enhanced emergency planning.	Medium	Alatna Tribal Council	City, Tribe, FG, FP&S, SAFER	3-5 years	B/C: Sustained emergency response planning, notification, and mitigation outreach programs have minimal cost and will help build and support community capacity enabling the public to prepare for, respond to, and recover from disasters. TF: This project is technically feasible using existing City staff
FL 5.1	***Brought Forward - Formerly 5D*** Determine and implement most cost beneficial and feasible mitigation actions for locations with repetitive flooding and significant damages or road closures, embankment protection, such as vegetation, riprap, gabion baskets, sheet piling, and walls to reduce or eliminate erosion.	High	Alatna Tribal Council	Alatna Tribal Council, HMA, HMGP, AFG, FP&S, SAFER, ANA,, EFSP	2-5 years	B/C: Improving slope stability will greatly reduce potential infrastructure losses. Project costs would outweigh replacement costs of lost facilities. TF: Technically feasible as the community has the skill to implement this action using native materials and equipment.
FL 5.2	Harden utility headers located along river embankments to mitigate potential flood, debris, and erosion damages.	High	Alatna Tribal Council	City, Tribe, HMA, ANA, DOT/PF, Denali Commission, NRCS, USACE, USDA/EWP, USDA/ECP, DCRA/ ACCIMP	3-5 years	B/C: Hardening infrastructure to reduce erosion and flood damages reduces potential future damages and replacement costs. TF: The Village can hire and manage vendors for this project.

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
GF 6.1	***Brought Forward - Formerly 7A,*** Map existing permafrost areas to assist in critical facility relocation siting.	Low	Alatna Tribal Council	Alatna Tribal Council, DCCED/CDBG, Denali Commission	1-5 years	B/C: Pre-identification ensures that structures are not placed inappropriately and are built with the hazard as a focus. TF: This is feasible using existing resources as the community has awareness of permafrost areas due to prior project reports and studies.
6.2	Promote permafrost sensitive construction practices in permafrost areas.	Medium	Alatna Tribal Council	City, Tribe, HMA, ANA	2-4 years	B/C: This outreach project would decrease damage to facilities if they were sited and used the most appropriate construction practices. TF: Technically feasible as the community is currently working with UAF and other entities to determine most viable permafrost construction practices.
6.3	Elevate homes to protect against permafrost thaw.	High	Alatna Tribal Council	City, Tribe, HMA, Natural Resources Conservation Service (NRCS), ANA, USACE, US Department of Agriculture (USDA), Lindbergh Grants Program	1-5 years	B/C: This project would enhance structures longevity by enabling permafrost to remain frozen reducing or eliminating future damage. TF: This project is feasible using existing staff skills, equipment, and materials. Acquiring contractor expertise may be required for large facilities.

Table 7-9 Native Village of Alatna's Mitigation Action Plan (MAP)

(Blue Initiatives were brought forward from existing THMP)

Goal / Action ID	Description	Priority (High, Medium, Low)	Responsible Department	Potential Funding Source(s)	Timeframe (1-3 Years 2-4 Years 3-5 Years)	Benefit-Costs (B/C) Technical Feasibility (TF)
SW 7.1	Develop and implement tree clearing mitigation programs to keep trees from threatening lives, property, and public infrastructure from severe weather events.	Low	Alatna Tribal Council	City, Tribe, DOF: Volunteer Fire Assistance Grant Program (VFAGP), Rural Assistance Grant Program (RAGP)	Ongoing	B/C: Implementing this mitigation activity will potentially reduce ancillary damage from severe winter storms caused by heavy snow loads, icy rain, and wind. TF: This type activity is technically feasible within the community typically using existing labor, equipment, and materials.
WF 8.1	Identify evacuation routes away from high hazard areas.	Medium	Alatna Tribal Council	Alatna Tribal Council, DOF: VFAG, RAGP	1-2 years	B/C: This project will ensure the community looks closely at their wildland fire risk to ensure they can safely evacuate their residents and visitors preserving life. TF: This is technically feasible using existing city and tribal resources.

See acronym and abbreviations list for complete titles

7.7 MONITORING MITIGATION ACTIONS PROGRESS

DMA 2000 requirements and Tribal governance regulations for monitoring mitigation action progress include:

DMA 2000 Requirements
Monitoring Progress of Mitigation Activities §201.7(c)(4)(ii): [The plan maintenance process shall include a] system for monitoring implementation of mitigation measures and project closeouts. §201.7(c)(4)(v); *[The plan maintenance process shall include a] system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.*
REGULATION CHECKLIST
ELEMENT
A. Does the new or updated plan describe how mitigation measures and project closeouts will be monitored? B. Does the new or updated plan identify a system for reviewing progress on achieving goals and implementing activities and projects in the Mitigation Strategy? C. Does the updated plan describe any modifications, if any, to the system identified in the previously approved plan to track the initiation, status, and completion of mitigation activities? D. Does the updated plan discuss whether mitigation actions were implemented as planned?
Source: FEMA, March 2015.

7.7.1 Reviewing THMP Successes

The Village will prepare an Annual Review Progress Report (Appendix F) to list their MAP successes or roadblocks for achieving the THMP's mitigation goals and implementing the Mitigation Action Plan's activities and projects during the annual review process.

During each annual review, each agency or authority administering a mitigation project will submit a Progress Report (Appendix F) to the planning team. The report will include the current status of the mitigation project, including any project changes, a list of identified implementation problems (with an appropriate strategies to overcome them), and a statement of whether or not the project has helped achieve the appropriate goals identified in the plan.

7.8 IMPLEMENTING MITIGATION STRATEGY INTO EXISTING PLANNING MECHANISMS

DMA 2000 requirements and Tribal governance regulations for implementing the THMP into existing planning mechanisms include:

DMA 2000 Requirements
Incorporation into Existing Planning Mechanisms §201.7(c)(4)(iii): [The plan maintenance process shall include a] process by which the Indian Tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate..
REGULATION CHECKLIST
ELEMENT
A. Does the new or updated plan identify other tribal planning mechanisms available for incorporating the requirements of the mitigation plan? B. Does the new or updated plan include a process by which the Indian Tribal government will incorporate the

DMA 2000 Requirements
mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?
Source: FEMA, March 2015.

After adoption of the HMP, each planning team member will ensure that the HMP, in particular each Mitigation Action Project, is incorporated into existing planning mechanisms and tribal initiatives. Each member of the planning team will achieve this incorporation by undertaking the following activities:

- Review the community-specific regulatory tools to determine where to integrate the mitigation philosophy and implementable initiatives. These regulatory tools are identified in Section 7.2 capability assessment.
- Work with pertinent community departments to increase awareness for implementing HMP philosophies and identified initiatives. Provide assistance with integrating the mitigation strategy (including the Mitigation Action Plan) into relevant planning mechanisms (i.e. Comprehensive Plan, Capital Improvement Project List, Transportation Improvement Plan, etc.).
- Implementing this philosophy and activities may require updating or amending specific planning mechanisms.

This page intentionally left blank

Section Eight provides a comprehensive reference list used to develop the HMP.

ACIA 2013. University of Alaska Fairbanks (UAF), Arctic Climate Impact Assessment (ACIA). Available: http://www.amap.no/documents/doc/arctic-arctic-climate-impact-assessment/796. (February 2017).

Alatna. 1995. Alatna, The Comprehensive Plan, A Constitutional Mandate for Long Term Survival, August 1995.

Alatna. 2010. The Native Village of Alatna Hazard Mitigation Plan. Prepared by The Native Village of Alatna Mitigation planning team. January 2010.

AICC (Alaska Interagency Coordination Center) 2017. Available: http://fire.ak.blm.gov/aicc.php. (February 2017).

BKP 1988. Baker, V.R.; Kochel, R.C.; Patton, P.C. *Flood Geomorphology,* Published by Wiley-Interscience, April 1988. Available: http://books.google.com/books?id=snLfvo2w-ngC&pg=PA176&lpg=PA176&dq=geomorphology+debris+deposition+during+floods&source=bl&ots=cixFlUnKLb&sig=3gLzWfoyciL3vcYfCOIUcky-ErM&hl=en&ei=E-JxSs-8CYzatAOL2tTMDA&sa=X&oi=book_result&ct=result&resnum=5. (March 2017).

Census (United States Census Bureau) 2010. American Fact Finder. http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml. (February 2017).

DCRA (Alaska Department of Commerce, Community an Economic Development, Division of Community and Regional Affairs) 2009. Planning and Land Management: Community Profile Maps. Available https://www.commerce.alaska.gov/web/dcra/PlanningLandManagement/CommunityProfileMaps.aspx (January 2017).

DCRA 2016. Community Information. Available https://www.commerce.alaska.gov/dcra/DCRAExternal/community. (November 2016).

DGGS (Division of Geological and Geophysical Survey) 2009. Available: http://www.dggs.dnr.state.ak.us/index.php?menu_link=publications&link=neotectonic_map&sub2_link=statewide. (January 2017).

DHS&EM (Division of Homeland Security and Emergency Management) 2009. DHS&EM *Disaster Cost Index 2006,* Accessed 2009.

DHS&EM 2013. *Alaska State Hazard Mitigation Plan, 2013.* Available: https://ready.alaska.gov/Plans/mitigationplan. (January 2017).

DHS&EM 2016a. *Disaster Cost Index, 2016*. (February 2016).

DHS&EM 2016b. *Planned and Funded Projects,* 2014. (October 2016.)

DHS&EM 2016c. *Critical Facilities Inventory,* 2014. (October 2016).

DOF (Alaska Division of Forestry). 2016. Role of Fire in the Alaskan Environment. Available: http://forestry.alaska.gov/fire/fireplans.htm. (February 2017).

FEMA (Federal Emergency Management Agency) 2002. *Mitigation Planning How-To Guides, 2002*. U.S. Department of Homeland Security, FEMA 386-1. Available: http://www.fema.gov/hazard-mitigation-planning-resources#1. (November 2016).

FEMA 2015a. *Code of Federal Regulations (CFR), Title 44 – Emergency Management and Assistance*. Available: http://www.ecfr.gov/cgi-bin/text-idx?SID=3e6e6ed90d4fe2483bb7b781f2e31362&node=pt44.1.201&rgn=div5. (November 2016).

FEMA 2015b. *Hazard Mitigation Assistance Guidance and Addendum, February 27, 2015*. Available: https://www.fema.gov/media-library/assets/documents/103279. (November 2016).

GSA, 1998. Avé Lallemant HG, Gottschalk RR, Sisson VB, Oldow JS. Structural analysis of the Kobuk fault zone, north-central Alaska. Special Paper 324: Architecture of the Central Brooks Range Fold and Thrust Belt, Arctic Alaska: Vol. 324, No. 0 pp. 261–268

Haeussler, P. USGS (United States Geologic Survey). 2009. E-mail correspondence concerning Shake Maps.

Jorgenson, T., Yoshikawa, K., Kanevskiy, M., Shur, Y., Romanovsky, V., Marchenko, S., Grosse, G., Brown, J., and Jones, B. 2008. Permafrost characteristics of Alaska – A new permafrost map of Alaska. In: Kane, D.L. and Hinkel, K.M. (eds.), Institute of Northern Engineering, University of Alaska Fairbanks, *Extended Abstracts of the Ninth International Conference on Permafrost*, December update to July NICOP map, Fairbanks, Alaska, 2008, pp. 121-122. Available: http://permafrost.gi.alaska.edu/sites/default/files/AlaskaPermafrostMap_Front_Dec2008_Jorgenson_etal_2008.pdf. (February 2017).

MMI 2017. *Modified Mercalli Intensity Scale.* Michigan Technical University. Available: http://www.geo.mtu.edu/UPSeis/Mercalli.html. (January 2017).

NOAA (National Oceanic and Atmospheric Administration) 2002. National Climate Data Center, Storm Events Database. Available http://www.ncdc.noaa.gov/stormevents/. (February 2017).

NOAA. 2017a. *National Weather Service Definitions.* Available: http://www.weather.gov/glossary/index.php?letter=F. (February 2017).

NOAA. 2017b. Storm Events Database. Available: https://www.ncdc.noaa.gov/stormevents/. (March 2017).

NRCS (Natural Resources Conservation Service) 2002. Technical Resources *PRISM Data*. Available: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ak/technical/dma/?cid=nrcs142p2_035894. (March 2017).

Plafker, G., L.M Gilpin, J.C. Lahr 1993. Neotectonic Map of Alaska. Geological Society of America.

UAF/SNAP (University of Alaska Fairbanks/Scenarios Network for Alaska and Arctic Planning) 2017. *Historic, current, and predicted weather data*. Available: http://www.snap.uaf.edu/charts.php. (February 2017).

USACE (US Army Corps of Engineers) 2008. Alaska Erosion Baseline Assessment: Erosion Information Paper – Alatna, Alaska, Current as of January 5, 2008. Available: http://www.poa.usace.army.mil/Portals/34/docs/civilworks/BEA/Alatna_Final%20Report.pdf. (January 2017).

USACE, 2009. Alaska Baseline Erosion Assessment, Study Findings and Technical Report, March 2009, Available: http://www.dissertation.xlibx.info/d1-technical/2031918-6-us-army-corps-engineers-study-findings-and-technical-report-alas.php. (January 2017)

USACE 2011. Erosion Information Paper –Alatna, Alaska, Current as of October 2011. Available: http://206.174.16.211/floodplain_data/?enter_PublicList=Enter+Site. (January 2017).

USGS (US Geologic Survey) 2009. National Earthquake Information Center, 2009 Probability Mapping: Available: http://geohazards.usgs.gov/eqprob/2009/. (January 2017).

USGS 2017. Earthquake Archive Search & URL Builder. Available: http://earthquake.usgs.gov/earthquakes/search/. (January 2017).

WRCC (Western Regional Climate Center) 2012. Period of Record General Climate Summary – Precipitation. Allakaket, Alaska. Available: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ak0230. (February 2017).

WRCC 2017. Available: http://www.wrcc.dri.edu/narratives/ALASKA.htm. (March 2017).

This page intentionally left blank

Appendix A
Funding Resources

This page intentionally left blank

Federal Funding 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 Unified HMA Programs and the HMGP. 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. Five key resource documents are available from FEMA Publication Warehouse (1-800-480-2520) and are briefly described here:
  - How-to Guides. FEMA has developed a series of how-to guides to assist states, communities, and tribes in enhancing their hazard mitigation planning capabilities. The first four guides describe the four major phases of hazard mitigation planning. The last five how-to guides address special topics that arise in hazard mitigation planning such as conducting cost-benefit analysis and preparing multi-jurisdictional plans. The use of worksheets, checklists, and tables make these guides a practical source of guidance to address all stages of the hazard mitigation planning process. They also include special tips on meeting DMA 2000 requirements (http://www.fema.gov/hazard-mitigation-planning-resources#1).
  - Local Mitigation Planning Handbook, March 2013. This handbook explains the basic concepts of hazard mitigation and provides guidance to local governments on developing or updating hazard mitigation plans to meet the requirements of Title 44 Code of Federal Regulations (CFR) §201.6 for FEMA approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs. (http://www.fema.gov/library/viewRecord.do?id=7209)
  - A Guide to Recovery Programs FEMA 229(4), September 2005. The programs described in this guide may all be of assistance during disaster incident recovery. Some are available only after a Presidential declaration of disaster, but others are available without a declaration. Please see the individual program descriptions for details. (http://www.fema.gov/txt/rebuild/ltrc/recoveryprograms229.txt)
  - The Emergency Management Guide for Business and Industry. FEMA 141, October 1993. This guide provides a step-by-step approach to emergency management planning, response, and recovery. It also details a planning process that businesses can follow to better prepare for a wide range of hazards and emergency events. This effort can enhance a business's ability to recover from financial losses, loss of market share, damages to equipment, and product or business interruptions. This guide could be of great assistance to a community's industries and businesses located in hazard prone areas. (https://www.fema.gov/media-library/assets/documents/3412)
  - The 2015 Hazard Mitigation Assistance (HMA) Guidance and Addendum, February 27 and March 3, 2015 respectively. Part I of the Hazard Mitigation Assistance (HMA) Guidance introduces the three HMA programs, identifies roles and responsibilities, and outlines the organization of the document. This guidance applies to Hazard Mitigation

Grant Program (HMGP) disasters declared on or after the date of publication unless indicated otherwise. This guidance is also applicable to the Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) Programs; the application cycles are announced via http://www.grants.gov/. The guidance in this document is subject to change based on new laws or regulations enacted after publication.

- FEMA, http://www.fema.gov - includes links to information, resources, and grants that communities can use in planning and implementing community resilience and sustainability measures.
- FEMA also administers emergency management grants and various firefighter grant programs such as
  - Emergency Management Performance Grant (EMPG) (https://www.fema.gov/emergency-management-performance-grant-program). This is a pass through grant. The amount is determined by the State. The grant is intended to support critical assistance to sustain and enhance State and local emergency management capabilities at the State and local levels for all-hazard mitigation, preparedness, response, and recovery including coordination of inter-governmental (Federal, State, regional, local, and tribal) resources, joint operations, and mutual aid compacts state-to-state and nationwide. Sub-recipients must be compliant with National Incident Management System (NIMS) implementation as a condition for receiving funds (https://www.fema.gov/national-incident-management-system). Requires 50% match.
  - National Earthquake Hazards Reduction Program (NEHRP). The NEHRP seeks to mitigate earthquake losses in the United States through both basic and directed research and implementation activities in the fields of earthquake science and engineering. (https://www.fema.gov/national-earthquake-hazards-reduction-program)

    The NEHRP agencies pursue the goals of the program through collaboration with each other and numerous partners. In addition to other federal agencies, program partners include state and local governments, universities, research centers, professional societies, trade associations and businesses, as well as associated councils, commissions and consortia.

    NEHRP's work encompasses research, development and implementation activities. Program research helps to advance our understanding of why and how earthquakes occur and impact the natural and built environments. The program develops strategies, tools, techniques and other measures that can reduce the adverse effects of earthquakes and facilitates and promotes implementation of these measures, thereby strengthening earthquake resilience among at-risk communities.

    Detailed information about the program is available at NEHRP.gov, which is maintained by the National Institute of Standards and Technology (NIST), the lead agency for NEHRP. For additional agency-specific information, visit FEMA Earthquake, the USGS Earthquake Hazards Program, the NIST NEHRP Office and the National Science Foundation.
  - Assistance to Fire Fighters Grant (AFG), Fire Prevention and Safety (FP&S), Staffing for Adequate Fire and Emergency Response Grants (SAFER), and Assistance to Firefighters Station Construction Grant programs. Information can be found at: (http://forestry.alaska.gov/fire/vfa.htm).

- Department of Homeland Security (DHS) provides the following grants:
  - Homeland Security Grant Program (HSGP), State Homeland Security Program (SHSP) are 80% pass through grants. SHSP supports implementing the State Homeland Security Strategies to address identified planning, organization, equipment, training, and exercise needs for acts of terrorism and other catastrophic events. In addition, SHSP supports implementing the National Preparedness Guidelines, the NIMS, and the National Response Framework. Must ensure at least 25% of funds are dedicated towards law enforcement terrorism prevention-oriented activities. (https://www.dhs.gov/homeland-security-grant-program-hsgp)
  - Citizen Corps Program. The Citizen Corps mission is to bring community and government leaders together to coordinate involving community members in emergency preparedness, planning, mitigation, response, and recovery activities. (http://www.dhs.gov/citizen-corps)
  - Emergency Operations Center (EOC) Guidance. This program is intended to improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, strategically located, and fully interoperable EOCs with a focus on addressing identified deficiencies and needs. Fully capable emergency operations facilities at the State and local levels are an essential element of a comprehensive national emergency management system and are necessary to ensure continuity of operations and continuity of government in major disasters or emergencies caused by any hazard. Requires 25% match. (https://www.fema.gov/media-library/assets/documents/20622)
  - Emergency Alert System (EAS). Resilient public alert and warning tools are essential to save lives and protect property during times of national, state, regional, and local emergencies. The EAS is used by alerting authorities to send warnings via broadcast, cable, satellite, and wireline communications pathways. Emergency Alert System participants, which consist of broadcast, cable, satellite, and wireline providers, are the stewards of this important public service in close partnership with alerting officials at all levels of government. The EAS is also used when all other means of alerting the public are unavailable, providing an added layer of resiliency to the suite of available emergency communication tools. The EAS is in a constant state of improvement to ensure seamless integration of CAP-based and emerging technologies. (https://www.fema.gov/emergency-alert-system)
- U.S. Department of Commerce's grant programs include:
  - National Oceanic and Atmospheric Administration (NOAA), provides funds to the State of Alaska due to Alaska's high threat for tsunami. The allocation supports the promotion of local, regional, and state level tsunami mitigation and preparedness; installation of warning communications systems; installation of warning communications systems; installation of tsunami signage; promotion of the Tsunami Ready Program in Alaska; development of inundation models; and delivery of inundation maps and decision-support tools to communities in Alaska. (http://www.tsunami.noaa.gov/warning_system_works.html)
  - Remote Community Alert Systems (RCASP) grant for outdoor alerting technologies in remote communities effectively underserved by commercial mobile service for the purpose of enabling residents of those communities to receive emergency messages.

(http://www.federalgrants.com/Remote-Community-Alert-Systems-Program-11966.html) This program is a contributing element of the Warning, Alert, and Response Network (WARN) Act.

- Public Works and Development Facilities Program. This program provides assistance to help distressed communities attract new industry, encourage business expansion, diversify local economies, and generate long-term, private sector jobs. Among the types of projects funded are water and sewer facilities, primarily serving industry and commerce; access roads to industrial parks or sites; port improvements; business incubator facilities; technology infrastructure; sustainable development activities; export programs; brownfields redevelopment; aquaculture facilities; and other infrastructure projects. Specific activities may include demolition, renovation, and construction of public facilities; provision of water or sewer infrastructure; or the development of stormwater control mechanisms (e.g., a retention pond) as part of an industrial park or other eligible project. (https://www.eda.gov/pdf/about/Public-Works-Program-1-Pager.pdf)
- US Environmental Protection Agency (EPA). Under EPA's Clean Water State Revolving Fund (CWSRF) program, each state maintains a revolving loan fund to provide independent and permanent sources of low-cost financing for a wide range of water quality infrastructure projects, including: municipal wastewater treatment projects; non-point source projects; watershed protection or restoration projects; and estuary management projects. (https://www.epa.gov/cwsrf)
  - Indian Environmental General Assistance Program (IGAP). 1992, Congress passed the Indian Environmental General Assistance Program Act (42 U.S.C. 4368b) which authorizes EPA to provide General Assistance Program grants to federally-recognized tribes and tribal consortia for planning, developing, and establishing environmental protection programs in Indian country, as well as for developing and implementing solid and hazardous waste programs on tribal lands.

    The goal of this program is to assist tribes in developing the capacity to manage their own environmental protection programs, and to develop and implement solid and hazardous waste programs in accordance with individual tribal needs and applicable federal laws and regulations. (http://www.epa.gov/Indian/gap.htm)

- Department of Agriculture (USDA). Provides diverse funding opportunities; providing a wide benefit range. Their grants and loans website provides a brief programmatic overview with links to specific programs and services. (http://www.rd.usda.gov/programs-services)
  - Farm Service Agency: Emergency Conservation Program, Non-Insured Assistance, Emergency Forest Restoration Program, Emergency Watershed Protection, Rural Housing Service, Rural Utilities Service, and Rural Business and Cooperative Service. (http://www.fsa.usda.gov/FSA/stateoffapp?mystate=ak&area=home&subject=landing&topic=landing)
  - Natural Resources Conservation Service (NRCS) has several funding sources to fulfill mitigation needs. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/alphabetical/)

- Conservation Technical Assistance Program is voluntary program available to any group or individual interested in conserving their natural resources and sustaining agricultural production. The program assists land users with addressing opportunities, concerns, and problems related to using their natural resources enabling them to make sound natural resource management decisions on private, tribal, and other non-federal lands. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/)
- Conservation Innovation Grants (CIG) is a voluntary program intended to stimulate developing and adopting innovative conservation approaches and technologies while leveraging Federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, Environmental Quality Incentives Program funds are used to award competitive grants to non-Federal governmental or nongovernmental organizations, Tribes, or individuals.

  CIG enables NRCS to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the Nation's most pressing natural resource concerns. CIG will benefit agricultural producers by providing more options for environmental enhancement and compliance with Federal, State, and local regulations. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/)
- The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides financial and technical assistance to agricultural producers through contracts up to a maximum term of ten years in length. These contracts provide financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland. In addition, a purpose of EQIP is to help producers meet Federal, State, Tribal and local environmental regulations. (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelprdb1242633)
- The Emergency Watershed Protection Program is designed is to undertake emergency measures, including the purchase of flood plain easements, for runoff retardation and soil erosion prevention to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed. (http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/)
- Watershed Surveys and Planning. NRCS watershed activities in Alaska are voluntary efforts requested through conservation districts and units of government and/or tribes. The purpose of the program is to assist Federal, State, and local agencies and tribal governments to protect watersheds from damage caused by erosion, floodwater, and sediment and to conserve and develop water and land resources. Resource concerns addressed by the program include water quality, opportunities for water conservation, wetland and water storage capacity,

agricultural drought problems, rural development, municipal and industrial water needs, upstream flood damages, and water needs for fish, wildlife, and forest-based industries.
(http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wsp/)

- Department of Energy (DOE), 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. (http://www1.eere.energy.gov/wip/wap.html)
  - The Tribal Energy Program offers financial and technical assistance to Indian tribes to help them create sustainable renewable energy installations on their lands. This program promotes tribal energy self-sufficiency and fosters employment and economic development on America's tribal lands. (https://energy.gov/savings/tribal-energy-program-grant)
- Department of Health and Human Services, 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 application information. (http://www.acf.hhs.gov/grants/open/foa/)
- Department of Housing and Urban Development (HUD) provides a variety of disaster resources. They also partner with Federal and state agencies to help implement disaster recovery assistance. Under the *National Response Framework* the FEMA and the Small Business Administration (SBA) offer initial recovery assistance. (http://www.hud.gov/info/disasterresources_dev.cfm)
  - 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. (https://www.hudexchange.info/programs/section-108/section-108-program-eligibility-requirements/#overview)
  - HUD, Office of Homes and Communities, Section 184 Indian Home Loan Guarantee Programs. The Section 184 Indian Home Loan Guarantee Program is a home mortgage specifically designed for American Indian and Alaska Native families, Alaska Villages, Tribes, or Tribally Designated Housing Entities. Section 184 loans can be used, both on and off native lands, for new construction, rehabilitation, purchase of an existing home, or refinance.
  - Because of the unique status of Indian lands being held in Trust, Native American homeownership has historically been an underserved market. Working with an expanding network of private sector and tribal partners, the Section 184 Program endeavors to increase access to capital for Native Americans and provide private

funding opportunities for tribal housing agencies with the Section 184 Program. (http://www.hud.gov/offices/pih/ih/homeownership/184/)

- Indian Housing Block Grant (IHBG)/ Native American Housing Assistance and Self Determination Act (NAHASDA) administration, operating & construction funds. The act is separated into seven sections:

  The Indian Housing Block Grant Program (IHBG) is a formula grant that provides a range of affordable housing activities on Indian reservations and Indian areas. The block grant approach to housing for Native Americans was enabled by the Native American Housing Assistance and Self Determination Act of 1996 (NAHASDA).

  Eligible IHBG recipients are Federally recognized Indian tribes or their tribally designated housing entity, and a limited number of state recognized tribes who were funded under the Indian Housing Program authorized by the United States Housing Act of 1937 (USHA). With the enactment of NAHASDA, Indian tribes are no longer eligible for assistance under the USHA.

  An eligible recipient must submit to HUD an Indian Housing Plan (IHP) each year to receive funding. At the end of each year, recipients must submit to HUD an Annual Performance Report reporting on their progress in meeting the goals and objectives included in their IHPs.

  Eligible activities include housing development, assistance to housing developed under the Indian Housing Program, housing services to eligible families and individuals, crime prevention and safety, and model activities that provide creative approaches to solving affordable housing problems. (http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/grants/ihbg)
- HUD/CDBG (Community Development Block Grant) 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. (http://www.hud.gov/offices/cpd/communitydevelopment/programs/)
- HUD/Indian Community Development Block Grants provide grant assistance and technical assistance to aid communities or Indian tribes 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. (http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/grants/icdbg)

- Department of Labor (DOL), Employment and Training Administration, Disaster Unemployment Assistance. Provides weekly 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. (https://workforcesecurity.doleta.gov/unemploy/disaster.asp)
  - The Workforce Investment Act contains provisions aimed at supporting employment and training activities for Indian, Alaska Native, and Native Hawaiian individuals.

The Department of Labor's Indian and Native American Programs funds grant programs that provide training opportunities at the local level for this target population. (http://www.dol.gov/dol/topic/training/indianprograms.htm)

- U.S. Department of Transportation (USDOT), Hazardous Materials Emergency Preparedness Grant. The Hazardous Materials Transportation Safety and Security Reauthorization Act of 2005 authorizes the USDOT to provide assistance to public sector employees through training and planning grants to States, Territories, and Native American tribes for emergency response. The purpose of this grant program is to increase State, Territorial, Tribal, and local effectiveness in safely and efficiently handling hazardous materials accidents and incidents, enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986, and encourage a comprehensive approach to emergency training and planning by incorporating the unique challenges of responses to transportation situations. (http://www.phmsa.dot.gov/hazmat/grants)
- 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, Disaster Tax Relief. Provides extensions to current year's tax return, allows deductions for disaster losses, and allows amendment of previous year's tax returns. (http://www.irs.gov/Businesses/Small-Businesses-%26-Self-Employed/Disaster-Assistance-and-Emergency-Relief-for-Individuals-and-Businesses-1)
- U.S. Small Business Administration (SBA) Disaster Assistance Loans and Grants program provides information concerning disaster assistance, preparedness, planning, cleanup, and recovery planning. (https://www.sba.gov/category/navigation-structure/loans-grants)
  - May provide low-interest disaster loans to individuals and businesses that have suffered a loss due to a disaster. (https://www.sba.gov/category/navigation-structure/loans-grants/small-business-loans/disaster-loans). Requests for SBA loan assistance should be submitted to DHS&EM.
- United States Army Corps of Engineers (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.
  - Civil Works and Planning (http://www.poa.usace.army.mil/Missions/CivilWorksandPlanning.aspx)
  - Environmental Resources Section (http://www.poa.usace.army.mil/About/Offices/Engineering/EnvironmentalResources.aspx)
  - USACE Alaska District Grants (http://search.usa.gov/search?affiliate=alaska_district&query=grants)

- The Grants.gov program management office was established, in 2002, as a part of the President's Management Agenda. Managed by the Department of Health and Human Services, Grants.gov is an E-Government initiative operating under the governance of the Office of Management and Budget.

  Under the President's Management Agenda, the office was chartered to deliver a system that provides a centralized location for grant seekers to find and apply for federal funding opportunities. Today, the Grants.gov system houses information on over 1,000 grant programs and vets grant applications for 26 federal grant-making agencies.

State Funding Resources

- Department of Military and Veterans Affairs (DMVA): Provides damage appraisals and settlements for VA-insured homes, and assists with filing of survivor benefits. (http://veterans.alaska.gov.htm)
  - DHS&EM within DMVA 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 elevating, relocating, or acquiring hazard-prone properties. (https://ready.alaska.gov/Plans/mitigationplan)

    DHS&EM also provides mitigation funding resources for mitigation planning on their Web site. (http://ready.alaska.gov/grants)
- Division of Health and Social Services (DHSS): On this site you will find information intended to assist all who are interested in DHSS grants and services they support. (http://dhss.alaska.gov/fms/grants/Pages/grants.aspx and http://dhss.alaska.gov/fms/Documents/FY15GrantBook.pdf)
- Division of Health and Social Services: Provides special outreach services for seniors, including food, shelter and clothing. (http://dhss.alaska.gov/dsds/Pages/hcb/hcb.aspx)
- Division of Insurance: Provides assistance in obtaining copies of policies and provides information regarding filing claims. (https://www.commerce.alaska.gov/web/ins/consumers.aspx)
- DCRA within the DCCED 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 division also administers programs for State's" distressed" and "targeted" communities. (http://www.commerce.state.ak.us/dca/)
  - DCRA Planning and Land Management staff provide Alaska Climate Change Impact Mitigation Program (ACCIMP) funding to Alaskan communities that meet one or more of the following criteria related to flooding, erosion, melting permafrost, or other climate change-related phenomena: Life/safety risk during storm/flood events; loss of critical infrastructure; public health threats; and loss of 10% of residential dwellings.

(https://www.commerce.alaska.gov/web/dcra/PlanningLandManagement/ACCIMP.aspx)

The Hazard Impact Assessment is the first step in the ACCIMP process. The HIA identifies and defines the climate change-related hazards in the community, establishes current and predicted impacts, and provides recommendations to the community on alternatives to mitigate the impact. (https://www.commerce.alaska.gov/web/dcra/PlanningLandManagement/ACCIMP/HazardImpactAssessments.aspx)

- Department 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. (http://dec.alaska.gov/)
  - The Division of Water's Village Safe Water (VSW) Program works with rural communities to develop sustainable sanitation facilities. Communities apply each year to VSW for grants for sanitation projects. Federal and state funding for this program is administered and managed by the VSW program. VSW provides technical and financial support to Alaska's smallest communities to design and construct water and wastewater systems. In some cases, funding is awarded by VSW through the Alaska Native Tribal Health Consortium (ANTHC), who in turn assist communities in design and construct of sanitation projects.
  - Municipal Grants and Loans Program. The Department of Environmental Conservation / Division of Water administer the Alaska Clean Water Fund (ACWF) and the Alaska Drinking Water Fund (ADWF). The division is fiscally responsible to the Environmental Protection Agency (EPA) to administer the loan funds as the EPA provides capitalization grants to the division for each of the loan funds. In addition, it is prudent upon the division to administer the funds in a manner that ensures their continued viability. (http://dec.alaska.gov/water/MuniGrantsLoans/loanoverview.html)
  - Under EPA's Clean Water State Revolving Fund (CWSRF) program, each state maintains a revolving loan fund to provide independent and permanent sources of low-cost financing for a wide range of water quality infrastructure projects, including: municipal wastewater treatment projects; non-point source projects; watershed protection or restoration projects; and estuary management, (and stormwater management) projects.

    Alaska's Revolving Loan Fund Program, prescribed by Title VI of the Clean Water Act as amended by the Water Quality Act of 1987, Public Law 100-4. DEC will use the ACWF account to administer the loan fund. This Agreement will continue from year-to-year and will be incorporated by reference into the annual capitalization grant agreement between EPA and the DEC. DEC will use a fiscal year of July 1 to June 30 for reporting purposes. (http://dnr.alaska.gov/ag/ag_arlf.htm)

- Department of Transportation and Public Facilities (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.

- 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 the safe, efficient, economical, and effective State highway, harbor, and airport operation. DOT/PF uses it's Planning, Design and Engineering, Maintenance and Operations, and Intelligent Transportation Systems resources to identify hazards, 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 temporary bridge replacements and materials necessary to make the multi-modal transportation system operational following natural disaster events.

- The Alaska Department of Natural Resources (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 Alaska's mineral, land, and water resources use, development, and earthquake mitigation collaboration.

    Their geologists and support staff are leaders in researching Alaska's geology and implementing technological tools to most efficiently collect, interpret, publish, archive, and disseminate information to the public. (http://dggs.alaska.gov/pubs/advanced-search)
  - The DNR's Division of Forestry (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. (http://dhss.alaska.gov/dph/Emergency/Documents/02-Internal/08FireSuppressionMediaGuide.pdf)
  - DOF also manages various wildland fire programs, activities, and grant programs such as the FireWise Program (http://forestry.alaska.gov/fire/firewise.htm), Community Forestry Program (http://forestry.alaska.gov/community/), Assistance to Fire Fighters Grant (AFG), Fire Prevention and Safety (FP&S), Staffing for Adequate Fire and Emergency Response Grants (SAFER), and Volunteer Fire Assistance and Rural Fire Assistance Grant (VFA-RFA) programs. (http://forestry.alaska.gov/fire/current.htm)
  - The Alaska Interagency Coordination Center (AICC) is the Geographic Area Coordination Center for Alaska. AICC serves as the focal point for initial attack resource coordination, logistics support, and predictive services for all state and federal agencies involved in wildland fire management and suppression in Alaska.

    Fire management planning, preparedness, suppression operations, prescribed burning, and related activities are coordinated on an interagency basis. DOF has cooperative agreements with the Departments of Agriculture and Interior, and numerous local

government and volunteer fire departments to respond to wildland fires, reduce duplication of efforts, and share resources.

In 1984 the State of Alaska adopted the National Interagency Incident Management System Incident Command System concept for managing fire suppression. The Incident Command System (ICS) guiding principles are followed in all wildland fire management operations. All State of Alaska Departments adopted ICS in 1996 through the Governor's administrative order.

Other Funding Resources

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

- Rural Alaska Community Action Program Inc. (RurAL CAP) In the nearly 50 years since it began, it is difficult to imagine any aspect of rural Alaskan lives which has not been touched in some way by the people and programs of RurAL CAP. From Head Start, parent education, adult basic education, and elder-youth programs, to Native land claims and subsistence rights, energy and weatherization programs, and alcohol and substance abuse prevention, RurAL CAP has left a lasting mark on the history and development of Alaska and its rural Peoples. (http://ruralcap.com/?page_id=334)
    - Weatherization Assistance Program assists low to moderate income households in weatherization needs. The program is available to homeowners as well as renters and includes; single family homes, cabins, mobile homes, condominiums and multifamily dwellings. (http://ruralcap.com/?page_id=794)
    - Solid Waste Management. RurAL CAP continues to host an expert solid waste liaison, Ted Jacobson, through funding provided by the EPA and Senior Services America, Inc. The liaison provides solid waste management technical assistance to rural communities through training, site visits, hands-on demonstrations, and remote contact. Resources are provided for dump management activities, collaborating with funders for funding and technical assistance on solid waste management, recycling, and backhaul. (http://ruralcap.com/?page_id=198)
- American Planning Association (http://www.planning.org) is 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, an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters. (http://www.disastersafety.org/)
- American Red Cross. 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. (http://www.redcross.org/find-help)
- Catalog of Federal Domestic Assistance 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. (http://dialoguemakers.org/Resourses4states+Nonprofits.htm)

- Denali Commission. Introduced by Congress in 1998, the Denali Commission is an independent federal agency designed to provide critical utilities, infrastructure, and economic support throughout Alaska. With the creation of the Denali Commission, Congress acknowledged the need for increased inter-agency cooperation and focus on Alaska's remote communities. Since its first meeting in April 1999, the Commission is credited with providing numerous cost-shared infrastructure projects across the State that exemplifies effective and efficient partnership between federal and state agencies, and the private sector. (http://www.denali.gov/grants)
  - The Energy Program primarily funds design and construction of replacement bulk fuel storage facilities, upgrades to community power generation and distribution systems, alternative-renewable energy projects, and some energy cost reduction projects. The Commission works with the Alaska Energy Authority, Alaska Village Electric Cooperative, Alaska Power and Telephone and other partners to meet rural communities' fuel storage and power generation needs.
  - The goal of the solid waste program at the Denali Commission is to provide funding to address deficiencies in solid waste disposal sites which threaten to contaminate rural drinking water supplies.
- Lindbergh Foundation Grants. Each year, The Charles A. and Anne Morrow Lindbergh Foundation provides grants of up to $10,580 (a symbolic amount representing the cost of the Spirit of St. Louis) to men and women whose individual initiative and work in a wide spectrum of disciplines furthers the Lindberghs' vision of a balance between the advance of technology and the preservation of the natural/human environment. (http://www.thelindberghfoundation.org/awards)
- Rasmuson Foundation Grants. The Rasmuson foundation invests both in individuals and well-managed 501(c)(3) organizations dedicated to improving the quality of life for Alaskans.

  Rasmuson Foundation awards grants both to organizations serving Alaskans through a base of operations in Alaska, and to individuals for projects, fellowships and sabbaticals. To be considered for a grant award, grant seekers must meet specific criteria and complete and submit the required application according to the specific guidelines of each program. (http://www.rasmuson.org/index.php?switch=viewpage&pageid=5)
  - Tier 1 Awards: Grants of up to $25,000 for capital projects, technology updates, capacity building, program expansion, and creative works.
  - Tier 2 Awards: Grants over $25,000 for projects of demonstrable strategic importance or innovative nature.
  - Pre-Development Program: Guidance and technical resources for planning new, sustainable capital projects.

  The Foundation trustees believe successful organizations can sustain their basic operations through other means of support and prefer to assist organizations with specific needs, focusing on requests which allow the organizations to become more efficient and effective. The trustees look favorably on organizations which demonstrate broad community support, superior fiscal management and matching project support. (http://www.rasmuson.org/index.php)

This page intentionally left blank

Appendix B
FEMA Hazard Mitigation Plan Review Tool

Indian Tribal Government: Native Village of Alatna

Tribal Mitigation Plan Review and Approval Status

Tribe: Native Village of Alatna	**Title of Plan:** Native Village of Alatna Tribal Hazard Mitigation Plan	**Date of Plan:** June, 2017

Tribal Point of Contact: Michelle Moses **Title:** Tribal Administrator **Agency:**	**Address:** Alatna Village P.O. Box 70 Allakaket, AK 99720

Phone Number: (907) 968-2304		**E-Mail:** aet99720@gmail.com	

State Reviewer (if applicable):	**Title:**	**Date:**
George J. Grady	Emergency Management Specialist II	July 5, 2017

FEMA Reviewer: Amanda Siok; Amanda.Siok@fema.dhs.gov	**Title:** Mitigation Planner	**Date:** 08/25/2017
Date Received in FEMA Region 10	07/14/2017	
Plan Not Approved	8/28/2017 (Approval Pending Adoption)	
Plan Approved	Approved	
Date Approved	07/03/2018	

Indian Tribal Government: Native Village of Alatna

TRIBAL MULTI-HAZARD MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a **"Needs Improvement"** score.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.
S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Planning Process	N	S
1. Documentation of the Planning Process: 201.7(b) and 201.7(c)(1)(i) and (ii)		X
2. Program Integration: 201.7(c)(1)(iii) and (iv)		X

Risk Assessment	N	S
3. Identifying Hazards: 201.7(c)(2)(i)		X
4. Profiling Hazards: 201.7(c)(2)(i)		X
5. Assessing Vulnerability: Overview: 201.7(c)(2)(ii)		X
6. Assessing Vulnerability: Identifying Structures: 201.7(c)(2)(ii)(A)	X	
7. Assessing Vulnerability: Estimating Potential Losses: 201.7(c)(2)(ii)(B)		X
8. Assessing Vulnerability: Analyzing Development Trends: 201.7(c)(2)(ii)(C)		X
9. Assessing Vulnerability: Assessing Cultural and Sacred sites: 201.7(c)(2)(ii)(D)	X	

Severe Repetitive Loss Strategy (Optional)	N	S
22. Repetitive Loss Strategy: 201.7(c)(3)(vi)		X

Mitigation Strategy	N	S
10. Tribal Multi-Hazard Mitigation Goals: 201.7(c)(3)(i)		X
11. Identification and Analysis of Tribal Mitigation Actions: 201.7(c)(3)(ii)		X
12. Implementation of Tribal Mitigation Actions: 201.7(c)(3)(iii)		X
13. Tribal Capability Assessment: 201.7(c)(3)(iv)		X

Plan Maintenance Process	N	S
15. Monitoring, Evaluating, and Updating the Plan: 201.7(c)(4)(i)		
16. Monitoring Progress of Mitigation Activities: 201.7(c)(4)(ii) and 201.7(4)(v)		
17. Incorporation into Existing Planning Mechanisms: 201.7(c)(4)(iii)		
18. Continued Member and Stakeholder Involvement: 201.7(c)(4)(iv)		

Prerequisites	NOT MET	MET
19. Adoption by the Tribal Governing Body : 201.7(c)(5) and (c)(6) ***[single Indian Tribal government only]***		X
20. Multi-Jurisdictional Plan Adoption: 201.7(a)(4), (c)(5) and(c)(6) ***[multi-jurisdictional only]***		X
21. Multi-Jurisdictional Planning Participation: 201.7(a)(4) ***[multi-jurisdictional only]***		X

	N	S
14. Tribal Funding Sources: 201.7(c)(3)(v)		X

TRIBAL MITIGATION PLAN APPROVAL STATUS PLAN NOT APPROVED	
See Reviewer's Comments	
PLAN APPROVED	**X**

PLANNING PROCESS: *201.7(b): An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other tribal agencies, appropriate Federal agencies, adjacent jurisdictions, interested groups, and be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA mitigation programs and initiatives.*

1. Documentation of the Planning Process

Requirement 201.7(c)(1): *[The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was defined and involved. This **shall** include: (i) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval, including a description of how the Indian Tribal government defined "public;" and (ii) As appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan provide a narrative **description of the process** followed to prepare the new or updated plan?	Section 3, Page 3-1 to 3-12 PDF 23-34	Five-step process from November 2016-June 2017.		X
B. Does the new or updated plan indicate **who was involved** in the current planning process?	Section 3.2, Page 3-2 to 3-3 PDF 24-25	Tribal Planning Team and contractor		X
C. Does the new or updated plan indicate **how the "public" was defined and involved**? How was the "public" defined? How was the "public" involved? Were they provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?	Section 3.3, Page 3-3to 3-6 Section 3.5.2, Page 3-8 Definition PDF 30. Involvement: PDF 25-28, 137-140	Public is any Alatna tribal member, community resident, or employee.		X
D. Does the new or updated plan discuss the opportunity for other Indian Tribal governments, tribal and regional agencies, businesses, academia, nonprofits, neighboring communities, and other affected stakeholders and interested parties to be involved in the planning process?	Section 3.3, Page 3-3 to 3-4 PDF 25	Outreach conducted to relevant academia, nonprofits, local, state, and federal agencies.		X
E. Does the updated plan document how the planning team reviewed and analyzed each section of the plan? ***[Updates only.]***	Section 3.4, Page 3-4 to 3-5 PDF 26-27	Table 3-2 is excellent; clear and succinct documentation		X
F. Does the updated plan indicate for each section of the plan whether or not it was revised as part of the update process? ***[Updates only.]***	Section 3.4, Page 3-4 to 3-5 PDF 26-27	Table 3-2, Status column		X
		SUMMARY SCORE		X

2. Program Integration

Requirement 201.7(c)(1)(iii) and (iv): *[The plan **shall**:] [include] (iii) Review and incorporation, if appropriate, of existing plans, studies, and reports; and (iv) Be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe the review and incorporation, if appropriate, of existing plans, studies, and reports in the new or updated plan?	Section 3.5, Page 3-7 to 3-8 PDF 29	Includes the Alatna Comprehensive Plan, USACE Erosion Assessment, and Economic Profile		X
B. Does the new or updated plan describe how the Indian tribal mitigation plan is **integrated with other ongoing Indian tribal planning efforts**?	Section 3.5.1, Page 3-8 PDF 29	The Comprehensive Plan documents '94 flood recovery and contains long-term planning goals.		X
C. Does the new or updated plan describe how the Indian tribal mitigation planning process is **integrated with FEMA mitigation programs and initiatives**?	Section 3.1, Page 3-1 to 3-2 PDF 24-25, 77	Identifies and prioritizes projects for future mitigation project funding. PDF 77 acknowledges the floodplain ordinance, "knowing that Federal agencies will deny future disaster damage reimbursement if they ignore the 1995 relocation assistance requirements."		X
		SUMMARY SCORE		X

RISK ASSESSMENT: *201.7(c)(2): [The plan **shall** include a] risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Tribal risk assessments must provide sufficient information to enable the Indian Tribal government to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

3. Identifying Hazards

Requirement 201.7(c)(2)(i): *[The risk assessment **shall** include a] description of the type … of all natural hazards that can affect the tribal planning area.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe the **tribal planning area**?	Section 2, Page 2-1 to 2-3 PDF 21	Figure 2-3, Map, Aerial View of Alatna		X
B. Does the new or updated plan include a description of the **types of all natural hazards** that affect the tribal planning area?	Earthquake: Section 5.3.1, Page 5-4 to 5-6 Flood: Section 5.3.2, Page 5-10 to 5-12 Ground Failure: Section 5.3.3, Page 5-16 to 5-18 Severe Weather: Section 5.3.4, Page 5-20 to 5-23 Wildland Fire: Section 5.3.5, Page 5-33 to 5-34	Table 5-1, PDF 38 explains hazard types.		X
		SUMMARY SCORE		X

4. Profiling Hazards

Requirement 201.7(c)(2)(i): *[The risk assessment **shall** include a] description of the … location and extent of all natural hazards that can affect the tribal planning area. The plan **shall** include information on previous occurrences of hazard events and on the probability of future hazard events.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the risk assessment identify the **location** (i.e., geographic area affected) of each natural hazard addressed in the new or updated plan?	Earthquake: Section 5.3.1, Page 5-7 to 5-8 PDF 43 Flood: Section 5.3.2, Page 5-13 to 5-14, PDF 49 Ground Failure: Sec.5.3.3, P. 5-18 to 5-19 PDF 54 Severe Weather: Section 5.3.4, Page 5-32 PDF 68 Wildland Fire: Sec 5.3.5, P 5-35 to 5-36 PDF 71			X
B. Does the risk assessment identify the **extent** (i.e., magnitude or severity) of each hazard addressed in the new or updated plan?	Earthquake: Sec 5.3.1, Page 5-8 to 5-9, PDF 44 Flood: Section 5.3.2, Page 5-14 to 5-15 PDF 50 Ground Failure: Sect 5.3.3, 5-19 to 5-20 PDF 55 Severe Weather: Section 5.3.4, Page 5-32 PDF 63 Wildland Fire: Sec 5.3.5,5-36 to 5-37 PDF 72	"Increased rain and snow could dramatically increase flooding and erosion" demonstrates the potential increase in severity of a hazard due to climate change.		X
C. Does the new or updated plan provide information on **previous occurrences** of each hazard addressed in the plan?	Earthquake: Section 5.3.1, Page 5-6 to 5-7 PDF 43 Flood: Section 5.3.2, Page 5-12 to 5-13 PDF 48 Ground Failure: Section 5.3.3, Page 5-18 PDF 54 Severe Weather: Sec 5.3.4, 5-23 to 5-31 PDF 64 Wildland Fire: Sec 5.3.5, 5-34 to 5-35 PDF 70			X
D. Does the new or updated plan include the **probability of future events** (i.e., chance of occurrence) for each hazard addressed in the plan?	Earthquake: Sec 5.3.1, Page 5-9 to 5-10 PDF 46 Flood: Section 5.3.2, Page 5-16 PDF 52 Ground Failure: Section 5.3.3, Page 5-20 PDF 56 Severe Weather: Section 5.3.4, Page 5-33 PDF 69 Wildland Fire: Section 5.3.5, Page 5-37 PDF 73	Earthquake, citing USGS P. Haeussler PDF 45 is a good example of leveraging State Resources for information		X
E. Does the updated plan address data deficiencies, if any, noted in the previously approved plan?	Ground Failure: Section 5.3.3.2, 5-18 PDF 56	No written record defining permafrost impacts.		X
		SUMMARY SCORE		X

5. Assessing Vulnerability: Overview

Requirement 201.7(c)(2)(ii): *[The risk assessment **shall** include a] description of the Indian Tribal government'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 tribe.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan include an **overall summary** description of the Indian tribe's **vulnerability** to each hazard?	Section 6.8, Page 6-10 to 6-15 PDF 76			X
B. Does the new or updated plan address the **impact** of each hazard on the Indian tribe?	Earthquake: Section 5.3.1, Page 5-9 PDF 45 Flood: Section 5.3.2, Page 5-15 to 5-16 PDF 51 Ground Failure: Section 5.3.3, Page 5-20 PDF 56 Severe Weather: Sec 5.3.4, 5-32 to 5-33 PDF 68 Wildland Fire: Section 5.3.5, Page 5-37 PDF 73			X
		SUMMARY SCORE		X

6. Assessing Vulnerability: Identifying Structures
Requirement 201.7(c)(2)(ii)(A): *[The plan **should** describe vulnerability in terms of the] types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?	Section 6.4.1.3, Page 6-6 to 6-8 PDF 81, 85-89	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		X
B. Does the new or updated plan describe vulnerability in terms of the **types and numbers** of **future** buildings, infrastructure, and critical facilities located in the identified hazard areas?	Section 6.9, Page 6-15	*Recommended Revision:* PDF 52 (5-16) expresses concern over planned structures and homes built in areas of known riverine scour in areas the Village has no jurisdiction over. These proposed structures and homes could be analyzed in Section 6.9	X	
		SUMMARY SCORE	X	

7. Assessing Vulnerability: Estimating Potential Losses
Requirement 201.7(c)(2)(ii)(B): *[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan estimate **potential dollar losses** to vulnerable structures?	Section 6.8, Page 6-10 to 6-15 PDF 81	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		X
B. Does the new or updated plan describe the **methodology** used to prepare the estimate?	Section 6.7, Page 6-10 Section 6.8, Page 6-10 PDF 83-84	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		X
C. Does the updated plan reflect the effects of **changes in development** on loss estimates?	Section 6.3.1, Page 6-3 PDF 77	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		X
		SUMMARY SCORE		X

8. Assessing Vulnerability: Analyzing Development Trends

Requirement 201.7(c)(2)(ii)(C): *[The plan **should** describe vulnerability in terms of a] general description of land uses and development trends within the tribal planning area so that mitigation options can be considered in future land use decisions.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe land uses and development trends within the tribal planning area?	Section 6.3, Page 6-3 to 6-4 PDF 77	PDF 52 (5-16) expresses concern over planned structures and homes built in areas of known riverine scour in areas the Village has no jurisdiction over.		X
B. Does the updated plan reflect changes in development for tribal lands in hazard prone areas within the tribal planning area?	Section 6.3, Page 6-3 to 6-4 PDF 77	There have been no changes.		X
		SUMMARY SCORE		X

9. Assessing Vulnerability: Assessing Cultural and Sacred Sites

Requirement 201.7(c)(2)(ii)(D): *[The plan **should** describe vulnerability in terms of] cultural and sacred sites that are significant, even if they cannot be valued in monetary terms.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe significant cultural and sacred sites that are located in hazard areas?	Section 6.2, Page 6-2 PDF 76	*Recommended Revision:* The plan identifies cultural and sacred sites but does not identify which hazards they are vulnerable to.	X	
		SUMMARY SCORE	X	

MITIGATION STRATEGY: *201.7(c)(3): [The plan **shall** include a] mitigation strategy that provides the Indian Tribal government's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.*

10. Tribal Multi-Hazard Mitigation Goals

Requirement 201.7(c)(3)(i): *[The mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

Element	Location in the Plan (section or annex and page	Reviewer's Comments	SCORE N	SCORE S
A Does the new or updated plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards?	Section 7.3, Page 7-5 to 7-6 PDF 96			X
B. Does the updated plan demonstrate that the goals were evaluated and either remain valid or have been revised?	Section 3.4, Page 3-4, PDF 26			X
		SUMMARY SCORE		X

11. Identification and Analysis of Tribal Mitigation Actions

Requirement 201.7(c)(3)(ii): *[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?	Section 7.6, Page 7- 12 to 7-18 PDF 97-100, 104-108			X
B Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?	N/A	No new buildings or infrastructure are planned within tribal boundaries.		X
C. Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?	Section 7.6, Page 7- 12 to 7-18 PDF 97-100, 104-108			X
		SUMMARY SCORE		X

12. Implementation of Tribal Mitigation Actions

Requirement: 201.7(c)(3)(iii): *[The mitigation strategy **shall** include an] action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the Indian Tribal government.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the mitigation strategy in the new or updated plan include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)	Section 7.5, Page 7- 10 to 7-12 PDF 101-102			X
B. Does the mitigation strategy in the new or updated plan address how the actions will be **implemented and administered,** including the responsible agency, existing or potential resources, and the timeframe to complete each action?	Section 7.6, Page 7- 12 to 7-18 and 3.6 PDF 33, 102, 145-149			X
C. Does the **updated** plan identify the completed, deleted, or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?	Section 7.4, Page 7-6 to 7-10 PDF 97-100			X
		SUMMARY SCORE		X

13. Tribal Capability Assessment

Requirement 201.7(c)(3)(iv): *[The mitigation strategy **shall** include a] discussion of the Indian Tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; and a discussion of tribal funding capabilities for hazard mitigation projects*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan include an evaluation of the Indian Tribal government's **pre-disaster hazard management** laws, regulations, policies, programs, and capabilities?	Section 1.1, Page 1-1 to 1-2 Section 1.2, Page 1-2 to 1-3 Section 6.3.1. Page 6-3 PDF 9-14			X
B. Does the new or updated plan include an evaluation of the Indian Tribal government's **post-disaster hazard management** laws, regulations, policies, programs, and capabilities?	Section 1.3, Page 1-3 to 1-8 PDF 14-15			X
C. Does the new or updated plan include an evaluation of the Indian Tribal government's laws, regulations, policies, programs, and capabilities **related to development** in hazard prone areas?	Section 7.2, Page 7-2 to 7-5 PDF 92	"Comments" column on table 7-1 does a nice job showing the linkage the plans have to hazard mitigation.		X
D. Does the new or updated plan include a discussion of the Indian Tribal government's **funding capabilities** for hazard mitigation projects?	Section 7.3, Page 7-2 to 7-5 PDF94			X
E. Does the updated plan address any hazard management laws, policies, programs, capabilities, or funding capabilities of the Indian Tribal	Section 7.2, Page 7-2 to 7-5 PDF 92	Nice work including Technical Specialists as tribal capabilities.		X
		SUMMARY SCORE		X

14. Tribal Funding Sources

Requirement 201.7(c)(3)(v): *[The mitigation strategy **shall** include an] identification of current and potential sources of Federal, tribal, or private funding to implement mitigation activities.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan identify **current** sources of Federal, tribal, or private funding to implement mitigation activities?	Section 6.4.1.2, Page 6-5 to 6-6 PDF 80	Table 6-3, Capital Improvement Projects		X
B. Does the new or updated plan identify **potential** sources of Federal, tribal, or private funding to implement mitigation activities?	Section 7.6, Page 7- 12 to 7-18 PDF 103-108			X
C. Does the updated plan identify the sources of mitigation funding used to implement activities in the mitigation strategy since approval of the previous plan?	Table 7.5, PDF 99-100	Funding not used to adopt fire ordinance or to make critical facility list needing back-up power.		X
		SUMMARY SCORE		X

PLAN MAINTENANCE PROCESS

15. Monitoring, Evaluating, and Updating the Plan
Requirement 201.7(c)(4)(i): *[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe the method and schedule for **monitoring** the plan, including how, when, and by whom (e.g., the responsible agency)?	Section 3.6.3.1, Page 3-9 to 3-10 Section 3.6.3.3, Page 3-11 to 3-12 7.7.1, P 7-19, PDF 109 PDF 33, 102, 145-149			X
B. Does the new or updated plan describe the method and schedule for **evaluating** the plan, including how, when, and by whom (e.g., the responsible agency)?	Section 3.6.3.1, Page 3-9 to 3-10 Section 3.6.3.3, Page 3-11 to 3-12 7.7.1, P 7-19, PDF 109 PDF 33, 102, 145-149			X
C. Does the new or updated plan describe the method and schedule for **updating** the plan, including how, when, and by whom (e.g., the responsible agency), within the 5-year cycle?	Section 3.6.3.3, Page 3-11 to 3-12 PDF 33, 102, 145-149			X
D. Does the updated plan include an analysis of whether the previously approved plan's method and schedule worked, and what elements or processes, if any, were changed for the next 5 years?	Section 3.4, Pages 3-4 to 3-5 Section 3.6.3.3, Page 3-11 to 3-12 PDF 31-33			X
		SUMMARY SCORE		X

16. Monitoring Progress of Mitigation Activities

Requirement 201.7(c)(4)(ii): *[The plan maintenance process **shall** include a] system for monitoring implementation of mitigation measures and project closeouts.*
Requirement 201.7(c)(4)(v): *[The plan maintenance process **shall** include a] system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy.*

Element	Location in the Plan (section or annex and page	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe how mitigation measures and project closeouts will be **monitored**?	Section 7.7, Page 7-19 7.7.1, P 7-19, PDF 109 3.6.1.1, 3-9; PDF 31			X
B. Does the new or updated plan identify a **system for reviewing progress** on achieving goals and implementing activities and projects in the Mitigation Strategy?	Section 7.7.1, Page 7-19 7.7.1, P 7-19, PDF 109 3.6.1.2, 3-10; PDF 33			X
C. Does the updated plan describe any modifications, if any, to the system identified in the previously approved plan to track the initiation, status, and completion of mitigation activities?	Section 7.4, Pages 7-6 to 7-10 3.4, 3.6.1.3; 3-11-3-12; PDF 26, 33-34			X
D. Does the updated plan discuss whether mitigation actions were implemented as planned?	Section 7.4, Pages 7-6 to 7-10 PDF 99, 100			X
		SUMMARY SCORE		X

17. Incorporation into Existing Planning Mechanisms
Requirement 201.7(c)(4)(iii): *[The plan maintenance process **shall** include a] process by which the Indian Tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.*

Element	Location in the Plan (section or annex and page	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan identify **other tribal planning mechanisms** available for incorporating the requirements of the mitigation plan?	Section 3.5.1, Page 3-8 Section 7.8, Page 7-19 to 7-20 PDF 29,109			X
B. Does the new or updated plan include a **process by which the Indian Tribal government will incorporate the mitigation strategy** and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?	Section 3.5.1, Page 3-8 Section 7.8, Page 7-19 to 7-20 PDF 30, 109			X
		SUMMARY SCORE		X

18. Continued Member and Stakeholder Involvement

Requirement 201.7(c)(4)(iv): *[The plan maintenance process **shall** include a] discussion on how the Indian Tribal government will continue public participation in the plan maintenance process.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	Section 3.5.2, Page 3-8 PDF 30			X
		SUMMARY SCORE		X

PREREQUISITES

19. Adoption by the Tribal Governing Body (*Single Indian Tribal government*)

Requirement 201.7(c)(5)**:** *The plan **must** be formally adopted by the governing body of the Indian Tribal government prior to submitting to FEMA for final review and approval.*
Requirement 201.7(c)(6): *[The plan **must** include] assurances that the Indian Tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 13.11(c) of this chapter. The Indian Tribal government will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes as required in 13.11(d) of this chapter.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE NOT MET	SCORE MET
A. Has the Indian tribal governing body formally adopted the new or updated plan?	Section 4.1, Page 4-1 Appendix C			X
B. Is supporting documentation, such as a resolution, included with the new or updated plan?	Appendix C			X
C. Does the new or updated plan provide assurances that the Indian Tribal government will continue to comply 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)?	Section 4.1, Page 4-1 Appendix C			X
		SUMMARY SCORE		X

APPENDIX A: COMPARISON OF TRIBAL, STATE, AND LOCAL MITIGATION PLAN REQUIREMENTS

Prior to October 1, 2008, Indian Tribal governments were given the option to meet the requirements of a State or a Local Mitigation Plan for approval and eligibility for most types of disaster assistance and mitigation grant programs. The following chart illustrates the differences in a State or Local Mitigation Plan, as compared to the requirements that must be met for a Tribal Mitigation Plan approved after October 1, 2008.

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
PLANNING PROCESS	**44 CFR 201.4(b)** **44 CFR 201.4(c)(1)**	**44 CFR 201.7(c)(1)(i-iv)** **44 CFR 201.7(b)**	**44 CFR 201.6(c)(1)** **44 CFR 201.6(b)(1-3)**
	(b) *Planning process.* An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.	(b) An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other tribal agencies, appropriate Federal agencies, adjacent jurisdictions, interested groups, and be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA mitigation programs and initiatives.	(b) *Planning process.* An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include [see 44 CFR 201.6(b)(1-3) below]:
	(c)(1) Description of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.	(c)(1) Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved. This shall include:	(c)(1)Documentation of the *planning process* used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.
	n/a	(i) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval, including a description of how the Indian Tribal government defined ''public;''	(b)(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
	n/a	(ii) As appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process;	(b)(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and nonprofit interests to be involved in the planning process; and
	n/a	(iii) Review and incorporation, if appropriate, of existing plans, studies, and reports; and	(b)(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
	n/a	(iv) Be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives.	n/a
RISK ASSESSMENT: HAZARD IDENTIFICATION	**44 CFR 201.4(c)(2)(i)**	**44 CFR 201.7(c)(2)(i)**	**44 CFR 201.6(c)(2)(i)**
	(2) *Risk assessments* that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments. The risk assessment shall include the following:	(2) A *risk assessment* that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Tribal risk assessments must provide sufficient information to enable the Indian Tribal government to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:	(2) A *risk assessment* that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards. The risk assessment shall include:
	(i) An overview of the type and location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate;	(i) A description of the type, location, and extent of all natural hazards that can affect the tribal planning area. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.	(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.

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
RISK ASSESSMENT: VULNERABILITY ASSESSMENT	**44 CFR 201.4(c)(2)(ii-iii)**	**44 CFR 201.7(c)(2)(ii)(A-D)**	**44 CFR 201.6.(c)(2)(ii)(A-C)**
	(ii) An overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The State shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned or operated critical facilities located in the identified hazard areas shall also be addressed;	(ii) A description of the Indian Tribal government'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 tribe. The plan should describe vulnerability in terms of:	(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. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. 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;	(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;
	(iii) An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State shall estimate the potential dollar losses to State owned or operated 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)(ii)(A) of this section and a description of the methodology used to prepare the estimate;	(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;
	n/a	(C) A general description of land uses and development trends within the tribal planning area so that mitigation options can be considered in future land use decisions; and	(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.
	n/a	(D) Sacred sites that are significant, even if they cannot be valued in monetary terms.	n/a

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
MITIGATION STRATEGY: GOALS & ACTIONS	**44 CFR 201.4(c)(3)(i)&(iii)**	**44 CFR 201.7(c)(3)(i-iii)**	**44 CFR 201.6(c)(3)(i-iii)**
	(3) A *Mitigation Strategy* that provides the State's blueprint for reducing the losses identified in the risk assessment. This section shall include:	(3) A *mitigation strategy* that provides the Indian Tribal government's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:	3) A *mitigation strategy* that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools. This section shall include:
	(i) A description of State goals to guide the selection of activities to mitigate and reduce potential losses.	(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.	(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.
	(iii) An identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each activity contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified.	(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.	(ii) A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.
	n/a	(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the Indian Tribal government.	(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
MITIGATION STRATEGY: POLICIES & FUNDING	**44 CFR 201.4(c)(3)(ii),(iv)&(v)**	**44 CFR 201.7(c)(3)(iv-vi)**	**N/A**
	(ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities.	(iv) A discussion of the Indian Tribal government's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: An evaluation of tribal laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas; and a discussion of tribal funding capabilities for hazard mitigation projects.	
	(iv) Identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.	(v) Identification of current and potential sources of Federal, tribal, or private funding to implement mitigation activities.	
	(v) A State may request the reduced cost share authorized under 79.4(c)(2) of this chapter for the FMA and SRL programs, if it has an approved State Mitigation Plan meeting the requirements of this section that also identifies specific actions the State has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the State intends to reduce the number of such repetitive loss properties. In addition, the plan must describe the strategy the State has to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local mitigation plans.	(vi) An Indian Tribal government may request the reduced cost share authorized under 79.4(c)(2) of this chapter of the FMA and SRL programs if they have an approved Tribal Mitigation Plan meeting the requirements of this section that also identify actions the Indian Tribal government has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the Indian Tribal government intends to reduce the number of such repetitive loss properties.	

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
COORDINATION OF LOCAL MITIGATION PLANNING	**44 CFR 201.4(c)(4)(i-iii)**	**N/A**	**N/A**
	(i) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans.		
	(ii) A description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan.		
	(iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according to a cost benefit review of proposed projects and their associated costs.		

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
MULTI-JURISDICTIONAL MITIGATION PLANS	**N/A**	**44 CFR 201.7(a)(4)**	**44 CFR 201.6(a)(4), 44 CFR 201.6.(c)(2)(iii), 44 CFR 201.6.(c)(3)(iv)**
		(4) Multi-jurisdictional plans (e.g., county- wide or watershed plans) may be accepted, as appropriate, as long as the Indian Tribal government has participated in the process and has officially adopted the plan. Indian Tribal governments must address all the elements identified in this section to ensure eligibility as a grantee or as a subgrantee.	(a)(4) Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan. State-wide plans will not be accepted as multi-jurisdictional plans.
			(c)(2)(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.
			(c)(3)(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.
	44 CFR 201.4(c)(5)i-iii	**44 CFR 201.7(c)(4)**	**44 CFR 201.6(c)(4)**
	(5) A *Plan Maintenance Process* that includes:	(4) A *plan maintenance process* that includes:	(4) A *plan maintenance process* that includes:
PLAN MAINTENANCE & ADOPTION	(i) An established method and schedule for monitoring, evaluating, and updating the plan.	(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan.	(i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a 5-year cycle.
	(ii) A system for monitoring implementation of mitigation measures and project closeouts.	(ii) A system for monitoring implementation of mitigation measures and project closeouts.	n/a
	n/a	(iii) A process by which the Indian Tribal government incorporates the requirements of the mitigation plan into other planning mechanisms such as reservation master plans or capital improvement plans, when appropriate.	(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.
	n/a	(iv) Discussion on how the Indian Tribal government will continue public participation in the plan maintenance process.	(iii) Discussion on how the community will continue public participation in the plan maintenance process.
	(iii) A system for reviewing progress on achieving goals as well as activities and	(v) A system for reviewing progress on achieving goals as well as activities and	n/a

	STATE PLAN (201.4)	TRIBAL PLAN (201.7)	LOCAL PLAN (201.6)
	projects identified in the Mitigation Strategy.	projects identified in the mitigation strategy.	
	44 CFR 201.4(c)(7)	**44 CFR 201.7(c)(6)**	**N/A**
ASSURANCES	(7) *Assurances.* The plan must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c) of this chapter. The State will amend its plan whenever necessary to reflect changes in State or Federal statutes and regulations as required in 44 CFR 13.11(d) of this chapter.	(6) *Assurances*. The plan must include assurances that the Indian Tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 13.11(c) of this chapter. The Indian Tribal government will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes as required in 13.11(d) of this chapter.	
PLAN ADOPTION	**44 CFR 201.4(c)(6)**	**44 CFR 201.7(c)(5)**	**44 CFR 201.(c)(5)**
	(6) *A Plan Adoption Process*. The plan must be formally adopted by the State prior to submittal to us for final review and approval.	(5) *Plan Adoption Process*. The plan must be formally adopted by the governing body of the Indian Tribal government prior to submittal to FEMA for final review and approval.	(5) Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi- jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.
REVIEW & UPDATE	**44 CFR 201.4(d)**	**44 CFR 201.7(d)(3)**	**44 CFR 201.6(d)(3)**
	(d) *Review and updates*. Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval to the appropriate Regional Administrator every 3 years….We also encourage a State to review its plan in the post-disaster timeframe to reflect changing priorities, but it is not required.	(3) Indian Tribal governments must review and revise their plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities and resubmit it for approval within 5 years in order to continue to be eligible for non- emergency Stafford Act assistance and FEMA mitigation grant funding, with the exception of the Repetitive Flood Claims program.	(3) A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities and to resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding.

The National Flood Insurance Program (NFIP) was established with the passage of the National

Flood Insurance Act of 1968, as amended (42 U.S.C. 4001 et seq.). This Act reinforces the

need and requirement for mitigation plans, linking flood mitigation assistance programs to State, Tribal, and Local Mitigation Plans. This appendix explains more about the NFIP requirements

for Indian Tribal governments, and the Community Rating System (CRS).

The Federal Emergency Management Agency (FEMA) administers the NFIP. This voluntary program has three basic aspects:

1. **Floodplain Identification and Mapping**: FEMA issues Flood Insurance Rate Maps (FIRMs) to establish the Special Flood Hazard Area (SFHA) which is a legally defined flood zone or floodprone area that is used for disaster assistance and flood insurance purposes. The FIRMs are also invaluable tools for developing a risk assessment and managing flood risk as part of the Tribal Mitigation Planning process.

2. **Floodplain Management**: To participate in the NFIP, an Indian Tribal government must pass a resolution, adopt the effective FIRM if there is one that includes their lands, and adopt and enforce a flood damage prevention ordinance that meets or exceeds the minimum requirements of the program. These requirements are intended to prevent loss of life, property and cultural resources, as well as economic and social hardships that result from flooding. Indian Tribal governments can incorporate mitigation goals and strategies into their floodplain management ordinances to reduce risk. Similarly, Tribal Mitigation Plans should include mitigation goals and strategies from their floodplain management ordinances and other NFIP or floodplain management activities.

3. **Flood Insurance**: If an Indian Tribal government adopts and enforces a floodplain management ordinance that meets or exceeds the NFIP minimum requirements, FEMA will make flood insurance available for insurable buildings as a financial protection against flood losses. Homeowners' insurance policies generally do not cover flood losses, and many property owners may be unaware that their property is floodprone. Flood insurance provides an alternative to disaster assistance to reduce the escalating costs of repairing damage to homes, buildings, and their contents caused by floods to property owners and renters. Congress mandated federally regulated or insured lenders to require flood insurance on properties in floodprone areas. In addition, a lender can require flood insurance, even if it is not federally required.

FIRMs provide data to define the SFHA, create awareness of flood hazards and assess flood risk, administer floodplain management programs, and determine the basis for flood insurance rates. Adoption and enforcement of a flood hazard prevention ordinance can help mitigate the effects of flooding on new development and substantially improved structures. NFIP participation allows residential and commercial property owners and renters to purchase insurance as a protection against flood losses. In addition, disaster and mitigation grant funds become available for insurable structures within SFHAs for Indian Tribal governments participating in the NFIP that otherwise would not be available to Indian Tribal governments whose lands are mapped but do not participate in the program.

Indian tribes, authorized tribal organizations, Alaska Native villages, or authorized native organizations which have land use authority can join the program even if FEMA has not produced a flood hazard map for some or all of the tribal land areas addressed in the Tribal Mitigation Plan. As of the date of this publication, there are more than 20,000 communities participating in the NFIP with more than 5 million policies in effect for Insurance in Force of $1,143,065,109,700. This includes 36 Indian Tribal governments, with more than 300 insurance policies in effect totaling over $58 million in coverage as of the date of this publication.

FEMA also administers grant programs under the authority of the National Flood Insurance Act. Grants from the Flood Mitigation Assistance (FMA), Severe Repetitive Loss (SRL), and Repetitive Flood Claims (RFC) programs are intended to reduce loss of life and property from potential flood damage. Of the 36 Indian Tribal governments that participate in the NFIP, there are two participating Indian Tribal governments with 250 claims for 87 repetitive loss properties, and none with severe repetitive loss properties as of the date of this publication.

NFIP Participation by Indian Tribal Governments

An Indian Tribal government should describe their floodplain management activities in their Tribal Mitigation Plan. This will help identify additional mitigation actions and strategies and provide support for grant applications, particularly FMA and SRL for those Indian Tribal governments that participate in the NFIP. A Tribal Mitigation Plan should describe the Indian tribe's intent to join or actual participation in the NFIP to identify, analyze, and prioritize actions related to continued compliance with the NFIP; identify repetitive and severe repetitive loss properties; and describe strategies for mitigation of repetitive losses. Relevant information on NFIP compliance actions could include, but is not limited to:

- Description of adoption and enforcement of floodplain management requirements, including regulating all and substantially improved construction in SFHAs;
- Floodplain identification and mapping, including any requests for map updates, if needed;
- Description of community assistance visits and monitoring activities; and.
- Discussion of regulations exceeding FEMA minimum requirements or participation in the Community Rating System (CRS).

Community Rating System (CRS)

CRS is a voluntary program available to participating NFIP communities, including Indian Tribal governments. When an NFIP community implements floodplain management programs that provide a level of protection that exceeds the Federal NFIP requirements, then flood insurance can be available to policyholders in that community for a reduced rate through the CRS program. As of the date of this publication, more than 1,100 communities, including one Indian Tribal government, participate in CRS accounting for 66% of policies in force. A second tribe enrolled in CRS; their participation in this program will be effective starting May 2010.

One of the activities that CRS participants can take to improve their CRS rating (to reduce their risk and subsequently lower their flood insurance premiums) is to develop a CRS Floodplain Management Plan. The CRS 10-step planning process is consistent with the multi-hazard planning regulation under 44 CFR Part 201. However, CRS provides additional credit points for activities that communities or Indian Tribal governments complete during their planning process that go above the minimum requirements, thus reducing their flood risk and possibly lowering insurance rates. An *approved* Tribal Mitigation Plan that addresses floods could qualify for CRS credit. Although Indian Tribal governments are not required to participate in the NFIP or CRS to receive approval of a Tribal Mitigation Plan, FEMA encourages integration of the CRS planning steps into the multi-hazard mitigation planning process to reduce flood risk.

APPENDIX B: MITIGATION PLANNING AND THE NATIONAL FLOOD INSURANCE PROGRAM

Indian Tribal governments can qualify for CRS credit in a variety of ways; for more information on joining CRS, review the information posted at http://www.fema.gov/business/nfip/crs.shtm.

Special Consideration: Community Rating System Coordinators

Each FEMA Regional Office has a designated CRS Coordinator in the Mitigation Division. Indian Tribal governments interested in learning more about joining the CRS should contact the Mitigation Division of the FEMA Regional Office serving their location.

The table below illustrates how the CRS 10-step planning process relates to the four phases of the multi-hazard mitigation planning process. More detailed information can be found in Activity 510 of the CRS Coordinator's Manual or in CRS Example Plans, which can be accessed on the Internet at http://training.fema.gov/EMIWeb/CRS/.

Mitigation Plan Requirements 44 CFR 201.7	CRS Planning Steps	CRS Maximum Points
Prerequisites		
201.7(c)(5)	9. Adopt the Plan	2
Phase 1: Planning Process		
201.7(b)	1. Organize	10
201.7(c)(1)(i)	2. Involve the Public	85
201.7(c)(1)(ii)-(iv)	3. Coordinate	25
Phase 2: Risk Assessment		
201.7(c)(2)(i)	4. Assess the Hazard	20
201.7(c)(2)(i) & (ii)	5. Assess the Problem	35
Phase 3: Mitigation Strategy		
201.7(c)(3)(i)	6. Set Goals	2
201.7(c)(3)(ii)	7. Review Possible Activities	30
201.7(c)(3)(iii) - (vi)	8. Draft an Action Plan	70
Phase 4: Plan Maintenance		
201.7(c)(4)	10. Implement, Evaluate, Revise	15
Total:		294

APPENDIX C: CONTACTS AND RESOURCES

Listed below are resources that, in addition to this guidance, may assist Indian Tribal governments in developing and implementing Tribal Mitigation Plans. For more resources and contacts, visit FEMA's Mitigation Planning Web site at http://www.fema.gov/plan/mitplanning/.

FEMA Regional Tribal Liaisons
See: http://www.fema.gov/about/contact/index.shtm#tribal

Region I - Boston, MA Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont	(617) 956-7506
Region II – New York, NY New Jersey, New York, Puerto Rico, Virgin Islands	(212) 680-3612
Region III – Philadelphia, PA (No Federally Recognized Tribes) District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, West Virginia	(215) 931-5608
Region IV – Atlanta, GA Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee	(770) 220-5200
Region V – Chicago, IL Illinois, Indiana, Wisconsin, Michigan, Minnesota, Ohio	(312) 408-5501
Region VI – Denton, TX Arkansas, Louisiana, New Mexico, Oklahoma, Texas	(940) 898-5104
Region VII – Kansas City, MO Nebraska, Iowa, Missouri, Kansas	(816) 283-7061
Region VIII – Denver, CO Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming	(303) 235-4840
Region IX – Oakland, CA Arizona, California, Guam, Hawaii, Nevada, Pacific Islands	(510) 627-7100
Region X – Bothell, WA Alaska, Idaho, Oregon, Washington	(425) 487-4604
Headquarters Washington, DC	(202) 646-2500

Tribal Historic Preservation Officers at the Advisory Council on Historic Preservation
See: http://www.achp.gov/thpo.html

National Association of Tribal Historic Preservation Officers
See: http://www.nathpo.org/

Tribal Preservation Program at the National Park Service
See: http://www.nps.gov/history/hps/tribal/thpo.htm

American Indian/Alaska Native Coordinating Team at the U.S. Geological Survey
See: http://www.usgs.gov/indian/

National Congress of American Indians
See: http://www.ncai.org/

National Tribal Environmental Council
See: http://www.ntec.org/

Appendix C
Native Village of Alatna Adoption Resolution

RESOLUTION OF ADOPTION
Alatna Tribe, State of Alaska
Resolution No. 18-17

WHEREAS the Alatna Tribe, Alaska is vulnerable to damages from natural hazard events which pose a threat to public health and safety and could result in property loss and economic hardship;

WHEREAS a Tribal Hazard Mitigation Plan (the Plan) was developed through the combined efforts of the Native Village of Alatna's Planning Team, and interested parties within the Alatna area;

WHEREAS the Plan recommends hazard mitigation actions that will protect people and property affected by natural hazards that could potentially affect the area, could potentially reduce future public, private, community, and personal disaster response and recovery costs; and that will reinforce the Alatna Tribal Council's leadership in their emergency preparedness efforts;

WHEREAS the Disaster Mitigation Act of 2000 (P.L. 106-390) (DMA 2000) and associated Federal regulations published under 44 CFR Part 201.6 and 201.7 requires all jurisdictional participants to formally adopt a Hazard Mitigation Plan subject to the approval of the Federal Emergency Management Agency to be eligible for federal hazard mitigation projects and activities funds;

WHEREAS the Native Village of Alatna's Planning Team held public meetings to receive Plan comment as required by DMA 2000;

NOW THEREFORE BE IT RESOLVED by the Alatna Tribal Council that:

1. The Plan is hereby adopted as an official plan of the Alatna Tribe.
2. The Alatna Tribal officials identified in the Planning Process (Section 3) and the Mitigation Action Plan (Section 7) are hereby directed to implement the recommended actions assigned to them. These officials will report quarterly on their activities, accomplishments, and progress to the Tribal council.
3. The Alatna Tribe will provide annual progress reports on the status of their implemented Mitigation Action Plan's projects to their Tribal Planning Team Leader who shall submit this report to the Tribal Council annually by the Plan's adoption anniversary date.
4. The Tribal Planning Team members' will complete periodic updates of the Plan as indicated in the Plan Maintenance Section (Section 3), but no less frequently than every five years or as determined by the State and FEMA.

NOW THEREFORE, BE IT RESOLVED by the Alatna Tribal Council that the Alatna Tribe adopts the Alatna Tribal Hazard Mitigation Plan; dated June 26, 2018 as the Native Village of Alana's Tribal Hazard Mitigation Plan, and resolves to execute and abide by all 44 CFR regulatory actions and requirements within the Plan.

ADOPTED this June 26, 2018

, President
Native Village of Alatna Tribal Council

Appendix D
Public Outreach Activities

This page intentionally left blank

From: Evans, Jessica
To: aet99720@gmail.com
Cc: Simmons, Scott
Subject: Hazard Mitigation Plan update for Allakaket
Date: Wednesday, October 12, 2016 4:39:00 PM

Dear Mayor Bergman and First Chief Bergman,

I am writing to introduce myself, Jessica Evans at AECOM Corp. We were contracted by the Division of Homeland Security and Emergency Management (DHS&EM) to assist the Native Village of Allakaket and the City of Allakaket with updating your 2010 legacy Hazard Mitigation Plan (HMP) to fulfill current FEMA criteria. Hazard Mitigation plans identify hazards which routinely impact a community, defines those hazards so community members understand their nature, impact locations within the community, and their potential impact extent. Having an updated plan can make the community eligible for mitigation grants.

It is important to note that the community does not need pay anything for this project. It is funded by FEMA through DHS&EM.

AECOM's role in this project is to ensure that the Plan meets state and federal requirements. We are at the beginning stages of this project, and we are seeking information about the Village infrastructure, residents, and jurisdictional authorities.

Our task is to write the plan while teaching you the hazard mitigation plan development process. We have been very successful accomplishing this by using a community Planning Team process. AECOM will write the plan. Your community Planning Team will working with us to provide us information.

Our first goal for the community is to encourage you to **select a Planning Team Leader and a few team members** from the community. We suggest you look for team members from the community: Village elders, the health clinic, school, volunteer fire fighters, law enforcement, and others as you deem appropriate. Team members should have knowledge of natural hazards that continually cause damages (such as erosion); what facilities are critical for protection from these hazards; as well as what resources are available within the community to mitigate those hazards.

Local Planning Team membership needs to be manageable, with four or five members. However, a few communities selected their joint community council as their Community Planning Team.

There will be opportunities for the entire community to review the team's work during the public involvement. This can include distributing or posting newsletters or providing information during Council Meetings or other public meetings, and working with us over the phone as we capture needed information.

I will be contacting you to schedule an introductory meeting with the team leader and team members to introduce the project and coordinate information collection. **Please let me know a good day and time** to call you.

We look forward to working with you to complete your portion of the Allakaket Plan Update. Please call me if you have questions.

Sincerely,

Jessica

Jessica Evans
Environmental Scientist/Planner
D 1-907-261-6764
jessica.evans@aecom.com

AECOM
700 G Street, Suite 500, Anchorage, Alaska 99501
T 1-907-562-3366 F 1-907-562-1297
www.aecom.com

Memorandum

700 G Street, Suite 500
Anchorage, AK 99501
Phone: 907.261.6764
Fax: 907.562.1297

SUBJECT: State of Alaska Division of Homeland Security and Emergency Management (DHS&EM) Alatna Hazard Mitigation Plan (HMP) Update – Team Meeting

Community: Alatna, (907) 968-2304

Date/Time: December 15, 2016 / 1:00pm

From: Jessica Evans

Attendees:
Alatna Planning Team:
- Harding Sam, First Chief, Alatna Tribal Council
- Jared Sam, Alatna

AECOM:
- Jessica Evans, Environmental Planner

Subjects covered included:
- AECOM was hired by the State of Alaska to update the hazard mitigation plan (HMP) for Alatna. It is AECOM's responsibility to develop the plan to guarantee FEMA compliance, but we need critical items that only community members of Alatna can provide. Prior to the meeting, Jessica sent Michelle Moses (Second Chief) a document with tables from the 2010 Plan that should be updated for the 2017 Plan. They included hazards to be profiled, a list of critical facilities for Alatna (some are in Allakaket), projects under development in 2010, mitigation goals, and potential projects. Michelle was unable to attend this meeting, but the information can be discussed another time.
- A mitigation plan ensures community eligibility for FEMA and potentially other federal agency funding, for which they are not currently eligible. The more information gathered, the better the plan. The HMP prepares the community to potentially obtain funding to implement projects.
- The attendees confirmed that the hazards profiled in the 2010 plan should be profiled in the updated plan (earthquake, erosion, flood, permafrost, wildland fire). It was noted that spring flooding and summer fires are the biggest concerns.
    - Melting permafrost is an issue; the roads are getting worse and the foundations of homes are sinking.
    - The erosion is mostly in Allakaket, but there are some critical facilities there that are important to Alatna, such as the airstrip, post office, clinic, and the store. They are in the flood plain.
- Jessica explained the next steps would be to discuss community critical facilities, and potential capital improvement projects. Jessica will re-send the tables to discuss.
- The attendees noted that the best way to get an understanding of the issues would be for AECOM and the State to travel to Alatna, and suggested the end of February as a time frame. Jessica noted that she is also updating the plan for Allakaket, and would like to make sure the timeframe works for them too so she can visit them on the same trip (perhaps the next day). AECOM will work with the State to make travel arrangements.
- Public participation is an important part of the HMP process to provide an opportunity for all community members to contribute. Typically this would include newsletters to be displayed in the community that lets the public know where a copy of the plan is available for review. AECOM will provide a draft of the first newsletter for the planning team to review.

Action items:

- Jessica will discuss with supervisor the possibility of visiting Alatna in late winter.
- Jessica will type up meeting notes and send to Michelle Moses. [COMPLETE]
- Jessica will develop a draft of the newsletter for the Planning Team to review.

Next steps:

- A teleconference will be scheduled before the Tribal Council meets on January 10, 2017. The purpose of this meeting will be to talk about the critical facilities in Alatna and potential improvement projects, as time allows. Jessica will send an agenda for the meeting and resend the tables to discuss with the Council.

Memorandum

700 G Street, Suite 500
Anchorage, AK 99501
Phone: 907.261.6764
Fax: 907.562.1297

SUBJECT: State of Alaska Division of Homeland Security and Emergency Management (DHS&EM) Alatna Hazard Mitigation Plan (HMP) Update – Team Meeting

Community: Alatna, (907) 968-2304

Date/Time: January 17, 2017 / 1:00pm

From: Jessica Evans

Attendees:
Alatna Planning Team:
- Harding Sam, First Chief, Alatna Tribal Council
- Jared Sam, Planning Team Member
- Amelia Edwards, Planning Team Member

AECOM:
- Jessica Evans, Environmental Planner

Subjects covered included:
- The Hazard Mitigation Plan update was discussed at the last Tribal Council meeting, and they would like to proceed with the Plan update.
- The team had a series of tables that were taken from the previous (2010) Plan. These will need to be updated, and the information will come from planning team members in Alatna. The team discussed the table listing critical facilities. The table and notes taken are attached.
- Regarding hazards, there is danger in severe cold temperatures, especially when water lines freeze and there is no running water. If/when the Koyukuk River floods, the community can be cut off from all services (water, the health clinic, the store, etc.).
- Dates were discussed for Jessica and a representative from the State to visit Alatna. The third week of February is good, and so is February 6th and 7th. In March the river begins to thaw and it is unsafe to cross.
- Engaging the public is an important part of the Hazard Mitigation Plan process. This can be done with a newsletter (posted where everyone can see it, like the Washeteria), or presented at a public meeting. The team members expressed interest in holding a public meeting while Jessica and a State representative are there.
- If Jessica and a State representative can visit Alatna, they will do the hazard vulnerability assessment for the critical facilities.

Action items:
- Jessica will discuss with supervisor the possibility of visiting Alatna the third week of February.
- Jessica will type up meeting notes and send to Michelle Moses.

Next steps:
- With approval from the State, plans will be made in coordination with Michelle Moses for a February visit.

This page intentionally left blank

ALATNA VILLAGE TRIBAL HAZARD MITIGATION PLAN

February 2017 **Newsletter 1**

This newsletter is for the Alatna Village (Village) Hazard Mitigation Planning project development processes. It explains the planning project to all interested agencies, stakeholders, and the public solicits comments. You can also view it on the State of Alaska Division of Homeland Security and Emergency Management Website at https://ready.alaska.gov/plans/localhazmitplans .

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management (DHS&EM) was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency (FEMA) to update your 2010 Hazard Mitigation Plan (HMP).

AECOM was contracted to assist the community with preparing a FEMA-approvable Tribal HMP.

The Alatna Hazard Mitigation Plan will identify all natural hazards, such as earthquake, erosion, flood, severe weather, and wildland/tundra fire, etc. The plan will also identify the people and facilities potentially at risk and ways to mitigate damage from future hazard impacts. We will document the public participation and planning process as part of this project.

What is Hazard Mitigation?

Hazard mitigation projects eliminate the risk or reduce the hazard impact severity to people and property. Projects may include short- or long-term activities to reduce exposure to or the effects of known hazards. Hazard mitigation activities include relocating or elevating buildings, replacing insufficiently sized culverts, using alternative construction techniques, or developing, implementing, or enforcing building codes to prevent damage.

Why Do We Need A Hazard Mitigation Plan?

Communities must have a State, FEMA-approved, and community adopted HMP to receive a project grant from FEMA's grant programs. Alatna's HMP will make you eligible to apply for mitigation funds after the plan is complete.

A FEMA approved and community adopted HMP enables the local and tribal governments to apply for the Hazard Mitigation Grant Program, a disaster related assistance program; the Pre-Disaster Mitigation, and the National Flood Insurance Program Flood Mitigation Assistance grant programs.

The Planning Process

There are very specific federal requirements that must be met when preparing a hazard mitigation plan. These requirements are commonly referred to as the Disaster Mitigation Act of 2000, or DMA2000 criteria. Information about the criteria and other applicable laws and regulations may be found at: *http://www.fema.gov/mitigation-planning-laws-regulations-guidance*.

The DMA2000 requires the plan to include and document the following topics:

- New Planning Team membership and processes
- HMP update participation and plan reviewers
- Identify new hazards not formerly addressed
- Explain hazard impacts occurring since 2010
- Identify changes to critical facilities, review their relative location within each hazard's impact area, and determine their estimated replacement costs
- Define the community's population risk and critical facility vulnerabilities
- Review and update the existing hazard mitigation goals
- Determine the status of the projects of the Mitigation Strategy: completed, deleted, delayed, combined/changed, or viable and ongoing
- Update the Maintenance section to reflect how the Village completed plan annual review commitments and identify whether it was effective or not, then update the process to make it more effective for future use
- Provide a copy of the community's HMP Adoption Resolution

FEMA has prepared a Local Multi-Hazard Mitigation Planning Guidance (available at: *http://emilms.fema.gov/is318/assets/local_mtgtn_plan_gdnce_0708.pdf*) that explains how the HMP meets each of the DMA2000 requirements.

We are currently in the very beginning stages of preparing the plan. We have conducted a Planning Team Meeting to introduce the project and planning team, to gather comments from community residents to update the hazards lists, and collect data to refine the vulnerability assessment.

We Need Your Help

Please use the table on the following page to identify any hazards you have observed in your area that DHS&EM is not aware of AND any additional natural hazards that may not be on the list.

Alatna Hazard Worksheet		
Hazard	Yukon-Koyukuk REAA*	Alatna Village
Earthquake	Yes	
Erosion	Yes	
Flood	Yes	
Ground Failure (Avalanche, Landslide, Permafrost)	No	
Severe Weather	Yes	
Tsunami & Seiche	No	
Volcano	No	
Wildland Fire	No	

*Hazard Matrix from the 2013 State of Alaska Hazard Mitigation Plan for the Yukon-Koyukuk REAA.

DHS&EM identified critical facilities within Alatna Village as part of the Alaska Critical Facilities Inventory, but the list of critical facilities needs to be updated and the estimated value and location (latitude/longitude) determined.

In addition, the number and value of structures, and the number of people living in each structure will need to be documented. Once this information is collected we will determine which critical facilities, residences, and populations are vulnerable to specific hazards in Alatna. Please add additional facilities if needed.

Alatna's Critical Facilities*	
Tribal Office Building	City Store (Allakaket)
VSPO office (Allakaket)	Roads
U.S. Post Office (Allakaket)	Bulk Fuel Facility at the Washeteria
Boat Landing	Community Well & Water Point
Airport (Allakaket)	Sewage Lagoon
Multi-Purpose Health Clinic, Washeteria Facility, Water Treatment Plant	Alaska Power Company, Generator with Bulk Fuel storage
Allakaket School (Allakaket)	Safehouse
Alatna Cemetery	Outdoor Cultural Area
Allakaket Cemetery (Allakaket)	

* Alaska Critical Facilities Inventory 2016, Alatna Planning Team, and 2010 HMP

The Planning Team

The Alatna planning team is being led by Harding Sam and Michelle Moses. AECOM Corporation has been contracted by DHS&EM to provide assistance and guidance to the planning team throughout the planning process.

Public Participation

Public involvement will continue throughout the project. The goal is to receive comments, identify key issues or concerns, and improve ideas for mitigation. When the Draft Alatna Hazard Mitigation Plan is complete, the results will be presented to the community before DHS&EM and FEMA approval and community adoption.

We encourage you to take an active part in preparing the Alatna Village's Tribal Hazard Mitigation Plan (THMP) development effort. The purpose of this newsletter is to keep you informed and to allow you every opportunity to voice your opinion regarding this important project. Please contact your community HMP Team Leader or Jessica Evans, AECOM, directly if you have any questions, comments, or to requests additional information:

Alatna HMP
Planning Team Leader
Michelle Moses
PO Box 70
Alatna, AK 99720
Phone: 907.968.2304
eMail: aet99720@gmail.com

AECOM Corporation
Jessica Evans, HMP Planner
700 G Street, Suite 500
Anchorage, Alaska 99501
Phone: 800.261.6764
eMail: Jessica.evans@AECOM.com

DHS&EM
Michelle Torres
State Hazard Mitigation Officer
P.O. Box 5750
JBER, AK 99505
Phone: 907.428.7032
eMail : michelle.torres@alaska.gov

Memorandum

700 G Street, Suite 500
Anchorage, AK 99501
Phone: 907.261.6764
Fax: 907.562.1297

SUBJECT: State of Alaska Division of Homeland Security and Emergency Management (DHS&EM) Alatna Hazard Mitigation Plan (HMP) Update – Team Meeting

Location: Alatna, Tribal Hall

Date/Time: February 16, 2017 / 4:00pm

Attendees:
Alatna Planning Team:

- Harding Sam, First Chief, Alatna Tribal Council
- Jared Sam, Alatna
- Michelle Moses, Alatna Tribal Council

AECOM:

- Jessica Evans, Environmental Planner

Subjects covered included:

- Mr. Sam suggested adding to the projects list: acquiring emergency communication equipment like a satellite phone and hand-held radios.
- Erosion is causing problems to the cemetery, which is located near the edge of a failing bluff.
- Denise Callahan at IRHA said that even the new Alatna site is within a floodplain. Ms. Evans will try to get this information.
- Tanana Chiefs Conference is going to offer training to complete a Small Community Emergency Response Plan for Alatna.

The following sites possess a very important cultural significance for the Native Village of Alatna. These can be placed in an appendix in the HMP, if the Tribe feels the location should not be released to the public. The Tribe noted that it this is not necessary.

- The Alatna Cemetery
- Picnic area by the Koyukuk River
- Fishing areas
- The site of Old Alatna
- Archeological sites near the Koyukuk River

General questions from AECOM

- How much does it cost to build a typical house? The last plan listed at $250,000, it would be $275,000 now.
- What are your buildings made of? Some wood, some pre-fabricated.
- Current population? The 2010 Census said 37; the 2016 State estimate was 23. Planning team: 16.
- How many houses do you have? 17. How many are vacant? About half.

700 G Street, Suite 500
Anchorage, AK 99501
Phone: 907.261.6764
Fax: 907.562.1297

The following table was discussed by the Planning Team. The red text indicates changes that were made.

Action items:

- Jessica will contact Denise Callahan, IHRA.
- Michelle will look in Tribal ordinances for burning restrictions.

Next steps:

- A Draft Hazard Mitigation Plan will be completed by AECOM and sent to the Alatna Tribe for review.

NATIVE VILLAGE OF ALATNA HAZARD MITIGATION PLAN (HMP)

June 2017 **Newsletter 2**

This newsletter discusses the preparation of the Native Village of Alatna Hazard Mitigation Plan. It has been prepared to inform interested agencies, stakeholders, and the public about the project and to solicit comments. This newsletter can also be viewed on the State of Alaska Division of Homeland Security and Emergency Management Website at: http://ready.alaska.gov/plans/localhazmitplans

HMP Development

The Native Village of Alatna was one of several communities selected by the State of Alaska, Division of Homeland Security and Emergency Management (DHS&EM) for a Hazard Mitigation Planning (HMP) development project. The plan identifies natural hazards that affect the community including earthquake, flood and erosion, ground failure, severe weather, and tundra/wildland fire. The HMP also identifies the people and facilities potentially at risk and potential actions to mitigate community hazards. The public participation and planning process is documented as part of the project.

What is Hazard Mitigation?

Across the United States, natural disasters have increasingly caused injury, death, property damage, and business and government service interruptions. The toll on individuals, families, and businesses can be very high. The time, money, and emotional effort required to respond to and recover from these disasters take public resources and attention away from other important programs and problems.

People and property throughout Alaska are at risk from a variety of hazards that have the potential for causing human injury, property damage, or environmental harm.

The purpose of hazard mitigation is to implement projects that reduce the risk severity of hazards on people and property. Mitigation programs may include short-term and long-term activities to reduce hazard impacts or exposure to hazards. Mitigation could include education, construction, or planning projects. Hazard mitigation activity examples include relocating buildings, developing or strengthening building codes, and educating residents and building owners.

Why Do We Need A Hazard Mitigation Plan?

A community is only eligible to receive grant money for mitigation programs by preparing and adopting a hazard mitigation plan. Communities must have an approved mitigation plan to receive grant funding from the Federal Emergency Management Agency (FEMA) for eligible mitigation projects.

The Planning Process

There are very specific federal requirements that must be met when preparing a HMP. These requirements are commonly referred to as the Disaster Mitigation Act of 2000, or DMA 2000 criteria. Information about the criteria may be found on the Internet at: http://www.fema.gov/mitigation-planning-laws-regulations-guidance.

The DMA 2000 requires the plan to document the following topics:

- Planning process
- Community Involvement and HMP review
- Hazard identification
- Risk assessment
- Mitigation Goals
- Mitigation programs, actions, and projects
- A resolution from the community adopting the plan

FEMA has prepared a Local Planning Review Guide (available at: http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=4859). It explains how the HMP meets each of the DMA2000 requirements. FEMA has prepared and "Mitigation Planning Guidance" and "How to Guides" (available at: http://www.fema.gov/hazard-mitigation-planning-resources). The Village's Hazard Mitigation Plan will follow those guidelines.

The planning process kicked-off in November 2016 by establishing a local planning committee and holding a meeting. The planning committee examined the full spectrum of hazards listed in the State Hazard Mitigation Plan and identified five hazards the HMP would address.

After the first meeting, Village planning staff and AECOM began identifying critical facilities, compiling the hazard profiles, assessing capabilities, and conducting the risk assessment for the identified hazards. Critical facilities are facilities that are critical to the recovery of a community in the event of a disaster. After collection of this information, AECOM helped to determine which critical facilities and estimated populations are vulnerable to the identified hazards for Alatna.

A mitigation strategy was the next component of the plan to be developed. Understanding the community's local

capabilities and using information gathered from the public and the local planning committee and the expertise of the consultants and agency staff, a mitigation strategy was developed. The mitigation strategy is based on an evaluation of the hazards, and the assets at risk from those hazards. Mitigation goals and a list of potential actions/projects were developed as the foundation of the mitigation strategy.

Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goals are positively stated future situations that are typically long-range, policy-oriented statements representing community-wide visions. Mitigation actions and projects are undertaken in order to achieve your stated objectives. On February 16, 2017, the local planning committee identified projects and/or actions for each hazard that focus on six categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. A representative sample of the mitigation actions identified as a priority by the planning team are listed below, and explained in more detail in the plan.

The selected projects and/or actions will potentially be implemented over the next five years as funding becomes available. A maintenance plan was also been developed for the hazard mitigation plan. It outlines how the community will monitor progress on achieving the projects and actions that will help meet the stated goals and objectives, as well as an outline for continued public involvement.

The draft plan is available in the Tribal office for public review and comment. Comments should be made via email, fax, or phone to Jessica Evans (listed below) and be received no later than July 30, 2017. The plan will be provided to DHS&EM and FEMA for their preliminary approval and returned to Alatna's Tribal Council.

The Planning Committee

The plan was developed with the assistance from the community's planning committee consisting of a cross section from the community. Planning Team members who helped with developing the plan include Team Leader, Michelle Moses, with assistance from the Alatna Tribal Council, and Jessica Evans with AECOM.

Sample of the Native Village of Alatna's Mitigation Actions. Review the draft HMP for a complete list.		
Acquire emergency communication equipment, including a satellite phone and hand-held radios.	Identify potential outside agencies to fund identified mitigation projects (ANTHC, DCCED, DOT&PF, and HUD etc.).	Develop outreach program to educate the public concerning warnings and evacuation procedures
Develop outreach program to educate residents concerning benefits of increased seismic resistance and modern building code compliance during rehabilitation or major repairs for residences or businesses.	Develop and maintain severe winter storm public outreach program defining mitigation activity benefits through educational outreach aimed at households and businesses while targeting special needs populations.	Acquire (buy-out), demolish, or relocate structures from hazard prone area. Property deeds shall be restricted for open space uses in perpetuity to keep people from rebuilding in hazard areas.
Determine best erosion mitigation measures for the Cemetery	Map existing permafrost areas to assist in critical facility relocation siting.	Identify and pursue funding opportunities to implement mitigation actions.
Develop an outreach program to educate public concerning NFIP participation benefits, floodplain development, land use regulation, and NFIP flood insurance availability to facilitate continued compliance with the NFIP	Cross reference and incorporate mitigation planning provisions into all community planning processes such as comprehensive, capital improvement, and land use plans, etc. to demonstrate multi-benefit considerations and facilitate using multiple funding source consideration.	Hold an annual or biennial "hazard meeting" to educate residents about recognizing and mitigating natural hazards that affect the Village. Presentations can be either brochure or other written media so residents can take information with them after the meeting. Example Topics: NFIP program participation benefits, safe fire practices, and erosion reduction, etc.

We encourage you to learn more about the Native Village of Alatna's Hazard Mitigation Plan. The purpose of this newsletter is to keep you informed and to allow you every opportunity to voice your opinion regarding this important project. If you have any questions, comments, or requests for more information, please contact:

Jessica Evans, Environmental Planner
AECOM
700 G Street, Suite 500
Anchorage, Alaska 99501
907.261.6764 or 800.909.6787
jessica.evans@aecom.com

Michelle Torres, DHS&EM
State Hazard Mitigation Officer
P.O. Box 5750
JBER, AK 99505
907.428.7032
michelle.torres@alaska.gov

From: Evans, Jessica
To: Simmons, Scott
Subject: FW: Hazard Mitigation Plan meeting
Date: Monday, June 26, 2017 1:23:17 PM

Boom.

I'll try to finish up Allakaket's draft plan in the morning and get it out with tomorrow's mail.

Jessica

Jessica Evans
Environmental Scientist/Planner
D 1-907-261-6764
jessica.evans@aecom.com

AECOM
700 G Street, Suite 500, Anchorage, Alaska 99501
T 1-907-562-3366 F 1-907-562-1297
www.aecom.com

From: Evans, Jessica
Sent: Monday, June 26, 2017 1:21 PM
To: 'Jonathan Henzie'
Subject: RE: Hazard Mitigation Plan meeting

Wow! This is wonderful. Thanks for all your hard work on this!

I will incorporate this information into your Draft Plan and put it in the mail this week. After you have had a chance to review it, we can make any changes you would like, and then it can go on to the State and FEMA for final review and approval.

Well done!

Jessica

Jessica Evans
Environmental Scientist/Planner
D 1-907-261-6764
jessica.evans@aecom.com

AECOM
700 G Street, Suite 500, Anchorage, Alaska 99501
T 1-907-562-3366 F 1-907-562-1297
www.aecom.com

From: Jonathan Henzie [mailto:jonathan.henzie@outlook.com]
Sent: Monday, June 26, 2017 1:16 PM
To: Evans, Jessica
Subject: Re: Hazard Mitigation Plan meeting

Good Morning Jessica,

I have reviewed all of the documents that you have provided to me as e-mail attachments. Regarding Table 7-5 (Blue) and as far as the status of these actions, I believe all of them still need to be completed. I don't think that any actions were taken on any of the projects. Sounds like a great goal plan though.
Regarding the sample projects list, I feel like maybe since no actions were taken on the current projects list than we should wait to add more to that list. I hope that makes sense.
Regarding the newsletter #1, I have assistants that are currently making copies and making them available in at least five public buildings.
Regarding the Critical facilities and infrastructure table 6-4 I have reviewed it as well as the acting Tribal Admin Catherine Henzie and we have found no additions. Please let me know if there is anything else.

If you have any questions, concerns, or need additional information, please feel free to contact me with the information below.

Thank you,

Jonathan M. Henzie
Environmental Coordinator
Allakaket Village Council
Tribal Environmental Department
P.O. Box 50
Allakaket, Alaska 99720
Ph: (907) 968-2529
Fx: (907) 968-2233
jonathan.henzie@outlook.com

"Treat the Earth well. It was not given to you by your parents. It was loaned to you by your children. We do not inherit the Earth from our ancestors. We borrow it from our children."

From: Evans, Jessica <jessica.evans@aecom.com>
Sent: Thursday, May 11, 2017 2:36:07 PM
To: jonathan.henzie@outlook.com
Subject: Hazard Mitigation Plan meeting

Jonathan,

It was good to talk to you again today. For our teleconference, we don't need everybody there, just a few people who would know about the things we'll talk about.

What I want to go over is:

- Your 2010 plan had a list of potential projects that the city wanted to implement. I need the status of those projects. We will also think about new projects that should be added to the plan.
- Important infrastructure (or critical facilities). I sat with Elizabeth when I was there and we refined this list, but it would be good to have someone else look at it to make sure it is right.

I'm going to attach the stuff that I sent in the mail, and then later faxed:

- Table 6-4 (red), Allakaket's Critical Facilities and Infrastructure. This is the list that Elizabeth and I went over in detail.
- Table 7-5 (blue), Potential Mitigation Actions. These are the projects that the City put into the 2010 HMP.
- Sample Projects List (blue). These are examples of mitigation projects that can be added to the plan.
- Newsletter #1. Please make these available in the Tribal Hall and/or City Building for the public to take. I can send more copies if necessary.

Let me know when you get this email—I worry about attachments ☺ . Call me anytime to schedule a teleconference. 907-310-9014.

Thanks for your help!

Jessica

Jessica Evans
Environmental Scientist/Planner
D 1-907-261-6764
jessica.evans@aecom.com

AECOM
700 G Street, Suite 500, Anchorage, Alaska 99501
T 1-907-562-3366 F 1-907-562-1297
www.aecom.com

This page intentionally left blank

Appendix E
Benefit–Cost Analysis Fact Sheet

Appendix E: 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 (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 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 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 (FFE).
- 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 F
Plan Maintenance Documents

This page intentionally left blank

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 planning team undertaken any public outreach activities regarding the HMP or implementation of mitigation actions?			
HAZARD PROFILES	Has a natural and/or manmade/ technologically caused disaster occurred during this reporting period?			
	Are there natural and/or manmade/ technologically caused hazards that have not been addressed in this HMP and should be?			
	Are additional maps or new hazard studies available? If so, what have they revealed?			
VULNERABILITY ANALYSIS	Do any critical facilities or infrastructure need to be added to the asset lists?			
	Have there been development patterns changes 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 within the City or Village as applicable?			
	Are the goals still applicable?			
	Should new mitigation actions be added to the Mitigation Action Plan (MAP)?			
	Do existing mitigation actions listed in the Mitigation Strategies' MAP need to be reprioritized?			
	Are the mitigation actions listed in the MAP appropriate for available resources?			

This page intentionally left blank

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(s):** _____

List Supporting Agencies and Contacts:

Total Project Cost: _____

Anticipated Cost Overrun/Underrun: _____

Project Approval Date: _____ **Project Start Date:** _____

Anticipated Completion Date: _____

Description of Project (describe each phase, if applicable, and the time frame for completing each phase:

Milestones	Complete	Projected Completion Date

MITIGATION ACTION PROGRESS REPORT

Plan Goal(s) Addressed:

Goal:

Success Indicators:

Project Status

- ☐ **On Schedule**
- ☐ **Completed**
- ☐ **Delayed***

*** Explain:**

- ☐ **Canceled**

Project Cost Status

- ☐ **Cost Unchanged**
- ☐ **Cost Overrun****

**** Explain:**

- ☐ **Cost Underrun*****

***** Explain:**

Summary of progress on project for this report:

A. What was accomplished during this reporting period?

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

C. How was each problem resolved?

Next Steps: What is/are the next step(s) to accomplish over the next reporting period?

Other Comments: