City and Native Village of Diomede
Multi-Jurisdictional Hazard Mitigation Plan

Prepared by

The Diomede Hazard Mitigation Planning Team

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Acronyms/Abbreviations

°F	Degrees Fahrenheit
ACCIMP	Alaska Climate Change Impact Mitigation Program
ACWF	Alaska Clean Water Fund
ADWF	Alaska Drinking Water Fund
AEA	Alaska Energy Authority
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
ARC	American Red Cross
AVCP	Association of Village Council Presidents
AVEC	Alaska Village Electric Cooperative
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
CBO	Communications Building-Other
CCP	Citizen Corps Program
CDBG	Community Development Block Grant
CFR	U.S. Code of Federal Regulations
CIG	Conservation Innovation Grant
City	City of Diomede
CTA	Conservation Technical Assistance
CWSRF	Clean Water State Revolving Fund
DCCED	Department of Commerce, Community, and Economic Development
DCRA	Division of Community and Regional Affairs
DEC	Department of Environmental Conservation
DHS	U.S. Department of Homeland Security
DHS&EM	Division of Homeland Security and Emergency Management
DHSS	Department of Health and Social Services
DGGS	Division of Geological and Geophysical Surveys
DM	Debris Management Grant
DMA 2000	Disaster Mitigation Act Of 2000
DMVA	Department of Military and Veterans Affairs
DNR	Department of Natural Resources
DOI	Division of Insurance
DOL	Department of Labor
DOT/PF	Department of Transportation and Public Facilities
DSPR	DEC Division of Spill Prevention and Response
DSS	Division of Senior Services

Acronyms/Abbreviations

ECP	Emergency Conservation Program
EFSP	Emergency Food and Shelter Program
EMPG	Emergency Management Performance Grant
ENSO	El Niño/La Niña Southern Oscillation
EOC	Emergency Operations Center
EPA	US Environmental Protection Agency
EPPS	Energy Production Plant-Small
EQ	Earthquake
EQIP	Environmental Quality Incentives Program
EWP	Emergency Watershed Protection Program
FEMA	Federal Emergency Management Agency
FL	Flood
FMA	Flood Mitigation Assistance
FP&S	Fire Prevention and Safety
ft	Feet
FY	Fiscal Year
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
IBHS	Institute for Business And Home Safety
ICDBG	Indian Community Development Block Grant
IGAP	Indian General Assistance Program
IHBG	Indian Housing Block Grant
IHLGP	Indian Home Loan Guarantee Program
INAP	Indian and Native American Programs
IRS	Internal Revenue Service
kt	Knot
M	Magnitude
MAP	Mitigation Action Plan
mb	Millibar
MGL	Municipal Grants And Loans
MMI	Modified Mercalli Intensity
mph	Miles Per Hour
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
NAHASDA	Native American Housing Assistance and Self Determination Act
NFIP	National Flood Insurance Program
NIMS	National Incident Management System

Acronyms/Abbreviations

NOAA	National Oceanic and Atmospheric Administration
NRF	National Response Framework
NRCS	Natural Resources Conservation Service
NWS	National Weather Service
OTF	Oil Tank Farm
PDM	Pre-Disaster Mitigation
PGA	Peak Ground Acceleration
POP	Period of Performance
PPD-8	President signed Presidential Policy Directive 8
PWE	Potable Water Well
PWS	Port Waterfront Structures (Harbor)
PWTS	Potable Water Treatment (Plant)-Small
RCASP	Remote Community Alert Systems
RD	Rural Development
REAA	Rural Educational Attendance Area
Risk MAP	Risk Mapping, Assessment, and Planning
RFC	Repetitive Flood Claims
RL	Repetitive Loss
RurAL CAP	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
SHSP	State Homeland Security Program
SNAP	Scenarios Network for Alaska and Arctic Planning
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
SW	Severe Weather
T/F	Technical / Feasibility
Tribe	Native Village of Diomede's Tribal Council
UAF	University of Alaska 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
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VFA-RFA	Volunteer Fire Assistance and Rural Fire Assistance Grant
VO	Volcano
Village	Native Village of Diomede

Acronyms/Abbreviations

VSW	Village Safe Water
WARN	Warning, Alert, and Response Network
WSO	Weather Service Office

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

1.1 OVERVIEW

In recent years, local 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 [U.S.C.] 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.

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 with subsequent updates. The planning requirements for local entities 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 that communities participating in the National Flood Insurance Program (NFIP) modify their 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.

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

1.2 TRIBAL AUTHORITIES AND REQUIREMENTS

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. This regulation 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 subgrantee 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 subgrantee is an entity, such as a community, local, or Indian Tribal government; State-recognized tribe; or a private nonprofit (PNP) organization to which a subgrant 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 subgrantee 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 subgrantee for Public Assistance (PA), 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 subgrantee 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 subgrantee, 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	Subgrantee Status
Public Assistance (PA) (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*	✓	✓

Table 1-1 Tribal HMP Authorities and Requirements

Program	Enabling Legislation	Funding Authorization	Tribal Mitigation Plan Required (✓)	
			Grantee Status	Subgrantee Status
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*

(FEMA 2010a)

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 (U.S.C.) 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

Table 1-2 lists HMA eligible grant program activities:

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	✓	✓	✓

Table 1-2 HMA Eligible Activities

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

The City of Diomede does not participate in the NFIP and is therefore ineligible for National Flood Insurance Act Grant Programs until they become a NFIP participant.

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).

MJHMP Layout Description

This MJHMP 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 City of Diomede (City) and Native Village of Diomede (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 City and Native Village of Diomede plans to implement to assure continued public participation; and their methods and schedule for keeping the plan current.

This section also describes the planning team's formal plan maintenance process to ensure that the MJHMP remains an active and applicable document throughout its 5-year lifecycle. The process includes monitoring, reviewing, evaluating (Appendix F – Maintenance Documents), updating the MJHMP; and implementation initiatives.

Section 4 Jurisdictional Adoption

Section four describes the community's MJHMP 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 MJHMP. The hazard analysis includes the nature, previous occurrences (history), location, extent, impact, and 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 City and Native Village of Diomede's 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 City and Native Village of Diomede. 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 MJHMP.

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 City of Diomede and the Native Village of Diomede.

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.

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Section Two provides the City and Native Village of Diomede's location, geography, history, and demographic information.

2.1 LOCATION, GEOGRAPHY, AND HISTORY

The City and Native Village of Diomede are collocated and intermingled within the same geographic area with no separation between communities. As depicted on the cover, the community is unique because it is entirely located on the sloped portion of a very small section of the island, near the Bering Sea's water's edge.

For the purposes of this plan, the area included in both the City of Diomede and the Native Village of Diomede encompasses the entire island. (See Figure 6-1, page 6-5 & Figure 6-2, page 6-6)

"Inaliq: 'The Other One' or *'The Island Over There' "* (AW 2015).

The City and Village of Diomede (Inaliq) is located on the island of Little Diomede (Ignaluk) Island, 2.5 miles from Big Diomede Island, Russia in the Bering Strait. The International Date Line lies between the two islands (DCRA 2016, KI 2012).

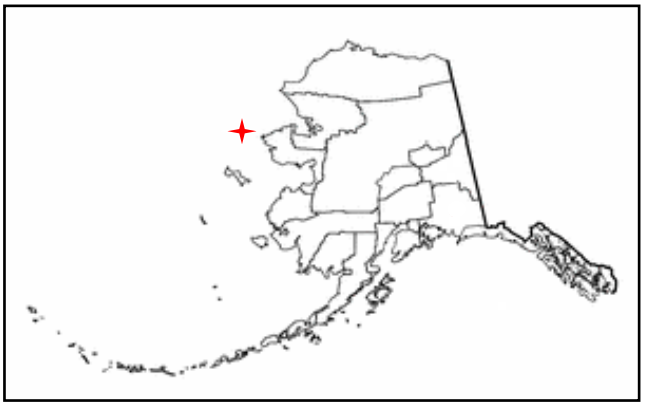

Figure 2-1 Diomede's Location Map

Little Diomede Island encompasses approximately 2.8 square (sq.) miles, all of it land. The City and Village (Diomede) lies within a transitional climate zone, characterized by tundra and boreal forests, however there is little vegetation on the island. During the summer, the climate is generally cloudy and foggy. Winds are consistent from the north and average 17 mph, with gusts of 60 to 80 mph. The Bering Strait is typically frozen between mid-December and mid-June (DCRA 2016, KI 2012).

Early Eskimos on the islands worked on the ice and sea and had a culture with elaborate whale hunting ceremonies. Historically, residents hunted on sea and ice and traded with natives in both Asia and Alaska. They were closely related to families living on Big Diomede Island. The islands were named in 1728 by Vitus Bering in honor of Saint Diomede. The 1880 Census counted 40 people, all Ingalikmiut Eskimos, in the village of "Inalet."

During World War II, the "Ice Curtain" was formed between the islands, and Big Diomede became a Soviet military base. Although officially forbidden to do so, residents from the two islands did occasionally meet on the International Date Line under the cover of fog, visiting briefly. Eventually all Native residents of Big Diomede were moved to mainland Russia, and Little Diomede residents who strayed into Soviet waters were taken captive. Following the end of the Cold War, an interest in reuniting with families across the Bering Strait revived. However, many of the residents of Little Diomede were unable to reunite with relatives (AW 2015, DCRA 2016).

Diomede has a traditional Ingalikmiut Eskimo village intermingled with the city. The community has a subsistence lifestyle, hunting oogruk (seal), polar bear, blue crab, and whale. At times,

other Alaska Natives come to Diomede to hunt polar bears. Seal and walrus hides are used to make parkas, hats, mukluks, furs, and skins for trade (DCRA 2016).

The City of Diomede was incorporated in 1970. Some residents are interested in relocating the community due to the rocky slopes, harsh storms, lack of useable land for housing construction, and inability to construct a water/sewer system, landfill, or airport (DCRA 2016).

2.2 DEMOGRAPHICS

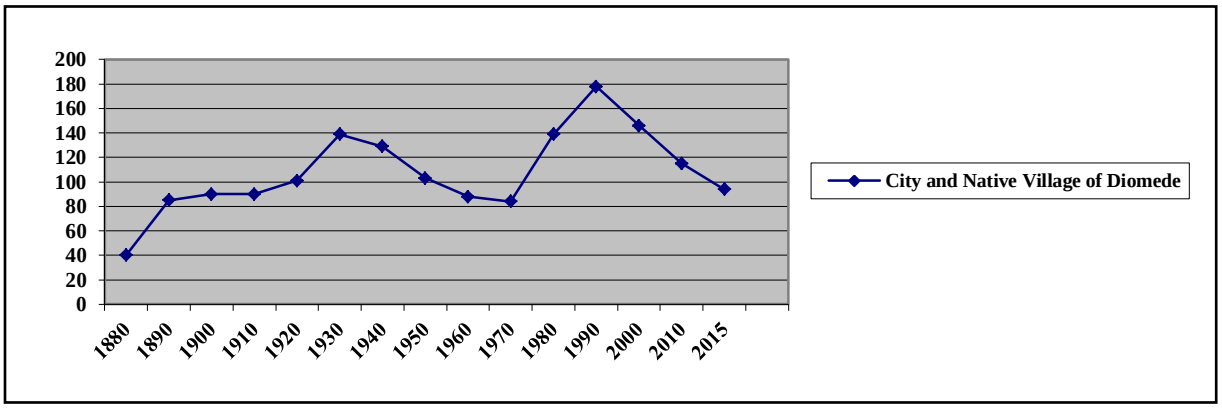

Figure 2-2 Diomede's Historic Population

The 2010 census recorded 115 residents, of which the median age is 26, indicating a relatively young population. The population of Diomede is expected to remain steady because over half of the population is under 40 years of age. The population is principally of Ingalikmiut Eskimo heritage, speaking Inupiaq. The male and female composition is approximately 61 and 54 percent, respectively. The 2010 census revealed that there are 38 households with the average household having approximately 4 individuals. The most recent 2015 Department of Commerce, Community, and Economic Development (DCCED) certified population is 94. Information from the planning team population count found 104 individuals, with 29 houses currently occupied. Figure 2-2 illustrates the community's historic population (DCRA 2016).

2.3 ECONOMY

The community's economy is primarily based on subsistence, local government, and education in Diomede; however, there are a few other general employment opportunities within the community listed by the Department of Labor and Workforce Development (DLWD) 2016 database. (DLWD 2016)

According to U.S. Census Bureau's 2010-2014 American Community Survey 5-Year Estimates, the median household income in Diomede was $18,750 with a per capita income of $11,415. Approximately 58.5 percent were reported to be living below the poverty level. The potential work force (those aged 16 years or older) in the community was estimated to be 53, of which 51 were actively employed. In 2015 there were 5 unemployment insurance claimants.

Figure 2-3 is a photograph of subsistence activity. Figures 2-4 and 2-5 depict aerial views of the community.

Figure 2-3 Subsistence Activity in Diomede (Photo Credit: Jessica Evans)

Figure 2-4 Aerial View of the City and Native Village of Diomede (Photo Credit: Jessica Evans)

2

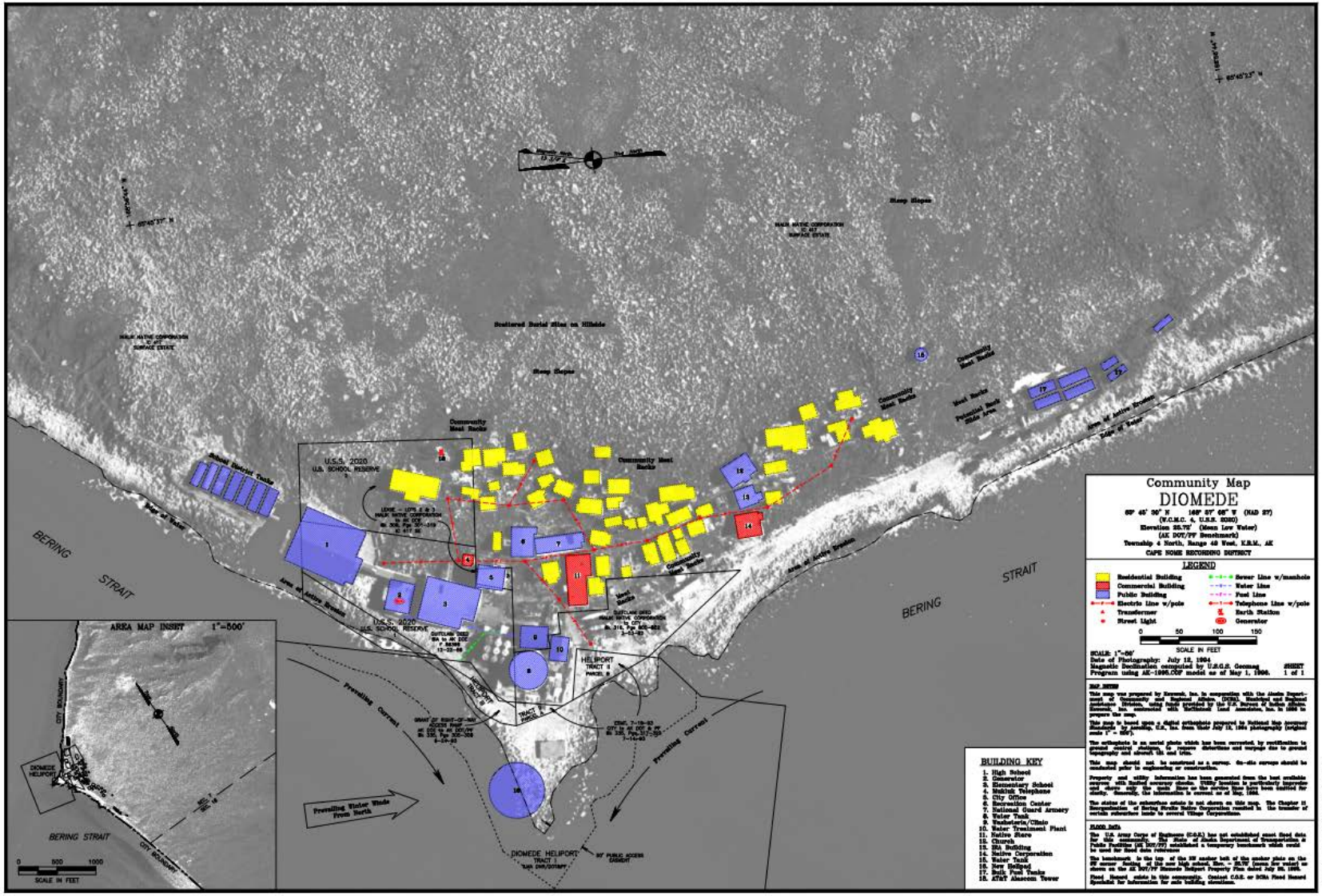

Figure 2-5 Aerial View of the City and Native Village of Diomede (DCRA 1996)

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 MJHMP. Outreach support documents and meeting information regarding the planning team and public outreach efforts are provided in Appendix D.

DMA 2000 requirements and implementing local and multi-jurisdictional governance regulations for describing the planning process include:

DMA 2000 Requirements
Local Planning Process §201.6(b): 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: Element §201.6(b)(1): An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; §201.6(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 §201.6(b)(3): Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. §201.6(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 involved. §201.6(c)(4)(i): The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle. §201.6(c)(4)(iii): The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.
1. REGULATION CHECKLIST
ELEMENT A. Planning Process
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1)) A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2)) A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1)) A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3)) A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii)) A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle?) (Requirement §201.6(c)(4)(i))
A7. Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process? (Not applicable until 2013 update).
Source: FEMA, March 2015.

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

DMA 2000 Requirements
ELEMENTS. Planning Process
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process? [44 CFR § 201.7(c)(1)] A2. Does the plan document an opportunity for public comment during the drafting stage and prior to plan approval, including a description of how the tribal government defined "public"? [44 CFR § 201.7(c)(1)(i)] A3. Does the plan document, as appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? [44 CFR § 201.7(c)(1)(ii)] A4. Does the plan describe the review and incorporation of existing plans, studies, and reports? [44 CFR § 201.7(c)(1)(iii)] A5. Does the plan include a discussion on how the planning process was integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives? [44 CFR § 201.7(c)(1)(iv)] A6. Does the plan include a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within the plan update cycle)? [44 CFR § 201.7(c)(4)(i)] A7. Does the plan include a discussion of how the tribal government will continue public participation in the plan maintenance process? [44 CFR § 201.7(c)(4)(iv)]
Source: FEMA, October 2017

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 MJHMP development.

ACEOM began the planning process on February 28, 2017 with a teleconference with the City and Tribal selected MJHMP development activity coordinator, Marlene "Opik" Ahkinga (Indian General Assistance Program [IGAP] coordinator). Ms. Evans, AECOM explained how their City and Tribal community was selected by DHS&EM to include Diomede within the 2014 Pre-Disaster Mitigation Grant award. AECOM staff described the MJHMP development requirement to enable the City and Tribal governments to qualify for Hazard Mitigation Grant Program grants through the MJHMP development process.

Ms. Ahkinga was encouraged to develop a City and Tribal government inclusive planning team to assist the community's efforts with identifying available resources and capabilities for MJHMP development. AECOM explained how the MJHMP differed from current emergency plans. The planning team will assist AECOM by acting as an advocate for the planning process; assist with gathering information, and providing support during public participation opportunities. AECOM briefly discussed DHS&EM identified existing hazards that affect the community such as erosion, severe weather, and ground failure (permafrost and landslide impacts), which are increasing in intensity due to climate change affects. Ms. Ahkinga worked with the City and Tribal Council to assure it fulfilled FEMA Tribal HMP requirements.

From March through October, 2017, the planning team discussed via teleconference the hazard mitigation planning process, asking participants to help identify hazards that affect Diomede, to

identify impacts to residential and critical facilities, and for assisting the planning team with identifying and prioritizing mitigation actions for potential future mitigation project funding

In summary, the following five-step process took place from February 2017 through October 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 Diomede 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 Opik Ahkinga, IGAP Coordinator, with assistance from the Tribal Coordinator (on the Tribal Council) and other City Council Members.

Table 3-1 identifies the complete hazard mitigation planning team.

Table 3-1 Hazard Mitigation Planning Team

Name	Title	Key Input
Cassandra Ahkvaluk	City Mayor	Planning team member, City data input and HMP review.
Cassandra Ahkvaluk	Former Mayor, Term ended 10/2017	Planning team member, City data input and HMP review.
Leticia Milligrock	City Administrator	Planning team member, City data input and HMP review.
Membership	City Council	Planning team member, City data input and HMP review.
Robert F. Soolook	President, Diomede Tribal Council	Planning team member, Tribal data input and HMP review.
Frances “Sistuq” Ozenna	Diomede Tribal Coordinator	Planning team member, Tribal data input and HMP review.

Table 3-1 Hazard Mitigation Planning Team

Name	Title	Key Input
Marlene "Opik" Ahkinga	EPA IGAP Coordinator	Planning team lead, HMP review.
Membership	Tribal Council	Planning team member, Tribal data input and HMP review.
Jessica Evans	Hazard Mitigation Planner, AECOM Alaska	Responsible for HMP development, lead writer, project coordination.

3.3 PUBLIC INVOLVEMENT AND OPPORTUNITY FOR INTERSTED 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 community's upcoming 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)
- Alaska State Hazard Mitigation Advisory Council (SHMAC)
- 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)
- U.S. Environmental Protection Agency (EPA)
- National Weather Service (NWS) Northern Region
- NWS Southeast Region
- NWS Southcentral Region
- Natural Resources Conservation Service (NRCS)
- U.S. Department of Agriculture (USDA)
- USDA Division of Rural Development (RD)
- U.S. Army Corps Of Engineers (USACE)
- U.S. Bureau of Indian Affairs (BIA)
- U.S. Bureau of Land Management (BLM)
- U.S. Department of Housing and Urban Development (HUD)

- U.S. Fish & Wildlife Service (USFWS)

3.3.1 Native Village of Diomede's "Public" Determination

The Native Village of Diomede 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 PUBLIC INVOLVEMENT ACTIVITIES

Table 3-2 lists the community's public involvement initiatives focused to encourage participation and insight for the HMP effort.

Table 3-2 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
Tribal Council meeting (December, 2016)	In December 2017, the Tribal Council conducted a meeting to introduce the community to the planning process and solicit input.
Newsletter #1 Distribution (May 16, 2017)	On May 16, 2017, the planning team posted a newsletter in town introducing the upcoming planning activity. The newsletter encouraged the whole community to provide hazard and critical facility information.
Newsletter #2 Distribution (June 13, 2017)	In June, 2017, the planning team distributed a second newsletter, describing the MJHMP's availability and potential MJHMP projects for review. The newsletter encouraged the whole community to provide comments or input. It was posted in town by the planning team lead.
Public HMP Progress Notifications	Team members engaged their "Public" during tribal council meetings to provide update HMP progress and notify them of HMP review opportunities throughout the project.
Public Comment Results	No public comments were received during development or during the draft HMP review period.

The City and Tribal planning team identified five natural hazards: earthquake, flood, ground failure, volcanic ash, and severe weather which periodically impact the City and Village.

AECOM described the specific information needed from the joint City and Tribal planning team to assess critical facility vulnerability and population risk by the location, value, and population within residential properties and critical facilities. AECOM visited the community in May, 2017 to gather data and to meet with both City and Tribal staff.

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

Diomede's joint planning team evaluated these facilities and their associated risks to facilitate creating a viable or realistic risk analysis and subsequent vulnerability assessment for Diomede.

In May and June of 2017, the joint 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 June 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 City and the Tribe both reviewed the draft HMP in July 2017 for accuracy – ensuring it meets their needs. Neither the City nor the Village received public comments either during HMP development or during the draft review period.

3.5 PLAN MAINTENANCE

This section describes a formal plan maintenance process to ensure that the MJHMP 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 MJHMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail here:

1. Implementation into existing planning mechanisms
2. Continued public involvement
3. Monitoring, reviewing, evaluating, and updating the MJHMP

3.5.1 Incorporating Existing Plans and Other Relevant Information

During the planning process, the joint planning team reviewed and incorporated information from existing plans, studies, reports, and technical reports (Table 3-3) into the MJHMP. The following were available from various sources and were reviewed and referenced where applicable for the MJHMP's jurisdictional information, hazard profiles, and vulnerability assessment.

Table 3-3 Documents Reviewed

Existing plans, studies, reports, ordinances, etc.	Contents Summary (How will this information improve mitigation planning?)
A Local Economic Development Plan for Diomede: 2009 Updated Priorities	Outlines economic priorities for the community.
US Army Corps of Engineers, 2013. Navigation Improvements, Diomede, Alaska: Draft Feasibility Report Environmental Assessment and Finding of No Significant Impact	Documents a detailed study for constructing breakwaters for protection from waves.
US Army Corps of Engineers, 2007. Erosion Information Paper	Provides information on baseline erosion in Diomede.
US Army Corps of Engineers, 2011. Economic Value of Subsistence Activity: Little Diomede, Alaska.	Identifies e key elements comprising subsistence and provides economic importance.
State of Alaska, Department of Commerce, Community and Economic Development Community Profile	Provided historical and demographic information
State of Alaska Hazard Mitigation Plan, 2013	Defined statewide hazards and their potential locational impacts

Note: A complete list of references is provided in Section 8.

3.5.2 Integrating MJHMP Precepts into Existing Planning Mechanisms

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

The Native Village of Venetie has extremely limited and transient staff; with associated funding challenges which could prevent the planning team from integrating any legacy HMP components into other planning mechanisms or initiatives during the THMP's 5-year lifecycle.

- Once the MJHMP is community adopted and receives FEMA's final approval, each planning team member ensures that the MJHMP, in particular each Mitigation Action Plan (MAP) project, is incorporated and, where feasible, integrated into existing City or Tribal planning mechanisms whenever possible. Each member of the joint planning team will undertake the following activities.
- Review community-specific regulatory tools to assess integrating HMP components. These regulatory tools are identified in Section 7.2, Capability Assessment
- Work with pertinent community departments to increase awareness of the MJHMP and provide assistance with integrating the mitigation strategy (including the MAP) into relevant planning mechanisms to align with FEMA mitigation programs identified in Section 1 of this MJHMP.

Note: *Implementing these requirements may require updating or amending specific planning mechanisms as funding becomes available.*

3.5.3 Continued Public Involvement

The entire City and Tribal community is committed to involving the public directly in the continual reshaping and updating the MJHMP. A paper copy of the MJHMP and any proposed changes will be available at the Tribal Office. 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 Office.

The City and Tribe will strive to continue identifying opportunities to raise community awareness about the MJHMP and the hazards that affect the area. This effort could include attendance and provision of materials at City- and Tribal-sponsored events, and outreach projects identified in Section 7, Mitigation Strategy, and public mailings. Any public comments received regarding the MJHMP will be collected by the planning team leader who will include the information within the annual report for consideration during future MJHMP updates.

3.5.4 Monitoring, Reviewing, Evaluating, and Updating the MJHMP

3.5.4.1 Planning Team Commitment for MJHMP Maintenance

The City and Tribe has extremely limited and transient staff, with associated funding challenges. However, Diomede's planning team intends to organize their efforts to ensure that MJHMP improvements and revisions occur in a well-managed, efficient, and coordinated manner. The planning team will follow these three process steps:

1. Review and revise the HMP to reflect development changes, planning process, project implementation progress, project priority changes, and mitigation strategy progress

2. Submit the MJHMP 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.

The City and the Tribal Councils, with assistance from the State Hazard Mitigation Officer (SHMO) and the State Hazard Mitigation Advisory Committee (SHMAC), are responsible for monitoring, evaluating, and updating the City and Native Village of Diomede's Multi-Jurisdictional Hazard Mitigation Plan in accordance with 44 CFR §201.7.

The City and Tribal Councils will monitor the plan continually, evaluate the plan annually and update the plan every five years, or within 90 days of a Presidential Declared Disaster (if required), or as necessary to reflect changes in State or federal law. The Hazard Mitigation Plan Annual Progress Report and Hazard Mitigation Plan Annual Evaluation Forms are plan review tools. The City and Tribal Councils, with advisement from the SHMO and FEMA, determines when significant changes warrant an update prior to the scheduled date.

3.5.4.2 Monitoring the HMP

The 2017 MJHMP was prepared as a collaborative effort. To maintain momentum and build upon previous hazard mitigation planning efforts and successes, the City and the Village will continue to use the planning team to review their success for achieving the MJHMP's maintenance, and mitigation goals, activities, and initiatives during the annual review process.

Additionally, during each annual review, each authority or agency identified in the Mitigation Action Plan (MAP) matrix (Table 7-10) will be responsible for implementing the MAP and determining whether their respective actions were effectively implemented. The IGAP Coordinator (or City & Tribal designee[s]), will serve as the primary point of contact and will coordinate local efforts to monitor, evaluate, revise, and tabulate MJHMP actions' status.

3.5.4.3 Reviewing the HMP

The planning team will review their success, failures, and roadblocks experiences for achieving the MJHMP's mitigation goals and implementing the Mitigation Action Plan's (MAP) 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 appropriate strategies to overcome them), and a statement of whether or not the project has helped achieve the appropriate goals identified in the plan. Completing annual reviews will reduce the planning team's efforts to update the MJHMP every five years.

3.5.4.4 Evaluating the HMP

The Annual Review Questionnaire (Appendix F) provides the basis for future MJHMP evaluations by guiding the planning team with identifying new or more threatening hazards,

adjusting to changes to, or increases in, development, resource allocations, and garnering additional support for MJHMP integration and 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 the authorities, outside agencies, stakeholders, and resident's participation or comments regarding MJHMP implementation and integration 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.
- MAP implementation progress (identify problems and suggest improvements as necessary).
- Evaluate MJHMP local resource implementation for MJHMP identified activities.

3.5.4.5 Updating the HMP

The City and Native Village of Diomede will annually review the MJHMP as described in Section 3.4.4.3 and update the MJHMP every five years (or when significant changes are made) by having the identified planning team review all Annual Review Questionnaires (Appendix F) to determine the success of implementing the MJHMP's MAP.

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

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

- Request grant assistance from DHS&EM to update the MJHMP (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 MJHMP sections that need improvement, the section and page number of their location within the MJHMP, 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 MJHMP 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 City and Village still desire to implement.
- Prepare a "new" MAP matrix for Diomede.

- Prepare a new Draft Updated MJHMP
- Submit the updated draft MJHMP to DHS&EM and FEMA for review and approval.

3.5.5 Formal State and FEMA HMP Review

Completed Hazard Mitigation Plans do not qualify the City/Village for mitigation grant program eligibility until they have been reviewed and adopted by the City Council and Village Assembly, and received State and FEMA final approval.

Evidenced by Section Four of this MJHMP: by formal Tribal HMP adoption, the Tribal government assures they will monitor the plan to evaluate progress and work with the City 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. Each participating government will amend its plan whenever necessary to reflect changes in City, Tribal, or Federal laws and statutes including 2 CFR parts 200 and 3002.

The Village of Diomede is represented in this MJHMP and meet the requirements of Section 409 of the Stafford Act and Section 322 of DMA 2000, and 44 CFR §201.6(c)(5) and§201.7. The Village has participated with this HMP's development and it intends to follow and implement applicable tribal activities to qualify the Village Tribal Council for tribal grant opportunities. The Native Village of Diomede supports 44 CFR 201 and assures compliance with all applicable Federal statutes and regulations.

Upon completion, the City and Native Village of Diomede (or its contractor) will submit the draft MJHMP to the State Hazard Mitigation Officer (SHMO) for initial State review and preliminary approval. Once any corrections are made, the State will send the draft HMP to FEMA Region X for formal review and tentative pre-approval.

Once the plan has fulfilled all FEMA criteria, the City and Village will each pass a formal MJHMP Adoption Resolution. A copy will be sent to FEMA through DHS&EM for final MJHMP approval.

Completed Hazard Mitigation Plans do not qualify the City and Village for mitigation grant program eligibility until they have been reviewed and approved by the State and FEMA and received final State of Alaska promulgation. Once the plan has fulfilled all FEMA criteria, the State will promulgate the MJHMP and return to FEMA for final approval. FEMA's final

approval assures the City and Village are eligible for applying for appropriate mitigation grant program funding.

The City and Village (or their contractor) will include a final copy of the State's promulgation letter as well as FEMA's formal approval letter within the MJHMP.

3.5.6 Tribal or Native Village Mitigation Grant Application Process Considerations

The Native Village of Diomede can potentially qualify to either apply for applicable grant funding as a State sub-applicant through DHS&EM; or apply directly to FEMA as an eligible federally recognized tribal government with sovereign authority working directly with government agencies.

Therefore, the Village can determine which of the two following options will best fit the Village's needs. These options are:

Option 1:

> The Village can submit grant applications through the State with no loss in Tribal governance authorities.
>
> The Village 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, federally recognized tribal government, maintaining sovereign authority working directly with government agencies.
>
> As a federally recognized 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.

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Section Four is included to fulfill the City and Native Village of Diomede's MJHMP adoption requirements.

4.1 JURISDICTIONAL ADOPTION

The City and Native Village of Diomede are represented in this MJHMP and meet the requirements of Section 409 of the Stafford Act and Section 322 of DMA 2000, and 44 CFR §201.6(c)(5), and §201.7(c)(5) & (6).

DMA 2000 requirements and implementing City governance regulations for the MJHMP adoption include:

DMA 2000 Requirements
Local Plan Adoption §201.6(c)(5): [The plan shall include…] Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.
1. REGULATION CHECKLIST
ELEMENT E. Plan Adoption
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval??) (Requirement §201.6(c)(5))
Source: FEMA, March 2015.

The Diomede City Council adopted the MJHMP on 2 March, 2019 and submitted the final draft MJHMP to FEMA for formal approval. A scanned copy of the City's formal adoption is included in Appendix C.

4.2 TRIBAL GOVERNMENT MJHMP ADOPTION

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

DMA 2000 Requirements
ELEMENT. Tribal HMP Adoption and Assurances
E1. Does the plan include assurances that the tribal government will 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, and will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes? [44 CFR § 201.7(c)(6)]
E2. Does the plan include documentation that it has been formally adopted by the governing body of the tribal government requesting approval? [44 CFR § 201.7(c)(5)]
Source: FEMA, October 2017

Tribal Assurance: Evidenced by Section Four of this MJHMP update; by formal Tribal HMP adoption the Tribe formally adopted the jurisdictional MJHMP. The Tribal government therefore assures they will monitor the plan to evaluate progress and work with the City 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 Diomede 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 Tribal Council formally adopted their Hazard Mitigation Plan on 15 April, 2019. A copy is included as Appendix C.

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

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 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.

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 eight possible hazards that could affect the Bering Strait Regional Educational 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 volcano ash; 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.

Table 5-1 Hazard Identification and Screening

Hazard Type	Should It Be Profiled?	Explanation
Natural Hazards		
Earthquake	Yes	Periodic, unpredictable occurrences.
Flood (Coastal related floods and resultant erosive scour)	Yes	The Village experiences coastal scour along the area's shorelines from high waves, wind and winter storms.
Ground Failure (Permafrost, Landslides)	Yes	Ground Failure occurs throughout Alaska from avalanches, landslides, thawing permafrost, and ground subsidence. On Little Diomede, landslides from thawing permafrost are eroding critical trails.

Table 5-1 Hazard Identification and Screening

Hazard Type	Should It Be Profiled?	Explanation
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, high winds, heavy or freezing rain, and with subsequent secondary hazards such as coastal storm surge floods, landslides, snow, and wind.
Tsunami (Seiche)	No	This hazard does not exist for this location.
Volcano	Yes	Volcano generated ash could impact the community from distant Russian or Alaskan volcanos which could potentially damage machinery or inhibit or delay essential aircraft supply delivery.
Wildland/Tundra Fire	No	This hazard does not exist for this location.

5.3 HAZARD PROFILES

DMA 2000 requirements and implementing City governance regulations for hazard profile development include:

DMA 2000 Requirements
Profiling Hazards Requirement §201.6(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
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction? (Requirement §201.6(c)(2)(i)) B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction?
Source: FEMA, March 2015.

DMA 2000 requirements and implementing Tribal governance regulations for hazard profile development include:

Hazard profiling is accomplished by describing hazards in terms of their nature, history, magnitude, frequency, location, extent, and probability. Hazards are identified through historical and anecdotal information 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.

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 Diomede's residents and critical facilities.)
- Recurrence Probability

NFIP insured Repetitive Loss Structures (RL) are 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 City and 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.

UPSeis
an educational site for budding seismologists

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 59 earthquakes with a magnitude > M3.5 that were recorded within a 100-mile radius of Diomede since 1970. Table 5-4 lists the 13 historical events that exceeded M4.5. The largest events, both occurring in 1996 with a M5.2, are highlighted.

Therefore, the planning team determined that based on available recorded data, Diomede has a moderate concern for earthquake damages as they have experienced 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 Diomede

Year	Month	Day	Time	Latitude	Longitude	Magnitude	Distance (Miles)
1980	01	26	14:49:33	66.079	-168.027	4.5	34
1982	08	07	19:53:46	65.999	-166.766	4.8	64

Table 5-4 Historical Earthquakes for Diomede

Year	Month	Day	Time	Latitude	Longitude	Magnitude	Distance (Miles)
1987	02	04	00:18:45	65.04	-166.801	4.7	80
1996	08	19	18:33:25	64.902	-170.447	5	74
1996	08	09	18:45:43	64.994	-170.416	5.2	68
1996	11	03	23:24:30	64.851	-170.364	5.2	75
2000	11	25	12:02:00	66.557	-170.283	4.6	66
2006	07	08	09:05:26	65.801	-169.676	4.5	20
2006	07	10	15:30:29	65.848	-169.676	4.9	21
2009	09	25	09:45:32	66.86	-170.336	5.1	85
2009	09	25	10:16:03	67.032	-169.625	4.7	90
2011	05	21	08:33:21	65.36	-166.833	4.8	67
2016	07	09	08:35:02	65.7005	-166.1294	4.8	80

(USGS 2017)

The average magnitude of these earthquakes is M4.8. planning team members stated that Diomede experienced some ground shaking from these events and no significant damage occurred to critical facilities or infrastructure.

North America's strongest recorded earthquake occurred on March 27, 1964 in Prince William Sound measuring M9.2 and was felt by many residents throughout Alaska. Diomede did not experience ground motion from this historic event.

5.3.1.3 Location, Extent, Impact, and Recurrence Probability

Location

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

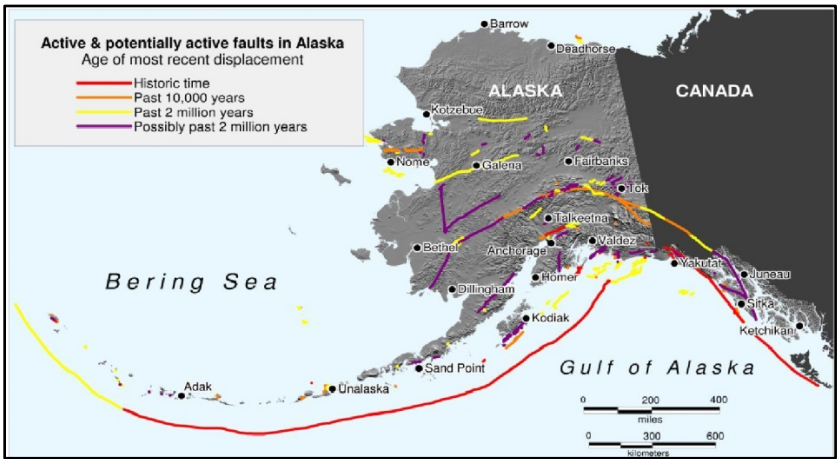

Figure 5-2 Active and Potentially Active Faults in Alaska (DGGS 2009)

Extent

The average distance of the 13 recorded earthquakes that exceeded M4.5 was 63 (with a range from 20 to 90) miles from Diomede (USGS 2017).

The middle of the Bering Strait Fault Zone is located about 50 miles southeast of Diomede and comprises a fault system of smaller faults running east by west. As depicted in the Neotectonic Map clip (Figure 5-3) there are some faults surrounding Diomede indicating the City and Village can expect to be impacted by future earthquake events (DGGS 2009).

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 injuries that that are treatable with first aid; complete shutdown of critical facilities for 24 hours or less; and less than 10 percent of property severely damaged.

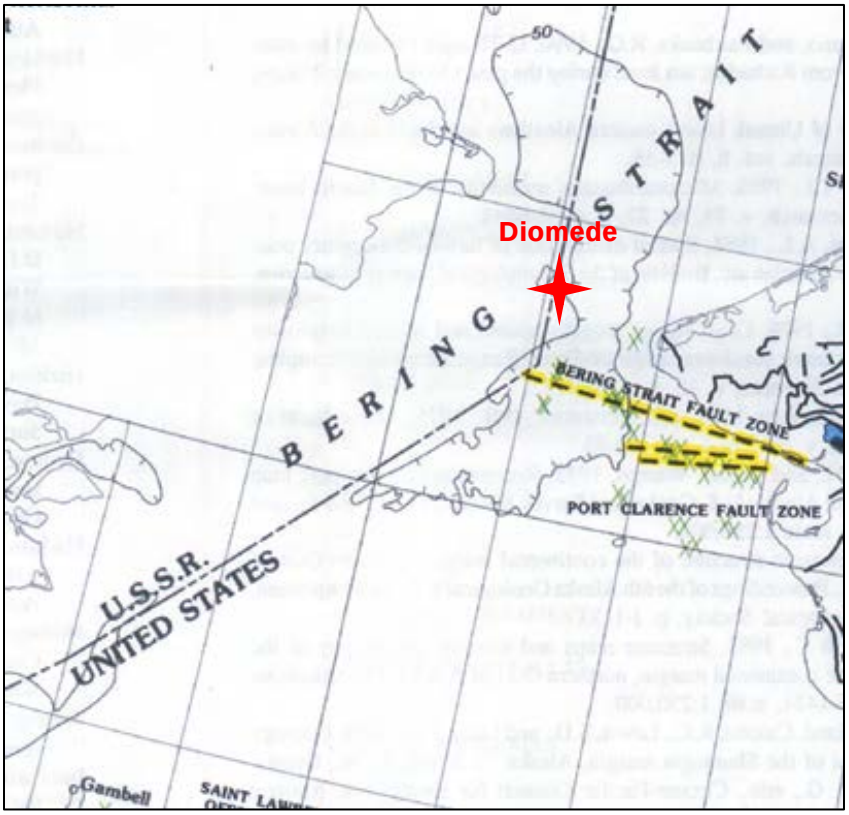

Figure 5-3 Earthquake Fault Proximity to Diomede (Plafker et al 1993)

Impact

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 Shake Map shown below 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 100 years and 50 kilometers (31 miles) of the City and 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 "Unlikely", but is possible to occur (1/10=10 percent) chance of occurring; due to an event history that is less than 10 percent likely per year.

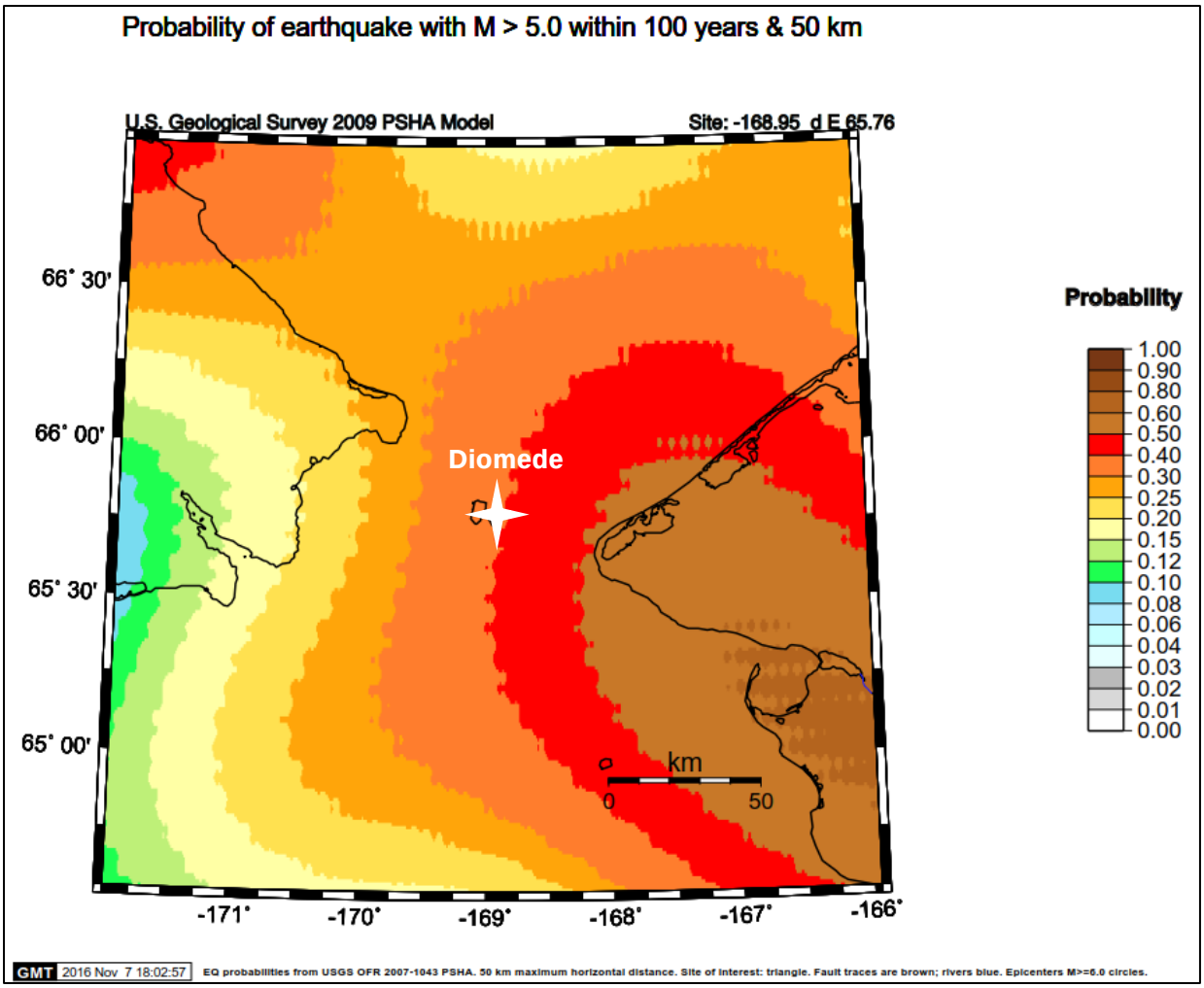

Figure 5-4 Diomede's Earthquake Probability (USGS 2009)

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.

Three primary types of flooding occur in the community: rainfall-runoff, snowmelt, and storm surge floods. Coastal scour also is 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.

Storm Surges, or coastal floods, occur when the sea is driven inland above the high-tide level onto land that is normally dry. Often, heavy surf conditions driven by high winds accompany a storm surge adding to the destructive-flooding water's force. The conditions that cause coastal floods also can cause significant shoreline erosion as the flood waters undercut roads and other structures. Storm surge is a leading cause of property damage in Alaska.

The meteorological parameters conducive to coastal flooding are low atmospheric pressure, strong winds (blowing directly onshore or along the shore with the shoreline to the right of the direction of the flow), and winds maintained from roughly the same direction over a long distance across the open ocean (fetch).

Communities that are situated on low-lying coastal lands with gradually sloping bathymetry near the shore and exposure to strong winds with a long fetch over the water are particularly susceptible to coastal flooding. Several communities and villages along the Bristol Bay coast, the Bering Sea coast, the Arctic coast, and the Beaufort Sea coast have experienced significant damage from coastal floods over the past several decades. Most coastal flooding occurs during the late summer or early fall season in these locations. As shore-fast ice forms along the coast before winter, the risk of coastal flooding abates, but, later freeze-ups greatly increase the risk of erosion, storm surge flooding and ice override events.

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

Coastal scour, sometimes referred to as tidal, bluff, or beach erosion, may other times encompass different categories altogether. For this profile, tidal, bluff and beach erosion will be nested within the term erosion.

Land scour, no matter the source results in lost beach, shoreline, or dune material from natural activity or human influences. Coastal damage occurs throughout the area roughly from the top of the bluff out into the near-shore region to about the 30 feet water depth. It is measured as the rate of change in the position or horizontal displacement of a shoreline over a period of time. Bluff recession is the most visible aspect of coastal erosion because of the dramatic change it causes to the landscape. As a result, this aspect of coastal erosion usually receives the most attention.

High water flow forces are embodied in waves, currents, and winds; surface and ground water flow; freeze-thaw cycles may also play a role. Not all of these forces may be present at any particular location. Coastal scour can occur from rapid, short-term daily, seasonal, or annual natural events such as waves, storm surge, wind, coastal storms, and flooding, or from human activities including boat wakes and dredging. The most dramatic erosion often occurs during storms, particularly because the highest energy waves are generated under storm conditions.

Scour damages may also be due to multi-year impacts and long-term climatic change such as sea-level rise, lack of sediment supply, subsidence, or long-term human factors such as aquifer depletion or the construction of shore protection structures and dams. Attempts to control erosion using shoreline protective measures such as groins, jetties, seawalls, or revetments can lead to increased erosion.

Coastal erosive scour threatens the Diomede area's infrastructure, built environment, and utilities adjacent embankments and shorelines.

Many floods are predictable and based on seasonal patterns. Most of the annual precipitation is received from April through October, with much of the flooding occurring in the fall.

5.3.2.2 History

The City and Village experiences severe floods from runoff, storm surge, stream overflows, and spring snowmelt. Flooding generally occurs throughout the year, but is heaviest in the spring.

The 2016 DHS&EM Disaster Cost Index delineates historical flood and erosion events affecting the community. The index lists the following events:

> ***125. Diomede, November 21, 1990.*** *A severe early winter storm with waves up to 25 feet destroyed several fuel storage facilities. The resultant loss of critically needed petroleum products along with other equipment, required the declaration of disaster.*
>
> ***04-209. Fall Sea Storm Declared January 29, 2004 by Governor Murkowski.*** *A series of sea storms with high winds and tidal surge during the period of November 1 to November 24, 2003 caused damages in the communities of Unalakleet, Diomede, and Port Heiden. Damage was also reported by the Department of Transportation. The City of Unalakleet and Port Heiden declared local emergencies and Diomede requested assistance in a letter to the Division of Homeland Security and Emergency Management. Disaster Assistance for Emergency Protective Measures and Permanent Work category C for the City of Port Heiden, the Department of Transportation and Unalakleet, category F for Port Heiden and debris removal for Unalakleet were approved under the State Public Assistance Program. No Federal Disaster Assistance was requested. No Hazard*

Mitigation was applicable. The total for this disaster is approximately $654K. This is for Public Assistance for 4 potential applicants with 5 PW's. (DHS&EM 2016a)

A 2011 flood assessment by the USACE noted a flood of record was in December, 1977, when wind-driven waves caused flooding to a depth of 15 to 20ft. (USACE 2011).

Coastal scour and flooding threatens damage to a number of facilities, including the school.

5.3.2.3 Location, Extent, Impact, and Recurrence Probability

Location

The USACE has not established exact flood data for Diomede, however the Alaska DOT/PF established a temporary benchmark at the top of the northwest anchor border of the anchor plate on the southwest corner of the new high school (elevation 25.72 feet, mean low water). There are areas of active coastal scour on the beach areas on the north and south sides of the community.

Nearly the entire community beachline is subject to periodic flooding. (DCRA 1996, DCRA 2004). Many facilities are located within 100 feet from the eroding shoreline, including residences, water tanks, fuel tanks, boat launches, and the school (USACE 2007). Figure 5-5 shows the proximity of some structures to the eroding coastline.

Figure 5-5 Facilities near the Beach (Photo Credit: Jessica Evans)

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 coastal 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 identified historical flood elevation

The community does experience severe coastal flooding and severe high water flow flood impacts. Therefore, based on past high water flow event history and the criteria identified in Table 5-2, the extent of flooding and resultant damages to infrastructure and their protective embankments in the City and Village are considered "Limited" where critical facilities would shut-down for more than one week with more than 10 percent of property 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.

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).

In Diomede, coastal scour and beach erosion threaten facilities and homes that line the beach (see Figure 5-5 above). Erosion protection measures were undertaken by the community in 2003 with the installation of a gabion rock wall, which continues to need maintenance (USACE 2007).

Recurrence Probability

Based on previous occurrences, the USACE Floodplain Manager's report, and criteria in Table 5-3, indicates it is "Likely" to experience a major flood event with a 1 in 3 year (1/3=33 percent) chance of occurring. History of events is greater than 20 percent but less than or equal to 33 percent likely per year. There are no data identifying a 500-year flood threat (0.2 percent chance of occurring in a given year) in the City and Village of Diomede.

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:

1. **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.
2. **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.
3. **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.
4. **Falls** are the free-fall movement of rocks and boulders detached from steep slopes or cliffs.
5. **Topples** are rocks and boulders that rotate forward and may become falls.
6. **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°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 Diomede.

5.3.3.2 History

There are few written records defining ground failure impacts. However, residents of Diomede have been monitoring slides and recognize the impacts. Slides are becoming more frequent as permafrost thaws, causing the bluffs to be more unstable.

5.3.3.3 Location, Extent, Impact, and Recurrence Probability

Location

There are various ground failure locations throughout Diomede. The bluffs on all sides of the island are areas where there can be slides. Directly above the community are identified areas of unstable boulders (DCRA 2004). Thawing permafrost on the bluffs are also causing landslides. Figure 5-6 shows the community laying below unstable boulders.

Figure 5-6 Unstable Boulders (Photo Credit: Jessica Evans)

The permafrost and ice conditions map developed for the National Snow and Ice Data Center/World Data Center for Glaciology (Figure 5-7) illustrates that Diomede is located in an area with discontinuous permafrost. (Jorgensen et al. 2008).

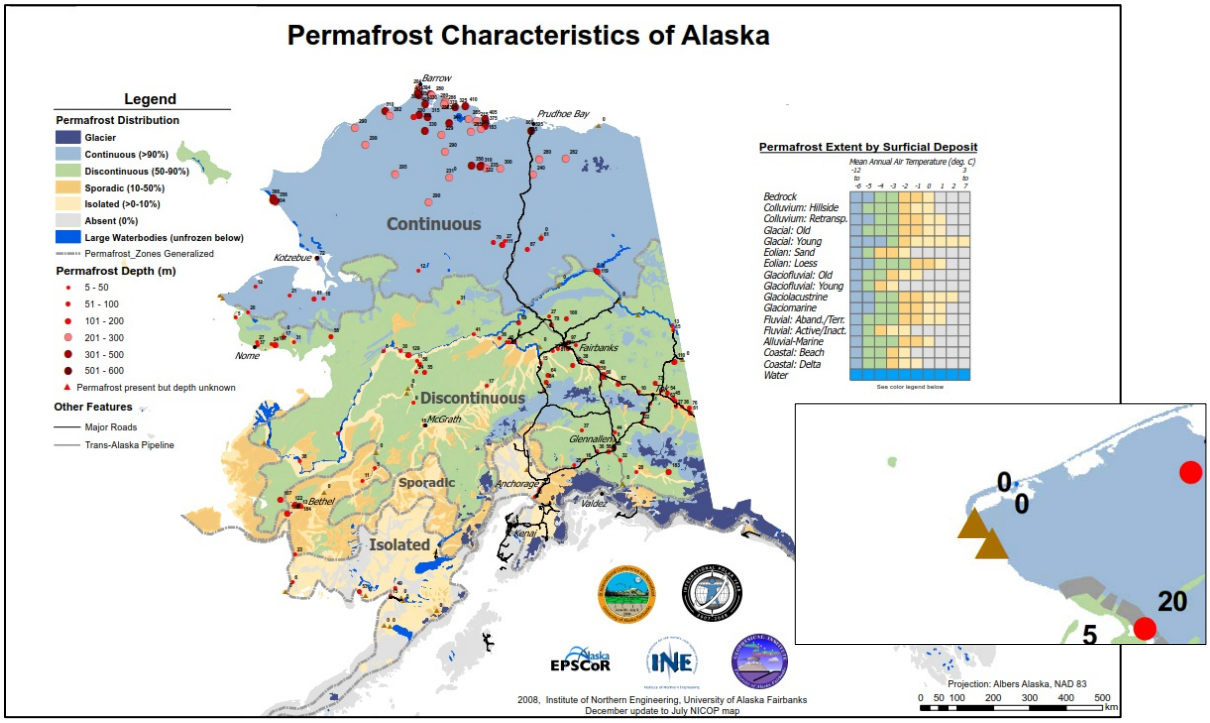

Figure 5-7 Permafrost and Ground Ice Map of Alaska (Jorgenson et al 2008)

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 school) were damaged and transportation was effected.

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 community are considered "Limited." Impacts from slides could occur quickly without warning signs. Therefore this hazard could cause injuries, or shut down critical facilities and services. More than 10 percent of property is could be severely damaged.

Impact

Impacts associated with ground failure include surface subsidence, infrastructure, building, and/or boardwalk damage. Ground failure does not typically pose a sudden and catastrophic hazard; however landslides and avalanches may. Land subsidence in bluffs can cause more landslides as the ground becomes less stable. 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 ground failure impacts for the community, the planning team has solid evidence of their annually recurring landslide, avalanche, and ground failure damages throughout the community – primarily to trails that are used for subsistence

resource gathering. The planning team stated the probability for ground failure follows the criteria in Table 5-3, the future damage probability resulting from ground failure is "Likely" in the next three years (event has up to 1 in 3 years chance of occurring) with a history of events greater than 20 percent but less than 33 percent likely per year.

5.3.4 Severe Weather

5.3.4.1 Nature

Severe weather occurs throughout Alaska with extremes experienced by the City and Village of Diomede that includes heavy snow, freezing rain/ice storm, and extreme cold. The community 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, 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 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 Rain occurs rather frequently over the coastal areas along the Bering Sea and the Gulf of Alaska. Heavy rain is a severe threat to Diomede.

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.

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 rather frequently over the coastal areas along the Gulf of Alaska, the Kuskokwim Bay and the Bering Sea.

Strong winds occasionally 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.

Winter Storms include a variety of phenomena described above and 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 -40°F. 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 5-6 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. Diomede receives approximately 10-15 inches of rainfall annually according to Figure 5-8.

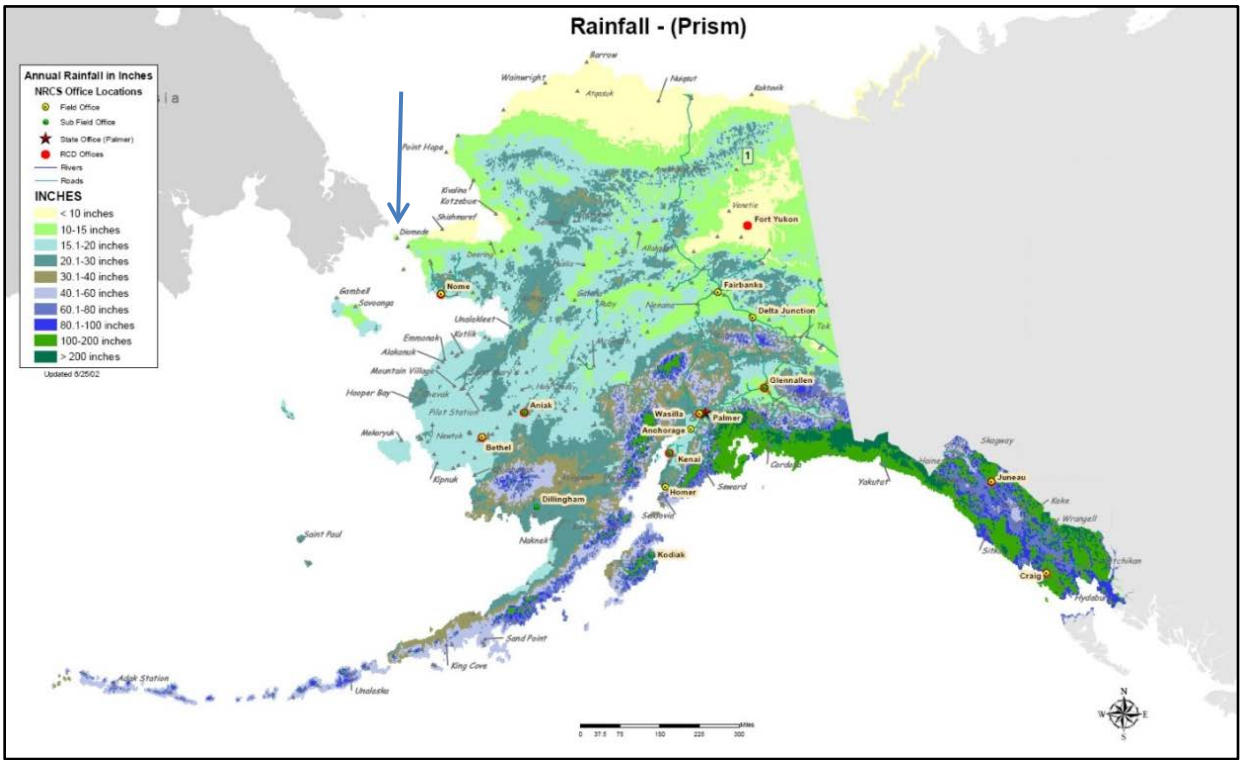

Figure 5-8 Statewide Rainfall Map (NRCS 2002)

Receding Sea Ice is occurring in the Arctic Ocean. Typically, the area covered by sea ice grows and shrinks over the course of the year. Each fall, as less sunlight reaches the Arctic and air temperatures begin to drop, additional sea ice forms. The total area covered by ice increases through the winter, usually reaching its maximum extent in early March. Once spring arrives with more sunlight and higher temperatures, the ice begins to melt back, shrinking to its minimum extent each September.

Over the past 30 years, the area covered by ice has shown a dramatic decrease. Since satellite-based measurements began in the late 1970s, data show a trend of more ice melting away during summers and less new ice forming during winters. As of 2016, the downward trend for the summer minimum in September was 13.3 percent per decade relative to the 1981-2010 average. Summer ice declines have been especially rapid since 2001. (NOAA 2017a).

5.3.4.2 History

The Village and City of Diomede is continually impacted by severe weather events. High winds and winter storms typically have disastrous results, and the community subsistence resources are being threatened by receding sea ice.

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 Wales area providing a representation of the typical weather events which may have impacted the community. Table 5-6 summarizes temperatures for the Wales area, providing a representation of typical temperatures which impact Diomede. 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: 509739; Wales

From Year=1949 To Year=1995														
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	0.43	3.7	1963	0	1954	1	12/1963	5	2	0	0	4.1	19	1963
February	0.37	1.67	1982	0	1954	1	03/1982	4	1	0	0	3.8	13.4	1960
March	0.44	3.93	1990	0	1953	1.8	15/1990	5	1	0	0	4.5	18.7	1994
April	0.31	1.62	1982	0	1954	1	05/1967	5	1	0	0	3.3	16.6	1961
May	0.51	5.93	1981	0	1953	2.1	02/1981	5	1	0	0	2.2	14.7	1981
June	0.68	1.92	1980	0.01	1956	0.65	22/1990	7	2	0	0	0.2	1.5	1965
July	1.42	3.52	1994	0.16	1964	1.91	26/1956	11	4	0	0	0.2	6.3	1981
August	2.65	6.27	1954	0.75	1991	2.03	09/1958	15	7	1	0	0	0	1950
September	2.15	7.14	1986	0.26	1951	1.68	01/1958	15	7	1	0	1.4	13.5	1962
October	1.41	4.18	1976	0.1	1974	1.1	18/1977	12	5	1	0	6.2	27.3	1976
November	0.71	4.84	1993	0.05	1971	1.2	27/1954	8	2	0	0	7.7	26	1993
December	0.4	2.03	1990	0	1956	0.8	28/1990	6	1	0	0	4.6	12.6	1992
Annual	11.48	24.39	1990	7.15	1960	2.1	05/02/1981	96	36	4	1	38.1	77.8	1993
Winter	1.21	4	1963	0.05	1983	1	01/12/1963	14	4	0	0	12.4	26.6	1963
Spring	1.26	6.6	1981	0.01	1966	2.1	05/02/1981	14	4	0	0	10	33.8	1975
Summer	4.75	9.01	1954	1.23	1964	2.03	08/11/1958	33	14	2	0	0.4	7.7	1981
Fall	4.27	8.65	1993	0.85	1984	1.68	09/01/1958	35	13	2	0	15.3	52	1976

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: 509739; Wales

From Year=1949 To Year=1995															
	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	8.4	-5.9	1.3	53	1963	-44	1989	19.3	1963	-12.9	1989	0	28.1	30.6	21
February	2.8	-10.6	-3.9	47	1957	-44	1955	23.1	1989	-21.2	1984	0	26.2	28	22
March	5.8	-8.3	-1.3	42	1981	-42	1977	17.5	1967	-16.2	1977	0	29.4	30.7	23.6
April	16.4	3.5	9.9	48	1956	-32	1975	23.7	1957	-5.5	1985	0	26.2	29.4	13.4
May	32.1	22.9	27.5	56	1990	-7	1964	34	1990	22	1971	0	14.4	28.8	0.6
June	43.3	33.3	38.3	67	1991	20	1975	42	1981	33.3	1975	0	0.9	14	0
July	51	41.7	46.4	72	Jul-72	23	1995	51.9	1993	41	1995	0	0	0.8	0
August	50.7	42.4	46.5	73	1990	30	1956	52.3	1990	42.9	1965	0	0	0.2	0
September	43.8	36.4	40.1	65	1991	19	1992	44.8	1974	34.1	1992	0	0.4	6.7	0
October	32.7	24.7	28.7	54	1954	-7	1970	34.4	1950	23.2	1970	0	14.3	26.4	0.3
November	22.3	11	16.6	45	1949	-28	1956	25.7	1965	1.2	1956	0	24.9	29.5	5.5
December	10.1	-2.7	3.6	44	1983	-35	1961	23.3	1983	-11.6	1974	0	28.5	30.2	19.2
Annual	26.6	15.7	21.1	73	1990	-44	1955	25.5	1967	17.7	1964	0	193.2	255.4	105.7
Winter	7.1	-6.4	0.3	53	1963	-44	1955	9.7	1982	-8.8	1976	0	82.7	88.8	62.3
Spring	18.1	6	12	56	1990	-42	1977	22	1967	5	1985	0	70	88.9	37.6
Summer	48.3	39.1	43.7	73	1990	20	1975	46.8	1990	39.9	1995	0	0.9	15.1	0
Fall	32.9	24.1	28.5	65	1991	-28	1956	33.8	1950	22	1956	0	39.6	62.6	5.8

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

DHS&EM's 2016 Disaster Cost Index records the following severe weather disaster events which may have affected the area:

> "***146. Little Diomede, July 25, 1991.*** *Mechanical system problems and lack of rainfall caused a critical shortage of safe water in the village of Little Diomede. Public assistance made available by the Declaration funded desalination equipment used to fill the village's storage reservoirs with processed seawater.*
>
> ***13-Z-246. Diomede Power Issues, Administrative Order # 268 signed by Governor Parnell on December 27, 2013.*** *On December 18, 2013, the City of Diomede suffered a complete power system failure after the last of three generators failed due to extreme cold winter temperatures approaching negative15 degrees Fahrenheit. Due to a lack of a community power plant operator, the City requested technical assistance from the Alaska Energy Authority (AEA) to instruct the mayor to restart one of the three generators. After the mayor restarted one of the generators, the limping generator continued to have distribution and cooling problems. AEA continued to provide remote assistance however, they were not able to stabilize the generators and restore full power to the community. After several unsuccessful attempts, it was determined the damage to the system was too severe to affect remote repairs. AEA contacted the State Emergency Operations Center (SEOC) for emergency authorization to deploy electrical workers and supplies to the City to affect repairs and to avoid further damage to the power system and other infrastructure in the community.*

Severe weather events have historically impacted the entire Bering Sea area. Rural communities generally lack capacity to track changing climate conditions. It is fortunate the University of Alaska Fairbanks Scenarios Network for Alaska and Arctic Planning (SNAP) is part of the International Arctic Research Center who makes this data available for planning purposes. The following provides a guideline for using SNAP data:

> "*Due to variability among climate models and among years in a natural climate system, these graphs are useful for examining trends over time, rather than for precisely predicting monthly or yearly values.*
>
> *How to interpret climate outlooks for your community*
>
> *You can examine SNAP community outlooks for certain key changes and threshold values—for example, higher mean monthly temperatures in the spring and fall may be of particular interest. This could signify any or all of these conditions:*
>
> - *a longer growing season*
> - *a loss of ice and/or frozen ground needed for travel or food storage*
> - *a shift in precipitation from snow to rain, which impacts water storage capacity and surface water availability*
>
> ***Note:*** *Precipitation may occur as either rain or snow, but is reported for all months in terms of rainwater equivalent.*
>
> *Warmer, drier spring weather may also be an indicator for increased fire risk. In many locations, winter temperatures are projected to increase dramatically. Warmer winters may favor growth of species that are less cold-hardy (including desirable crops and invasive species), or it may decrease snowpack and increase the frequency of rain-on-snow events that impact wildlife. Higher temperatures across all seasons will likely impact permafrost and land-fast ice"* (SNAP 2016).

SNAP data tools depict Diomede's historic and future predicted precipitation and temperatures (Figures 5-9 and 5-10).

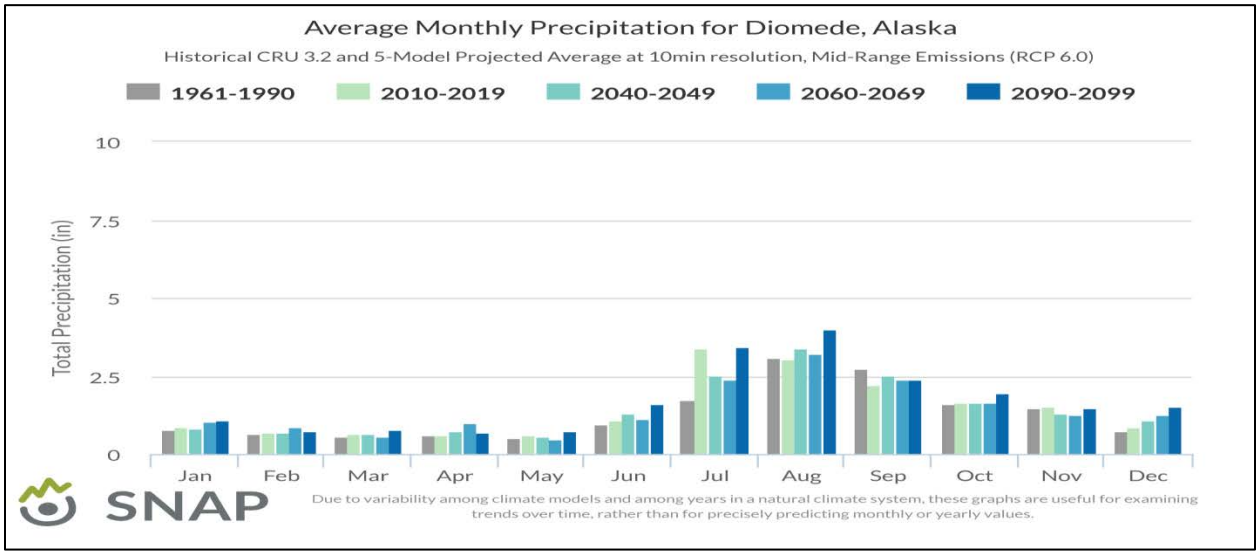

Figure 5-9 Diomede's Historic and Predicted Precipitation (UAF/SNAP 2016).

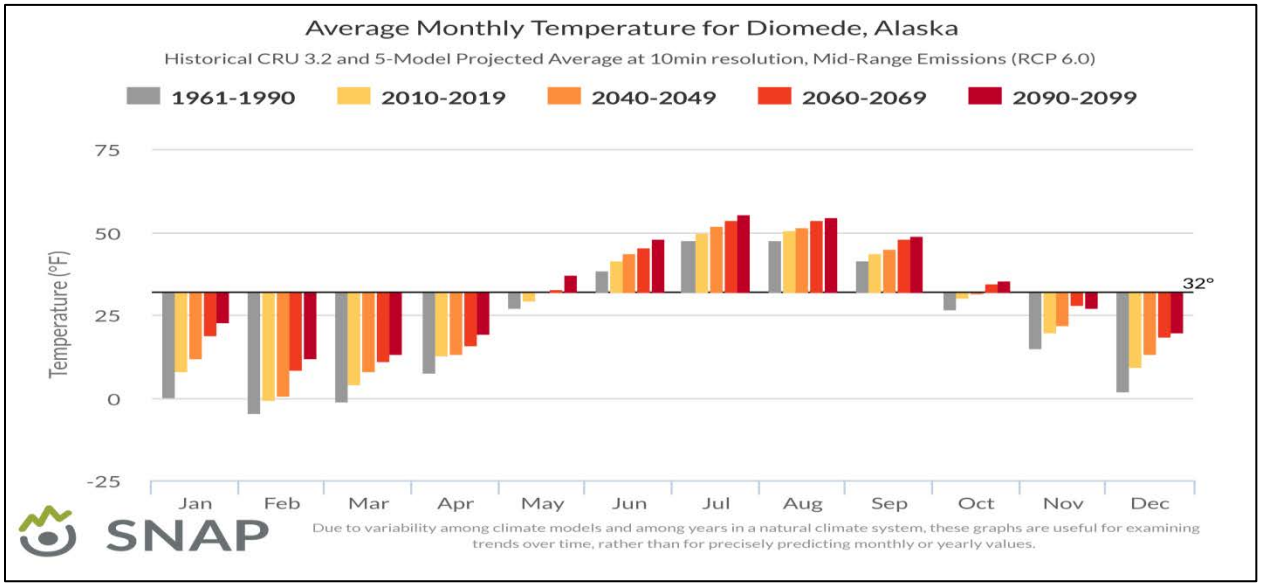

Figure 5-10 Diomede's Historic and Predicted Temperatures (UAF/SNAP 2016)

Table 5-7 provides a representative sample of major storm events the National Weather Service (NWS) identified for the Saint Lawrence Island / Bering Strait's Weather Zone. Each weather event may not have specifically impacted Diomede. 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
St. Lawrence Island / Bering Strait (Zone 213)	10/1/2015	High Wind	A tight pressure gradient developed between a strong 980 millibar (mb) low pressure center in the far western Bering Sea and a 1040 mb high pressure center over the Canadian Yukon on the evening of the 1st and into the early morning hours of October 2nd 2015. High winds were reported on the 28th at: **Zone 213:** Wales AWOS highest reported gust was 71 miles per hour (mph) (62 knots [kt]).
St. Lawrence Island / Bering Strait (Zone 213)	12/26/2014	High Wind	A tight pressure gradient developed between a strong 968 mb low pressure center in the far western Bering Sea and a 1045 mb high pressure center over the eastern Arctic slope on the 27th and 28th of December 2014. High winds were reported on the 28th at: **Zone 213:** Wales AWOS highest reported gust was 70 mph (61 kt).
St. Lawrence Island / Bering Strait (Zone 213)	11/13/2013	High Wind and Ice Storm	This storm brought a variety of hazardous weather to northern Alaska: another surge of sea water across Norton Sound, rising 4 to 8 feet to prolong the inundation which had occurred just a few days earlier though the peak surge did occur during the falling tide so the overall rise in sea level was not as high as the previous event. A strong warm front with this system spread precipitation across the west coast and interior, starting out as freezing rain, then rain, though remaining as snow near the Brooks Range. ... Very strong westerly winds gusting from 50 to 75 mph developed just behind the warm front as it moved across the west coast and interior of northern Alaska on the afternoon of the 13th through the morning of the 14th. In addition to the wintry mix of precipitation and strong winds, temperatures soared into the lower 40s when the wind arrived. As the low pressure center continued east of Barter island on the 14th, a short period of blizzard conditions occurred there. Coastal Flooding was reported at: **Zone 213:** Rain was reported at Wales (estimated 0.20 inch) and Teller (0.26 inch), along with lesser amounts at Brevig Mission (0.07 inch) and likely at Savoonga (0.08 inch). Ground was likely frozen so rain turned to ice on the ground. High winds reported were: Teller AWOS 65 kt (75 mph); Wales AWOS 56 kt (64 mph); Savoonga AWOS 55 kt (63 mph) and Brevig Mission AWOS 53 kt (61 mph).
St. Lawrence Island / Bering Strait (Zone 213)	3/4/2013	High Wind	**Zone 213:** Strong winds developed along the west coast of Alaska between a 1045 high over the Arctic and 977 mb low pressure in the Gulf of Alaska. A gust of 58 kt (67 mph) was recorded at the Wales AWOS during the morning of the 5th.
St. Lawrence Island / Bering Strait (Zone 213)	8/15/2012	High Wind	An unusually strong for August 982 mb low in the southern Chukchi Sea produced high winds at Teller along the Bering Strait Coast and at Cape Lisburne along the western Arctic Coast on the afternoon of the 15th. **Zone 213:** At Teller there was a peak wind gust of 64 mph/56 kt at the Teller AWOS at 1558AKST on the 15th. The wind frequently gusted as high as 60 mph/52 kt from approximately 1252AKST through 1658AKST.

Table 5-7 Severe Weather Events

Location	Date	Event Type	Magnitude
St. Lawrence Island / Bering Strait (Zone 213)	2/1/2012	Extreme Cold / Wind Chill	A cold air mass across northern Alaska combined with a strong pressure difference between a 950 mb low in the northern Gulf of Alaska and a ridge of high pressure across eastern Russia to produce strong wind and low wind chills along parts of the west coast of Alaska. A period of blizzard conditions were observed at Point Hope along the Chukchi Sea Coast. **Zone 213:** Temperatures of 29 to 33 below zero combined with a north wind of 15 to 25 mph to produce wind chills as low as 66 below zero at Wales. The wind chills were 60 below or lower from approximately 2100AKST on the 2nd through 1700AKSTon the 3rd.
St. Lawrence Island / Bering Strait (Zone 213)	11/8/2011	High Wind	A 960 mb low over the southern Aleutians ...and moved into the southern Chukchi Sea as a 958 mb low by 2100AKST on the 9th....The storm was one of the strongest storms to impact the west coast of Alaska since November 1974. **Zone 213:** Blizzard conditions and high winds were observed on Saint Lawrence Island as well as along the Bering Strait ...There was an unofficial report of a wind gust as high as 81 kt (93 mph) at **Little Diomede** during the event. At Brevig Mission, there were reports that two homes had minor roof damage and the power was reported to be off intermittently during the afternoon on the 9th.
St. Lawrence Island / Bering Strait (Zone 213)	4/6/2011	Winter Storm	**Zone 213:** Blizzard conditions were observed at Gambell from 2216AKST on the 6th through 0056AKST on the 9th. The visibility was frequently reduced to one quarter mile or less in snow and blowing snow. ... At Savoonga, blizzard conditions were observed from 1936AKST on the 6th through 0456AKST on the 7th. There was a peak wind gust of 48 kt/55 mph at the Savoonga AWOS. ... During the onset of the blizzard conditions there was a peak wind gust of 51 kt/ 59 mph at the Teller AWSS. At Wales, blizzard conditions were observed from 2346AKST on the 6th until 0858AKST on the 7th. There was a peak wind gust of 43 kt/49 mph at the Wales AWSS. At Gambell, There was a storm total of 12 to 18 inches, but the amounts were estimated due to significant blowing and drifting snow....
St. Lawrence Island / Bering Strait (Zone 213)	1/7/2011	High Wind	**Zone 213:** A 978 mb low approximately 300 miles southwest of Saint Lawrence Island combined with a 1030 mb high across interior Alaska to produce blizzard conditions at Savoonga on Saint Lawrence. At Savoonga, blizzard conditions were observed from 0616AKST through 0956AKST. The visibility was reduced to one quarter of a mile or less in snow and blowing snow. There was a peak wind gust of 51 kt (59 mph) at the Savoonga AWOS. A brief period of blizzard conditions were also observed at Wales during the afternoon, but several observations were unavailable and it did not appear that the blizzard conditions lasted for 3 hours. There was, however, a peak wind gust of 53 kt (61 mph) at the Wales AWSS and several consecutive hours when the wind gusted to 52 kt (60 mph).

Table 5-7 Severe Weather Events

Location	Date	Event Type	Magnitude
St. Lawrence Island / Bering Strait (Zone 213)	3/4/2009	Blizzard	A 978 mb low across the southern Aleutians at 3 am AKST on the 4th lifted northeast and deepened to 973 mb in the vicinity of Saint Lawrence Island by 3 am AKST on the 5th. The low tracked northeast to the Norton Sound by 9 pm AKST on the 5th, and weakened to 994 mb along the northwest coast of Alaska by 3 am AKST on the 6th. The storm brought blizzard conditions and heavy snowfall to portions of northern Alaska. **Zone 213:** Blizzard conditions were observed at Gambell and Savoonga on Saint Lawrence Island during the late afternoon and evening hours on the 4th. The visibility was frequently reduced to one quarter of a mile or less in snow and blowing snow. The wind gusted to 49 mph/43 kt at the Savoonga AWOS, and to 55 mph/48kt at the Gambell AWOS. Along the Bering Strait coast, blizzard conditions were observed intermittently during the evening hours. The wind gusted to 45 mph/39 kt at the Teller AWSS.
St. Lawrence Island / Bering Strait (Zone 213)	11/22/2003	Blizzard	A 975 mb low pressure center moved northeast over the Bering sea from Kamchatka Peninsula to Saint Lawrence Island the evening of the 22nd and morning of the 23rd. The low then slowed and began weakening, moving east across the Seward Peninsula Sunday and across the western interior Monday; then reaching Fairbanks Monday night before dissipating.... Blizzard Conditions were reported at: **Zone 213** - Gambell; Savoonga
St. Lawrence Island / Bering Strait (Zone 213)	4/25/2002	High Wind	A strong and large storm (974 mb) moved northeast across Russia Far East late on the 25th through the morning of the 26th, across the Chukchi Sea on the 26th, ...Strong southwesterly flow associate with this system and the circulation around it brought a variety of winter weather and strong winds to much of northern Alaska. Blizzard Conditions were reported at: **Zone 213** - Savoonga, Tin City

(NOAA 2017b)

5.3.4.3 Location, Extent, Impact, and Recurrence Probability

Location

The entire island of Little Diomede, which includes the City and Village of Diomede, experiences periodic severe weather impacts. The most common to the area are high winds and blizzards. Table 5-7 depicts weather events that have impacted the area since 2002 and are provided as a representative sample.

Extent

The entire City and Village is equally vulnerable to the severe weather effects. The community experiences severe storm conditions with high winds that reach over 70 mph and a high of 93 mph.

Based on past severe weather events and the criteria identified in Table 5-2, the extent of severe weather in Diomede 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. Although the community is not on top of the bluff to avoid the worst wind, high winds can still have a heavy impact on the Village and City. In addition, the waves from storm surge can move extremely heavy items on the beach, creating a safety hazard and potential for damage to facilities.

Extreme cold can 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. 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.

Receding sea ice is also impacting the community, by increasing human conflicts with polar bears. Polar bear migration has been slowly changing as the arctic sea ice thins and recedes (NASA 2016). Diomede has experienced an increase of polar bears coming into or near the village (two during the winter of 2016/17), and an increase in human-bear encounters as the bears' food source becomes more difficult to access. Receding sea ice also impacts the community's ability to hunt for subsistence resources such as oogruk (bearded seal) and other marine mammals.

Recurrence Probability

Based on previous occurrences and the criteria identified in Table 5-3, it is "Highly Likely" a severe storm event will occur in the next year with an event having up to 1 in 1 years (1/1=100 percent) chance of occurring as the history of events is greater than 33 percent likely per year.

5.3.5 Volcanic Hazards

5.3.5.1 Nature

Alaska is home to 41 historically active volcanoes stretching across the entire southern portion of the state from the Wrangell Mountains to the far western Aleutian Islands. "Historically active" refers to actual eruptions that have occurred during Alaskan historic time, in general the time period in which written records have been kept, from about 1760 on. Alaska averages 1-2 eruptions per year. In 1912, the largest eruption of the 20th century occurred at Novarupta and Mount Katmai, located in what is now Katmai National Park and Preserve on the Alaska Peninsula (AVO 2016a).

A volcano is a vent or opening in the earth's crust from which molten lava (magma), pyroclastic materials, and volcanic gases are expelled onto the surface. Volcanoes and other volcanic phenomena can unleash cataclysmic destructive power greater than nuclear bombs, and can pose serious hazards if they occur in populated and/or cultivated regions.

There are four general volcano types:

1. Lava domes are formed when lava erupts and accumulates near the vent
2. Cinder cones are shaped and formed by cinders, ash, and other fragmented material accumulations that originate from an eruption
3. Shield volcanoes are broad, gently sloping volcanic cones with a flat dome shape that usually encompass several tens or hundreds of square miles, built from overlapping and inter-fingering basaltic lava flows
4. Composite or stratovolcanoes are typically steep-sided, large dimensional symmetrical cones built from alternating lava, volcanic ash, cinder, and block layers. Most composite volcanoes have a crater at the summit containing a central vent or a clustered group of vents.

Along with the different volcano types there are different eruption classifications. Eruption types are a major determinant of the physical impacts an event will create, and the particular hazards it poses. Six main types of volcano hazards exist including:

1. Volcanic gases are made up of water vapor (steam), carbon dioxide, ammonia, as well as sulfur, chlorine, fluorine, and boron compounds, and several other compounds. Wind is the primary source of dispersion for volcanic gases. Life, health, and property can be endangered from volcanic gases within about 6 miles of a volcano. Acids, ammonia, and other compounds present in volcanic gases can damage eyes and respiratory systems of people and animals, and heavier-than-air gases, such as carbon dioxide, can accumulate in closed depressions and suffocate people or animals.
2. Lahars are usually created by shield volcanoes and stratovolcanoes and can easily grow to more than 10 times their initial size. They are formed when loose masses of unconsolidated, wet debris become mobilized. Eruptions may trigger one or more lahars directly by quickly melting snow and ice on a volcano or ejecting water from a crater lake. More often, lahars are formed by intense rainfall during or after an eruption since rainwater can easily erode loose volcanic rock and soil on hillsides and in river valleys. As a lahar moves farther away from a volcano, it will eventually begin to lose its heavy load of sediment and decrease in size.
3. Landslides are common on stratovolcanoes because their massive cones typically rise thousands of feet above the surrounding terrain, and are often weakened by the very process that created the mountain – the rise and eruption of molten rock (magma). If the moving rock debris is large enough and contains a large content of water and soil material, the landslide may transform into a lahar and flow down valley more than 50 miles from the volcano.
4. Lava flows are streams of molten rock that erupt from a vent and move downslope. Lava flows destroy everything in their path; however, deaths caused directly by lava flows are uncommon because most move slowly enough that people can move out of way easily, and flows usually do not travel far from the source vent. Lava flows can bury homes and agricultural land under tens of feet of hardened rock, obscuring landmarks and property lines in a vast, new, hummocky landscape.

5. Pyroclastic flows are dense mixtures of hot, dry rock fragments and gases that can reach 50 mph. Most pyroclastic flows include a ground flow composed of coarse fragments and an ash cloud that can travel by wind. Escape from a pyroclastic flow is unlikely because of the speed at which they can move.
6. Tephra is a term describing any size of volcanic rock or lava that is expelled from a volcano during an eruption. Large fragments generally fall back close to the erupting vent, while smaller fragment particles can be carried hundreds to thousands of miles away from the source by wind. Ash clouds are common adaptations of tephra.

Ash fall poses a significant volcanic hazard to Diomede because, unlike other secondary eruption effects such as lahars and lava flows, ash fall can travel thousands of miles from the eruption site.

Volcanic ash consists of tiny jagged particles of rock and natural glass blasted into the air by a volcano. Ash can threaten the health of people, livestock, and wildlife. Ash imparts catastrophic damage to flying jet aircraft, operating electronics and machinery, and interrupts power generation and telecommunications. Wind can carry ash thousands of miles, affecting far greater areas and many more people than other volcano hazards. Even after a series of ash-producing eruptions has ended, wind and human activity can stir up fallen ash for months or years, presenting a long-term health and economic risk. Special concern is extended to aircraft because volcanic ash completely destroys aircraft engines.

Ash clouds have caused catastrophic aircraft engine failure, most notably in 1989 when KLM Flight 867, a 747 jetliner, flew into an ash cloud from Mt. Redoubt's eruption and subsequently experienced flameout of all four engines. The jetliner fell 13,000 feet before the flight crew was able to restart the engines and land the plane safely in Anchorage. The significant trans-Pacific and intrastate air traffic traveling directly over or near Alaska's volcanoes, has necessitated developing strong communication and warning links between the Alaska Volcano Observatory (AVO), other government agencies with responsibility for aviation management, and the airline and air cargo industry (AVO 2016a). The AVO has identified volcanos in Alaska, Table 5-8 lists those located along the Aleutian Chain.

Table 5-8 Volcanoes in Alaska's Aleutian Chain

Volcano Names			
Akutan Volcano	Davidof Volcano	Kiska Volcano	Semisopochnoi Volcano
Amak Volcano	Dutton Volcano	Koniuji Volcano	Shishaldin Volcano
Amukta Volcano	Fisher Volcano	Korovin Volcano	Tanaga Volcano
Aniakchak Volcano	Gareloi Volcano	Little Sitkin Volcano	Ugashik-Peulik Volcano
Bobrof Volcano	Great Sitkin Volcano	Makushin Volcano	Ukinrek-Maars Volcano
Bogoslof Volcano	Herbert Volcano	Okmok Volcano	Uliaga Volcano
Buldir Volcano	Isanotski Volcano	Pavlov Volcano	Veniaminof Volcano
Carlisle Volcano	Kagamil Volcano	Pogromni Volcano	Vsevidof Volcano
Chagulak Volcano	Kanaga Volcano	Seguam Volcano	Westdahl Volcano
Cleveland Volcano	Kasatochi Volcano	Segula Volcano	Yunaska Volcano

(AVO 2016b)

5.3.5.2 History

The AVO, and its constituent organizations (USGS, Alaska Department of Natural Resources [DNR], and UAF), has volcano hazard identification and assessment responsibility for Alaska's active volcanic centers. The AVO monitors active volcanoes several times daily using Advanced Very High Resolution Radiometers and satellite imagery.

The 2016 DHS&EM Disaster Cost Index records the following volcanic eruption disaster events:

> ***103. Mt. Redoubt Volcano, December 20, 1989*** *When Mt. Redoubt erupted in December 1989, posing a threat to the Kenai Peninsula Borough, Mat-Su Borough, and the Municipality of Anchorage, and interrupting air travel, the Governor declared a Disaster Emergency. The Declaration provided funding to upgrade and operate a 24-hr. monitoring and warning capability.*
>
> ***104. KPB-Mt. Redoubt, January 11, 1990*** *The Kenai Peninsula Borough, most directly affected by Mt. Redoubt, experienced extraordinary costs in upgrading air quality in schools and other public facilities throughout successive volcanic eruptions. The Borough also sustained costs of maintaining 24-hr. operations during critical periods. The Governor's declaration of Disaster Emergency supported these activities.*
>
> ***161. Mt. Spurr, September 21, 1992*** *Frequent eruptions and the possibility of further eruptions has caused health hazards and property damage within the local governments of the Municipality of Anchorage, Kenai Peninsula Borough and Mat-Su Borough. These eruptions caused physical damage to observation and warning equipment. Funds to replace equipment for AVO. (DHS&EM 2016a)*

Figure 5-11 2009 Eruption Cloud- 15,000 ft. (NOAA 2009)

The NOAA's Service Review, Mount Redoubt Volcanic Eruptions, March – April 2009 (Figure 5-11) states,

> *"Mount Redoubt volcano in continuous eruption on March 31, 2009. Plume height is no more than 15,000 feet above sea level. The small amount of ash in the plume is creating a haze layer downwind of the volcano and dustings of fine ash are falling out of the plume. View is from the northwest…*
>
> *[Figure 5-9] Photo Credit: Kristi Wallace, AVO…*

On March 22, 2009, Mount Redoubt volcano, 106 miles southwest of Anchorage, Alaska, began a series of eruptions after persisting in Orange or "Watch" status since late January 2009. Plume heights were observed at or above 60,000 feet during two of the six significant eruptions. Ashfall occurred over south central Alaska, including in Anchorage, with amounts ranging from a trace to one-half inch in depth.

The Redoubt eruptions also disrupted air traffic in the region. Hundreds of commercial flights were cancelled and cargo companies were significantly impacted. This resulted in employees being placed on unpaid leave during periods when airport operations were shut down. Anchorage is Alaska's major population center; its airport serves as a critical strategic transportation hub as the third busiest cargo airport in the world.

The impacts of the unrest at Mount Redoubt volcano continued through spring and into the summer. The threat of continuing eruptions and lahars (volcanic mud flows composed of water, ash, mud, and debris) necessitated the removal of millions of gallons of oil from Chevron's nearby Drift River Terminal. Residents, emergency management, and health officials remained on alert until Mount Redoubt volcano was downgraded to Yellow or "Advisory" status on June 30, 2009, and finally to Green or "Normal" status on September 29, 2009" (NOAA 2009).

Recent volcano eruption impacts demonstrate modern community vulnerability to volcanic ash dispersal and travel distance.

Alaska's volcanoes have very diverse eruption histories spanning thousands of years. Activity spanning such an extensive timeline is nearly impossible to define. However, modern science has enabled the AVO to determine fairly recent historical eruption dates. Table 5-9 lists the AVO's identified Aleutian Chain volcanoes' historical eruption dates with explanatory symbols to designate the data's accuracy.

Table 5-9 Aleutian Volcano Eruption Events

Aleutian Volcanoes and Their Respective Eruption Dates				
Akutan 10: 1765-1953 30: 1848-1992 4: 1996-2007	**Fisher** 3: 1795-1830	**Kiska** 3: 1907-1987 4: 1962-1990 1: 1943	**Pavlof Sister** 1: 1762	**Ukinrek-Maars** 1: 1977
Amak 2: 1700-1796	**Gareloi** 6: 1760-1996 10: 1791-1989	**Korovin** 8: 1829-2005 3: 1973-1998 3: 1996-2006	**Seguam** 3: 1827-1927 6: 1786-1993	**Veniaminof** 4: 18572-1987 18: 1830-2013 1: 1999
Amukta 5: 1770-1997 4: 1786-1996	**Great Sitkin** 7: 1760-1987 8: 1767-1974 3: 1974-2002	**Little Sitkin** 3: 1776-1900 1: 2012	**Semisopochnoi** 4: 1772-1830 2: 1873-1987 1: 2014	**Vsevidof** 5: 1784-1957 2: 1790-1999
Aniachak 1: 1931 7: 1942-2010	**Kagamil** 1: 1929	**Makushin** 14: 1790-1993 10: 1769-1995 10: 1871-2010	**Shishaldin** 30: 1775-2009 26: 1824 2014 5: 1913-2005	**Westdahl** 3: 1820-1979 7: 1795-1991

Table 5-9 Aleutian Volcano Eruption Events

Aleutian Volcanoes and Their Respective Eruption Dates				
Bogoslof 4: ✱ 1908-1951 8: ! 1796-1992	**Kanaga** 5: ✱ 1763-1996 6: ! 1786-2012 3: i 1790-1933	**Okmok** 3: ✱ 1878-1936 14: ! 1817-2008 4: i 1805-2009	**Tanaga** 3: ✱ 1763-1829 1: ! 1914 1: i 2005	**Wrangell** 3: ✱ 1820-1979 2: ! 1795-1991 3: i 1996-2010
Carlisle 1: ✱ 1987 3: i 1774-1838	**Kasatochi** 4: ✱ 1760-1899 1: ! 2008 2: i 2005-2006	**Pavlof** 10: ✱ 1762-1903 36: ! 1817-2007 4: i 1999-2005	**Ugashik-Peulik** 2: ✱ 1814-1852	**Yunaska** 3: ✱ 1817-1929 3: ! 1824-1937
Cleveland 8: ✱ 1774-2010 26: ! 1828-2014	**Key:** ! Eruption ✱ Questionable eruption i Non-eruptive activity			

(AVO 2016b)

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

Location

Figure 5-12 depicts the AVO monitoring program's active and inactive volcanoes.

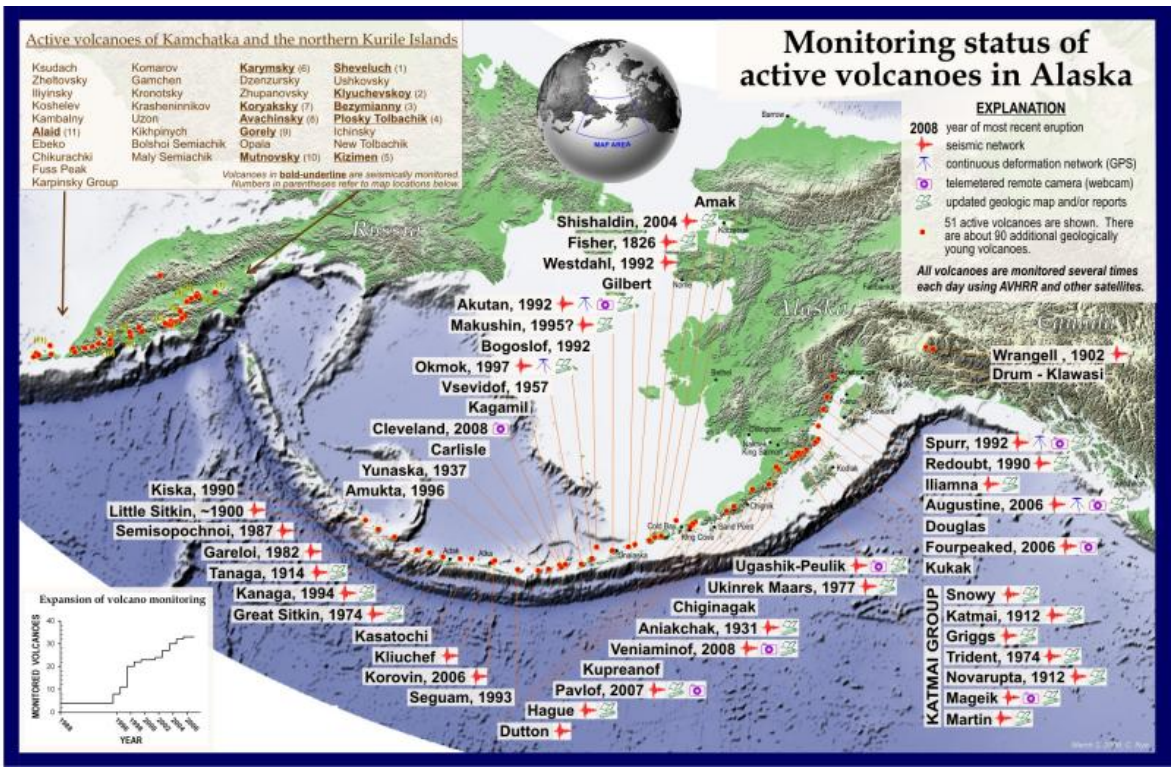

Figure 5-12 AVO's Volcano Monitoring Status Map (AVO 2008)

The AVO publishes individual hazard assessments for each active volcano in Alaska. Table 5-10 lists a representative sample of their preliminary reports and hazard assessments.

Table 5-10 List of Published Aleutian Volcano Hazard Assessments

Volcano Names			
Akutan Volcano	Great Sitkin Volcano	Makushin Volcano	Shishaldin Volcano
Aniakcahak Volcano	Hayes Volcano	Okmok Volcano	Tanaga Island Volcanic Cluster
Gareloi Volcano	Kanaga Volcano	Pavlof Volcano	

Each report contains a description of the eruptive history of the volcano, the hazards it poses, and the likely effects of future eruptions to populations, facilities, and ecosystems.

Figure 5-13 indicates the most likely volcanoes to impact Diomede.

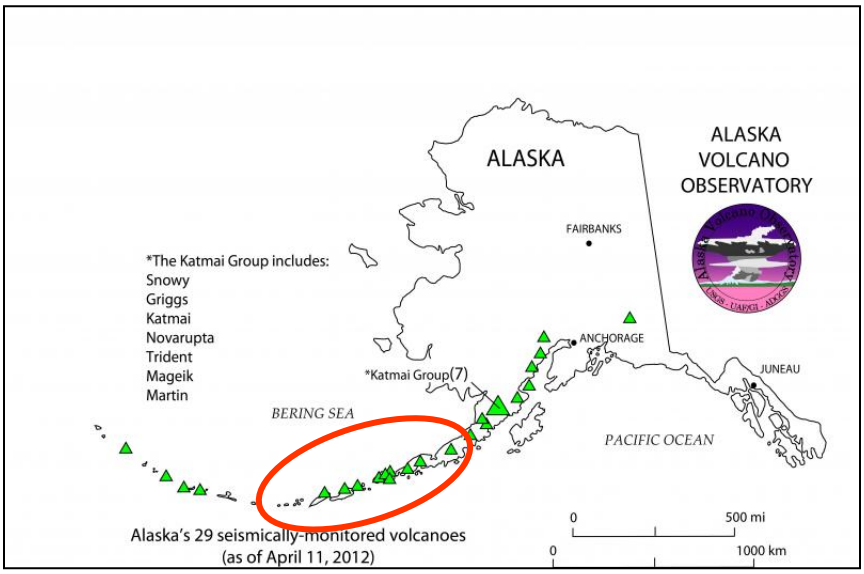

Figure 5-13 Alaska's Seismically Monitored Volcanoes (AVO 2012)

Alaska contains 80+ volcanic centers and is at continual risk for volcanic eruptions. Most of Alaska's volcanoes are far from settlements that could be affected by lahars, pyroclastic flows and clouds, and lava flows; however ash clouds and ash fall have historically caused significant impact to human populations.

> *"When volcanoes erupt explosively, high-speed flows of hot ash (pyroclastic flows) and landslides can devastate areas 10 or more miles away, and huge mudflows of volcanic ash and debris (lahars) can inundate valleys more than 50 miles downstream. . . Explosive eruptions can also produce large earthquakes. . . the greatest hazard posed by eruptions of most Alaskan volcanoes is airborne dust and ash; even minor amounts of ash can cause the engines of jet aircraft to suddenly fail in flight"* (USGS 1998)

Many of the volcanoes in Alaska are capable of producing eruptions that can affect far distant communities such as Diomede. A large ash plume has the capability of shutting down air, and potentially, ferry and barge operations because tephra is damaging to all engine types. Large tephra could cause further damage from direct impact damages.

USGS Bulletin 1028-N explains that Mount Katmai's eruption on June 5, 1912 was up to that point *"the greatest volcanic catastrophe in the recorded history of Alaska. More than six cubic*

miles of ash and pumice were blown into the air from Mount Katmai and the adjacent vents in the Valley of Ten Thousand Smokes." The eruption lasted for 3 days. The USGS Fact Sheet 075-98, Version 1.0 states,

> *"The ash cloud, now thousands of miles across, shrouded southern Alaska and western Canada, and sulfurous ash was falling on Vancouver, British Columbia; and Seattle, Washington. The next day the cloud passed over Virginia, and by June 17th it reached Algeria in Africa."*

Figure 5-14 shows the extent of four ash cloud impact areas. The 1912 Katmai ash cloud is gray; the Augustine (blue plume), Redoubt (orange plume), and Spurr (yellow plume) were each dwarfed by the Katmai event. "Volcanologists discovered that [this] 1912 [Katmai] eruption was actually from Novarupta, not Mount Katmai" (USGS 1998).

Figure 5-14 1912 Katmai Volcano Impact (USGS 1998)

- Archaeological evidence suggests that an eruption of Aniakchak volcano 3,500 years ago spread ash over much of Bristol Bay and generated a tsunami that washed up onto the tundra around Nushagak Bay. Within the past 10,000 years, Aniakchak volcano has significantly erupted on at least 40 occasions.
- The 1989-90 eruption of Mt. Redoubt seriously affected the population commerce, and oil production and transportation throughout the Cook Inlet region.

> "*Redoubt Volcano is a strato-volcano located within a few hundred kilometers of more than half of the population of Alaska. This volcano has erupted explosively at least six times since historical observations began in 1778. The most recent eruption occurred in 1989-90 and similar eruptions can be expected in the future. The early part of the 1989-90 eruption was characterized by explosive emission of substantial volumes of volcanic ash to altitudes greater than 12 kilometers above sea level and widespread flooding of*

the Drift River valley. Later, the eruption became less violent, as developing lava domes collapsed, forming short-lived pyroclastic flows associated with low-level ash emission. Clouds of volcanic ash had significant effects on air travel as they drifted across Alaska, over Canada, and over parts of the conterminous United States causing damage to jet aircraft, as far away as Texas. Total estimated economic costs are $160 million, making the eruption of Redoubt the second most costly in U.S. history" (USGS 1998).

- Mt. Spurr's 1992 eruption brought business to a halt and forced a 20 hour Anchorage International Airport closure. Communities 400 miles away reported light ash dustings.

  "Eruptions from Crater Peak on June 27, August 18, and September 16–17, 1992, produced ash clouds (fig. 11) that reached altitudes of 13 to 15 kilometers [8-9 miles] above sea level. These ash clouds drifted in a variety of directions and were tracked in satellite images for thousands of kilometers beyond the volcano (Schneider and others, 1995). One ash cloud that drifted southeastward over western Canada and over parts of the conterminous United States and eventually out across the Atlantic Ocean (fig. 12) significantly disrupted air travel over these regions but caused no direct damage to flying aircraft" (USGS 2002)

In 1992, another eruption series occurred, resulting in three separate eruption events. The first, in June, dusted Denali National Park and Manley Hot Springs with 2 mm of ash – a relatively minor event. In August, the mountain again erupted, covering Anchorage with ash, bringing business to a halt and forcing officials to close Anchorage International Airport for 20 hours. St. Augustine's 1986 eruption caused similar air traffic disruption.

- Small ash clouds from the 2001 eruption of Mt. Cleveland were noted by USGS to have reached Fairbanks. These clouds dissipated somewhere along the line between Cleveland and Fairbanks. A full plume, visible on satellite imagery, was noted in a line from Cleveland to Nunivak Island.

Figure 5-15 displays the air travel routes in the North Pacific, Russia, and Alaska and the active volcanoes which could easily disrupt air travel during significant volcanic eruptions with ash fall events.

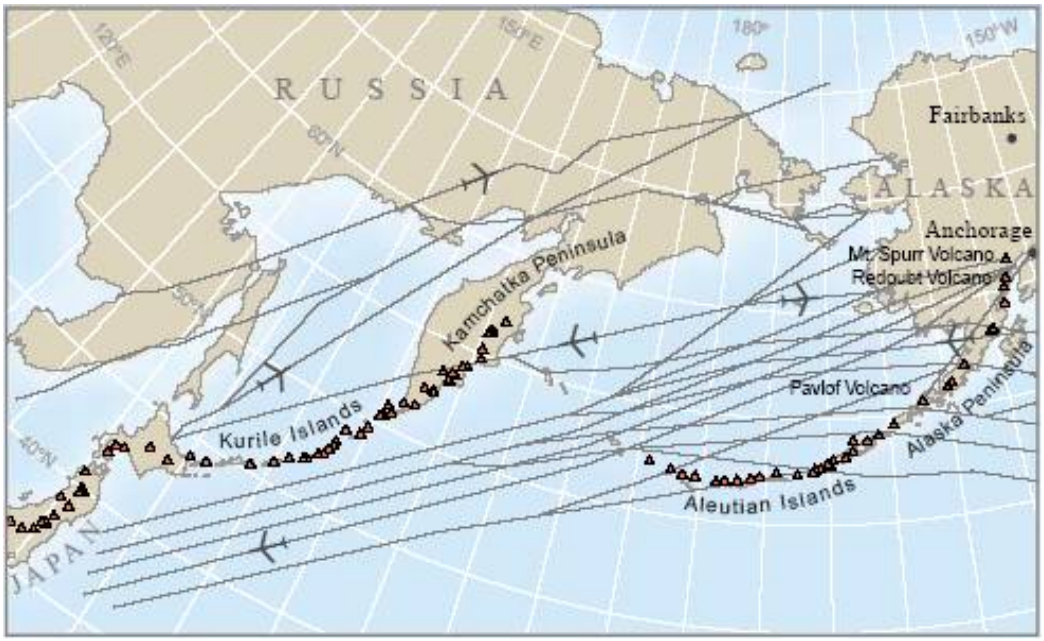

Figure 5-15 North Pacific Air Travel Routes (USGS 2004)

Figure 5-16, the Alaska Division of Geologic and Geophysical Surveys (DGGS) Makushin Hazard Assessment (Report of Investigation 200-4, Figure 8), explains how an explosive Makushin Volcano eruption's plumes could impact airline flight routes:

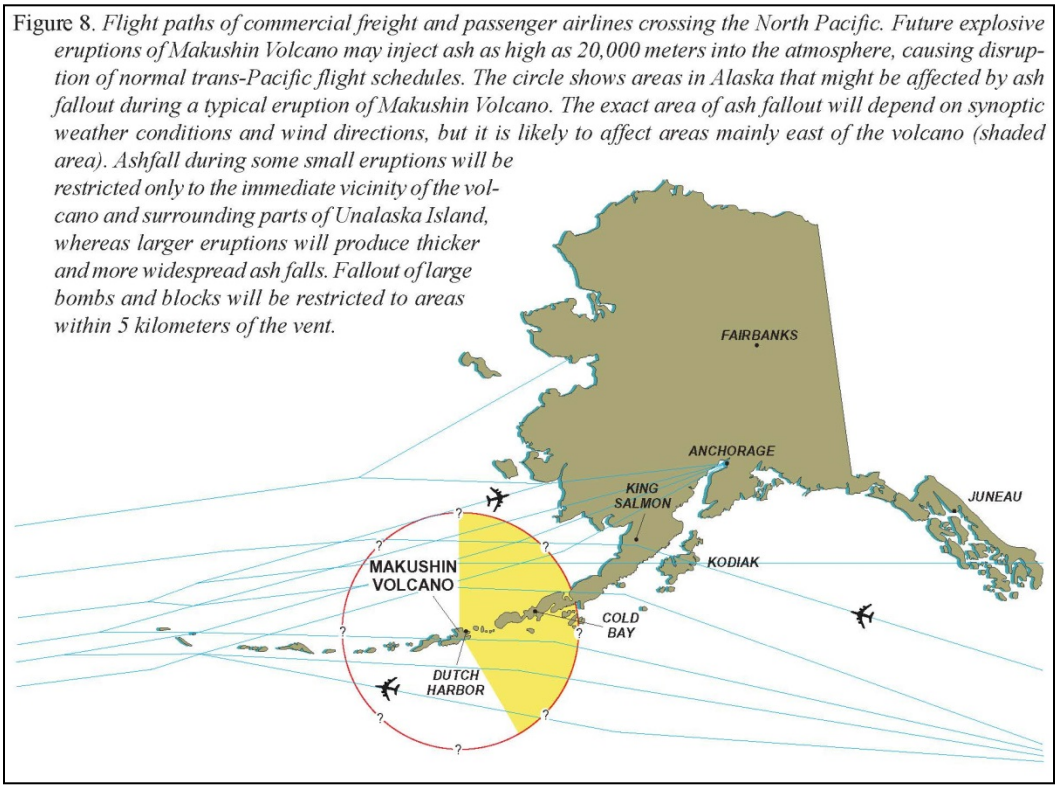

Figure 5-16 Makushin Volcano Flight Proximity (DGGS 2000)

Extent

Volcanic effects include severe blast, turbulent ash and gas clouds, lightning discharge, volcanic mudflows, pyroclastic flows, corrosive rain, flash flood, outburst floods, earthquakes, and tsunamis. Some of these activities include ash fallout in various communities, air traffic, road transportation, and maritime activity disruptions.

Diomede might receive some ash fall during a massive volcanic eruption. A tsunami is not possible if the eruption included a massive, high speed pyroclastic flow into the Bering Sea; however, the community would be impacted. A much more likely impact would be prolonged traffic disruptions (air, land, or rail) preventing essential community resupply (e.g., food and medicine delivery, and medical evacuation service capabilities to full service hospitals).

A massive eruption anywhere on earth, as depicted in Figure 5-17, could severely affect the global climate; radically changing Diomede's (and everyone else's) risk from weather events for weeks, months, or years.

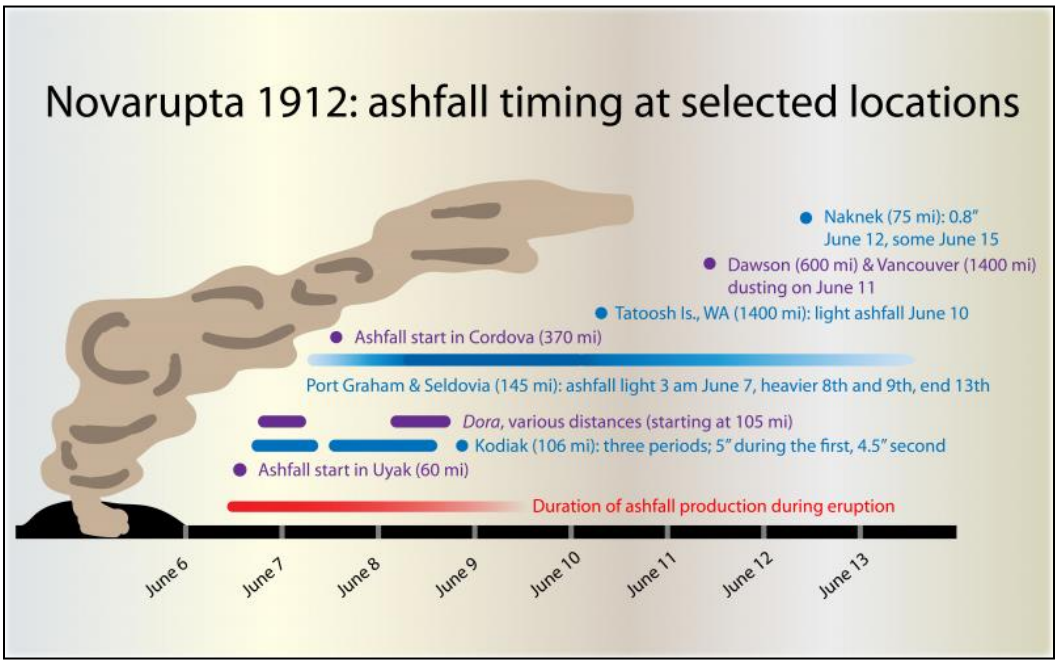

Figure 5-17 Novarupta's Historic Ashfall Timeline (AVO 2012)

Based on historic volcanic activity impacts and the criteria identified in Table 5-2, the magnitude and severity of impacts in Ambler are considered "Negligible" with minor injuries, minor quality of life lost, the potential for critical facilities to shut down for 24 hours or less, and less than 10% of property or critical infrastructure being severely damaged.

Impact

As the Preliminary Volcano-Hazard Assessment for Makushin Volcano, Alaska, Summary of Hazards states,

> "*If eruptions as large as those of 8,000 years ago were to occur, volcanic ash falls would be much thicker and more extensive than any seen in the area in historic time, and highly mobile pyroclastic flows, surges, or lateral blasts might affect areas tens of kilometers*

from the volcano... Such huge eruptions could also significantly disrupt air travel over the north Pacific area for days and perhaps weeks. However, based on the volcano's pattern of past behavior, eruptions of this magnitude are very rare, and therefore unlikely to recur in the near future" (DGGS 2000).

Such an ash fall event would undoubtedly be devastating to Diomede by straining its resources as well as transportation (air, and ocean); especially if other hub communities like Nome are also significantly affected by a volcanic eruption. Residents would likely experience respiratory problems from airborne ash, personal injury, and potential residential displacement or lack of shelter with general property damage (electronics and unprotected machinery), structural damage from ash loading, state/regional transportation interruptions, loss of commerce, as well as water supply contamination.

These impacts can range from inconvenience – a few days with no transportation capability; to disastrous – heavy, debilitating ash fall throughout the state, forcing residents to be completely self-sufficient.

Recurrence Probability

Geologists can make general forecasts of long-term activity associated with individual volcanoes by carefully analyzing past activity, but these are on the order of trends and likelihood, rather than specific events or timelines. Short-range forecasts are often possible with greater accuracy. Several signs of increasing activity can indicate that an eruption will follow within weeks or months. Magma moving upward into a volcano often causes a significant increase in small, localized earthquakes, and measurable carbon dioxide and compounds of sulfur and chlorine emissions increases. Shifts in magma depth and location can cause ground level elevation changes that can be detected through ground instrumentation or remote sensing.

Based on the criteria identified in Table 5-3 and information presented in the Alaska State Hazard Mitigation Plan, it is "Unlikely" a volcanic eruption will occur within the next ten years. Event has up to 1 in 10 years (1/10=10 percent) chance of occurring. History of events is less than or equal to 10 percent likely per year. Vulnerability depends on the type of activity and current weather, especially wind patterns.

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 extent of exposure that may result from a hazard event of a given intensity in a given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage. A vulnerability analysis is divided into eight steps:

1. Asset Inventory
2. Exposure Analysis for Current Assets
3. National Flood Insurance Program Participation
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 City governance regulations for current assets, and area future development initiatives:

DMA 2000 Recommendations
Assessing Risk and Vulnerability, and Analyzing Development Trends §201.6(c)(2)(ii): The risk assessment shall include 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: §201.6(c)(2)(ii)(A): The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; §201.6(c)(2)(ii)(B): An estimate of the potential dollar losses to vulnerable structures identified in … this section and a description of the methodology used to prepare the estimate. §201.6(c)(2)(ii)(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. §201.6(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.
1. REGULATION CHECKLIST
ELEMENT B. Risk Assessment, Assessing Vulnerability, Analyzing Development Trends
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))
B4. Does the Plan address NFIP insured structures within each jurisdiction that have been repetitively damaged by floods?
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))
Source: FEMA, March 2015.

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

DMA 2000 Requirements
ELEMENTS B: Risk and Vulnerability Assessment
B3. Does the plan include a description of each identified hazard's impact as well as an overall summary of the vulnerability of the tribal planning area? [44 CFR § 201.7(c)(2)(ii)]
Source: FEMA, October 2017

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 and City of Diomede'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	50	25	10
Ground Failure	50	100	100	75
Severe Weather	100	100	100	100
Volcanic Hazards	100	100	100	100

6.2 CULTURALLY AND SACRED SITE SENSITIVITY

6.2.1 Location

The entire island is culturally significant to Diomede.

> *"All of Inaliq is subsistence life. From the land of green picking, birds we catch with anovuq poles (nets), blue king crabs, sculpins, oogruks, walrus, polar bears, and whales. Our ancestors are buried here, up in those rocks. They sang the traditional songs we still sing and made the Inupiaq foods we still prepare and eat today. We are Inaliq." (Opik Ahkinga)*

Meat caches or 'meat holes' are scattered throughout the community. These meat holes, called *qaluaq* or *eas* in Inupiaq, were used to preserve, ferment, and store meat harvested from walrus

and birds. Families prepare izagvak (baby walrus) in the meat holes. The carcass was left out, but covered with a cardboard or tarp (historically a hide was used) and left to ferment and age. In the summertime, the carcass was placed in the meat hole. In late fall, after snow fall and before freeze up, the carcass was cut in half, and some parts were eaten. The rest of the carcass was left in the meat hole to keep frozen. Fermented walrus flippers were a favorite food on Diomede.

> *"I remember in early November, the village would smell like stink aged walrus. Oh, that smell I miss so much. When you smell that and see the dragging tracks on the snowy ground, you know someone is going to be eating good that night." (Opik Ahkinga)*

The meat holes are located throughout the community, but not near the beach or shoreline and therefore are not prone to erosion or flooding impacts.

> **** NOTE:*** *Anyone desiring information concerning Diomede's culturally sensitive information must contact the tribal office for assistance.*

6.3 LAND USE AND DEVELOPMENT TRENDS

6.3.1 Land Use

Land use in the community is predominately residential with limited area for commercial services and community (or institutional) facilities. There is no suitable or developable vacant land for expansion or future development. Figure 6-2, page 6-6 shows the community's relatively small footprints located on a steep slope with no open space within community boundaries.

Figure 6-3, page 6-7 shows three areas that, depending on weather patterns, are potentially safe for helicopter landings. There is no airport anywhere on Little Diomede Island.

In 2008, a system of boardwalks was constructed throughout the community because roads were not feasible within their constrained location.

Figures 6-1 through 6-3 show the community's location with a small footprint on the edge of Little Diomede Island, its layout, land use areas, and 2008 boardwalk project are indicated on the images where available.

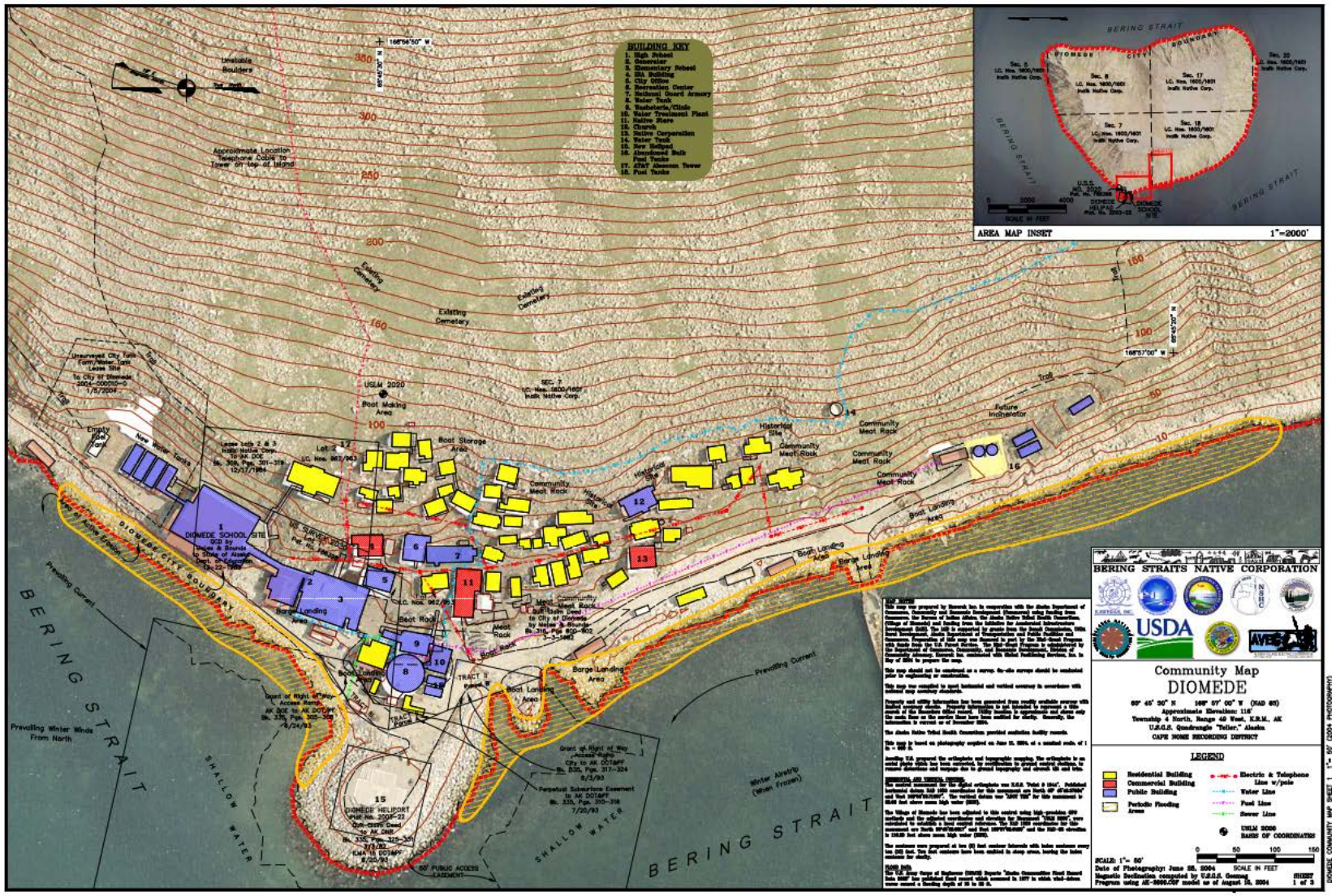

Figure 6-1 **City and Village of Diomede** (DCRA 2004)

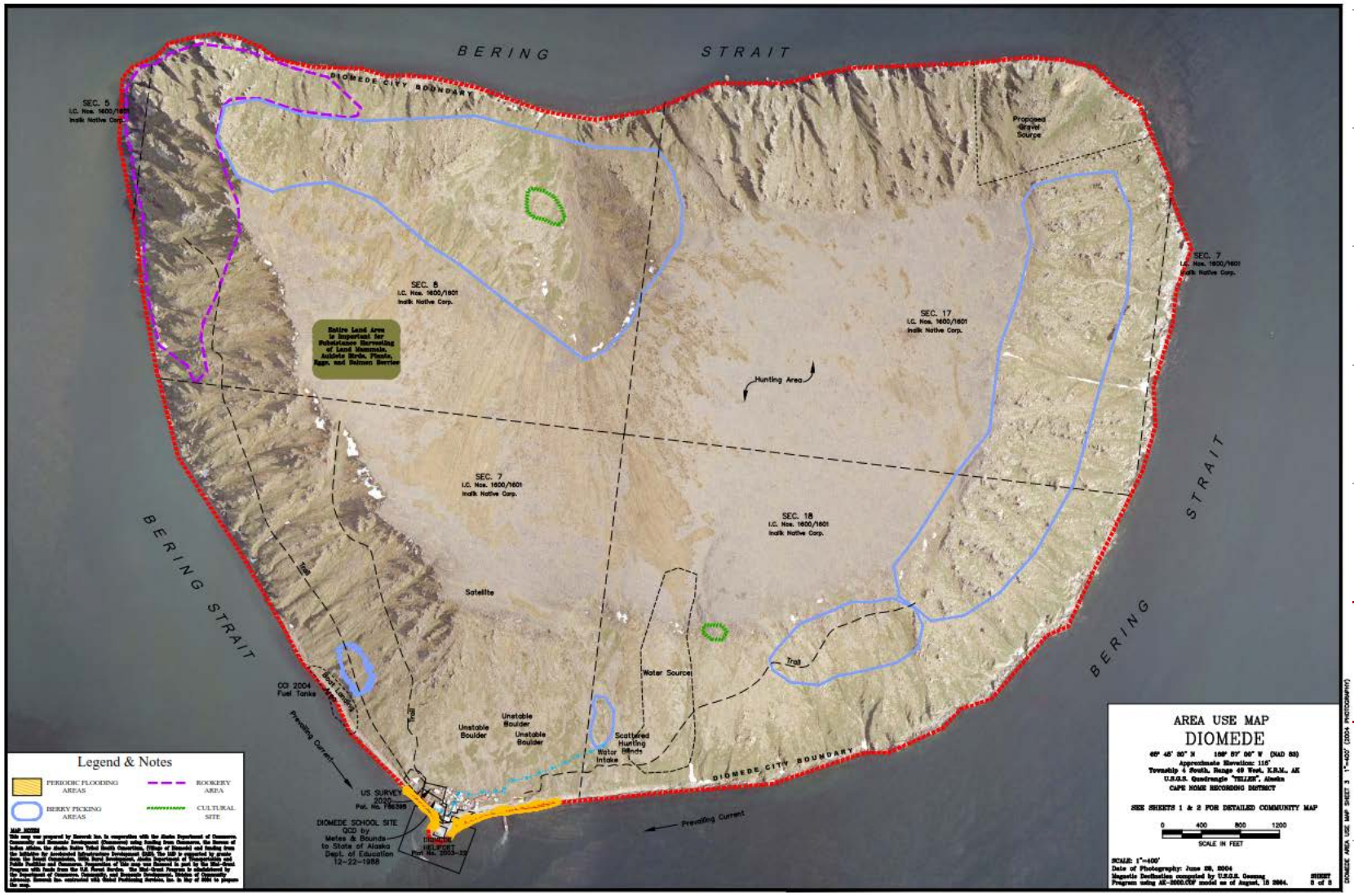

Figure 6-2 Island of Little Diomede (Area Map) (DCRA 2004)

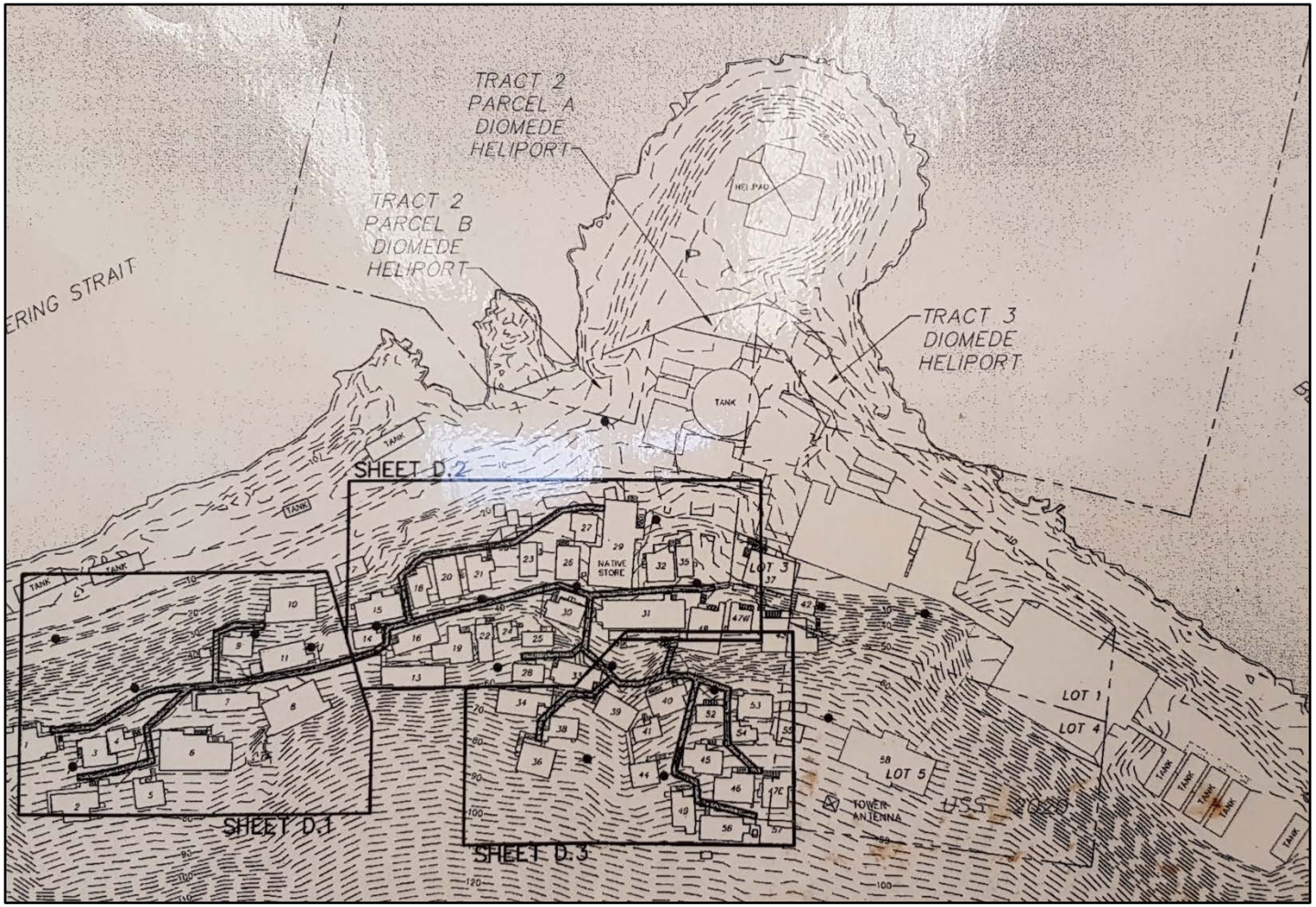

Figure 6-3 Inalik Walkway Project (KI and RPKA 2008)

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.

Population and Building Stock

Population data for the City and Village were obtained from the 2010 U.S. Census and the Department of Labor's (DOL) estimate. The U.S. Census reports the Village's total population for 2010 as 328 and 2014 DOL data reported a population of 283 (Table 6-2). The project team estimated the number of residential buildings.

Table 6-2 Estimated Population and Building Inventory

Population			Residential Buildings	
2010 Census	DOL 2016 Data	2017 Village Count	2015 Total Building Count	Total Value of Buildings
115	88	104	41	US Census $684,700 Village: $15,375,000

Sources: Census 2010, 2016 DCCED/DCRA identified Department of Labor's estimates, and Census 2015. US Census listed housing value at $16,700. The Project Team determined that the average structural replacement value of all single-family residential buildings is $375,000.

Estimated replacement values for those structures, as shown in Table 6-2, were obtained from the U.S. Census 2010, and 2014 DCCED/DCRA identified DOL's estimates, and the U.S. Census 2011-2015 American Community Survey.

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 $375,000.

6.4.1.1 Existing Infrastructure

The City and the Native Village of Diomede have benefited from numerous funding opportunities to assist them with upgrading their infrastructure. Table 6-3 list the community's identified "completed" infrastructure improvement projects. These projects provide a depiction of the community's ongoing development trends and focus toward improving aging infrastructure.

Table 6-3 Diomede's Completed Capital Improvement Project List

Recipient	Award Year	Project Description/Comments	Project Status	Award Amount	End Date
City of Diomede	1982	Electrification	Closed	$106,000	
City of Diomede	1982	Youth Recreation Center	Closed	$21,000	
City of Diomede	1983	Heavy Equipment and Equip Storage Bldg.	Closed	$131,900	

Table 6-3 Diomede's Completed Capital Improvement Project List

Recipient	Award Year	Project Description/Comments	Project Status	Award Amount	End Date
City of Diomede	1983	Electrical Distribution System	Closed	$100,000	
City of Diomede	1985	Breakwater Project	Closed	$300,000	
City of Diomede	1985	Heavy Equipment (Backhoe and Parts)	Closed	$320,000	
City of Diomede	1988	Helicopter Pad and Community Facility Repair	Closed	$34,562	
City of Diomede	1990	City Buildings Renovation, Equip	Closed	$34,490	
City of Diomede	1993	Heavy Equipment Storage/Repairs	Closed	$0	
City of Diomede	1994	Community Center Renovation	Closed	$25,000	6/30/2000
City of Diomede	1996	Heavy Equipment Storage Facility	Closed	$0	6/30/2000
City of Diomede	1998	Community Facilities and Equipment	Closed	$50,000	3/29/2004
City of Diomede	1999	purchase of a backhoe and payment of shipping costs for the backhoe	Closed	$82,700	6/30/2003
City of Diomede	1999	Purchase and Shipping of a Backhoe	Closed	$50,000	6/30/2003
City of Diomede	2000	Backhoe Purchase	Closed	$25,089	6/30/2004
City of Diomede	2003	CP&I/Fire Dept. Equipment, Start-up & Upgrade	Closed	$25,001	6/30/2008
City of Diomede	2002	Payment in Lieu of Taxes	Closed	$7,519	6/30/2002
City of Diomede	2002	State Revenue Sharing	Closed	$26,503	3/31/2003
City of Diomede	2002	Safe Communities	Closed	$2,363	3/31/2003
City of Diomede	2003	State Revenue Sharing	Closed	$26,710	3/31/2004
City of Diomede	2003	Safe Communities	Closed	$2,606	3/31/2004
City of Diomede	2003	Payment in Lieu of Taxes	Closed	$8,785	6/30/2003
City of Diomede	2004	Temporary Fiscal Relief Grant	Closed	$40,000	
City of Diomede	2005	Community Projects & Improvements	Closed	$18,352	1/31/2008
City of Diomede	2004	Electrification Upgrade	Closed	$330,689	1/31/2008
City of Diomede	2006	City Facilities Repair and Maintenance	Closed	$25,000	8/18/2006
City of Diomede	2008	Electrification Block Grant	Closed	$35,000	6/30/2012
City of Diomede	2008	Waste Oil Recycle System Purchase	Closed	$25,000	6/30/2013
City of Diomede	1992	Equipment Storage Facility	Closed	$0	
City of Diomede	1995	Solid Waste Disposal Project	Closed	$0	6/30/1999
City of Diomede	1999	Backhoe Purchase	Closed	$26,345	6/30/2003
City of Diomede	2001	Fire Department Equipment & Supplies Upgrade	Closed	$25,000	6/30/2003
City of Diomede	2010	Undefined	Declined	$3,847	5/15/2014
Native Village of Diomede	2014	ANTCH Hazardous Waste Management and Education	Closed	Unknown	12/31/2015

(DHS&EM 2016b)

6.4.1.2 Diomede'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 community 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, nearly 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 helipad;
- 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.

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

Table 6-4 Diomede's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Volcanic Hazards
Government	4	Diomede City Office	65.75918	-168.94888	$425,000	W1	X		X	X	X
	4	IRA Office	65.75823	-168.94858	$425,000	W1	X		X	X	X
	2	Native Corporation Office	65.75824	-168.94885	$425,000	W1	X		X	X	X
	1	Post Office (City Office building)	65.75918	-168.94897	$425,000	W1	X		X	X	X
Transportation	0	Diomede Heliport	65.75919	-168.95083	$15,000,000	AFH	X	X		X	X
	0	Barge Landing (Causeway)	65.75928	-168.95101	$5,000,000	PWS	X	X		X	X
	3	Boat Landing Areas (Along coastline)	Undefined	Undefined	$5,000,000	PWS	X	X		X	X
Emergency Response	-	Fire and Rescue Equipment (Stored in City Office building)	65.75918	-168.94888	$20,000	-	X		X	X	X
	-	Emergency Shelter (Diomede School)	65.75936	-168.94908	-	-	X	X	X	X	X
Education	31	Diomede School (K-12)	65.75974	-168.94852	$15,000,000	S3	X	X	X	X	X
Medical	3	Diomede Clinic (Co-located with Washeteria)	65.75905	-168.94949	$425,000	W1	X		X	X	X
Community	3	IRA/NVD Activity Building (Old Saint Jude's Church)	65.75824	-168.94832	$425,000	W2	X		X	X	X
	0	Old Recreation Center	65.75904	-168.94871	$375,000	W1	X		X	X	X
	0	Diomede Connex	65.75918	-168.94888	$2,000	S3	X		X	X	X
	0	Old Teachers Quarters (Duplex)	65.75933	-168.94913	$600,000	W2	X		X	X	X

Table 6-4 Diomede's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Volcanic Hazards
	2	Diomede Native Store	65.75887	-168.94909	$425,000	W1	X		X	X	X
	2	NVD Native Store	65.758242	-168.951922	$300,000	W2	X		X	X	X
	0	Inaliq Recycling Staging Center	65.758119	-168.952392	$50,000	W1	X	X	X	X	X
	-	Community Meat Racks	Undefined	Undefined	Undefined	-	X	X	X	X	X
	0	NVD Connexes (3)	65.756319	-168.950486	$6,000	S3	X	X	X	X	X
	-	Cemetery	65.75882	-168.94665	Undefined	-	X	X	X	X	X
Boardwalks and Trails	-	1365 feet of Boardwalks	Undefined	Undefined	$120,000	S3	X	X	X	X	X
	-	~3 Miles of Trails ($15,000 per mile)	Undefined	Undefined	$45,000	-	X	X	X	X	X
Utilities	1	Diomede Generator Building and Water Treatment Plant	65.75949	-168.94901	$2,500,000	EPPS PWTS	X	X	X	X	X
	0	School District Generator Building	65.758683	-168.952069	$500,000	EPPS	X	X	X	X	X
	0	Bulk Fuel Tank (7,900 gallon gasoline)	65.75687	-168.9479	$250,000	OTF	X	X		X	X
	0	Bulk Fuel Tank (12,000 gallon diesel)	65.75687	-168.9479	$250,000	OTF	X	X		X	X
	0	School District Bulk Fuel Tanks	65.76014	-168.94776	$500,000	OTF	X	X	X	X	X
	2	Washeteria (Co-located with Clinic)	65.75905	-168.94949	-	-	X	X	X	X	X
	0	Community Water Intake and Piping	Undefined	Undefined	$50,000	PWE	X	X	X	X	X

Table 6-4 Diomede's Critical Facilities and Infrastructure

Facilities	Number of Occupants	Facilities	Latitude	Longitude	Estimated Value	Building Type	Earthquake	Flood or Erosion	Ground Failure	Severe Weather	Volcanic Hazards
	0	Diomede Water Tank (444,000 gallon)	65.758258	-168.952664	$250,000	PSTGS	X	X	X	X	X
	0	Diomede Water Tank (mountainside)	65.756861	-168.950567	$50,000	PSTGS	X	X	X	X	X
	0	Burn Box	65.756614	-168.950864	$3,000	S3	X	X	X	X	X
	0	School Water Tanks	65.75924	-168.95085	$250,000	PSTGS	X	X	X	X	X
	0	Diomede Septic Tank	65.75915	-168.9508	$75,000	WWTS	X	X	X	X	X
	0	School District Septic Tank	65.758478	-168.951736	$75,000	WWTS	X	X	X	X	X
	0	GCI Mukluk Telephone Building	65.75924	-168.94879	$250,000	W1	X		X	X	X
	0	AT&T Alascom Tower	65.75848	-168.95062	$500,000	CBO	X		X	X	X
	0	Satellite	65.75882	-168.94665	$1,000,000	CBO	X		X	X	X
Total Occ.	**48**			**Potential Damages (Total)**	**$48,026,000**						

Building Type: AFH =Helipad; CBO=Communication; EPPS=Electric; FWS=Fortified Coast; OTF=Fuel Tank; PWS=Waterfront; PWE, PWTS=Potable Water; PWSO=Wastewater; STL, S=Steel; W=Wood; WWTS=Wastewater Treatment

(DHS&EM 2016c, Community of Diomede)

6.5 NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

DMA 2000 requirements and implementing City governance regulations for estimating the number and type of structures at risk to repetitive flooding include:

DMA 2000 Requirements
Addressing Risk and Vulnerability to NFIP Insured Structures §201.6(c)(2)(ii): The risk assessment shall include 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: §201.6(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; §201.6(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; §201.6(c)(2)(ii)(C): The plan should describe vulnerability in terms of] 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. §201.6(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.
1. REGULATION CHECKLIST
ELEMENT B. NFIP Insured Structures
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods?
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?
Source: FEMA, March 2015.

6.5.1 Repetitive Loss Properties

The City of Diomede 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 Community planning team determined their facility locations within identified hazard impact zones. This data were used to develop a vulnerability assessment for those hazards.

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 MJHMP 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 MJHMP.

6.8 VULNERABILITY EXPOSURE ANALYSIS

There are limited Geographic Information System (GIS) data available for the City and Native Village of Diomede. 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	4/11	$1,700,000	1/31	$15,000,000	1/3	$425,000	10/7	$2,183,000
Flood or Erosion	Descriptive	0/0	$0	1/31	$15,000,000	0/0	$0	4/0	$56,000
Ground Failure	Descriptive	4/11	$1,700,000	1/31	$15,000,000	1/3	$425,000	10/7	$2,183,000
Severe Weather	Descriptive	4/11	$1,700,000	1/31	$15,000,000	1/3	$425,000	10/7	$2,183,000
Volcanic Ash	Descriptive	4/11	$1,700,000	1/31	$15,000,000	1/3	$425,000	10/7	$2,183,000

Table 6-6 Potential Hazard Exposure Analysis – Critical Infrastructure

		Boardwalks		Trails		Transportation		Utilities	
Hazard Type	Methodology	Feet	Value	Miles	Value	#Facilities / # Occ	Value	#Facilities / # Occ	Value
Earthquake	Descriptive	1365	$120,000	3	$45,000	3/3	$25,000,000	17/3	$6,503,000
Flood or Erosion	Descriptive	1365	$120,000	3	$45,000	3/3	$25,000,000	10/0	$2,178,000
Ground Failure	Descriptive	1365	$120,000	3	$45,000	0/0	$0	13/3	$5,703,000
Severe Weather	Descriptive	1365	$120,000	3	$45,000	3/3	$25,000,000	17/3	$6,503,000
Volcanic Ash	Descriptive	1365	$120,000	3	$45,000	3/3	$25,000,000	17/3	$6,503,000

6.8.1 Exposure Analysis – Hazard Narrative Summaries

Earthquake

The area surrounding the City and Village of Diomede can expect to experience limited, 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 area is at risk of experiencing moderate earthquake impacts as a result of its far proximity to known earthquake faults.

The probability is unlikely but 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 Diomede population, residential structures, and critical facilities are exposed to the effects of "critical" earthquake events. This includes approximately:

- 11 people in four government and emergency response facilities (approximate value $1,700,000)
- 31 people in one educational facility (approximate value $15,000,000)
- Three people in one medical facility (approximate value $425,000)
- Seven people in 10 community facilities (approximate value $2,183,000)
- 1,365 boardwalk system feet (approximate value $120,000)
- Three trail system miles bridge (approximate value $45,000)
- Three people in three transportation facilities (approximate value $25,000,000)
- Three people in 17 utility facilities (approximate value $6,503,000)

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 coastal 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 Diomede area. The USACE Floodplain Manager does not provide flood information or a 100-year floodplain map for Diomede.

This includes approximately:

- 31 people in one educational facility (approximate value $15,000,000)
- Four community facilities (approximate value $56,000)
- 1,365 boardwalk system feet (approximate value $120,000)
- Three trail system miles bridge (approximate value $45,000)
- Three people in three transportation facilities (approximate value $25,000,000)
- 10 utility facilities (approximate value $2,178,000)

The community 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.

USGS elevation datasets were used to determine the ground failure hazard areas within Diomede. Risk was assigned based on slope angle. A slope angle less than 14 degrees was assigned a low risk, a slope angle between 14 and 32 degrees was assigned a medium risk, and a slope angle greater than 32 degrees was assigned a high risk.

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, Diomede has discontinuous permafrost (see Section 5.3.3.3).

There have been periodic landslides and other ground failure incidents in Diomede. Threatened facilities include:

- 11 people in four government and emergency response facilities (approximate value $1,700,000)
- 31 people in one educational facility (approximate value $15,000,000)
- Three people in one medical facility (approximate value $425,000)
- Seven people in 10 community facilities (approximate value $2,183,000)

- 1,365 boardwalk system feet (approximate value $120,000)
- Three trail system miles bridge (approximate value $45,000)
- Three people in 13 utility facilities (approximate value $5,703,000)

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, power lines falling, damage to light aircraft and sinking small boats, injury and death resulting from snowmachine or vehicle accidents, overexertion while shoveling all due to heavy snow. A quick thaw after a heavy snow can also cause substantial flooding. Impacts from extreme cold include hypothermia, halting transportation from fog and ice, congealed fuel, frozen pipes, 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 community and the National Weather Service, the entire existing, transient, and future Diomede population, residential structures, and critical facilities are exposed to future severe weather impacts. This includes approximately:

- 11 people in four government and emergency response facilities (approximate value $1,700,000)
- 31 people in one educational facility (approximate value $15,000,000)
- Three people in one medical facility (approximate value $425,000)
- Seven people in 10 community facilities (approximate value $2,183,000)
- 1,365 boardwalk system feet (approximate value $120,000)
- Three trail system miles bridge (approximate value $45,000)
- Three people in three transportation facilities (approximate value $25,000,000)
- Three people in 17 utility facilities (approximate value $6,503,000)

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

Volcanic Hazards

Impacts associated with a volcanic eruption include strain on resources should other hub communities be significantly affected by volcanic eruption. An eruption of significant size in Siberia or Western Alaska will certainly affect air routes. Impacts to people include respiratory problems from airborne ash, displaced persons, lack of shelter, and personal injury. Other potential impacts include general property damage (electronics and unprotected machinery),

structural damage from ash loading, state/regional transportation interruption, loss of commerce, and contamination of water supply. (See Section 5.3.5.3)

Using information provided by the community, the USGS, and the Alaska Volcano Observatory, the entire existing and future Diomede population, residences, and critical facilities are equally at risk from the effects of a volcanic eruption. This area includes approximately:

- 11 people in four government and emergency response facilities (approximate value $1,700,000)
- 31 people in one educational facility (approximate value $15,000,000)
- Three people in one medical facility (approximate value $425,000)
- Seven people in 10 community facilities (approximate value $2,183,000)
- 1,365 boardwalk system feet (approximate value $120,000)
- Three trail system miles bridge (approximate value $45,000)
- Three people in three transportation facilities (approximate value $25,000,000)
- Three people in 17 utility facilities (approximate value $6,503,000)

The City and Village anticipate that impacts to future populations, residences, critical facilities, and infrastructure are at the same historical impact level.

6.9 FUTURE DEVELOPMENT

Diomede continually seeks to maintain and upgrade their aging infrastructure. Section 7, Hazard Mitigation Strategy identifies potential projects they can accomplish demonstrating how the community intends to continue their future development initiatives. These initiatives will culminate in their MAP, Table 7-10.

Table 6-7 delineates Diomede's future, planned, and funded projects and their tentative completion status, as of the beginning of 2017.

Table 6-7 Planned and Funded Projects

Recipient	Award Year	Project Description/Comments	Project Status	Award Amount	End Date
Native Village of Diomede	2009	New Clinic Building	Active	$420,000	6/30/2017
City of Diomede	2013	Construction and Remodel of a Clinic	Active	$25,000	6/30/2018

(DHS&EM 2016b)

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Section Seven delineates the City and Village's MJHMP mitigation strategy.

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 City governance implementing regulations for comprehensive mitigation strategy development include:

DMA 2000 Requirements
Identification and Analysis of Mitigation Actions §201.6(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. §201.6(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. §201.6(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. §201.6(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. §201.6(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 §201.6(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.
1. REGULATION CHECKLIST
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.

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

DMA 2000 Requirements
ELEMENT C: Mitigation Strategy
C1. Does the plan include a discussion of the 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 and regulations related to hazard mitigation as well as to development in hazard-prone areas? [44 CFR §§ 201.7(c)(3) and 201.7(c)(3)(iv)]
C2. Does the plan include a discussion of tribal funding sources for hazard mitigation projects and identify current and potential sources of Federal, tribal, or private funding to implement mitigation activities? [44 CFR §§ 201.7(c)(3)(iv) and 201.7(c)(3)(v)]
Source: FEMA, October 2017

7.2 CITY AND NATIVE VILLAGE OF DIOMEDE'S CAPABILITY ASSESSMENT

The MJHMP displays DMA 2000 and 44 CFR 201.6 (City jurisdictional) and 44 CFR 201.7 (Alaska Native Village) requirements to guide HMP development throughout the MJHMP. Pertinent support data follows each regulatory criteria text boxes, striving to fulfill regulatory criteria.

Note: *Rural Alaska cities and villages have very limited, fund, staff, and formal government process. 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 MJHMP planning development process seeks to integrate the Mitigation Strategy with FEMA mitigation programs and initiatives.

Diomede is a small community with collocated city and a tribal government; each with limited planning and land management tools. Their available resources have been assessed by the City and Village as summarized in Tables 7-1 through 7-5 listing the City's and the Village's regulatory tools, technical specialists, and financial and training resource available for project management.

Table 7-1 Diomede's Regulatory Tools

Regulatory Tools (ordinances, codes, plans)	Existing Yes/No	Comments (Year of most recent update; problems administering it, etc.)
Comprehensive Plan	No	
City and Tribal Land Use Initiatives	Yes	Jointly approved, the plan describes the economic priorities for the community to include housing, sanitation, land expansion for housing and
City and Village of Diomede " A Local		

Table 7-1 Diomede's Regulatory Tools

Regulatory Tools (ordinances, codes, plans)	Existing Yes/No	Comments (Year of most recent update; problems administering it, etc.)
Economic Development Plan for Diomede 2009, Updated Priorities		infrastructure. (2009)
Economic Value of Subsistence Activity Report, December 2011	Yes	City and Village of Diomede USACE studied the economic value of their subsistence activity. (2011)
Wildland Fire Protection Plan	No	
Emergency Response Plan	No	
Building code	No	
Zoning ordinances	No	
Subdivision ordinances or regulations	No	
Special purpose ordinances	No	

Local Resources

As seen in Table 7-1, The City and Native Village of Diomede have limited "formal" planning and land management tools that will allow them 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 and DHS&EM staff to guide them with funding and planning activities. The resources available within their respective City and Tribal offices was assessed by the joint planning team, and are summarized below.

Additionally, Diomede's small community footprint prohibits additional development or community expansion. The entire community is currently located within hazard impact areas. Many community members are considering moving the community to a better location on Little Diomede Island, however this are very few areas with sufficient space away from any hazard.

Table 7-2 Diomede'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	The City & Village can hire planners and engineering consultants
Engineer or professional trained in construction practices related to buildings and/or infrastructure	Yes	The City & Village can hire engineering consultants
Planner or engineer with an understanding of natural and/or human-caused hazards	Yes	The City & Village has staff with this knowledge
Floodplain Manager	No	The City & Village does not have this capability
Surveyors	Yes	The City & Village can hire consultants when they need a surveyor.
Staff with education or expertise to assess the jurisdiction's vulnerability to hazards	Yes	The City & Village has staff with this knowledge
Personnel skilled in Geospatial Information System (GIS) and/or Hazards Us-Multi Hazard software	Yes	The City & Village can hire consultants when needed.

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

Staff / Personnel Resources	Yes / No	Department / Agency and Position
Scientists familiar with the hazards of the jurisdiction	No	City & Village can work with U.S. Fish & Wildlife Service (USFWS) and Fish & Game (ADF&G), and the Alaska Department of Transportation and Public Facilities
Emergency Manager	Yes	City or Tribal President, Administrator, or Clerk as applicable
Finance (Grant writers)	Yes	City or Tribal President, Administrator, or Clerk as applicable
Public Information Officer	Yes	City or Tribal President, Administrator, or Clerk as applicable

Table 7-3lists a sample of the City jurisdiction's funding resources.

Table 7-3 City of Diomede's Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
General funds	Limited funding, however there is no available funding for mitigation initiatives
Payment in Lieu of Taxes (PILT)	Provides operating support funding
Municipal Energy Assistance Program (MEAP)	Provides City's operating support funding
Community Development Block Grants (CDBG)	City can exercise this authority with voter approval
Capital Improvement Project Funding	City can exercise this authority with voter approval
Authority to levy taxes for specific purposes	City can exercise this authority with voter approval
Incur debt through general obligation bonds	City can exercise this authority with voter approval
Incur debt through special tax and revenue bonds	City can exercise this authority with voter approval
Incur debt through private activity bonds	City can exercise this authority with voter approval

DMA 2000 stipulated requirements and Tribal governance implementing regulations for grant financial management include:

Table 7-4 lists a sample of the Tribal jurisdiction's funding resources.

Table 7-4 Native Village of Diomede's Financial Resources

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
General funds	Available from various sources, however there is no available funding for mitigation initiatives
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 MJHMP or THMP assures participant eligibility for FEMA mitigation grant programs and initiatives. The final MJHMP assures these jurisdictions can integrate grant management integration. Table 7-5 provides a representative sample. Appendix A provides a substantial federal, state, and other agency funding resource list.

Table 7-5 Federal Mitigation Programs and Initiatives

Financial Resource	Mitigation Programs and Initiatives
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. ***Diomede does not qualify for this funding source because they do 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 their mitigation goals and potential mitigation actions to address identified potential hazard impacts for the City and Village of Diomede with a focus of not allowing future construction within high hazard areas identified in Sections 5.3 and 6.8.

DMA 2000 stipulated and implementing Tribal governance regulations for developing hazard mitigation goals include:

DMA 2000 Requirements
ELEMENT C. Mitigation Goals
C3. Does the Mitigation Strategy include goals to reduce or avoid long-term vulnerabilities to the identified hazards? [44 CFR § 201.7(c)(3)(i)]
Source: FEMA, October 2017

The planning team developed the mitigation goals and mitigation actions to address identified potential hazard impacts for the City and Village of Diomede within Sections 5.3 and 6.8.

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 current and future potential hazard impacts for Diomede.

The exposure analysis results were used as a basis for updating the mitigation goals and actions (Table 7-6). Additionally, the City and Native Village of Diomede 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 Diomede 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 Diomede area.

Table 7-6 lists the community's strategic mitigation goals developed to reduce or avoid identified long-term hazard vulnerabilities. They form the Mitigation Strategy's foundation that culminates within the MAP, Table 7-10.

Table 7-6 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 City and Village.
MH 2	**Cross-reference** mitigation goals and actions with other City and Tribal planning mechanisms and projects.
MH 3	Develop **construction** activities that reduce possibility of losses from all natural hazards that affect the City and 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.
VO 8	Reduce vulnerability, damage, or loss of structures from volcanic (VO) debris impacts.

7.4 IDENTIFYING MITIGATION ACTIONS

FEMA Hazard Mitigation Assistance Guidance and Addendum 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).

After developing mitigation goals, the planning team reviewed a comprehensive list of potential mitigation actions that were identified during this HMP development process. The joint planning team selected only those they intended to implement during the MJHMPs 5-year lifecycle within the MAP.

Note: *AECOM's potential projects list is seven pages long and subsequently deemed too large for MJHMP inclusion.*

The planning team assessed the potential mitigation actions to carry forward into the mitigation strategy. Mitigation actions are activities, measures, or projects that help achieve the goals of a mitigation plan. Mitigation actions are usually grouped into three broad categories: property protection, public education and awareness, and structural projects.

Table 7-7 below breaks out the project criteria as considered, selected, and ongoing. The City and Village jointly identified numerous "ongoing" mitigation actions currently in-process or those that were listed in other City or Village planning documents.

Note: *The actions are applicable to both the City and the Tribe. Therefore the MAP, Table 7-10, identifies the "Responsible Office" for implementation as whether the City Office, Tribal Office, or designated alternate such as the IGAP Coordinator, as responsible for grant management for each project grant received for their specific organization.*

Table 7-7 Potential Mitigation Actions
(Ongoing and newly selected items will be carried forward into the MAP for implementation)

Supports Goal No.	Hazard	Criteria *Considered Selected Ongoing Completed*	Priority *High Medium Low*	Action Description
Multi- Hazards (MH)				
MH 1	Provide **outreach** activities to educate and promote recognizing and mitigating all natural hazards that affect the	Selected	High	Acquire emergency warning methods to communicate critical emergency warnings and alerts (sirens, radios, or cell phones).
		Selected	Medium	Establish a formal role for the Hazard Mitigation planning team to develop a sustainable process to implement, monitor, review, and evaluate community wide mitigation actions.
		Ongoing	High	Identify and pursue funding opportunities to implement mitigation actions.

Table 7-7 Potential Mitigation Actions
(Ongoing and newly selected items will be carried forward into the MAP for implementation)

Supports Goal No.	Hazard	Criteria *Considered Selected Ongoing Completed*	Priority *High Medium Low*	Action Description
	City and Native Village of Diomede.	Selected	High	Update public emergency notification procedures and develop an outreach program for potential hazard impacts or events.
		Selected	Low	Investigate benefits of, and potentially join, the National Flood Insurance Program to reduce monetary losses to individuals and the community.
		Selected	Medium	Identify evacuation routes away from high hazard areas and develop outreach program to educate the public concerning warnings and evacuation procedures.
MH 2	**Cross reference** mitigation goals and actions with other City or Tribal planning mechanisms and projects.	Selected	High	Request a "Security and Vulnerability Assessment" from DHS&EM to qualify for a grant to install a radio or satellite phone.
		Selected	Low	Develop land use ordinances or guidelines to minimize hazard impacts and damages such as: reducing vegetation removal to keep or maintain slope stability from rain, snowmelt run-off, and erosion impacts.
		Selected	Medium	Review ordinances and develop outreach programs to assure propane tanks are properly anchored and hazardous materials are properly stored and protected from known natural hazards such as flood or seismic events.
		Considered	Low	Develop process to regulate future development in potential high hazard areas (permitting, geotechnical review, soil stabilization techniques, etc.).
		Selected	Medium	Develop prioritized list of mitigation actions for threatened critical facilities and other buildings or infrastructure.
		Selected	High	Develop a plan and associated ordinances to protect drinking water resource
MH 3	Develop **construction** activities that reduce possibility of losses from all natural hazards that affect the Village.	Selected	Medium	Develop a vegetation management plan addressing slope-stabilizing root strength to maintain or encourage precipitation containment.
		Selected	Medium	Encourage utility companies to evaluate and harden vulnerable infrastructure elements for sustainability.
Natural Hazards				
EQ 4	Reduce structural vulnerability to earthquake (EQ) damage.	Selected	Medium	Evaluate critical public facilities with significant seismic vulnerabilities and complete retrofit (e.g. evaluate fire stations, public works buildings, potable water systems, wastewater systems, electric power systems, and bridges, etc.).
		Selected	Low	Install non-structural seismic restraints for large

Table 7-7 Potential Mitigation Actions
(Ongoing and newly selected items will be carried forward into the MAP for implementation)

Supports Goal No.	Hazard	Criteria *Considered Selected Ongoing Completed*	Priority *High Medium Low*	Action Description
				furniture such as bookcases, filing cabinets, heavy televisions, and appliances to prevent toppling damage and resultant injuries to small children, elderly, and pets.
FL 5	Reduce flood (FL) and erosive scour damage and loss possibility.	Ongoing	High	Develop mitigation initiatives such as: Rip-rap (large rocks), sheet pilings, gabion baskets, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide coastal protection.
		Selected	Medium	Establish flood mitigation priorities for critical facilities, residential structures, and commercial buildings located within the identified flood hazard area(s) (100- and 500-year floodplains, stormwater, etc.) based on current base flood elevation survey elevation data.
GF 6	Reduce ground failure (GF) damage and loss possibility.	Selected	Low	Develop, implement, and enforce a property development "ground failure" risk assessment for any structure that may be sited in potentially vulnerable locations.
		Considered	Low	Identify and seasonally restrict recreational and construction activities in high avalanche and landslide areas.
SW 7	Reduce structural vulnerability to severe weather (SW) damage.	Selected	Medium	Develop critical facility list needing emergency back-up power systems, prioritize, seek funding, and implement installation.
		Selected	High	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms (snow load, ice, and wind).
		Selected	High	Reinforce buildings and homes against high winds.
VO 8	Reduce vulnerability, damage, or loss of structures from volcanic (VO) debris impacts.	Considered	Low	Evaluate capability of water treatment plants to deal with high turbidity from ash fall events.
		Considered	Low	Upgrade water and wastewater treatment facilities' physical plant to deal with ash fall events.

7.5 EVALUATING AND PRIORITIZING MITIGATION ACTIONS

The MAP represents mitigation projects and programs the City and Village could implement to potentially reduce damaging hazard impacts to both current and future infrastructure and buildings.

The planning team (including both City and Tribal members) evaluated and prioritized each of the mitigation actions in May 2017 to determine which actions would be included in the MAP.

The MAP represents mitigation projects and programs to be implemented through the cooperation of multiple entities in Diomede. 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 volcanic ash).

The City and Tribal planning team reviewed the simplified social, technical, administrative, political, legal, economic, and environmental (STAPLEE) evaluation criteria (Table 7-8) 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 or City choose to implement.

Table 7-8 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

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 7-10) was completed to provide the Village and City with an implementation approach. The City and Tribe will primarily focus their mitigation efforts on their high priority initiatives as funding becomes available. Unfortunately, DHS&EM has insufficient funding for large (high priority) projects but can fund smaller projects. Therefore due to limited available community funding sources, Diomede will strive to acquire any funding amounts to fulfill their diverse mitigation needs.

7.6 MITIGATION ACTION PLAN

The City and Village have flat management structures. Like most rural-remote Alaskan communities there is limited budget; therefore no funding is available for developing and maintaining departmental or other infrastructure responsibilities. The City and Village is managed by their mayoral led City or tribal president led Tribal Councils respectively. This process enables each jurisdiction to maximize governance capacity, coordinate project prioritization, and closely monitor their limited budget.

Diomede's mitigation project selection, although jointly accomplished, requires vastly different implementation and management processes due to their diverse government structures. City governments have specific authorities, laws, and regulations that qualify them to apply for federal agency grants intended only for organized city or borough governments. However, Tribal governments may not be eligible for the same grants but they have Indian or IRA tribal government restricted grants provided by the Bureau of Indian Affairs (BIA) as well as many other agency grant programs designated only for Indian or IRA tribes.

For the purpose of the Diomede Mitigation Strategy, grant recipients are restricted to fulfilling grant specific and awarding agency implementation and management processes or requirements. To that end, the MJHMP MAP's (Table 7-10) Responsible Office will be either the City or Tribal government. The respective offices could conceivably receive funding to accomplish similar projects to improve their respective initiatives or owned infrastructure.

Table 7-9 defines the acronyms used in the MAP (Table 7-10). See Appendix A for summarized funding agency resource descriptions.

Table 7-9 Potential Funding Source Acronym List
(See complete funding resource description in Appendix A)

City Office (City),
Tribal Council Office (Tribe)
US Department of Homeland Security (DHS)
Citizens Corps Program (CCP)
Emergency Operations Center (EOC)
Homeland Security Grant Program (HSGP)
Emergency Management Performance Grant (EMPG)
State Homeland Security Program (SHSP)
Federal Management Agency (FEMA) /
Hazard Mitigation Assistance Grant Programs (HMA)
Emergency Management Program Grant (EMPG)
Debris Management Grant (DM)

Flood Mitigation Assistance Grants (FMA)
National Earthquake Hazards Reduction Program (NEHRP)
National Dam Safety Program (NDS)

US Department of Commerce (DOC) /
Remote Community Alert Systems Program (RCASP)
National Oceanic and Atmospheric Administration (NOAA)
Economic Development Administration (EDP)
Public Works and Development Facilities Program (PWDFP)
US Environmental Protection Agency (EPA)/
Indian Environmental General Assistance Program (IGAP)

US Department of Agriculture (USDA) /
USDA, Farm Service Agency
Emergency Conservation Program (ECF)
Rural Development (RD)

USDA, Natural Resources Conservation Service (NRCS)
Conservation Technical Assistance Program (DCT)
Conservation Innovation Grants (CIG)
Environmental Quality Incentives Program (EQIP)
Emergency Watershed Protection Program (EWP)
Watershed Planning (WSP)

US Geological Survey (USGS)
Alaska Volcano Observatory (AVO)

Assistance to Native Americans (ANA)
*Native American Housing Assistance and Self Determination Act (NA*FSMA),

US Army Corps of Engineers (USACE) /
Planning Assistance Program (PAP)
Capital Projects: Erosion, Flood, Ports & Harbors

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)
Preparedness Section (for community planning)
State Emergency Operations Center (SEOC for emergency response)

Alaska Department of Community, Commerce, and Economic Development (DCCED)
Division of Community and Regional Affairs (DCRA)/
Community Development Block Grant (CDBG)
Alaska Climate Change Impact Mitigation Program (ACCIMP)
Flood Mitigation Assistance Grants (FMA)

Alaska Department of Transportation
State road repair funding

Alaska Energy Authority (AEA)
AEA/Bulk Fuel (ABF)
AEA/Alternative Energy and Energy Efficiency (AEEE)

Alaska Department of Environmental Conservation (DEC) /
Village Safe Water (VSW)
DEC/Alaska Drinking Water Fund (ADWF)
DEC/Alaska Clean Water Fund [ACWF]
DEC/Clean Water State Revolving Fund (CWSRF)

Alaska Division of Forestry (DOF) /
Volunteer Fire Assistance and Rural Fire Assistance Grant (VFAG/RFAG)
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)

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

Lindbergh Foundation Grant Programs (LFGP)

Rasmussen Foundation Grants (RFG)

The MAP lists the City and the Native Village of Diomede's projects and initiatives to address their various hazard impact threats. Table 7-10 defines how each mitigation action will be implemented and administered by the individual city and tribal governments.

Additionally, the MAP lists each selected mitigation action, their priorities, the responsible office, the anticipated implementation timeline, and provides a brief explanation as to how the overall benefit/costs and technical feasibility were taken into consideration.

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.1	Identify and pursue funding opportunities to implement mitigation actions.	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, City, FEMA, DHS, DCRA, ANA, Lindbergh Grants Program, Rasmussen Foundation, (Appendix A for additional sources)	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 1.2	Acquire emergency warning methods to communicate critical emergency warnings and alerts (sirens, radios, or cell phones).	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, EPA, IGAP, Denali Commission, DCRA, DHS/SHSP	1-3 years	B/C: This project will ensure the community looks closely at their hazard areas to ensure they can safely evacuate their residents and visitors to safety during a natural hazard event. TF: This is technically feasible using existing city and tribal resources.
MH 1.3	Establish a formal role for the Hazard Mitigation planning team to develop a sustainable process to implement, monitor, review, and evaluate community wide mitigation actions.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, City	1-3 years	B/C: The existing team has gained experience 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 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.4	Develop outreach programs to assure propane tanks are properly anchored and hazardous materials are properly stored and protected from known natural hazards such as flood or seismic events.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, ANA, NRCS, USUSACE, USDA, Lindbergh Grants Program	2-5 years	B/C: Coordinated planning ensures effective damage abatement and ensures proper attention is assigned to reduce losses and damage to structures and City residents. Sustained mitigation outreach program is minimal in cost and will help build and support community capacity to enable the public to prepare for, respond to, and recover from disasters. TF: This action is feasible with limited fund expenditures.
MH 1.5	Update public emergency notification procedures and develop an outreach program for potential hazard impacts or events.	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, FEMA/AFGFP&S, SAFER Grants	3-5 years	B/C: Sustained emergency response planning 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 Village staff.
MH 1.6	Investigate benefits of, and potentially Join the National Flood Insurance Program (NFIP) to reduce monetary losses to individuals and the community.	Low	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, FEMA NFIP/FMA Coordinator	1-3 years	B/C: NFIP participation while one of FEMA's highest priorities also enables communities with an effective program focused on repetitive flood loss properties and other priority flood locations and projects. TF: Village is currently not a member and residents would enjoy lower cost insurance. Continuation is relatively simple.

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 1.7	Identify evacuation routes away from high hazard areas and develop outreach program to educate the public concerning warnings and evacuation procedures.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, Denali Commission, DCRA, FEMA/HMA	1-3 years	B/C: This project will ensure the community looks closely at their hazard areas to ensure they can safely evacuate their residents and visitors to safety during a natural hazard event. TF: This is technically feasible using existing city and tribal resources.
	Request a "Security and Vulnerability Assessment" from DHS&EM to qualify for a grant to install a radio or satellite phone.	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	FEMA/HMA, FP&S, SAFER, ANA, DHS/ HSGP, EMPG, EOC, & NOAA/NWS	1-3 years	B/C: This would provide important communication equipment for the community. TF: This is technically feasible using existing city and tribal resources.
MH 2.1	Develop land use ordinances or guidelines to minimize hazard impacts and damages such as: reducing vegetation removal to keep or maintain slope stability from rain, snowmelt run-off, and erosion impacts.	Low	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, Denali Commission, DCRA	1-3 years	B/C: Ordinance development, implementation, and enforcement can effectively reduce future losses to hazardous events. TF: This project is technically feasible and enforceable.

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 2.2	Review and/or develop ordinances to assure propane tanks are properly anchored and hazardous materials are properly stored and protected from known natural hazards such as flood or seismic events.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, ANA, NRCS, USUSACE, USDA, Lindbergh Grants Program	2-5 years	B/C: Coordinated planning ensures effective damage abatement and ensures proper attention is assigned to reduce losses and damage to structures and City residents. Sustained mitigation outreach program is minimal in cost and will help build and support community capacity to enable the public to prepare for, respond to, and recover from disasters. TF: This action is feasible with limited fund expenditures.
MH 2.4	Develop prioritized list of mitigation actions for threatened critical facilities and other buildings or infrastructure.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, Denali Commission, DCRA	1-3 years	B/C: Repetitive damage reduction is a high priority for FEMA and will therefore benefit the community greatly. Identifying repetitive loss (RL) and severe repetitive loss (SRL) properties is the first step to reducing losses. 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 until appropriate mitigation actions are identified. This activity relies on community member availability and willingness to serve their community.

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 2.5	Develop a plan and associated ordinances to protect drinking water resources	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, FEMA/HMA), AFG, FP&S, SAFER, ANA, EFSP, DEC/VSW, ADWF, ACWF, CWSRF	1-4 years	B/C: Drinking Water Protection plan and associated ordinances and plans are an essential disaster management tool. Focused and coordinated planning enables effective damage abatement and ensures proper attention is assigned to reduce losses, damage, and materials management. TF: This action is feasible with limited fund expenditures.
MH 2.6	Update or develop, implement, and maintain debris management plans.	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, FEMA/HMA, AFG, FP&S, SAFER, ANA, EFSP, DM	1-4 years	B/C: Debris management plans are an essential disaster management tool. Focused and coordinated planning enables effective damage abatement and ensures proper attention is assigned to reduce losses, damage, and materials management. TF: This action is feasible with limited fund expenditures.
MH 3.1	Develop a vegetation management plan addressing slope-stabilizing root strength to maintain or encourage precipitation containment.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, HMA, AFG, FP&S, SAFER, ANA, EFSP	1-4 years	B/C: Management plans are an essential disaster management tool. Focused and coordinated planning enables effective damage abatement and ensures proper attention is assigned to reduce losses, damage, and materials management. TF: This action is feasible with limited fund expenditures.

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
MH 3.2	Encourage utility companies to evaluate and harden vulnerable infrastructure elements for sustainability.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, HMA, AFG, FP&S, SAFER, ANA, EFSP	3-5 years	B/C: This project would ensure threatened infrastructures are available for use – their loss would exacerbate potential damages and further threaten survivability. TF: This project is feasible using existing staff skills, equipment, and materials.
EQ 4.1	Evaluate critical public facilities with significant seismic vulnerabilities and complete retrofit (e.g. evaluate fire stations, public works buildings, potable water systems, wastewater systems, electric power systems, and bridges, etc.).	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, HMA, ANA, EFSP, DEC/MGL	2-4 years	B/C: Retrofit projects can be very cost effective. Project viability depends on the cost and extent of the modifications. A comprehensive Benefit-Cost Analysis needs to be conducted to validate this activity. TF: The Village will need phase funding to obtain engineering and design expertise to determine project viability.
EQ 4.2	Install non-structural seismic restraints for large furniture such as bookcases, filing cabinets, heavy televisions, and appliances to prevent toppling damage and resultant injuries to small children, elderly, and pets.	Low	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, HMA, ANA, EFSP, DOT/PF	2-4 years	B/C: Non-structural mitigation projects have minimal cost and will help the community reduce recurring earthquake impact damages from future events. TF: This project is technically feasible using existing Tribal Council staff

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
FL 5.1	Develop mitigation initiatives such as: Rip-rap (large rocks), sheet pilings, gabion baskets, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide river bank protection.	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, HMA, ANA, NRCS, USACE	3-5 years	B/C: Improving embankment and slope stability will greatly reduce potential infrastructure and residential losses. Project costs would outweigh replacement costs of lost facilities. TF: The community has the skill to implement this action. Specialized skills may need to be contracted out with materials and equipment barged in depending on the method selected.
FL 5.2	Establish flood mitigation priorities for critical facilities, residential structures, and commercial buildings located within the identified flood hazard area(s) (100- and 500-year floodplains, stormwater, etc.) based on current base flood elevation (BFE) survey elevation data.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, HMA, USACE, NRCS/EWP, USDA/ECP, DCRA/ACCIMP	1-3 years	B/C: Flood hazard mitigation is among FEMA's highest national priorities. FEMA desires communities focus on repetitive flood loss properties. This activity will ensure the Village focuses on priority flood locations and projects. TF: Low to no cost makes this outreach activity very feasible.

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
GF 6.1	Develop, implement, and enforce a property development "ground failure" risk assessment for any structure that may be sited in potentially vulnerable locations.	Low	City, Tribe or EPA/IGAP Coordinator Office as appropriate	Tribe, ANA, NRCS, Denali Commission, DCRA, USACE	2-4 years	B/C: Identifying ground failure locations is a minimal cost project which would decrease damage to facilities if they were sited appropriately. Project must be associated with an eligible relocation or construction project. TF: Technically feasible as the community currently can identify permafrost locations but they have not created a map defining the area or dug test holes to determine permafrost depth prior to construction.
SW 7.1	Develop critical facility list needing emergency back-up power systems, prioritize, seek funding, and implement installation.	Medium	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, Lindbergh, HMA, FP&S, SAFER, ANA, DHS/HSGP, CCP,EMPG, EOC	1-5 years	B/C: Identifying threatened infrastructure proximity to natural hazards is vital to their sustainability. There are currently few mapped hazard areas. This is a vital first step. This knowledge will help the community focus on activities to protect their vital infrastructure. Emergency power generation is a minor cost to ensure facilities' 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

Table 7-10 City and Native Village of Diomede's Mitigation Action Plan (MAP)

(See acronym and abbreviations list for complete titles)

Goal / Action ID	Description	Priority *High Medium Low*	Responsible Office	Potential Funding Source(s)	Timeframe *1-3 Years 2-4 Years 3-5 Years*	Benefit-Costs (B/C) Technical Feasibility (TF)
SW 7.2	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms (snow load, ice, and wind).	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, DCCED/ CDBG, Denali Commission	3-5 years	B/C: Scheduling maintenance and implementing mitigation activities will potentially reduce severe winter storm damages caused by heavy snow loads, wind, and freezing rain. TF: This type of activity is technically feasible within the community typically using existing labor, equipment, and materials. Specialized methods are not new to rural communities as they are used to importing required contractors.
SW 7.3	Reinforce buildings and homes against high winds.	High	City, Tribe or EPA/IGAP Coordinator Office as appropriate	City, Tribe, Lindbergh, HMA, FP&S, SAFER, ANA, DHS, HSGP, CCP, EMPG, EOC	1-5 years	B/C: This project would reinforce threatened structures against high wind, to potentially reduce future damage. TF: This project is feasible using existing staff skills, equipment, and materials. Acquiring contractor expertise may be required for large facilities.

7.7 MONITORING MITIGATION STRATEGY PROGESS

The planning team determined that Mitigation Strategy, Section 7.4, Table 7-7, is the most appropriate location to support DMA 2000 initiatives found in 44CFR §201.7(c)(4), Monitoring Progress of Mitigation Actions data.

7.7.1 Reviewing HMP Successes

The City and Village planning team leaders will monitor, review, and evaluate their mitigation strategy to determine potential successes or roadblocks to achieving the MJHMP's mitigation goals and whether implementing the Mitigation Action Plan's activities and projects were successful during the annual review process, throughout the MJHMP's five-year life cycle.

The planning team will edit Section 7-4, Table 7-7 to provide the current status of each HMP project or initiative during the annual review throughout its 5-yearl life-cycle. The Status column will include defining each MJHMP mitigation project's status as: "Completed," "Deleted," "Deferred," "Ongoing," and "Re-Defined" to better meet participant's needs as well as including an explanation for any project changes, define or identify 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.

Each agency or authority administering a mitigation project will submit a Progress Report (Appendix F) to the planning team during the HMP's annual review.

7.8 INTEGRATING MITIGATION STRATEGY INTO EXISTING PLANNING MECHANISMS

After the adoption of the MJHMP, both the City and the Tribe will ensure that the MJHMP, in particular each Mitigation Action Project, is incorporated or integrated into existing planning mechanisms as applicable. Each member of the planning team will achieve this 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 integrating MJHMP philosophies and identified initiatives. Provide assistance with integrating the mitigation strategy (including the MAP) into relevant planning mechanisms (e.g., Comprehensive Plan, Capital Improvement Project List, Sanitation Plan, and City and Tribal/BIA Transportation Improvement Plans).

Note: Implementing this philosophy and activities may require updating or amending specific planning mechanisms.

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

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Appendix A
Funding Resources

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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 UHMA 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 (http://www.fema.gov/help/site.shtm) and various firefighter grant programs (http://www.firegrantsupport.com/) such as
  - Emergency Management Performance Grant (EMPG). 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. Requires 50% match. (https://www.fema.gov/fiscal-year-2015-emergency-management-performance-grant-program)
  - National Earthquake Hazards Reduction Program (NEHRP). The National Earthquake Hazards Reduction Program (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 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 (NRF). 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 (CCP). 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 Emergency Operations Centers (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 Emergency Alert System (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. (http://cfpub.epa.gov/fedfund/program.cfm?prog_num=51)
- 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. (http://yosemite.epa.gov/R10/ecocomm.nsf/6da048b9966d22518825662d00729a35/7b68c420b668ada5882569ab00720988!OpenDocument)
  - 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 (GAP) 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 (CTA) 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 (EWP) 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. (http://energy.gov/eere/wipo/tribal-energy-program)
- 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. (http://www.hud.gov/offices/cpd/communitydevelopment/programs/108/index.cfm)
  - HUD, Office of Homes and Communities, Section 184 Indian Home Loan Guarantee Programs (IHLGP). 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 / Native American Housing Assistance and Self Determination Act (IHBG/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 (TDHE), 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 (APR) 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 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 (ICDBG) 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 (DUA). 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. (http://www.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 (INAP) 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 (DOT), Hazardous Materials Emergency Preparedness (HMEP) Grant. The Hazardous Materials Transportation Safety and Security Reauthorization Act of 2005 authorizes the U.S. DOT 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 (EPCRA), 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 (IRS), 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/links.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. (http://ready.alaska.gov/plans/mitigation.htm)

    DHS&EM also provides mitigation funding resources for mitigation planning on their Web site at 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 (DSS): Provides special outreach services for seniors, including food, shelter and clothing. (http://dhss.alaska.gov/dsds/Pages/hcb/hcb.aspx)
- Division of Insurance (DOI): Provides assistance in obtaining copies of policies and provides information regarding filing claims. (http://commerce.state.ak.us/dnn/ins/Consumers/AlaskaConsumerGuide.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. (http://commerce.state.ak.us/dnn/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. (http://commerce.alaska.gov/dca/planning/accimp/hazard_impact.html)

- 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 (MGL) 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. (http://yosemite.epa.gov/R10/ecocomm.nsf/6da048b9966d22518825662d00729a35/7b68c420b668ada5882569ab00720988!OpenDocument)

    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://www.epa.gov/region10/pdf/water/srf/cwsrf_alaska_operating_agreement.pdf)

- 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.
- 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://forestry.alaska.gov/pdfs/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 (CFP) (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/vfarfa.htm). Information can be found at 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 Environmental Protection Agency (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 (APA), http://www.planning.org - a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.
- Institute for Business and Home Safety (IBHS), 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 (ARC). Provides for the critical needs of individuals such as food, clothing, shelter, and supplemental medical needs. Provides recovery needs such as

furniture, home repair, home purchasing, essential tools, and some bill payment may be provided. (http://www.redcross.org/find-help)

- Catalog of Federal Domestic Assistance (DFDA) Crisis Counseling Program (CCP). 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 (AEA), Alaska Village Electric Cooperative (AVEC), 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)

Appendix B
FEMA Hazard Mitigation Plan Review Tool

FEMA REGION 10 LOCAL MITIGATION PLAN REVIEW TOOL

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

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

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

Jurisdiction: City of Diomede	**Title of Plan:** City and Native Village of Diomede Multi-Jurisdictional Hazard Mitigation Plan	**Date of Plan:** May 2018
Local Point of Contact: Opik Ahkinga	**Address:** Native Village of Diomede PO Box 7079 Little Diomede, AK 99762	
Title: IGAP Environmental Coordinator		
Agency: Native Village of Diomede		
Phone Number: (907) 686-2202	**E-Mail:** dio.env103@yahoo.com	

State Reviewer:	**Title:**	**Date:**
Mike Johnson	EMS II	JUN 2018

FEMA Reviewer:	**Title:**	**Date:**
Amanda Siok Amanda.Siok@fema.dhs.gov	Mitigation Planner	10/27/2017; 07/26/2018
Kate Skaggs Kate.Skaggs@mbakerintl.com	Mitigation Champion	07/17/2018; 10/11/2018
Date Received in FEMA Region 10	9/12/17	
Plan Not Approved	10/31/17; 07/26/2018	
Plan Approvable Pending Adoption	10/11/2018	
Plan Approved	03/12/2019	

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

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

MULTI-JURISDICTION SUMMARY SHEET (Add additional pages if necessary)										
#	Jurisdiction Name	Jurisdiction Type (city/borough/ district, etc.)	POC	Required Revisions / Comments	Requirements Met (Y/N)					
					A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1	Native Village of Diomede	Native Village	Opik Ahkinga(907) 686-2202		Y	Y	Y	N/A	APA	N/A
2	Village of Diomede	City	Ann Soolook (907) 686-3071		Y	Y	Y	N/A	Y	N/A
3										
4										
5										
6										
7										
8										
9										
10										

SECTION 2: REGULATION CHECKLIST

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	PDF 22, 24-257 Section 3, Page 3-1 to 3-11 Section 3.1, Page 3-2 to 3-3 Section 3.2, Page 3-3 to 3-4, Table 3-1 Section 3.3, Page 3-4 to 3-5 Section 3.4, Page 3-5 to 3-6, Table 3-2	X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	PDF 25-26 Section 3.2: Pages 3-3 to 3-4, & Table 3-1 Section 3.3, Page 3-4 to 3-5 Section 3.4, Page 3-5 to 3-6, Table 3-2	X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Appendix D Section 3.1, Page 3-2 to 3-3 Section 3.2, Page 3-3 to 3-4, Table 3-2 Section 3.3, Page 3-4 to 3-5 Section 3.5.3, Page 3-7 Appendix D	X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Section 3.5.1, Page 3-6 to 3-7, Table 3-3 Section 3.5.2, Page 3-7 to 3-8 Section 7.8, Page 7-23 Cited throughout plan	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	PDF 31 Section 3.5.3, Pages 3-7 Section 7.7, Page 7-23	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	PDF Page 32	X	
ELEMENT A: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	**Earthquake:** Nature: Section 5.3.1.1, Page 5-4 to 5-6 Location: Section 5.3.2.2, Page 5-7 Extent: Section 5.3.1.2, Page 5-8 & Figure 5-3 **Flood:** Nature: Section 5.3.2.1, Pages 5-10 to 5-11 Location: Section 5.3.2.3, Page 5-12 & Figure 5-5 Extent: Section 5.3.2.3, Page 5-12 to 5-13 **Ground Failure** with Climate Change Nature: Section 5.3.3.1, Pages 5-14 to 5-16 Location: Section 5.3.3.3, Page 5-16 to 5-17, & Figure 5-6 Extent: Section 5.3.3.3, Page 5-17 **Severe Weather** with Climate Change: Nature: Section: 5.3.4.1, Pages 5-18 to 5-20 Location: Section 5.3.4.3, Page 5-28 Extent: Section 5.3.4.3, Page 5-28 **Volcano:** Nature: Section: 5.3.5.1, Pages 5-29 to 5-31 & Table 5-8 Location: Section 5.3.5.3, Page 5-34 to 5-38, Figure 5-12, 5-13, 5-14, 5-15, 5-16, & Table 5-10 Extent: Section 5.3.5.3, Page 5-39	X	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	**Earthquake:** History: Section 5.3.1.2, Page 5-6 to 5-7 & Table 5-4 Probability: Section 5.3.1.3, Page 5-8 to 5-9, & Figure 5-4 **Flood** History: Section 5.3.2.2, Page 5-11 to 5-12 Probability: Section 5.3.2.3, Page 5-14 **Ground Failure** History: Section 5.3.3.2, Page 5-16 Probability: Section 5.3.3.2, Page 5-17 to 5-18 **Severe Weather** History: Section 5.3.4.2, Page 5-20 to 5-28, & Figure 5-9 & 5-10, Table 5-5, 5-6, & 5-7 Probability: Section 5.3.43, Page 5-29 **Volcano:** History: Section 5.3.5.2, Page 5-32 to 5-34, Figure 5-11, & Table 5-9 Probability: Section 5.3.5.3, Page 5-40	X	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	**Earthquake** Impact: Section 5.3.1.3, Page 5-8 **Flood** Impact: Section 5.3.2.3, Page 5-13 to 5-14 **Ground Failure** Impact: Section 5.3.3.3, Page 5-17 **Severe Weather** Impact: Section 5.3.4.3, Page 5-29 **Volcanic Hazards** Impact: Section 5.3.5.3, Page 5-39 to 5-40 **Overall Vulnerability:** Section 6, Page 6-1 to 6-19	X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	PDF Page 17	X	
ELEMENT B: REQUIRED REVISIONS			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	PDF 103-105 Table 303 Section 1. Page 1-1 to 1-8, Tables 1-1 & 1-2 Section 7.2, Page 7-2 to 7-5, Tables 7-1 to 7-5	X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Does not participate in the NFIP.	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	PDF 104 Section 7.3, Table 7-6	X	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	PDF 114-122 Section 7.4, Page 7-6 to 7-9, & Table 7-7 Section 7-5, Page 7-9 to 7-11, Table 7-7 Section 7.6, Page 7-11 to 7-22, Table 7-10	X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	PDF 114-122 Section 7.5, Page 7-9 to 7-11, & Table 7-8 Section 7.6, Page 7-11 to 7-22, Table 7-10 Section 7.7, page 7-23	X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	PDF 121 Section 3.5.2, Page 3-7 to 3-8 Section 7.6, Page 7-11 to 7-22, Table 7-10 Section 7.8, Page 7-23	X	
ELEMENT C: REQUIRED REVISIONS			
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	N/A		
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	N/A		
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	N/A		
ELEMENT D: REQUIRED REVISIONS			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Once adopted information will be found in Appendix C	X	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Once adopted information will be found in Appendix C		X
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 3: PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

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

Element A: Planning Process

Plan Strengths

- Good Figure 2-5 of the City and Native Village of Diomede that includes structures.
- Good summary of socio-economic data on community and discussion of community specific needs.

Opportunities for Improvement

- For the plan update, consider an alternative community-up approach to the planning process based on needs of the City and Native Village and ability of both to manage Hazard Mitigation Assistance grants.
- Consider including more specific information and expanding the documenting of the steps for plan creation more clearly, using dates/including meeting minutes.
- Consider alternative forms, or times of year, for community engagement since no public comments were received.

Element B: Hazard Identification and Risk Assessment

Plan Strengths

- Great inclusion of the Potential Impacts from Future Climate Conditions into hazard analyses and summaries.
- Great inclusion of impacts of culturally and sacred site sensitivity, including meat caches.

Opportunities for Improvement

- For the update, consider illustrating each hazard on the aerial map provided on the City and Native Village. This would provide a better understanding of each hazard's potential for impacting the specific planning area and infrastructure.
- Consider becoming more specific with additional impacts; for example, not only that ground failure can exacerbate permafrost, but what specific structures would that failure hurt? This information can be used to develop mitigation actions and the basis of identifying priority projects for grant funding.

Element C: Mitigation Strategy

Plan Strengths

- Clear Table 7-7 and explanation of actions that rose to the top of priorities for inclusion in Table 7-10.
- Thorough Capability Assessment that provides good information to inform mitigation actions.

Opportunities for Improvement

- Consider providing specific funding ideas, instead of the responsible agency. This focus will help narrow grant application or other project ideas moving forward to implement actions.

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

Plan Strengths

- N/A

Opportunities for Improvement

- N/A

B. Resources for Implementing Your Approved Plan

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

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

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

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

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

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

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

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

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

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

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Appendix C
City and Native Village of Diomede's
MJHMP Adoption Resolutions

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

FEMA

October 15, 2018

The Honorable Robert F. Soolook
President, Diomede Tribal Council
P.O. Box 7079
Diomede, AK 99762

Dear President Soolook:

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

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

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

Sincerely,

Tamra Biasco
Chief, Risk Analysis Branch

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

Enclosures

KS:vl

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

FEMA

October 15, 2018

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

Dear Mr. Nichols:

As requested, on October 11, 2018, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA), Region 10, completed a pre-adoption review of the ***City and Native Village of Diomede Multi-Jurisdictional Hazard Mitigation Plan***. This letter serves as Region 10's commitment to approve the plan upon receiving documentation of its adoption by the City of the Native Village of Diomede. The plan successfully contains the required criteria, excluding the adoption, for hazard mitigation plans, as outlined in Code of Federal Regulation Title 44 Part 201.

Once FEMA approves the plan, the City and the Village are eligible for mitigation project grants.

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

Sincerely,

_X_____

Tamra Biasco
Chief, Risk Analysis Branch
Mitigation Division

KS:vl

City of Diomede
P.O. Box 7039
Little Diomede, Alaska 99762

Resolution of the City of Diomede, Alaska
Resolution No. 2019-01

A RESOLUTION TO ADOPT THE CITY OF DIOMEDE/NATIVE VILLAGE OF DIOMEDE-IRA COUNCIL MULTI-JURISDICTIONAL HAZARDOUS MITIGATION PLAN

WHEREAS, the City of Diomede is a recognized Second-Class city; and

WHEREAS, the Diomede City Council (hereafter call "the City") is the governing body for the community of Little Diomede; and

WHEREAS, the community of Little Diomede, is subject high winds and tidal wave storms, high tides, permafrost thawing, and other natural disasters that can damage property, businesses, Power Plant & Utility Facility Building and community water storage tank, and bulk fuel tanks, and solid waste dumpsite; and

WHEREAS, undertaking hazardous mitigation projects before natural disasters occur will reduce the potential for harm to the residents, property, and will save taxpayer dollars; and

WHEREAS, adopting the Multi-Jurisdictional Hazardous Mitigation Plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of Diomede/Native Village of Diomede-IRA Council Multi-Jurisdictional Hazardous Mitigation Plan has been sent to the Alaska Division of Homeland Security and Emergency Management Agency for their approval.

NOW, THEREFORE BE IT RESOLVED, that the community of Little Diomede hereby adopts the City of Diomede/Native Village of Diomede-IRA Council Multi-Jurisdictional Hazardous Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the community of Little Diomede, will submit the adopted Multi-Jurisdictional Hazardous Mitigation Plan to the Alaska Division of Homeland Security and Emergency Management Agency officials for final review and approval.

Adopted this 2nd day of March 2019, by a duly constituted quorum of the Diomede City Council of Little Diomede, Alaska.

SIGNED:

Mayor: Marlene Ahkinga
Marlene Ahkinga, City of Diomede

ATTEST:

Bookkeeper: Marcia Scolcok
for Karen Kazingnuk, City Administrator

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

FEMA

March 12, 2019

The Honorable Marlene Ahkinga
Mayor, City of Diomede
P.O. Box 7039
Diomede, AK 99762

Dear Mayor Ahkinga:

On March 12, 2019, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) Region 10, approved the *City and Native Village of Diomede Multi-Jurisdictional Hazard Mitigation Plan* as a multi-jurisdictional local plan as outlined in Code of Federal Regulations Title 44 Part 201. This approval provides the below jurisdictions eligibility to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's, Hazard Mitigation Assistance (HMA) grants projects through March 11, 2024, through your state:

| City of Diomede |

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

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

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

Sincerely,

FOR Mark Carey, Director
Mitigation Division

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

Enclosure

JS:vl

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

FEMA

JUN 10 2019

The Honorable Andrew Milligrock
President, Native Village of Diomede
P.O. Box 7079
Diomede, Alaska 99762

Dear President Milligrock:

Congratulations, on March 12, 2019, the United States Department of Homeland Security's Federal Emergency Management Agency (FEMA) Region X approved the City and Native Village of Diomede Multi-Jurisdictional Hazard Mitigation Plan as a Tribal Mitigation Plan, in accordance with the Code of Federal Regulations Title 44 Part 201.

An approval provides the Native Village of Diomede with 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 March 11, 2024. 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, John Schelling, at (425) 487-2104.

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 FEMA-R10-HMA@fema.dhs.gov.

We look forward to continuing a productive relationship between FEMA Region X and the Native Village of Diomede. 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,

for

Michael F. O'Hare
Regional Administrator

Enclosures

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

FEMA Region 10 Tribal Mitigation Plan Review Tool

The *Tribal Mitigation Plan Review Tool* records how the tribal mitigation plan meets the regulations in 44 CFR § 201.7 and § 201.5 (if applicable) and offers FEMA plan reviewers an opportunity to provide feedback to the tribal government.

- **Section 1**: The Regulation Checklist documents FEMA's evaluation of whether the plan has addressed all requirements. If plan requirements are not met, FEMA uses each Required Revisions section to indicate necessary changes.
- **Section 2**: The Strengths and Opportunities for Improvement summary identifies plan's strengths as well as areas for improvement as part of the next plan update.

The FEMA mitigation planner must reference the *Tribal Mitigation Plan Review Guide* when completing the *Tribal Mitigation Plan Review Tool.*

Tribal Jurisdiction: Native Village of Diomede	**Title of Plan:** City and Native Village of Diomede's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP)	**Date of Plan:** May 2018
Tribal Point of Contact: Opik Ahkinga	**Address:** Native Village of Diomede PO Box 7079 Diomede, AK 99762	
Title: IGAP Environmental Coordinator		
Agency: Native Village of Diomede		
Phone Number: 907.686.2202	**Email:** dio.env103@yahoo.com	

State Reviewer (if applicable): Mike Johnson	**Title:** Emergency Mgmt Spec II	**Date:** June 2018

FEMA Reviewer: Kate Skaggs Amanda Siok Amanda.Siok@fema.dhs.gov	**Title:** Mitigation Champion Mitigation Planning Lead	**Date:** July 17, 2018 July 26, 2018
Date Received in FEMA Region 10	9/12/17	
Plan Not Approved	10/31/17; 07/26/2018	
Plan Approvable Pending Adoption	10/11/2018	
Plan Approved	03/11/2019	

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

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

MULTI-JURISDICTION SUMMARY SHEET (Add additional pages if necessary)

#	Jurisdiction Name	Jurisdiction Type (city/borough/ district, etc.)	POC	Required Revisions //Comments	Requirements Met (Y/N)					
					A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1	Native Village of Diomede	Native Village	Opik Ahkinga(907) 686-2202		Y	Y	Y	N/A	Y	N/A
2	Village of Diomede	City	Ann Soolook (907) 686-3071		Y	Y	Y	N/A	Y	N/A
3										
4										
5										
6										
7										
8										
9										
10										

Section 1: REGULATION CHECKLIST

1. Standard Regulation Checklist Regulation (44 CFR § 201.7 Tribal Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process? [44 CFR § 201.7(c)(1)]	PDF 22, 24-257 Section 3, Page 3-1 to 3-11 Section 3.1, Page 3-2 to 3-3 Section 3.2, Page 3-3 to 3-4, Table 3-1 Section 3.3, Page 3-4 to 3-5 Section 3.4, Page 3-5 to 3-6, Table 3-2	X	
A2. Does the plan document an opportunity for public comment during the drafting stage and prior to plan approval, including a description of how the tribal government defined "public"? [44 CFR § 201.7(c)(1)(i)]	PDF 25-26 Section 3.2: Pages 3-3 to 3-4, & Table 3-1 Section 3.3, Page 3-4 to 3-5 Section 3.4, Page 3-5 to 3-6, Table 3-2	X	
A3. Does the plan document, as appropriate, an opportunity for neighboring communities, tribal and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? [44 CFR § 201.7(c)(1)(ii)]	Appendix D Section 3.2: Pages 3-3 to 3-4, & Table 3-1 Section 3.3: Pages 3-4 to 3-5 Section 3.4, Pages 3-5 to 3-6, & Table 3-2	X	
A4. Does the plan describe the review and incorporation of existing plans, studies, and reports? [44 CFR § 201.7(c)(1)(iii)]	Section 3.5.1, Page 3-6 to 3-7 Section 3.5.2, Page 3-7 to 3-8 Section 7.8, Page 7-23 Cited throughout plan	X	
A5. Does the plan include a discussion on how the planning process was integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA programs and initiatives? [44 CFR § 201.7(c)(1)(iv)]	Section 1.1 Page 1-1 Section 1.2 Page 1-1 Table 1-1 page 1-2 Section 1.3 Page 1-3	X	
A6. Does the plan include a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within the plan update cycle)? [44 CFR § 201.7(c)(4)(i)]	PDF 32 Section 3.5.4, Page 3-7 to 3-10 & Appendix F	X	
A7. Does the plan include a discussion of how the tribal government will continue public participation in the plan maintenance process? [44 CFR § 201.7(c)(4)(iv)]	Section 3.5.3, Page 3-7 Section 7.7, Page 7-23	X	
ELEMENT A: REQUIRED REVISIONS			

1. Standard Regulation Checklist Regulation (44 CFR § 201.7 Tribal Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the tribal planning area? [44 CFR § 201.7(c)(2)(i)]	**Earthquake:** Nature: Section 5.3.1.1, Page 5-4 to 5-6 Location: Section 5.3.2.2, Page 5-7 Extent: Section 5.3.1.2, Page 5-8 & Figure 5-3 **Flood:** Nature: Section 5.3.2.1, Pages 5-10 to 5-11 Location: Section 5.3.2.3, Page 5-12 & Figure 5-5 Extent: Section 5.3.2.3, Page 5-12 to 5-13 **Ground Failure** with Climate Change Nature: Section 5.3.3.1, Pages 5-14 to 5-16 Location: Section 5.3.3.3, Page 5-16 to 5-17, & Figure 5-6 Extent: Section 5.3.3.3, Page 5-17 **Severe Weather** with Climate Change: Nature: Section: 5.3.4.1, Pages 5-18 to 5-20 Location: Section 5.3.4.3, Page 5-28 Extent: Section 5.3.4.3, Page 5-28 **Volcano:** Nature: Section: 5.3.5.1, Pages 5-29 to 5-31 & Table 5-8 Location: Section 5.3.5.3, Page 5-34 to 5-38, Figure 5-12, 5-13, 5-14, 5-15, 5-16, & Table 5-10 Extent: Section 5.3.5.3, Page 5-39	X	

1. **Standard Regulation Checklist** **Regulation** (44 CFR § 201.7 Tribal Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
B2. Does the plan include information on previous occurrences of hazard events and on the probability of future hazard events for the tribal planning area? [44 CFR § 201.7(c)(2)(i)]	**Earthquake:** History: Section 5.3.1.2, Page 5-6 to 5-7 & Table 5-4 Probability: Section 5.3.1.3, Page 5-8 to 5-9, & Figure 5-4 **Flood** History: Section 5.3.2.2, Page 5-11 to 5-12 Probability: Section 5.3.2.3, Page 5-14 **Ground Failure** History: Section 5.3.3.2, Page 5-16 Probability: Section 5.3.3.2, Page 5-17 to 5-18 **Severe Weather** History: Section 5.3.4.2, Page 5-20 to 5-28, & Figure 5-9 & 5-10, Table 5-5, 5-6, & 5-7 Probability: Section 5.3.43, Page 5-29 **Volcano:** History: Section 5.3.5.2, Page 5-32 to 5-34, Figure 5-11, & Table 5-9 Probability: Section 5.3.5.3, Page 5-40	X	
B3. Does the plan include a description of each identified hazard's impact as well as an overall summary of the vulnerability of the tribal planning area? [44 CFR § 201.7(c)(2)(ii)]	**Earthquake** Impact: Section 5.3.1.3, Page 5-8 **Flood** Impact: Section 5.3.2.3, Page 5-13 to 5-14 **Ground Failure** Impact: Section 5.3.3.3, Page 5-17 **Severe Weather** Impact: Section 5.3.4.3, Page 5-29 **Volcanic Hazards** Impact: Section 5.3.5.3, Page 5-39 to 5-40 **Overall Vulnerability:** Section 6, Page 6-1 to 6-19	X	
ELEMENT B: REQUIRED REVISIONS			

1. Standard Regulation Checklist Regulation (44 CFR § 201.7 Tribal Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan include a discussion of the 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 and regulations related to hazard mitigation as well as to development in hazard-prone areas? [44 CFR §§ 201.7(c)(3) and 201.7(c)(3)(iv)]	Section 1, Page 1-1 to 1-8, & Table 1-1 & 1-2 Section 7-2, Page 7-2 to 7-5 Tables 7-1, 7-4, & 7-5	X	
C2. Does the plan include a discussion of tribal funding sources for hazard mitigation projects and identify current and potential sources of Federal, tribal, or private funding to implement mitigation activities? [44 CFR §§ 201.7(c)(3)(iv) and 201.7(c)(3)(v)]	Section 7.2, Page 7-2 to 7-6, & Table 7-1, 7-4, & 7-5 Section 7-4, Page 7-6 to 7-9, & Table 7-7 Section 7-6 Page 7-11 to 7-22, & Table 7-9 & 7-10 Appendix A	X	
C3. Does the Mitigation Strategy include goals to reduce or avoid long-term vulnerabilities to the identified hazards? [44 CFR § 201.7(c)(3)(i)]	Section 7.3, Page 7-5 to 7-6 & Table 7-6	X	
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with emphasis on new and existing buildings and infrastructure? [44 CFR § 201.7(c)(3)(ii)]	Section 7.4, Page 7-8 to 7-11, & Table 7-7 Section 7.5, Page 7-9 to 7-11	X	
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by the tribal government? [44 CFR § 201.7(c)(3)(iii)]	Section 7.5, Page 7-9 to 7-11, & Table 7-8 Section 7.6, Page 7-11 to 7-22, & Table 7-10 STAPLEE	X	
C6. Does the plan describe a process by which the tribal government will incorporate the requirements of the mitigation plan into other planning mechanisms, when appropriate? [44 CFR § 201.7(c)(4)(iii)]	Section 3.5, Page 3-6 to 3-7 Section 7.8, Page 7-23	X	
C7. Does the plan describe a system for reviewing progress on achieving goals as well as activities and projects identified in the mitigation strategy, including monitoring implementation of mitigation measures and project closeouts? [44 CFR §§ 201.7(c)(4)(ii) and 201.7(c)(4)(v)]	Section 3.5.4, Page 3-9 to 3-10 Section 7.7, Page 7-23 Section 7.8, Page 7-23	X	
ELEMENT C: REQUIRED REVISIONS			

1. **Standard Regulation Checklist** **Regulation** (44 CFR § 201.7 Tribal Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ELEMENT D. PLAN UPDATES			
D1. Was the plan revised to reflect changes in development? [44 CFR § 201.7(d)(3)]	N/A This is a new plan		
D2. Was the plan revised to reflect progress in tribal mitigation efforts? [44 CFR §§ 201.7(d)(3) and 201.7(c)(4)(iii)]	N/A This is a new plan		
D3. Was the plan revised to reflect changes in priorities? [44 CFR § 201.7(d)(3)]	N/A This is a new plan		
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. ASSURANCES AND PLAN ADOPTION			
E1. Does the plan include assurances that the tribal government will 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, and will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes? [44 CFR § 201.7(c)(6)]	Section 4.2, Page 4-1 to 4-2	X	
E2. Does the plan include documentation that it has been formally adopted by the governing body of the tribal government requesting approval? [44 CFR § 201.7(c)(5)]	After FEMA provides conditional approval the plan will be locally adopted and resolution will be found in Appendix C	X	
ELEMENT E: REQUIRED REVISIONS			

2. Enhanced Regulation Checklist Regulation (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ENHANCED ELEMENT F. STANDARD PLAN REQUIREMENTS			
F1. Does the enhanced plan include all elements of the standard tribal mitigation plan? [44 CFR §§ 201.3(e)(3), 201.5(b), and 201.7]	N/A		
ENHANCED ELEMENT F: REQUIRED REVISIONS			
ENHANCED ELEMENT G. INTEGRATED PLANNING			
G1. Does the enhanced plan demonstrate integration to the extent practicable with other tribal and/or regional planning initiatives and FEMA mitigation programs and initiatives? [44 CFR §§ 201.3(e)(3) and 201.5(b)(1)]	N/A		
ENHANCED ELEMENT G: REQUIRED REVISIONS			
ENHANCED ELEMENT H. TRIBAL MITIGATION CAPABILITIES			
H1. Does the tribal government demonstrate commitment to a comprehensive mitigation program? [44 CFR §§ 201.3(e)(3) and 201.5(b)(4)]	N/A		
H2. Does the enhanced plan document capability to implement mitigation actions? [44 CFR §§ 201.3(e)(3), 201.5(b)(2)(i), 201.5(b)(2)(ii), and 201.5(b)(2)(iv)]	N/A		
H3. Is the tribal government using existing mitigation programs to achieve mitigation goals? [44 CFR §§ 201.3(e)(3), 201.5(a) and 201.5(b)(3)]	N/A		
ENHANCED ELEMENT H: REQUIRED REVISIONS			

2. **Enhanced Regulation Checklist** **Regulation** (44 CFR § 201.5 Enhanced Tribal Mitigation Plans)	**Location in Plan** (section and/or page number)	**Met**	**Not Met**
ENHANCED ELEMENT I. HMA GRANTS MANAGEMENT PERFORMANCE			
I1. With regard to HMA, is the tribal government maintaining the capability to meet application timeframes and submitting complete project applications? [44 CFR §§ 201.3(e)(3), 201.5(b)(2)(iii)(A)]	N/A		
I2. With regard to HMA, is the tribal government maintaining the capability to prepare and submit accurate environmental reviews and benefit-cost analyses? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(B)]	N/A		
I3. With regard to HMA, is the tribal government maintaining the capability to submit complete and accurate quarterly progress and financial reports on time? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(C)]	N/A		
I4. With regard to HMA, is the tribal government maintaining the capability to complete HMA projects within established performance periods, including financial reconciliation? [44 CFR §§ 201.3(e)(3) and 201.5(b)(2)(iii)(D)]	N/A		
ENHANCED ELEMENT I: REQUIRED REVISIONS			

Section 2: STRENGTHS AND OPPORTUNITIES FOR IMPROVEMENT

INSTRUCTIONS: The purpose of the ***Strengths and Opportunities for Improvement*** section is for FEMA to provide more comprehensive feedback on the tribal mitigation plan to help the tribal government advance mitigation planning. The intended audience is the tribal staff responsible for the mitigation plan update. FEMA will address the following topics:

1. Plan strengths, including specific sections in the plan that are above and beyond the minimum requirements; and
2. Suggestions for future improvements.

FEMA will provide feedback and include examples of best practices, when possible, as part of the *Tribal Mitigation Plan Review Tool,* or, if necessary, as a separate document. The tribal mitigation plan elements are included below in italics for reference. FEMA is not required to provide feedback for each element.

Required revisions from the **Regulation Checklist** are not documented in the **Strengths and Opportunities for Improvement** section. Results from the **Strengths and Opportunities for Improvement** section are not required for Plan Approval.

Plan Strengths

- Good Figure 2-5 of the City and Native Village of Diomede that includes structures.
- Good summary of socio-economic data on community and discussion of community specific needs.
- Great inclusion of the Potential Impacts from Future Climate Conditions into hazard analyses and summaries.
- Great inclusion of impacts of culturally and sacred site sensitivity, including meat caches.
- Clear Table 7-7 and explanation of actions that rose to the top of priorities for inclusion in Table 7-10.
- Thorough Capability Assessment that provides good information to inform mitigation actions.
-

Opportunities for Improvement

- For the plan update, consider an alternative community-up approach to the planning process based on needs of the City and Native Village and ability of both to manage Hazard Mitigation Assistance grants.
- Consider including more specific information and expanding the documenting of the steps for plan creation more clearly, using dates/including meeting minutes.
- Consider alternative forms, or times of year, for community engagement since no public comments were received.

- For the update, consider illustrating each hazard on the aerial map provided on the City and Native Village. This would provide a better understanding of each hazard's potential for impacting the specific planning area and infrastructure.
- Consider becoming more specific with additional impacts; for example, not only that ground failure can exacerbate permafrost, but what specific structures would that failure hurt? This information can be used to develop mitigation actions and the basis of identifying priority projects for grant funding.
- Consider providing specific funding ideas, instead of the responsible agency. This focus will help narrow grant application or other project ideas moving forward to implement actions.
- Include additional information on grants management specific to the Native Village of Diomede to more strongly support requirements C1, C2, and C6.

B. Resources for Implementing Your Approved Plan

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

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

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

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

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

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

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

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

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

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

FEMA Region 10 Tribal Mitigation Plan Review Tool

The *Tribal Mitigation Plan Review Tool* records how the tribal mitigation plan meets the regulations in 44 CFR § 201.7 and § 201.5 (if applicable) and offers FEMA plan reviewers an opportunity to provide feedback to the tribal government.

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- **Section 2**: The Strengths and Opportunities for Improvement summary identifies plan's strengths as well as areas for improvement as part of the next plan update.

The FEMA mitigation planner must reference the *Tribal Mitigation Plan Review Guide* when completing the *Tribal Mitigation Plan Review Tool*.

Tribal Jurisdiction: Native Village of Diomede	**Title of Plan:** City and Native Village of Diomede's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP)	**Date of Plan:** May 2018
Tribal Point of Contact: Opik Ahkinga	**Address:** Native Village of Diomede PO Box 7079 Diomede, AK 99762	
Title: IGAP Environmental Coordinator		
Agency: Native Village of Diomede		
Phone Number: 907.686.2202	**Email:** dio.env103@yahoo.com	

State Reviewer (if applicable): Mike Johnson	**Title:** Emergency Mgmt Spec II	**Date:** June 2018

FEMA Reviewer: Kate Skaggs Amanda Siok Amanda.Siok@fema.dhs.gov	**Title:** Mitigation Champion Mitigation Planning Lead	**Date:** July 17, 2018 July 26, 2018
Date Received in FEMA Region 10	9/12/17	
Plan Not Approved	10/31/17; 07/26/2018	
Plan Approvable Pending Adoption	10/11/2018	
Plan Approved	06/07/2019	

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

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

MULTI-JURISDICTION SUMMARY SHEET (Add additional pages if necessary)

#	Jurisdiction Name	Jurisdiction Type (city/borough/ district, etc.)	POC	Required Revisions / Comments	Requirements Met (Y/N)					
					A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1	Native Village of Diomede	Native Village	Opik Ahkinga(907) 686-2202		Y	Y	Y	N/A	Y	N/A
2	Village of Diomede	City	Ann Soolook (907) 686-3071		Y	Y	Y	N/A	Y	N/A
3										
4										
5										
6										
7										
8										
9										
10										

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Appendix D
Public Outreach Activities

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From: Simmons, Scott
Sent: Thursday, October 13, 2016 12:35 PM
To: "hdenny@anthc.org'; 'tneal@usgs.gov'; 'swhite@avcp.org'; 'steve.heppner.bia.ak@gmail.com'; 'alexa.greene@alaska.gov'; 'jneimeyer@denali.gov'; 'DOT Harvey Smith'; 'michelle.torres@alaska.gov'; 'ryan.anderson@alaska.gov'; 'jimmy.smith@alaska.gov'; 'terri.lomax@alaska.gov'; 'Soderlund.Dianne@epamail.epa.gov'; 'john.lingaas@noaa.gov'; 'joel.curtis@noaa.gov'; 'sam.albanese@noaa.gov'; 'meg.mueller@ak.usda.gov'; 'merlaine.kruse@ak.usda.gov'; 'ak_le@fws.gov'; 'eddie.zingone@noaa.gov'; 'patty.burns@alaska.gov'; 'margie.goatley1@alaska.gov'; 'khoward@blm.gov'; 'BischofbergerKL@ci.anchorage.ak.us'; 'nicole.kinsman@noaa.gov'; 'bruce.r.sexaur@usace.army.mil'; 'mtavelton@usace.army.mil'; 'steve.mcgroarty@alaska.gov'; 'megan.kohler@alaska.gov'; 'jade.gamble@alaska.gov'; 'steven.russell@alaska.gov'; 'deanne.stevens@alaska.gov'
Cc: Young, Laura; Evans, Jessica; Appleby, Elizabeth; Seims, Tux; Schultz, Thomas
Subject: Agency Involvement Participant Invitation Letter

Dear Potential HMP Development Participants,

AECOM (formerly URS) has received a 2014 contract from the State Division of Homeland Security and Emergency Management (DHS&EM) to develop Local/Tribal Multi-Jurisdictional Hazard Mitigation Plans (MJHMPs) for the following communities: Each group defines the HMP type and targeted communities.

The following communities' do not currently have an HMP. These communities will develop plans that meet FEMA's current MJHMP requirements:

New MJHMP and Tribal HMP Development

Organized Cities with Co-Located Villages

- Diomede (2nd Class City with Tribal Village)
- Goodnews Bay (2nd Class City with Tribal Village)
- White Mountain (2nd Class City with Tribal Village)

Stand Alone Tribal HMPs

- Native Village of Minto
- Native Village of Tyonek
- Native Village of Venetie

The following communities' currently have expired HMPs. These communities will have their plans updated from HMP to MJHMPs to meet current FEMA requirements:

MJHMP/Tribal HMP Update Required

Organized Cities with Co-Located Villages

- Allakaket (2nd Class City with Tribal Village)
- Nulato (2nd Class City with Tribal Village)
- Saint Mary's (2nd Class City with Tribal Village)

Stand Alone Tribal HMPs

- Native Village of Alatna
- Native Village of Koyukuk
- Native Village of Kwethluk

The Northwest Arctic Borough (NWAB) Multi-Jurisdictional HMP (MJHMP) consists of nine organized cities and 2 unorganized communities. NWAB is currently expired. These Borough's plan as well as constituent communities will have their plans updated to meet current FEMA requirements:

The NWAB Borough, MJHMP

Organized Cities with Co-Located Villages

- Ambler (2nd Class City with Tribal Village)
- Buckland (2nd Class City with Tribal Village)
- Deering (2nd Class City with Tribal Village)
- Kiana (2nd Class City with Tribal Village)
- Kobuk (2nd Class City with Tribal Village))
- Kotzebue (2nd Class City with Tribal Village)
- Noorvik (2nd Class City with Tribal Village)
- Selawik (2nd Class City with Tribal Village)
- Shungnak (2nd Class City with Tribal Village)

Unorganized Communities

- Native Village of Noatak
- Red Dog Mine

We invite you to participate in this important community planning effort during the development process. Community newsletters will be located on the DHS&EM Local/Tribal All Hazard Mitigation Plan Development website at: https://ready.alaska.gov/plans/localhazmitplans as the communities finalize them.

Please feel free to contact me and to forward this email to the most appropriate person within your agency involved with hazard assessments, hazard mitigation plan development or community specific hazard information or planning suggestions. (Please cc me so I may update the contact list)

I encourage you to acknowledge receiving this invitation at your earliest convenience to allow me to include your participation (with appropriate acknowledgments) within the Draft and Final HMPs prior to State and FEMA review and subsequent approvals.

Kind Regards
-Scott-

R. Scott Simmons, CFM, CPM
Emergency Management, Mitigation, and Resilience Planner
scott.simmons@aecom.com

AECOM
700 G Street, Suite 500, *Anchorage, AK 99501*
Phone: 907.261.9706 or *800.909.6787*; *Personal Cell: 907.841.1832, Fax: 907.562.1297*

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From:	Evans, Jessica
To:	cityofdiomede@yahoo.com; fozenna@kawerak.org
Cc:	Simmons, Scott
Subject:	Hazard Mitigation Plan for the City of Diomede
Date:	Wednesday, October 12, 2016 4:38:55 PM

Dear Mayor Ahkvaluk and President Soolook,

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 City of Diomede with writing a 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 city 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 community 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 City 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 Diomede Hazard Mitigation

Plan. Please call me if you have questions.

Sincerely,

Jessica

Jessica Evans
Environmental Scientist/Planner
D 1-907-261-6764
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From: Opik Ahkinga
To: Evans, Jessica
Subject: Fw: DIO
Date: Tuesday, February 28, 2017 3:43:16 PM

LOL i sent it to me

On Tuesday, February 28, 2017 3:34 PM, Opik Ahkinga <dio.env103@yahoo.com> wrote:

Erickson Helicopters (443-5334), runs on a weekly and/or bi-weekly schedule. Mondays are passengers service days. If you came on a Monday, you can take the direct flight back to Nome, on a Wednesday mail run.

Airfare: $350ow or $700 Round Trip

I would call and make reservations early, and ensure that your flight will take you back on Wednesday. Does this make sense so far?

Diomede School allows mainlanders (That would be you ;) to rent by the night. I believe it is $70 per night.

Very important things to bring: -warm outdoor gear (coat, snowpants, boots, gloves)
- Food. You will have to cook your own meals at the School. Yes, they do have a microwave and cook stove/oven you can use.

Types of food DIO Stores do not have: fresh produce, eggs, bread, meats, and icecream. Sorry, but I am telling the facts.

Oh,remember to bring your own sleeping bag. I think that is that. If I think of other stuff I will keep you posted.

Good luck trying to get out here. Looking forward to working with you.

Opik

On Tuesday, February 28, 2017 2:26 PM, Opik Ahkinga <dio.env103@yahoo.com> wrote:

OKay, you can call me right now. How is that?

Opik
907-686-2202

On Tuesday, February 28, 2017 2:17 PM, "Evans, Jessica" <jessica.evans@aecom.com> wrote:

How about this: is there a day/time that would be convenient for you, and *I* can call *you*? Our toll-free number will give you a bit of the run-around.

Thanks,

Jessica

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

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From: Opik Ahkinga [mailto:dio.env103@yahoo.com]
Sent: Monday, February 27, 2017 8:50 AM
To: Evans, Jessica
Subject: Re: DIO

Okay, I can call. Is there a toll free number I can use? Our offices do not have direct dialing. Talk to you soon.

Opik Ahkinga
Environmental Coordinator
Native Village of Diomede
907-686-2202

On Monday, February 27, 2017 7:18 AM, "Evans, Jessica" <jessica.evans@aecom.com> wrote:

Hi Opik,

I was also off work last week, and I will be back in the office tomorrow. Please call tomorrow or later in the week. I look forward to speaking with you!

Jessica

Jessica Evans, AECOM
Environmental Scientist/Planner
1-907-261-6764

-----Original Message-----
From: Opik Ahkinga [mailto:dio.env103@yahoo.com]
Sent: Friday, February 17, 2017 9:15 AM
To: Evans, Jessica
Subject: DIO

Hi, Jessica

I am off work until next Monday. I will call you then. How does that sound? And I'm Opik. Better known by my Eskimo name. I never like my given name since forever.

Talk to you then.
Opik Ahkinga

Sent from my iPhone

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CITY AND NATIVE VILLAGE OF DIOMEDE HAZARD MITIGATION PLAN (HMP)

May 2017 **Newsletter 1**

This newsletter is for the City of Diomede (City) and the Native Village of Diomede (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 prepare a Hazard Mitigation Plan (HMP) for City and Village of Diomede.

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

The Diomede Hazard Mitigation Plan will identify all natural hazards, such as earthquake, erosion, flood, severe weather, and ground failure, 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. Diomede'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:

- Planning Team membership and processes
- HMP participation and plan reviewers
- Identify hazards, and explain hazard impacts
- Identify 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
- Develop hazard mitigation goals
- List projects for the Mitigation Strategy and determine priority
- Describe maintenance of the plan
- 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 will be conducting 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 this table 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.

Diomede Hazard Worksheet		
Hazard	Bering Strait REAA*	City and Village of Diomede
Earthquake	Yes	
Erosion	Yes	
Flood	Yes	
Ground Failure (Avalanche, Landslide, Permafrost)	Yes	
Severe Weather	Yes	
Tsunami & Seiche	No	
Volcano	No	
Wildland Fire	Yes	
*Hazard Matrix from the 2013 State of Alaska Hazard Mitigation Plan for the Bering Strait REAA.		

DHS&EM identified critical facilities within the City and Village of Diomede 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 Diomede. Please add additional facilities if needed.

Diomede Critical Facilities*	
Facility Type	Facility Name
Airport	Diomede Heliport
Cemetery	Cemetery
Church	Saint Judes
Community Hall	Recreation Center
Community Storage Shed	City Van
Emergency Operations Center	Elementary School
Emergency Shelter(s)	Elementary School
Fire Station	City Office
Fuel Storage Tanks (>500gal)	Bulk Fuel Tanks; School District Bulk Fuel Tanks
Harbor/Dock/Port	Temporary Causeway
Clinic/Washeteria	Clinic/washeteria
National Guard	Armory
Offices	City Office; IRA Buildings; Native Corporation
Post Office	City Office
Potable Water Production and Treatment Facility	Water treatment plant
Power Generation Facility	Generator Building
Reservoir/Water Supply	Water tank
Satellite	Satellite
Schools	Diomede School; Elementary School (and teacher's quarters)
Store	Native Store
Teachers Quarters	Elementary School
Telephone	Mukluk Telephone Building
Waste Water Treatment Facility	Community septic tank
* Alaska Critical Facilities Inventory 2009	

The Planning Team

The Diomede planning team is being led by Opik Ahkinga. 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 Diomede 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 City and Village of Diomede's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) 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 MJHMP Team Leader or Jessica Evans, AECOM directly if you have any questions, comments, or to requests additional information:

Diomede HMP
Planning Team Leader
Opik Ahkinga
PO Box 7079
Little Diomede, AK 99762
Phone: 907-686-2202
eMail: dio.env103@yahoo.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

From: Evans, Jessica
To: Simmons, Scott
Subject: RE: Diomede :-)!
Date: Tuesday, May 16, 2017 4:38:44 PM

Hi Scott.

Met with the IRA IGAP coordinator today and it was very very useful. I'm hoping to be able to tidy up the draft and get it to them next week. There is talk of hiking to the top of the island tonight, but it might be too chilly. We'll see :)

The weather: So far there has been a low cloud ceiling. The helicopter flew very low--I don't know if that was because of the clouds or not. Patchy fog this morning, but it cleared up by noon, so I am hoping that won't interfere with tomorrow's travel plans. The wind picked up a bit this afternoon, so it is quite cold facing in that direction. Snow is patchy through town. The seas have been surprisingly calm. Slow moving and not really any waves.

So far I have seen them haul 3 adult and one baby seal (oogruk) to shore. There is butchering happening all over town--very neat and very smelly :). Some hunters said they saw a Russian boat yesterday. Crazy!

I didn't have a good view of the islands coming into town, but I'll sit facing back next time and see if I can get a shot of both islands.

Oh, and the Russian store has actually moved locations, and is in a nice new building by the park square :). They just never seem to be open...

Jessica

Jessica Evans, AECOM
Environmental Scientist/Planner
1-907-261-6764

-----Original Message-----
From: Simmons, Scott
Sent: Tuesday, May 16, 2017 7:57 AM
To: Evans, Jessica
Subject: RE: Diomede :-)!

Hi Jessica,
Glad your trip is going well. I didn't know if there'd be snow or not... the seasonal sea changes are exacerbating subsistence challenges throughout the region... all those communities need the food other resources the sea mammals provide for community longevity.

What is the weather: clear, cloudy, windy; how active is the sea: minimal, moderate, or high waves or sea surge?

Russian Store:
I have no way to contact the store before I travel. They were closed the last two times I was there. I can only hope I can eventually be successful.

Stay safe, take a few photos for me. Just wondering, did you happen to get a photo of both Big and Little Diomede in the same frame? That would be a great photo

-s-

Kind Regards
-Scott-

R. Scott Simmons, CFM, CPM
Emergency Management, Mitigation, and Resilience Planner scott.simmons@aecom.com

700 G Street, Suite 500, Anchorage, AK 99501
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-----Original Message-----
From: Evans, Jessica
Sent: Monday, May 15, 2017 3:03 PM
To: Simmons, Scott
Subject: Re: Made it to Diomede!

Could be worse but could be better. Garbage is a problem. I was provided distilled water and told not to drink from the faucet. Subsistence getting harder with shrinking sea ice season. Some facilities are in great shape (the school, the helipad). Hard to tell because there is snow, but it looks like the whole shoreline in front of the village is fortified. I'll find out more when I meet with the council tomorrow.

The Russian store was closed the whole time we were in Nome.

Big Diomede is really close!

Jessica

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

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---

From: Simmons, Scott
Sent: Monday, May 15, 2017 1:50:15 PM
To: Evans, Jessica
Subject: RE: Made it to Diomede!

Great, What do you think about their living conditions?

Kind Regards
-Scott-

[AECOMLogo-Sm-Color]
R. Scott Simmons, CFM, CPM
Emergency Management, Mitigation, and Resilience Planner scott.simmons@aecom.com

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From: Evans, Jessica
Sent: Monday, May 15, 2017 12:58 PM
To: Simmons, Scott
Cc: Craig, Bill
Subject: Made it to Diomede!

There is limited wireless here (!)

I'll check in again when I make it back to Nome.

Jessica

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

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From: Evans, Jessica
To: Opik Ahkinga
Subject: RE: Diomede Hazard Mitigation Plan
Date: Thursday, May 25, 2017 8:03:00 AM

Hi Opik,
I emailed your plan yesterday—let me know if it didn't come.

It is big, and I know that there is a lot going on right now, with hunting etc. The most important parts for you to look at are:

Section 5.3 describes the science of each hazard. At the end of each hazard profile, it talks about Location, Extent, and Impact. It would be good to know if there is any information about specific impacts that have occurred in the community

Section 6.4, Table 6-4 is the updated version of the critical facilities table you and I went over. I guessed at the cost of most things. I added a bit to the cost of the boardwalks from what you gave me yesterday, thinking it would be a bit more expensive now, ten years later.

Section 7.4, Table 7-5. This is the meat of the plan. I created a list of potential actions/projects that might be useful to Diomede. I took a wild guess at the priority of each action. PLEASE let me know how you would like to modify this table. There are probably some you would like to add and take off.

Thanks!

Jessica

Jessica Evans
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jessica.evans@aecom.com

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From: Evans, Jessica
Sent: Wednesday, May 24, 2017 5:00 PM
To: 'Opik Ahkinga'
Subject: RE: Diomede Hazard Mitigation Plan

Your plan is attached!

Let me know when you get this—the attachment is big. I will put the hard copy in the mail for you tomorrow.

Jessica

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

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www.aecom.com

From: Opik Ahkinga [mailto:dio.env103@yahoo.com]
Sent: Wednesday, May 24, 2017 1:48 PM
To: Evans, Jessica
Subject: Re: Diomede Hazard Mitigation Plan

I will be happy to see the plan. Can it be emailed?

Our mailing address is:
Native Village of Diomede
PO Box 7079
Little Diomede, AK 99762

The meat holes are in various places in the village. Mostly in front of the homes, distal to the ocean and not on the shoreline.

We lost ATT internet....now on GCI cell.

Opik

Sent from my iPhone

On May 24, 2017, at 12:54 PM, Evans, Jessica <jessica.evans@aecom.com> wrote:

> I found a map of the boardwalks posted on a door at the school. I used a ruler and math to figure out the linear size of the boardwalk—I'm curious to see how accurate I got! By next week is fine. I will still send you the plan and that part will just be a hole for now.
>
> I love your story of the meat holes ☺ Can you tell me where they are? Behind the houses?
>
> Jessica
>
> **Jessica Evans**
> Environmental Scientist/Planner
> D 1-907-261-6764
> jessica.evans@aecom.com
>
> **AECOM**

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From: Opik Ahkinga [mailto:dio.env103@yahoo.com]
Sent: Wednesday, May 24, 2017 11:11 AM
To: Evans, Jessica
Subject: Re: Diomede Hazard Mitigation Plan

Oh, it was very nice to meet you. I'm glad you got to meet some kids too. The kids here are always very fun to talk with. And, yes I was grateful to share you the Diomede life I know, since I was a Cavekid.

I called up Kawerak DOT to find out when this boardwalk was placed and for the cost to build it. I have also asked them to send me the linear size of this boardwalk. He says by next week, he will email me the answers to my questions. Will that work?

I say all of Diomede is a cultural site, but the are areas in the village that should be marked in your plan. These are meat caches or 'meat holes' These meat holes are used to preserve, ferment, and store meat of walrus and birds. In Inupiaq we call it 'qaluaq or ea'. In the meat holes, families prepare izagvak (baby walrus). The carcass is left out, but covered with a cardboard or tarp (long ago under a hide) to age (ferment). In July, the carcass was placed in the meat hole. In late October or early November, after the snow fall and before freeze up, the carcass was cut in half and other parts were ready to eat. The carcass was left in the meat hole to be kept frozen. Fermented walrus flippers were the best favorite foods on Diomede. I remember in early November, the village would smell like stink aged walrus. Oh, that smell I miss so much. When you smell that and see the dragging tracks on the snowy ground, you know someone is going to be eating good that night.

Hope this helps.

Thank you for all YOUR help. You're the hard working one ;)

Opik

On Wednesday, May 24, 2017 10:09 AM, "Evans, Jessica" <jessica.evans@aecom.com> wrote:

Whew! I realize how long it can take for things to reach you in the mail, so I wanted to get this done as soon as I could to send you a hard copy. I'll also email it, of course, but it's easier to review things in print I think.

As I mentioned in my text, I was able to find at least rough estimates of everything I needed, but I still need the **cost of your boardwalks.** Can someone at the City answer that question?

I would also like to know about your **cultural sites**. I used your text as a quote in the plan (I hope you don't mind but it really fits well). We can simply say that the whole island is culturally important, or we can list out some specific sites (and mention if any are especially susceptible to hazards). Or we can do both. If the Tribe doesn't want the public to know where important sites are, we can put that list in an appendix that FEMA will see, but will be kept confidential from the public (the Tribe would have total control over who sees it). Some Tribes don't mind having that information public, others don't want outsiders to know where their fish camps are, for example.

I can always print out the draft plan as it is and send it to you right away for your review—it will just have a few holes we can plug in later. I hope to have it in the mail today or tomorrow ☺

Can you give me an address to send the plan?

Thanks for your hard work on this. And I also want to thank you for taking the time to share your home with me. It am truly grateful for the opportunity to visit Diomede and meet the people (and kids!) on the island.

Jessica

Jessica Evans
Environmental Scientist/Planner
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From: Opik Ahkinga
To: Evans, Jessica
Subject: Fw: Board walk info
Date: Wednesday, May 24, 2017 3:23:21 PM

Here is the Boardwalk Project from 2008 ;)

-Opik

On Wednesday, May 24, 2017 3:11 PM, Steffen Verdin <SVerdin@kawerak.org> wrote:

The total cost of the project was $ 888,631.00
It began: Aug 21st 2008
Ended: Sept 23rd 2008

Let me know if you require additional info.

Steffen Verdin
Construction Project Specialist
Kawerak Inc
PO Box 948
Nome, AK 99762
907-443-4337 (ph)
907-443-4445 (fx)

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DIOMEDE HAZARD MITIGATION PLAN (HMP)

June 2017 **Newsletter 2**

This newsletter discusses the preparation of the City and Native Village of Diomede 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 City and Native Village of Diomede 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 volcanic ashfall. 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 February 2017 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, community 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 Diomede.

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 May 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 IGAP 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 Diomede'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, Opik Ahkinga, with assistance from the Diomede Tribal Council, and Jessica Evans with AECOM.

Sample of the City and Native Village of Diomede's Mitigation Actions. Review the draft HMP for a complete list.

Acquire emergency warning methods to communicate critical emergency warnings and alerts (sirens, radios, or cell phones).	Identify evacuation routes away from high hazard areas and develop outreach program to educate the public concerning warnings and evacuation procedures.	Update public emergency notification procedures and develop an outreach program for potential hazard impacts or events.
Request a "Security and Vulnerability Assessment" from DHS&EM to qualify for a grant to install a radio or satellite phone.	Develop critical facility list needing emergency back-up power systems, prioritize, seek funding, and implement installation.	Develop prioritized list of mitigation actions for threatened critical facilities and other buildings or infrastructure.
Develop a plan and associated ordinances to protect drinking water resources	Encourage utility companies to evaluate and harden vulnerable infrastructure elements for sustainability.	Develop a vegetation management plan addressing slope-stabilizing root strength to maintain or encourage precipitation containment.
Reinforce buildings and homes against high winds.	Update or develop, implement, and maintain debris management plans.	Identify and pursue funding opportunities to implement mitigation actions.
Review ordinances and develop outreach programs to assure propane tanks are properly anchored and hazardous materials are properly stored and protected from known natural hazards such as flood or seismic events	Develop mitigation initiatives such as: Rip-rap (large rocks), sheet pilings, gabion baskets, articulated matting, concrete, asphalt, vegetation, or other armoring or protective materials to provide river bank protection.	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms (snow load, ice, and wind).

We encourage you to learn more about the City and Native Village of Diomede'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:

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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
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HAZARD MITIGATION PLAN FOR STATE/FEMA REVIEW

Diomede, State of Alaska

The Multi-Jurisdictional Hazard Mitigation Plan written by AECOM with help from the Diomede IGAP Coordinator may be sent as-is for review by the State of Alaska and the Federal Emergency Management Agency.

Date: August 16, 2017

Name _____

Tribal President

Name _____

Acting Mayor

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Appendix E
Benefit–Cost Analysis Fact Sheet

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

Use Correct Occupancy Data

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

Questions to Be Answered

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

Common Shortcomings

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

Appendix F
Plan Maintenance Documents

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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?			

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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: _____