Aleutians East Borough
(including the Cities of Akutan, King Cove, False Pass, and Sand Point, and the Native Village of Nelson Lagoon)
Multi-Jurisdictional Hazard Mitigation Plan Update

Photo credit: www.aleutianseast.org: Sand Point which is where the AEB Office is based

Prepared by the AEB
Mitigation Planning Team

In Collaboration with:

LeMay Engineering & Consulting, Inc.

November 2021

This page was intentionally left blank.

Table of Contents

Table of Tables

Table of Figures

Appendices

Acronyms/Abbreviations

°F	Degrees Fahrenheit
AC	Alaska Commercial
ACS	American Community Survey
ADF&G	Alaska Department of Fish & Game
AEB	Aleutians East Borough
AEC	Alaska Earthquake Center
APA	American Planning Association
ARC	American Red Cross
AVO	Alaska Volcano Observatory
Borough	Aleutians East Borough
BRIC	Building Resilience in Communities
CC	Changes in the Cryosphere
CCP	Citizen Corps Program
CDBG	Community Development Block Grant
CDP	Census-Designated Place
CFR	Code of Federal Regulations
City	Cities of Akutan, False Pass, King Cove, and Sand Point
DCCED	Department of Commerce, Community, and Economic Development
DCRA	Division of Community and Regional Affairs
DEC	Department of Environmental Conservation
DHS	Department of Homeland Security
DHS&EM	Division of Homeland Security and Emergency Management
DGGS	Division of Geological and Geophysical Survey
DMA 2000	Disaster Mitigation Act of 2000
DMV	Department of Motor Vehicles
DMVA	Department of Military and Veterans Affairs
DNR	Department of Natural Resources
DOF	Division of Forestry
DOI	Division of Insurance
DOL	Department of Labor
DOT/PF	Department of Transportation and Public Facilities
ENSO	El Niño – Southern Oscillation
EQ	Earthquake
FEMA	Federal Emergency Management Agency
F&E	Fire and Erosion
FMA	Flood Mitigation Assistance
FY	Fiscal Year
g	gravity as a measure of peak ground acceleration
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HSGP	Homeland Security Grant Program
M	Magnitude

Mb	Millibars
MAP	Mitigation Action Plan
MMI	Modified Mercalli Intensity
mph	miles per hour
N/A	Not Applicable
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
NFIP	National Flood Insurance Program
NWS	National Weather Service
NTWC	National Tsunami Warning Center
PDM	Pre-Disaster Mitigation
PGA	Peak Ground Acceleration
PWs	Project Worksheets
RAWS	Remote Automated Weather System
RD	U.S. Division of Rural Development
RDA	Rural Development Assistance
SBA	U.S. Small Business Administration
SEOC	State Emergency Operations Center
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, and Environmental
SW	Severe Weather
TS	Tsunami
UAF-AEC	University of Alaska Fairbanks - Alaska Earthquake Center
UAF-ACGL	University of Alaska Fairbanks - Arctic Coastal Geoscience Lab
UAF-GI	University of Alaska Fairbanks - Geophysical Institute
UHMA	Unified Hazard Mitigation Assistance
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFW	United States Fish & Wildlife
USGS	United States Geological Survey
V	Volcano
Village	Nelson Lagoon
WWRC	Western Regional Climate Center

1.0 Introduction

This section 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) Update. This MJHMP is an Update for the Aleutians East Borough (AEB) that was adopted in 2010. As part of this planning process, the 2021 MJHMP Update remains a MJHMP that includes the AEB; Cities of Akutan, False Pass, King Cove, and Sand Point; and the Native Village of Nelson Lagoon. The AEB City of Cold Bay will develop its own standalone Hazard Mitigation Plan (HMP) at a later date.

1.1 Hazard Mitigation Planning

Hazard mitigation, as defined in Title 44 of the Code of Federal Regulations (CFR), Part §201, is "any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards." Many areas have expanded this definition to also include human-caused hazards. As such, hazard mitigation is any work done to minimize the impacts of any type of hazard event before it occurs and aims to reduce losses from future disasters. Hazard mitigation is a process in which hazards are identified and profiled, people and facilities at risk are analyzed, and mitigation actions are developed. Implementation of the mitigation actions, which include long-term strategies such as planning, policy changes, programs, projects, and other activities, is the result of this process. Hazard mitigation is the only phase of emergency management specifically dedicated to breaking the cycle of damage reconstruction and repeated damage. As such, State, Local, and Tribal governments are encouraged to take advantage of funding provided by Federal Hazard Mitigation Assistance (HMA) programs.

1.2 Mitigation Plans

On October 30, 2000, Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390) which amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) (Title 42 of the United States Code [USC] 5121 et seq.) by repealing the act's previous mitigation planning section (409) and replacing it with a new mitigation planning section (322). Section 322 directs State, Local, and Tribal entities to closely coordinate mitigation planning and implementation efforts. Additionally, it establishes the HMP requirement for the Federal Emergency Management Agency's (FEMA) HMA programs.

On October 2, 2015, FEMA published the Mitigation Planning Final Rule in the Federal Register, [Docket ID: FEMA-2015-0012], 44 CFR Part 201, effective November 2, 2015. Planning requirements for Local and Tribal entities are described in detail in Sections §201.6 and §201.7. Locally- and Tribally-adopted and State- and FEMA-approved HMPs qualify jurisdictions for several HMA grant programs. This MJHMP for the AEB; the Cities of Akutan, King Cove, False Pass, and Sand Point; and the Native Village of Nelson Lagoon complies with Title 44 CFR Sections §201.6 and §201.7 and applicable FEMA guidance documents as well as the 2018 State of Alaska HMP.

Section 322 of the Stafford Act (42 USC 5165) as amended by P.L. 106-390 provided for State, Local, and Tribal governments to undertake a risk-based approach to reducing risks from natural hazards through mitigation planning. The National Flood Insurance Act of 1968 (42 USC

4001 et seq.) as amended, further reinforced the need and requirement for HMPs, linking Flood Mitigation Assistance (FMA) programs to State, Local, and Tribal HMPs. This change also required participating National Flood Insurance Program (NFIP) communities' risk assessments and mitigation strategies to identify and address repetitively flood damaged properties.

Neither the AEB nor its communities participate in the NFIP.

1.3 Grant Programs with Mitigation Plan Requirements

FEMA HMA grant programs provide funding to State, Local, and Tribal entities that have a FEMA-approved State, Local, or Tribal HMP. 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. As of June 19, 2008, the grant programs were segregated. The Hazard Mitigation Grant Program (HMGP) is a competitive, disaster-funded grant program whereas the Unified Mitigation Assistance Programs (Pre-Disaster Mitigation [PDM] and FMA, although competitive) rely on specific grant pre-disaster grant funding sources, sharing several common elements. As a result of amendments by the Disaster Relief and Recovery Act of 2018, the PDM program is being replaced with the new Building Resilient Infrastructure and Communities (BRIC) program.

"The Department of Homeland Security (DHS) FEMA HMA grant programs present a critical opportunity to protect individuals and property from natural hazards while simultaneously reducing reliance on Federal disaster funds. The HMA programs provide PDM/BRIC grants annually to State, Local, and Tribal communities. The statutory origins of the programs differ, but all share the common goal of reducing the loss of life and property due to natural hazards. The PDM/BRIC program is authorized by the Stafford Act and focuses on mitigation project and planning activities that address multiple natural hazards, although these activities may also address hazards caused by manmade events. The FMA program is authorized by the National Flood Insurance Act and focuses on reducing claims against the NFIP" (FEMA, 2019h).

1.4 HMA Unified Programs

The HMGP provides grants to State, Local, and Tribal entities to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. Projects must provide a long-term solution to a problem; for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a disaster declaration is limited. FEMA may provide a State, Borough, City, or Tribe with up to 20% of the total aggregate disaster damage costs to fund HMGP project or planning grants. The cost-share for this grant is 75% Federal/25% non-Federal.

The PDM/BRIC grant program provides funds to State, Borough, City, or Tribal entities for hazard mitigation planning and mitigation project implementation prior to a disaster event.

PDM/BRIC grants are awarded on a nationally-competitive basis. Like HMGP funding, a PDM/BRIC project's potential savings must be more than the cost of implementing the project. In addition, funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The total amount of PDM funding available is appropriated by Congress on an annual basis. In Fiscal Years (FY) 2018 and 2019, PDM program funding totaled approximately $235 and $250 million each year, respectively. The cost-share for this grant is 75% Federal/25% non-Federal.

The goal of the FMA grant program is to reduce or eliminate flood insurance claims under the NFIP. Emphasis for this program is placed on mitigating repetitive loss properties. The primary source of funding for this program is the National Flood Insurance Fund. Grant funding is available for three types of grants, including Planning, Project, and Technical Assistance. Project grants, which use most of the program's total funding, are awarded to State, Local, and Tribal entities to apply mitigation measures to reduce flood losses to properties insured under the NFIP. In FY 2018, FMA funding totaled $160 million. In FY 2019, FMA funding totaled $210 million. The cost-share for this grant is 75% Federal/25% non-Federal.

1.5 Plan Description

The remainder of this 2021 MJHMP Update consists of the following sections and appendices.

Prerequisites

Section 2 addresses the prerequisites of Plan adoption, which includes adoption by the AEB Assembly, Akutan City Council, False Pass City Council, King Cove City Council, Sand Point City Council, and the Nelson Lagoon Tribal Council. The adoption resolutions and FEMA approval letters are included in Appendix B.

Community Description

Section 3 provides a general history and background of the AEB and its communities, including historical trends for the population and the demographics and economic conditions that have shaped the area. Boundary limits of each community are included.

Planning Process

Section 4 describes the planning process and identifies the Planning Team Members, the meetings held as part of the planning process, and the key stakeholders within the AEB. In addition, this section documents public outreach activities (Appendix A) and the review and incorporation of relevant plans, reports, and other appropriate information.

Hazard Analysis

Section 5 describes the process through which the Planning Team identified, screened, and selected the hazards to be profiled in this MJHMP Update. The hazard analysis includes the characteristics, history, location, extent, impact, and recurrence probability for each hazard. In addition, historical and hazard location figures are included when available.

Vulnerability Analysis

Section 6 identifies potentially vulnerable assets—people, residential and nonresidential

buildings, and critical facilities and infrastructure—in the AEB. The resulting information identifies the full range of hazards that the AEB and its communities could face and potential damages. Trends in land use and development are also discussed.

Mitigation Strategy

Section 7 defines the mitigation strategy which provides a blueprint for reducing the potential losses identified in the vulnerability analysis. The Planning Team provided a status update on mitigation actions that have been implemented since 2010 and developed additional mitigation goals and potential actions to address the risks facing the communities. Mitigation actions include preventive actions, property protection techniques, natural resource protection strategies, structural projects, emergency services, and public information and awareness activities.

Plan Maintenance

Section 8 describes the Planning Team's formal plan maintenance process to ensure that the MJHMP Update remains an active and applicable document. The process includes monitoring, evaluating (Appendix E), and updating the MJHMP; implementation through existing planning mechanisms; and continued public involvement. This section also provides the AEB's and the communities' capacities in terms of regulatory tools, and staff and financial resources as well as potential funding sources.

References

Section 9 lists the reference materials used to prepare this MJHMP Update.

Appendix A

Appendix A provides public outreach information, including public survey results, meeting agendas, meeting minutes, and public comments.

Appendix B

Appendix B provides the adoption resolutions for the AEB, the Cities of Akutan, King Cove, False Pass, and Sand Point, and the Native Village of Nelson Lagoon as well as the final approval letters from FEMA for each jurisdiction in this 2021 MJHMP Update.

Appendix C

Appendix C provides the FEMA Local Mitigation Plan Review Tool for the AEB and its Cities and the FEMA Tribal Multi-Hazard Mitigation Plan Review Crosswalk for the Native Village of Nelson Lagoon. Each review crosswalk documents compliance of this 2021 MJHMP Update with FEMA criteria.

Appendix D

Appendix D contains the Benefit-Cost Analysis Fact Sheet used to prioritize mitigation actions.

Appendix E

Appendix E provides plan maintenance documents, such as an annual review sheet, a progress report form, and a community survey.

2.0 Prerequisites

The DMA 2000 requirements for the adoption of this 2021 MJHMP Update by the local governing bodies are described below.

DMA 2000 Requirements
Local and Tribal Plan Adoptions **§201.6(c)(5) and §201.7(c)(5 and 6):** [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., Borough Assembly, City Council, 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 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? **[Requirement §201.7(c)(6)]** E1/E2. Does the Plan include documentation that the Plan has been formally adopted by the governing bodies of the jurisdictions requesting approval? **[Requirements §201.6(c)(5) and §201.7(c)(5)]** E2. For multi-jurisdictional Plans, has each jurisdiction requesting approval of the Plan documented formal Plan adoption? **[Requirement §201.6(c)(5)]**
Source: FEMA, 2015.

The AEB Assembly; the Cities of Akutan, False Pass, King Cove, and Sand Point; and the Native Village of Nelson Lagoon are represented in this 2021 MJHMP Update that meets the requirements in Section 322 of DMA 2000 and Sections 44 CFR §201.6 and §201.7. There are 25 tribal members enrolled in the Native Village of Nelson Lagoon. The Native Village of Nelson Lagoon will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which grant funding is received, in compliance with 44 CFR 13.11(c), 2 CFR Parts 200 and 3002, and will amend this MJHMP whenever necessary to reflect changes in Tribal or Federal laws and statutes as required in 44 CFR 13.11(d). The AEB Assembly adopted this MJHMP Update on ____, 2021. The City Councils of Akutan, False Pass, King Cove, and Sand Point adopted this MJHMP Update on ____, 2021, ____, 2021, ____, 2021, and ____, 2021, respectively. The Native Village of Nelson Lagoon Tribal Council adopted this MJHMP Update on ____, 2021. Scanned copies of each governing body's formal adoption resolutions and FEMA's final approval letters are included in Appendix B.

3.0 Community Description

This section describes the location, geography, climate, community types, and history; demographics; economy of the AEB; transportation options; and community boundaries.

3.1 Location, Geography, Climate, Community Types, and History

Location and Geography

The AEB is the westernmost portion of the Alaska Peninsula and a small number of the Aleutian Islands, about 600 miles southwest of Anchorage and 350 miles southwest of Bethel (Figure 1). Based in Sand Point, there are five incorporated cities and the Native Village of Nelson Lagoon within the AEB (note: Cold Bay is an incorporated city within the AEB but is not a jurisdiction included in this MJHMP Update). The AEB encompasses approximately 6,988 square miles of land and 8,023.5 square miles of water. The AEB is in the Aleutian Island recording district. The AEB population is spread out along the Alaska Peninsula as well as Akutan Island, Unga Island, Unimak Island, and Popof Island. In all, about 63.9% of AEB's area comprises land on the Alaska Peninsula, while 36.1% is on numerous islands.

Figure 1. Location Map

Climate

The AEB is located within the southwest maritime climate zone. The area is characterized by persistently overcast skies, high winds, and frequent cyclonic storms. Fog during summer and high winds during winter can limit accessibility. Temperature ranges vary slightly throughout the AEB (-13 degrees Fahrenheit [°F] to 77°F), and snow can occur during eight months of the year. Average annual precipitation is 38 inches with an annual snowfall of 63 inches.

Community Types

Nearly all AEB residents live along the coast. Table 1 provides an overview of community types.

Table 1. Jurisdictions for this MJHMP Update

Jurisdiction	Classification	Year Incorporated	Form of Government	Population*
Aleutian East Borough	2nd Class Borough	1987	Strong Mayor	3,008
Akutan	2nd Class City	1979	Strong Mayor	990
False Pass	2nd Class City	1990	Strong Mayor	42
King Cove	1st Class City	1949	Strong Mayor	919
Tribal Village of Nelson Lagoon	Unincorporated/CDP	N/A	N/A	30
Sand Point	1st Class City	1978	Strong Mayor	897

*Alaska Department of Commerce, Community, and Economic Development (DCCED) 2019 Certified Populations.

**Note that the total population for the AEB in this table does not total to 3,008. Cold Bay is not included as a jurisdiction for this MJHMP Update. Other settlements in the AEB include Pauloff Harbor, Sanak, Port Moller, Unga, Belkofski, and Squaq Harbor.

Figure 2 shows the planning area of the AEB.

Akutan is located 766 air miles southwest of Anchorage and 35 miles east of Unalaska and is located within the Fox Island group at approximately 54.1338º north latitude and -165.7768º west longitude. The City has 65.58 square miles of land and 82.33 square miles of water.

False Pass is located on the eastern shore of Unimak Island on a strait connecting the Pacific Gulf of Alaska to the Bering Sea. It is 646 air miles southwest of Anchorage. It lies at approximately 54.8549º north latitude and -163.4119º west longitude. The area encompasses 26.8 square miles of land and 41.4 square miles of water.

King Cove is located on the south side of the Alaska Peninsula, on a sand spit fronting Deer Passage and Deer Island. It is 18 miles southeast of Cold Bay and 625 miles southwest of Anchorage. It lies at approximately 55.0607º north latitude and -162.3161º west longitude. The area encompasses 25.3 square miles of land and 4.5 square miles of water.

Nelson Lagoon is located on the northern coast of the Alaska Peninsula, on a narrow sand spit that separates the lagoon from the Bering Sea. It is 580 miles southwest of Anchorage. It lies at approximately 56.0012º north latitude and -161.2019º west longitude. The width of the spit is approximately 1,900 feet near the community. The community is located on a series of vegetated sand dunes gradually increasing in size to the north to an elevation of approximately 20 to 30 feet (HDR, 2011).

Sand Point is located on Humboldt Harbor on Popof Island, off the Alaska Peninsula, 570 air miles from Anchorage. It lies at approximately 55.3516º north latitude and -160.4756º west longitude. The area encompasses 7.8 square miles of land and 21.1 square miles of water.

Figure 2. AEB Planning Area

History

Archaeological evidence suggests Unanga (Aleut) tribes inhabited the AEB area since the last ice age. Early contact was with Russian fur traders who sought sea otters in these islands. The Unanga were called "Aleut" by Russian traders. The 1900s brought an influx of Euro-American fishermen interested in the area's whaling, fishing, and cannery operations. During World War II, the area was a strategic military site for the Aleutian Campaign, resulting in the evacuation of many local residents to Ketchikan.

Akutan began in 1878 as a fur storage and trading port for the Western Fur & Trading Company. The company's agent established a commercial cod fishing and processing business that quickly attracted nearby Unangan to the community. A Russian Orthodox church and a school were built in 1878. Alexander Nevsky Chapel was built in 1918 to replace the original structure. The Pacific Whaling Company built a whale processing station across the bay from Akutan in 1912. It was the only whaling station in the Aleutians and operated until 1939. After the Japanese attacked Unalaska in June 1942, the United States (U.S.) government evacuated Akutan residents to the Ketchikan area. The community was re-established in 1944, although many residents chose not to return.

The Aleut name for False Pass is "Isanax" which means "The Pass". Shallow waters and the narrowness of the channel caused the community and strait to be called False Pass, but it is indeed a major throughway between the North Pacific and the Bering Sea for all but the largest vessels. Originally homesteaded by William Gardner in the early 1900s, the community began to grow when P.E. Harris established the first seafood cannery in False Pass in 1917. Many of the original buildings came from a cannery that was abandoned in Morzhovoi Bay, about 30 miles away. Natives immigrated from Morzhovoi Bay, Sanak Island, and Ikatan when the cannery was built. A post office was established in 1921. The cannery operated continuously, except for 1973 to 1976, when two hard winters depleted fish resources. It was eventually purchased by Peter Pan Seafoods and dominated the economy of the community for decades. In 1981, most of the cannery was consumed in a fire, although some buildings and facilities

remain. Peter Pan does not process fish in False Pass but has equipment. Trident and Silver Bay play a vital role in the community; Trident operates fuel sales, and the Isanotski Corporation runs the store.

King Cove was founded as a salmon cannery location in 1911. Early settlers were Scandinavian, European, and Unangan fishermen. The cannery operated continuously between 1911 and 1976, when it was partially destroyed by fire. The adoption of the 200-mile fisheries limit spurred rebuilding. King Cove remains tied to fishing and fish processing.

Nelson Lagoon was used historically as an Unangan summer fish camp. The resources of the lagoon and nearby Bear River are excellent. The lagoon was named in 1882 for Edward William Nelson of the U.S. Signal Corps, an explorer in the Yukon Delta region between 1877 and 1920. A salmon saltery operated from 1906 to 1917, which attracted Scandinavian fishermen, but there has been no cannery since that time. In 1965, a school was built, and the community began to be occupied year-round.

Sand Point was founded in 1898 by a San Francisco fishing company as a trading post and cod-fishing station. Aleuts from surrounding areas and Scandinavian fishermen were the first residents of the community. Sand Point served as a repair and supply center for gold mining during the early 1900s, but fish processing became the dominant activity in the 1930s. The Saint Nicholas Chapel, a Russian Orthodox church, was built in 1933 and is now on the National Register of Historical Places. Aleutian Cold Storage built a halibut plant in 1946. Today, Sand Point is home to the largest fishing fleet in the Aleutian Chain. The AEB office is based in Sand Point.

3.2 Demographics

The 2010 U.S. Census population was 3,141 residents for the AEB. Figure 3 shows the AEB population by community as Alaskan boroughs were not established until the 1980 Census. The most recent 2019 DCCED certified population was 3,008, of which the median age was 43 years (ACS, 2019). The population of the AEB is expected to remain steady because well over half of the population is between 18 and 44 years of age. The racial makeup of the AEB is predominantly Alaskan Native at approximately 46.7% of the population. The second largest demographic is Asian with approximately 19.7% of the total population, and the third largest demographic is Caucasian with approximately 15.1% of the total population. The male and female composition is each approximately 60.1% and 39.9%, respectively (ACS, 2019).

3.3 Economy

AEB's economy is based primarily on fisheries, subsistence, and other general employment opportunities that exist throughout the communities. A total of 2,403 residents are employed, and 557 adults are not in the labor force (not seeking work) (ACS, 2019). The per capita income is $33,939. The median and mean household incomes within the AEB are $69,706 and $81,570, respectively (ACS, 2019). Nearly 14.8% of residents live below the poverty level (ACS, 2019).

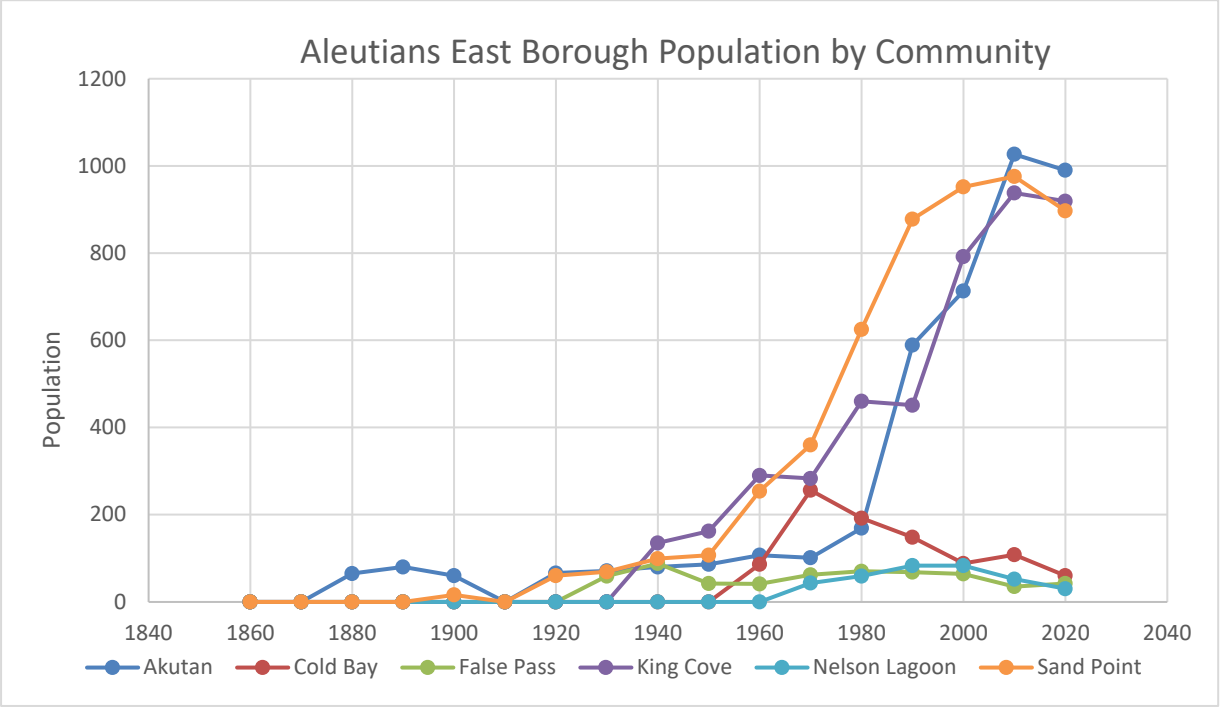


Figure 3. Historic Population

3.4 Transportation

Steep terrain prevents Akutan from having an airstrip; a seaplane base is available and open to the public. Akutan is accessible by boat and amphibious aircraft. The land-based Akutan Airport was opened in 2012 on Akun Island, and services Akutan by a helicopter. The State ferry serves Akutan from May to September. Akutan has a 100-foot public dock and a 58-vessel mooring basin and breakwater was completed by the U.S. Army Corps of Engineers (USACE) in 2013. Trident Seafoods owns several commercial docks. The Tribe has applied for funding for a two-mile harbor access road, with the purpose of connecting the community with the nation's second-largest seafood port.

Boats and aircraft provide the only means of transportation into False Pass. A seaplane base and a State-owned gravel airstrip are available. Mail and passenger flights arrive three times weekly. There is a boat harbor with electricity and water at the floats, and a dock and boat ramp are available. Cargo barges are available from Seattle. The State ferry operates once a month between May to September from Homer.

King Cove is accessible by air and sea only. A State-owned gravel runway is available. Mail and passenger flights arrive at least four times a week. Gale force crosswinds are common, as the airport lies in a valley between two volcanic peaks. The State ferry provides bi-monthly service to King Cove between May and September from Homer. In addition, one public deep-water dock is available in King Cove. The dock can be used by fuel and cargo barges, the State ferry, and large fishing vessels. In addition, there are two harbors operated by the City that provide

moorage for vessels up to 150 feet in length.

Nelson Lagoon is accessible only by air and sea. A State-owned gravel runway serves regularly-scheduled flights. It has a dock, boat ramp, harbormaster's office, and warehouse. Some freight is landed at the Peter Pan Seafoods dock, 30 miles away at Port Moller.

Sand Point has a State-owned airport with a paved runway. Direct flights to Anchorage are available. Marine facilities include a 25-acre boat harbor with five floats, 134 boat slips, harbor house, barge off-loading area, and a 150-ton lift. The City is working to add additional floats to the new harbor. A new dock was constructed in 2019. Regular barge services supply the community. The State ferry serves Sand Point between May and September.

3.5 Boundaries of Each Community

Figures 4 through 8 show each community's boundaries.

This Page Intentionally Left Blank

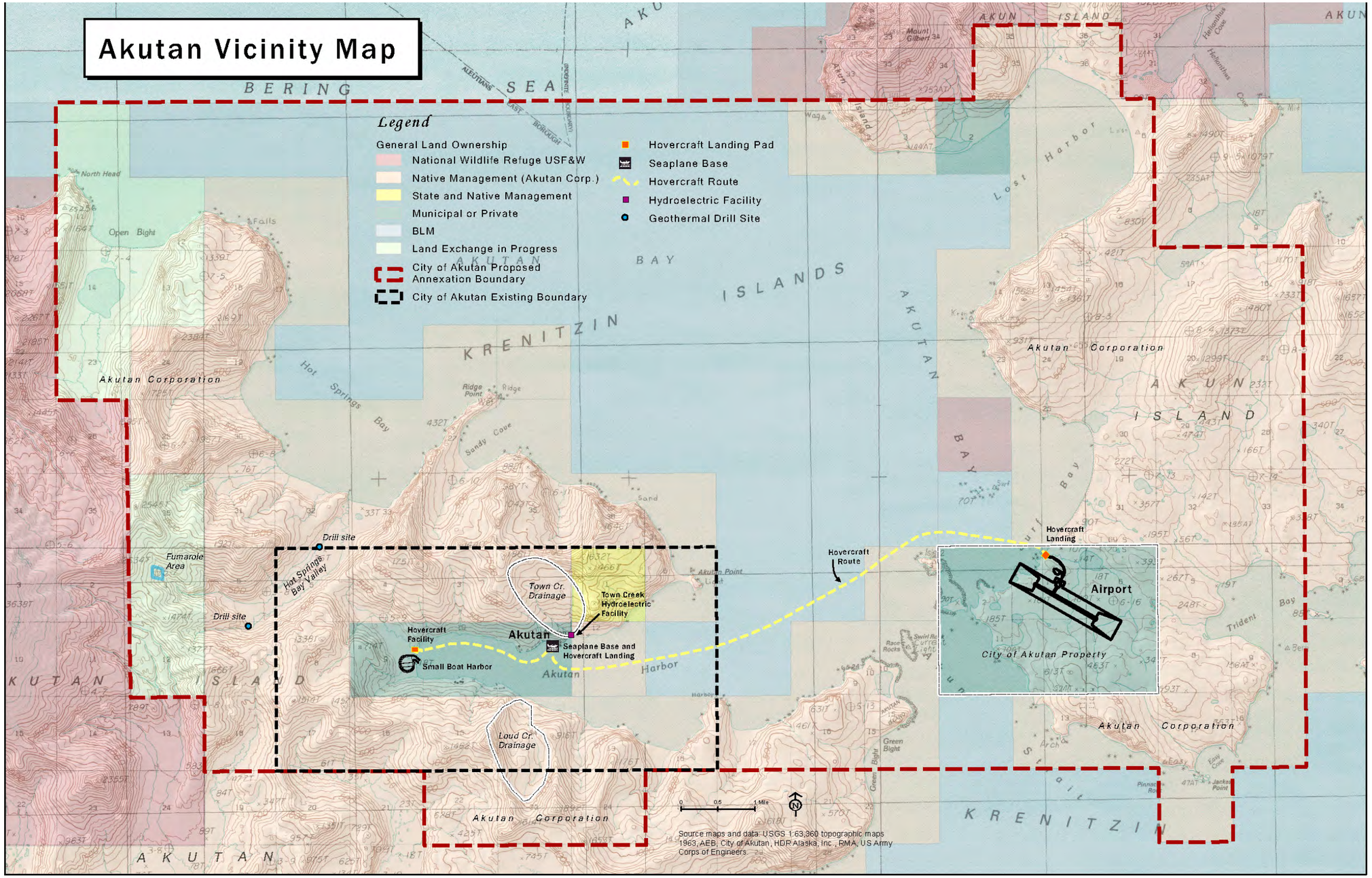


Figure 4. City of Akutan Boundaries

This Page Intentionally Left Blank

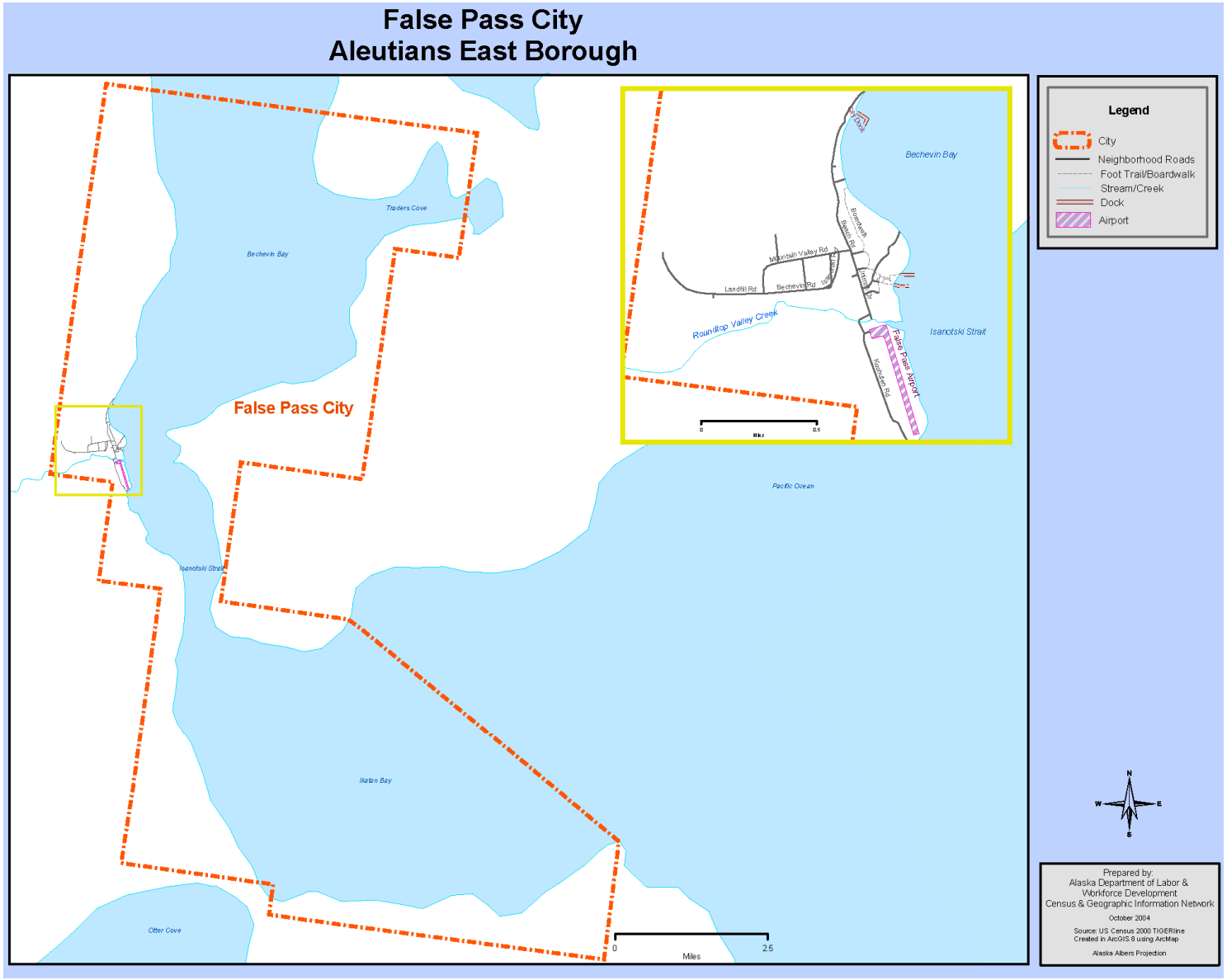


Figure 5. City of False Pass Boundaries

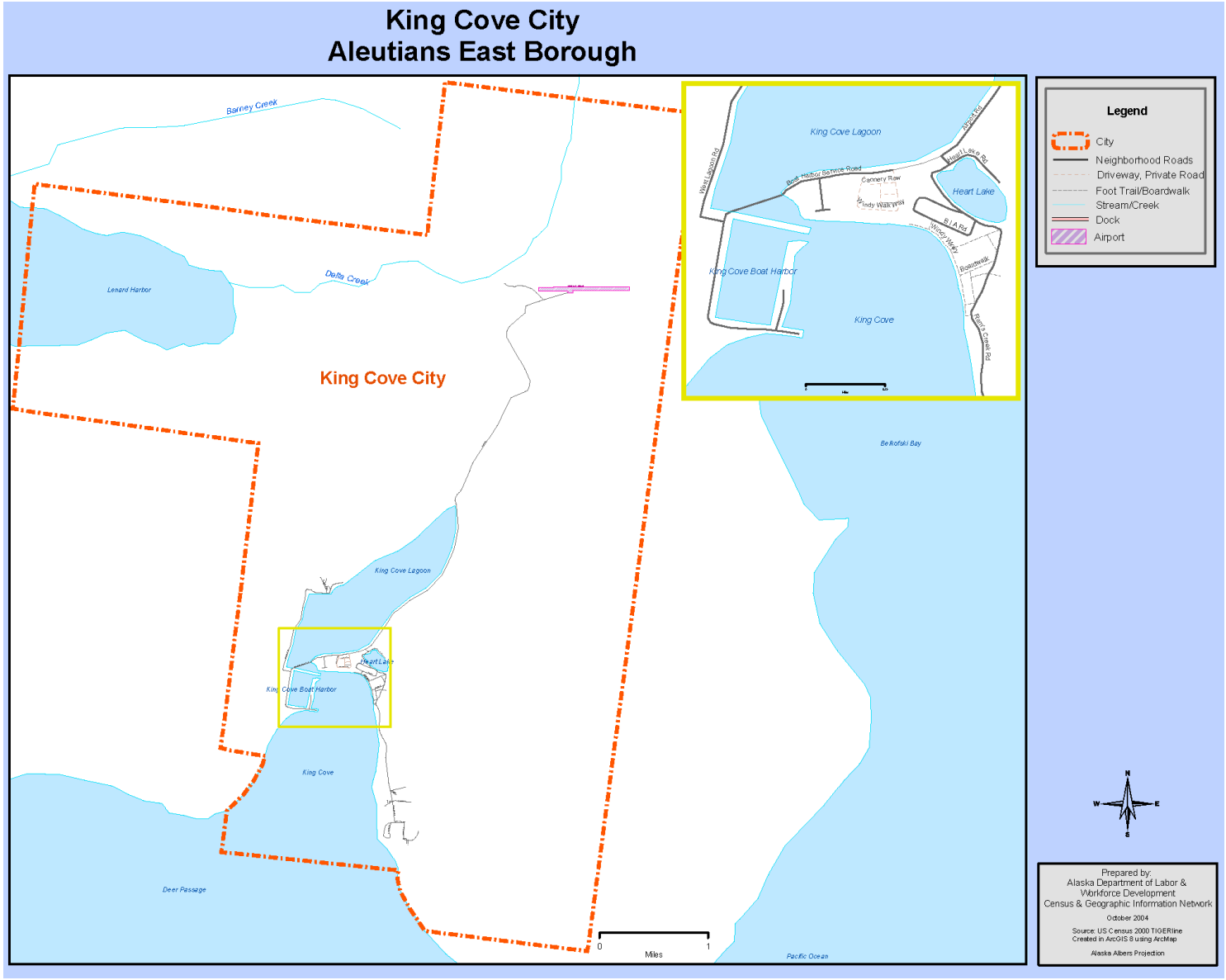


Figure 6. City of King Cove Boundaries

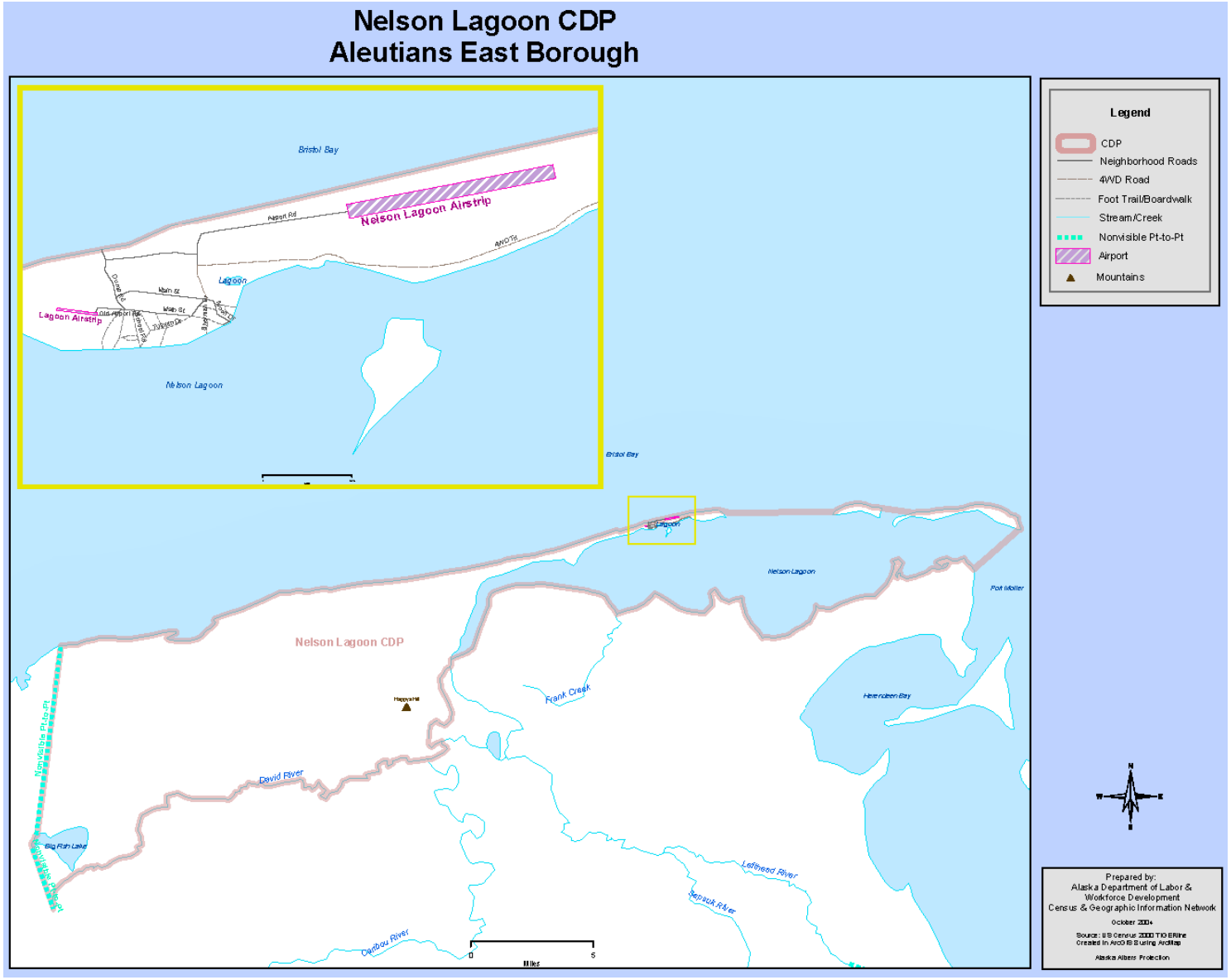


Figure 7. Nelson Lagoon CDP Boundaries

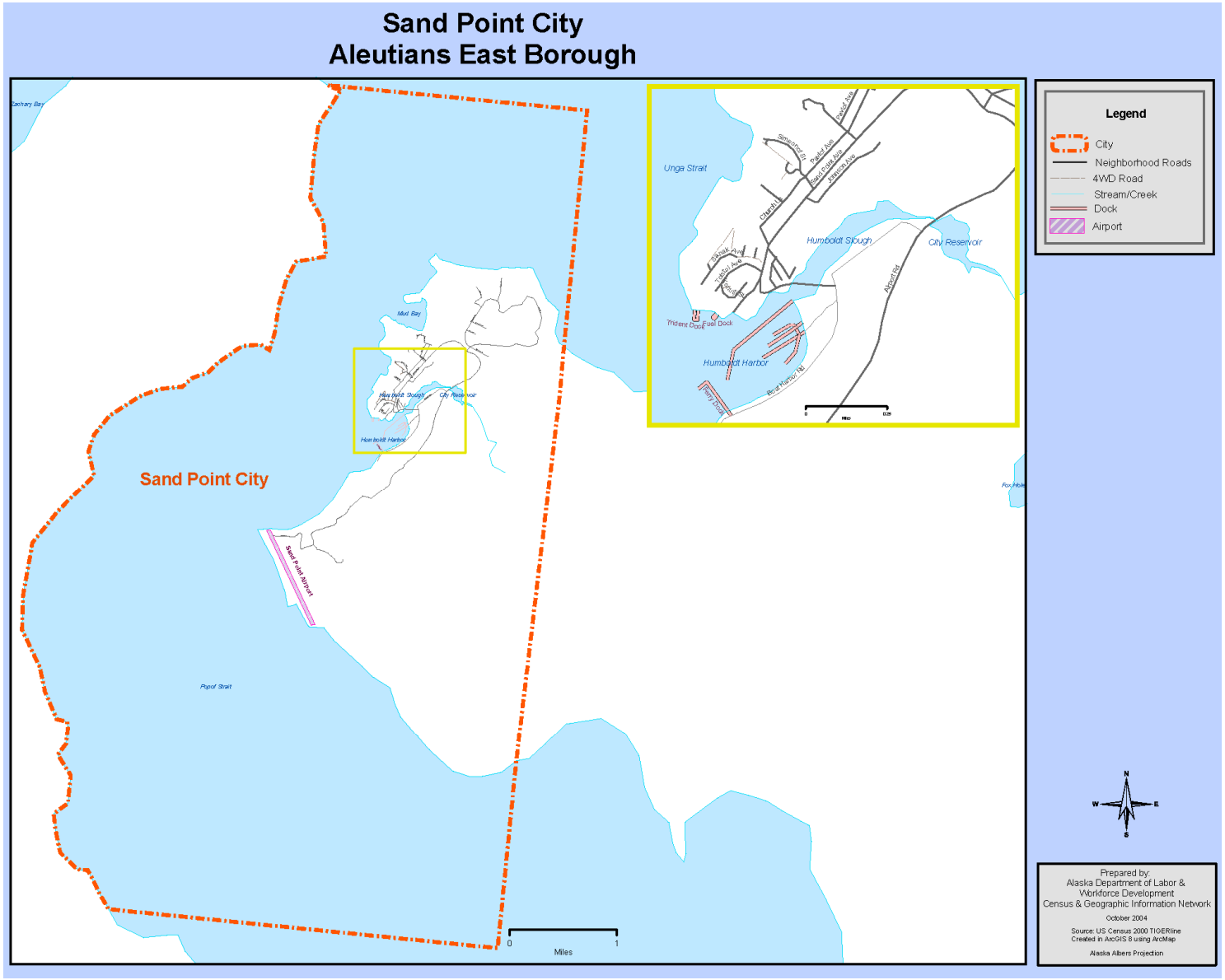


Figure 8. City of Sand Point Boundaries

4.0 Planning Process

This section 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 update this 2021 MJHMP Update. Additional information is provided in Appendix A.

The requirements for the planning process, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements
1. REGULATION CHECKLIST
Local and Tribal Planning Processes **§201.6(b) and §201.7(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 A components in the Plan.
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? **[Requirements §201.6(c)(1) and §201.7(c)(1)]** A2. Does the Plan document how the public was involved in the planning process during the drafting stage? **[Requirements §201.6(b)(1) and §201.7(c)(1)(i)]** A3. 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? **[Requirements §201.6(b)(2) and §201.7(c)(1)(ii)]** A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? **[Requirements §201.6(b)(3) and §201.7(c)(1)(iii)]**
Source: FEMA, 2015.

4.1 Overview of Planning Process

Updates to the 2021 MJHMP include:

- Revised community demographic and economic information;
- A review of the local hazards facing the planning area;
- A revised hazard vulnerability assessment;
- An assessment of the progress made towards mitigating those hazards from the 2010 MJHMP; and
- Development of additional mitigation actions, and re-prioritization of hazards and all remaining mitigation actions to implement.

LeMay Engineering & Consulting, Inc. was hired by the State of Alaska Department of Homeland

Security and Emergency Management (DHS&EM) to guide development of the Planning Team to assist the AEB with the 2021 MJHMP Update. The planning process began with Jennifer LeMay as an agenda item on the December 10, 2020 AEB Assembly meeting. The Planning Team discussed the AEB's roles such as: acting as an advocate for the planning process, assisting with gathering information, and supporting public participation opportunities. There was also a brief discussion about hazards that affect the community (Section 5). Changes in the cryosphere was added as a hazard to the 2021 MJHMP Update per the 2018 State of Alaska HMP.

The Planning Team updated critical facilities and evaluated mitigation goals and actions from the 2010 MJHMP. Some mitigation goals were changed due to the 2018 State of Alaska HMP requirements and a change in the AEB's priorities. Some mitigation actions are no longer a priority and were identified as such. Current statuses were added to mitigation actions from the 2010 HMP, and new projects were developed. All remaining projects were then prioritized (Chapter 7).

In summary, the following six-step process occurred from December 2019 through March 2020.

- 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 2021 MJHMP Update.
- Engage the public: The Planning Team developed an online survey to gauge AEB residents' concern with hazards that could potentially affect their community areas. Teleconference meetings were held during the updating process and broadcast on the radio to provide opportunities for input. Additionally, the Draft 2021 MJHMP Update was posted on the AEB's website for a public comment period.
- Monitor, evaluate, and update the 2010 MJHMP: The Planning Team evaluated their implementation process to ensure compatibility with community needs, making changes for an even better process starting in 2026.
- Assess risks: The Planning Team confirmed the hazards that were of concern to the communities and updated the risk assessment for identified hazards. The Planning Team reviewed the risk assessment, including the vulnerability analysis, prior to and during the update and development of the 2021 mitigation strategy.
- 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.
- Update the mitigation strategy: The Planning Team updated the mitigation goals and actions from 2010. Subsequently, the AEB identified completed projects, and all jurisdictions jointly developed mitigation goals, actions, and prioritized future projects into a mitigation strategy (Section 7).

4.2 Hazard Mitigation Planning Team

Table 2 identifies the Hazard Mitigation Planning Team.

Table 2. Hazard Mitigation Planning Team

Name	Title	Organization	Contact Information
Alvin Osterback	Mayor	AEB	aosterback@aeboro.org
Anne Bailey	Administrator	AEB	abailey@aeboro.org
Mary Tesche	Assistant Administrator	AEB	mtesche@aeboro.org
Laura Tanis	Communications Director	AEB	ltanis@aeboro.org
Tina Anderson	Clerk/Planner	AEB	tanderson@aeboro.org
Tuna Scanlan	City Administrator	Akutan	tuna.scanlan@akutanak.us
Farha Karim	Assistant City Administrator	Akutan	farha.karim@akutanak.us
Nikki Hoblet	Mayor	False Pass	mayor@falsepass.net
Carleen Hoblet	Deputy Clerk	False Pass	carleenh@falsepass.net
Shane Hoblet	City Council Member	False Pass	
Gary Hennigh	City Administrator	King Cove	ghennigh@kingcoveak.org
Jordan Keeler	City Administrator	Sand Point	jkeeler@sandpointak.org
Justine Gunderson	Tribal Administrator	Nelson Lagoon	jgunde1125@aol.com
Mark McNeley	Indian General Assistant Program Coordinator	Nelson Lagoon	mr.mcneley@gmail.com
Warren Wilson	Member/Resident of King Cove	AEB Assembly	tanderson@aeboro.org
Paul Gronholdt	Member/Resident of Sand Point	AEB Assembly	
Chris Babcock	Member/Fire Chief/Resident of King Cove	AEB Assembly	
Brenda Wilson	Member/Resident of King Cove	AEB Assembly	
Carol Foster	Member/Resident of Sand Point	AEB Assembly	
Josephine Shangin	Member/Resident of Akutan	AEB Assembly	
Denise Mobeck	Member/Resident of Sand Point	AEB Assembly	
Samantha McNeley	Advisory Member representing Nelson Lagoon/Resident of Nelson Lagoon	AEB Assembly	
Tom Hoblet	Advisor Member representing False Pass/Resident of False Pass	AEB Assembly	
Dailey Schaack	Advisory Member representing Cold Bay/Resident of Cold Bay	AEB Assembly	
Jennifer LeMay, PE, PMP	Hazard Mitigation Planner	LeMay Engineering & Consulting, Inc.	jlemay@lemayengineering.com; jenniferlemaype@gmail.com

Rick Dembroski	PDM/BRIC Program Manager	DHS&EM	rick.dembroski@alaska.gov
Terrence Murphy	State Hazard Mitigation Officer	DHS&EM	terry.murphy@alaska.gov

4.3 Public Involvement & Opportunity for Interested Parties to Participate

Table 3 lists public involvement initiatives focused to encourage participation and insight for the 2021 MJHMP Update effort.

Table 3. Public Involvement Mechanisms

Mechanism	Description
December 10, 2020: • Strategic Plan Update Workshop from 12 – 3 pm; • AEB Assembly Meeting from 3-5:19 pm	AEB Assembly Meeting Meeting packets were available on the AEB's website at www.aleutianseast.org. Due to COVID-19, the meeting was not held in public locations. The meeting was broadcast and streamed on KSDP Public Radio at http://apradio.org/. Jennifer LeMay gave a presentation summarizing the Hazard Mitigation Planning Process (see Appendix A for PowerPoint slides).
January 20, 2021	Telephonic meeting with the Points of Contact for AEB, Akutan, King Cove, False Pass, Nelson Lagoon, and Sand Point.
January 21 – February 12, 2021	Public Survey was conducted via online link to the AEB's website. The AEB its communities with social media access posted the survey link on their Facebook Pages. False Pass and Nelson Lagoon do not have Facebook pages and posted flyers on community bulletin boards to invite the public to participate.
January 27, 2021	The AEB's **In the Loop** Newsletter was emailed to all 98 subscribers from the region. The total number of subscribers who received the newsletter were 181 and include State and Federal employees and Stakeholders within and outside the AEB region as well as journalists outside of the region.
February 5, 2021	The AEB Communications Director reported to the AEB Mayor and AEB Assembly that a couple of **In the Loop Newsletters** were emailed to remind people to take the Public Survey. This information was also posted on the AEB Facebook Page.
February 11, 2021 • Strategic Plan Update Workshop from 1 – 3 pm;	AEB Assembly Meeting Meeting packets were available on the AEB's website at www.aleutianseast.org. Due to COVID-19, the meeting was not held in public locations. The meeting was

• AEB Assembly Meeting from 3-3:43 pm	broadcast and streamed on KSDP Public Radio at http://apradio.org/. Jennifer LeMay gave a presentation summarizing the natural hazards with the potential to impact the AEB and its communities as well as mitigation items (see Appendix A for PowerPoint slides).
Public Comment, submitted March 8, 2021 that was read at the March 11, 2021 AEB Assembly Meeting	AEB Assembly meeting packets were available on the AEB's website at www.aleutianseast.org. Due to COVID-19, the meeting was not held in public locations. The meeting was broadcast and streamed on KSDP Public Radio at http://apradio.org/. Jennifer LeMay submitted a public comment that was read. Public comment: The Draft MJHMP Update for the AEB (including Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point) will be out for review in the next week or two. An **In the Loop** newsletter will announce the availability of the Draft MJHMP Update for review, and the MJHMP Update will be posted on the AEB's website. A public hearing will be held during the April 8 AEB Assembly Meeting as an agenda item to receive public comments.
March 29, 2021	Notice of the availability of the Draft MJHMP was provided to the public via an announcement on the AEB Facebook page, website, and **In the Loop** Newsletter. The Draft MJHMP Update was also emailed to the Team Members who provided email addresses in Table 2.
March 29 to April 16, 2021	Public Comment Period for the Draft MJHMP. Comments were received from two residents and were incorporated accordingly in the Revised Draft MJHMP that was submitted to the DHS&EM (see Appendix A).
April 8, 2021 AEB Assembly Meeting 3 pm	AEB Assembly meeting packets were available on the AEB's website at www.aleutianseast.org. Due to COVID-19, the meeting was not held in public locations. The meeting was broadcast and streamed on KSDP Public Radio at http://apradio.org/. Jennifer LeMay summarized the planning process and mitigation actions (see Appendix A for PowerPoint slides). Jennifer LeMay asked for comments on the Draft MJHMP. None were received during the meeting. Assembly Member Chris Babcock stated he was pleased with the Draft MJHMP.
April 9, 2021	Reminders to review the Draft MJHMP were provided to the public via an announcement on the AEB Facebook page and **In the Loop** Newsletter.

From January 21 to February 12, 2021, the AEB posted a public survey regarding hazard mitigation on its website. Fifty-seven people answered the survey. Survey results are briefly

summarized below and are contained in their entirety in Appendix A.

- The top three communities that responded were Sand Point, King Cove, and Akutan.
- Seventy-one percent of respondents had lived in their community for 21 years or longer.
- The majority of respondents ranked social media, email, radio, mail, and the AEB website as their preferred method of obtaining information from the AEB.
- Fifty percent of respondents ranked severe weather as their first priority hazard, and 43% ranked earthquake as their first priority hazard.
- Nearly 60% of respondents were unsure of whether their community had hazard mitigation prevention measures such as building codes and community-specific regulations to influence the way land is developed and buildings are built.
- Public education and awareness such as outreach programs, public service announcements, and notices to residents and property owners were determined to be extremely important (47%) and very important (39%), respectively, to inform the public about natural hazards and the actions necessary to avoid potential injury or damage.
- Natural resource protection actions such as floodplain protection, habitat preservation, slope stabilizations, and riparian buffers in addition to minimizing losses were determined to be extremely important (39%), very important (30%) and somewhat important (26%), respectively, to preserve or restore the functions of natural systems.
- Protection such as placing generators in critical infrastructure to ensure electrical power during a widespread power failure was determined to be extremely important (58%) and very important (33%), respectively.
- Emergency service actions such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems were determined to be extremely important (70%) and very important (25%), respectively, to protect people and property during and immediately after a hazard event.
- Sixty-three percent of survey respondents thought that critical facilities had average vulnerability. Twenty-five percent thought critical facilities were very vulnerable, and 11% thought critical facilities had minimal vulnerability.
- Three respondents in Sand Point stated their properties have a history of recorded damages. One noted that their roofing and siding blew off in a storm, one noted that both 2020 earthquakes with magnitudes above 7 caused damage to their property, and one said their property was an old building. Two respondents in False Pass stated their properties have had damage from winds over 100 miles per hour (mph). One respondent in Nelson Lagoon stated their backyard is eroding from Nelson Lagoon and the Bering Sea.
- Of the twelve responses received to the following open-ended question (Do you have other suggestions for possible mitigation actions/strategies?), responses included:
    - Maybe, an active siren to signal emergency.

- I am a classroom teacher. Our school is in the tsunami evacuation site. Families are assigned classrooms according to evacuation plans. I believe that the classrooms, and the school in general should have emergency supply kits on hand for evacuees-food, bedding, first aid, water, etc. If the supplies were already in the classrooms (in storage), we'd be prepared to really assist evacuees.
- Need community container with emergency supplies, stand-alone generator at a community facility.
- I believe we need something in place for evacuations to make sure people with no rides, especially from the boat harbor, have a way to safely and quickly get to where they need to go.
- Need to know who lead manager or contact person is. Nobody knew the last time we had to go to the school during a tsunami/earthquake. Thanks to radio station to keep us somewhat informed.
- Need a secure plan where to relocate as the need becomes reality in Nelson Lagoon.
- Fix up old school for a shelter.
- Need more meetings to make public aware.
- Need strong/secure emergency shelter easily accessible for refuge, including alternative/redundant power sources and several months' supply of rations for the community. Shelters/rations for individual home owners.
- To my knowledge, the City does not have a plan in case of emergencies. I think this is extremely important.

4.4 Incorporation of Existing Plans and Other Relevant Information

The Planning Team incorporated relevant information from the following plans, studies, and technical reports into the 2021 MJHMP Update to adequately characterize the type, location, extent, previous occurrences, and probabilities of potential hazards within the jurisdictions. A complete list of references consulted is provided in Section 9.

- City of King Cove, Draft *Comprehensive Community Plan*, March 2006.
- City of Sand Point *Comprehensive Community Development Plan*, prepared by URS Corporation, September 2004.
- Communities of the *AEB Multi-Jurisdictional Multi-Hazards Mitigation Plan*, 2010, prepared by WHPacific and Bechtol Planning & Development.
- Division of Geological and Geophysical Survey (DGGS) *Regional Tsunami Hazard Assessment for Communities of Bristol Bay and the Pribilof Islands, Alaska*, 2020.
- DGGS *Regional Tsunami Hazard Assessment for False Pass and Perryville, Alaska*, 2019.
- DGGS *Tsunami Inundation Maps for the City of Sand Point, Alaska*, 2017.

- DGGS *Tsunami Inundation Maps for King Cove and Cold Bay Communities, Alaska*, 2016.
- DGGS *Tsunami Inundation Maps of Fox Islands Communities, Including Dutch Harbor and Akutan, Alaska*, 2015.
- *Nelson Lagoon Coastal Hazard Assessment*, 2021, prepared by Reyce Bogardus and Dr. Chris Maio, University of Alaska Fairbanks (UAF), Arctic Coastal Geoscience Lab (ACGL), February 2021.
- *Nelson Lagoon Coastal Erosion Study, 20% Preliminary Design Report*, 2015, prepared by HDR, Inc.
- *Nelson Lagoon Coastal Erosion Study Historical Shoreline Map Report,* 2014, prepared by HDR Alaska, Inc.
- *Nelson Lagoon Hazard Impact Statement*, 2011, prepared by HDR Alaska, Inc. with Shannon and Wilson.
- *Nelson Lagoon Strategic Economic and Community Development Plan,* November 2001.
- State of Alaska, DCCED/Division of Community and Regional Affairs (DCRA) Community Profile, provided historical and demographic information.
- State of Alaska DHS&EM *Hazard Mitigation Plan*, 2018, defined statewide hazards and their potential locational impacts.
- State of Alaska DHS&EM *Disaster Cost Index*, 2021, identified State Disaster Declarations.

5.0 Hazard Profiles

This section identifies and profiles the natural hazards with the potential to affect the AEB.

5.1 Overview of a Hazard Analysis

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. Even though a particular hazard may not have occurred in recent history in the planning area, all-natural hazards that may potentially affect the 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.

Hazard profiling is accomplished by describing hazards in terms of their characteristics, history, location, extent, impact, and recurrence probability. Hazards are identified through historical and anecdotal information, review of existing plans and studies, and preparation of hazard maps of the planning area. Hazard maps are used to determine the geographic extent of the hazards and define the approximate boundaries of the areas at risk.

5.2 Hazard Identification and Screening

The DMA 2000 requirements for hazard identification and screening are described below.

DMA 2000 Requirements
Identifying Hazards **§201.6(2)(i)** and **§201.7(c)(2)(i):** The risk assessment shall include a] description of the type, location and extent of all-natural hazards that can affect the jurisdictions. The Plan shall include information on previous occurrences of hazard events and on the recurrence probability of future hazard events for each jurisdiction. **§201.6(2)(ii)** and **§201.7(c)(2)(ii):** 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 and planning area? **§201.6(2)(ii):** Does the Plan address NFIP-insured structures within the jurisdiction that have been repetitively damaged by floods?
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? **[Requirements §201.6(2)(i)** and **§201.7(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? **[Requirements §201.6(2)(i)** and **§201.7(c)(2)(i)]** 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? **[Requirements §201.6(2)(ii)** and **§201.7(c)(2)(i)]** B4. Does the Plan address NFIP-insured structures that have been repetitively damaged by floods? **[Requirement §201.6(2)(ii)]**
Source: FEMA, 2015.

For the first step of the hazard analysis, on December 10, 2020, the Planning Team reviewed possible hazards that could affect the AEB. They then evaluated and screened the comprehensive list of potential hazards based on a range of factors, including prior knowledge or perception of the 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 (see Table 4). The Planning Team determined that six hazards pose the greatest threat to the AEB: earthquakes, tsunamis, severe weather, volcanoes, flooding/erosion, and changes to the cryosphere. Hazards excluded through the screening process were considered to pose a lower threat to life and property due to the low likelihood of occurrence or the low probability that life and property would be significantly affected.

Table 4. Identification and Screening of AEB and Its Communities Hazards

Hazard Type	Should It Be Profiled?	Explanation
Changes in the Cryosphere	Yes	King Cove has a history of avalanches. An ice level bench that has historically formed in the Bering Sea to protect Nelson Lagoon from erosion has failed to form since the 1990s.
Earthquakes	Yes	Alaska is an earthquake-prone state. The AEB and its communities are located in an active earthquake region which includes the Alaska-Aleutian Subduction Zone Fault. The 2018 *State of Alaska HMP* designates this hazard with a medium probability.
Flooding/Erosion	Yes	Nelson Lagoon is experiencing coastline erosion on the Bering Sea and Nelson Lagoon side of the spit. Akutan, False Pass, and King Cove are also experiencing erosion as they are located on coastlines.
Ground Failure (Landslide/Debris Flow)	No	Ground Failure is not a hazard.
Severe Weather	Yes	Severe weather (high winds and fog) frequently impacts the AEB and its communities. The 2018 *State of Alaska HMP* designates this hazard with a medium probability.
Tsunami/Seiche	Yes	The AEB and its communities are located on islands in the Bering Sea and North Pacific Ocean. The 2018 *State of Alaska HMP* designates this hazard with a high probability.
Wildfire and Conflagration Fires	No	Soil conditions, lack of fuel, and heavy rainfall combine to make a fire hazard unlikely. The 2018 *State of Alaska HMP* did not designate this as a hazard.
Volcanoes	Yes	The AEB and its communities are located within the "Ring of Fire". There are numerous volcanoes within the AEB, and the 2018 *State of Alaska HMP* designates this hazard with a medium probability. Ash periodically impacts the communities in the AEB, and communities lose their scheduled flight service as a result.

5.3 Hazard Profile

The Planning Team reviewed the AEB's local hazards using the following criteria:

- Characteristics (Type);
- History (Previous Occurrences);
- Location;

- Extent (to include breadth, magnitude, and severity);
- Impact (Section 5 provides general impacts associated with each hazard. Section 6 provides detailed impacts and a vulnerability summary of potential hazards to each jurisdiction's residents and critical facilities); and
- Recurrence Probability.

The hazards profiled are presented in the rest of Section 5.3. The order of presentation is in alphabetical order and does not signify the level of importance or risk.

5.3.1 Changes in the Cryosphere

5.3.1.1 Hazard Characteristics

The "cryosphere" is defined as those portions of Earth's surface and subsurface where water is in solid form, including sea, lake, and river ice; snow cover; glaciers; ice caps and ice sheets; and frozen ground (e.g., permafrost) (Figure 9). The components of the cryosphere play an important role in climate. Snow and ice reflect heat from the sun, helping to regulate the Earth's temperature. They also hold Earth's important water resources, and therefore, regulate sea levels and water availability in the spring and summer. The cryosphere is one of the first places where scientists can identify global climate change. Hazards of the cryosphere can be subdivided into four major groups:

- Glaciers;
- Permafrost and Periglacial Features;
- Sea Ice; and
- Avalanches.

Of these four major groups, sea ice and avalanches affect AEB communities.

Sea ice is frozen ocean water that forms, grows, and melts in the ocean (Figure 9). Sea ice grows during the winter and melts during the summer. Lack of sea ice during fall and winter increases the risk of coastal erosion from storms because the ice is not there to protect the shore.

A snow avalanche is a mass of snow, ice, and debris that releases and slides or flows rapidly down a steep slope, either over a wide area or concentrated in an avalanche chute or track. The damage caused by an avalanche varies based on the avalanche type, the consistency and composition of the avalanche flow, the flow's force and velocity, as well as the avalanche path. Their size, run-out distance, and impact pressure vary. Large avalanches have the potential to kill people and wildlife, destroy infrastructure, and bury entire communities. Significant avalanche cycles (multiple avalanches naturally releasing across an entire region) are generally caused by long periods of heavy snow, but avalanche cycles can also be triggered by rain-on-snow events, rapid warming in the spring, and earthquakes. Figure 10 shows Alaska's potential snow-avalanche areas.

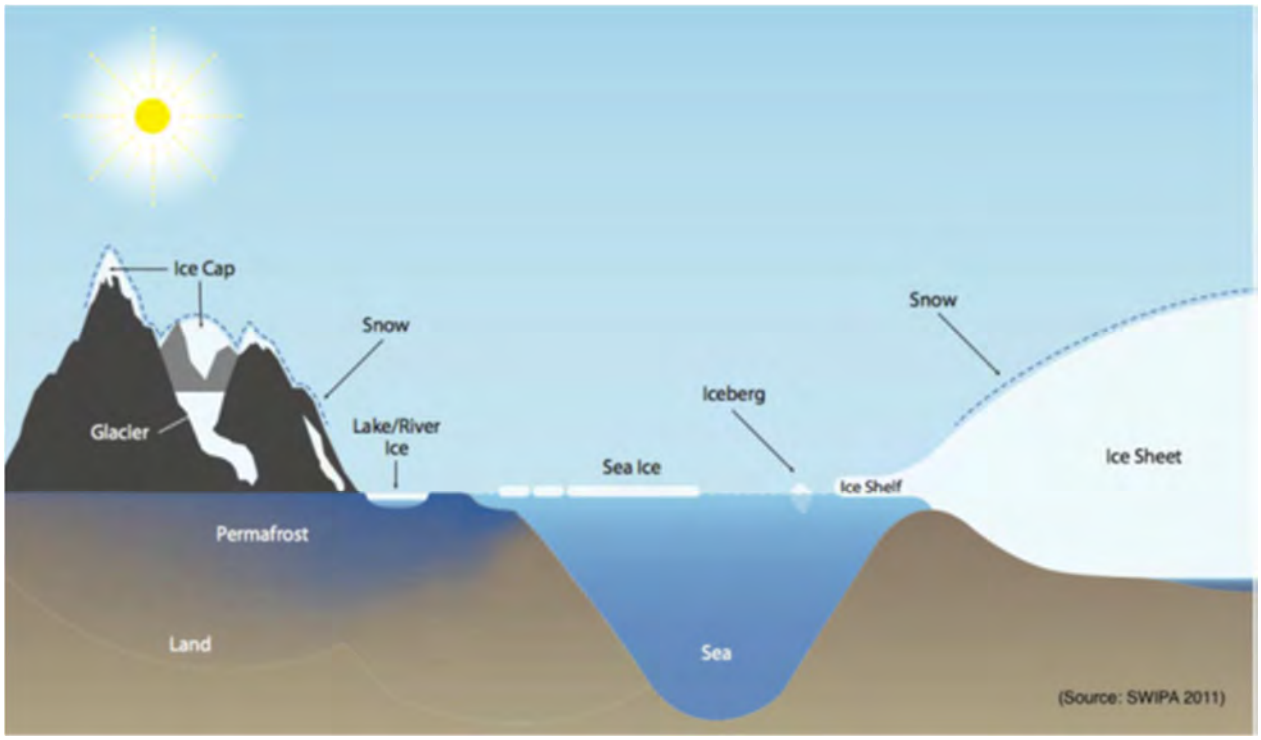


Figure 9. Cryosphere Components Diagram

Source: DHS&EM, 2018

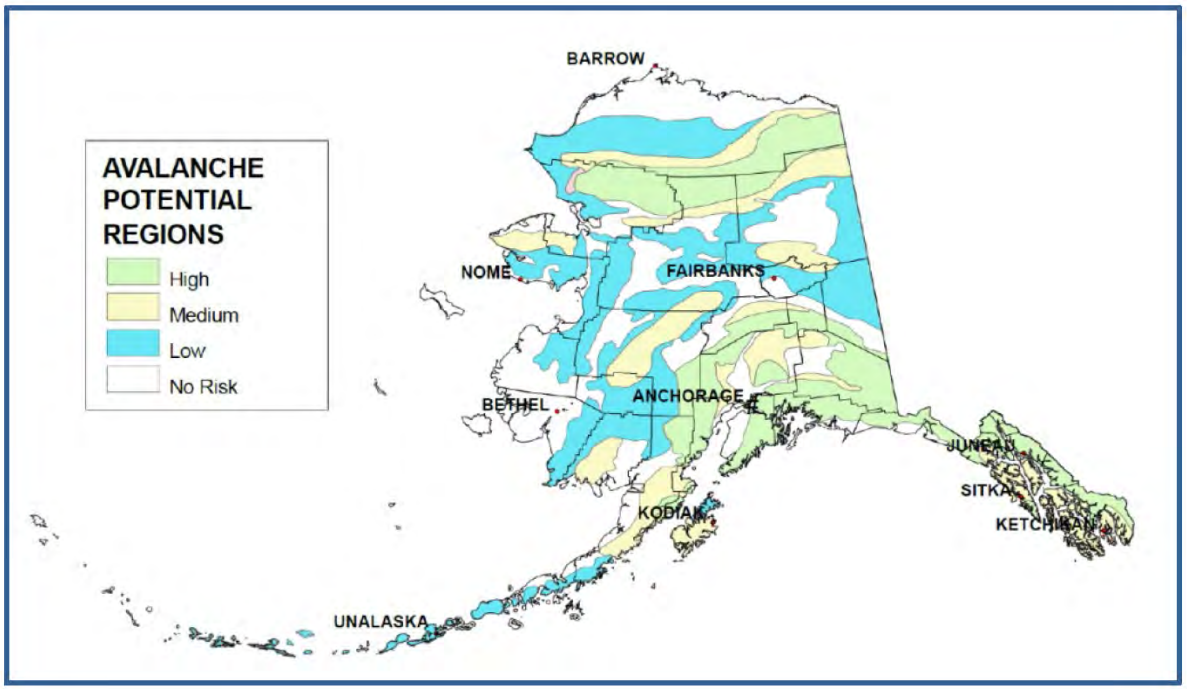


Figure 10. Map Depicting Alaska's Potential Snow-Avalanche Areas

5.3.1.2 Climate Factors

Climate has a major effect on changes in the cryosphere hazards because these hazards are closely linked to snow and ice. Changes can modify natural processes and increase the magnitude and recurrence frequency of certain geologic hazards (e.g., erosion), which if not properly addressed, could have a damaging effect on Alaska's communities and infrastructure, as well as on the livelihoods and lifestyles of Alaskans.

During the last several decades, Alaska has warmed twice as fast as the rest of the U.S. Sea ice and climate are intimately linked. An ice bench reduces wave development in the open ocean during winter months. Without an ice bench, waves can mechanically erode coastal beaches. Many villages are located along Alaska's coastline and are threatened by eroding shores, including Nelson Lagoon. The lack of sea ice to protect Nelson Lagoon is discussed in Section 5.3.3.3 as shoreline erosion is being exasperated due to sea ice not being available to protect the coast.

Some studies suggest that warming climate may increase avalanche risk due to changes in snow accumulation and moisture content, as well as loss of snowpack stability because of changing air temperature. Increased rain-on-snow event frequency is leading to an increase in avalanche hazards all across Alaska.

5.3.1.3 Hazard History

There is no written history of changes to the cryosphere for the AEB and its communities.

In 2021, King Cove residents stated that an avalanche occurred over 50 years ago and carried a house down the slope to the beach. No documentation of this event has been found. On February 1, 2012, an avalanche occurred and pummeled into the Alaska Commercial (AC) store. An article from The Bristol Bay Times by Hannah Heimbuch dated March 9, 2012, described this impact on the community:

> *"AC Store Manager, Jeff Watt, said he and several other employees typically would have been there at the time – around 7:50 p.m. on February 1 – but weather had prompted him to send everyone home early just 20 minutes before. When the crew arrived early the next morning, they noticed a few inches of water on the sales floor, leaking from broken pipes. The scene in the warehouse was more severe, with a snow slide taking up a large part of the room, 12 to 14 feet at its deepest level. The store stocks large appliances like washers, dryers and refrigerators, and of the 12 units stored in the warehouse, only two survived intact. 'It tossed one about 30 feet before it ran into something else,' Watt said. With such a heavy appliance getting tossed around like a basketball, Watt and his employees were fortunate to be on their way home when the snow hit. It took several bobcats and 20 people several days to get the snow cleared from the warehouse and clearing damaged merchandise and taking inventory took employees another two weeks.*
>
> *This has been a particularly undecided winter on the peninsula and in King Cove, with seriously fluctuating temperatures and high snowfall, which makes for an unstable snow pack. This was one of several avalanches that occurred over the span of a few days – albeit one of the most destructive seen in years. 'They've had a couple of avalanches at*

this store before,' Watt said, 'But it's opened the door a couple of feet. (This) probably came into my building a couple of hundred feet."

5.3.1.4 Location

Figure 11 shows these two approximate locations and identifies a third potential avalanche area of concern. No avalanche mapping has been done.

5.3.1.5 Extent

Alaska is at risk of affects from climate change. Historical climate data shows that the average annual temperature in Alaska has warmed about 4°F since the 1950s and 7°F in winter. The growing season has lengthened by about 14 days. Models predict continued warming, including an increase in temperature by 1.5 to 5°F by 2030 and 5 to 18°F by 2100.

Avalanches could cut off mobility of one side of King Cove to the other depending on where one occurred. This could prevent supplies and emergency personnel from being deployed. Avalanches are triggered by a variety of occurrences including earthquakes, seasonal freezing and melting, heavy rain, and human alterations.

Figure 11. King Cove Avalanche Areas

5.3.1.6 Impact

Large avalanches have the potential to kill people and wildlife, destroy infrastructure, and bury communities. The economic impacts of such avalanches, from impeding traffic to removing avalanche debris blocking the transportation corridor, can be significant at both the Local and State levels. Large avalanche cycles are more common in Alaska during pronounced climate events driven by changes in the Pacific Ocean, such as during La Niña/El Niño and the larger-scale Pacific Decadal Oscillation, that cause warmer air temperatures and heavier precipitation than normal.

Studies suggest that warming climate is increasing avalanche risk due to changes in snow accumulation, moisture content, and loss of snowpack stability because of changing air temperature. Increased rain-on-snow event frequency is leading to an increase in avalanche hazards. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated to increase as the climate warms.

5.3.1.7 Recurrence Probability

Changes to the cryosphere in the AEB are occurring and will continue to do so. The probability of future avalanche events is possible in King Cove which equates to an event having up to one in five year's chance to occur (1/5 = 20%).

5.3.2 Earthquakes

Alaska is one of the most seismically active regions in the world and is at risk of societal and economic losses due to damaging earthquakes. On average, Alaska has one "great" magnitude [(M) >8] earthquake every 13 years and one M 7-8 earthquake every year. Earthquakes have killed more than 130 people in Alaska during the past 60 years (DHS&EM, 2018).

It is not possible to predict the time and location of the next big earthquake, but the active geology of Alaska guarantees that major damaging earthquakes will continue to occur and can affect almost anywhere in the State. Scientists have estimated where large earthquakes are most likely to occur, along with the probable levels of ground shaking to be expected.

Alaska earthquake statistics include:

- Alaska is home to the second-largest earthquake ever recorded (1964 Great Alaska Earthquake, M 9.2);
- Alaska has 11% of the world's recorded earthquakes; and
- Three of the eight largest earthquakes in the world occurred in Alaska.

Since 1900, Alaska has had an average of:

- 45 M 5-6 earthquakes per year;
- 320 M 4-5 earthquakes per year; and
- 1,000 earthquakes located in Alaska each month.

Source: UAF - Alaska Earthquake Center (UAF-AEC), 2021

5.3.2.1 Hazard Characteristics

An earthquake is a sudden motion or trembling caused by a release of stress accumulated within or along the edge of 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 rupture area. 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 more damaging than seismic waves because they cause larger motions and their frequency is close to harmonic frequencies for human structures and for sedimentary deposits.

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

- **Strong Ground Motion** is ground shaking. Strong ground motion intensity is directly correlated with earthquake magnitude (i.e., the larger the earthquake magnitude, the more intense and widespread the ground shaking will be). The strong ground motion severity is also dependent on the distance from the energy source.
- **Surface Rupturing** occurs when the subsurface patch of fault that slips in an earthquake intersects the earth's surface. This causes discrete, differential ground movement during intense earthquake shaking. The relative crustal block motion is dictated by the rupture's fault type, which can be horizontal, vertical, or a combination of both. Earthquakes larger than a M of 6.5 have sufficient energy to create surface ruptures, but whether or not this occurs is dependent on the earthquake's depth. The shallower a depth at which a significant earthquake occurs, the more likely it is to create a surface rupture. Permanent displacement along faults can be substantial. Surface ruptures, as a product of intense strong ground motion, can cause severe damage to existing structures.
- **Landslides/Debris Flows** occur as a result of horizontal seismic inertia forces induced in the slopes by 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 completely 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 M. 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 rupture (where the fault moved). While the area directly above the rupture usually experiences the most intense earthquake effects (e.g., shaking), the total area affected can cover hundreds of thousands of square miles, depending on the earthquake's M.

Larger earthquakes are less common than smaller earthquakes, such that the smallest earthquakes are extremely frequent, while the largest earthquakes are relatively infrequent.

Earthquakes are also classified by their felt effects (e.g., perceived shaking intensity). However, the effects of an earthquake are directly related to the distance from the earthquake rupture, among other parameters such as the type of crust where the earthquake occurs. In general, the closer one is to an earthquake's epicenter, the more severe the felt effects and damage will be. An earthquake's intensity is described by the Modified Mercalli Intensity (MMI) Scale. As shown in Table 5, the MMI Scale consists of 10 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, 2006).

M is the measure of the earthquake's strength and 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.

Since the AEB lies in an active seismic area, large regional deformations could occur during earthquakes. Figure 12 shows active and potentially active faults throughout the State of Alaska.

Table 5. Perceived Shaking, Potential Damage, and Peak Ground Acceleration (PGA)

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
MMI scale	I	II–III	IV	V	VI	VII	VIII	IX	X+

5.3.2.2 Hazard History

Since 1920, 47 earthquakes have been recorded with a M of 6.0 or greater within a 150-mile radius of the approximate center of the planning area (55.53861° N, 161.8986° W) (Table 6). The largest two recorded Simeonof earthquakes within the last 20 years measured a M of 7.8 occurring on July 22, 2020, and a M of 7.6 occurring on October 19, 2020.

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. The AEB experienced minimal ground motion from this historic event. Planning Team members further stated that AEB communities experienced no ground shaking from the November 3, 2002 M7.9 Denali earthquake or the November 30, 2018 M7.1 Cook Inlet earthquake.

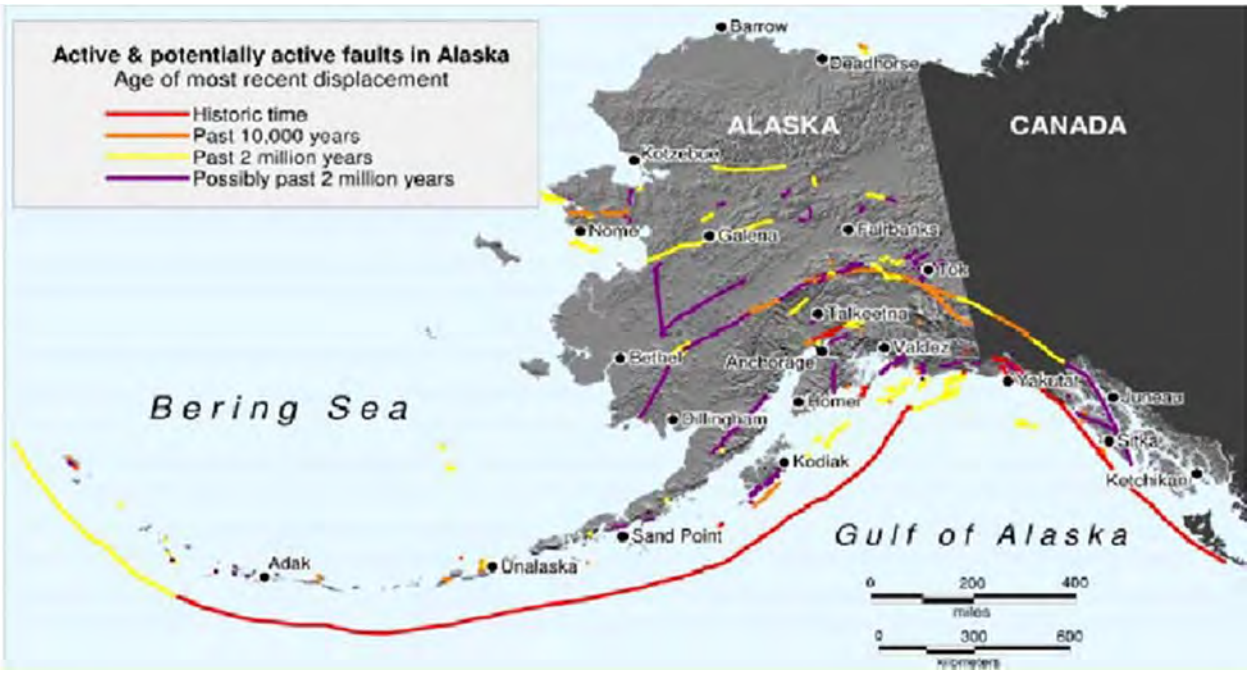


Figure 12. Active and Potentially Active Faults in Alaska

Additionally, the 2020 Simeonof earthquake provided disaster assistance to the AEB per the DHS&EM *Disaster Cost Index* (DHS&EM, 2021).

AK-20-271 2020 July Alaska Peninsula M7.8 Earthquake declared by Governor Dunleavy on October 28, 2020: At 10:13 pm on July 21, 2020, the National Tsunami Warning Center (NTWC) in Palmer, Alaska recorded a M 7.8 earthquake 61 miles south/southeast of Perryville and 75 miles south of Chignik. The magnitude and location of the earthquake triggered a tsunami warning for an approximately 800-mile-long coastline from Homer to Nikolski. Based upon the warning, multiple communities along the Southern, Kodiak, Alaska Peninsula and Eastern Aleutians coastline evacuated to higher ground. The State Emergency Operations Center (SEOC) recalled all operations staff and the Public Information Officer to support the community response. The SEOC received initial reports of strong earthquake shaking in several communities including Sand Point, Cold Bay, Perryville, and Chignik.

The NTWC issued wave arrival times for ten communities with the first wave, if generated, to reach Sand Point by 11:15 pm, and the rest of the communities over the next two hours. Several communities evacuated to higher ground. A major wave was not generated, but sea level gauges recorded a tsunami of 0.8 feet at Sand Point just after midnight on July 22. As a result, NTWC determined there was no threat and canceled the tsunami warning at 12:23 am.

As of September 14, the SEOC received disaster declarations from the City of Sand Point and the AEB. The July 22, 2020 earthquake and its October 19, 2020 aftershock were the largest and third largest earthquakes worldwide in 2020 and were both centered near Sand Point.

Table 6. Historical Earthquakes within a 150-Mile Radius of the Center of the AEB

Date	Latitude	Longitude	Depth	M	Location
2020-10-19	54.6093	-159.652	19.3	7.6	97 km SSE of Sand Point, Alaska; aftershock of the July 22, 2020 Simeonof Earthquake
2020-10-06	54.8444	-159.842	19.3	6	69 km SE of Sand Point, Alaska; aftershock of the July 22, 2020 Simeonof Earthquake
2020-07-28	54.7905	-161.204	21.8	6.1	Alaska Peninsula
2020-07-22	54.969	-159.041	10.3	6.1	101 km ESE of Sand Point, Alaska; aftershock of the July 22, 2020 Simeonof Earthquake
2020-07-22	55.0715	-158.596	17.4	7.8	99 km SSE of Perryville, Alaska; named the Simeonof Earthquake
2018-12-31	54.4266	-161.513	19.3	6	114 km SE of Cold Bay, Alaska
2011-07-16	54.787	-161.29	22.4	6.1	Alaska Peninsula
2007-10-02	54.511	-161.708	19.9	6.3	Alaska Peninsula
2005-11-20	53.843	-164.093	18.6	6.2	Unimak Island Region, Alaska
2002-05-25	53.815	-161.116	20.5	6.4	South of Alaska
1999-10-13	54.657	-161.189	18.6	6.4	Alaska Peninsula
1995-03-14	54.776	-161.339	21.8	6.2	Alaska Peninsula
1993-11-19	54.287	-164.164	18.8	6.5	Unimak Island Region, Alaska
1993-05-25	55.021	-160.513	22.9	6.2	Alaska Peninsula
1993-05-13	55.177	-160.458	20.1	6.9	Alaska Peninsula
1991-05-30	54.567	-161.606	17.6	7	Alaska Peninsula
1988-05-22	53.619	-163.267	20.5	6	Unimak Island Region, Alaska
1987-06-21	54.211	-162.601	20.9	6.5	Alaska Peninsula
1985-11-14	54.756	-159.787	20.5	6.1	South of Alaska
1985-10-09	54.765	-159.613	18.8	6.6	South of Alaska
1983-02-14	54.931	-159.189	29.2	6.5	South of Alaska
1979-01-27	54.768	-161.25	10.6	6	Alaska Peninsula
1975-08-02	53.387	-161.485	20.5	6.2	South of Alaska
1974-04-06	55.12	-160.443	24.9	6	Alaska Peninsula
1973-05-29	54.011	-163.76	18.6	6	Unimak Island region, Alaska
1966-05-19	53.934	-164.122	20.1	6	Unimak Island region, Alaska
1964-09-23	53.734	-163.84	21.4	6	Unimak Island region, Alaska
1963-01-28	54.578	-161.561	21.7	6.6	Alaska Peninsula
1961-01-14	53.693	-163.416	13.6	6	Unimak Island Region, Alaska
1956-04-22	53.649	-161.489	9.3	6.1	South of Alaska
1952-08-28	55.203	-160.422	26.8	6	Alaska Peninsula
1951-11-08	53.991	-161.134	21.7	6.2	South of Alaska
1948-05-14	54.61	-161.19	15.5	7.1	Alaska Peninsula
1946-04-01	53.492	-162.832	9.3	8.6	1946 Aleutian Islands (Unimak Island) Earthquake, Alaska
1941-11-06	54.155	-161.391	15.5	6.4	Alaska Peninsula
1941-08-06	55.75	-163	93.2	6.75	South of Alaska
1940-02-12	55	-161.5	UK	6.75	Alaska Peninsula
1939-08-20	54	-164	46.6	6.25	Unimak Island Region, Alaska
1939-02-24	54.05	-162.01	49.1	6.25	Alaska Peninsula
1938-11-11	55.017	-158.688	21.7	6.6	Alaska Peninsula

1938-11-10	55.178	-158.181	21.7	8.23	Alaska Peninsula
1937-04-29	54.649	-161.761	21.7	6.6	Alaska Peninsula
1933-10-14	53.75	-164	UK	6.25	Unimak Island Region, Alaska
1932-10-30	54.975	-159.696	21.7	6.3	South of Alaska
1932-10-16	54.852	-159.594	15.5	6.6	South of Alaska
1929-02-26	54.511	-162.855	18.6	6.4	Alaska Peninsula
1922-07-02	54.808	-161.21	21.7	6.6	Alaska Peninsula

Figure 13 illustrates seismicity for Alaska in 2020 courtesy of the UAF-AEC. Figure 13 labels call attention to earthquakes with Ms larger than 6.0. The M7.8 Simeonof Earthquake and its M7.6 aftershock were the largest and third largest earthquakes worldwide in 2020. In total, the UAF - AEC reported about 49,250 seismic events in Alaska and nearby regions in 2020, making it the State's third largest year, after 2018 (about 55,000 seismic events) and 2019 (about 50,000 seismic events). The M7.8 Simeonof Earthquake was significant in many ways from producing a small tsunami and damage to coastal Alaska Peninsula communities to its potential impact on the UAF - AEC's understanding of the Aleutian Megathrust and subduction beneath Alaska.

According to UAF - AEC, 2021:

"The M7.8 Simeonof Earthquake and M7.6 aftershock both caused damage in several Alaska Peninsula communities and prompted tsunami evacuations, although fortunately neither triggered significant tsunamis.

These two earthquakes were also some of the most scientifically interesting of 2020. Historically, large earthquakes have occurred along the Aleutian Islands chain, with the exception of the region near the Shumagin Islands. Seismologists have long suspected the "Shumagin Gap" would eventually experience a large earthquake. On July 22, a M7.8 earthquake struck the Shumagin Islands region, just south of Simeonof Island. On October 19, a M7.6 aftershock shook the region. The Simeonof earthquake series partially filled this long-recognized seismic gap.

There are more differences than similarities between the two earthquakes. The July M7.8 earthquake ruptured a section of the megathrust boundary between the subducting Pacific and overriding North American plates. The October rupture zone was much smaller than the M7.8 fault and located farther off-shore and closer to the ocean trench where the tectonic plates meet. The M7.6 earthquake had a different source mechanism (or faulting type) and was possibly associated with a fault inside the subducting Pacific plate rather than on the plate interface. Prior to the October 19 aftershock, we recorded over 2,200 aftershocks with the largest magnitude of 6.1. The M7.6 earthquake generated its own aftershock sequence, which has produced more aftershocks than the M7.8 sequence. Combined we have recorded more than 6,400 aftershocks. We expect this Simeonof aftershock sequence to continue through most of 2021, at least.

The July 22, 2020 M7.8 earthquake occurred on the well-known subduction zone interface off the Alaska Peninsula. Strong shaking was reported from Perryville and Sand Point to King Cove and Cold Bay. Weak shaking was felt more than 500 miles away in the Matanuska-Susitna Borough and Anchorage areas. Three months later on October 19, a M7.6 aftershock shook the

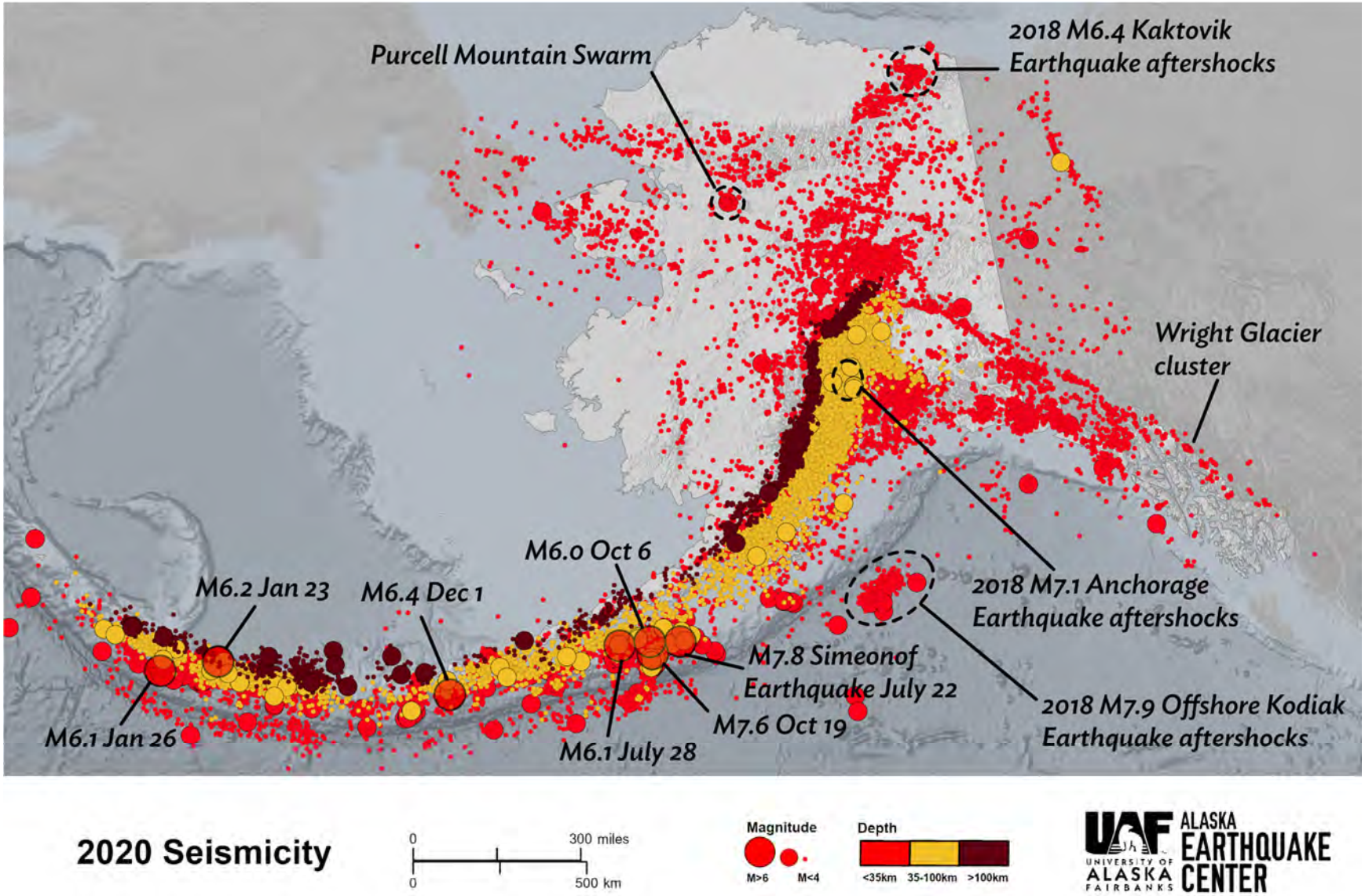


Figure 13. 2020 Seismicity for Alaska

region again. The NTWC issued tsunami warnings for much of the Alaska Peninsula prompting evacuations following both events. Several Alaska Peninsula communities also reported damage.

Though this style of earthquake is quite common, the specific location will continue to generate a lot of scientific interest" (UAF - AEC, 2021).

5.3.2.3 Location

The Uniform Building Code rates the entire State of Alaska in Earthquake Zone 4, the highest hazard level. Approximately 75% of Alaska's detected earthquakes occur in the Alaska Peninsula, Aleutian, Cook Inlet, and Anchorage areas. About 15% occur in Southeast Alaska, and the remaining 10% occur in the Interior. The greatest earthquake in North American history occurred in the Alaska-Aleutian Seismic zone. That earthquake was a M of 9.2, lasting between four and five minutes and was felt over a 7,000,000 square mile area. It caused a significant amount of ground deformation as well as triggering landslides and tsunamis resulting in major damage throughout the region. The megathrust zone where the North Pacific Plate plunges beneath the North American Plate still has the potential to generate earthquakes up to a M of 9.

An earthquake hazard event could potentially impact any part of the AEB and its communities and damage could be area-wide. Major fault lines in the AEB include the Alaska-Aleutian Megathrust which runs along the length of the Aleutian Islands. The AEB is at a high earthquake risk causing concern for infrastructure and human lives.

5.3.2.4 Extent

The AEB and its communities are located approximately 118 miles from the Aleutian Trench earthquake fault which is 2,100 miles long (Figure 14). The AEB remains vulnerable to significant damages from an earthquake.

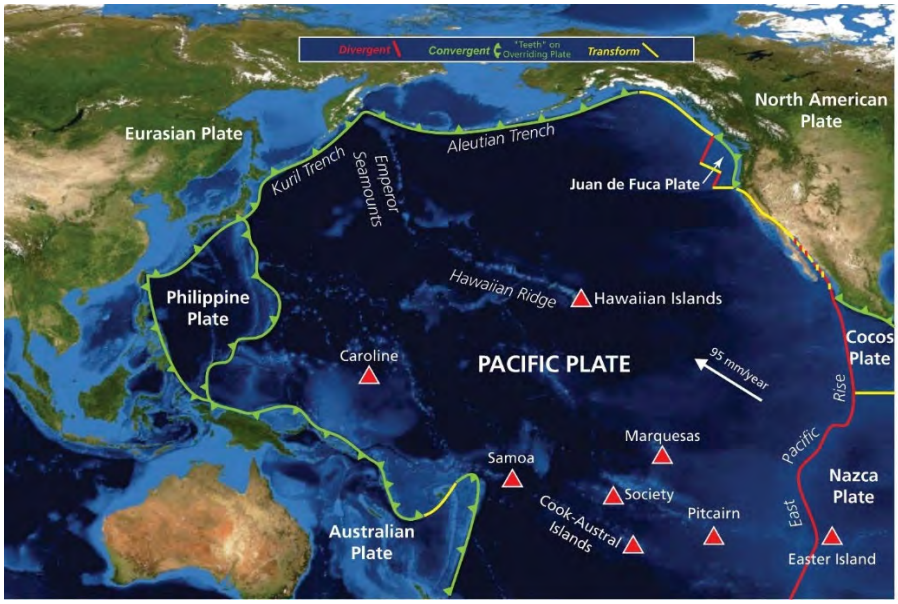


Figure 14. Pacific Plate Tectonic Boundaries

5.3.2.5 Impact

Impacts such as significant ground movement that may result in infrastructure damage could occur. Major or 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.

Since the AEB communities are not located on the road system, residents in the AEB are aware that they need to be prepared to be isolated. Emergency aid may be hampered by earthquake damage to airports and dock facilities. Supplies and emergency personnel may be delayed in arrival. Medical evacuations are also more difficult should a damaging earthquake occur.

"Alaska has changed significantly since the damaging 1964 earthquake, and the population has more than doubled. Many new buildings are designed to withstand intense shaking; some older buildings have been reinforced, and development has been discouraged in some particularly hazardous areas.

Despite these precautions, and because practices to reduce vulnerability to earthquakes are not applied consistently in regions of high risk, future earthquakes may still cause life-threatening damage to buildings, cause items within buildings to be dangerously tossed about, and disrupt basic utilities and critical facilities.

FEMA estimates that with the present infrastructure and policies, Alaska will have the second highest average annualized earthquake-loss ratio (ratio of average annual losses to infrastructure) in the country. Reducing those losses requires public commitment to earthquake-conscious siting, design, and construction. The Seismic Hazards Safety Commission is committed to addressing these issues. Earthquake-risk mitigation measures developed by similar boards in other States have prevented hundreds of millions of dollars in losses and significant reductions in casualties when compared to other seismically active areas of the world that do not implement effective mitigation measures. The San Francisco (1989), Northridge (1994), and Nisqually (2001) earthquakes caused comparatively low losses as a result of mitigation measures implemented in those areas. Many of these measures were recommended by the States' seismic safety commissions."

Source: HAZUS 99 Estimated Annualized Earthquake Losses for the U.S., FEMA Report 66. September 2000. Via DHS&EM, 2018.

5.3.2.6 Recurrence Probability

While it is not possible to predict an earthquake, the U.S. Geological Survey (USGS) has developed earthquake probability maps that use the most recent earthquake rate and probability models. These models are derived from earthquake rate, location, and M data as well as from mapping of active faults, from the USGS National Seismic Hazard Mapping Project.

The measure of peak ground acceleration is relative to the acceleration due to gravity (1 g). At 1 g vertical acceleration, objects will be lofted off the ground as it moves down, and then experience twice their own weight when the ground moves up. One g of horizontal acceleration will make flat ground feel as though it is sloped at 45 degrees – steep enough that most things would fall. Figure 15 indicates that the USGS earthquake probability model places the probability of an earthquake in the AEB with a likelihood of experiencing severe shaking

(0.30g to 0.80g peak ground acceleration) at a 2% probability in 50 years. A 2% probability in 50 years is the rare, large earthquake, and statistically, it happens on average every 2,500 years.

Due to the location of the AEB and its communities near the Aleutian Trench, it is highly likely that earthquakes will continue to occur. Highly likely equates to an event being probable within the calendar year or the event having up to one in one year's chance to occur (1/1 = 100%).

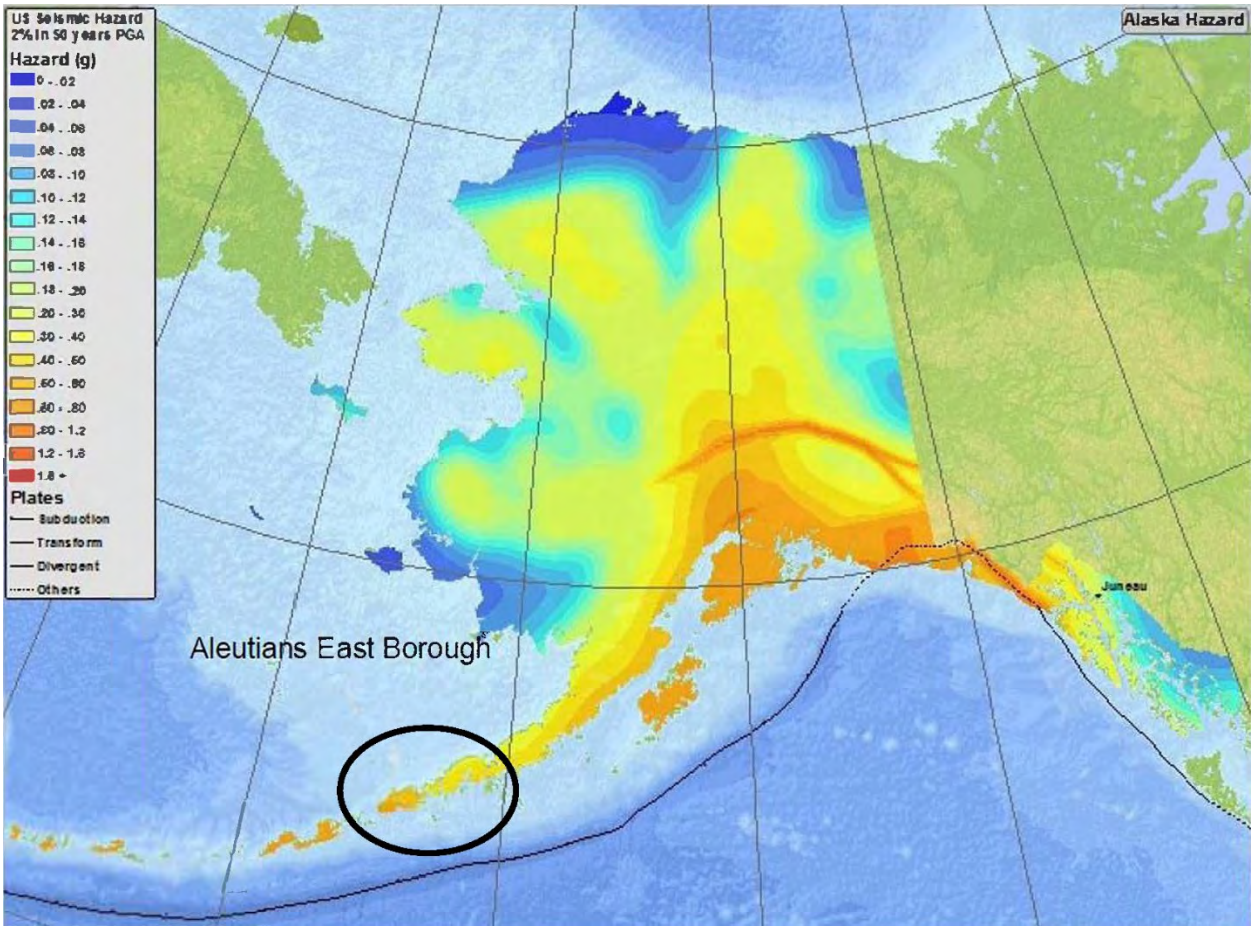


Figure 15. Earthquake Probability Map

5.3.3 Flooding and Erosion

5.3.3.1 Hazard Characteristics

Floods can occur as a result of a combination of factors, including heavy snow pack, temperature, sunshine, and precipitation. The sequence of events affects the flooding potential. Spring floods on streams may occur as a result of an above-normal snowfall during the winter followed by an unusually cold spring and a rapid snowmelt. Summer and fall floods usually result from intense precipitation. The principal flood problems are natural obstructions such as vegetation along the banks, manmade obstructions such as bridges and boat docks, ice jams, the accumulation of brush and debris along and within the streambed which can be

carried downstream by high water and block bridge openings or other constrictions, and inadequately-sized culverts.

Flooding is Alaska's most common disaster, often costing in excess of one million dollars annually, causing major disruptions to society and occasionally loss of life (DHS&EM, 2018). Many floods are predictable based on rainfall patterns.

The primary flooding hazards in the AEB are storm surge, king tides, snowmelt and rainfall floods. Much of the AEB's infrastructure development is located near the North Pacific Ocean or the Bering Sea.

Coastal flooding occurs along the coast when the combined effects of coastal storm surge, tides, and waves exceed local land elevations of beaches and coastal plains. Storm surge is caused by coastal storms, which start as low-pressure weather systems moving across large bodies of water. These systems draw water toward the low-pressure center, building a bulge of water that moves with the system that is called storm surge. Flooding occurs when this storm surge reaches the coast and is driven landward.

A king tide is a non-scientific term people often use to describe exceptionally high tides.

Snowmelt flooding typically occurs from April through June, but is most common in the spring when rapidly warming temperatures quickly melt snow. Snowpack depth, spring weather patterns, and geomorphic characteristics of the watershed influence the magnitude of flooding.

Rainfall-runoff flooding typically occurs in late summer through early fall. Rainfall intensity, duration, distribution, as well as pre-existing soil moisture conditions and geomorphic characteristics of the watershed all contribute to the flood's magnitude. These floods result from high rainfall amounts and accompanying high surface runoff rates. Rainfall and high temperatures can exacerbate snowmelt floods.

Erosion rarely causes death or injury. However, erosion causes the destruction of property, development, and infrastructure. Erosion is the wearing away, transportation, and movement of land. It is usually gradual but can occur rapidly as the result of floods, storms, or other events or slowly as the result of long-term environmental changes. Erosion is a natural process, but its effects can be exacerbated by human activity.

Coastal and riverine erosion are problems for communities where disappearing land threatens development and infrastructure. Coastal erosion is sometimes referred to as tidal, bluff, or beach erosion. However, other times these erosion types encompass different categories of erosion altogether. For this profile, tidal and beach erosion will be nested within the term erosion.

Coastal erosion is the attrition of land resulting in loss of beach or shoreline from natural activity or human influences. Coastal erosion is measured as the rate of change in the position or horizontal displacement of a shoreline over a period of time.

The forces of erosion are embodied in waves, currents, and winds on the coast. Surface and ground water flow, and freeze-thaw cycles may also play a role. Not all of these forces may be present at any particular location. Coastal erosion 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, dredging, and heavy four-wheeler or vehicle traffic along the beach (cross shore and along shore). The most dramatic erosion often occurs during storms, particularly because the highest energy waves and elevated water levels (storm-tides) are generated under storm conditions.

Coastal erosion 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 the construction of shore protection structures. Attempts to control erosion through shoreline protective measures such as groins, jetties, seawalls, or revetments, can sometimes lead to increased erosion. This is because shoreline structures minimize the natural wave run-up and sand deposition processes and may increase reflected wave action and currents at the waterline. The increased wave action can cause localized scour both in front of and behind structures and prevent the settlement of suspended sediment.

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

Storm systems along coasts produce high winds that in turn generate large waves and currents. Storm surges can temporarily raise water levels, increasing the vulnerability of shorelines, floodplains, tidal ranges in rivers and other waterbodies, and changes in sediment and nutrient transport which drive beach processes.

5.3.3.2 Climate Factors

Climate and weather are the two primary drivers of flooding and erosion in Alaska. Weather (i.e., the day-to-day state of the atmosphere) affects these hazards in the short-term with individual episodes of rainfall, wind, temperature, and low-pressure systems that initiate or intensify individual episodes. Climate is affecting the long-term incident rate and severity of these hazards, especially in Alaska, which is particularly vulnerable due to its high northern latitude.

5.3.3.3 Hazard History

The USACE completed an *Alaska Baseline Erosion Assessment* (BEA) in 2009. The report listed the communities of False Pass and Nelson Lagoon as “Monitor Conditions Communities” and the communities of King Cove and Sand Point as “Minimal Erosion Communities.”

The 2019 Denali Commission *Statewide Threat Assessment: Identification of Threats from Erosion, Flooding, and Thawing Permafrost in Remote Alaska Communities* identified False Pass and Nelson Lagoon as “threatened” communities based on the results of the 2009 USACE *BEA*. The vulnerability of 187 communities to three infrastructure threats—erosion, flooding, and thawing permafrost—were evaluated individually in this threat assessment. These threats generally operate at different timescales and impact infrastructure through different processes. Any of these threats can be catastrophic to a community. When combined, the impacts can be exacerbated, resulting in usteq (Denali Commission, 2019).

As a result, the *Statewide Threat Assessment: Identification of Threats from Erosion, Flooding, and Thawing Permafrost in Remote Alaska Communities* presented a combined score as an

aggregate of these three individual threats. Of 187 communities throughout Alaska, Nelson Lagoon received a community ranking of number 58, and False Pass received a community ranking of 75. A closer examination of the individual threat ranking shows Nelson Lagoon ranking 19th overall for the threat of erosion, 55th overall for the threat of flooding, and tied for last place for the threat of thawing permafrost. False Pass ranked 28th overall for the threat of erosion, 56th overall for the threat of flooding, and tied for last place for the threat of thawing permafrost (Denali Commission, 2019).

Of the three threats, erosion is the most readily-observed and identified. The erosion process is continuously observable at the point of impact, although the rates may vary according to conditions. Prediction of erosion usually involves observations of current rates and consideration of potential changes to those rates. Flooding, on the other hand, is readily observed during a flood event, but is a discontinuous process. Prediction of future floods is based upon the frequency of past floods, sometimes in conjunction with predictions of potential changes in climatic conditions. Due to lack of permafrost, usteq is not occurring in the AEB communities.

Akutan

Akutan noted that all of their utilities were near the shoreline and could be impacted by bank destabilization in the 2010 *AEB HMP*. The Alaska Native Tribal Health Consortium implemented a project that resolved this concern in 2018/2019. Riverine erosion that affected the community's impoundment pond (the drinking water source for the community) has also been fixed.

False Pass

The USACE indicated flooding had occurred in only one AEB community which is False Pass (AEB, 2010). Floods in False Pass are a result of the 100-year discharge for the unnamed creek known locally as Round Top Creek (AEB, 2010). Past events have required the use of heavy equipment to divert flooding from the creek to an adjacent stream. The highest remembered flows in Round Top Creek occurred in the fall of 1963, December 1984, and November 1985. The flood of 1963 eroded through the middle of the newly constructed runway, but no reports of water entering the community were reported.

The 2009 USACE *BEA* developed Figure 16 to show the extent of erosion in False Pass and stated:

> *"Coastline erosion along Bechevin Bay is the primary cause of erosion problems in False Pass. Conditions causing greatest erosion concern is approximately 1,500 feet north of the community and is approximately 1,000 feet long and five feet high. In October 2005, approximately 100 linear feet of shoreline along Unimak Drive (also called Beach Drive) eroded; in December 2006, an additional 300 lineal feet of shoreline was lost to erosion. The community reported that during winter months when the tide is at its highest, tide elevations can reach up to the roadway. Additionally, the community reported that Round Top Creek, which periodically overflows, is another area of erosion concern.*
>
> *During a 1963 flood, a section of the airfield runway reportedly eroded. After a site visit*

in 1986, the USACE reported that the bridge connecting the airfield to the community was eroding out at least twice a year.

The City of False Pass installed concrete blocks and gravel in areas of concern along Unimak Drive. The City reports that to date the measure has been effective in preventing erosion (USACE, 2009)*."*

King Cove

The 2009 USACE *BEA* developed Figures 17 and 18 to show the extent of erosion in King Cove and stated:

"According to the community survey, the main erosion problem is coastal erosion. Causes and contributing factors to coastal erosion are storm surge, high wind, and waves. In the community survey, the City Manager reported that high wind and waves occur several times per year, but they have not resulted in any structural damage to buildings. During a February 2007 storm, water lapped over boardwalks and spray occasionally hit the front row of homes, but no threats to structures were identified.

The road along the Westside of King Cove Lagoon connects residents living in the King Cove Lagoon Subdivision with the rest of the City. This road is the only infrastructure threatened.

Approximately ½ mile of road along the Eastside of King Cove Lagoon is armored to protect it from coast erosion. The City plans to raise the Westside of King Cove Lagoon road and place additional large armor rock to further stabilize this road. The main road to the small boat harbor has washed out during high tides in the past. The road was repaired and part was relocated approximately 20 feet inland. The main road is currently not a problem and the road along the Eastside of King Cove Lagoon is not at serious risk from erosion or in imminent risk of failure. According to the City Manager, King Cove roads have been or will be upgraded to a 50-year flood design standard. The City has paved all the roads and plans to pave King Cove Lagoon road in the future (USACE, 2009)*."*

Nelson Lagoon

The 2009 USACE *BEA* developed Figure 19 to show the extent of erosion in Nelson Lagoon and stated:

"Factors causing and contributing to erosion at the site include high tides and storm surges. There is a constant prevailing wind of 20 to 25 miles per hour, which combined with wave action also contributes to erosion. The soil structure is primarily sand which is more susceptible to erosion than larger-grained soil types like gravel.

The erosion problems in Nelson Lagoon include coastline erosion on the Bering Sea and Nelson Lagoon side of the narrow sand spit that the community is situated on. The spit is getting longer and narrower as erosion advances on both sides. The community survey indicated that factors causing and contributing to erosion include high tides, storm surges, and wind and wave action. Much of Nelson Lagoon was protected by ice for part of the winter storm season until the 1990s, but this protection has not been

present.

The active erosion area along the Nelson Lagoon side of the spit was less than 100 feet from community structures, including housing and the airstrip in 2007. In this area during the winter of 1998, a storm event resulted in the exposure of 3,000 feet of the community's 10.5-mile-long water line, which then froze. The community water lines were replaced three times in past years due to erosion and storm damage. The water line is now buried and the community has planted beach grasses over it in an effort to help protect against erosion damage. Major erosion events in the community have been constant in the last 20 years, resulting in an average of five feet per year of shoreline erosion.

In recent years, the community has placed gabions along the beach to anchor existing wood in the breakwater and placed about 300 linear feet of geotube that is about five feet high, with a 7.5-foot attached scour apron on the seaward side to prevent toe scour (USACE, 2009)*."*

HDR Alaska, Inc. with Shannon & Wilson conducted a *Nelson Lagoon Hazard Impact Assessment* in 2011. Meeting attendees made the following comments regarding erosion in Nelson Lagoon:

- The area of greatest concern is in the coastline on the lagoon side. Tommy John's house will be the first house to go.
- The breakwater was working, but ice is causing problems.
- Some parts of the community are below sea level.
- The area in front of the Tides Inn has experienced more erosion since the breakwater was built.
- The lagoon coastline is eroding towards the sea.
- Erosion is now occurring under the breakwater.
- Tides are bigger than they used to be (bigger tidal surge).

The 2011 *Nelson Lagoon Hazard Impact Assessment* stated:

"In conversations with Mr. Mark McNeley (resident of Nelson Lagoon), one of the major changes in the community over the past 20 to 40 years has been the severe reduction in the "ice bench" that historically formed during the winter on the north beach. He stated that during the 1970s, there used to be large ice benches, possibly on the order of 15 feet tall, which were formed from the ocean spray freezing during the winter. These ice benches provided some protection to the sand dunes on the north side of the island against the early spring storms. However, in recent years, these benches have been on the order of two feet tall and provided little protection against the spring storms. Mr. McNeley also stated that there have been several instances where the spit has been overtopped during storm events to the west of the community. This is consistent with information prepared by CE2 Engineers which stated that there was evidence the spit was overtopped by waves 1.2 miles east of Coast Lake in 1983 photography and 2.4 miles south of the village in 2001 aerial photography. CE2 also stated that that the spit

is narrowing at a rate of 10 to 15 feet per year. However, according to Mr. McNeley, to date, the spit has generally filled back in after the overtopping.

A growing concern for areas in Alaska like Nelson Lagoon is the increasing coastal hazards posed by climate change. These changes may not directly cause erosion, but they can exacerbate or intensify natural coastal processes. For instance, winter ice and ground freezing help protect the shoreline from waves. If the duration of winter ice and ground freezing is steadily decreasing, a longer time period exists for waves to potentially erode the shoreline. In addition, changes in eustatic sea-level rise and local effects from tectonic creep/shifting can alter normal water surface elevation, also contributing to shoreline retreat. Given its location on a spit, Nelson Lagoon is likely facing an on-going erosion problem which is being worsened by climate change. At Nelson Lagoon, wind-generated waves are likely a primary cause of coastal sediment transport and erosion as well as wind erosion" (HDR, 2011).

One of the recommendations of the 2011 *Nelson Lagoon Hazard Impact Assessment* was a *Nelson Lagoon Coastal Erosion Study Historical Shoreline Map Report* that was completed in 2014. Based on the shoreline projections, areas of higher and lower risk of erosion can be identified (Figures 20 through 22).

"The two areas of highest risk are the townsite area and the dock/airport area. Both projections indicate little change on the lagoon side of the community, due primarily to the wooden seawall built at this location, which slowed down the natural shoreline erosion process. In late 2013, the wooden seawall failed and is no longer providing the shoreline with any protection. [Note: The ACGL stated in 2021 that although the seawall is failing, erosion is still being mitigated along its extent.] In Figure 20, in both projections, erosion would substantially impact the community and several homes are likely to erode away. Additional effects may occur, as some parts of the townsite are reported to be below sea level. These areas could be subject to periodic flooding. Projections on Figures 21 and 22 indicate some erosion is likely on the Bering Sea side of the townsite. The runway area is likely to experience substantial erosion from the Bering Sea that would effectively shorten the usable length of the runway. Additional research would be needed to determine if the airport could remain operational with a shortened runway (HDR, 2014)."

In 2015, HDR, Inc. prepared a *Nelson Lagoon Coastal Erosion Study 20% Preliminary Design Report* and considered several shoreline protections concepts to present to the community during a public meeting.

"The three alternatives that were carried forward for preliminary design were based on feedback received from Nelson Lagoon residents, initial capital costs, and the ability to be constructed using local labor and resources, and included: geotextile containers, gabion mattress revetment, and timber seawall with gabion scour pad. Based on the cost estimates, the AEB and the residents of Nelson Lagoon indicated the geotextile container revetment is their preferred alternative. A phased approach was developed as only partial sections of the shoreline protection can be constructed at one time. The highest priority was determined to be the area where the seawall has already collapsed.

The next highest priority should be given to areas that appear to be in more stable condition but are located along the south-facing shoreline (i.e., impacted more directly from waves). Sections of the shoreline that are not directly impacted were given the lowest priority" (HDR, 2015).

In 2018, a baseline topographic survey and installation of two erosion monitoring sites were carried out. Two time-lapse cameras were installed to monitor the shorelines fronting Nelson Lagoon on the seaward side (Figure 23). Cross-shore profiles were also established for monitoring beach volume along the ocean site beaches. Funding for this work was provided by the Alaska Institute for Justice and the UAF-ACGL. Funding provided by the Alaska Sea Grant further expanded the UAF-ACGL research and community engagement in Nelson Lagoon. Reyce Bogardus, a UAF-ACGL Master's Degree Candidate and his professor, Dr. Chris Maio, UAF-ACGL Lab Director, collected flood and erosion datasets during site visits in 2018 and 2019, conducted an assessment of erosion and flood vulnerability, and are currently preparing an updated coastal hazard assessment. It is anticipated that this final report will be completed before the State and FEMA review process of this Draft MJHMP Update is completed. Below is a summary.

Time-lapse videos of the two cameras from October 2018 to May 2019 can be observed at: https://www.youtube.com/watch?v=-FmvEXaPZvg&feature=youtu.be https://www.youtube.com/watch?v=r6fS1wvpeAs&feature=youtu.be.

The 2021 UAF-ACGL thesis stated:

"The non-linearity of the shoreline changes reflect the dynamic nature of the processes operating along the spit. Locations that were particularly dynamic include the accretional tip of the spit, and the two erosional lobes on the ocean side of the spit (solid waste disposal site and airstrip). The coastline fronting the community on the lagoon side is also an area of interest, given the proximity of the erosional shoreline to the buildings there are one to fifteen meters (three to 49 feet) from the lagoon. It was found through the shoreline change analysis, elevation profiles, and time lapse photography from cameras installed by UAF-ACGL that the erosion signal on both sides of the spit is predominantly driven by high storm-tide events, coupled with significant wave action. This is especially the case along the ocean side shoreline. As such, the long-term erosion rates ultimately reflect the combined erosional impact of a few, intermittent storm events. The spatial variability in the beach's response to extreme storm events is probably caused by variability in the height and extent of the foredunes alongshore. The elevation profiles show that, for the most part, the morphological responses to storm events along the beaches on both side of the spit is erosion at the extreme upper edge of the intertidal zone; more precisely, erosion at or near the vegetation that steepens the slope of the pre-existing foredune as it retreats landward. Drone and time-lapse photography also reveal that overwash occurs frequently along the ocean shoreline during autumn months. Overwash deposits are easy to spot since they 'bury' the vegetation inland from the insipient foredune (UAF-ACGL, 2021)*."*

Figure 24 shows the net shoreline movement of Nelson Lagoon. Accretion and erosion movements can be easily identified around the community. The net shoreline movement looks

like erosion has taken up to 80 meters (262 feet) of land. Figure 25 shows erosion occurring near the solid waste disposal site (Insert A), village (Inserts B and C) and airstrip (Insert D) that may eventually impact the airstrip and the solid waste disposal site and water pipe. Given the morphology across this section of the spit, the seaward side is most vulnerable to erosion and overwash (Figure 28), and the lagoon side is most vulnerable to inundation, considering its very close to the water table. Erosion has already impacted the airstrip and the solid waste transfer site. As of November 2020, the foredune fronting the airstrip was breached by a storm (Figure 29). The solid waste disposal site floods from the sea side whenever there is a large storm-tide event coupled with runup. The foredune fronting the solid waste disposal site has been cut back due to wave action during high storm-tide events, and as a result, the north side of the disposal site has been flooded multiple times via the access road from the beach. Projected shoreline positions show that the solid waste disposal site will likely be eroded into the sea within the next three decades, depending on storm impact frequency and magnitude (Figures 29 and 30). The landfill is also located near subsistence areas and a critical habitat area for the Steller's eider. The water pipe has been exposed due to erosion multiple times in the past, but has been reburied; the route of the pipe has never been surveyed. No one really knows where the water pipe is unless it gets exposed. The pipe is very much at risk since it runs along the thinnest portions of the spit - especially near the "neck" of the spit, which is only about 100 meters (328 feet) across. There is evidence of overwash actually reaching across the spit at some point.

Figure 25 compares where the shoreline was in 1983, 2013, 2018, and 2019. As per the ocean side of the village (Insert C), erosion is not a major concern. This is not the case on the lagoon side of the village (Insert B) where slow, yet consistent erosion occurs along the lagoon side and it is regularly flooded during high storm-tide events. There are multiple abandoned buildings for this reason. This flooding is also the case for the road that runs from the village to the airstrip and dock facilities.

Figure 26 is a single value threshold flood risk map of the Nelson Lagoon residential area, color coded based off elevation in meters above mean high water. Buildings and roads are symbolized in black. The minimum, average, and maximum building heights are provided. Elevations between -4 and 0 as well as elevations between 3 and 13 meters are transparent. Building height is the height of the ground level near the building, above which the building would be expected to be flooded, although first floor elevation surveys were not used in this analysis. Figure 26 identifies infrastructure vulnerable to flooding, not necessarily identifying individual structures that would flood during a storm-tide of specific magnitude. This is because it assumes a static sea surface. The areas it identifies as vulnerable match up to areas residents have documented. UAF-ACGL encourages residents to constantly take photos whenever there is a flood so that they can reference the flood heights to a datum.

Sand Point

Sand Point's shoreline is rocky and irregular, comprised primarily of cliffs and bluffs. Much of Sand Point is confined to a 1-mile-long, ½-mile-wide hilly peninsula that extends into Popof Strait and forms Humbolt Harbor. A manmade breakwater protects the existing boat harbor at the mouth of Humboldt Slough. No USACE erosion map was prepared.

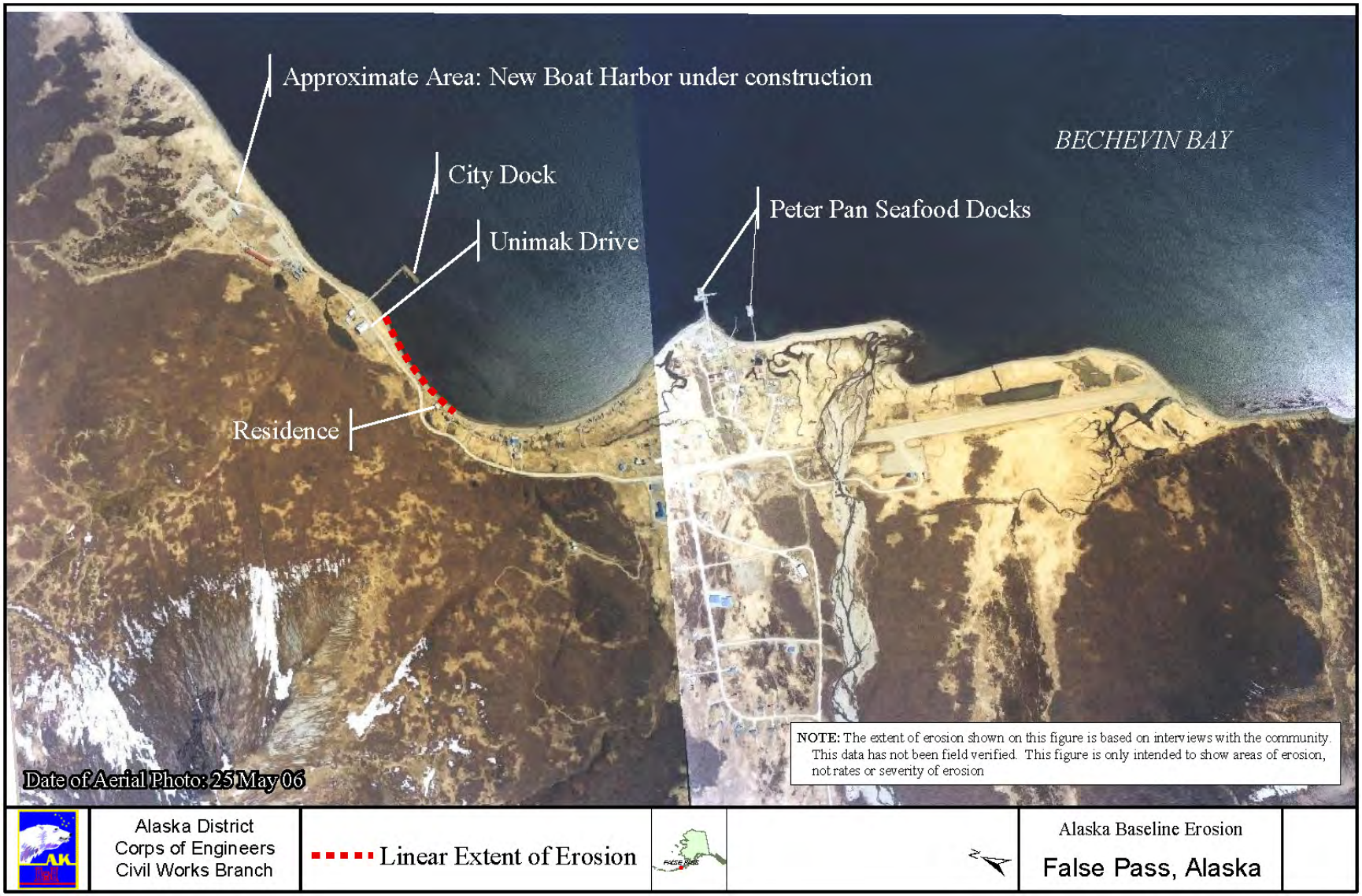


Figure 16. USACE Identified Linear Extent of Erosion in False Pass

Figure 17. USACE Identified Linear Extent of Erosion in King Cove, Part 1

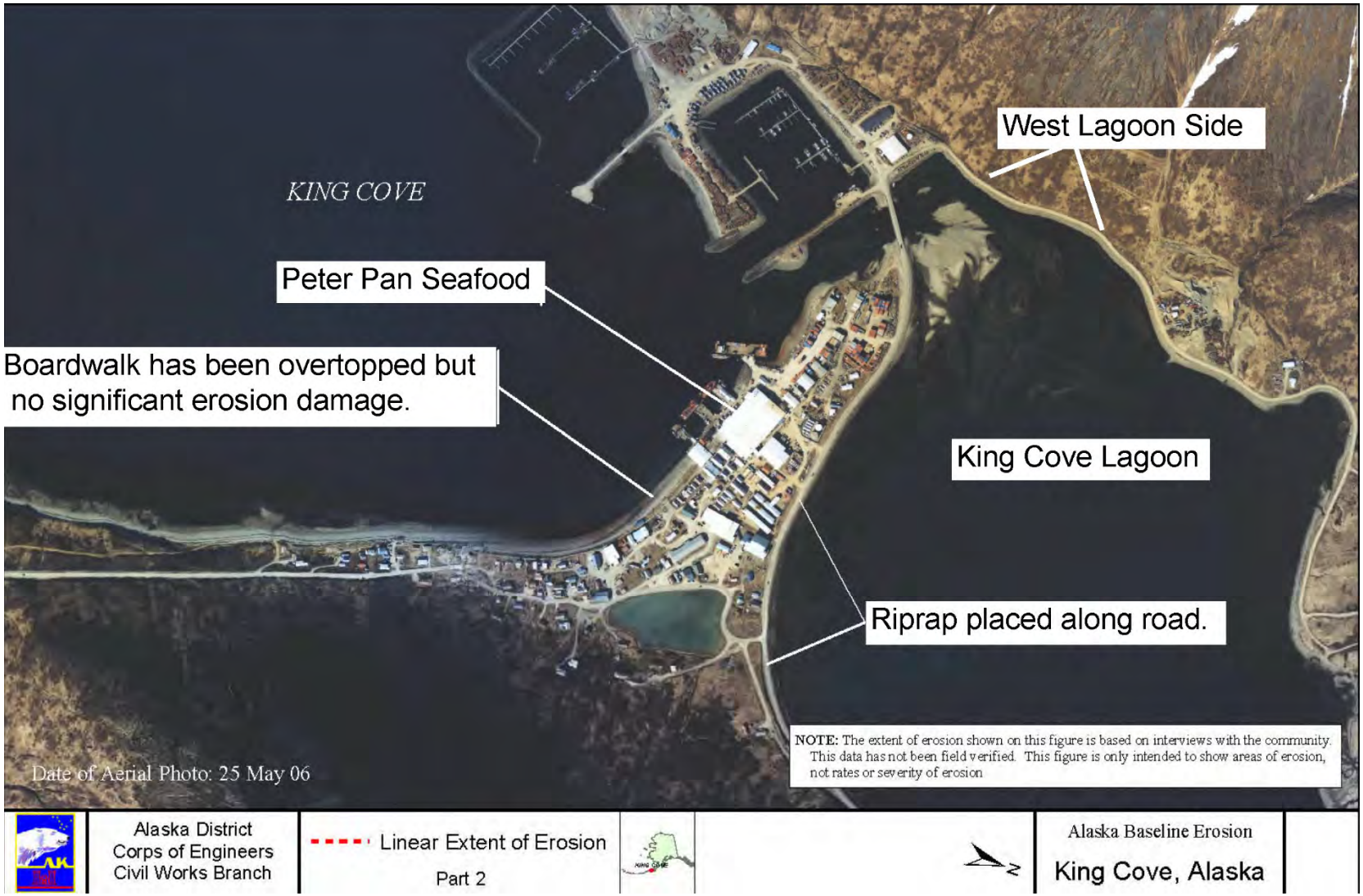


Figure 18. USACE Identified Linear Extent of Erosion in King Cove, Part 2

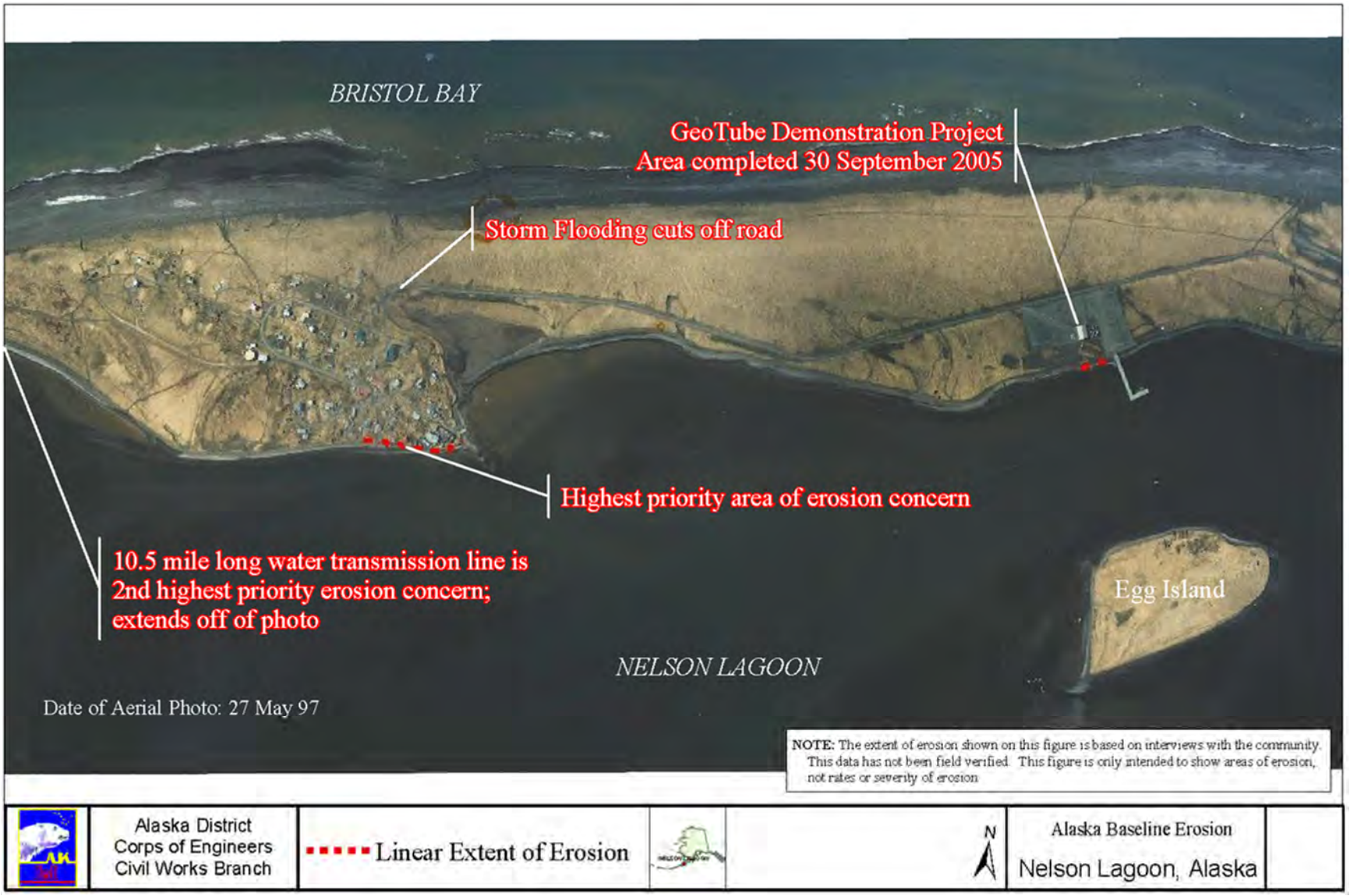


Figure 19. USACE Identified Linear Extent of Erosion in Nelson Lagoon

Figure 20. Nelson Lagoon Erosion Projections with and without the Failed Seawall Being Replaced

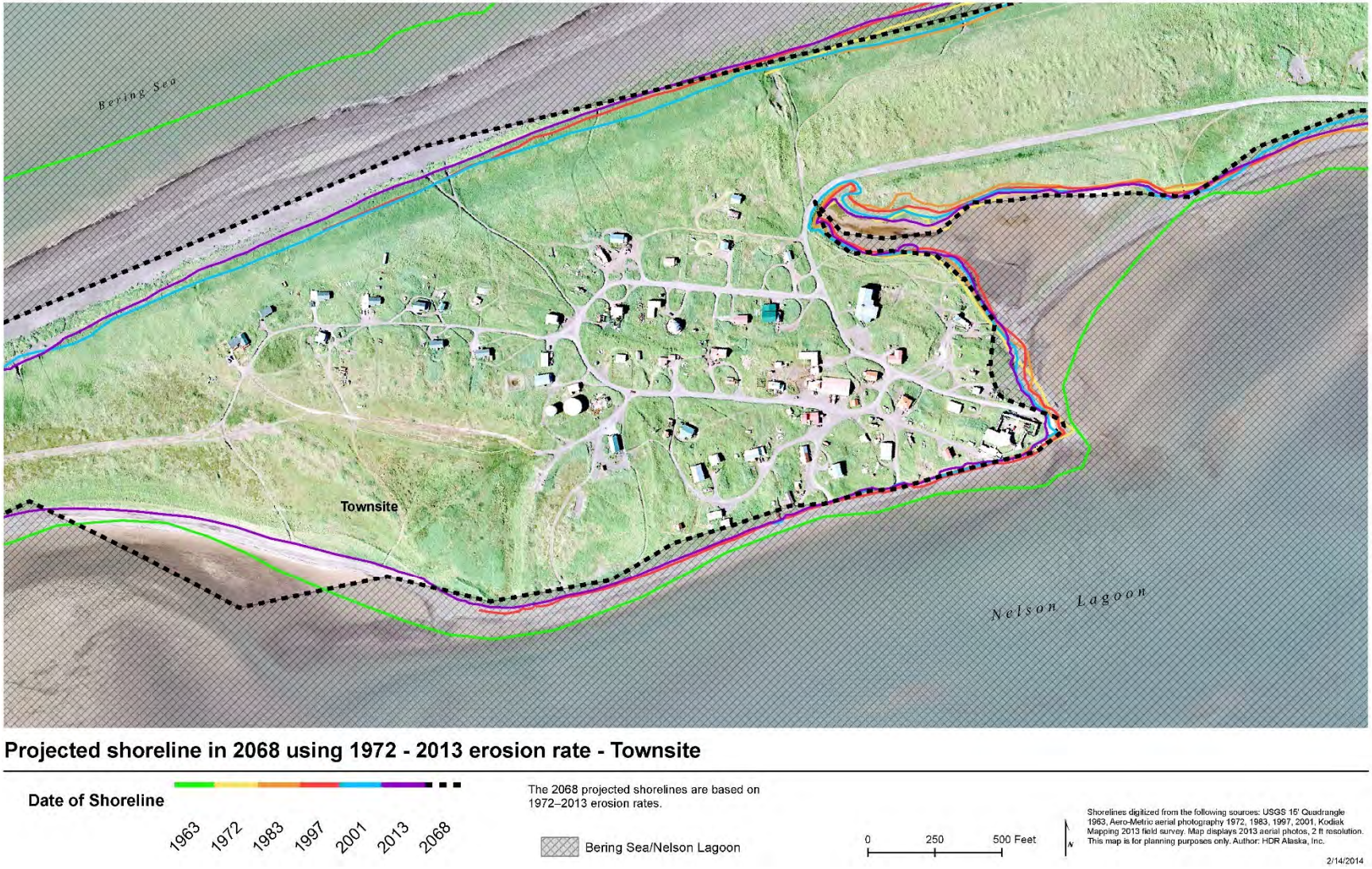


Figure 21. Nelson Lagoon Projected Shoreline Erosion in 2068 Using 1972 – 2013 Erosion Rate for the Townsite

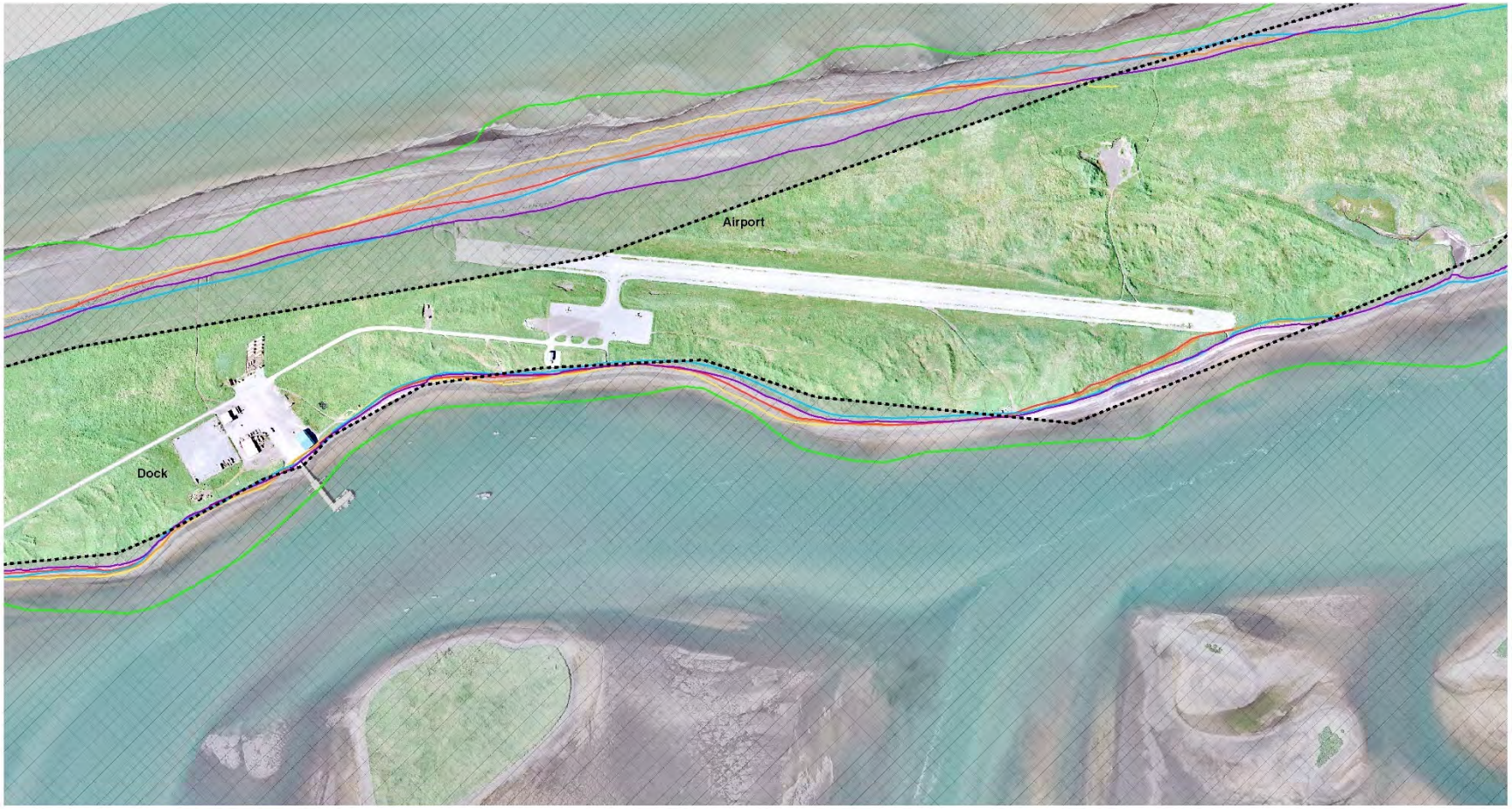


Figure 22. Nelson Lagoon Projected Shoreline Erosion in 2068 Using 1972 – 2013 Erosion Rate for the Dock and Airport

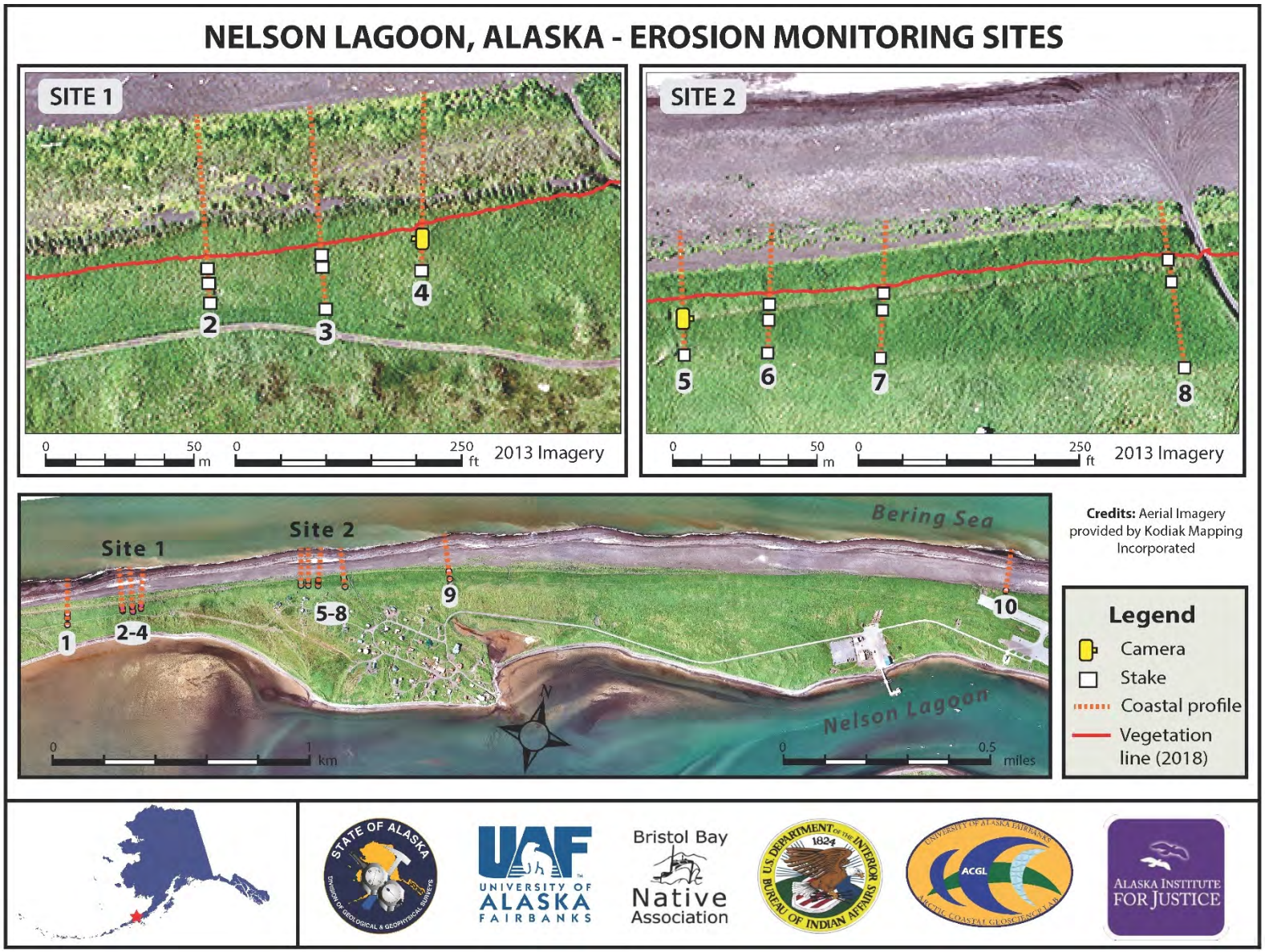


Figure 23. Erosion Monitoring Sites Installed at Nelson Lagoon in 2018

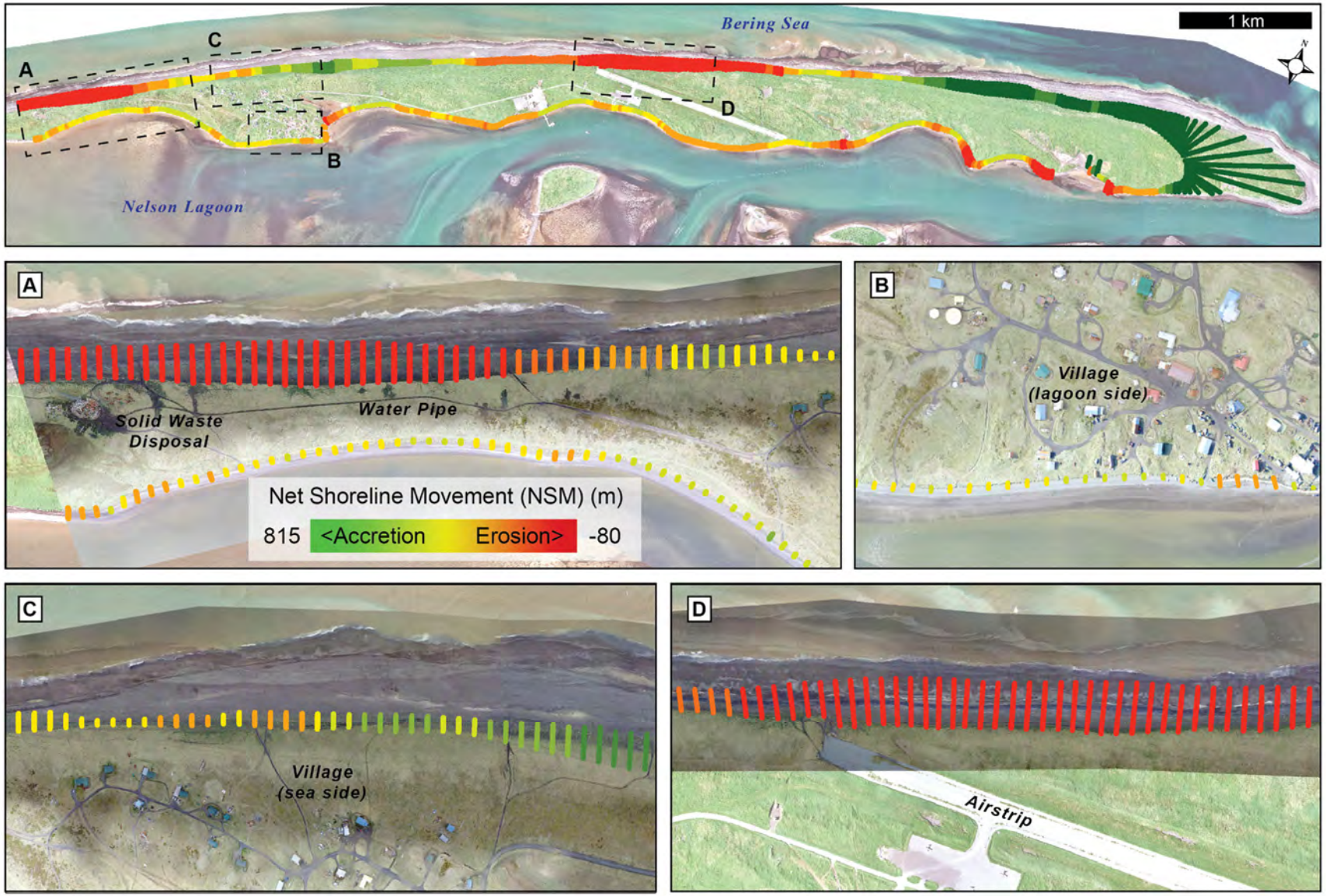


Figure 24. Net Shoreline Movement of Nelson Lagoon between 1983 and 2019

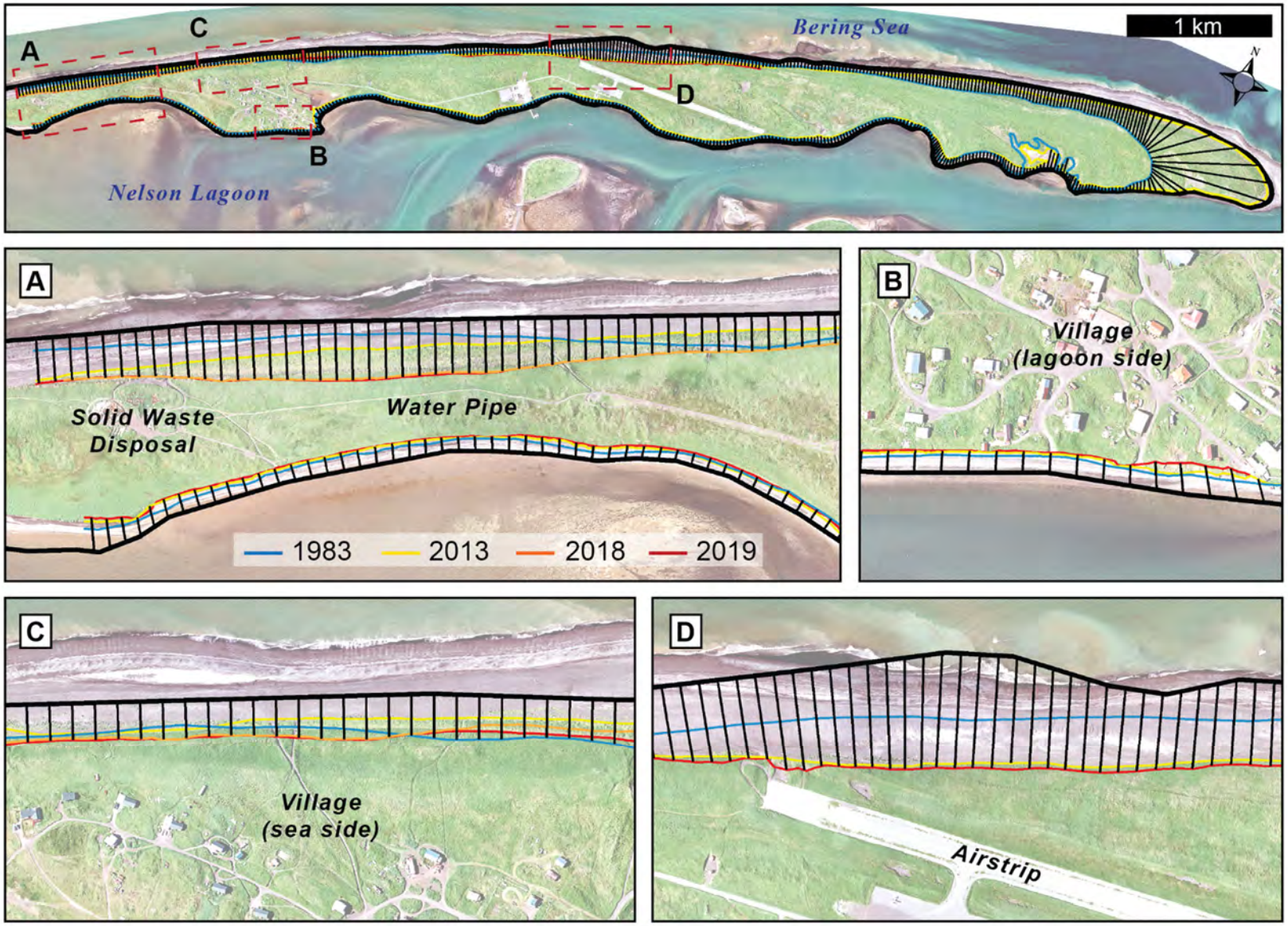


Figure 25. Shoreline Erosion of Nelson Lagoon from 1983 through 2019

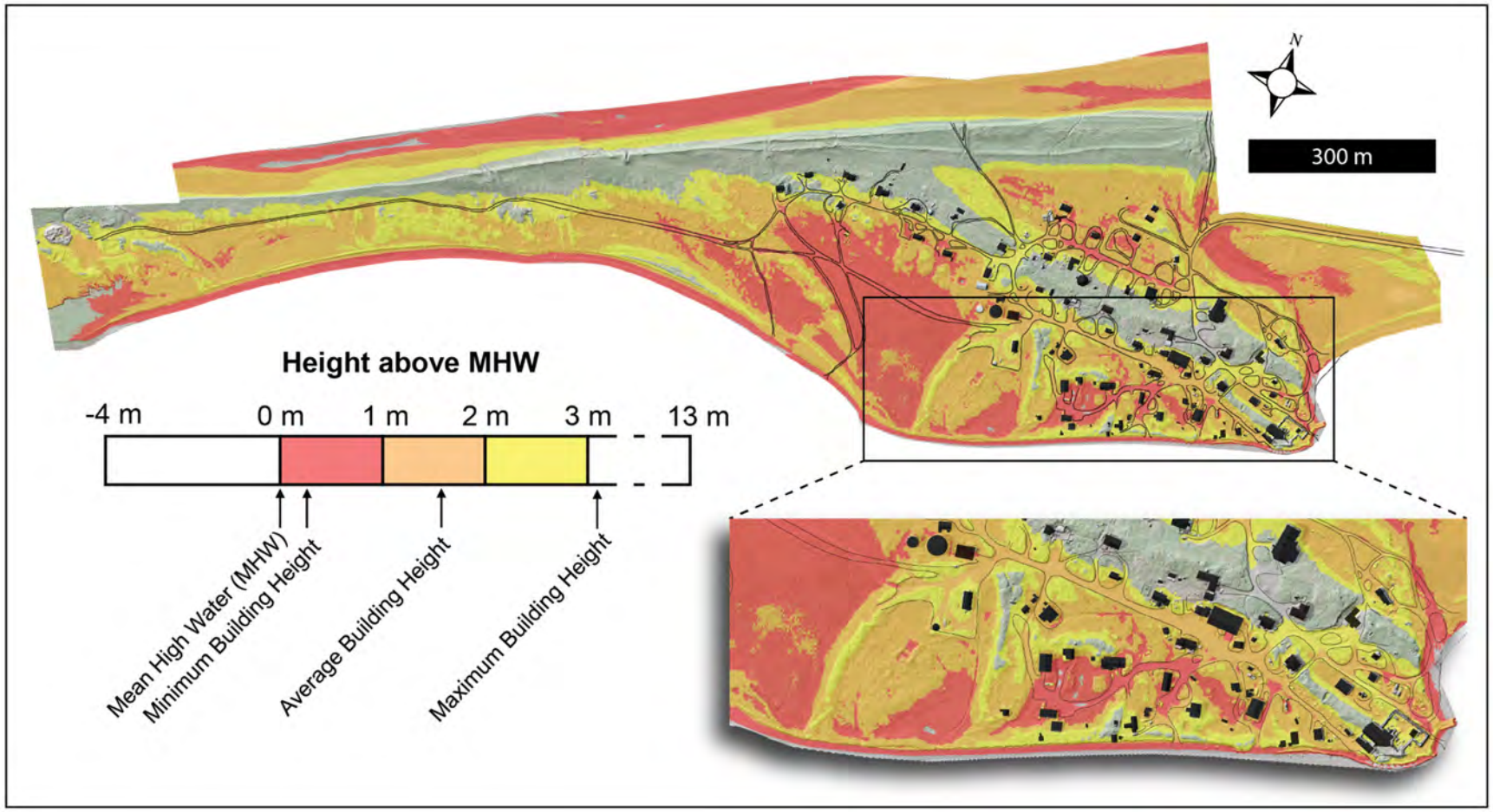


Figure 26. Flooding Vulnerability

Figure 27. Seawall and sediment containers in place along the lagoon coastline of Nelson Lagoon. May 2019, UAF-ACGL.

Figure 28. Imagery showing the remnants of overwash deposits along the ocean side of the Nelson Lagoon spit. The road on the right goes from the community to the dock and airstrip. April 2018 by UAF-ACGL.

Figure 29. Foredune breach along the ocean shoreline fronting the community airstrip. Image generously provided by Angela Johnson, November 2020 to UAF-ACGL.

Figure 30. Photograph taken from the solid waste disposal site looking towards the community on the ocean side of the spit showing bluff face erosion, October 2018 by UAF-ACGL.

Figure 31. Remnants of an overwash and flooding event at the access road from the beach to the solid waste disposal site, October 2018 by UAF-ACGL.

5.3.3.4 Location

Akutan

Akutan completed their mitigation actions from the 2010 AEB HMP related to erosion. Erosion is occurring near the library/recreation center. The City and Tribe were discussing this newly identified situation while this Draft MJHMP was being written.

False Pass

False Pass experiences flooding by the airport and the Mountain Valley subdivision. In 2020, Road Top Creek flooded onto private land and washed-out foundations, the carpenter's shop with machinery, and warehouse on Peter Pan-owned land. In 2021, residents stated that water floods the road to the Mountain Valley subdivision a few times each year.

In 2021, a False Pass City Council member stated that erosion hasn't progressed where the concrete blocks and gravel were installed in 2009. A road was built on top of the concrete blocks and gravel. However, erosion has occurred further south on the access road to the City Dock. This portion of the road continues to erode, especially in winter months.

King Cove

King Cove indicated bank destabilization affects West Lagoon Road, located across King Cove, and increases with flooding and rain. Rams Creek and roads along the lagoon experience flooding when strong winds combine with high tide.

Nelson Lagoon

Unlike the other AEB communities, Nelson Lagoon's flooding and erosion has been steadily studied since the 2010 *AEB HMP*. HDR, Inc. and the UAF-ACGL identified the four primary impact locations as the airstrip, solid waste disposal site, water transmission line, and coastline fronting the community on the lagoon side.

Sand Point

Sand Point has minor flooding impacts; most of which occur from rainfall, snowmelt run-off, and storms. Water collects in low terrain depressions and may rise to just below a structure's first step with no water intrusion on the first floor.

5.3.3.5 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 flooding frequency and severity:

- Rainfall intensity and duration.
- Antecedent moisture conditions.
- Watershed conditions, including terrain steepness, soil type, amount, vegetation type, and development density.
- The attenuating feature existence in the watershed, including natural features such as

beaches and sand dunes.

- Flow velocity.
- Availability of sediment for transport, and the bed and embankment watercourse erodibility.

A variety of natural and human-induced factors influence the erosion process within the community. Coastal orientation and proximity to ocean waves, currents, and storm surges can influence erosion rates. Embankment composition also influences erosion rates, as sand and silt will erode easily, whereas boulders or large rocks are more erosion-resistant depending on oceanographic setting. Other factors that may influence coastal erosion include:

- Shoreline type;
- Geomorphology;
- Structure types along the shoreline;
- Amount of encroachment in the high-hazard zone;
- Proximity to erosion inducing coastal structures;
- Interseismic and/or coseismic land level changes;
- Nature of the coastal topography;
- Density of development;
- Elevation of coastal dunes and bluffs; and
- Shoreline exposure to wind and waves.

The following factors contribute to coastal flooding severity:

- Astronomical tides;
- Storm surge - the rise in water from wind stress and low atmospheric pressure;
- Interseismic and/or coseismic land level changes;
- Waves; and
- Peak still-water elevation.

Climate change also plays a part in increasing coastal erosion. Rising sea levels and retreating sea ice may leave stretches of coastline open to increased exposure to wave action during normal and winter storm conditions.

5.3.3.6 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.
- Erosion or scouring of stream banks, roadway embankments, foundations, footings for

bridge piers, and other features.

- Damage to structures, roads, culverts, and other features from high-velocity flow and debris carried by floodwaters. Such debris may also accumulate in culverts, increasing loads on these features or causing overtopping or backwater damages.
- Sewage and hazardous or toxic materials released as wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed.
- Floods also result in economic losses through business and government facility closure, 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.

Flooding in the low-lying portion of the communities could cut off portions of the community from critical services located out of the flood zone. For example, road closures, impacts to public safety (access and response capabilities), and limited availability of perishable commodities will impact even those properties not flooded. Because of this, while the actual area subject to flooding is limited, the impact of the flooding could affect the entire community.

Impacts from erosion include loss of land and any development on that land. Erosion can cause increased erosion and down current deposition. Other impacts include reduction in water quality due to high sediment loads, loss of native aquatic habitats, damage to public utilities (fuel headers and electric and water/wastewater utilities), and economic impacts associated with the costs of trying to prevent or control erosion sites.

5.3.3.7 Recurrence Probability

All of AEB's communities with the exception of Sand Point were developed on low-lying lands adjacent to coastal beaches. Akutan and King Cove could likely experience continued erosion. Likely equates to an event being probable within the next three years or the event having up to one in three year's chance to occur (1/3 = 33%). It is highly likely that False Pass and Nelson Lagoon will continue to experience increased flooding/erosion (Section 5.3.3.3). Highly likely equates to an event being probable within the calendar year or the event having up to one in one year's chance to occur (1/1 = 100%).

5.3.4 Tsunamis and Seiches

5.3.4.1 Hazard Characteristics

A tsunami is a series of waves generated in a body of water by an impulsive disturbance along the seafloor that vertically displaces the water. A seiche is an oscillating wave occurring in a partially or totally enclosed water body.

Subduction zone earthquakes at plate boundaries often cause tsunamis. However, submarine landslides, submarine volcanic eruptions, and the collapses of volcanic edifices can also generate tsunamis. A single tsunami may involve a series of waves, known as a train, of varying heights. In open water, tsunamis exhibit long wave periods (up to several hours) and wavelengths that can extend up to several hundred miles, unlike typical wind-generated swells on the ocean, which might have a period of about 10 seconds and a wavelength of 300 feet.

The actual height of a tsunami wave in open water is generally only one to three feet and is often practically unnoticeable to people on ships. The energy of a tsunami passes through the entire water column to the seabed. Tsunami waves may travel across the ocean at speeds up to 700 mph. As the wave approaches land, the sea shallows and the wave no longer travels as quickly, so the wave begins to “pile up” as the wave-front becomes steeper and taller, and less distance occurs between crests. Therefore, the wave can increase to a height of 90 feet or more as it approaches the coastline and compresses.

Tsunamis not only affect beaches that are open to the ocean, but also bay mouths, tidal flats, and the shores of large coastal rivers. Tsunami waves can also diffract around land masses and islands. Since tsunamis are not symmetrical, the waves may be much stronger in one direction than another, depending on the nature of the source and the surrounding geography. However, tsunamis do propagate outward from their source, thus coasts in the shadow of affected land masses are usually fairly safe.

Local tsunamis and seiches may be generated from earthquakes, underwater landslides, atmospheric disturbances, or avalanches and last from a few minutes to a few hours. Initial waves typically occur quite soon after onslaught, with very little advance warning. They occur more in Alaska than any other part of the U.S.

Seiches occur in an enclosed water body such as a lake, harbor, cove, or bay. They are localized event-generated waves characterized as a “bathtub effect” where successive water waves move back and forth in the enclosed area until the energy is fully spent causing repeated impacts and damages.

5.3.4.2 Hazard History

The AEB is in close proximity to historic tsunamigenic events that have occurred along the Aleutian Trench. The NTWC lists the following earthquake-generated tsunamis with observed or measured tsunami waves throughout the AEB (Table 10).

Table 7. Alaska's Historic Aleutian Tsunami Waves

Date	Location	Earthquake Moment Magnitude (MW)	Wave Height (m)	Latitude	Longitude
November 10, 1938	Alaska Peninsula	8.2	0.1	54.48	-158.37
April 1, 1946 (six fatalities occurred per 2010 *AEB HMP*)	Near Unimak Island (False Pass), Eastern Aleutian Islands	8.6	35-40	25.8	-163.5
March 9, 1957	South of Andreanof Islands, Central Aleutian Islands	8.3	Unknown	51.5	-175.7
March 27, 1964	Prince William Sound	9.2	0.35	61.05	-147.48
February 4, 1965	Rat Islands, Western Aleutian Islands	8.7	<0.1	51.29	-178.49
May 7, 1986	Central Aleutian Islands	8.0	0.15	51.52	-166.54
February 21, 1991	Bering Sea	6.7	0.15	58.43	-175.45
June 10, 1996	Central Aleutian Islands	7.9	0.6	51.56	-177.63

The 1946 earthquake 144 kilometers offshore of Unimak Island (False Pass) resulted in a 100-foot tsunami that topped Scotch Cap lighthouse with a runup of 40 meters. In 1957, a 45-foot wave occurred at the same location (AEB, 2010).

An article from KTOO and KUCB dated October 20, 2020, described that a 7.*5-Magnitude Quake Prompted Tsunami Warning from Aleutians to Kenai Peninsula*:

> *"Residents of costal Alaska, from Sand Point to Kodiak, scrambled for higher ground and motored boats into deeper water Monday afternoon after a M7.5 earthquake hit near Sand Point and triggered a tsunami warning. The NTWC reported that a small tsunami, measured at two feet, had reached Sand Point at 2:25 pm, and a smaller wave in King Cove.*
>
> *The Sand Point School is the evacuation point for the eastern Aleutian fishing community of just under 1,000 people. Austin Roof teaches at the Sand Point School and is also general manager at the community's radio station, KSDP-AM. 'The community mostly evacuated to high ground… The last earthquake, there was a small, one-foot tsunami that did happen…' The last earthquake was another major earthquake (7.8 earthquake) that occurred near Sand Point on July 22, 2020. The October 19, 2020 earthquake was about 50 miles southwest of the July 22, 2020 earthquake. According to UAF-AEC, the October earthquake could be an aftershock of the July earthquake.*
>
> *State Seismologist Mike West stated that the two earthquakes are definitely related. And in this part of the world, it's not surprising to get earthquakes—even two of that large magnitude—relatively often. It's one of the world's major tectonic plate*

boundaries, where each year, the Pacific Plate shoves a few inches under the North American Plate that Alaska sits on, 'We build up a whole lot of strain. In some sense, yet, we anticipate, we are almost never surprised by a M7 earthquake along that boundary. These earthquakes happened near an area that scientists had been speculating about for decades. The plates are locked together, and they're pushing together. They build up a couple of inches, couple of inches, and then eventually, it ruptures in an earthquake. We've had four tsunami warnings in Alaska since 2018. And none of them happened to generate a deadly tsunami.' He thinks Alaskans may be lulled into a false sense of security. 'I would strongly caution people not to try and second guess and do their own education about whether or not a large tsunami is coming. That's what the warning means. There really shouldn't be any questions remaining when the warning is issued.'" (KTOO/KUCB, 2020)

On October 19, 2020, a M7.5 earthquake near Sand Point triggered a tsunami warning. Although large waves never appeared, the community was disrupted by the emergency.

5.3.4.3 Location

A tsunami could affect the low-lying portions of all five AEB communities (see Figures 32 through 37).

5.3.4.4 Extent

The most vulnerable areas of the State are the low-lying coastal areas in the Gulf of Alaska and those areas bordering the Pacific Ocean.

The extent of a tsunami is affected by the following factors:

- Coastline configuration: Tsunamis impact long, low-lying stretches of linear coastlines, usually extending inland for relatively short distances. Concave shorelines, bays, sounds, rivers, streams, offshore canyons, and flood control channels may intensify damage. Offshore canyons can focus tsunami wave energy, and islands can filter the energy. Coastline orientation determines whether the waves strike head-on or are refracted from other parts of the coastline. Tsunami waves entering flood control channels could reach a mile or more inland, especially if it enters at high tide.
- Earthquake characteristics: Several characteristics of the earthquake that generate the tsunami contribute to the intensity of the tsunami, including the area and shape of the rupture zone.
- Fault movement: Strike-slip movements that occur under the ocean create little or no tsunami hazard. However, vertical movements along a fault on the seafloor displace water and create a tsunami hazard.
- Magnitude and depth: Earthquakes with greater magnitude cause more intense tsunamis. Shallow-focus earthquakes also have greater capacity to cause tsunamis.
- Human activity: With increased development adjacent to the coastline, property damage increases, multiplying the amount of debris available to damage or destroy other structures.

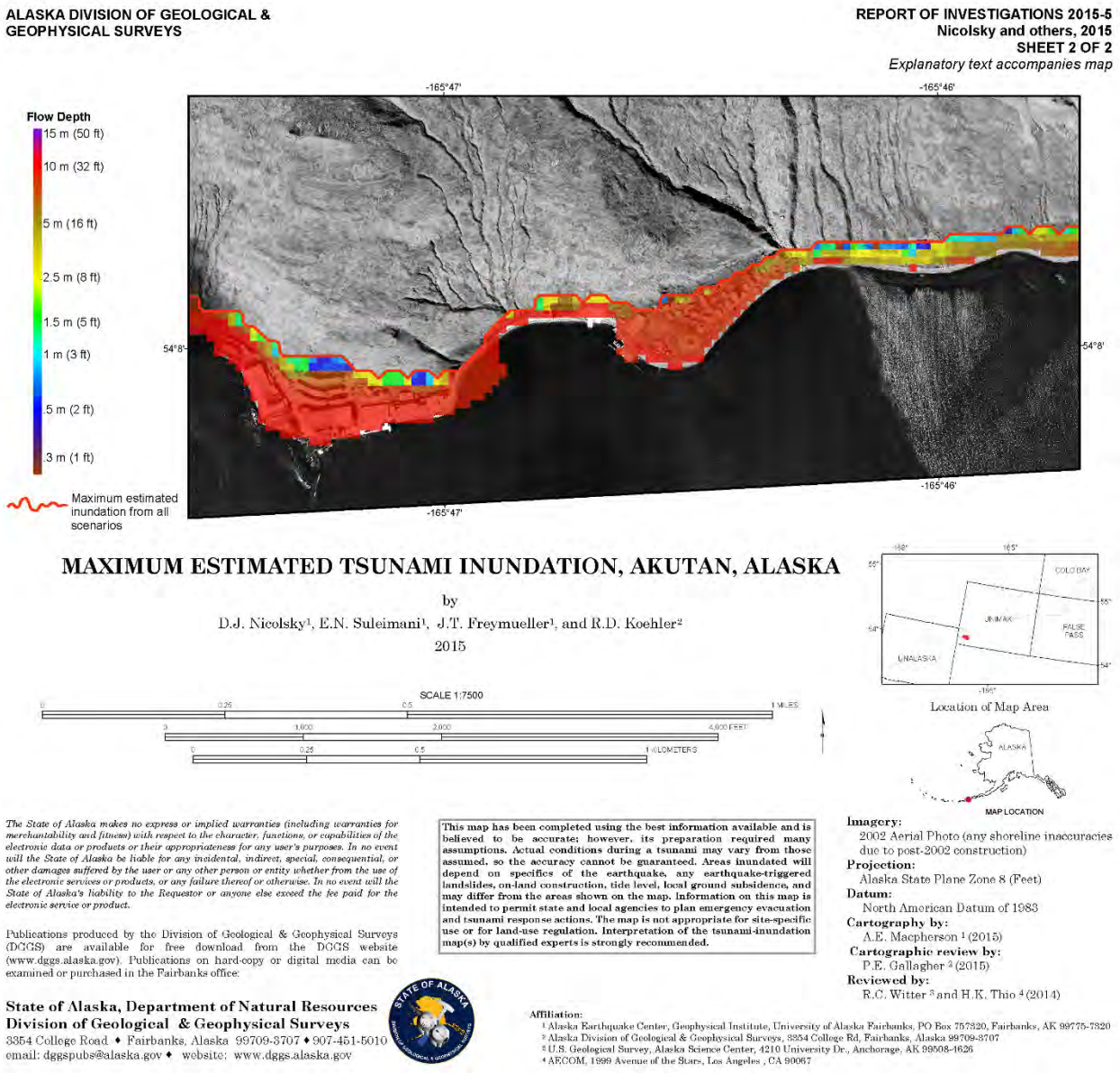


Figure 32. Maximum Estimated Tsunami Inundation for Akutan

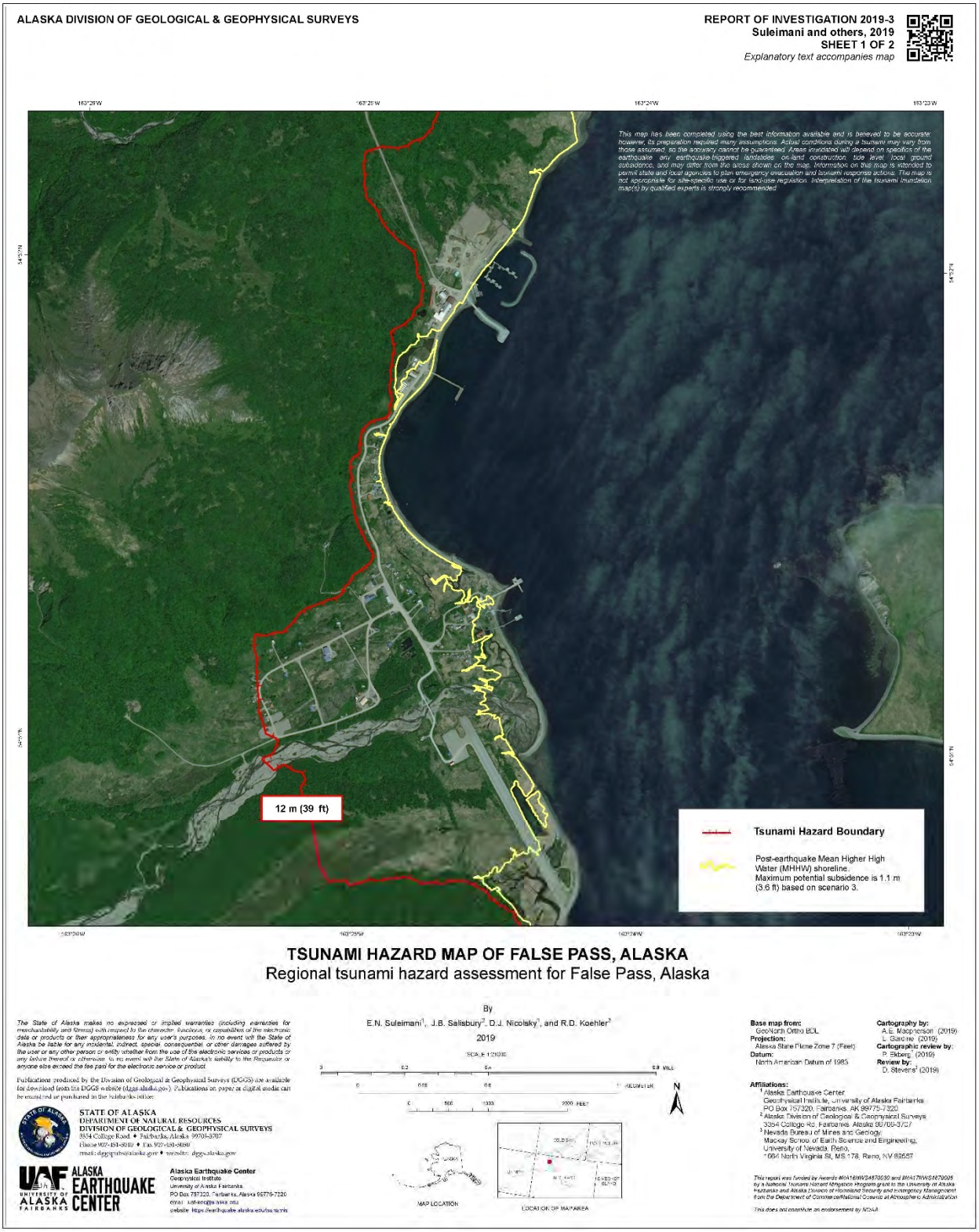


Figure 33. Tsunami Hazard Map of False Pass

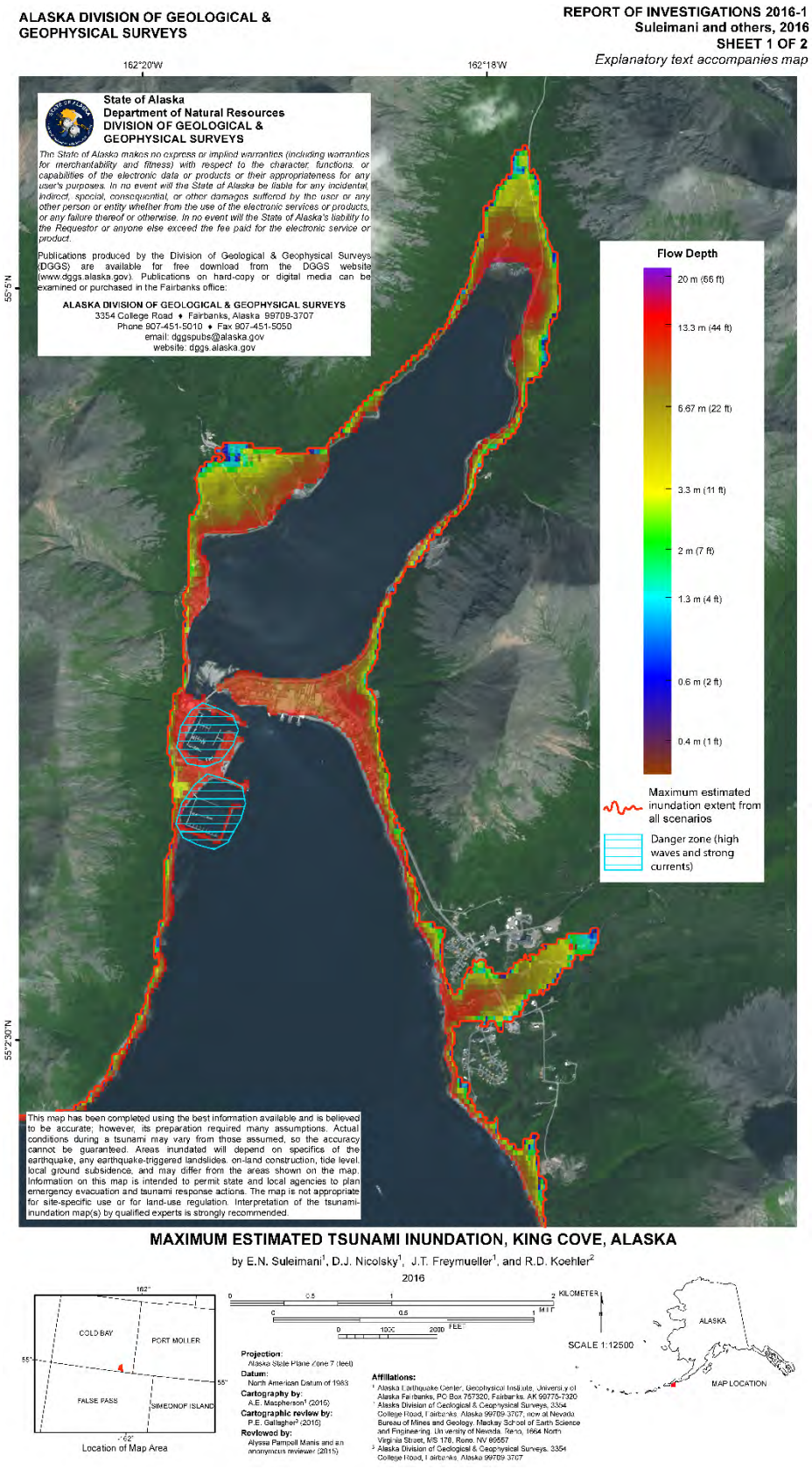


Figure 34. Maximum Estimated Tsunami Inundation Map of King Cove

Figure 35. Tsunami Hazard Map of Nelson Lagoon

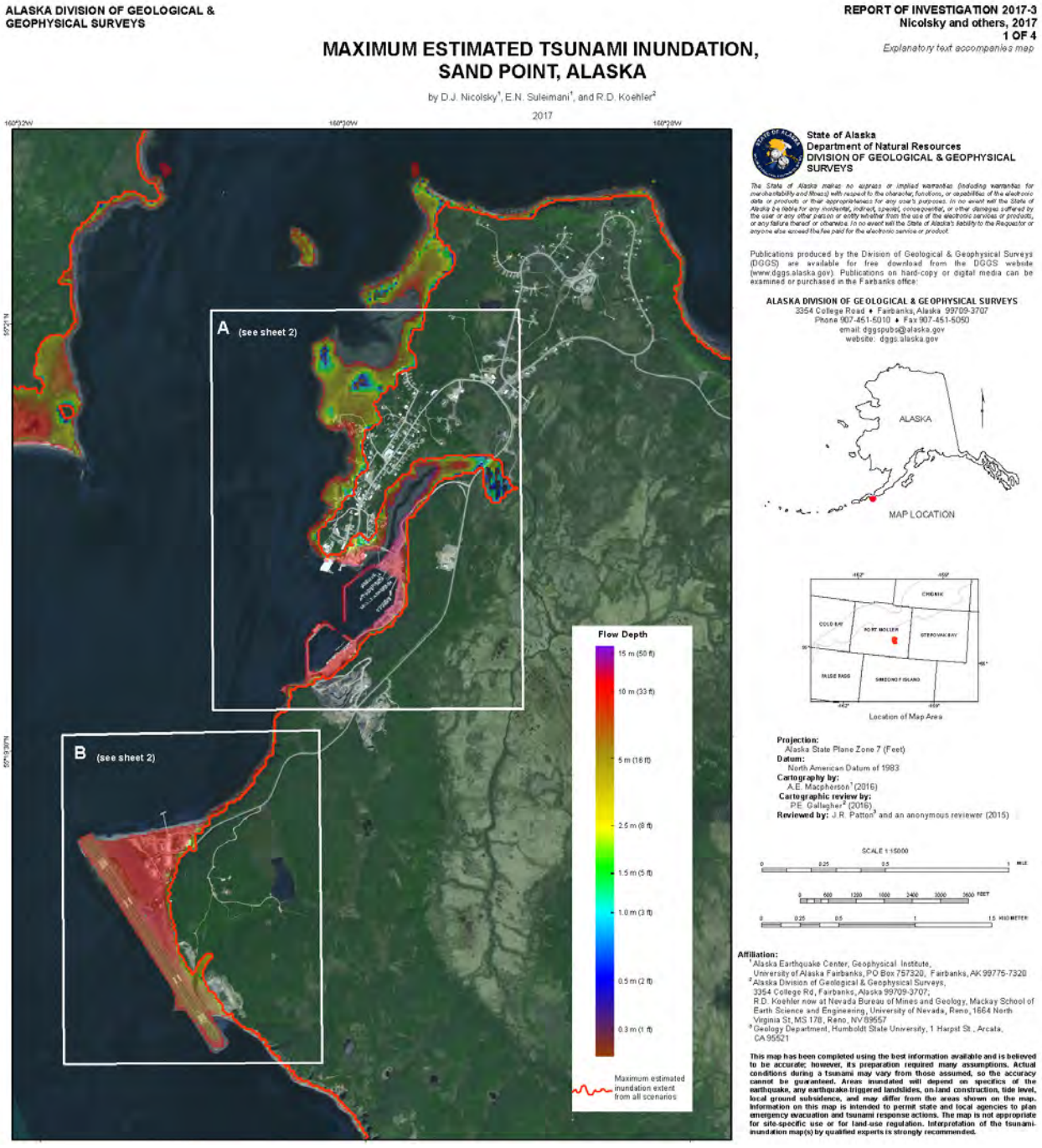


Figure 36. Maximum Estimated Tsunami Inundation Map of Sand Point, Part 1

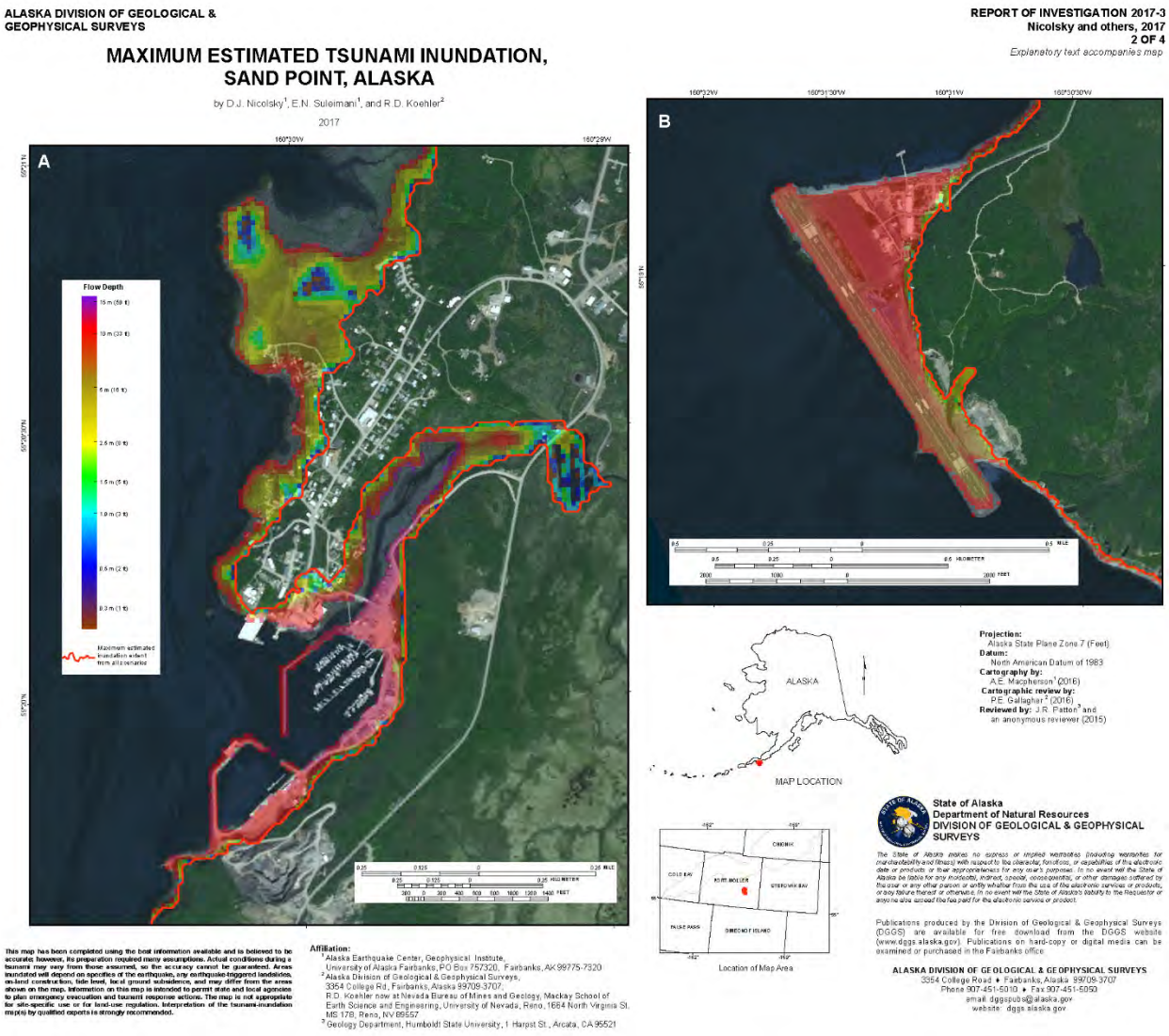


Figure 37. Maximum Estimated Tsunami Inundation Map of Sand Point, Part 2

5.3.4.5 Impact

Alaska is subject to diverse tsunami impacts from a multitude of tsunamigenic sources. Potential impacts of tsunamis on Alaska communities are described in a mapping tool at https://earthquake.alaska.edu/sites/all/tsuMap/html/tsunami.html and via animation at Tsunami Animation Page | Alaska Earthquake Center. Potential impacts span the entire range of possibilities--from a barely detectable tsunami to completely destructive. A large tsunami could create major property damage and loss of life. The communities in the AEB contain many harbor facilities and on-shore structures that could be damaged or destroyed by a large tsunami. Also, a tsunami would likely damage or destroy most of the electrical power and telephone communication infrastructure, water and sewer systems, and transportation infrastructure, such as roads, airports, and marine docking facilities.

5.3.4.6 Recurrence Probability

Tsunamis are a great concern for the communities in the AEB. Tsunamis could reach the communities before a warning could be issued. It is possible that a tsunami could occur which equates to an event being probable within the next five years. The event has up to one in five year's chance of occurring (1/5 = 20%).

5.3.5 Severe Weather

5.3.5.1 Hazard Characteristics

Severe weather occurs throughout Alaska with extremes experienced by the AEB including high winds, heavy and drifting snow, freezing rain/ice storm, and extreme cold. The AEB experiences periodic severe weather events such as the following:

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 winds can equal hurricane force but fall under a different classification because they are not cyclonic nor possess other hurricane characteristics. In Alaska, high winds occur rather frequently over the AEB coastal areas. High winds can be a severe threat and have been recorded at greater than 100 mph on several occasions.

Climate change influences the environment, particularly historical weather patterns. Climate change and El Niño – Southern Oscillation (ENSO) create increased weather volatility such as hotter summers (drought) and colder winters, intense thunderstorms, lightning, hail, snow storms, freezing rain/ice storms, and high winds.

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 (storm surge) and severe winter storms. Therefore, increased awareness and understanding how ENSO events potentially impact Alaska's vastly differing regional weather is important.

Heavy rain occurs rather frequently over the coastal areas along the Bering Sea and the Gulf of Alaska. Heavy rain is a threat to AEB. 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 utility poles and communication towers which disrupt transportation, power, and communications.

Winter storms include a variety of phenomena described above and as previously stated may include several components; wind, snow, and ice storms. Ice storms, which include freezing rain, sleet, and hail, can be the most devastating of winter weather phenomena and are often the cause of automobile accidents, power outages, and personal injury. Ice storms result in the accumulation of ice from freezing rain, which coats every surface it falls on with a glaze of ice. Freezing rain is most commonly found in a narrow band on the cold side of a warm front, where surface temperatures are at or just below freezing temperatures. Typically, ice crystals high in the atmosphere grow by collecting water vapor molecules, which are sometimes supplied by evaporating cloud droplets. As the crystals fall, they encounter a layer of warm air where the

particles melt and collapse into raindrops. As the raindrops approach the ground, they encounter a layer of cold air and cool to temperatures below freezing. However, since the cold layer is so shallow, the drops themselves do not freeze, but rather, are supercooled, that is, in liquid state at below-freezing temperatures. These supercooled raindrops freeze on contact when they strike the ground or other cold surfaces.

5.3.5.2 Climate Factors

Increases in carbon dioxide, methane, and other gases in the atmosphere are generally warming and changing the climate worldwide by trapping heat that would have escaped back into space. Trees and other plants cannot absorb as much carbon dioxide through photosynthesis as is produced by burning fossil fuels. Therefore, carbon dioxide builds up and changes precipitation patterns; increases storms and flooding frequency and intensity; and substantially changes flora, fauna, fish, and wildlife habitats.

Alaska's temperature rise rate has been twice the average of the rest of the U.S. in recent decades. During the period from 1949 to 2014, the Statewide average annual air temperature increased by 3°F, and the average winter temperature increased by 6°F (ACRC, 2018). This included considerable annual and regional variability, and was accompanied by a greater number of extremely warm days and fewer extremely cold days (CCSP, 2008). The Statewide average annual precipitation during this same period increased by about 10%, with recent decades showing amounts largely above normal, but with substantial annual and regional variability (Shulski and Wendler, 2007, ACRC, 2018).

Global climate is projected to continue changing over this century, and changes to Alaska's climate are expected to be unprecedented (Chapin et al, 2014). Average annual temperatures in Alaska are projected to rise by an additional 2°F to 4°F by 2050, and by 6°F to 12°F by the end of the century depending on emission levels (Stewart et al, 2013). Projections of annual precipitation show an increase across Alaska as part of the broad pattern of increases projected for high northern latitudes.

Snow cover extent and depth have been decreasing in most places in Alaska for nearly three decades. Warmer winter temperatures change the precipitation frequency of snow and rain, and are producing more frequent rain-on-snow events.

5.3.5.3 Hazard History

The AEB has had five severe weather events in the DHS&EM Disaster Cost Index (DHS&EM, 2021). These events are listed below.

83. Omega Block Disaster, January 28, 1989 & FEMA declared (DR-00826) on May 10, 1989: The Governor declared a Statewide disaster to provide emergency relief to communities suffering adverse effects of a record-breaking cold spell, with temperatures to as low as -85 °F. The State conducted a wide variety of emergency actions, which included: emergency repairs to maintain and prevent damage to water, sewer, and electrical systems, emergency resupply of essential fuels and food, and DOT&PF support in maintaining access to isolated communities.

86. Sand Point, February 27, 1989: After the Omega Block cold spell caused permanent damage to the water main serving the Sand Point boat harbor, the Governor declared a disaster to

provide assistance in repairing the line and restoring services.

119. Hazard Mitigation Cold Weather, 1990: The Presidential Declaration of Major Disaster for the Omega Block cold spell of January and February 1989 authorized federal funds for mitigation of cold weather damage in future events. The Governor's declaration of disaster provided the State matching funds required for obtaining and using this federal money.

00-191 Central Gulf Coast Storm declared February 4, 2000 by Governor Murkowski, then FEMA-declared (DR-1316) on February 17, 2000: The Governor declared a disaster due to high impact weather events throughout an extensive area of the State. The State began responding to the incident on December 21, 1999. The declaration was expanded on February 8 to include the City of Whittier, City of Valdez, Kenai Peninsula Borough, Matanuska-Susitna Borough, and the Municipality of Anchorage. On February 17, 2000, President Bill Clinton determined the event disaster warranted a major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288 as amended (the Stafford Act). On March 17, 2000, the Governor again expanded the disaster area and declared that a condition of disaster existed in **Aleutians East**, Bristol Bay, Denali, Fairbanks North Star, Kodiak Island, and Lake and Peninsula Boroughs and the census areas of Dillingham, Bethel, Wade Hampton, and Southeast Fairbanks, which was of sufficient severity and magnitude to warrant a disaster declaration. Effective on April 4, 2000, Amendment No. 2 to the Notice of a Major Disaster Declaration, the Director of FEMA included the expanded area in the presidential declaration. Public Assistance, for 64 applicants with 251 PWs, totaled $12.8 million. Hazard Mitigation totaled $2 million. The total for this disaster was $15.66 million.

AK-15-256 2015 December Bering Sea Storm declared by Governor Walker on January 29, 2016, then FEMA declared on February 17, 2016 (DR-4257): Beginning December 12, 2015 and continuing for several days, the low-pressure system reached 933 millibars (mb) moving northeast from the Central and Western **Aleutian Islands** past the Pribilof Islands, and into the Yukon-Kuskokwim Delta region. These communities were impacted by hurricane force winds exceeding 100 mph and gusts of up to 122 mph, high tidal ranges, and strong sea surges up to 10 feet above mean sea level. Island communities also experienced extreme wave heights of 40 to 50 feet. This combined weather system began on December 15, 2015 and extended the incident period to December 19, 2015.

Table 8 lists major storm events that NWS identified for the AEB's Weather Zone (AKZ155).

Table 8. Severe Weather Events

Location	Date	Event Type	Magnitude
155	11/12/2000	High Wind	The front associated with the storm was preceded by very strong south and southeast winds across the Aleutians…leaving close to four inches around Cold Bay in a 24-hour period. Classic urban drainage and small stream flooding resulted. Stronger winds, gusting around 100 mph, at King Cove produced considerable damage and several injuries due to flying debris.
155	25-Jan-01	Winter Storm	Winds around the low center peaked at 102 mph in False Pass. Several wind reports around King Cove were received, including a 113 mph wind in the low areas around the King Cove Police Department and one report of 135 mph wind by Carol Wilson,

			who monitored the weather from a higher ground location with southeast exposure.
155	11-Apr-01	Blizzard	A moderate low and its occluded front moved into the western Gulf of Alaska. Strong north and northwest wind around the back side of this low produced blizzards across the Alaska Peninsula. Spotter reports from King Cove reported a peak wind at an incredible 120 mph with additional reports of gusts at 107 mph. Northwest winds peaked at 73 mph across the Eastern Aleutians at Dutch Harbor.
155	1-Jan-02	Heavy Snow	Arctic air across the zone continued to erode from the 'top down'. Several bands of precipitation managed to cross the Aleutian and Alaska Range, from east to west, in the warm air aloft. Below freezing arctic air still was reported at many areas of the zone.
155	12-Mar-02	Heavy Snow	A front, moving northeast across Bristol Bay, was accompanied by strong winds. Blizzard conditions were reported around Nunivak Island. Additionally, wind gusts at Cape Romanzof reached 89 mph as the front passed.
155	9-Dec-03	Blizzard	A strong front moved toward the Alaska Peninsula from the west. The tight pressure gradient in advance of this front produced strong wind across the Alaska Peninsula. A ship outside of Cold Bay reported measured wind gusts of 104 mph. The storm center associated with this low was located over the western Aleutians and moved into the northern Bering sea. The strong long southwest fetch across the Bering Sea resulted in a coastal storm surge along the Yukon and Kuskokwim Delta and northern Bristol Bay.
155	9-Sep-04	High Wind	A strong storm in the Bering Sea created a long fetch with high wind. This produced a coastal storm surge resulting in minor coastal flooding along the Kuskokwim Delta.
155	10-Oct-04	High Wind	A strong low-pressure system in the southern Bering Sea increased the pressure gradient over zones 155 and 161, which produced strong winds along the coastal areas. A weather front associated with the low-pressure center also produced snowfall in these zones. Blowing snow with peak wind gusts up to 58 mph reduced visibility below one quarter of a mile for several hours.
155	9-Nov-04	High Wind	A strong low over the western Alaska Peninsula produced snow along with strong east to north wind over the Kuskokwim Delta and over Unalaska Island. Blizzard conditions occurred.
155	22-Sep-05	Storm Surge/Tide	A storm rapidly intensified to 962 MB as it moved from the central Aleutians to the northern Bering Sea. The storm produced strong southwest wind across the southern Bering Sea into the Bering Sea coast. The resulting surge combined with high tides resulted in coastal flooding from Nunivak Island north into Norton Sound and the Bering Strait. Rough surf and tidal overflow persisted due to the storm remaining in the northern Bering sea as it slowly weakened.
155	13-Feb-06	High Wind	An intense storm rapidly moved from the north Pacific into the Bering Sea. Reports received from the vessel Stimson in Akutan were of wind peaking at 123 knots that resulted in the vessel

			tipping over in the harbor. Along with the high wind, heavy rain occurred.
155	25-Feb-06	Blizzard	A storm moved from the central Aleutians into the eastern Bering Sea. As this storm moved to the Bering Sea Coast, gusty wind along with snow produced blizzard conditions over the Kuskokwim Delta.
155	11-Mar-06	High Wind	A strong and fast-moving storm moved across the Alaska Peninsula into the eastern Bering Sea Saturday. This storm produced strong wind across the eastern Aleutians and the Alaska Peninsula in advance of its front Friday. This front pushed north and east producing strong wind across the Pribilof Islands, then produced blizzard conditions along the coast of the Kuskokwim Delta.
155	3-Apr-06	Winter Weather	A fast-moving intense storm pushed a front into the Bering Sea producing snow and strong wind resulting in a blizzard. This same storm moved across the Alaska Peninsula into the northwest Gulf of Alaska resulting in a strong channeled northerly wind through the rugged terrain of the Alaska Peninsula. The wind peaked at 82 mph in King Cove.
155	7-Apr-06	High Wind	A strong storm moved through the Aleutians. Strong wind followed passage of the cold front that swept through the Aleutians. This storm brought strong wind along with snow to the Bering Sea coast producing a blizzard.
155	15-Apr-06	Winter Weather	A large intense North Pacific storm moved into the Bering Sea. Strong wind in advance of the front peaked at 102 mph at Atka. Strong wind and snow produced a blizzard in advance of the front moved as it moved into the Pribilof Islands.
155	15-Oct-06	High Wind	An intense storm moved into the central Bering Sea. This storm produced strong southeast wind in advance of its front across the central and eastern Aleutians while producing strong west wind across the western Aleutians.
155	28-Dec-06	High Wind	A large intense storm centered over the Alaska Peninsula produced widespread blizzard conditions across most of the central and eastern Bering Sea and over the southcentral region of Alaska.
155	9-Jan-07	High Wind	A storm in the north Pacific and its associated weather front caused gusty south winds, snow, and blowing snow across southwest Alaska.
155	25-Jan-07	High Wind	An intense north Pacific storm moved into the Eastern Bering Sea. This storm produced strong wind and snow as the associated front pushed into the southcentral region of Alaska. Around the north to west side of this storm, strong north to west wind combined with snow produced blizzard conditions in the Pribilof Islands.
155	30-Jan-07	Blizzard	An intense north Pacific storm moved to the central Aleutians with a secondary storm center south of the Alaska Peninsula. High wind swept through southwest and southcentral Alaska and along the central Aleutians and Alaska Peninsula. Snow over the central Aleutians combined with the wind resulted in a blizzard. Unconfirmed wind gusts were reported to 127 mph at Sand Point.

155	7-Mar-07	Heavy Snow	A strong northwest flow across the Bering Sea produced areas of snow along with strong Northwest wind. Blizzard conditions occurred from the Pribilof Islands south to the Alaska Peninsula.
155	26-Mar-07	Blizzard	A moderately strong low with gusty northwest winds around the back side of the storm and snow resulted in blizzard conditions across the Pribilof Islands to the Alaska Peninsula and along the Kuskokwim Delta coast.
155	17-Apr-07	Blizzard	An intense storm moved into the eastern Bering Sea. Strong wind combined with snow in advance of the front produced blizzard conditions across the Pribilof Islands to the Kuskokwim Delta coast.
155	24-Jan-08	High Wind	An intense storm moved across the Aleutians into the Bering Sea producing hurricane force wind along the Aleutians then blizzard conditions across the Pribilof Islands to the Bering Sea Coast.
155	12-Feb-08	High Wind	A north pacific storm pushed a front across the eastern Aleutians and western Alaska Peninsula. Strong wind and snow associated with this front produced blizzard conditions across the region. The low then moved along the south side of the Alaska Peninsula producing strong northeast to northwest wind from the Bering Sea Coast to the Pribilof islands to the Alaska Peninsula and Eastern Aleutians.
155	16-Feb-08	High Wind	A strong low moved south of the Aleutians produced strong east wind along with snow from the Kuskokwim Delta to the Pribilof Islands. The combination of wind and snow resulted in blizzard conditions for these regions.
155	14-Mar-08	High Wind	An intense north Pacific storm pushed a front into the eastern Bering Sea. Strong wind and snow in advance of the front produced a blizzard in the Kuskokwim Delta.
155	29-Mar-08	High Wind	An intense storm moved across the Aleutians into the eastern Bering Sea. Strong wind and snow ahead of the associated front produced blizzard conditions across the Pribilof Islands and along the Bering Sea.
155	24-Dec-08	High Wind	A strong front moved into the Bering Sea coast producing strong wind and snow that resulted in a Blizzard Christmas eve and Christmas day.
155	7-Feb-09	High Wind	Gusty northwest wind around the west side of a strong low combined with snow produced blizzard conditions across the Kuskokwim Delta and along the Alaska Peninsula.
155	12-Feb-09	Heavy Snow	An intense storm moved into the central Aleutians and moved to the eastern Bering Sea. The storm then moved to the Bering Sea coast producing blizzard conditions in the Bristol Bay region and Kuskokwim Delta. Strong northwest wind and snow around the northwest side of the low produced a blizzard in the Pribilof Islands.
155	3-Dec-09	High Wind	Two powerful north Pacific storms moved across the eastern Aleutians for three days. The storms produced winds of 125 mph across the eastern Aleutians and Alaska Peninsula and to 70 to 85 mph across the Bristol Bay area and to around 75 mph in the Pribilof Islands. Significant damage was reported in King Cove.

155	10-Jan-10	High Wind	A deep cold arctic air mass over the Alaska mainland combined with low pressure in the eastern Bering Sea produced strong wind in the Kuskokwim Delta.
155	1-Mar-10	High Wind	An intense North Pacific storm moved across the Bering Sea north of the Aleutians. As it passed the central Aleutians, hurricane force gusts to 75 mph were observed at Adak.
155	2-Apr-11	High Wind	An intense Bering Sea storm produced high wind and blizzard conditions from the western Aleutians to the Alaska Peninsula and along the Bering Sea coast of the Kuskokwim Delta. The peak wind observed in Dutch Harbor hit 107 mph.
155	6-Apr-11	High Wind	A large intense Bering Sea storm impacted Alaska from the Aleutian Islands to southcentral. Wind gusts reached 94 mph along Turnagain Arm and ranged from 72 to 78 mph along the Aleutian Islands, Alaska Peninsula, and Pribilof Islands. This storm also produced blizzard conditions across the Pribilof Islands to the Bering Sea coast and Bristol Bay coast.
155	8-Nov-11	High Wind/Storm Surge	A storm crossed the western Aleutians and intensified as it moved through the Bering Sea toward the Bering Strait. This storm produced high wind along with blizzard conditions and a storm surge that resulted in minor coastal flooding. The peak wind reached 83 mph at Shemya. Several ship reports were of wind around 80 knots in the Bering Sea associated with this storm. The strong wind and long fetch resulted in a coastal storm surge that produced minor coastal flooding in the Kuskokwim Delta region.
155	11-Nov-11	High Wind/Storm Surge	A potent storm moved into the eastern Bering Sea producing snow and strong wind in the Kuskokwim Delta and high wind from the Alaska Peninsula to the Bristol Bay region. The strong wind generated a storm surge that resulted in coastal flooding in Goodnews Bay.
155	25-Feb-12	High Wind	A large intense north Pacific storm moved into the eastern Bering Sea. This storm produced heavy snow and blizzard conditions along the Bering Sea coast and across the Pribilof Islands.
155	4-Apr-12	Blizzard	A strong storm moved across the central Aleutian Islands into the eastern Bering Sea. Snow and strong wind associated with this storm produced blizzard conditions across the central Aleutians to the Pribilof Islands and the Kuskokwim Delta.
155	8-Dec-12	Blizzard	A large intense North Pacific storm moved across the Eastern Aleutians and Alaska Peninsula. This storm spread snow along with strong wind across the Central Aleutians to the Pribilof Islands and the Bristol Bay and Kuskokwim Delta areas resulting in blizzard conditions.
155	25-Feb-13	Blizzard	King Cove developed blizzard conditions. Winds were quite strong with peak gusts reaching 90 mph.
155	24-Oct-13	High Wind	Winds gusting 70 mph or higher were reported at False Pass, Cold Bay, and King Cove. The highest gust was 72 mph at False Pass.
155	7-Feb-14	High Wind	Strong northwest wind blew across the East Aleutians with a measured peak gust of 114 mph…Strong wind blew across the Alaska Peninsula with the peak wind gust reaching 79 mph in King Cove.

155	11-Nov-15	High Wind	Winds remained just below hurricane force in the Central Aleutians, but were significantly stronger in the Eastern Aleutians, causing significant damage…Damage at Akutan was reported by the local emergency manager. Construction materials at a new fourplex were blown away.
155	25-Dec-15	High Wind	This storm brough strong winds to the Aleutians and Pribilof Islands and caused blizzard conditions along the West Coast with snow ahead of the front. One death was attributed to whiteout conditions during this time. Prolonged periods of high winds and heavy waves caused damage along the West Coast…Port Heiden observed winds over 73 mph for three hours during this time.
155	23-Dec-16	High Wind	A triple point low moved through the Eastern Aleutians. A peak gust of 85 mph was measured in Unalaska.
155	4-Oct-17	Ice Storm	A strong low-pressure system pushed across the eastern Bering Sea before moving inland across Southwest Alaska. A long fetch of strong westerly winds brought coastal flooding to portions of Southwest Alaska.
155	21-Dec-17	Extreme Cold/Wind Chill	A strong low-pressure system moved northward from the Gulf of Alaska to cross the Alaska Peninsula. It intensified to 976 mb as it did so, enhancing gap winds through the ranges. This caused high winds in southwest Alaska and the north side of the Alaska Peninsula.
155	30-Dec-18	High Wind	A low-pressure system moving southeastward off the Kamchatka Peninsula rapidly intensified over the Bering Sea, reaching a central pressure of 944 mb by the time it crossed the Aleutian Islands. This system had a second, equally strong, low center that developed in its wake, continuing stormy conditions across the Aleutians as the first low moved onshore. The two low-pressure systems brought widespread blizzards and high winds to the Aleutians.
155	2/11/2019	High Wind	A 968 mb low moved rapidly northward through the western Bering Sea, bringing cold air over the western Aleutians, which intensified the already strong winds. Storm force winds moved across the Bering, bringing high winds to the Pribilof Islands.
155	12/31/2019	Blizzard	A low-pressure system developed south of the Aleutian Chain and then moved northward along the Alaska Peninsula and up Cook Inlet. A strong high-pressure system behind it brought a large amount of cold air behind the low. This created the perfect scenario for snow and high winds along the Alaska Peninsula and northward through the Cook Inlet area. Snow and blizzard conditions continued into January 2020.
155	11/5/2019	Ice Storm	A low-pressure system moved northward from the Gulf of Alaska towards Bristol Bay. This brought a large amount of warm air into the region. Preceding conditions across Southwest Alaska were well below freezing. The warm air aloft allowed the precipitation in the area to fall as rain, which froze instantly upon hitting the ground.
155	11/19/2019	Blizzard	A complex weather system based in the Aleutian Islands brought multiple fronts across the area. This caused ice and blizzard conditions west of the Alaska Range, while entrenched cold air on the east side of the Alaska Range led to heavy snow.

155	1/1/2020	Blizzard	A low-pressure system developed south of the Aleutian Chain and then moved northward along the Alaska Peninsula and up Cook Inlet. A strong high-pressure system behind it brought a large amount of cold air behind the low. This created the perfect scenario for snow and high winds along the Alaska Peninsula and northward through the Cook Inlet area. Snow and blizzard conditions began in December 2019 and continued into January 2020.
155	3/1/2020	Blizzard	A low-pressure system in the Bering Sea brought a warm front to the Kuskokwim Delta coast. This caused winds to increase, reducing visibility in blowing snow to cause blizzard conditions. This event began in February.
155	2/8/2020	High Wind	A chain of storms developed in the North Pacific and moved northward along the Alaska Peninsula. The successive storms brought cold air behind them, which caused high winds through the Aleutians, blizzards along the west coast, and wind and blizzards in Southcentral.

(NWS, 2021)

5.3.5.4 Location

The entire AEB planning area experiences periodic severe weather impacts. The most common to the area are high winds and severe winter storms.

5.3.5.5 Extent

The entire AEB is affected. Table 9 lists mean weather conditions for select communities in the Borough. Severe weather is a normal part of living in Alaska. However, sometimes the confluence of elements produces extreme conditions. Being prepared is the key to survival. Alternate forms of home heat and lighting, stored food, appropriate clothing, and advance planning are critical.

The Western Regional Climate Center (WWRC) records summaries for weather stations in the U.S. The only two stations recorded in the AEB are Cold Bay and Sand Point.

Table 9. AEB Community Weather Summary

Characteristic	Cold Bay	Sand Point
Mean Summer High	51	53
Mean Summer Low	42	43
Mean Winter High	34	37
Mean Winter Low	25	30
Extreme High	77	72
Extreme Low	-13	1
Rain (inches)	38.29	44.68
Snowfall (inches)	62.8	12.9

Source: 2010 updated with most recent WWRC data as available in 2020

The most common forms of damage to structures from severe wind include loss of roofing materials, damage to doors and hinges, broken water lines due to freezing, fallen trees, structural failure of out-buildings, fallen or damaged exterior lights, flag poles, and antennae.

Overhanging signs on businesses and satellite dishes can become airborne projectiles.

Heavy snow brings another set of damages. Structural deflection or collapse of structures is common. Deflection causes cracks or breakage of interior walls and finishes. Falling ice from roof eaves can knock out electric meters, damage vehicles, break windows, and threaten injury to passersby. Sliding snow can cause damages described above and also cause damage to roof-mounted vents and other equipment. Wind-packed snow and ice can block windows and emergency exits.

Travel can be restricted by extreme low temperatures, fuel can gel, and visibility be impaired by ice fog. Pipes can freeze particularly if there is a lack of snow cover. Prolonged exposure to extremely low temperatures can result in hypothermia and death.

5.3.5.6 Impact

The intensity, location, and the land's topography influence the impact of severe weather conditions on a community.

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

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

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.

5.3.5.7 Recurrence Probability

High winds and winter storms occur several times a year in the AEB and its communities; therefore, the probability of severe weather impacting residents and infrastructure is highly likely. Highly likely equates to an event being probable within the calendar year or the event having up to one in one year's chance to occur (1/1 = 100%).

5.3.6 Volcanoes and Ashfalls

5.3.6.1 Hazard Characteristics

Alaska is home to more than 80 major volcanic centers, 41 of which have been historically active volcanoes stretching across the entire southern portion of the State from the Wrangell Mountains to the far Western Aleutians. An average of one to two eruptions per year occurs in Alaska. Over half of the State's population lives within 100 miles of an active volcano.

Volcanoes are vents at the Earth's surface through which magma (molten rock) and associated gases erupt, and also the landform built by effusive and explosive eruptions. Volcanoes with the potential to impact the AEB and its communities are Akutan, Amak, Dutton, Fisher, Isanotski, Pavlof, Shishaldin, Veniaminof, and Westdahl, (Figure 38) (AVO, 2021).

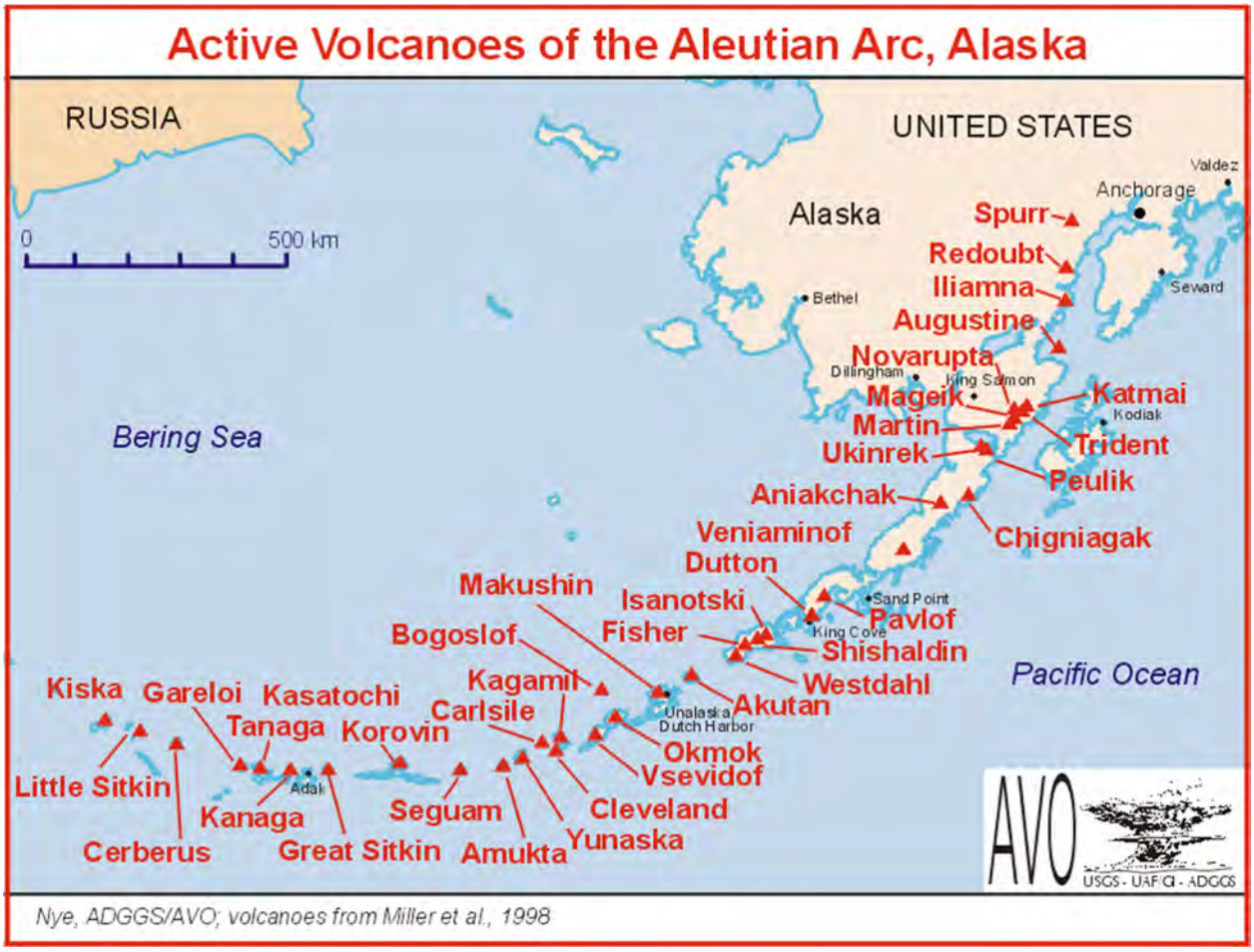


Figure 38. Volcanoes of the Aleutian Arc

Volcanic Ash

Volcanic ash, also called tephra, is fine fragments of solidified lava and rock crystals ejected into the air by a volcanic explosion. The fragments range in size, with the larger falling nearer the source. Ash is a problem near the source because of its high temperatures (may cause fires),

burial (the weight can cause structural collapses; for example, it was 100 miles from Novarupta to Kodiak where structures collapsed), and impact of falling fragments. Further away, the primary hazard to humans is damage to machinery (including airplanes in flight and boats in the ocean), decreased visibility, and inhaling the fine ash (long-term inhalation can lead to lung cancer), but lightning in large ash clouds can also pose a hazard. In Alaska, this is a major problem as many of the major flight routes are near historically active volcanoes. Ash accumulation may also interfere with the distribution of electricity due to shorting of transformers and other electrical components (ash is an excellent conductor of electricity).

The largest volcanic eruption of the 20th century occurred on the Alaska Peninsula at Novarupta Volcano in June 1912. The eruption started by generating an ash cloud that grew to thousands of miles wide during the three-day event. Within four hours of the eruption, ash started falling on Kodiak. It became hard to breathe because of the ash and sulfur dioxide gas. The water became undrinkable and unable to support aquatic life. Roofs collapsed under the weight of the ash. Some buildings were destroyed by ash avalanches while others burned after being struck by lightning from the ash cloud. Similar conditions could be found all over the area. Some villages ended up being abandoned, including Katmai and Savonoski Villages. The ash and acid rain also negatively affected animal and plant life. Large animals were blinded, and many starved because their food was eliminated.

5.3.6.2 History

The Alaska Volcano Observatory (AVO), which is a cooperative program of the USGS, the DGGS, and the UAF Geophysical Institute (UAF/GI), monitors seismic activity at Alaska's active volcanoes. In addition, satellite images of all Alaskan volcanoes are analyzed daily for evidence of ash plumes and elevated surface temperatures. AVO also researches the individual history of Alaska's active volcanoes and produces hazard assessment maps for each center.

Volcanoes near the communities that have been historically active within the AEB include Akutan (1992), Fisher (1830), Shishaldin (2019), Westdahl (1991), Amak (1796), Dutton, and Pavlof (2016). Veniaminof Volcano, near the eastern boundary of the AEB, last erupted in 2018 (AVO, 2021). The most active volcanoes in the area are Pavlof, Shishaldin, and Veniaminof.

5.3.6.3 Location, Extent, Impact, and Recurrence Probability

Location

Most of Alaska's volcanoes are located along the 1,550-mile-long Aleutian Arc, which extends westward to Kamchatka and forms the northern portion of the Pacific "Ring of Fire" (AVO, 2021). The entire AEB and its communities are at high risk for a volcanic event. Figure 38 illustrates the majority of active volcanoes in and around the communities of the AEB.

Extent

Extreme ashfalls, such as those documented previously for the Novarupta 1912 eruption, could happen again. There have been at least seven deposits of volcanic ash within 500 miles of Anchorage younger than 6,000 years that approach or exceed the volume of ash ejected by

Novarupta in 1912. Such events have occurred at less than 1,000-year intervals, which suggests a probability of about 5% in a 50-year time period.

There is also a substantially higher probability of smaller-scale ashfalls in the AEB and its communities from the numerous active volcanoes on the Alaska Peninsula or the Aleutian Arc from volcanoes further away, depending on the wind direction at the time of an eruption. For any given eruption, the depth of ash deposited at any given location depends on the total volume of ash ejected, the wind direction, and the distance between the volcano and a given location.

Extreme ashfall events, similar to the 1912 event, would have similar extreme consequences including building damage up to and including collapses, disruption of travel (air, sea, land), disruption of water, electric power and communications, and health and environmental impacts. Smaller ashfall events would result in little or no building damage, but would still have significant impacts, including:

- Respiratory problems for at-risk populations such as young children, people with respiratory problems and the elderly;
- Disruption of air, marine, and land traffic;
- Clean-up and ash removal from roofs, gutters, sidewalks, roads, vehicles, mechanical systems and ductwork, engines, and mechanical equipment;
- Clogging of filters and possible severe damage to vehicle engines, furnaces, heat pumps, air conditioners, commercial and public buildings combined heating, ventilation, and air conditioning (HVAC) systems and other engines and mechanical equipment;
- Disruption of public water supplies drawn from surface waters, including degradation of water quality (high turbidity) and increased maintenance requirements at water treatment plants;
- Disruption/clogging of storm water drainage systems;
- Disruption of electric power from ash-induced short circuits in distribution lines, transmission lines, and substations; and
- Disruption of communications.

A major factor in determining ashfall is wind direction. Kodiak was located directly downwind of the main eruption of Novarupta, which is why it was so deeply buried. Additionally, if there is a large ashfall, wind could blow and redistribute ashfall several times which would be a prolonged hazard. Ash resuspension continues to be a problem near Katmai even a century after Novarupta.

Impact

An ash fall event would undoubtedly be devastating to the entire AEB by straining its resources as well as transportation (air and ocean routes); especially if other nearby communities 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 AEB residents to be completely self-sufficient. Many of the volcanoes in Alaska are capable of producing eruptions that can affect far distant communities. A large ash plume has the capability of shutting down air, and potentially, fishing, ferry, and barge operations because tephra is damaging to all engine types. Large tephra could cause further damage from direct impact damages. Figure 39 displays air travel routes identified by the USGS and the active volcanoes which could easily disrupt air travel during significant volcanic eruptions with ash fall events.

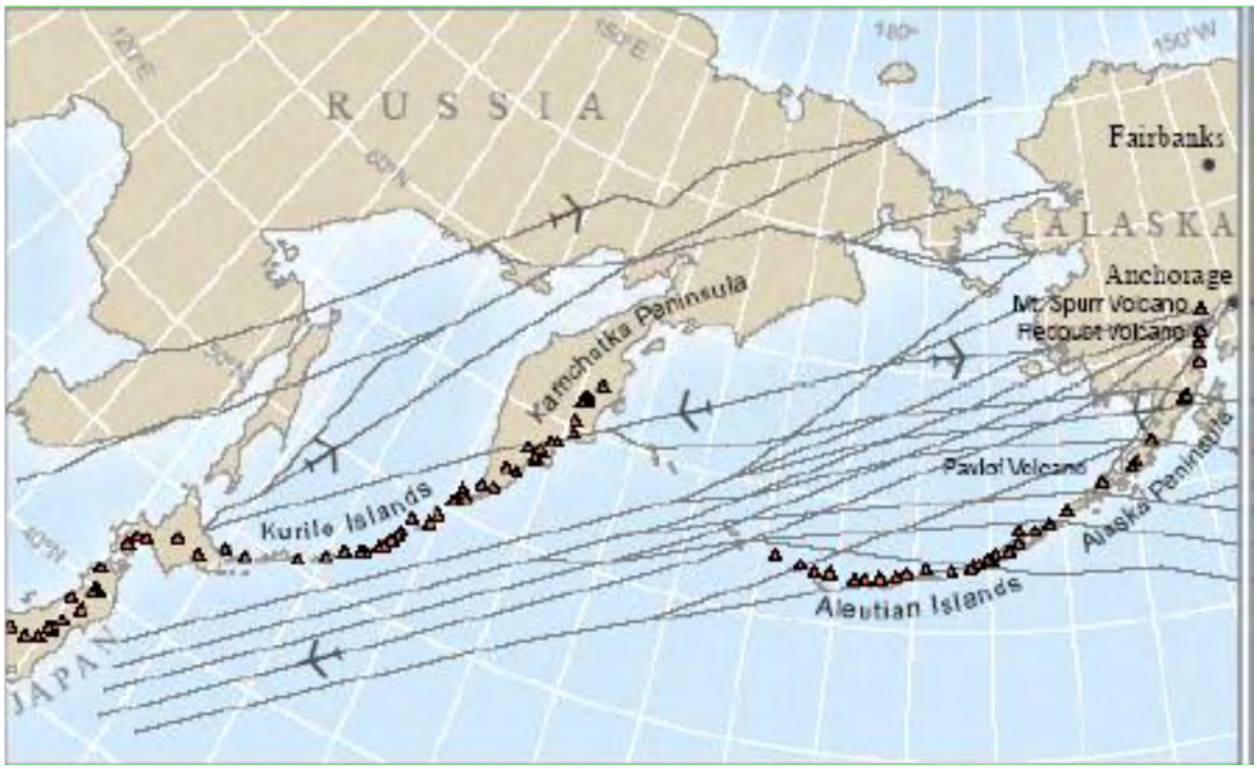


Figure 39. North Pacific Air Travel Routes

The actual impact to the AEB would depend in large part on the weather, especially wind patterns, at the time of the eruption. Changes in wind speed and direction could remove the chance of an ash fall on the AEB; however, it could also cause a disaster.

Another impact of major ashfall is a breakdown of soil cover, accelerating erosion. This impact was seen on the flanks of Okmok in the eastern Aleutian Islands following the 2008 eruption. Former grasslands were cut with networks of deep, rapidly eroding gullies (SVT, 2019).

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. It is likely that volcanic eruptions with ash falls will continue to occur, impacting AEB and its communities. Likely equates to an event being probable within the next three years or the event having up to one in three year's chance to occur (1/3 = 33%). Vulnerability depends on the type of activity and current weather, especially wind patterns.

6.0 Vulnerability Analysis

This section provides an overview of the vulnerability analysis.

DMA 2000 Requirements
Assessing Risk and Vulnerability, and Analyzing Development Trends **§201.6(2)(ii)** and **§201.7(c)(2)(ii):** The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described. This description shall include an overall summary of each hazard and its impact on the community. The Plan should describe vulnerability in terms of: **§201.6(2)(ii)(A)** and **§201.7(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(2)(ii)(B)** and **§201.7(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; and **§201.6(2)(ii) (C)** and **§201.7(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. **§201.7(c)(2)(ii)(D):** Cultural and sacred sites that are significant, even if they cannot be valued in monetary terms.
1. REGULATION CHECKLIST
ELEMENT B. Hazard Identification and Risk Assessment
B3 for Borough and Cities. 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(2)(ii)]** B3 for Village. Does the Plan include a description of each hazard's impact as well as an overall summary of the vulnerability of the Tribal planning area? B4. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods? **[Requirement §201.6(2)(ii)]**
ELEMENT D. Assessing Vulnerability, Analyzing Development Trends
D1. Was the Plan revised to reflect changes in development? **[Requirement §201.6(d)(3)]** D2. Was the Plan revised to reflect progress in local mitigation efforts? **[Requirement §201.6(d)(3)]**
Source: FEMA, 2015.

6.1 Overview of a Vulnerability Analysis

A vulnerability analysis predicts the extent of exposure that may result from a hazard event of a given intensity in a planning 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. Asset Exposure Analysis;
3. Repetitive Loss Properties;
4. Existing Critical Facilities and Infrastructure;
5. Vulnerability Analysis Methodology;
6. Data Limitations;
7. Vulnerability Exposure Analysis; and
8. Land Use and Development Trends.

Table 10 summarizes each jurisdiction's hazard vulnerabilities.

Table 10. Hazard Identification by Planning Area

Natural Hazards Profiles	AEB- Wide	Akutan	False Pass	King Cove	Nelson Lagoon	Sand Point
Changes in the Cryosphere	Yes	No	Yes	Yes	Yes	No
Earthquake	Yes	Yes	Yes	Yes	Yes	Yes
Flood/Erosion	Yes	No	Yes	No	Yes	No
Severe Weather	Yes	Yes	Yes	Yes	Yes	Yes
Tsunami	Yes	Yes	Yes	Yes	Yes	Yes
Volcano	Yes	Yes	Yes	Yes	Yes	Yes

6.2 Vulnerability Analysis: Specific Steps

6.2.1 Asset Inventory

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

6.2.2 Population and Building Stock

The 2019 certified population for the AEB is 2,938. Individual community populations and residential buildings are provided in Table 11.

Table 11. Estimated Population and Building Inventory

Community	Population		Residential Buildings	
	2010 Census	DCCED 2019 Data	Total Building Count	Total Value of Buildings
AEB	3,141	3,008	1,138	$136,566,100
Akutan	1,027	990	77	$7,507,500
False Pass	35	42	48	$5,755,200
King Cove	938	919	370	$44,770,000
Nelson Lagoon	52	30	44	$5,429,600
Sand Point	976	897	497	$63,218,400

Sources: Aleutians East Borough, 2019 DCRA Community Database, and 2019 ACS. Residential building numbers do not include any of the seafood processing housing complexes. 2019 ACS listed median housing values for AEB at $119,900; Akutan at $97,500; not provided for False Pass—assumed AEB value of $119,900; $121,000 for King Cove; $123,400 for Nelson Lagoon; and $127,200 for Sand Point.

6.2.3 Repetitive Loss Properties

Neither the AEB nor its included communities participate in the NFIP due to lack of funding and technical expertise.

6.2.4 Existing Critical Facilities and Infrastructure

Critical infrastructure is defined as a facility or infrastructure that provides essential products and services to the general public, such as preserving quality of life while fulfilling important public safety, emergency response, and disaster recovery functions. Critical facilities and infrastructure for the AEB are profiled in this MJHMP Update and include the following (see also Table 12):

- Government: AEB and City/Village administrative offices;
- Emergency Response: including fire personnel services and fire-fighting equipment;
- Health Care: medical clinics; and
- Community Gathering Places.

Table 12. Alaska's Critical Infrastructure

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

The AEB encompasses a large area of 15,000 square miles of land and water located on the Alaska Peninsula and adjacent islands. In its small, widely scattered communities, all existing infrastructure is important, and the loss of facilities or homes could be devastating to the communities. Tables 13 through 17 include a list of critical facilities in each community, and whether, based on its location, each has a low, moderate, or high vulnerability to specific natural hazards. Figures 40 to 45 show maps of critical facilities. The AEB does not have property tax and does not track number of occupants, physical addresses, latitudes and longitudes, appraisal values, or building types. The Cities and Native Village provide limited services to its residents and also do not have property tax. The AEB collects a fish tax.

The Nelson Village Corporation is the Village Corporation for Nelson Lagoon. The Corporation has 57,000 acres and 25 Tribal members. Everyone who lives on Nelson Lagoon is defined as the Tribe's Public. All of Nelson Lagoon is Tribal-owned with the exception that each Corporation shareholder receives one acre of land to own. Nelson Lagoon has no cultural or

sacred places such as a cemetery. Residents are buried outside their homes.

6.2.5 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 properties at risk without consideration of probability or level of damage. The analysis simply represents the number of people at risk; no estimate of the number of potential injuries or deaths was prepared.

6.2.6 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, residences, 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.

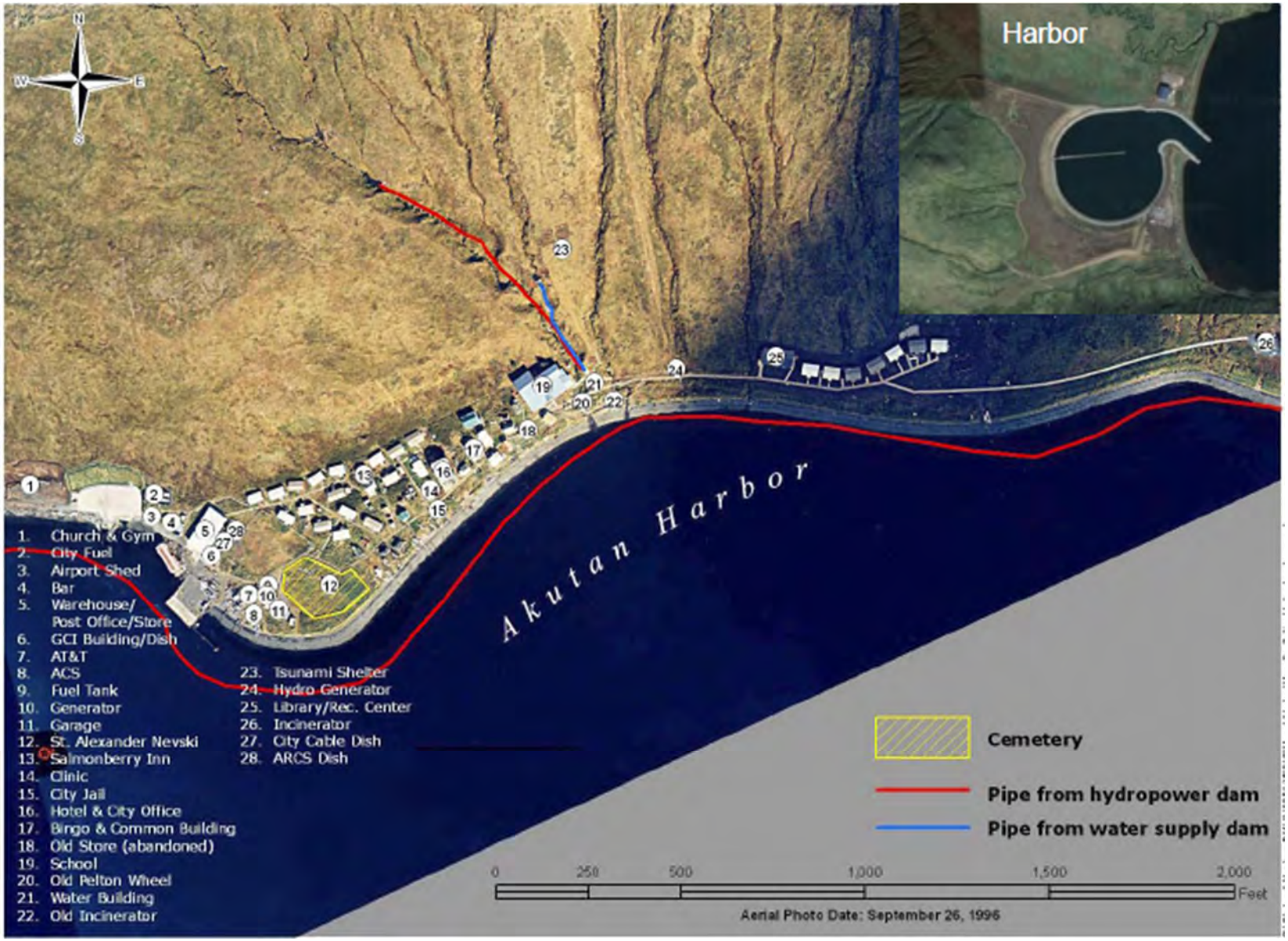


Figure 40. Akutan Map

Table 13. Akutan Critical Infrastructure

Critical Infrastructure/Facilities	Earthquake	Volcanoes	Tsunami	Severe Weather	Flood/ Erosion	Changes to the Cryosphere
2. City Fuel	M	M	H	M	N/A	N/A
5. Warehouse/Post Office/Store	M	M	H	M	N/A	N/A
6. GCI Building Dish	M	M	H	M	N/A	N/A
7. AT&T	M	M	H	M	N/A	N/A
8. ACS	M	M	H	M	N/A	N/A
9. Fuel Tank	M	M	H	M	N/A	N/A
10. Generator	M	M	H	M	N/A	N/A
12. St. Alexander Nevski Cemetery	M	M	H	M	N/A	N/A
14. Clinic	M	M	H	M	N/A	N/A
15. City Jail	M	M	H	M	N/A	N/A
16. City Office	M	M	H	M	N/A	N/A
17. Bingo & Common Building	M	M	H	M	N/A	N/A
19. School	M	M	H	M	N/A	N/A
21. Water Building	M	M	H	M	N/A	N/A
23. Tsunami Shelter location will be re-located after COVID risk is reduced	M	M		M	N/A	N/A
24. Hydro Generator	M	M	H	M	N/A	N/A
26. Incinerator and Landfill	M	M	H	M	N/A	N/A
27. City Cable Dish	M	M	H	M	N/A	N/A
28. ARCS Dish	M	M	H	M	N/A	N/A
New Harbor built in 2015	M	M	H	M	N/A	N/A
Runway on nearby Akun Island (see Figure 4)	M	M		M	N/A	N/A

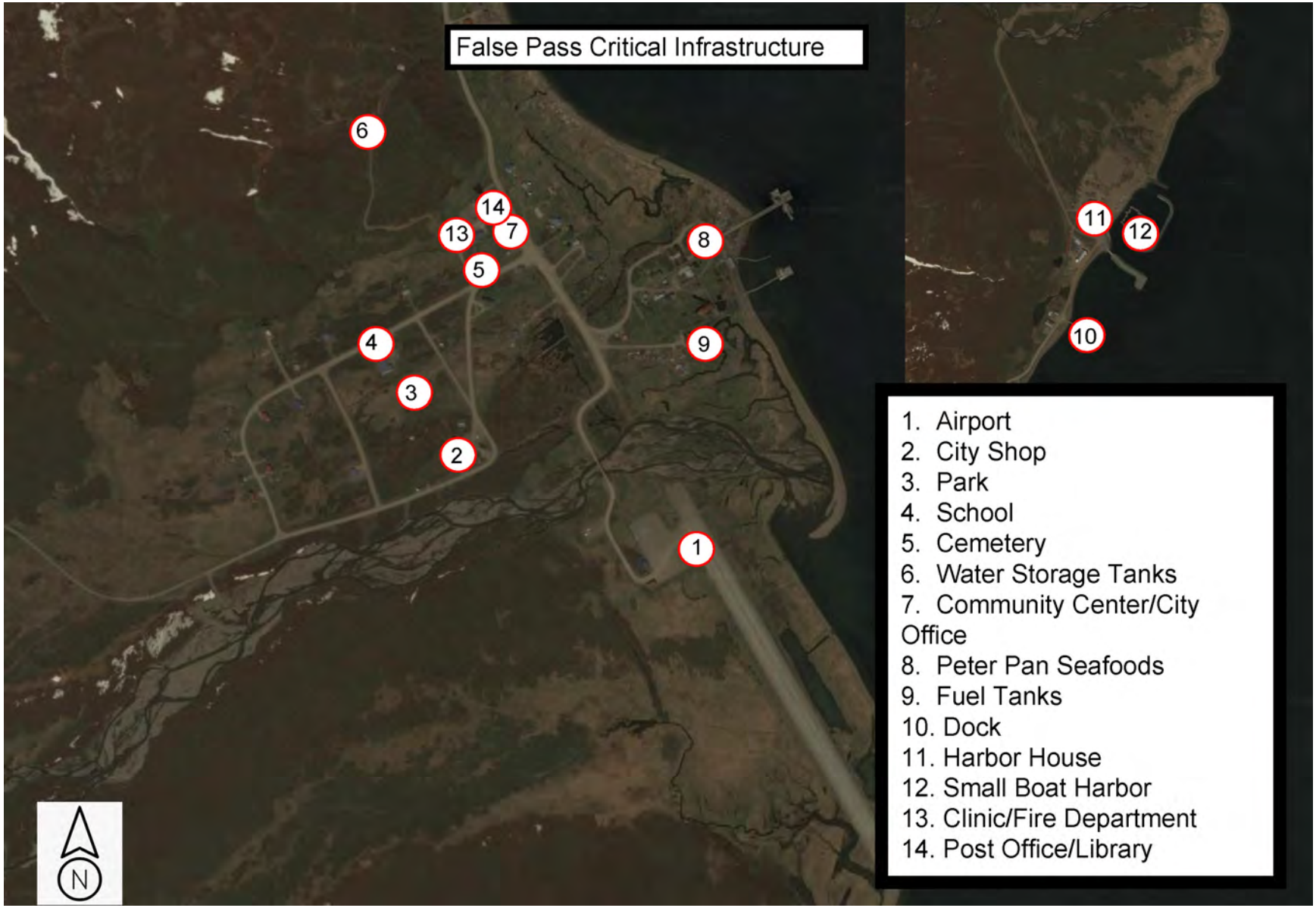


Figure 41. False Pass Critical Infrastructure

Table 14. False Pass Critical Infrastructure

Critical Infrastructure/Facilities	Earthquake	Volcanoes	Tsunami	Severe Weather	Flood/ Erosion	Changes to the Cryosphere
1. Airport	M	M	H	M	H	H
2. City Shop	M	M	H	M	N/A	N/A
3. Park	M	M	H	M	N/A	N/A
4. School	M	M	H	M	N/A	N/A
5. Cemetery	M	M	H	M	N/A	N/A
6. Water Storage Tanks	M	M	H	M	N/A	N/A
7. Community Center/City Offices	M	M	H	M	N/A	N/A
8. Peter Pan Seafoods	M	M	H	M	L	L
9. Fuel Tanks	M	M	H	M	N/A	N/A
10. Dock	M	M	H	M	L	L
11. Harbor House	M	M	H	M	L	L
12. Small Boat Harbor	M	M	H	M	L	L
13. Post Office	M	M	H	M	N/A	N/A
14. Fire Department/Clinic	M	M	H	M	N/A	N/A

Figure 42. King Cove Critical Infrastructure

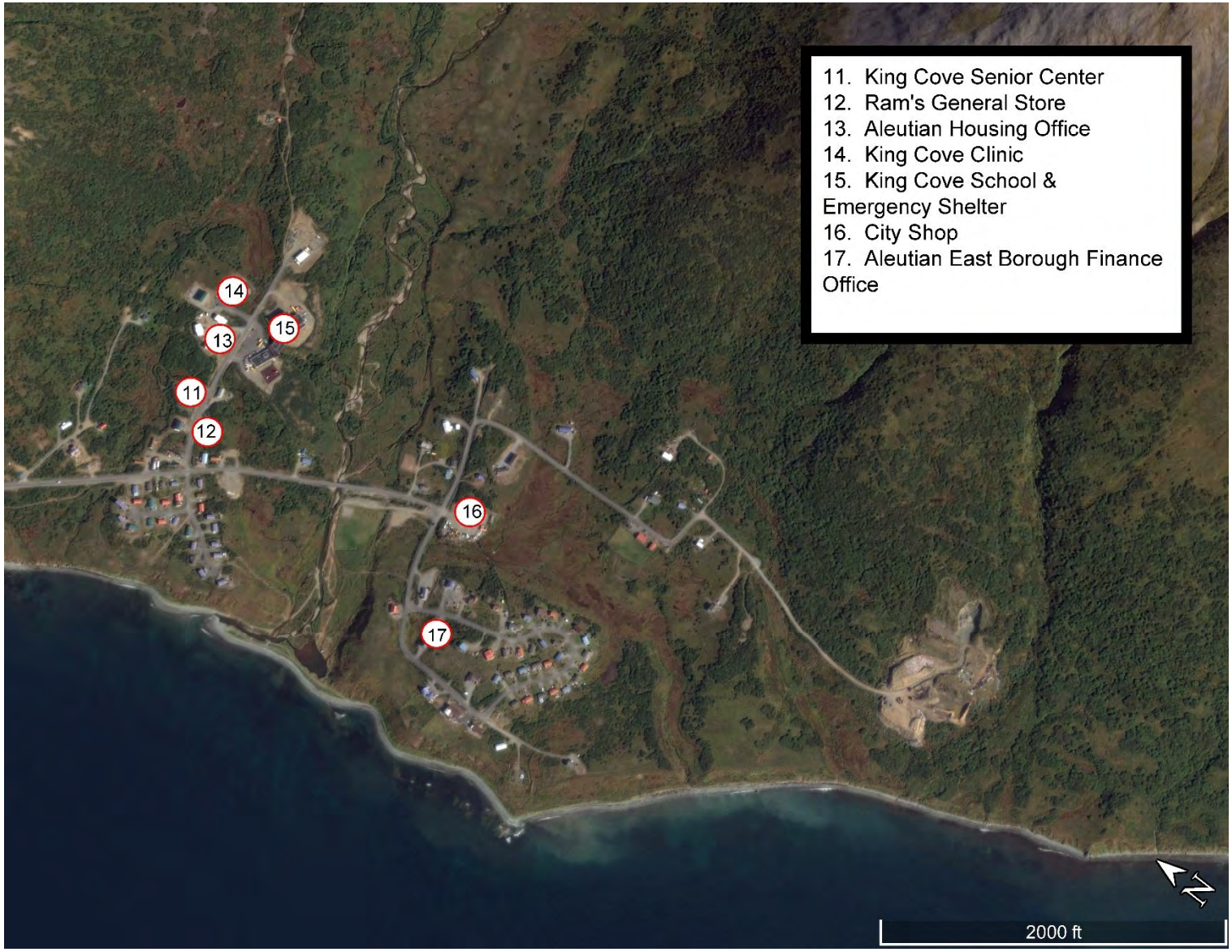


Figure 43. King Cove Critical Infrastructure

Table 15. King Cove Critical Infrastructure

Infrastructure/Structures	Earthquake	Volcanoes	Tsunami	Severe Weather	Erosion	Changes in the Cryosphere
1. City of King Cove Tank Farm	M	M	H	M	N/A	L
2. Warehouse	M	M	H	M	N/A	L
3. Alaska Commercial Co.	M	M	H	M	N/A	L
4. The Old School	M	M	H	M	N/A	L
5. City Storage	M	M	H	M	N/A	L
6. GCI Satellite Station	M	M	H	M	N/A	L
7. Department of Public Safety	M	M	H	M	N/A	L
8. Post Office	M	M	H	M	N/A	L
9. King Cove City Hall	M	M	H	M	N/A	L
10. King Cove Harbor House	M	M	H	M	N/A	L
11. King Cove Senior Center	M	M	L	M	N/A	L
12. Ram's General Store	M	M	L	M	N/A	L
13. Aleutian Housing Office	M	M	L	M	N/A	L
14. King Cove Clinic	M	M	L	M	N/A	L
15. King Cove School & Emergency Shelter	M	M	L	M	N/A	L
16. City Shop	M	M	L	M	N/A	L
17. AEB Finance Office	M	M	L	M	N/A	L

Figure 44. Nelson Lagoon Critical Infrastructure

Table 16. Nelson Lagoon Critical Infrastructure

Infrastructure/Structures	Earthquake	Volcanoes	Tsunami	Severe Weather	Flood/ Erosion	Changes in the Cryosphere
1. Community Center	M	M	H	M	M	M
2. COHO Commercial Store	M	M	H	M	L	M
3. Clinic	M	M	L	M	L	M
4. Water Treatment Plant	M	M	L	M	L	M
5. Water Tower	M	M	L	M	L	M
6. Community Storage Building	M	M	L	M	L	M
7. Aleutians East Borough School District Teacher Living Quarter	M	M	L	M	L	M
8. Private Shop	M	M	H	M	L	M
9. Tide's Inn	M	M	H	M	M	M
10. Community Office/Building	M	M	L	M	L	M
11. Private Shop	M	M	M	M	L	M
12. Bering Inn	M	M	M	M	L	M
13. School	M	M	M	M	M	M
14. Public Dock/Boat Ramp	M	M	L	M	M	M
15. Electrical	M	M	L	M	M	M
16. Storage Company	M	M	L	M	M	M
17. Airstrip	M	M	H	M	H	H
Solid Waste Disposal Site (see Insert A on Figure 24)	M	M	H	M	H	H
Water Pipe (see Insert A on Figure 24)	M	M	H	M	H	H

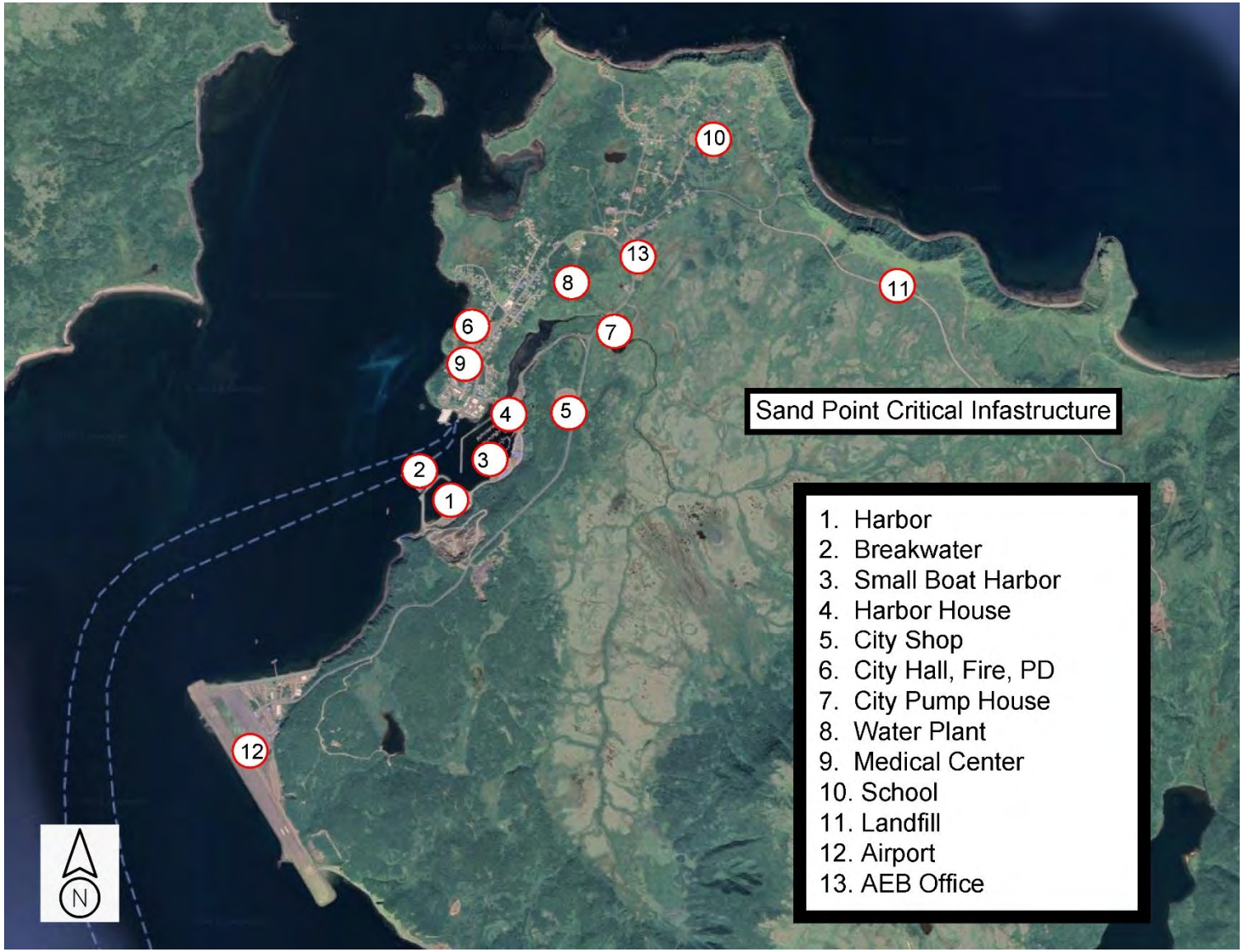


Figure 45. Sand Point Critical Infrastructure

Table 17. Sand Point Critical Infrastructure

Infrastructure/Structures	Earthquake	Volcanoes	Tsunami	Severe Weather	Flood/ Erosion	Changes in the Cryosphere
1. Harbor	M	M	H	M	N/A	N/A
2. Breakwater	M	M	H	M	N/A	N/A
3. Small Boat Harbor	M	M	H	M	N/A	N/A
4. Harbor House	M	M	H	M	N/A	N/A
5. City Shop	M	M		M	N/A	N/A
6. City Hall, Fire, PD	M	M		M	N/A	N/A
7. Water Intake Building	M	M	H	M	N/A	N/A
8. Water Plant	M	M	H	M	N/A	N/A
9. Medical Center	M	M		M	N/A	N/A
10. School and Water Tank	M	M		M	N/A	N/A
11. Landfill	M	M		M	N/A	N/A
12. Airport	M	M	H	M	N/A	N/A
13. AEB Office	M	M		M	N/A	N/A

6.2.7 Vulnerabilities

Table 18 summarizes each jurisdiction's priority ranking of hazards. The top three AEB priorities were provided by the AEB Assembly. The individual rankings for communities were determined from the public survey. Vulnerabilities by hazard are summarized below.

Table 18. Hazard Identification by Area

Natural Hazards Profiles	AEB- Wide	Akutan	False Pass	King Cove	Nelson Lagoon	Sand Point
Changes in the Cryosphere		2	5	3	1	6
Earthquake	1	4	2	1	3	1
Erosion		1	4	4	4	5
Severe Weather		3	1	5	2	3
Tsunami	2	4	4	3	5	2
Volcano	3	3	3	2	4	4

Earthquakes

Alaska should expect the full spectrum of potential earthquake ground motion scenarios. Severe shaking may result in infrastructure damage that is equally as extreme. Although all structures are at some risk due to earthquakes, short wooden buildings are less vulnerable than multi-story and complex masonry/steel structures. The majority of Alaska's schools, State, and Federal buildings are built and sited based on stringent seismic construction standards and are expected to survive major earthquake events.

The 2018 *State of Alaska HMP* categorized the AEB planning area at risk of experiencing moderate earthquake impacts (see Section 5.3.2). Impacts to the communities such as significant ground movement that may result in infrastructure damage may occur. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated to remain the same. Tables 13 through 17 include a list of critical facilities in each community, and whether, based on its location, each has a low, moderate, or high vulnerability to earthquakes.

Impacts to the community such as significant ground movement that may result in infrastructure damage could occur. Due to the AEB's highly active geologic setting at a tectonic plate boundary, future populations, residential structures, critical facilities, and infrastructure will be exposed to continued earthquakes of various magnitudes—from those that are barely felt to those that detrimentally affect large regions of the State.

Tsunamis

The 2018 *State of Alaska HMP* categorizes the AEB at risk of experiencing high tsunami impacts. Impacts associated with a tsunami event include the potential for loss of life and property. Tsunami mapping for all AEB communities has been completed since the 2010 MJHMP, and the maximum inundation maps are included in Section 5.3.4. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated to remain the same. Tables 13 through 17 include a list of critical facilities in each community, and whether, based on its location, each has a low, moderate, or high vulnerability to tsunamis.

Volcanoes

The 2018 *State of Alaska HMP* categorizes the AEB at risk of experiencing moderate volcanic impacts. Impacts associated with an ashfall event include the potential for ashfall to damage motors, bring marine and air transportation to a halt and impair air quality (Section 5.3.6). Impacts to future populations, residences, critical facilities, and infrastructure are anticipated to remain the same. Tables 13 through 17 include a list of critical facilities in each community, and whether, based on its location, each has a low, moderate, or high vulnerability to volcanoes.

Severe Weather

Using information provided by the NWS, the entire existing and future AEB population, residences, and critical facilities are equally exposed to the effects of a severe weather event. Impacts associated with severe weather events include roof collapse, trees and power lines falling, damage to light aircraft and sinking small boats, injury and death resulting from marine, snow machine or vehicle accidents, overexertion while shoveling--all due to heavy snow. A quick thaw after a heavy snow can also cause substantial flooding. Impacts from extreme cold include hypothermia, halting transportation from fog and ice, congealed fuel, frozen pipes, utility disruptions, frozen pipes, and carbon monoxide poisoning. Section 5.3.5 provides additional detail regarding the impacts of severe weather. Buildings that are older and/or not constructed with materials designed to withstand heavy snow and wind (e.g., hurricane ties on crossbeams) are more vulnerable to the impacts of severe weather. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at the same impact level. Tables 13 through 17 include a list of critical facilities in each community, and whether, based on its location, each has a low, moderate, or high vulnerability to severe weather.

Floods/Erosion

Impacts associated with flooding are water damage to structures and contents, road and coastal damage, areas of standing water in roadways, and damage or displacement of 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 the impacts of flooding (see Section 5.3.3). Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at the same historical impact level for every community but False Pass and Nelson Lagoon. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at increased impact levels for False Pass and Nelson Lagoon because of the accelerated changes in the cryosphere (storm surges, lack of sea ice) which exasperate erosion damages. Tables 13 through 17 include a list of critical facilities in each community, and whether, based on its location, each has a low, moderate, or high vulnerability to floods/erosion.

Changes in the Cryosphere

Changes in the cryosphere cause unstable slopes which create avalanches in King Cove and storm surges along sandy coasts. Impacts to future populations, residences, critical facilities, and infrastructure are anticipated at the same impact level. Tables 13 through 17 include a list

of critical facilities in each community, and whether, based on its location, each has a low, moderate, or high vulnerability to changes in the cryosphere.

6.3 Land Use and Development Trends

The AEB communities are built on islands or the Alaska Peninsula. The human footprint in the AEB is relatively small with communities concentrated near fishing grounds. The AEB does not have a land ownership map or percentage breakdown by land owner.

Land use in the AEB is predominantly residential with limited area for commercial services and community (or institutional) facilities. Suitable developable vacant land is in short supply various hydrological bodies and geological features surrounding each community.

There have been no changes in development in hazard prone areas since the last MJHMP was approved in 2010. Future AEB projects include:

- The King Cove – Cold Bay Access Project;
- The Akun Dock and Breakwater Project in Akutan;
- Harbor Float Systems in Sand Point and Akutan; and
- The False Pass Airport Project with a longer runway. The current gravel runway gets soft and becomes difficult to use during spring break-up, melting ice/snow and heavy rains, reducing aircraft performance and safety. Also, due to the length of the runway, air ambulance companies are unable to serve False Pass because the companies require a minimum runway length of 3,000 feet in order to land.

7.0 Mitigation Strategy

This section outlines the four-step process for preparing a mitigation strategy including:

- Developing Mitigation Goals;
- Identifying Mitigation Actions;
- Evaluating Mitigation Actions; and
- Implementing Mitigation Action Plan (MAP) Strategies.

The goal of all mitigation is the reduction of risk. Accordingly, the primary purpose of this 2021 MJHMP Update is to identify strategies for increasing the level of protection from vulnerability to natural hazards experienced by residents and visitors within the AEB. All other goals and objectives are in support of this purpose.

It is challenging to address a comprehensive MJHMP Update for the entire AEB considering that it encompasses multiple isolated communities. A "do-it-yourself" frontier attitude, typical of most Alaskan communities prevails. Residents tend to consider the AEB to be made up of small isolated communities without much need for government intervention.

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

DMA 2000 Requirements
Identification and Analysis of Mitigation Actions **§201.6(c)(3):** 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? **§201.6(c)(3)(ii):** Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? **§201.7(c)(3)** and **§201.7(c)(3)(iv):** 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? **§201.7(c)(3)(iv)** and **§201.7(c)(3)(v):** Does the Plan include a discussion of Tribal funding sources for hazard mitigation projects and current and potential sources of Federal, Tribal, or private funding to implement mitigation actions? **§201.6(c)(3)(ii)** and **§201.7(c)(3)(i):** Does the Mitigation Strategy include goals to reduce or avoid long-term vulnerabilities to the identified hazards? **§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)(ii)** and **§201.7(c)(3)(iv):** [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** and **iv)** and **§201.7(c)(3)(iii):** [The hazard mitigation strategy shall include an] action plan, describing how the action identified will be prioritized, implemented, and administered by the local and tribal jurisdictions. **§201.6(c)(4)(ii)** and **§201.7(c)(4)(iii):** [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. **§201.6(c)(4)(ii)** and **§201.7(c)(4)(ii** and **v):** [The Plan shall include a] process by which local governments will 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 City. 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? C1 Tribe. 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? C2 City. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? *(Addressed in Section 6.6)* C2 Tribe. 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? 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? 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? C7 Tribe. 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?
ELEMENT D. HMP Updates
D3. Was the Plan revised to reflect changes in priorities? **[Requirements §201.6(d)(3)]**
Source: FEMA, 2015.

7.1 Developing Mitigation Goals

Section 6 was used as a basis for developing mitigation goals and actions. 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. As such, goals were developed to reduce or avoid long-term vulnerabilities to the identified hazards in 2010. In February 2021, the Planning Team modified the goals from the 2010 HMP (Table 19). Additionally, a new goal was added of reducing the risk of damage from changes in the cryosphere. Goals in Table 19 are listed in the order of importance for the AEB.

Table 19. Mitigation Goals

No.	Goal Description
1	Reduce potential earthquake (EQ) vulnerability, damage, and loss.
2	Reduce potential tsunami (TS) vulnerability, damage, and loss.
3	Reduce potential volcano (V) vulnerability, damage, and loss.
4	Reduce potential severe weather (SW) vulnerability, damage, and loss.
5	Reduce potential flooding and erosion (FL/ER) vulnerability, damage, and loss.
6	Reduce potential changes to the cryosphere (CC) vulnerability, damage, and loss.

7.2 Identifying Mitigation Actions

After mitigation goals were developed, the Planning Team assessed potential mitigation actions to carry forward into the mitigation strategy. Mitigation actions are activities, measures, or projects that help achieve the goals of an MJHMP. Mitigation actions are usually grouped into three broad categories: property protection, public education and awareness, and structural projects. The Planning Team placed particular emphasis on projects and programs that reduce the effects of hazards on both new and existing buildings and infrastructure. These potential actions are listed in Table 20.

7.3 Evaluating and Prioritizing Mitigation Actions

The Planning Team evaluated goals and potential actions from the 2010 MJHMP and provided updates. New goals and potential actions were developed as necessary.

The Planning Team reviewed the simplified social, technical, administrative, political, legal, economic, and environmental (STAPLEE) evaluation criteria (shown in Table 21) and the Benefit-Cost Analysis Fact Sheet (Appendix D) to consider the opportunities and constraints of

Table 20. Potential Mitigation Actions

Goals		Potential Actions	
No.	**Description**	**ID**	**Description**
1	Reduce potential EQ vulnerability, damage, and loss.	A	Obtain funding to protect existing critical infrastructure from earthquake damage. **2021 Update:** Emergency shelters and clinics in each community should be surveyed to ensure each facility has the appropriate number of generators.
2	Reduce potential tsunami vulnerability, damage, and loss.	A	Increase public education about tsunamis and seiches. **2021 Update:** The schools have drills, and information is available within the communities.
		B	Consider pursing Tsunami Ready Community Designation Programs. **2021 Update:** The Cities of King Cove and Sand Point are Tsunami Ready Communities.
		C	Develop accurate inundation maps for the AEB coastline. **2021 Update:** DGGS has completed mapping for all AEB communities. Tsunami inundation maps were created for Akutan, King Cove, and Sand Point. Tsunami hazard maps were created for False Pass and Nelson Lagoon.
		D	Update AEB Emergency Operations Plan, as needed. **2021 Update:** The AEB has a Plan from 2007.
3	Reduce potential volcano vulnerability, damage,	A	Continue to provide public education regarding volcanoes. **2021 Update:** The AEB communities continue to educate residents.

	and loss.	B	Increase planning for volcanic hazards. **2021 Update:** King Cove has a NIXLE system to alert residents of hazards. Individual communities monitor warning networks, including NOAA, FEMA, the Alaska Warning System, and the Tsunami Alert System.
		C	Research and publish information on volcanic hazards in Alaska. **2021 Update:** AVO researches volcanoes and maintains current information on its website.
		D	Improve monitoring. **2021 Update:** AVO monitors volcanoes and communicates with the AEB and its communities.
4	Reduce potential SW vulnerability, damage, and loss.	A	Mitigate the effects of severe weather by instituting programs that provide early warning and preparation. **2021 Update:** King Cove has a NIXLE system to alert residents of hazards. Individual communities monitor warning networks, including NOAA, FEMA, the Alaska Warning System, and the Tsunami Alert System.
		B	Educate people about the dangers of extreme weather and how to prepare. **2021 Update:** Residents are aware of this hazard and are prepared.
		C	Develop practical measures to warn in the event of a severe weather event. **2021 Update:** Individual communities monitor warning networks, including NOAA, FEMA, the Alaska Warning System, and the Tsunami Alert System and relay this information to their residents.
5	Reduce potential FL/ER vulnerability, damage, and loss.	A	**New in 2021:** Communities monitor their own FL/ER concerns if applicable.
6	Reduce CC vulnerability, damage, and loss.	A	**New in 2021:** Increase public awareness of avalanche dangers in King Cove and map hazard zones.
		B	**New in 2021:** Erosion from storm surges is included with FL/ER due to increased storm surges contributing to erosion.

implementing each 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 AEB chooses to implement.

Table 21. 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 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 2009 Planning Team prioritized mitigation actions that were chosen to carry forward into the MAP for the 2010 MJHMP. The 2020 Planning Team considered each mitigation action from the 2010 MJHMP. Progress statements were added to each mitigation action. 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. The 2021 Planning Team reprioritized the planning actions (see Table 18).

7.4 Implementing a Mitigation Action Plan

Table 22 shows the AEB's and each community's MAP Matrix that shows how the mitigation actions were prioritized, how the overall benefit/costs were taken into consideration, and how each mitigation action will be implemented and administered by the Planning Team.

If no mitigation actions from Table 22 are implemented, the AEB and its communities will continue to be vulnerable to all hazards identified in Section 5 and the risks associated with those hazards in Section 6. If mitigation actions from Table 22 are implemented, the AEB and its communities will become resilient areas that are prepared for potential hazards identified and profiled in Section 5 and the risks associated with those hazards in Section 6.

Table 22 contains statuses, priorities, responsible agencies, potential funding sources, and timelines for mitigation actions selected to be implemented.

Nelson Lagoon's Tribal government does not have pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area. Additionally, other than IGAP and BIA Transportation, there are no Tribal funding sources for hazard mitigation projects at the present time other than the Alaska Sea Grant.

Table 22. AEB and its Communities' Mitigation Action Plan Matrix

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
AEB						
EQ 1	Conduct mock emergency exercises to identify response vulnerabilities (i.e., Great Alaska Shakeout). **2021 Progress:** Drills are ongoing in the school system.	High	Borough Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
TS 1	Complete inundation mapping. Consider pursuing tsunami ready community designations. **2021 Progress:** Mapping has been completed. AEB will support its communities in their decisions regarding pursuing tsunami community designations.	High	Borough Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
V 1	Continue to support publication of volcano hazard assessments for Alaska's active volcanoes. **2021 Progress:** Ongoing.	High	Borough Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
SW 1	Research and consider instituting the National Weather Service program of "Storm Ready". **2021 Progress:** Ongoing.	High	Borough Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
ER 1/CC 1	**New in 2021:** Support communities with their efforts to mitigate erosion.	High	Borough Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
Akutan						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2015. Buildings and facilities intended as shelters that are located outside the inundation zone should be equipped with generators and emergency supplies.	High	City Administrator	DHS&EM BRIC and HMGP	2026	B/C: Life/Safety project. Residents identified in the 2021 survey that shelters aren't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Now that the tsunami zone has been mapped, the City Mayor is able to research participation requirements and make a decision.	High	City Mayor	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
TS 2	**New in 2021:** Install a second tsunami siren.	High	City Administrator	DHS&EM, NOAA	2026	B/C: Life/Safety Issue TF: Staff time
TS 3	Replace Tsunami Shelter. **2021 Progress:** Funding has been procured. Once COVID allows, shelter will be re-located to allow better access.	High	City Administrator	In hand	2021	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2020 Progress:** The City supports the Tribe's and Village Corporation's educational awareness efforts.	Low	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
SW 2	Improve City Dock. **2021 Progress:** DOT replaced City Dock with a small boat harbor in 2015. This action will be deleted in next HMP Update.	Completed.				
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	City	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	City	2022	B/C: Life/Safety Issue TF: Staff time
ER 1	Protect water source and transmission line. **2021 Progress:** System has been replaced. This action will be deleted in next HMP Update.	Completed.				
ER 2	**New in 2021:** Erosion is occurring near housing by the Library/Recreation. Center. Mitigate Erosion.	High	City Mayor is working with Tribe.	Scope and nature of hazard is being determined.	2021	B/C: This hazard was discovered in 2021 during the updating of this MJHMP. TF: It's less expensive to mitigate erosion in its early stages.
False Pass						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2019. Buildings and facilities intended as shelters that are	High	City Mayor	DHS&EM BRIC and HMGP	2026	B/C: Life/Safety project. Residents identified in the 2021 survey that shelters

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	located outside the inundation zone should be equipped with generators and emergency supplies.					aren't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Now that the tsunami zone has been mapped, the City Mayor is able to research participation requirements and make a decision.	High	City Mayor	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
TS 2	**New in 2021:** Install a tsunami siren.	High	City Mayor	DHS&EM, NOAA	2026	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2021 Progress:** Health fairs and the Fire Department pass out natural hazard information to the community.	Low	City Mayor	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
SW 2	**New in 2021:** Dilapidated homes and debris become projectiles in severe wind storms with gusts greater than 100 mph. Remove debris.	High	City Mayor	Staff Time	2025	B/C: Life/Safety Issue TF: Local labor could remove debris if funding was obtained.
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	Staff Time	2022	B/C: Life/Safety Issue TF: Staff time
FL/ER 1	Consider benefits of joining the NFIP. **2021 Progress:** The community would need to be mapped for flooding first.	High	City Mayor	DHS&EM, NOAA	2026	B/C: Flooding is limited to Round Top Creek. Benefit may not outweigh the costs of the program. TF: Staff time
FL/ER 2	Continue to monitor the concrete blocks and gravel at Unimak Drive, and report to the USACE any erosion issues.	High	City Administrator	Staff Time	2021	B/C: Maintain investment.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	2021 Progress: Erosion mitigation is working as intended.					TF: Staff time.
FL/ER3	**New in 2021:** Erosion has occurred further south on the access road to Unimak Drive from City Pier to Fuel Road. Implement mitigation action.	High	City Administrator	Staff Time	2021	B/C: Action is needed to mitigate erosion. TF: Staff time.
FL/ER 4	**New in 2021:** Install culverts at Mountain Valley subdivision to prevent flooding over the road.	High	City Administrator	DHS&EM BRIC or HMGP	2026	B/C: Inexpensive solution. TF: Staff time.
FL/ER 5	**New in 2021:** Repair the upper portion of the concrete boat ramp that has washed away.	High	City Administrator	DHS&EM HMGP	2022	B/C: Action is needed to mitigate erosion. TF: Staff time.
FL/ER 6	**New in 2021:** False Pass has a substandard gravel runway measuring 2,150 feet long by 60 feet wide, and the State requires a 3,100-foot runway. The runway also gets soft and becomes difficult to use during spring break-up, melting ice/snow and heavy rains, reducing aircraft performance and safety. The AEB is working with the City for a project to upgrade the runway.	High	AEB Administrator	State of Alaska, DOT&PF, FAA	2026	B/C: Life/Safety Issue TF: Funding would be required.
King Cove						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2016. The school is intended as a shelter and should be equipped with generators and emergency supplies.	High	City Administrator	DHS&EM BRIC and HMGP	2026	B/C: Life/Safety project. Residents identified in the 2021 survey that shelters aren't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** King Cove is now designated a tsunami-ready community.	High	City Administrator	Staff Time	Completed.	

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
TS 2	**New in 2021:** Install an additional tsunami siren by the City Shop.	High	City Administrator	DHS&EM, NOAA	2026	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2021 Progress:** Health fairs are used by the City to pass out natural hazard information to the community. The City participates in the Great Alaska Shake-out. Tsunami drills occur twice a year at the school.	Low	City Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	Staff Time	2022	B/C: Life/Safety Issue TF: Staff time
FL/ER 1	**New in 2021:** The City has several small erosion/flooding projects planned for the spring.	High	City Administrator	DHS&EM, NOAA	2021	B/C: The City is proactive in mitigation projects. TF: Funding is in hand.
CC 1	**New in 2021:** Install warning signage in known avalanche zones.	High	City Administrator	City	2021	B/C: Life/Safety Issue TF: Staff time
CC 2	**New in 2021:** Map avalanche hazard zones.	High	City Administrator	DGGS	2024	B/C: Life/Safety Issue TF: Staff time
CC 3	**New in 2021:** Conduct a time-lapsed photographic study of the glaciers on Mt. Dutton that power the hydroelectric facilities to ensure there will be enough water to power the facilities well into the future.	Low	City Administrator	AEB, City	2026	B/C: Future Planning TF: A drone could potentially capture this information.
Nelson Lagoon						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** The school is intended as a shelter and should be equipped with generators and emergency supplies.	High	Tribal Administrator	DHS&EM	2026	B/C: Life/Safety Issue. Residents identified in the 2021 survey that the shelter isn't equipped with supplies and a source of heat.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
						TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Now that the tsunami zone has been mapped, the Tribal Administrator is able to research participation requirements and make a decision.	High	Tribal Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2021 Progress:** Health fairs are used by the Village to pass out natural hazard information to the community.	Low	Tribal Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	Tribal Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	Tribal Administrator	Staff Time	2022	B/C: Life/Safety Issue TF: Staff time
FL/ER/ CC 1	Implement long-term erosion control project to protect waterline and other infrastructure. **2021 Progress:** Studies have been completed. Actions to be implemented are: • If the airstrip is to stay operational during extreme storm-tide events, mitigation action needs to occur. • The landfill needs to have erosion mitigation actions installed or to be relocated. • The current seawall failed in 2013 and needs to be replaced and mitigation structures need to be placed and extended to the west of the existing seawall as described by HDR, 2015.	High	Tribal Administrator	DHS&EM, NOAA	2026	B/C: Hazards have been identified and prioritized. Mitigation is necessary. TF: Funding is needed to implement recommended solutions.
FL/ER 2	Relocate Nelson Lagoon water transmission line away from shoreline. **2021 Progress:** This action has not occurred.	High	Tribal Administrator	DHS&EM BRIC and HMGP, Denali Commission	2026	B/C: Life/Safety Issue TF: Staff time
FL/ER/ CC	Install geodetically referenced, permanent, real-time water level gauge and wave buoys.	Medium	Tribal Administrator	UAF-ACGL, DGGS, FEMA,	2022	B/C: Accurate flood mapping, tide

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
3				NWS		predictions (important for surge forecasting and impact), quantify changes to wave regime, improved validation and forecasting of NWS surge prediction models
Sand Point						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2017. The school is intended as a shelter and should be equipped with generators and emergency supplies.	High	City Administrator	DHS&EM	2026	B/C: Life/Safety Issue. Residents identified in the 2021 survey that the shelter isn't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
EQ 2	New in 2021: Harden the water and sewer system.	High	City Administrator	DHS&EM	2026	B/C: Life/Safety Issue TF: Staff time
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Sand Point is now designated a tsunami-ready community.	High	City Administrator	Staff Time	Completed.	
TS 2	**New in 2021:** Install an additional tsunami siren.	High	City Administrator	DHS&EM, NOAA	2026	
TS 3	Build a road to a higher elevation in case of a tsunami. **2021 Progress:** Most of the community is above sea level so this isn't a concern. This mitigation action will be deleted in the next HMP Update.	This mitigation action will be deleted in the next HMP Update.				
TS 4	Construct a heliport. **2021 Progress:** This mitigation action is not a priority and will be deleted in the next HMP Update.	This mitigation action will be deleted in the next HMP Update.				
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week.	Low	City Administrator	Staff Time	Ongoing	B/C: Pre-planning saves lives.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	2021 Progress: Health fairs are used by the City to pass out natural hazard information to the community.					TF: Easily implementable.
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time

8.0 Plan Maintenance

This section describes a formal plan maintenance process to ensure that the MJHMP Update remains an active and applicable document. It includes an explanation of how the Planning Team intends to organize their efforts to ensure that improvements and revisions to the MJHMP Update occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail here:

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

8.1 Monitoring, Evaluating, and Updating the Plan

The requirements for monitoring, evaluating, and updating the MJHMP, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements
Monitoring, Evaluating, and Updating the Plan **Requirement §201.6(c)(4)(i, ii, and iii):** [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; b] a process by which local government incorporates the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate; and c] discussion on how the community will continue public participation in the Plan maintenance process.
1. REGULATION CHECKLIST
ELEMENT A. Planning Process
A5. Is there discussion of how the jurisdiction(s) 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. Is there discussion of how the Cities and Tribe will continue public participation in the Plan maintenance process? **[Requirements §201.6(c)(4)(iii) and §201.7(c)(4)(iv)]**
ELEMENT C. Mitigation Strategy
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)]**
Source: FEMA, 2015.

The MJHMP Update was prepared as a collaborative effort. Each City Administrator and the Tribal Administrator will serve as the primary point of contacts and will coordinate local efforts to monitor, evaluate, and revise the MJHMP. Each authority identified in Table 22 will be

responsible for implementing the MAP. Each year before the annual AEB Planning Conference typically held in December, the points of contact for each community will conduct an annual review to monitor the progress in implementing the MJHMP, particularly the MAP. As shown in Appendix E, the Annual Review Worksheet will provide the basis for possible changes in the MJHMP MAP by refocusing on new or more threatening hazards, adjusting to changes to or increases in resource allocations, and engaging additional support for the MJHMP implementation. Each review, as shown on the Annual Review Worksheet, will include an evaluation of the following:

- Participation of authorities and others in the MJHMP implementation;
- Notable changes in the risk of natural hazards;
- Impacts of land development activities and related programs on hazard mitigation;
- Progress made with the MAP (identify problems and suggest improvements as necessary);
- The adequacy of local resources for implementation of the MJHMP;
- A system of reviewing the progress on achieving the mitigation goals and implementing the MAP activities and projects will also be accomplished during the annual review process. During each annual review, each authority administering a mitigation project will submit a Progress Report to the Community Point of Contact. As shown in Appendix E, the report will include the current status of the mitigation project, including any changes made to the project, the identification of implementation problems and appropriate strategies to overcome them, and whether or not the project has helped achieve the appropriate goals identified in the MJHMP; and
- In addition to the annual review, the AEB Administrator and Planning Team will update the MJHMP every five years. To ensure that this update occurs, in the fourth year following adoption of the MJHMP, the AEB Administrator will undertake the following activities:
    - Request grant assistance for DHS&EM to update the MJHMP (this can take up to one year to obtain and one year to update the MJHMP);
    - Thoroughly analyze and update the risk of natural hazards;
    - Provide a new annual review (as noted above), plus a review of the three previous annual reviews, from the individual points of contact within each community;
    - Provide a detailed review and revision of the mitigation strategy;
    - Prepare a new Mitigation Action Plan for each community;
    - Prepare a new Draft MJHMP Update;
    - Submit an updated MJHMP to the DHS&EM and FEMA for approval;
    - Submit the FEMA-approved Plan for adoption by the AEB and its included

communities; and

- Return adoption resolutions to DHS&EM and FEMA to receive formal approval.

The schedule for the MJHMP Update is to start the following tasks before the end of the five-year cycle as discussed above.

8.2 Implementation Through Existing Planning Mechanisms

After the adoption of the MJHMP, each City Administrator and the Tribal Administrator will ensure that the MJHMP Update, in particular each mitigation action project, is incorporated into existing AEB planning mechanisms. He or she will achieve this incorporation by undertaking the following activities.

- Conduct a review of the community-specific regulatory tools to assess the integration of the mitigation strategy. These regulatory tools are identified in the capability assessment section (Tables 23, 24, and 25).
- Work within their communities to increase awareness of the MJHMP Update and provide assistance in integrating the mitigation strategy (including the MAP) into relevant planning mechanisms. Implementation of these requirements may require updating or amending specific planning mechanisms.
- Each City Administrator and the Tribal Administrator will be responsible for providing a copy of this MJHMP Update to contractors focused on developing new or updating existing AEB or community plans and ensuring that this MJHMP is incorporated into plans as applicable.

8.3 Capability Assessment

The AEB and its communities do not have many planning and land management tools to implement hazard mitigation activities. The AEB and its communities have a fish tax, but rely heavily on Federal and State funding for projects. Annual budgets do not contain funding for hazard mitigation; the AEB and its communities rely on grants. The AEB and its communities do not have staff dedicated to planning. Akutan, King Cove, and Sand Point have Public Works departments. King Cove and Sand Point have Public Safety departments.

Table 23. AEB and its Communities Regulatory Tools

Regulatory Tools (ordinances, codes, plans)	Existing?	Comments (Year of most recent update; problems administering it, etc.)
Comprehensive Plan	No	King Cove has a Draft Plan from 2006.
Land Use Plan	No	There isn't a Plan, but the AEB holds yearly planning sessions.
All-Hazards Emergency Response Plan	Yes	2007 (not current)
Wildland Fire Protection Plan	No	
Building code	No	The AEB and its communities do not have building codes.
Ordinances	Yes for AEB, King Cove, and Sand Point	Akutan, False Pass, and Nelson Lagoon do not have ordinances.

Subdivision ordinances or regulations	Yes for AEB, King Cove, and Sand Point	Akutan, False Pass, and Nelson Lagoon do not have subdivision ordinances or regulations.
Special purpose ordinances	Yes for Sand Point	The AEB, Akutan, False Pass, King Cove, and Nelson Lagoon do not have special purpose ordinances.

Table 24. AEB and its Communities Technical Resources for Hazard Mitigation

Staff/Personnel Resources	Y/N	Department/Agency and Position
Borough Administrator	Yes	Anne Bailey
Borough Clerk	Yes	Tina Anderson
City Points of Contact	Yes	Tuna Scanlan, Akutan City Administrator Nikki Hobelt, City Mayor Gary Hennigh, City Administrator Jordan Keeler, City Administrator
Tribal Administrator	Yes	Justine Gundersen, Nelson Lagoon
Planner or engineer with knowledge of land development and land management practices	No	The AEB or local jurisdictions hire planners and engineering consultants when grant funding is available.
Engineer or professional trained in construction practices related to buildings and/or infrastructure	No	The AEB or local jurisdictions hire planners and engineering consultants when grant funding is available.
Planner or engineer with an understanding of natural and/or human-caused hazards	No	The AEB or local jurisdictions hire planners and engineering consultants when grant funding is available.
Floodplain Manager	No	Jimmie C. Smith, State Floodplain Manager
Surveyors	No	The AEB or local jurisdictions hire surveying consulting services when grant funding is available.
Staff with education or expertise to assess the jurisdiction's vulnerability to hazards	No	The AEB or local jurisdictions hire consulting services as needed when grant funding is available.
Personnel skilled in Geospatial Information System (GIS) and/or HAZUS-MH	No	
Scientists familiar with the hazards of the jurisdiction	Yes	AVO; DGGS; UAF-AEC; UAF-ACGL; DOT&PF; USFWS; ADF&G; USFW
Emergency Manager	No	The AEB Mayor and Administrator, City Mayors and Administrators, Tribal President and Administrator as applicable. There is no dedicated Emergency Manager.
Finance (Grant writers)	Yes	AEB, City, and Tribal staff
Public Information Officer	Yes	AEB personnel, City Mayors and Administrators, Tribal President and Administrator as applicable.

Table 25. Financial Resources Available for Hazard Mitigation

Financial Resource	Accessible or Eligible to Use for Mitigation Activities
General funds	Limited funding, can exercise this authority with voter approval.

Community Development Block Grants	Limited funding, the AEB and its communities can exercise this authority.
Capital Improvement Projects Funding	Limited funding, the AEB and its communities can exercise this authority.
Authority to levy taxes for specific purposes	Limited funding, the AEB can exercise this authority with voter approval.
Incur debt through general obligation bonds	Limited funding, the AEB can exercise this authority with voter approval.
Incur debt through special tax and revenue bonds	Limited funding, the AEB can exercise this authority with voter approval.
Incur debt through private activity bonds	Limited funding, the AEB can exercise this authority with voter approval.
Hazard Mitigation Grant Program (HMGP)	FEMA funding which is available to local communities 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 which is available on an annual basis. This grant can only be used to fund pre-disaster mitigation plans and projects.
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.

8.4 Continued Public Involvement

The AEB and its included communities are dedicated to involving the public directly in the continual reshaping and updating of this MJHMP Update. Each City Administrator or Mayor and the Tribal Administrator will serve as the primary point of contact and will involve the public to continually reshape and update this MJHMP. A paper copy of this MJHMP Update will be available at the AEB Office and at the individual communities' City and Tribal offices. An electronic copy of this MJHMP Update will also be available online at www.aleutianseast.org. This MJHMP Update will also be stored on the State DCCED/DCRA's plans website for public reference. Planners are encouraged to integrate components of this MJHMP Update into their own plans.

The City Administrator or Mayor and Tribal Administrator will continue to identify opportunities to raise community awareness about the MJHMP Update and the hazards that affect the area in the **In the Loop** newsletter and at community events. The City Administrator or Mayor and Tribal Administrator will solicit community involvement through the distribution of community surveys. The annual surveys (Appendix E) document the AEB's insights into potential changes to hazards, actions, and resource allocations. Any survey results and public comments received will be collected by the point of contact in Table 24, included in the annual report, and considered during future MJHMP updates.

8.5 Federal Resources

The Federal government requires Local Governments (Borough) to have an MJHMP 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. Key resource documents are available from the 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.
    - Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments. FEMA DAP-12, September 1990. This handbook explains the basic concepts of hazard mitigation and shows State, Tribal, and Local governments how they can develop and achieve mitigation goals within the context of FEMA's post-disaster hazard mitigation planning requirements. The handbook focuses on approaches to mitigation, with an emphasis on multi-objective planning.
    - Mitigation Resources for Success compact disc (CD). FEMA 372, September 2001. This CD contains a wealth of information about mitigation and is useful for State, Tribal, and Local government planners and other stakeholders in the mitigation process. It provides mitigation case studies, success stories, information about Federal mitigation programs, suggestions for mitigation measures to homes and businesses, appropriate relevant mitigation publications, and contact information.
    - A Guide to Federal Aid in Disasters. FEMA 262, April 1995. When disasters exceed the capabilities of State, Tribal, and Local governments, the President's disaster assistance programs (administered by FEMA) is the primary source of Federal assistance. This handbook discusses the procedures and process for obtaining this assistance, and provides a brief overview of each program.
    - 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.

  - The FEMA Hazard Mitigation Assistance Guidance and Addendum, February 5, 2015. The guidance introduces the five HMA grant programs, funding opportunities, award information, eligibility, application and submission information, application review process, administering the grant, contracts, additional program guidance, additional project guidance, and contains information and resource appendices (FEMA, 2015).

- Department of Agriculture (USDA). Assistance provided includes: Emergency Conservation Program, Non-Insured Assistance, Emergency Watershed Protection, Rural Housing Service, Rural Utilities Service, and Rural Business and Cooperative Service.
- Department of Energy (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.
- 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 the method of application.
- Department of Housing and Urban Development (HUD), Office of Homes and Communities, Section 108 Loan Guarantee Programs. This program provides loan guarantees as security for Federal loans for acquisition, rehabilitation, relocation, clearance, site preparation, special economic development activities, and construction of certain public facilities and housing.
- Department of Housing and Urban Development, Community Development Block Grants (HUD/CDBG). Provides grant assistance and technical assistance to aid communities in planning activities that address issues detrimental to the health and safety of local residents, such as housing rehabilitation, public services, community facilities, and infrastructure improvements that would primarily benefit low-and moderate-income persons.
- Department of Labor (DOL), Employment and Training Administration, Disaster Unemployment Assistance. Provides weekly unemployment subsistence grants for those who become unemployed because of a major disaster or emergency. Applicants must have exhausted all benefits for which they would normally be eligible.

- Federal Financial Institutions. Member banks of Federal Deposit Insurance Corporation, Financial Reporting Standards or Federal Home Loan Bank Board may be permitted to waive early withdrawal penalties for Certificates of Deposit and Individual Retirement Accounts.
- Internal Revenue Service (IRS), Tax Relief. Provides extensions to current year's tax return, allows deductions for disaster losses, and allows amendment of previous tax returns to reflect loss back to three years.
- U.S. Small Business Administration (SBA). May provide low-interest disaster loans to individuals and businesses that have suffered a loss due to a disaster. Requests for SBA loan assistance should be submitted to DHS&EM.
- 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.

State Resources

- DHS&EM is responsible for improving hazard mitigation technical assistance for Local and Tribal governments for the State of Alaska. Providing hazard mitigation training, current hazard information, and communication facilitation with other agencies will enhance local hazard mitigation efforts. DHS&EM administers FEMA mitigation grants to mitigate future disaster damages such as those that may affect infrastructure including the elevation, relocation, or acquisition of hazard-prone properties. DHS&EM also provides mitigation funding resources for mitigation planning.
- Division of Senior Services (DSS): Provides special outreach services for seniors, including food, shelter, and clothing.
- Division of Insurance (DOI): Provides assistance in obtaining copies of policies and provides information regarding filing claims.
- Department of Military and Veterans Affairs (DMVA): Provides damage appraisals and settlements for VA-insured homes, and assists with filing of survivor benefits.
- The Community Health and Emergency Medical Services (CHEMS) is a section within the Division of Public Health within the Department of Health and Social Services (DHSS). DHSS is charged with promoting and protecting the public health and one of CHEMS' responsibilities is developing, implementing, and maintaining a statewide comprehensive emergency medical services system. The department's statutory mandate (Alaska Statute 18.08.010) requires it to:
    - Coordinate public and private agencies engaged in the planning and delivery of emergency medical services, including trauma care, to plan an emergency medical services system;

- Assist public and private agencies to deliver emergency medical services, including trauma care, through the award of grants in aid;
- Conduct, encourage, and approve programs of education and training designed to upgrade the knowledge and skills of health personnel involved in emergency medical services, including trauma care; and
- Establish and maintain a process under which hospitals and clinics can represent themselves to be trauma centers because they voluntarily meet criteria adopted by the department which are based on an applicable national evaluation system.

- DCRA within the DCCED. DCRA administers the HUD/CDBG, FMA Program, and the Alaska Climate Change Impact Mitigation Program (www.commerce.alaska.gov/web/dcra/CommunityResilienceandClimateAdaptationPrograms) funds and administers various flood and erosion mitigation projects, including the elevation, relocation, or acquisition of flood-prone homes and businesses throughout the State. This department also administers programs for State "distressed" and "targeted" communities.
- Division of Environmental Conservation (DEC). The DEC's primary roles and responsibilities concerning hazards mitigation are ensuring safe food and safe water, and pollution prevention and pollution response. DEC ensures water treatment plants, landfills, and bulk fuel storage tank farms are safely constructed and operated in communities. Agency and facility response plans include hazards identification and pollution prevention and response strategies.
- Department of Transportation and Public Facilities (DOT/PF) personnel provide technical assistance to the various emergency management programs, to include mitigation. This assistance is addressed in the DHS&EM-DOT/PF Memorandum of Agreement and includes, but, is not limited to: environmental reviews, archaeological surveys, and historic preservation reviews.
- In addition, DOT/PF and DHS&EM coordinate buy-out projects to ensure that there are no potential right-of-way conflicts with future use of land for bridge and highway projects, and collaborate on earthquake mitigation.
- Additionally, DOT/PF provides safe, efficient, economical, and effective operation of the State's highways, harbors, and airports. DOT/PF uses its Planning, Design and Engineering, Maintenance and Operations, and Intelligent Transportation Systems resources to identify the hazard, plan and initiate mitigation activities to meet the transportation needs of Alaskans and make Alaska a better place to live and work. DOT/PF budgets for the temporary replacement bridges and materials necessary to make the multi-modal transportation system operational following a natural disaster.
- The Department of Natural Resources (DNR) administers various projects designed to reduce stream bank erosion, reduce localized flooding, improve drainage, and improve discharge water quality through the stormwater grant program funds. Within DNR, the Division of Geological and Geophysical Survey (DGGS) is responsible for the use and development of Alaska's mineral, land, and water resources, and collaboration on

earthquake mitigation.

- DNR's DGGS collects and distributes information about the State's geologic resources and hazards. 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 that information to the public
- 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.
- DOF also manages various wildland fire programs, activities, and grant programs such as the FireWise Program, the Community Forestry Program (CFP) and the Volunteer Fire Assistance and Rural Fire Assistance Grant (VFA-RFAG) programs.

Other Funding Sources and Resources

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

- FEMA, http://www.fema.gov - includes links to information, resources, and grants that communities can use in planning and implementation of sustainable measures.
- American Planning Association (APA), http://www.planning.org - a non-profit professional association that serves as a resource for planners, elected officials, and citizens concerned with planning and growth initiatives.
- Institute for Business and Home Safety (IBHS), http://ibhs.org - an initiative of the insurance industry to reduce deaths, injuries, property damage, economic losses, and human suffering caused by natural disasters.
- American Red Cross (ARC). Provides for the critical needs of individuals such as food, clothing, shelter, and supplemental medical needs. Provides recovery needs such as furniture, home repair, home purchasing, essential tools, and some bill payment may be provided.
- Crisis Counseling Program. Provides grants to State and Borough Mental Health Departments, which in turn provide training for screening, diagnosing, and counseling techniques. Also provides funds for counseling, outreach, and consultation for those affected by disaster.

9.0 References

ACRC (Alaska Climate Research Center). *2018: Temperature Change in Alaska*. Available: http://climate.gi.alaska.edu/ClimTrends/Change/TempChange.html.

ACS (Alaska Community Survey). 2019. https://data.census.gov.

AEB. 2010. *Communities of the Aleutians East Borough Multi-Jurisdictional Multi-Hazards Mitigation Plan.* Prepared by WH Pacific and Bechtol Planning and Development. Available: https://www.commerce.alaska.gov/dcra/DCRARepoExt/RepoPubs/Plans/AEB%202010.pdf.

APM (Alaska Public Media). 2020. Available: https://www.alaskapublic.org/2020/10/20/aleutian-kodiak-and-kenai-peninsula-communities-under-tsunami-warning/

AVO (Alaska Volcano Observatory). 2021. Available: http://www.avo.alaska.edu.

Bristol Bay Times. 2012. *King Cove Avalanche Pummels Warehouse*. Available: King Cove avalanche pummels warehouse - The Bristol Bay Times.

CCSP (U.S. Climate Change Science Program). 2008. *Weather and Climate Extremes in a Changing Climate – Regions of Focus – North America, Hawaii, Caribbean, and U.S. Pacific Islands. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research*. Vol. 3.3T.R. Karl, G.A. Meehl, C.D. Miller, S.J. Hassol, A.M. Waple, and W.L. Murray, Eds. Department of Commerce, NOAA's National Climatic Data Center, 164 pp.

Chapin, F.S., III, S.F. Trainor, P. Cochran, H. Huntington, C. Markon, M. McCammon, A.D. McGuire, and M. Serreze. 2014. Ch. 22: *Alaska. Climate Change Impacts in the U.S.: The Third National Climate Assessment*, J. M. Melillo, Terese.

Denali Commission. 2019. *Statewide Threat Assessment: Identification of Threats from Erosion, Flooding, and Thawing Permafrost in Remote Alaska Communities*. Report was prepared by the University of Alaska Fairbanks Institute of Northern Engineering, U.S Army Corps of Engineers Alaska District, and U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory. Available: Statewide-Threat-Assessment-Final-Report-20-November-2019.pdf (myftpupload.com).

DCCED/DCRA (Department of Community and Commerce and Economic Development [DCCED]/Division of Community and Regional Affairs [DCRA]). 2020. Available: https://dcced.maps.arcgis.com/apps/MapJournal/index.html?appid=0b35128d5d1d4affa0cb4b36dd0f940a.

DGGS (Division of Geological and Geophysical Surveys). 2020. Suleimani, E.N., Nicolsky, D.J., and Salisbury, J.B. *Regional Tsunami Hazard Assessment for Communities of Bristol Bay and the Pribilof Islands, Alaska*. Available: https://doi.org/10.14509/30422.

DGGS. 2019. Suleimani, E.N., Salisbury, J.B., Nicolsky, D.J., and Koehler, R.D. *Regional Tsunami Hazard Assessment for False Pass and Perryville, Alaska*. Available:

https://doi.org/10.14509/30192.

DGGS. 2017. Nicolsky, D.J., Suleimani, E.N., and Koehler, R.D. *Tsunami Inundation Maps for the City of Sand Point, Alaska*. Available: https://doi.org/10.14509/29706.

DGGS. 2016. Nicolsky, D.J., Koehler, R.D., Freymueller, J.T., and Macpherson, A.E. *Tsunami Inundation Maps for King Cove and Cold Bay Communities, Alaska*. Available: https://doi.org/10.14509/30073.

DGGS. 2015. Nicolsky, D.J., Suleimani, E.N., Freymueller, J.T., and Koehler, R.D. *Tsunami Inundation Maps of Fox Islands Communities, Including Dutch Harbor and Akutan, Alaska*. Available: https://doi.org/10.14509/29728.

DHS&EM (Division of Homeland Security and Emergency Management). 2018. Available: http://ready.alaska.gov/Plans/Mitigationplan.

DHS&EM. 2021. Disaster Cost Index. 2021.

FEMA-a, (Federal Emergency Management Agency), "Local Mitigation Plan Review Guide – September 30, 2011." Available: https://www.fema.gov/media-library-data/20130726-1809-25045-7498/plan_review_guide_final_9_30_11.pdf.

FEMA-b, "Mitigation Planning How-To Guides, 2013." Available: https://www.fema.gov/media-library/resources-documents/collections/6.

FEMA-c, "Local Mitigation Planning Handbook." Updated January 1, 2015. Available: https://www.fema.gov/media-library/assets/documents/31598.

FEMA-d, "Local Mitigation Assistance Guidance and Addendum, February 27, 2015. Available: https://www.fema.gov/media-library/assets/documents/103279.

FEMA-e, "Mitigation Planning Fact Sheet, February 27, 2015. Available: https://www.fema.gov/media-library/assets/documents/5756.

FEMA-f, "Hazard Mitigation Assistance Cost Share Guide, May 2016. Available: https://www.fema.gov/media-library-data/1463766664964-4e6dd22652cb7c8a6162904f3b1b2022/FinalHMACostShareGuide508.pdf.

FEMA-g, "Flood Frequently Asked Questions." Available: https://www.floodsmart.gov/faqs.

FEMA-h, "Flood Facts." Available: https://www.floodsmart.gov/why/why-buy-flood-insurance.

HDR, Inc. 2015. *Nelson Lagoon Coastal Erosion Study, 20% Preliminary Design Report*.

HDR Alaska, Inc. 2014. *Nelson Lagoon Coastal Erosion Study Historical Shoreline Map Report*.

HDR Alaska Inc. with Shannon and Wilson. 2011. *Nelson Lagoon Hazard Impact Statement*.

IRIS (Incorporated Research Institutions for Seismology). 2021. Available: Alaska: Tectonics and Earthquakes- Incorporated Research Institutions for Seismology (iris.edu).

KTOO and KUCB. October 20, 2020. *7.5-Magnitude Quake Prompted Tsunami Warning from Aleutians to Kenai Peninsula.* Available: 7.5-magnitude "shaker" prompts tsunami

warning from Aleutians to Kenai Peninsula - Alaska Public Media.

MMI. 2006. *Modified Mercalli Intensity Scale*. Michigan Technical University.

Nelson Lagoon. 2001. *Strategic Economic and Community Development Plan*.

Seldovia Village Tribe. 2019. *Hazard Mitigation Plan*. Available: Microsoft Word - 190813 Draft SVT Hazard Mitigation Plan (alaska.gov).

Shulski, M., and G. Wendler. 2007. *The Climate of Alaska*. University of Alaska Press. 208 pp.

Stewart, B. C., K. E. Kunkel, L.E. Stevens, L. Sun, and J. E. Walsh. 2013. *Regional Climate Trends and Scenarios for the U.S. National Climate Assessment: Part 7. Climate of Alaska*. NOAA Technical Report NESDIS 142-7. 60 pp.

UAF-AEC (University of Alaska Fairbanks - Alaska Earthquake Center). 2021. Available: https://earthquake.alaska.edu/event/0209dha24u/detail.

UAF – ACGL (University of Alaska Fairbanks - Arctic Coastal Geoscience Lab. 2021. *Nelson Lagoon Coastal Hazard Assessment*. Anticipated publication date of May 2021. Prepared by Reyce Bogardus, Master's Degree Candidate and Dr. Chris Maio, Director of UAF - ACGL.

USACE (U.S. Army Corps of Engineers). 2009. *Alaska Baseline Erosion Assessment*. Available: Alaska District > Library > Reports and Studies > Alaska Baseline Erosion Assessments (army.mil).

USFS. 2020. https://www.fs.usda.gov/Internet/FSE_MEDIA/fseprd690761.jpg.

U.S. Tsunami Warning System. https://www.tsunami.gov/.

Appendix A: Public Involvement

This page was intentionally left blank.

Agenda
Assembly Meeting
(packet available on website www.aleutianseast.org)

Date: Thursday, December 10, 2020
Time: Workshop: 12:00 p.m. Meeting: 3:00 p.m.

Due to Covid-19, the Assembly meeting will not have public locations. All Assembly Members will dial in from individual locations, for the purpose of following the mandates, social distancing and protecting the public health.

The meeting will be broadcast on KSDP Public Radio. If you do not have the radio station broadcasting in your community, you can go to KSDP website, http://apradio.org/ to stream the meeting.

Prior to and during the meeting, Public Comments on Agenda items or Public Comments on other issues can be e-mailed to ltanis@aeboro.org, Subject: *December Assembly Meeting*, to be read at the appropriate time during the meeting.

ASSEMBLY WORKSHOP ONLY

Planning Session-Strategic Plan Update– Information provided on AEB website. *Public Comments can be e-mailed to ltanis@aeboro.org to be addressed at workshop. Subject: Planning Session*.

ASSEMBLY MEETING AGENDA

1. Roll Call & Establishment of Quorum.

2. Adoption of the Agenda.

3. Public Comments on Agenda Items *(to be e-mailed to ltanis@aeboro.org)*.

4. Presentations:
   - Jennifer LeMay, Hazard Mitigation Planning Process.
   - AEB 2021 Legislature Presentation – AEB Lobbyist Mark Hickey.

5. Conflict of Interest.

6. Minutes.
   - November 12, 2020 Assembly Meeting Minutes.

7. Financial Reports.
   - October Financials.

- October Investment Report.

8. Consent Agenda.
- Resolution 21-25, authorizing the mayor to negotiate and execute a contract with DOWL to perform a King Cove Delta Creek Mitigation Study in an amount not to exceed $29,500.
- Resolution 21-26, adopting an alternative allocation method for the FY21 Shared Fisheries Business Tax Program for FMA 2.
- Resolution 21-27, adopting an alternative allocation method for the FY21 Shared Fisheries Business Tax Program for FMA 3.

9. Ordinances
- Emergency Ordinance 21-07, issuing a declaration of disaster emergency in response to Covid-19.

10. Resolutions.
- Resolution 21-24, authorizing the mayor to negotiate and execute an aquatic farm lease (ADL 233402) with State of Alaska, DNR, for the AEB Kelp Mariculture Project.

11. Old Business. *None*

12. New Business.
- Strategic Plan Quarter 3 Update.

13. Reports and Updates.

14. Assembly Comments.

15. Public Comments. *(to be e-mailed to ltanis@aeboro.org)*.

16. Next Meeting Date.

17. Adjournment.

Hazard Mitigation Planning Process

Update to the 2010 Aleutians East Borough Hazard Mitigation Plan

Plans must be updated every five years and approved by DHS&EM and FEMA and then adopted by the AEB and individual communities via resolutions for the AEB to be eligible for FEMA grant funding.

Public Meeting #1: December 10, 2020

Hazard Mitigation Definition

Hazard mitigation, as defined in Title 44 of the Code of Federal Regulations (CFR), Part §201.4, is “any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards.” As such, hazard mitigation is any work done to minimize the impacts of any type of hazard event before it occurs. Planning aims to reduce losses from future disasters.

Hazard Mitigation Planning

Hazard mitigation is a process in which **hazards are identified and profiled, people and facilities at risk are analyzed, and mitigation actions are developed**. Implementation of the mitigation actions, which include long-term strategies that may consist of planning, policy changes, programs, projects, and other activities, is the end result of this process. Hazard mitigation is the only phase of emergency management specifically dedicated to breaking the cycle of damage reconstruction and repeated damage.

Plan Process

- Gathering of data is occurring now.
- Public Meeting #1 on December 10, 2020 at 3 pm.
- Planning Committee to provide information and answer questions during the Plan Update process. (December 2020 to January 2021)
- Draft Plan posted on AEB webpage and available for a one-month public comment period. (February 2021)
- Public Hearing for Draft Plan. (March 2021 AEB Assembly Meeting)
- State/FEMA review and pre-approval of Draft Plan.
- Newsletter announcing Final Plan (the public may still comment).
- Borough Assembly adoption and individual communities' adoptions). (May 2021)
- Final Approval from FEMA. (May 2021)

After the Hazard Mitigation Plan Update is completed, approved, and adopted, the AEB and its communities who participated in the update process will be eligible to apply for mitigation project funds from DHS&EM and FEMA for five years until the plan requires another update in 2026.

Contacts:

Jennifer LeMay, PE, PMP, LeMay Engineering & Consulting, Inc. Planner (907) 350-6061
JJ Little, State of Alaska DHS&EM Planner (907) 428-7055

For hazards, we're interested in information related to:

- Hazard Identification,
- Profiles (characteristics),
- Previous occurrences,
- Locations,
- Extents (breadth, magnitude, and severity)
- Impacts, and
- Recurrence probability statements.

Which hazards are applicable for your community?

- Changes to the Cryosphere Applicable to the AEB
- Earthquakes Applicable to the AEB
- Flood/Erosion Applicable to the AEB
- Ground Failure Not Applicable
- Severe Weather Applicable to the AEB
- Tsunami/Seiche Applicable to the AEB
- Volcano Applicable to the AEB
- Wildland/Conflagration Fires Not Applicable. Is there interest in adding to the 2021 Update?

CALL TO ORDER

Mayor Alvin D. Osterback called the Aleutians East Borough Assembly meeting to order by teleconference on December 10, 2020 at 3:02 p.m.

ROLL CALL

Mayor Alvin D. Osterback	Present
Chris Babcock	Present
Carol Foster	Present
Warren Wilson	Present
Josephine Shangin	Present
Paul Gronholdt	Present
Brenda Wilson	Present
Denise Mobeck	Present

Advisory Members:	
Dailey Schaack, Cold Bay	Present
Samantha McNeley, Nelson Lagoon	Present
Tom Hoblet, False Pass	Present

A quorum was present.

Staff Present:
Roxann Newman, Finance Director
Jacki Brandell, Finance Assistant
Tina Anderson, Clerk
Anne Bailey, Administrator
Mary Tesche, Assistant Administrator
Ernie Weiss, Natural Resources Director
Charlotte Levy, Assistant Natural Resources Director
Glennora Dushkin, Administrative Assistant
Laura Tanis, Communications Director
Emil Mobeck, Maintenance Director

Adoption of the Agenda:

MOTION

CAROL moved to adopt the agenda and second by DENISE.

AMENDMENT

PAUL moved to amend the agenda to include New Business items and second by DENISE.

NEW BUSINESS

- Cold Bay Clinic
- Cold Bay Airport Terminal

- Discussion: Invitation to processors for updates
- False Pass Hydro Project

Hearing no objection the agenda is approved **AS AMENDMENT**.

Community Roll Call and Public Comments on Agenda Items:

All Assembly and staff were participating by teleconference from their individual locations, for the purpose of following the mandates of social distancing and protecting the public health. Also broadcast on KSDP radio.

The Communications Director, Laura Tanis, will read any Public Comments submitted by e-mail.

There were no public comments.

PRESENTATIONS

Jennifer LeMay, Hazard Mitigation Planning Process:

Jennifer LeMay reviewed her presentation in the packet. She said the State of Alaska has acquired a grant from FEMA to update the AEB plan in 2021. It is a requirement every 5 years and AEB plan expired in 2015. There was an attempt to update in early 2020, which did not get completed. Ms. LeMay said she is a contractor hired by the State to assist AEB in updating the plan.
She will update the 2010 mitigation plan. The intent is to minimize the impacts before they happen. Will review AEB's 2010 plan and make sure the hazards identified are still relevant and update facilities and people at risk.

When she finds out which jurisdictions want to participate, she will develop a schedule. The State planner is JJ Little. AEB, local municipalities and Nelson Lagoon, are welcome to participate.

Bailey said it was started almost two years ago and did not get completed. She will call Ms. LeMay to set up meetings with the communities.

AEB 2021 Legislature Presentation – AEB Lobbyist Mark Hickey:

AEB State Lobbyist Mark Hickey, reviewed his presentation in packet.
He said the State's Statutory Reserve Account will be depleted in 2021. The Alaska Permanent Fund reserve is the only reserve account left. Permanent Fund value has increased by $6B. Going into the state budget with a budget deficit. If full dividend given, there will be a state budget deficit. Every dollar you add to Permanent Fund Dividend you have a dollar cut from the budget. Governor's budget will be released December 14.

Conflict of Interests:

Mayor Osterback asked for any potential **Conflict of Interests** to discuss. There were no conflicts on agenda items.

Minutes, November 12, 2020:

MOTION

JOSEPHINE moved to approve the November 12 Assembly Meeting Minutes and second by CAROL.

Hearing no more **MOTION CARRIED**.

Financial October:

MOTION

CHRIS moved to approve October Financial Report and second by WARREN.

Administrator Anne Bailey said October financials tracking along as should be. Raw fish tax last 5-year year-to-date average were approximately 61%. Fish tax year-to-date in October is at 27%. Some salary line item have been offset with CARES Act funding so lower than they should be.

ROLL CALL

Yeas: Paul, Warren, Denise, Chris, Carol, Josephine, (No Brenda). Advisory: Samantha, Dailey, Tom.
Nay: None

MOTION CARRIED

October Investment Report:

Administrator Bailey said Permanent Fund balance presently is $43,051,002.

CONSENT AGENDA

- Resolution 21-25, authorizing the mayor to negotiate and execute a contract with DOWL to perform a King Cove Delta Creek Mitigation Study in an amount not to exceed $29,500.
- Resolution 21-26, adopting an alternative allocation method for the FY21 Shared Fisheries Business Tax Program for FMA 2.
- Resolution 21-27, adopting an alternative allocation method for the FY21 Shared Fisheries Business Tax Program for FMA 3.

MOTION

BRENDA moved to approve the Consent Agenda and second by JOSEPHINE.

Administrator reviewed Resolution 21-25, saying Delta Creek is prone to flooding and may impact the King Cove/Cold Bay access road owned by AEB. To prevent damage AEB would like to address permitting and flooding mitigation along Delta Creek. Phase 1 DOWL conducted a reconnaissance site visit and erosion assessment, and recommends King Cove Delta Creek Flood Phase 2 – Mitigation Study.

The Clerk reviewed Resolutions 21-26 and 21-27. The State allocates a share of state fish tax collected outside the municipal boundaries with the communities affected by the fishing industry activities. The shared fish tax is based on 2019 fishing activity. The resolutions adopt an alternative method for allocation for FMA 2 and FMA 3 that municipalities have agreed to since the inception of the program.

ROLL CALL
Yeas: Denise, Brenda, Chris, Josephine, Warren, Paul, Carol. Advisory: Tom, Dailey, Samantha.
Nay: None

MOTION CARRIED

ORDINANCES
Emergency Ordinance 21-07, issuing a declaration of disaster emergency in response to Covid-19.

MOTION
BRENDA moved to approve Emergency Ordinance 21-07 and second by DENISE.

Administrator Bailey said this is another emergency ordinance in response to Covid-19. This extends our declaration of disaster on the pandemic. In effect for 60 days, expiring February 7, 2021.

PAUL asked if there were changes from the last time. Bailey said nothing changed other than clerical items. PAUL said close to vaccines, and suggested we begin to consider what will be required of our employees in regards to vaccines. Mayor Osterback said will have to check on the legality of requiring employees getting vaccines.

CHRIS suggested considering ways to open to the public better.

Mayor Osterback said due to Covid-19 we are doing the best we can with the technology we have. It is just the times we are in and hopefully will end by summer.

PAUL said public participation is important. The Mayor suggested, if you have ideas, send to Administrator.

ROLL CALL.
Yeas: Josephine, Carol, Denise, Brenda, Chris, Paul, Warren. Advisory: Dailey, Tom, Samantha.
Nay: None

MOTION CARRIED

RESOLUTIONS

Resolution 21-24, authorizing the mayor to negotiate and execute an aquatic farm lease (ADL 233402) with State of Alaska, DNR, for the AEB Kelp Mariculture Project:

MOTION
BRENDA moved to approve Resolution 21-24 and second by CHRIS.

Natural Resources Assistant Director Charlotte Levy reviewed Resolution 21-24. She said additional funding was received from National Sea Grant to construct and operate the pilot farm. Intended use of pilot farm includes but not limited to testing a variety of local species; training and demonstration; and mariculture research. AEB applied for a 9.9 acre plot of State-owned tide site.

The lease agreement outlines conditions and stipulations. The annual fee has been paid and agreement reviewed by AEB attorney. Since lease is government to government, approval can be done by resolution.

PAUL hesitant of approving because Trident in Kodiak got denied on their lease. Levy said she assisted Trident with their permit application in Sand Point. Trident-Kodiak submitted an application for a bay that is not appropriate for a kelp farm and will be looking at a different site.

Mayor recommends moving forward with the lease.

Levy said State and ADF&G has thoroughly reviewed and has approved. Once Resolution 21-24 is approved, it is finalized.

TOM asked if it would interfere in any fishing operations. Levy said looking at all the conflicts was part of the review process. She said lines are out planted in the fall, grow throughout the winter, harvested in the spring, and gear removed before salmon season.

ROLL CALL
Yeas: Brenda, Chris, Denise, Warren, Josephine, Carol. Advisory: Tom, Dailey, Samantha.
Nay: Paul.

ASSEMBLY YEAS: 6 ASSEMBLY NAYS: 1

MOTION CARRIED

OLD BUSINESS *None*

NEW BUSINESS

Strategic Plan Quarter Three Update:

Administrator Bailey said quarter three ended November 30, 2020. Due to Covid-19, a lot of projects had to shift due to other priorities. Many will just move over to next year.

Cold Bay Clinic:

PAUL is disappointed the clinic is not going to be able to go out to bid again. He asked what the available amount is for the project. Assistant Administrator Tesche said $4.8M was needed initially which included all three alternatives and a 20% contingency. Of that $4.8M we have $4.7M remaining for the project and the lowest base bid came back at $4.7M, which does not include any alternatives preferred or contingency.

PAUL does not understand why fill is having to be brought in. Tesche said project manager is exploring. There are three local sources for fill. One federal source, a city source and King Cove Corporation source, so exploring whether we would have access. We were requiring contractors to bring in fill material. 7,000 cy of material needed for project.

Bailey agrees. Lowest bid $4.7M, but each add alternative was $1.6M, which would bring project up to $7-8M. Highest bidders at $8M. Decided to pull the bid. We are looking at different alternatives and also will look into a modular building. This is a top priority and everyone is disappointed.

CHRIS agrees with Paul and supports looking for alternatives and continuing to pursue the clinic.

Mayor Osterback said this is a building only, with nothing inside that is 3100 sq. ft. Have to be financially responsible when we build this. Will figure out what happened, why it got this far off track, at $2,200 per sq. ft. Not trying to stop the clinic replacement or slow it down but it has to make sense.

DAILEY is disappointed and supports to continue working to resolve the issues and determine what the line items are that cost so much. Suggests a new engineering firm.

Mayor Osterback said we opened bids a week ago so are working on solutions and the clinic project is still a priority. The clinic is also used as a hub clinic for the other communities as wells as Coast Guard for medivacs. We have to be able to afford to replace and will move forward to figure that out.

CHRIS asked if COVID-19 increased the cost. The Mayor said a certain percentage was built into deal with COVID. We will talk to engineers and people that deal with projections as to where the bids should be.

PAUL asked who the low bidder is. Tesche answered T C Construction out of Wasilla.

PAUL does not understand why the project would need 7,000 yards of gravel. The Mayor agreed and is something we have to review.

Cold Bay Terminal:

Paul said there needs to be a short term solution and a long term solution for needed space in the terminal.

Mayor Osterback said opening the terminal was the fastest project that ever happened. TSA are continually coming up with change requirements. With Covid-19 and the airlines folding at the same time has put a big demand on the airport terminal in Cold Bay. Because there were no airlines anywhere Alaska Airlines stepped in on their flights to Adak and back. There was so much red tape to bring the jet in and is not the best situation that we have. We thought New Ravn would take some stress off since there are Ravn flights directly Anchorage/Dutch Harbor.

BRENDA said, in discussing with people in the region, people will continue to use Alaska Airlines because they can use mileage for travel. She does not see anything different in the foreseeable future and Ravn seats fill up quickly. She suggested to accommodate more space by putting benches outside.

Mayor Osterback said Ravn begins flights to Cold Bay around December 18th. In the meantime, feels we can purchase benches for outside. He is unsure on adjacent lands for long term solution, this is state land and state leases require lots of hoops to jump through.

Administrator Bailey will look at where to put outdoor benches. Still working with TSA and State in getting security in place, constantly addressing TSA requests. Our lot is small, and if we expand beyond would have to get authorization. For the interim, we can order benches for outdoors.

CHRIS supports seating outside and saw how fast Covid-19 spread in Cold Bay.

DAILEY said Ravn is discussing opposite flight days than Alaska Airlines. Mayor Osterback added that Ravn and Alaska agreed both could not be in the terminal on the same day.

DENISE asked how long Alaska Airlines is going to be in Cold Bay. Administrator said she does not see them leaving any time soon. They have a 5-year contract.

Invitation to the processors:
PAUL suggested inviting the processors, including the new Peter Pan owner. Mayor Osterback said we did invite the new owners and they said possibly in January, they receive ownership January 1.
Will send out invitations to processors to come and do presentations at our next meeting.

False Pass Hydro Project:
TOM does not want to lose sight of a False Pass hydro project, and getting renewable energy in False Pass. Mayor Osterback suggested having the city draft a letter to send to Administrator Bailey. TOM said they made their last payment on the engineering report and will share that with Bailey when they receive it.

REPORTS AND UPDATES

Administrator's Report in packet. Highlights below:
CARES Act funding:
AEB issued EAES grant extended to December 4 and to include increased cost of living as a COVID impact. We have over 640 applications and expended $384,000 so far through November. The break out per community is in packet report.

Air Purification Systems in King Cove and Sand Point School:
King Cove project complete. Project started at Sand Point School to be completed before end of the month. Contractor followed COVID-19 protocol.

Cold Bay Community Center:
Moving along with the conversion of community center to provide extra space for passengers delayed or waiting in Cold Bay.

Eastern Aleutian Tribes, Inc.: Will be entering into agreement with EAT for funding to go towards COVID-19 related Nelson lagoon Clinic renovations.

Food Distribution Program: Meat boxes have been purchased for all households in each community. This will also include $1,500 gift cards from local stores or an alternative to communities that do not have a local store gift card.

Upgrades to Transmitter: Assisting with upgrades to Sand Point and Nelson Lagoon transmitters. Akutan upgrades are delayed due to weather and COVID -19. Will complete in spring.

Utilities Expenditures: After researching, unable to distribute COVID funds for utilities per capita payment without an application assessment of individual hardship, and difficult for us to do.

Cold Bay terminal: Was closed to the public Nov. 24 – Dec. 1, due to the COVID outbreak in Cold Bay.

Helicopter Operations:
In 2019 Maritime agreed to cover 50% through the EAS program. AEB entered into agreement to pay for the other 50%. Will have a new draft agreement presented at the January meeting.

King Cove Road Update:
Opening Brief filed on November 23. Opponents will file their opposing brief by January 15, 2021.

Shared Business Tax: Sent a memo giving the Assembly an update. This would have very little tax since not much landing tax received.

Assistant Administrator Report in packet. Highlights below
EAES Grant Program:
Making sure applicants have completed paperwork to receive full payment. Thanked Administrative Assistant Glennora Dushkin for all her hard work on that.

#MaskupAleutiansEast: Those that participated by posting pictures wearing AEB masks were placed in a drawing for a gift card.

Communications Director Report in packet. Highlights below:
Alaska Marine Highway System:
Petition for Change.org draft had a few edits and has been sent to AML and SWAMC for feedback. Hoping to have many Alaskans sign the petition on the importance of the ferry system.

Power Cost Equalization (PCE) White Paper: Continuing research for white paper showing program history up to present.

E-News:
Fish News and In-the-Loop continue to go out.

2021 Calendar: Working on the 2021 calendar. Using a collage of mask-up photos posted.

Natural Resources Director Report in packet. Highlights below:

NPFMC:
Mayor Osterback said Natural Resources Director Ernie Weiss termed out of the Advisory Panel. Quite an achievement to serve on the panel for 9 years.

Weiss said NPFMC meeting presently still going on. Public hearings on specs for Bering Sea and Gulf of Alaska going on now. Motion on specs tomorrow.

Salmon FMP for Cook Inlet: They closed area outside 3 miles. Eventually may consider closing our areas outside of 3 miles.

Advisory appointments will be made at end of Council meeting. Kate Reedy stepping down from SSC.

Limited Entry White Paper:
Submitted comments from the Mayor on proposed regulation changes that will provide additional opportunities for emergency transfers for widows and widowers, which achieves some of the goals we have been trying to do.

AEB Fishermen's Meeting:
End of year Zoom meeting is scheduled for December 16. Link on flyer to meeting. Will be sent out tomorrow to fishermen.

Seafood Tariff Relief Program:
Deadline extended to January 15.

Alaska Board of Fisheries & Game:
Game management Unit 9 and 10, meeting will be via web to discuss re-schedule.

Board of Fisheries shellfish meeting scheduled to begin March 5, comment deadline February 18. Area M salmon and P-cod proposals due April 9, 2021.

Assistant Natural Resources Director Report in packet. Highlights below:
GOA Groundfish Plan Team:
Pacific Cod:
2021 max ABC, 23,000 tons; 2022, 38,000 tons.

Concerns in stock assessment but no additional reduction recommended and should have a federal fishery.

Pollock:
2021 ABC 105,722t, a decrease of 3% from 2020; 2022 decreasing ABC to 91,934t.

Concerns of drop in Shelikoff Strait acoustic survey biomass. Uncertainty if there will be a 2021 GOA survey. No recommendation for a reduction in ABC.

WGA2 Electronic Monitoring (EM)/EFP:
EFP Team reviewed the revised EFP. Covering the entire fleet. Working with NMFS to improve education and enforcement A pre-season meeting to be scheduled to get ready for A Season.

AFSC Cod Tagging Project:
Resumed preparation for the cod tagging study to take place in March, 2021. Can't move forward until we hear about funding and should have information on that by next meeting. Working on sampling design, and COVID protocols training.

Mariculture:
Will be working on the initial stipulations for Surety Bond and finalizing the lease.

NGA Fishermen's Data Portal:
A draft in report of data flow shows you how data will move from the vessels, to processors, to cloud, and then makes its way back to the vessel owners on a mobile app. Will have hotspot map to help the fleet to avoid salmon.

Maintenance Director Report in packet. Highlights below:
TSA:
Staying informed on the requirements at terminal.

Schools: Addressing the circulation pumps issues at the Akutan School and addressing obsolete circulation system in False Pass School. Receiving quotes on contractor for backup plan on heating system.

MAYOR'S UPDATE
Mayor Osterback said in regards to a letter from Peninsula Fishermen's Coalition (PFC) to Assembly. He said third paragraph down is not a true statement, which says AEB would not be supporting any candidates for the AP. AEB did not submit a name to the AP, but in the last meeting we discussed that we would support a name brought to AEB. PFC knew the Natural Resources Assistant Director Charlotte Levy was not interested in the position. He had a conversation with Administrator Bailey, Levy and the Governor's Office and told them that we would not be submitting her name. Feels she has a lot of projects ongoing and would not have time to do the AP and do all the projects that have been approved by the Assembly. If PFC would have submitted a name to AEB, he would have written a letter of support, placed it before the Assembly, and he would have called the Governor's office.

ASSEMBLY COMMENTS
DAILEY asked about the Cold Bay repeater for the radio station. Bailey said she spoke to FCC, and approval came through last week.

PUBLIC COMMENTS

NEXT MEETING DATE
January 14, 2021.

ADJOURNMENT
JOSEPHINE moved to adjourn and second by DENISE. Hearing no more, the meeting adjourned at 5:19 p.m.

Mayor Alvin D. Osterback

Tina Anderson, Clerk

Date: _____

AKUTAN • COLD BAY • NELSON LAGOON
ALEUTIANS EAST
BOROUGH
FALSE PASS • KING COVE • SAND POINT

January 13, 2021

Terrence Murphy
State of Alaska Hazard Mitigation Officer
DMVA DHS&EM
P.O. Box 5750
Joint Base Elmendorf-Richardson, Alaska 99505-5750

Mr. Murphy:

This letter serves as the Aleutians East Borough's Letter of Commitment to support DMVA DHS&EM and LeMay Engineering & Consulting, Inc. in their Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) planning grant to update the January 18, 2010 Multi-Jurisdictional Communities of the AEB Hazard Mitigation Plan. The end goal of this grant is a State- and FEMA- approved multi-jurisdictional hazard mitigation plan update that the AEB and its six communities will adopt in early 2021 and maintain over a five-year period.

Sincerely,

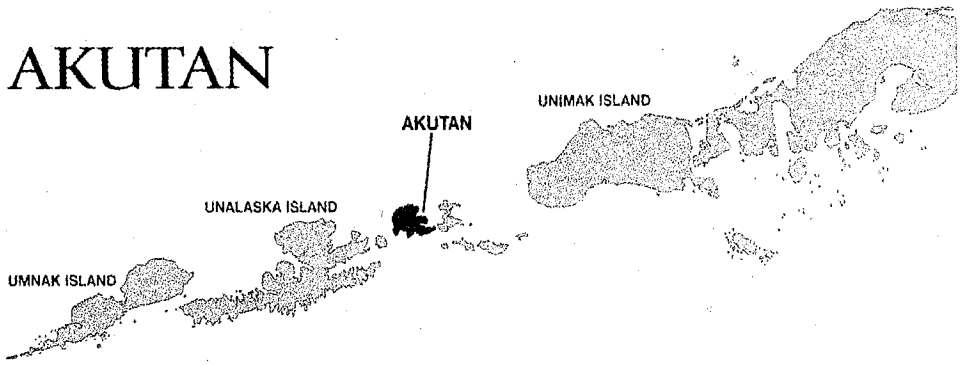
Alvin D. Osterback
AEB Mayor

ANCHORAGE OFFICE • 3380 C Street, Ste 205 • Anchorage, AK 99503-3952 • (907)274-7555 • Fax: (907)276-7569
KING COVE OFFICE • P.O. Box 49 • King Cove, AK 99612 • (907)497-2588 • Fax: (907)497-2386
SAND POINT OFFICE • P.O. Box 349 • Sand Point, AK 99661 • (907)383-2699 • Fax: (907)383-3496

CITY OF AKUTAN

P.O. Box 109
Akutan, AK 99553

Phone (907) 698-2228
Fax (907) 698-2202



January 25, 2021

Terrence Murphy
State of Alaska Hazard Mitigation Officer
DMVA DHS&EM
P.O. Box 5750
Joint Base Elmendorf-Richardson, AK 99505-5750

Mr. Murphy:

This letter serves as the City of Akutan's Letter of Commitment to support DMVA DHS&EM and LeMay Engineering & Consulting, Inc. in their Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) planning grant to update the January 18, 2010 Multi-Jurisdictional Communities of the AEB Hazard Mitigation Plan. The end goal of this grant is a State- and FEMA- approved multi-jurisdictional hazard mitigation plan update that the City of Akutan will adopt as a participating jurisdiction in 2021 and maintain over a five-year period.

Sincerely,

Joseph Bereskin
Mayor

City of False Pass

P.O. Box 50 · False Pass, Alaska 99583-0050
Telephone (907) 548-2319 · Fax (907) 548-2214

January 22, 2021

Terrence Murphy
State of Alaska Hazard Mitigation Officer
DMVA DHS&EM
P.O. Box 5750
Joint Base Elmendorf-Richardson, AK 99505-5750

Mr. Murphy:

This letter serves as the City of False Pass's Letter of Commitment to support DMVA DHS&EM and LeMay Engineering & Consulting, Inc. in their Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) planning grant to update the January 18, 2010 Aleutians East Borough Multi-Jurisdictional Hazard Mitigation Plan which expired in 2015. The City of False Pass is a participating jurisdiction in the 2021 Plan Update. The end goal of this grant is a State- and FEMA- approved multi-jurisdictional hazard mitigation plan update that the City of False Pass will adopt as a participating jurisdiction in 2021 and maintain over a five-year period.

Sincerely,

Tom Hoblet
City Vice Mayor

KING COVE
A L A S K A

PO BOX 37
KING COVE, AK 99612
P (907) 497-2340 F (907) 497-2594
hmackmayor@gmail.com
Office of the Mayor

January 22, 2021

Terrence Murphy
State of Alaska Hazard Mitigation Officer
DMVA DHS&EM
P.O. Box 5750
Joint Base Elmendorf-Richardson, AK 99505-5750

Mr. Murphy:

This letter serves as the City of King Cove's Letter of Commitment to support DMVA DHS&EM and LeMay Engineering & Consulting, Inc. in their Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) planning grant to update the January 18, 2010 Aleutians East Borough Multi-Jurisdictional Hazard Mitigation Plan which expired in 2015. The City of King Cove is a participating jurisdiction in the 2021 Plan Update. The end goal of this grant is a State- and FEMA- approved multi-jurisdictional hazard mitigation plan update that the City of King Cove will adopt as a participating jurisdiction in 2021 and maintain over a five-year period.

Sincerely,

Henry Mack

Henry Mack
City Mayor

Nelson Lagoon Tribal Council
P.O. Box 13
Nelson Lagoon, Alaska 99571

January 21, 2021

Terrence Murphy
State of Alaska Hazard Mitigation Officer
DMVA DHS&EM
P.O. Box 5750
Joint Base Elmendorf-Richardson, AK 99505-5750

Mr. Murphy,

This letter serves as the Native Village of Nelson Lagoon's Letter of Commitment to support DMVA DHS&EM and LeMay Engineering & Consulting, Inc. in their Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) planning grant to update the January 18,2010 Aleutians East Borough Multi-Jurisdictional Hazard Mitigation Plan which expired in 2015. The Native Village of Nelson Lagoon is a participating jurisdiction in the 2021 Plan Update. The end goal of this grant is a State- and FEMA- approved multi-jurisdictional hazard mitigation plan update that the Native Village of Nelson Lagoon will adopt as a participating jurisdiction in 2021 and maintain over a five-year period.

Sincerely,

Justine Gundersen

Justine Gundersen
Tribal Administrator

City of Sand Point, Alaska

January 22, 2021

Terrence Murphy
State of Alaska Hazard Mitigation Officer
DMVA DHS&EM
P.O. Box 5750
Joint Base Elmendorf-Richardson, AK 99505-5750

Mr. Murphy:

This letter serves as the City of Sand Point's Letter of Commitment to support DMVA DHS&EM and LeMay Engineering & Consulting, Inc. in their Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation (PDM) planning grant to update the January 18, 2010 Aleutians East Borough Multi-Jurisdictional Hazard Mitigation Plan which expired in 2015. The City of Sand Point is a participating jurisdiction in the 2021 Plan Update. The end goal of this grant is a State- and FEMA- approved multi-jurisdictional hazard mitigation plan update that the City of Sand Point will adopt as a participating jurisdiction in 2021 and maintain over a five-year period.

Sincerely,

Jordan Keeler
City Administrator

In the Loop

Hazard Awareness and Mitigation Survey:

Public Feedback Needed by Feb. 12th

Completed Entries will be Eligible for a $50 Gift Card Drawing

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management (DHS&EM) was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency (FEMA) to update the 2010 hazard mitigation plan (HMP) for the Aleutians East Borough. This HMP will assist the Borough and the communities of Akutan, Cold Bay, False Pass, King Cove, Nelson Lagoon, and Sand Point as a valuable resource tool in making decisions in regards to preparing for natural hazards. The benefit of a State- and FEMA-approved and community-adopted HMP is that participating communities will be eligible to apply for Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) programs, i.e., Pre-Disaster Mitigation project grants, Building Resilient Infrastructure and Communities (BRIC) project grants, Public Assistance (Categories C-G), Fire Management Assistance, and Hazard Mitigation Grant Program (HMGP) grants for five years.

LeMay Engineering & Consulting, Inc. was contracted to assist the AEB and its participating communities with preparing a 2021 HMP Update.

Your input is essential to the hazard mitigation planning process. Please take a few moments and complete our survey. Those that complete the survey and provide their names will have their names entered in a drawing for a $50 Amazon gift card. Participant names will not be published in the 2021 HMP Update to maintain confidentiality. Thank you in advance for your feedback. Feel free to call Jennifer LeMay at (907) 350-6061 with questions.

2021 Hazard Awareness and Mitigation Survey Questions

If you'd like to subscribe, please email ltanis@aeboro.org .

Thank you for reading In the Loop. If you would like to subscribe or unsubscribe, please send an email to ltanis@aeboro.org. For more information about our communities, our people, and our fisheries, please visit us at www.aleutianseast.org and www.aebfish.org. For the latest news, find us on Facebook:

Link to AEB's Facebook page

Link to King Cove's Facebook page

Link to Cold Bay's Facebook page

Link to Sand Point Department of Public Safety page

This notice was printed and given to each household in Nelson Lagoon by IGAP Coordinator Mark McNeley on January 27 to increase hazard mitigation awareness. Mr. McNeley also posted the notice on the walls of open buildings.

Hazard Awareness and Mitigation

Survey: Public Feedback Needed by

Feb. 12th

Completed Entries will be Eligible for a $50 Gift Card Drawing

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management (DHS&EM) was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency (FEMA) to update the 2010 hazard mitigation plan (HMP) for the Aleutians East Borough. This HMP will assist the Borough and the communities of Akutan, Cold Bay, False Pass, King Cove, Nelson Lagoon, and Sand Point as a valuable resource tool in making decisions in regards to preparing for natural hazards. The benefit of a State- and FEMA-approved and community-adopted HMP is that participating communities will be eligible to apply for Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) programs, i.e., Pre-Disaster Mitigation project grants, Building Resilient Infrastructure and Communities (BRIC) project grants, Public Assistance (Categories C-G), Fire Management Assistance, and Hazard Mitigation Grant Program (HMGP) grants for five years.

Your input is essential to the hazard mitigation planning process. Please take a few moments and complete our survey. Those that complete the survey and provide their names will have their names entered in a drawing for a $50 Amazon gift card. Participant names will not be published in the 2021 HMP Update to maintain confidentiality. Thank you in advance for your feedback. LeMay Engineering & Consulting, Inc. was contracted to assist the AEB and its participating communities with preparing a 2021 HMP Update. Feel free to call Jennifer LeMay at (907) 350-6061 with questions.

The survey link is posted on the AEB website [www.aleutianseast.org] as the first announcement under News.

Aleutians East Borough

3d ·

Hazard Awareness and Mitigation Survey - Public Feedback Requested by Feb. 12th: Completed Entries will be Eligible for a $50 Gift Card Drawing

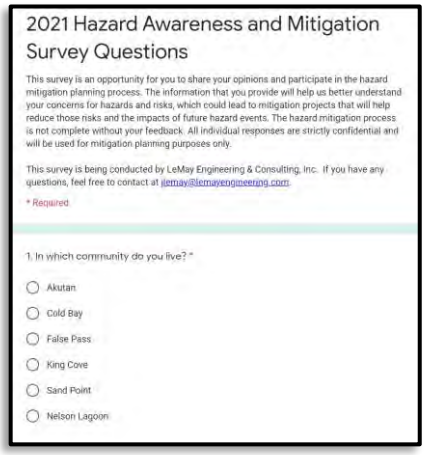
This survey is an opportunity for you to share your opinions and participate in the hazard mitigation planning process. Hazard mitigation planning is the only phase of emergency management specifically dedicated to breaking the cycle of damage reconstruction and repeated damage. The information that you provide will help us better understand your concerns for hazards and risks, which could lead to mitigation projects that will help reduce those risks and the impacts of future hazard events. The hazard mitigation process is not complete without your feedback. All individual responses will be used for mitigation planning purposes only. Names will only be used for the gift card drawing. Names will note be included in the 2021 Hazard Mitigation Plan Update Survey Results Section.

Please click on the link below for the survey questions.
https://docs.google.com/forms/d/e/1FAIpQLSfEseAjHIJsFEY6y-

To: Honorable Mayor Alvin Osterback and Aleutians East Borough Assembly
From: Laura Tanis, AEB Communications Director
Through: Anne Bailey, AEB Administrator
Subject: Communications Director's Report to the Assembly
Date: February 5, 2021

In the Loop:

A couple of ***In the Loop*** newsletters have been sent out regarding the Borough's hazard mitigation planning process. This information was also posted to the Borough website and on Facebook. The HMP will help the Borough and AEB communities in making decisions to prepare for natural hazards. Your feedback is an important part of the process. So if you haven't already responded to the survey, please consider participating. Those that complete the survey and provide their names, will be entered into a drawing for a $50 Amazon gift card. The deadline is February 12th. Here's a link to the survey.


2021 Hazard Awareness and Mitigation Survey Questions

This survey is an opportunity for you to share your opinions and participate in the hazard mitigation planning process. The information that you provide will help us better understand your concerns for hazards and risks, which could lead to mitigation projects that will help reduce those risks and the impacts of future hazard events. The hazard mitigation process is not complete without your feedback. All individual responses are strictly confidential and will be used for mitigation planning purposes only.

This survey is being conducted by LeMay Engineering & Consulting, Inc. If you have any questions, feel free to contact at jlemay@lemayengineering.com.

* Required

1. In which community do you live? *

- Akutan
- Cold Bay
- False Pass
- King Cove
- Sand Point
- Nelson Lagoon

A story about the Borough's food distribution program was also included in last month's newsletter. The article included information and quotes from staff members, volunteers and community leaders who helped to distribute the meat boxes and gift cards provided to household members within the Borough over the holidays.


In the Loop

ALEUTIANS EAST BOROUGH

Aleutians East Borough's Food Distribution Program Provides a Much-needed Boost during the Holidays

With COVID-19 cases on the rise over the holidays, many people modified their 2020 celebration plans last month. For some, that meant making do with less. The seafood industry as a whole was hit hard by restaurant closures, social distancing protocols and the need for safety measures as a result of the pandemic. Hunker down mandates also had economic ripple effects throughout the region as well as across the state. In addition, commercial fishermen struggled with lower prices for salmon.

"If you look at salmon alone, we're at

Borough staff members and volunteers pack up meat boxes at the city dock warehouse.

In the Loop newsletter Published by the Aleutians East Borough Jan. 27, 2021 Page 1

Fish News:

On Jan. 26th, information went out in Fish News written by AEB Natural Resources Director Ernie Weiss regarding a special meeting held by the Alaska Board of Fisheries. The special meeting discussed the rescheduling of meetings for the upcoming meeting cycle due to COVID-19 concerns.

Strategic Plan – Marine Highway Narrative:

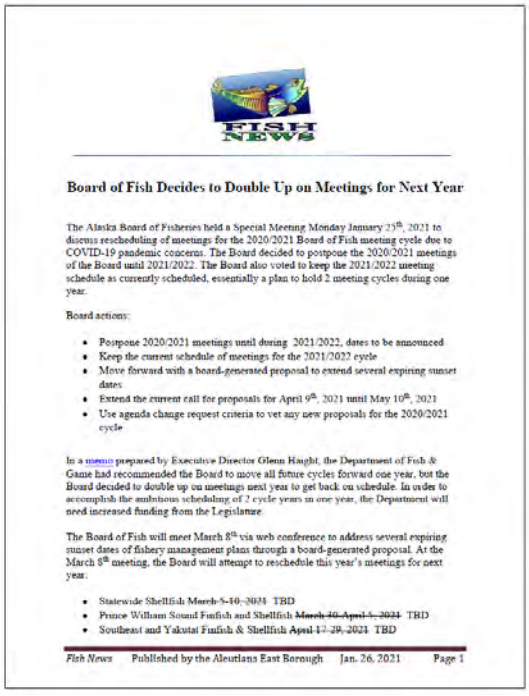
I've been continuing work on additional edits for the discussion paper and online petition language regarding the marine highway narrative section (Government & Policy Advocacy) of the Strategic Plan. Both focus on the importance of the Alaska Marine Highway System and

why it's important to prevent further reductions in service. It includes information about service cuts during the past few years as well as the Governor's proposed 2022 budget for AMHS operations. The proposed summer schedule was released on January 25th. It has five runs to the Aleutians May through September. Our objective is to engage in extensive outreach efforts throughout Alaska so we can have as many people sign it as possible to preserve the service we have, and hopefully restore additional service in the future.

Strategic Plan – PR and Marketing Improvement Plan:
I'm in the process of writing a RFP to solicit quotes from website designers regarding design updates for the Borough website to improve navigation and modernize the website. This is section 6.4 of the Borough's Strategic Plan.

Miscellaneous items:

- Continuing work on the PCE white paper;
- Updates to the website and Facebook page;
- Weekly/bi-weekly meetings regarding COVID-19.



FISH NEWS

Board of Fish Decides to Double Up on Meetings for Next Year

The Alaska Board of Fisheries held a Special Meeting Monday January 25th, 2021 to discuss rescheduling of meetings for the 2020/2021 Board of Fish meeting cycle due to COVID-19 pandemic concerns. The Board decided to postpone the 2020/2021 meetings of the Board until 2021/2022. The Board also voted to keep the 2021/2022 meeting schedule as currently scheduled, essentially a plan to hold 2 meeting cycles during one year.

Board actions:

- Postpone 2020/2021 meetings until during 2021/2022, dates to be announced
- Keep the current schedule of meetings for the 2021/2022 cycle
- Move forward with a board-generated proposal to extend several expiring sunset dates
- Extend the current call for proposals for April 9th, 2021 until May 10th, 2021
- Use agenda change request criteria to vet any new proposals for the 2020/2021 cycle

In a memo prepared by Executive Director Glenn Haight, the Department of Fish & Game had recommended the Board to move all future cycles forward one year, but the Board decided to double up on meetings next year to get back on schedule. In order to accomplish the ambitious scheduling of 2 cycle years in one year, the Department will need increased funding from the Legislature.

The Board of Fish will meet March 8th via web conference to address several expiring sunset dates of fishery management plans through a board-generated proposal. At the March 8th meeting, the Board will attempt to reschedule this year's meetings for next year.

- Statewide Shellfish ~~March 5-10, 2021~~ TBD
- Prince William Sound Finfish and Shellfish ~~March 10-April 5, 2021~~ TBD
- Southeast and Yakutat Finfish & Shellfish ~~April 17-29, 2021~~ TBD

Fish News Published by the Aleutians East Borough Jan. 26, 2021 Page 1

Meetings Attended:

SOA Emergency Managers Meeting: Jan. 20, 2021	teleconference
AEB Strategic Planning – PR/Marketing: Jan. 22, 2021	Google Meet
SOA Emergency Managers Meeting: Jan. 27, 2021	teleconference
AFISH: Feb. 3, 2021	Zoom
SOA Emergency Managers Meeting Feb. 3, 2021	teleconference
SOA ECHO – COVID-19 Vaccine Feb. 4, 2021	Zoom

As always, I'm happy to help get the word out about events/issues going on in your community. Please feel free to contact me and let me know how I can help.

www.aleutianseast.org www.facebook.com/AleutiansEastBorough/ ltanis@aeboro.org (907) 274-7579

Agenda
Assembly Meeting
(packet available on website www.aleutianseast.org)

Date: Thursday, February 11, 2021
Time: Workshop: 1:00 p.m. Meeting: 3:00 p.m.

Due to Covid-19, the Assembly meeting will not have public locations. All Assembly Members will dial in from individual locations, for the purpose of following the mandates, social distancing and protecting the public health.

The meeting will be broadcast on KSDP Public Radio. If you do not have the radio station broadcasting in your community, you can go to KSDP website, http://apradio.org/ to stream the meeting.

Prior to and during the meeting, Public Comments on Agenda items or Public Comments on other issues can be e-mailed to ltanis@aeboro.org, Subject: *February Assembly Meeting*, to be read at the appropriate time during the meeting.

ASSEMBLY MEETING AGENDA

1. Roll Call & Establishment of Quorum.

2. Adoption of the Agenda.

3. Public Comments on Agenda Items *(to be e-mailed to ltanis@aeboro.org)*.

4. Presentations:
   - Jennifer LeMay, Hazard Mitigation Planning Process.

5. Conflict of Interest.

6. Minutes.
   - January 14, 2021 Assembly Meeting Minutes.

7. Financial Reports.
   - December Financials.
   - December Investment Report.

8. Consent Agenda
   - Resolution 21-30, relating to disposal or real property (*for housing equipment*).
   - Resolution 21-31, relating to disposal or real property (*for vending machine concessions)*

- Resolution 21-32, relating to disposal or real property (*Cold Bay school bldg. for temporary lodging for a military exercise scheduled)*

9. Ordinances
- Introduction Ordinance 21-09, authorizing the Mayor to negotiate and execute a sublease within Cold Bay Terminal for air transportations services.

10. Resolutions.
- Resolution 21-33, Assembly approving the projects and initiatives identified on the Borough Strategic Plan.
- Resolution 21-34, Assembly authorizing the mayor to enter into a short-term sublease with the military for the use of the Cold Bay School by negotiation at less than fair market value.
- Resolution 21-35, authorizing the mayor to negotiate and execute a contract with DOWL to perform a feasibility study, 10% conceptual design, 35% design and construction manager-general contract, contractor solicitation and selection in an amount not to exceed $100,000.

11. Old Business. *None*

12. New Business
- 2021 Advisory Appointments.

13. Reports and Updates.

14. Assembly Comments.

15. Public Comments. *(to be e-mailed to ltanis@aeboro.org)*.

16. Next Meeting Date.

17. Adjournment.

Hazard Mitigation Strategy

For the 2021 Aleutians East Borough Multi-Jurisdictional Hazard Mitigation Plan Update

Jennifer LeMay, PE, PMP

Public Meeting #2: February 11, 2021

The 2018 State of Alaska Hazard Mitigation Plan identifies the following natural hazards for the Aleutians East Borough.

Cryosphere	Earthquakes	Floods	Tsunamis	Volcanoes	Severe Weather	Fires
Yes; Avalanches in King Cove	Yes; Medium Probability	No	Yes; High Probability	Yes; Medium Probability	Yes; Medium Probability	No

Based on the Assembly's experience, what are the top three ranked hazards for the Aleutians East Borough as an entity?

1. Earthquakes
2. Tsunamis
3. Volcanoes

Natural Hazard Survey for AEB Communities

If you haven't already taken the natural hazard survey, please go to the Borough's website and clink on the link under News/Announcements and take it. Sunday, February 14, is the last day. Results will be tabulated on Monday, February 15th. As of February 4, survey results are:

Community	# of Surveys	#1 Hazard	#2 Hazard	#3 Hazard
Akutan	5	Erosion	Changes in the Cryosphere	Volcanoes and Severe Weather
Cold Bay	4	Severe Weather	Earthquakes and Volcanoes	Tsunamis and Cryosphere
False Pass	6	Severe Weather	Earthquakes	Volcanoes
King Cove	8	Earthquakes	Volcanoes	Tsunamis and Cryosphere
Nelson Lagoon	3	Changes in the Cryosphere	Severe Weather	Earthquakes
Sand Point	19	Earthquakes	Tsunamis	Severe Weather

Changes in the Cryosphere

Hazards of the cryosphere can be subdivided into four major groups: glaciers; sea ice; avalanches; and permafrost and periglacial features.

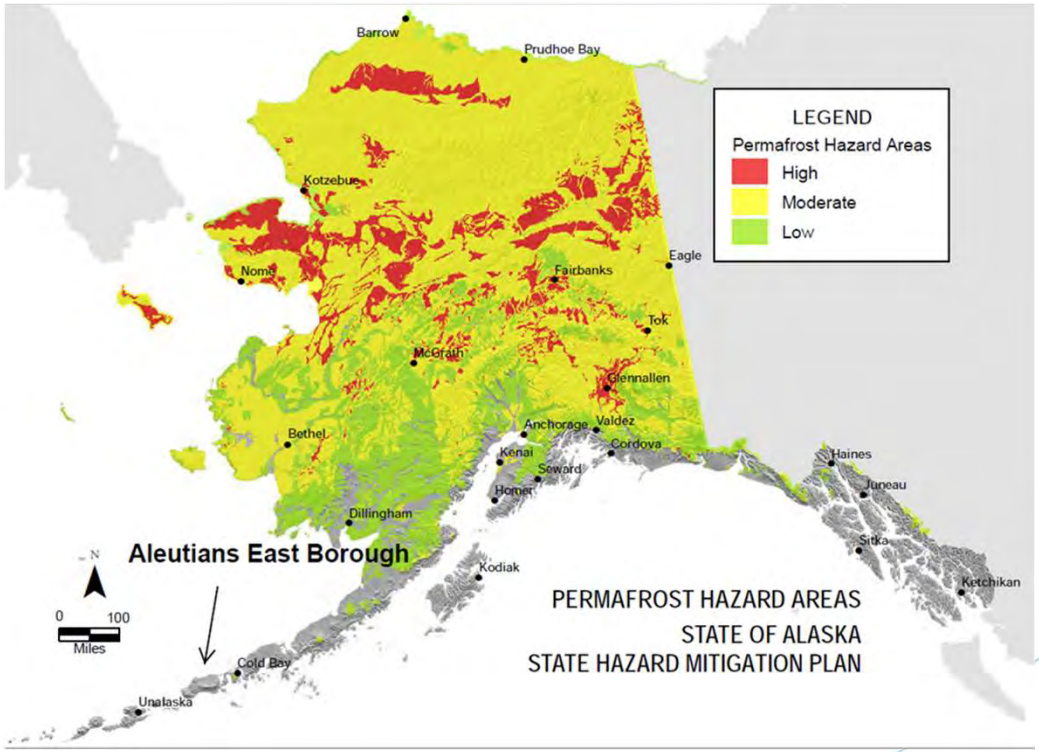
- **Glaciers:** There are glaciers on Mt. Dutton near King Cove that power two hydroelectric plants. Glaciers are not a hazard for the other AEB communities.

- **Sea Ice:** Nelson Lagoon had an ice bench in the Bering Sea in the past that protected the land from erosion. This ice bench melted. Sea ice is not a hazard for the other AEB communities.

- **Avalanches:** King Cove has had two avalanches occur in the city in two different areas. One slammed into the AC store on February 1, 2012. Does anyone know the date of the second avalanche? There is also a third area where potential avalanches could occur. Avalanches are not a hazard for the other AEB communities.

Changes in the Cryosphere, continued.

- **Permafrost and periglacial features:** Per the 2018 State of Alaska Hazard Mitigation Plan, the AEB and its communities are considered a low permafrost hazard area.



Changes in the Cryosphere, continued.

The 2019 Denali Commission Statewide Threat Assessment report prepared by the University of Alaska Fairbanks Institute of Northern Engineering, U.S. Army Corps of Engineers Alaska District, and U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory evaluated the combined threat of flooding, erosion, and thawing permafrost to public infrastructure in **187** of Alaska's remote communities.

Community	Erosion	Flood	Permafrost	Combined Ranking
Akutan	Tied for 57 out of 58	Tied for 59 out of 63	Tied for 23 out of 23 which means thawing permafrost is not a risk to AEB communities.	112
False Pass	28	56		75
King Cove	Tied for 54 out of 58	Tied for 59 out of 63		110
Nelson Lagoon	19	55		Tied for 58
Sand Point	Tied for 57 out of 58	Tied for 59 out of 63		112

Source: Erin Trochim, Alaska Climate Adaptation Science Center, 2019.

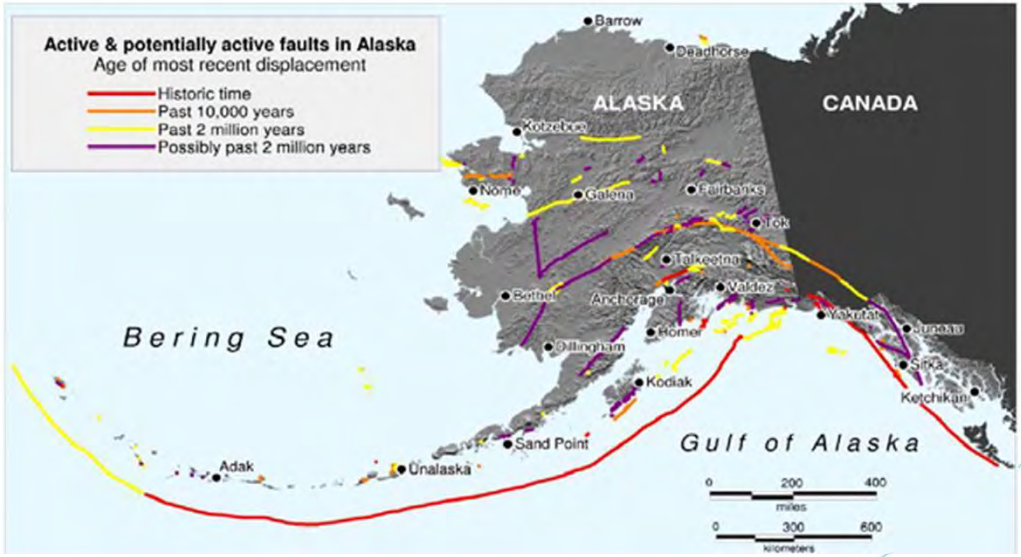
Changes in the Cryosphere, continued.

Does the Borough or any community have mitigation actions related to Changes in the Cryosphere that should be added to the 2021 Hazard Mitigation Plan Update?

1. King Cove mitigation action: Conduct a time-lapsed photographic study of the glaciers on Mt. Dutton that power the hydroelectric facilities to ensure there will be enough water to power the facilities well into the future.
2. King Cove mitigation action: Place signs in two historic avalanche areas and any other potential areas warning of the possibility of danger.
3. Any other mitigation actions needed?

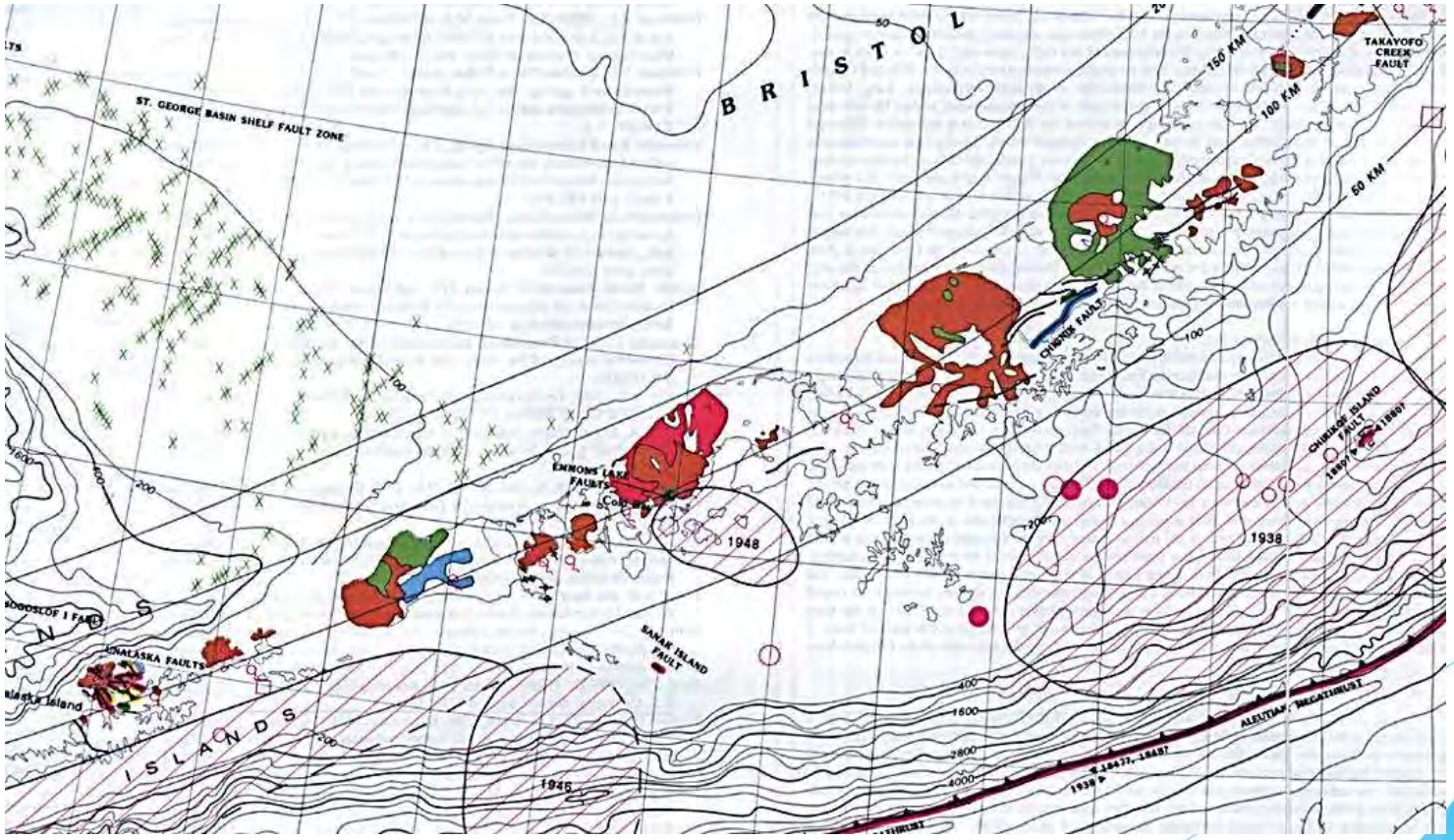
Earthquakes

- The entire geographic area of Alaska is prone to earthquakes. The most recent large earthquakes on the AEB occurred July 21, 2020 (M7.8), and October 19, 2020 (M7.6). According to the Alaska Earthquake Center, the October 19 earthquake could be an aftershock of the July 21 earthquake. Both of these earthquakes occurred 50 miles apart near Sand Point. The July earthquake damaged the Sand Point City docks and the road to the harbor. None of the other AEB communities received damage from these earthquakes.



Earthquakes, continued.

Neotectonic Map of Alaska, Aleutian Islands



Earthquakes, continued.

Does any community have mitigation actions related to Earthquakes that should be added to the 2021 Hazard Mitigation Plan Update?

Flood/Erosion

Akutan: No flooding concerns. All of the City's utilities were located near the shoreline and had the potential to be impacted by bank destabilization. ANTHC implemented a project to resolve this issue in 2018/2019. As of February 4, the community survey respondents rank erosion as the #1 natural hazard. Akutan meeting was held on Feb. 5 in the afternoon to discuss further, and information could not be incorporated into this packet.

False Pass: Floods in False Pass are a result of the 100-year discharge from an unnamed creek known locally as Round Top Creek. Water floods the road a couple times annually near the Mountain Valley subdivision. In 2020, Round Top Creek flooded on private land owned by Peter Pan. Floods also occur by the airport.

False Pass coastline erosion threatens Unimak Drive, the boat launch, boat storage and repair structures, and electrical lines. Most of these community structures are 100 to 150 feet from the eroding coastline, with the exception of Unimak Drive that is less than 10 feet from the coastline. Unimak Drive is the only connection between the industrial part of town, the harbor, and the residential portion of the community. There is also concern for a home located between Unimak Drive and the beach.

Flood/Erosion, continued

King Cove: King Cove indicated bank destabilization affects West Lagoon Road and increases with flooding and rain. Rams Creek and roads along the lagoon experience flooding when strong winds combine with high tide. King Cove has paved all roads except West Lagoon Road. A rock gabion wall has been installed that connects downtown to New Rams.

Nelson Lagoon: Nelson Lagoon indicated that fall storms have washed out the numerous waterlines buried along the coast. Erosion is occurring. HDR prepared a coastal erosion study in 2015, and UAF has been working with the community the last three years to prepare a shoreline change assessment, coastal topographic profiles covering multiple years, and timelapse photos from the ocean side of the beach. UAF anticipates providing data of their study by February 19, and mitigation actions will be recommended accordingly.

Sand Point: Flooding and erosion are not a concern.

Flood/Erosion, continued.

Does any community have mitigation actions related to Floods/Erosion that should be added to the 2021 Hazard Mitigation Plan Update?

1. Does Akutan need any mitigation actions?
2. False Pass needs funding to install culverts at Mountain Valley subdivision to prevent flooding over the road. What can be done to mitigate flooding by the airport?
3. False Pass—have any erosion mitigation actions occurred along Unimak Drive and the beach? Is there a report? Has the home identified in the 2010 HMP been re-located from its location between Unimak Drive and the beach.
4. The upper portion of the concrete boat ramp gets washed away at False Pass. It is now unusable. What can be done to repair the flooding?
5. Are there any actions that King Cove would like to implement to mitigate bank destabilization affecting West Lagoon Road? Are there any actions that King Cove would like to implement to mitigate the flooding that occurs along Rams Creek and the roads along the lagoon?

Severe Weather

Severe weather in the Aleutians East Borough include high winds greater than 100 mph, moderate snow depths, and average low temperatures of 27.6 F.

Does any community have mitigation actions related to Severe Weather that should be added to the 2021 Hazard Mitigation Plan Update?

1. False Pass needs funding to acquire dilapidated homes and debris. Homes would be demolished, and all debris would be removed with the open space re-deeded. This action would prevent homes and debris from flying in windstorms.

Tsunamis

Tsunamis can be generated by volcanic eruptions. Though volcano-generated tsunamis are rarer than earthquake-generated tsunamis, they are a threat to the Aleutian Chain and parts of Cook Inlet.

In Alaska, landslide-generated tsunamis on deltas formed by glacial rivers are responsible for most of the tsunami hazard. Most of the destruction and death from tsunamis like this occurred in the minutes following the 1964 earthquake, when deltas in Valdez, Whittier, and Seward failed and produced locally-destructive tsunamis.

Sand Point residents evacuated to their school with the July 21, 2020 (M7.8) and October 19, 2020 (M7.6) earthquakes. The National Tsunami Warning Center recorded a wave less than one foot tall in Sand Point as a result of the July 21 earthquake. Additionally, the National Tsunami Warning Center reported that a small tsunami, measured at two feet, reached Sand Point on October 19 after the earthquake, and a smaller wave reached King Cove.

Tsunamis, continued.

Since the last AEB Hazard Mitigation Plan, tsunami mapping has been completed for the following communities:

2015 ***Tsunami Inundation Maps of Fox Islands Communities, Including Dutch Harbor and Akutan, Alaska*** by Nicolsky, Suleimani, Freymueller, and Koehler;

2016 ***Tsunami Inundation Maps for King Cove and Cold Bay Communities, Alaska*** by Suleimani, Nicolsky, Koehler, Freymueller, and Macpherson;

2017 ***Tsunami Inundation Maps for the City of Sand Point, Alaska***, by Nicolsky, Suleimani, and Koehler; and

2019 ***Regional Tsunami Hazard Assessment for False Pass and Perryville, Alaska***, by Suleimani, Salisbury, Nicolsky, and Koehler.

Does any community have mitigation actions related to Tsunamis that should be added to the 2021 Hazard Mitigation Plan Update?

1. False Pass needs a tsunami siren.
2. Akutan is relocating their tsunami shelter once COVID lifts and needs another tsunami siren.
3. King Cove needs a tsunami siren by the City Shop.

Volcanic Ashfall

Most of Alaska's volcanoes are located along the 1,550-mile-long Aleutian Arc, which extends westward to Kamchatka and forms the northern portion of the Pacific "Ring of Fire". The entire Aleutians East Borough and its communities are located within the Ring of Fire.

Movement of the Pacific Plate against the Aleutian Trench created many dormant and active volcanoes in the Aleutians East Borough region. Volcanoes near Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point that have been historically active include: Akutan (1992), Fisher (1830), Shishaldin (2019), Westdahl (1991), Amak (1796), Dutton, Pavlof (2016), and Veniaminof (2018).

The greatest volcanic hazard in Alaska is airborne ash which is fine fragments of rock blown high into the atmosphere during explosive volcanic eruptions. Coarse particles fall near the volcano, but the fine particulates can travel downwind as an eruption cloud posing a hazard to aircraft and populations hundreds or thousands of miles away. A major factor in determining ashfall probability is wind direction. Additionally, if there is a large ashfall, wind could blow and redistribute ashfall several times which would be a prolonged hazard.

Does any community have mitigation actions related to Volcanic Ashfall that should be added to the 2021 Hazard Mitigation Plan Update?

Mitigation Goals for the Aleutians East Borough

Goal ID	Description
1	Reduce potential earthquake vulnerability, damage, and loss.
2	Reduce potential severe weather vulnerability, damage, and loss.
3	Reduce potential tsunami vulnerability, damage, and loss.
4	Reduce potential volcano vulnerability, damage, and loss.
5	Reduce potential erosion and flooding vulnerability, damage, and loss.
6	Reduce potential changes to the cryosphere vulnerability, damage, and loss.

CALL TO ORDER

Mayor Alvin D. Osterback called the Aleutians East Borough Assembly meeting to order by teleconference on February 11, 2021 at 3:00 p.m.

ROLL CALL

Mayor Alvin D. Osterback	Present
Chris Babcock	Present
Carol Foster	Present
Warren Wilson	Present
Josephine Shangin	Present
Paul Gronholdt	Present
Brenda Wilson	Present
Denise Mobeck	Present

Advisory Members:	
Dailey Schaack, Cold Bay	Present
Samantha McNeley, Nelson Lagoon	Present
Tom Hoblet, False Pass	Absent

A quorum was present.

Staff Present:
Roxann Newman, Finance Director
Jacki Brandell, Finance Assistant
Tina Anderson, Clerk
Anne Bailey, Administrator
Mary Tesche, Assistant Administrator
Ernie Weiss, Natural Resources Director
Charlotte Levy, Assistant Natural Resources Director
Glennora Dushkin, Administrative Assistant
Laura Tanis, Communications Director
Emil Mobeck, Maintenance Director

Adoption of the Agenda:

MOTION

PAUL moved to adopt the February 11, 2021 agenda with an addition and second by CHRIS.

- Old Business, Cold Bay Clinic.

Hearing no more agenda will stand as amended.

Community Roll Call and Public Comments on Agenda Items:

All Assembly and staff were participating by teleconference from their individual locations, for the purpose of following the mandates of social distancing and protecting the public health. Also broadcast on KSDP radio.

The Communications Director, Laura Tanis, will read any Public Comments submitted by e-mail.

There were no public comments.

PRESENTATIONS *(workshop and meeting)*

Jennifer LeMay, Hazard Mitigation Planning Process:

Jennifer LeMay provided a presentation on the AEB Hazard Mitigation Plan being updated. Last approved plan was adopted in 2010. She reviewed the hazards and AEB top three hazards are earthquake, tsunami and volcano. Some local concerns are Nelson Lagoon erosion and False Pass flooding. She requested people do the survey on the AEB website. She encourages any point of contact or resident that wants to contribute, to review the presentation (in packet) and identify hazards in their neighborhood. Don't assume that anyone has offered the information and wants duplication of hazards. Also include any mitigation that needs to happen.

Ms. LeMay said tsunami plans were done for King Cove, Akutan and False Pass in 2019 and will be included in this plan. The last presentation page has mitigation goals for the plan to be prepared for all the natural hazards that could occur.

Mayor Osterback encouraged people to fill out the survey documenting the concerns and mitigation needed.

Conflict of Interests:

Mayor Osterback asked for any potential **Conflict of Interests** to discuss. There were no conflicts on agenda items.

Minutes, January 14, 2021:

MOTION

BRENDA moved to approve the January 14, 2021 Assembly Meeting Minutes and second by JOSEPHINE.

Hearing no more **MOTION CARRIED**.

December 2020 Financial Report:

MOTION

BRENDA moved to approve the December Financial Report and second by DENISE.

Administrator Anne Bailey said December financials tracking along. Some administration salary line items less due to offsetting with COVID funds for staff hours spent on COVID issues. Raw Fish Tax, 5-year average is at 51%. Revenue at $1.46M, which is 41.61% of budgeted amount, and is lower than average.

ROLL CALL
Yeas: Josephine, Denise, Paul, Warren, Chris, Carol, Brenda. Advisory: Dailey, Samantha.
Nay: None

MOTION CARRIED

December Investment Report:

Administrator Bailey said Permanent Fund balance value presently is $45,245,000 so has increased from what is in the December Report in packet.

MOTION CARRIED

CONSENT AGENDA

- Resolution 21-30, relating to disposal of real property (*for housing equipment*).
- Resolution 21-31, relating to disposal of real property (*for vending machine concessions)*
- Resolution 21-32, relating to disposal of real property (*Cold Bay school bldg. for temporary lodging for a military exercise scheduled)*

MOTION
WARREN moved to adopt the Consent Agenda and second by DENISE.

Administrator reviewed the Consent Agenda items. All resolutions are in relationship to disposal of real property. All resolutions are regarding leases which require Assembly approval in the form of resolutions.

PAUL pointed out that the resolutions are really leases and not actual disposal of real property.

ROLL CALL
Yeas: Denise, Chris, Carol, Josephine, Paul, Brenda, Warren. Advisory: Samantha, Dailey.
Nay: None

MOTION CARRIED

ORDINANCES

Introduction Ordinance 21-09, authorizing the Mayor to negotiate and execute a sublease within Cold Bay Terminal for air transportations services:

MOTION
WARREN moved to accept Ordinance 21-09 and set for Public Hearing at the next regular meeting. Second by CAROL.

Administrator said ARINC Inc. is interested in storing air-to-ground communications equipment and ground support in the Cold Bay terminal since the old Ravn building is no longer available. The

Resolution 21-30 on Consent Agenda was just approved so now authorized to dispose of this property. If Ordinance 21-09 receives final approval, it authorizes the mayor to negotiate and execute a sublease agreement with ARINC, Inc.

PAUL asked if they get money from FAA for the use of that equipment. Bailey did not know the answer to that question.

ROLL CALL.
Yeas: Warren, Carol, Denise, Josephine, Chris, Paul, (no Brenda). Advisory: Dailey, Samantha.
Nay: None

MOTION CARRIED

RESOLUTIONS

Resolution 21-33, Assembly approving the projects and initiatives identified on the Borough Strategic Plan:

MOTION
JOSEPHINE moved to approve Resolution 21-33 and second by CHRIS.

Administrator said AEB held a strategic planning session on December 10 and Resolution 21-33 approves the projects on the draft AEB Strategic Plan for March 1, 2021 – February 28, 2022. The Vision Navigational Chart is in the packet. If the Assembly wants to add or remove something they can do that.

ROLL CALL
Yeas: Chris, Josephine, Carol, Brenda, Denise, Paul, Warren. Advisory: Dailey, Samantha.
Nay: None

MOTION CARRIED

Resolution 21-34, Assembly authorizing the mayor to enter into a short-term sublease with the military for the use of the Cold Bay School by negotiation at less than fair market value:

MOTION
WARREN moved to approve Resolution 21-34 and second by CAROL.

Administrator said the U.S. Airforce is interested in entering into a short term sub-lease for the Cold Bay School. Resolution 21-32 was just approved on the Consent Agenda. Draft of short term agreement is attached and a price will yet to be determined. This can be done by resolution and can be done less than fair market value.

ROLL CALL
Yeas: Paul, Warren, Josephine, Carol, Brenda, Chris, Denise. Advisory: Dailey, Samantha.
Nay: None

MOTION CARRIED

Resolution 21-35, authorizing the mayor to negotiate and execute a contract with DOWL to perform a feasibility study, 10% conceptual design, 35% design and construction manager-general contract, contractor solicitation and selection in an amount not to exceed $100,000:

MOTION

DENISE moved to approve Resolution 21-35 and second by BRENDA.

The Administrator reviewed saying due to COVID-19, the existing terminal doesn't allow social distancing. Cold Bay has been made a primary hub due to the pandemic, and AEB is interested in expanding to accommodate the increased passenger count. DOWL has submitted a draft Scope of Services to perform a Feasibility Study/10% conceptual design, 35% design and Construction Manager-General Contractor Solicitation and Selection for $96,460. If Assembly approves AEB will issue a notice for Phase 1.

This proposal does not include 65% design, construction drawings, and costs of State of Alaska building permit. Funds are available in maintenance reserve, project contingency line item and COVID funds can be used.

PAUL said the costs are too high and recommends we go out to bid. The sooner the better to make the terminal more usable, as it is right now, it is not real great.

ROLL CALL

Yeas: Chris, Warren, Josephine, Brenda, Denise, Carol. Advisory: Samantha, Dailey.
Nay: Paul

6 –YEAS 1-NAY MOTION CARRIED

OLD BUSINESS

Cold Bay Clinic:

PAUL said while in Cold Bay he looked at the new clinic lot location and feels there is a way around the confusion on the fill for the project.

MOTION

PAUL moved we go out to bid immediately with the clinic but removing references to bringing in fill from off sight or local site. Second by WARREN.

PAUL said he took a lot of pictures of the one acre lot for the proposed new clinic. The lot is at a reduced level, however, the clinic is a small footprint and feels that fill can be moved around on the acre in order to construct the clinic. Feels we can have a clinic this year by fixing the fill portion of the bid documents.

CHRIS said if we start changing what is already engineered feels we may complicate the project and create more problems.

DAILEY agrees with Paul and feels contractor won't need as much fill as originally determined.

BRENDA asked if an engineer had made the determination as to what is needed.
Bailey said the Cold Bay clinic bids were way over the anticipated bid amount. We were unable to see break down of bids so we don't know what caused the increase but assume some was fill related and some may have been shipping and lumber increases. We are in the process of reassessing to re-bid. There are also other location options on AEB property. She is not opposed, but doesn't want to remove the language without discussing with an expert.

CAROL agrees with Bailey. Feels it is not in our best interest to change something without expertise input.

CHRIS agrees with Bailey also. A new clinic is needed but feels if we rush it without expertise, we might have more problems and cost.

BRENDA feels supporting this motion without expertise opinion may be a setback.
WARREN said it was the construction companies that determined the amount of gravel needed and you have an entire acre. I'm sure the contractors would put gravel in the bid again and he does not support bringing in gravel from outside.

PAUL said, if the motion passes, could still talk to engineers or architect. Not taking any risk except it allows us to get a much needed clinic.

Mayor Osterback said he has been working with administration on finding other avenues. He has looked at other gravel sources, one is in Cold Bay; looking at other locations; and having an engineer look at what could eliminate the gravel the bidders felt they needed. We are reviewing all options including a modular to keep down construction costs and less time having people onsite.

DAILEY asked if each bid had an engineer look at everything prior to bidding. Bailey can't speak to the contractor so does not know.

Bailey said when we go out to bid, the project outlines everything. It doesn't necessarily say how much for each and we are not able to see what line item is high.

PAUL said if the motion passes the staff still has to do what they feel comfortable doing. The motion only moves the process along.

BRENDA requested the MOTION be read.

Mayor Osterback said the MOTION is to go out to bid immediately and to exclude bringing in fill or getting fill locally.

CHRIS asked what happens if we go out to bid excluding fill and the contractor comes out and says we need to get fill.

The Mayor said that would be an add-on and those get expensive.

WARREN supports having a different site reviewed. He also is not sure what grade the gravel is, at the present site to move onsite.

PAUL said if the motion passes the staff can review including the other lot, we have a little time, and bidders are familiar with the project.

ROLL CALL
Yeas: Paul, Warren. Advisory: Dailey.
Nay: Chris, Josephine, Brenda, Denise, Carol. Advisory: Samantha.

YEAS: 2 NAY: 5 MOTION FAILS

NEW BUSINESS

2021 Advisory Appointments:

The Clerk explained that there is one advisory for each community that does not have an elected Assembly Member residing. The term is one annual year. The communities of Cold Bay, False Pass, and Nelson Lagoon do not have an Assembly Member. A posting was sent out to those communities and three letters of interest were received.

Nelson Lagoon – Samantha McNeley
Cold Bay – Dailey Schaack
False Pass – Tom Hoblet

MOTION
JOSEPHINE moved to appoint the three as Advisory Members for 2021 and second by BRENDA.

ROLL CALL
Yeas: Brenda, Chris, Josephine, Warren, Carol Paul, Denise. Advisory: Samantha, Dailey.

MOTION CARRIED

REPORTS AND UPDATES

Administrator's Report in packet. Highlights below:

CARES Act Funding:

AEB received $3.72M in CARES Act funds from the State of Alaska, AEB has expended $2.68M. The AEB CARES Act funding Program allocations is in the packet. Looking for different options to expend the unexpended funds. Deadline extended to December 31, 2021.

Cold Bay Terminal:
Terminal is now in TSA compliance.

King Cove Road Update:
Opponents filed their Answering Brief. Filing deadline has been extended to March 8, 2021. So now we anticipate the Court timeline to be in the summer instead of spring, 2021.

Assistant Administrator Report in packet. Highlights below
Cold Bay Clinic:
Moving forward with the clinic, reviewing a few scenarios as discussed earlier in meeting.

Strategic Planning:
New projects added. Assisting staff with the new online strategic planning portal.

Communications Director Report in packet. Highlights below:
E-News:
In-the-Loop and Fish News have gone out.

Marine Highway Narrative:
Continuing working on the discussion paper and online petition regarding the importance of the Alaska Marine Highway System.

Website Improvements:
Working on RFP to solicit quotes from website designers to improve navigation and design on website.

Natural Resources Director Report in packet. Highlights below:
Board of Fisheries:
Decision has been made to continue our Board of Fisheries cycle as scheduled. February, 2022 for Area M Salmon and October, 2021 for Pacific cod. They will also try to fit in meetings that have been postponed this year. We are preparing and will emulate the 2019 Board of Fisheries, working with Advisory committees.

NPFMC:
Council meeting finished yesterday.

International Pacific Halibut Commission:
Halibut catch limits for Area 3B (King Cove, False Pass, Sand Point) stayed the same as 2020. Area 4A increased (Akutan, Dutch Harbor) to 2.05M lbs.

Alaska Marine Highway:
The AMHS teleconference on the ferry summer schedule went well. AEB staff supported prioritized deck space for Aleutian Chain trips, communities west of Kodiak.

The Tustemena is getting federally funded upgrades in Seward shipyard and hopefully on schedule to return to service April 15.

Re-design work to comply with regulation changes for Tustemena Replacement Vessel at 60%. Received an extra $8.2M for re-design. A major contemplation for redesign is solace or no solace, and will also be wider for stability. The Marine Transportation Advisory Board meets next month.

Limited Entry:
Link to limited entry white paper in packet.

Assistant Natural Resources Director Report in packet. Highlights below:
Electronic Monitoring – WGOA2/EFP:
Held pre-season meeting January 21 to review the major changes from 2020 to 2021. Created a YouTube training for eLog system to be used for 2021. Fishing expected to open on February 5th for Western Gulf vessels that went over to Kodiak

Alaska Fisheries Science Center (AFSC) Cod Tagging Project:
We were awarded the funds from AFSC so have been working with the Science Center preparing for the field work beginning March 5, in Sand Point. A RFP has been posted for the vessel charter to go out and do the tagging work, applications due tomorrow at noon. The AEB will be responsible for the vessel charter cost, up to 10 days. The AEB NRD and Administration will review the RFPs and select the vessel for the charter service.

Kelp Mariculture:
Working on Bond requirements for Alaska Dept. of Natural Resources. Will also work on a gear list for the project while in Sand Point.

NGA Fishermen's Data Portal:
Portal project moving along really well. We received good feedback from fishermen. As soon as we get some data from fishermen during Pollock season we will review how it's working.

PAUL said there are articles in newspapers regarding a mask mandate that Coast Guard will be enforcing on fishing vessels.

Mayor Osterback said he saw an article on an oyster farm in Kodiak, which was very interesting and is good to see more mariculture expanding. Charlotte Levy said the oyster farm is Eric O'Brien and he will be doing a presentation at SWAMC.

Maintenance Director Report:
Schools Repairs:
Working on school boiler repairs and pump replacements.

LONG under contract to do work at Akutan School in March, and will be following COVID protocol.

Staying on top of maintenance to keep our good standing for the State grant program.

Akutan helicopter hangar:
In the process of getting a new generator and door hardware replacement.

Upcoming Projects:
Projects in the works are King Cove School maintenance, King Cove-AEB office exterior painting, and Cold Bay terminal addition project, which a determination will be made to bid out or build in-house.

MAYOR'S UPDATE

Representative Louise Stutes out of Kodiak was elected Speaker of the House so they are organized and getting on with work in Juneau. She is someone we can work well together with.

ASSEMBLY COMMENTS

CAROL asked where the Pacific State Marine Fishermen CARES Act funds given to ADF&G for fishermen are at. Feels that CARES Act money should have been distributed by now. She also asked about the cod fishery disaster money distribution. Weiss will follow up on those.

DAILEY asked if Cold Bay will receive the community education grant again. She said Cold Bay has 11 kids, 5 school age and hopes to get the school open again and a building for a school. She also said the church is needing a building or meeting location and wants to consider a partnership with AEB. Mayor Osterback said when we area accepting grants, the City of Cold Bay can submit for the grant again. He also suggested the church submit a letter regarding the use of the school.

PUBLIC COMMENTS
No public comments received.

NEXT MEETING DATE
March 11, 2021.

ADJOURNMENT
JOSEPHINE moved to adjourn and second by WARREN. Hearing no more, the meeting adjourned at 3:43p.m.

Mayor Alvin D. Osterback

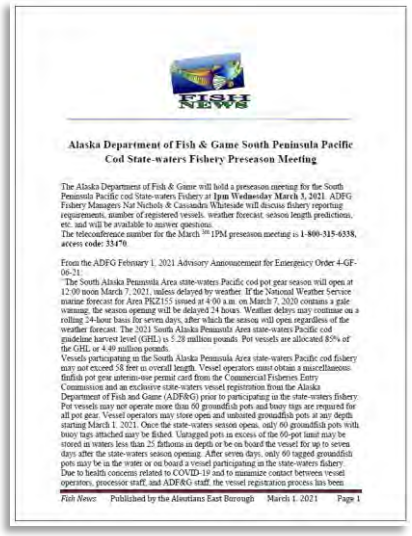
Tina Anderson, Clerk

Date: _____

To: Honorable Mayor Alvin Osterback and Aleutians East Borough Assembly
From: Laura Tanis, AEB Communications Director
Through: Anne Bailey, AEB Administrator
Subject: Communications Director's Report to the Assembly
Date: March 5, 2021

Fish News:

The last Fish News went out on March 1st. It contained information about ADF&G's preseason meeting on March 3rd to discuss the South Peninsula Pacific cod state-waters fishery.



FISH NEWS

Alaska Department of Fish & Game South Peninsula Pacific Cod State-waters Fishery Preseason Meeting

The Alaska Department of Fish & Game will hold a preseason meeting for the South Peninsula Pacific cod State-waters Fishery at **1pm Wednesday March 3, 2021**. ADFG Fishery Managers Nat Nichols & Cassandra Whiteside will discuss fishery reporting requirements, number of registered vessels, weather forecast, season length predictions, etc. and will be available to answer questions.
The teleconference number for the March 3rd 1PM preseason meeting is **1-800-315-6338, access code: 33470**.

From the ADFG February 1, 2021 Advisory Announcement for Emergency Order 4-GF-06-21:
The South Alaska Peninsula Area state-waters Pacific cod pot gear season will open at 12:00 noon March 7, 2021, unless delayed by weather. If the National Weather Service marine forecast for Area PKZ155 issued at 4:00 a.m. on March 7, 2020 contains a gale warning, the season opening will be delayed 24 hours. Weather delays may continue on a rolling 24-hour basis for seven days, after which the season will open regardless of the weather forecast. The 2021 South Alaska Peninsula Area state-waters Pacific cod guideline harvest level (GHL) is 5.28 million pounds. Pot vessels are allocated 85% of the GHL or 4.49 million pounds.
Vessels participating in the South Alaska Peninsula Area state-waters Pacific cod fishery may not exceed 58 feet in overall length. Vessel operators must obtain a miscellaneous finfish pot gear interim-use permit card from the Commercial Fisheries Entry Commission and an exclusive state-waters vessel registration from the Alaska Department of Fish and Game (ADF&G) prior to participating in the state-waters fishery. Pot vessels may not operate more than 60 groundfish pots and buoy tags are required for all pot gear. Vessel operators may store open and unbaited groundfish pots at any depth starting March 1, 2021. Once the state-waters season opens, only 60 groundfish pots with buoy tags attached may be fished. Untagged pots in excess of the 60-pot limit may be stored in waters less than 25 fathoms in depth or be on board the vessel for up to seven days after the state-waters season opening. After seven days, only 60 tagged groundfish pots may be in the water or on board a vessel participating in the state-waters fishery.
Due to health concerns related to COVID-19 and to minimize contact between vessel operators, processor staff, and ADF&G staff, the vessel registration process has been

Fish News Published by the Aleutians East Borough March 1, 2021 Page 1

In the Loop:

A recent ***In the Loop*** newsletter was sent out on Feb. 17th containing several items. Information from the Alaska Housing Finance Corporation was included about obtaining assistance with rent and utility bills, for those who qualify. Also included was a notice from TelAlaska about solar outages February 23rd through March 5th in King Cove, Cold Bay, Sand Point, and other communities served by TelAlaska,. Lastly, the winner of the $50 Amazon gift card drawing for those who participated in the Borough's hazard mitigation planning process survey was announced. The winner of that drawing was Janet Bear.

In the Loop

ALEUTIANS EAST BOROUGH

Notice from TelAlaska: February/March 2021 Solar Outages

Below is a schedule of expected solar outages that may impact your services. A solar outage occurs when the sun gets in direct line with the satellite and the dish on the ground, causing an override of the signal.

TelAlaska has two satellite networks running different frequencies, so the dates and lengths of the outages differ by community.

Unalaska, King Cove, Cold Bay, Sand Point, Bisanna, Galena, Fort Yukon, Port Lions, Teller, Brevig Mission, Wales, Little Diomede and Shishmaref:

– The solar outages will begin on February 23 and continue through March 5.
– They will begin at approximately 10:40am and end at approximately 11:15am and will last from one to 16 minutes.

Elim, Golovin, Koyuk, St. Michael, Shaktoolik, Stebbins, White Mountain
– The solar outages will begin on February 25 and continue through March 5.
– The outages will occur between 11:25am and 11:50am and will last from one to 14 minutes.

There is also a video available on TelAlaska's website for more information:

https://www.telalaska.com/solaroutages/

In the Loop newsletter Published by the Aleutians East Borough Feb. 17, 2021 Page 1

Strategic Plan – PR and Marketing Improvement Plan:

I've completed the first draft of an RFP to seek quotes from website designers. This is part of the PR and Marketing Improvement Plan of the strategic plan to update and improve navigation for staff and website users. I'm hoping to get feedback from administration before proceeding to the next stage. I recently spoke with a gentleman from CivicPlus, a company that has experience with municipalities in Alaska and elsewhere. He mentioned that Chris Babcock referred him. I mentioned that I will contact this company when the redesign goes out to bid. In the meantime, he emailed some information about his company.

Strategic Plan – Marine Highway Narrative:

The most recent edits on the marine highway online petition and discussion paper have been sent to the mayor, Anne, Mary and Mark

Hickey. As discussed before, this is part of the Government & Policy Advocacy of the Strategic Plan. We'll decide next steps soon. Those steps will include outreach to Borough and other coastal communities.

Miscellaneous items:

- Updates to Facebook page as needed;
- Continuing work on the PCE white paper;
- Weekly/bi-weekly/as-needed meetings regarding COVID-19/Borough projects (below).

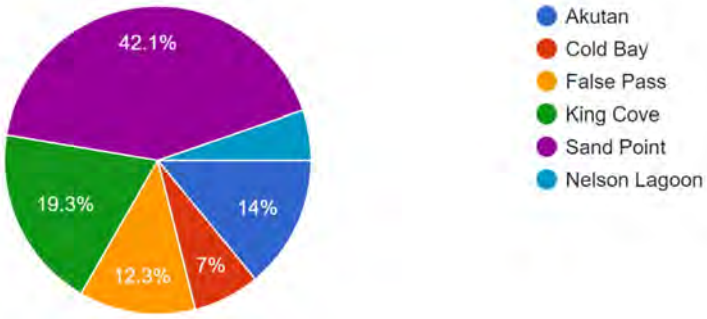
As always, I'm happy to help get the word out about events/issues going on in your community. Please feel free to contact me and let me know how I can help.

Meetings Attended:

Staff Meeting	Teams	March 8, 2021
SWAMC Conference	Zoom	March 4 - 5, 2021
SOA Emergency Managers Meeting	teleconference	March 3, 2021
AFISH	Zoom	March 3, 2021
COVID-19 (Borough/communities, EAT, AEBSD):	teleconference	March 2, 2021
AEB Strategic Planning – PR/Marketing/Marine Narrative:	Google Meet	Feb. 25, 2021
SOA Emergency Managers Meeting:	teleconference	Feb. 24, 2021
AMHS petition discussion	Teams	Feb. 29, 2021
SOA Emergency Managers Meeting	teleconference	Feb. 17, 2021
AFISH	Zoom	Feb. 17, 2021

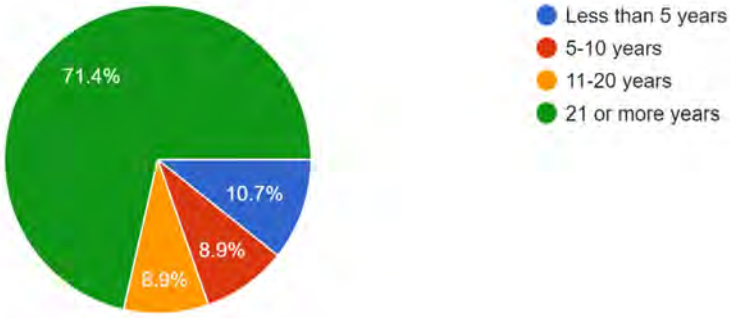
1. In which community do you live?

57 responses



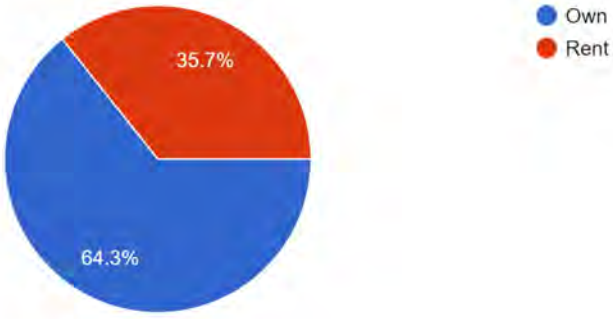
2. How long have you lived in your community?

56 responses



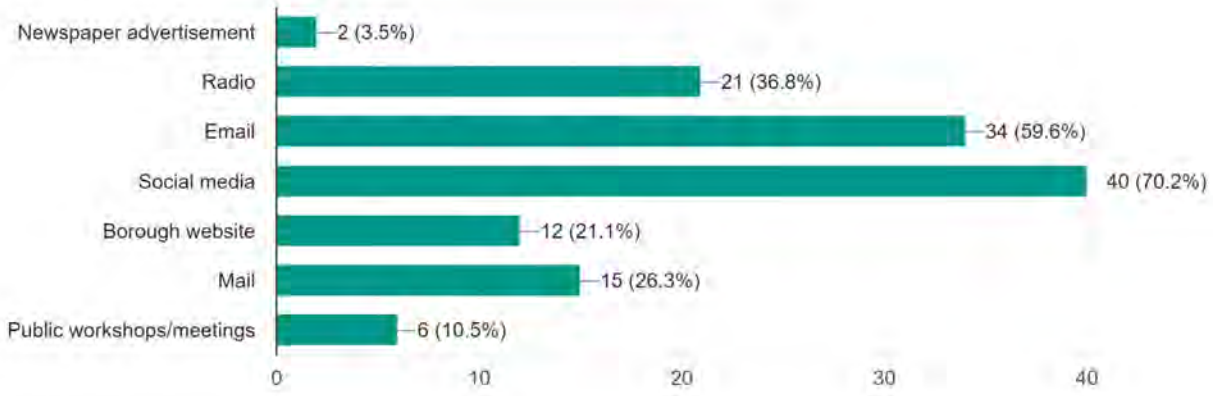
3. Do you own or rent your home?

56 responses

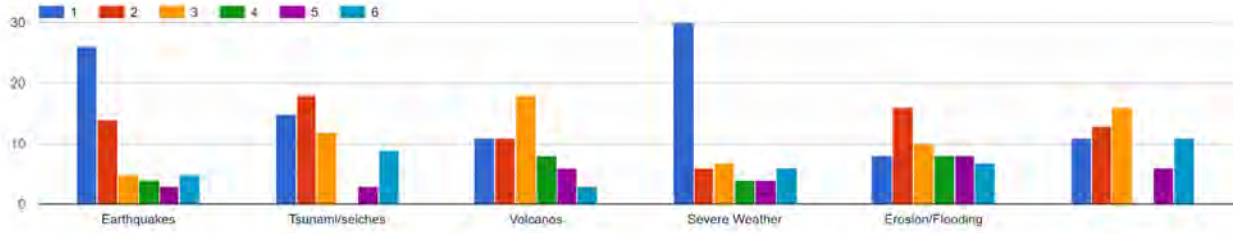


4. What is the most efficient way for you to receive information on emergencies and other community topics?

57 responses

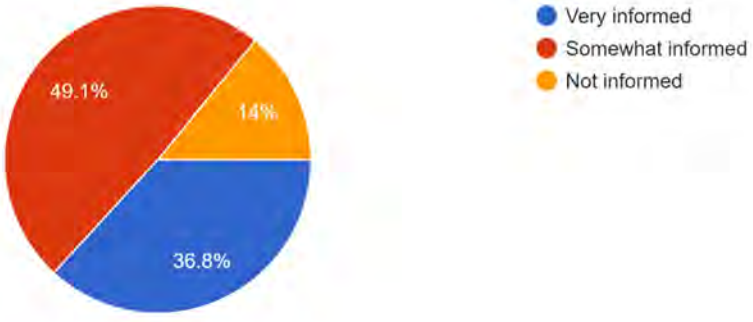


5. Which hazards present the greatest risk to your community (please rank in order of highest to lowest with 1 being the hazard of most concern to you, followed by the second most hazard of concern, etc.)?



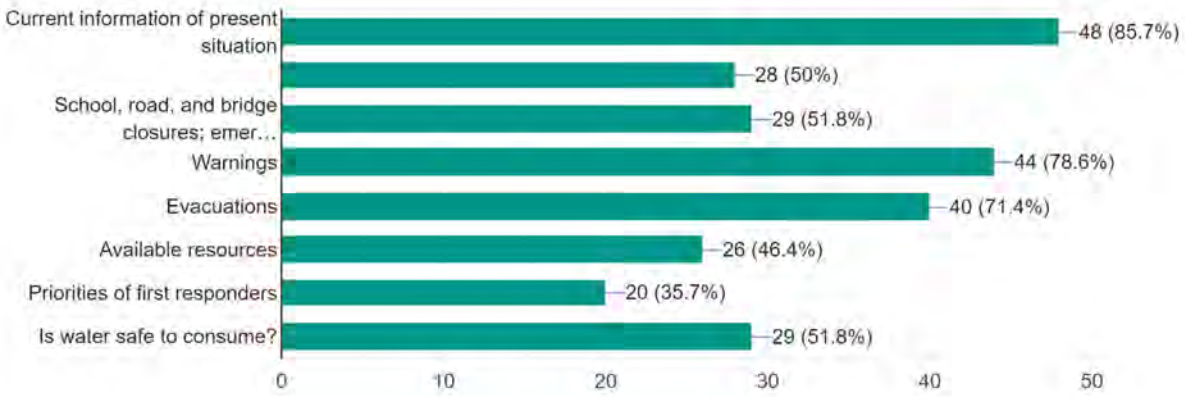
6. How informed do you feel about natural hazards with the potential to affect your community?

57 responses



7. What information do you expect to receive from your community during a natural disaster?

56 responses

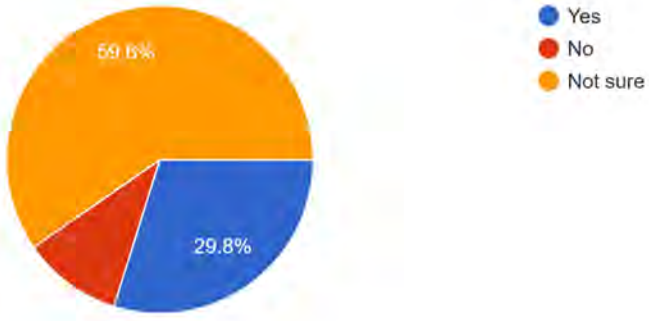


8. What is the frequency that your community should provide updates during a natural disaster?

57 responses

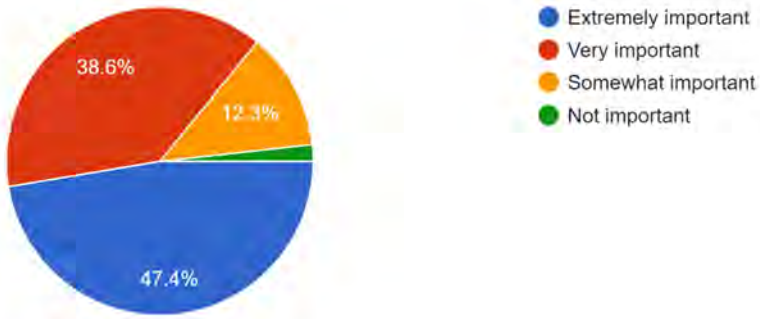
9. Does your community have hazard mitigation prevention measures such as building codes and community-specific regulations to influence the way land is developed and buildings are built?

57 responses



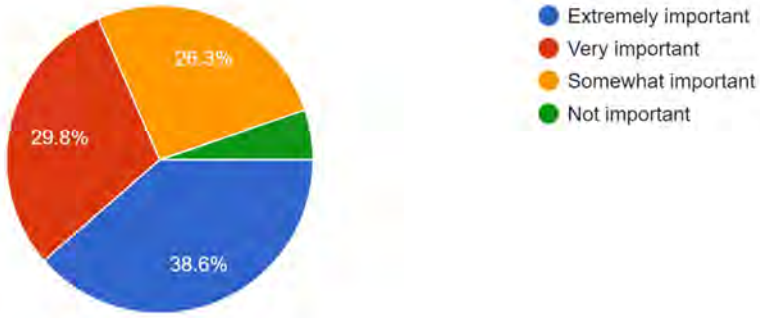
10. How important are public education and awareness such as outreach programs, public service announcements, and notices to residents and prop...s necessary to avoid potential injury or damage?

57 responses



11. How important are natural resource protection actions such as habitat preservation, slope stabilizations, riparian buffers, and forest manage...eserve or restore the functions of natural systems?

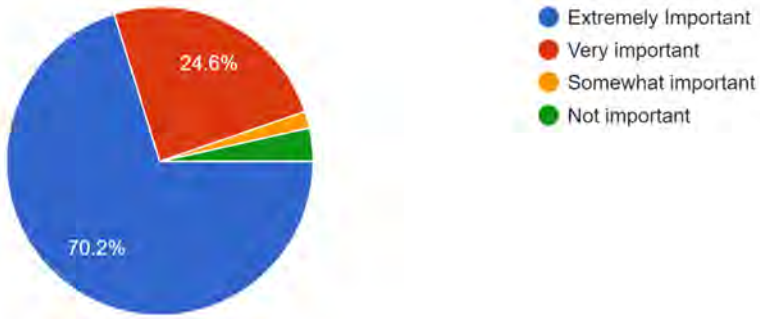
57 responses



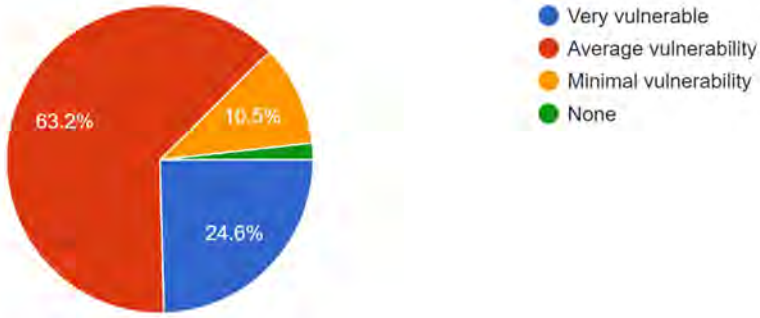
12. How important is critical facility protection such as placing generators at community centers to ensure electrical power during a widespread power failure?

57 responses

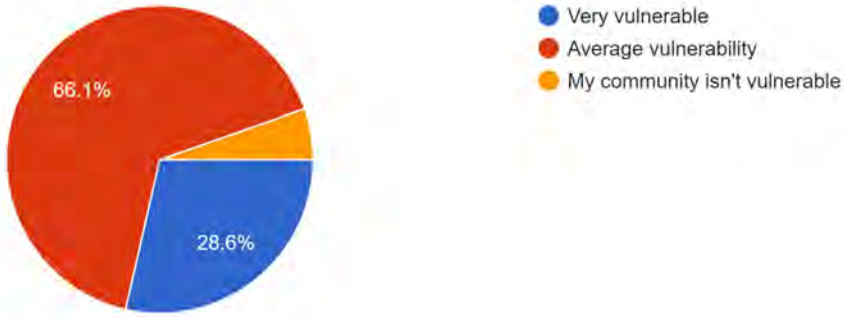
13. How important are emergency service actions such as warning systems, evacuation planning, emergency response training, and protection of cr...erty during and immediately after a hazard event?
57 responses



14. How vulnerable are critical facilities (schools, community centers, government buildings, places of worship, communications towers, water and wast...tations, landfills) in your community to hazards?
57 responses

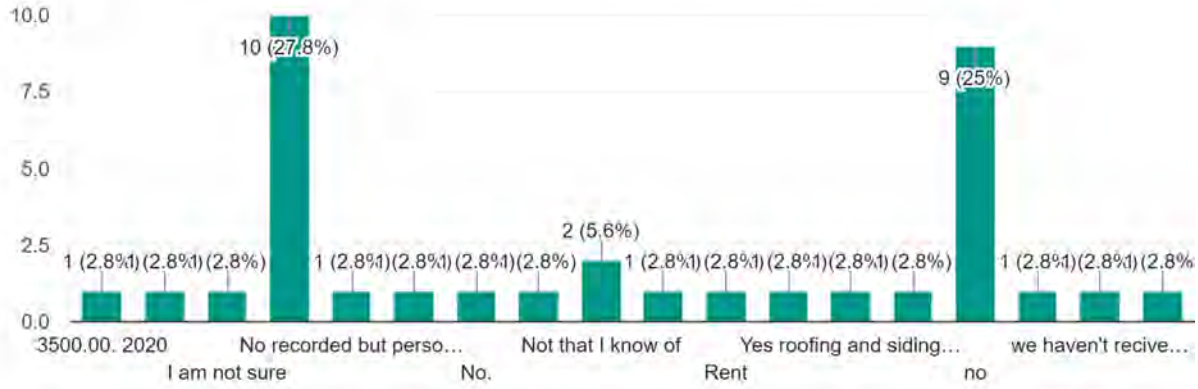


15. How vulnerable to displacement, evacuation, or life safety is your community?
56 responses



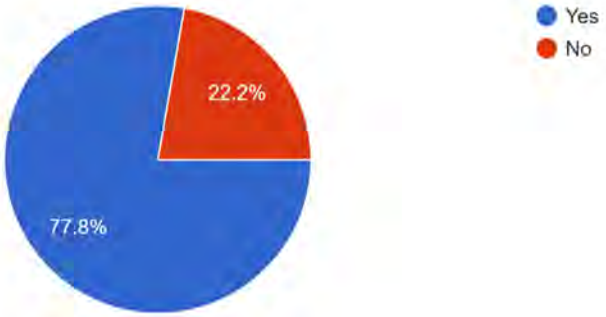
16. Does your property (rented or owned) have a history of recorded damages? (If yes, please provide an estimated amount for each hazard event and the year it occurred.)

36 responses



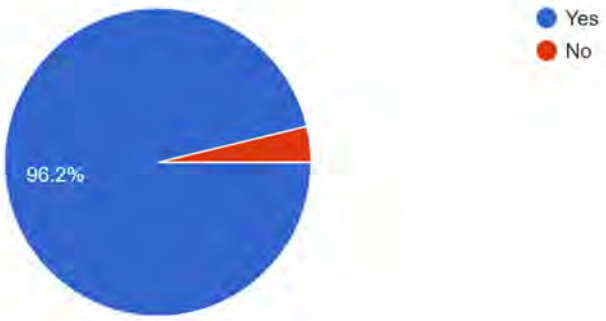
17. Are you willing to spend money to make your home more resilient to damage from natural hazards?

54 responses

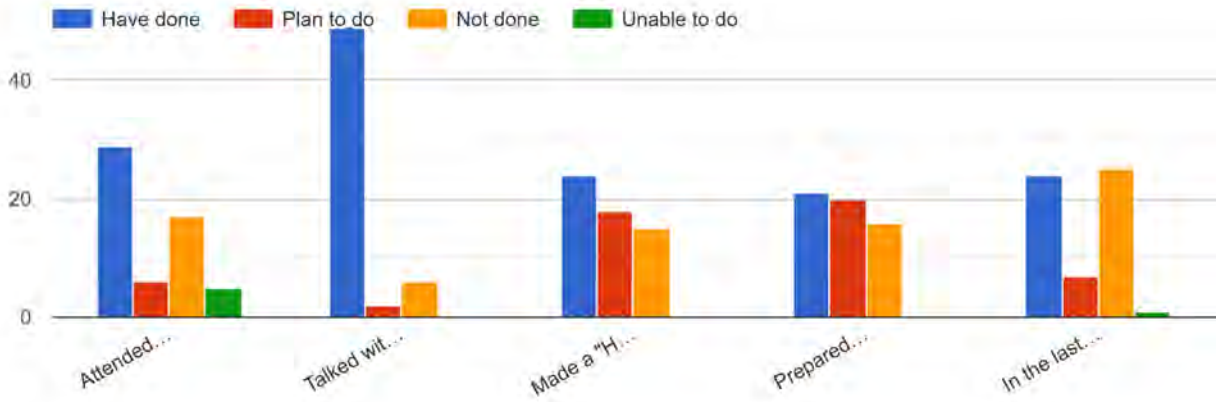


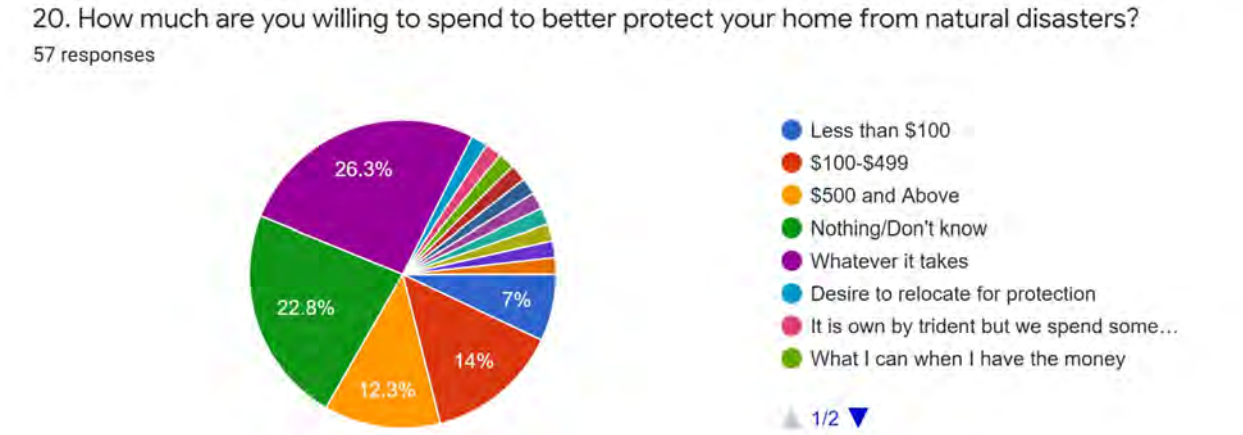
18. Would you be willing to make your property more resistant to natural hazards?

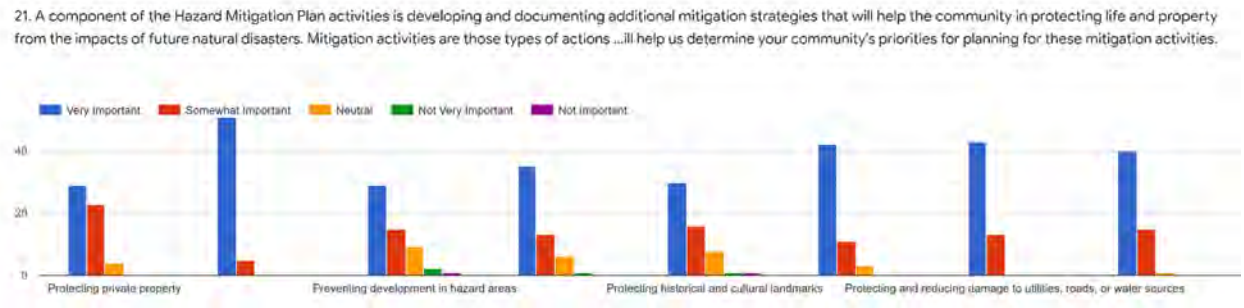
53 responses



19. Preparedness activities are often the first line of defense for the protection of your family and the community. In the following list, please check... check one answer for each preparedness activity.







22. Do you have other suggestions for possible mitigation actions/strategies?

Maybe an active siren to signal emergency.

I am a classroom teacher. Our school is the tsunami evacuation site. Families are assigned classrooms according to evacuation plans. I believe that the classrooms, and the school in general, should have emergency supply kits on hand for evacuees-food, bedding, first aid, water, etc. If the supplies were already in the classrooms (in storage) we'd be prepared to really assist evacuees.

Don't let tribal council and corporations have control of the money! Oversite, oversite, oversite!

community container with emergency supplies, stand alone generator at a community facility

I believe we need something in place for evacuations to make sure people with no rides especially from boat harbor have a way to safely and quickly get to where they need to go.

Lead manager / contact person or persons. Right now who is the contact? Nobody knew the last time we had to go to the school during a Tsunami / earthquake. Thanks to KSDP to keep us somewhat informed..

A secure plan where to relocate as the need becomes reality

Fix up old school for a shelter

More meetings or making public aware.

Strong/secure emergency shelter easily accessible for refuge, including alternative/redundant power sources and several months supply of rations for the community. Shelters/rations for individual home owners

To my knowledge the City does not have a plan in case of emergencies- I think this is extremely important for them to do

Gmail Jennifer LeMay <jenniferlemaype@gmail.com>

Public comment for this week's assembly meeting

2 messages

Jennifer LeMay <jenniferlemaype@gmail.com> Mon, Mar 8, 2021 at 10:46 AM
To: Laura Tanis <ltanis@aeboro.org>

Good morning, Laura,

I would like to submit the following public comment for this week's Borough Assembly Meeting.

The Draft Hazard Mitigation Plan for the Borough (including Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point) will be out for review in the next week or two. An In the Loop newsletter will announce the availability of the Draft Hazard Mitigation Plan for review, and the Plan will be posted on the Borough's website. A public hearing will be held during the April 8 Borough Assembly Meeting as an agenda item to receive public comments.

Thank you.

Jennifer LeMay, PE, PMP
LeMay Engineering and Consulting, Inc.
(907) 350-6061

Laura Tanis <ltanis@aeboro.org> Mon, Mar 8, 2021 at 10:57 AM
To: Jennifer LeMay <jenniferlemaype@gmail.com>
Cc: Anne Bailey <abailey@aeboro.org>, Mary Tesche <mtesche@aeboro.org>

O.K. Thank you Jennifer.

Thanks,

Laura Tanis
Communications Director
Aleutians East Borough

Office: (907) 274-7579

ltanis@aeboro.org
www.aleutianseast.org

From: Jennifer LeMay <jenniferlemaype@gmail.com>
Sent: Monday, March 8, 2021 10:46 AM
To: Laura Tanis <ltanis@aeboro.org>
Subject: Public comment for this week's assembly meeting

[External Email]

HOME
COVID-19 ▸
DEPARTMENTS ▸
COMMUNITIES ▸
VISITORS ▸
PERMITTING ▸
INFORMATION ▸
EMPLOYMENT ▸

In Departments:

- Administra. on
- Clerk's Dept.
- Natural Resources
- **Communica ons**
  - **News & Announcements**
  - Annual Report
  - King Cove Land Exchange & Access Project
  - White Papers
  - In the Loop - newsle. er
  - Fish News - newsle. er

Draft Hazard Mitigation Plan Posted for Review

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency to update the 2010 hazard mitigation plan (HMP) for the Aleutians East Borough and its communities of Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point. Cold Bay will develop its own HMP at a later date. Communities must have a State- and FEMA-approved and community-adopted HMP to receive FEMA pre- and post-disaster grants.

LeMay Engineering & Consulting, Inc. was contracted to assist in updating the HMP. The Draft HMP has been posted at www.aleutianseast.org for your review. (Please see attachment below.) Everyone is invited to review and add their input to the plan. Comments can be provided verbally to Jennifer LeMay at (907) 350-6061 or emailed to jenniferlemaype@gmail.com. Comments can also be provided verbally during the AEB Assembly meeting on April 8 starting at 3 pm as the HMP is an agenda item. The public comment period will end Friday, April 16.

Draft_AEB_MJHMP.pdf

Printer-friendly Version

Gmail Jennifer LeMay <jenniferlemaype@gmail.com>

Draft Hazard Mitigation Plan for review

Jennifer LeMay <jenniferlemaype@gmail.com> Sun, Mar 28, 2021 at 6:09 PM
To: jgunde1125@aol.com, mr.mcneley@gmail.com, Sand Point <jkeeler@sandpointak.org>, ghennigh@kingcoveak.org, Amber Jusefowytsch <amberj@kingcoveak.org>, kingcovedps@gmail.com, Nikki Hoblet <mayor@falsepass.net>, Carleen Hoblet <carleenh@falsepass.net>, farha.karim@akutanak.us, Tuna.Scanlin@akutanak.us, Tina Anderson <tanderson@aeboro.org>, joe.bereskin@akutanak.us
Cc: Anne Bailey <abailey@aeboro.org>, Mary Tesche <mtesche@aeboro.org>

All,

Everyone is invited to review and add their input to the plan. Comments can be provided verbally to Jennifer LeMay at (907) 350-6061 or emailed to jenniferlemaype@gmail.com or jlemay@lemayengineering.com. Comments can also be provided verbally during the AEB Assembly meeting on April 8 starting at 3 pm as the HMP is an agenda item. The public comment period will end Friday, April 16. I will then incorporate comments and submit the Revised Draft Plan to the State of Alaska/FEMA.

Thank you. I will work on a brief presentation to give during the April 8 meeting summarizing the Draft.

Jennifer LeMay, PE, PMP

LeMay Engineering & Consulting, Inc.

(907) 350-6061

210329 Draft AEB MJHMP.pdf
10873K

In the Loop

Draft Hazard Mitigation Plan Available for Public Review

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency to update the 2010 hazard mitigation plan (HMP) for the Aleutians East Borough and its communities of Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point. Cold Bay will develop its own HMP at a later date. Communities must have a State- and FEMA-approved and community-adopted HMP to receive FEMA pre- and post-disaster grants.

LeMay Engineering & Consulting, Inc. was contracted to assist in updating the HMP. The Draft HMP has been posted at www.aleutianseast.org for your review. Everyone is invited to review and add their input to the plan. Comments can be provided verbally to Jennifer LeMay at (907) 350-6061 or emailed to jenniferlemaype@gmail.com. Comments can also be provided verbally during the AEB Assembly meeting on April 8 starting at 3 pm as the HMP is an agenda item. The public comment period will end Friday, April 16, 2021.

Link to Draft HMP: https://www.aleutianseast.org/vertical/sites/%7BEBDABE05-9D39-4ED4-98D4-908383A7714A%7D/uploads/Draft_AEB_MJHMP.pdf

If you'd like to subscribe, please email ltanis@aeboro.org .

Thank you for reading In the Loop. If you would like to subscribe or unsubscribe, please send an email to ltanis@aeboro.org. For more information about our communities, our people, and our fisheries, please visit us at www.aleutianseast.org and www.aebfish.org. For the latest news, find us on Facebook:

Link to AEB's Facebook page

Link to King Cove's Facebook page

Link to Cold Bay's Facebook page

Link to Sand Point Department of Public Safety page

aleutians east borough

All Posts People Groups Photos Videos

Aleutians East Borough
3d ·

Draft Hazard Mitigation Plan Available for Public Review

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency to update the 2010 hazard mitigation plan (HMP) for the Aleutians East Borough and its communities of Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point. Cold Bay will develop its own HMP at a later date. Communities must have a State- and FEMA-approved and community-adopted HMP to receive FEMA pre- and post-disaster grants.

LeMay Engineering & Consulting, Inc. was contracted to assist in updating the HMP. The Draft HMP has been posted at www.aleutianseast.org for your review. Everyone is invited to review and add their input to the plan. Comments can be provided verbally to Jennifer LeMay at (907) 350-6061 or emailed to jenniferlemaype@gmail.com. Comments can also be provided verbally during the AEB Assembly meeting on April 8 starting at 3 pm as the HMP is an agenda item. The public comment period will end Friday, April 16, 2021

jlemay@lemayengineering.com

From: King Cove Department of Public Safety <kingcovedps@gmail.com>
Sent: Wednesday, March 31, 2021 11:11 AM
To: jlemay@lemayengineering.com
Subject: AEB Draft Hazard Mitigation Plan
Attachments: Disaster plan_000168.pdf

Hello I reviewed the AEB Draft Hazard Mitigation Plan and these are some changes I see. attached are the changes. You did an amazing job on the plan thank you

Thank you Chris Babcock
--
King Cove Dept. of Public Safety
PO BOX 289
King Cove, AK 99612
PH: (907)497-2210
FAX: (907)497-2556

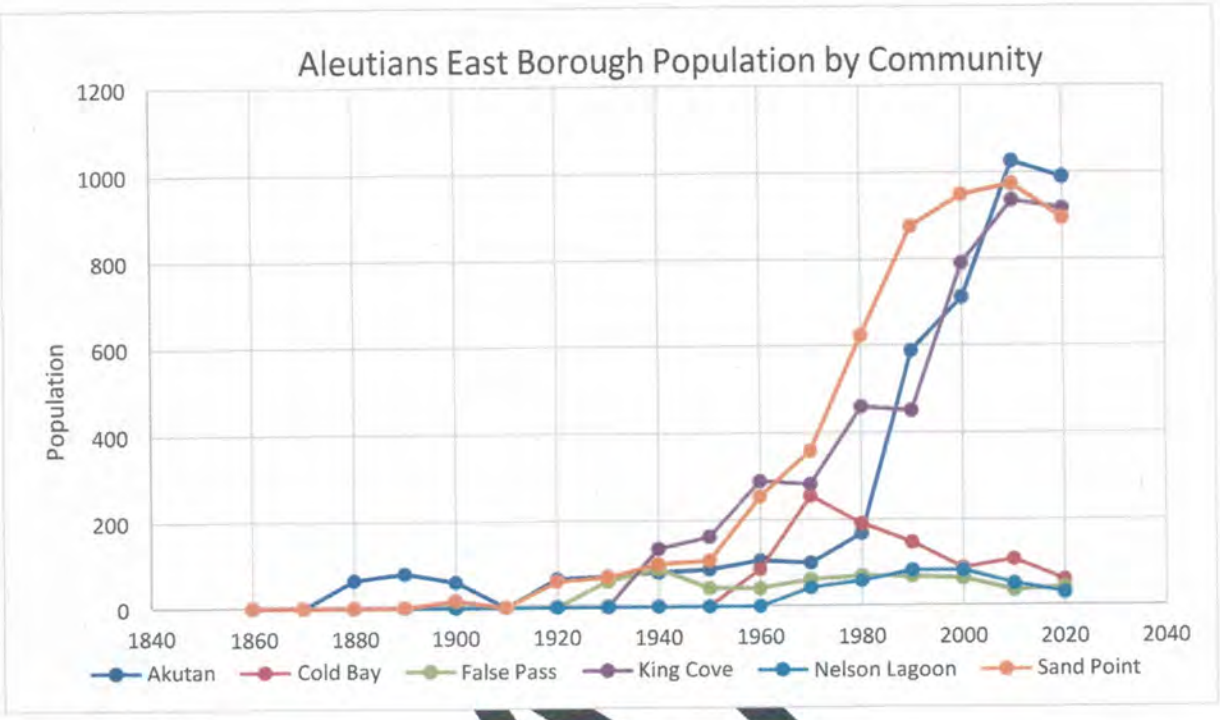


Figure 3. Historic Population

3.4 Transportation

Steep terrain prevents Akutan from having an airstrip; a seaplane base is available and open to the public. Akutan is accessible by boat and amphibious aircraft. The land-based Akutan Airport was opened in 2012 on Akun Island, and services Akutan by a helicopter. The State ferry serves Akutan from May to September. Akutan has a 100-foot public dock and a 58-vessel mooring basin and breakwater was completed by the U.S. Army Corps of Engineers (USACE) in 2013. Trident Seafoods owns several commercial docks. The Tribe has applied for funding for a two-mile harbor access road, with the purpose of connecting the community with the nation's second-largest seafood port.

Boats and aircraft provide the only means of transportation into False Pass. A seaplane base and a State-owned gravel airstrip are available. Mail and passenger flights arrive three times weekly. There is a boat harbor with electricity and water at the floats, and a dock and boat ramp are available. Cargo barges are available from Seattle. The State ferry operates once a month between May to September from Homer.

King Cove is accessible by air and sea only. A State-owned gravel runway is available. Mail and passenger flights arrive at least four times a week. Gale forcecrosswinds are common, as the airport lies in a valley between two volcanic peaks. The State ferry provides bi-monthly service to King Cove between May and ~~October~~ **September from Homer**. In addition, one public deep-water dock is available in King Cove. The dock can be used by fuel and cargo barges, the State ferry, and large fishing vessels. In addition, **there are two** ~~a~~ harbors ~~is~~ **are** operated by the City and provide~~s additional~~ moorage for ~~larger~~ vessels ~~ranging between 60 and~~ **up to** 150 feet

"According to the community survey, the main erosion problem is coastal erosion. Causes and contributing factors to coastal erosion are storm surge, high wind, and waves. In the community survey, the City Manager reported that high wind and waves occur several times per year, but they have not resulted in any structural damage to buildings. During a February 2007 storm, water lapped over boardwalks and spray occasionally hit the front row of homes, but no threats to structures were identified.

The road along ~~Gould's~~ **Westside of King Cove** *Lagoon connects residents living in* ***the King Cove Lagoon Subdivision*** ~~*old Ram and new Ram subdivisions (about 2/3 of residents)*~~ *with* ***The rest of the city.*** ~~*those living on the spit, near the Peter Pan Seafood plant. Residents on the spit also use the road to evacuate in the event of a tsunami threat.*~~ *This road is the only infrastructure threatened.*

Approximately ½ mile of road along ~~Gould's~~ ***the Eastside of King Cove*** *Lagoon is armored to protect it from coast erosion. The City plans to* ***raise the Westside of King Cove Lagoon road and*** *place additional large armor rock to further stabilize this road* ~~*during 2008*~~*. The main road to the small boat harbor has washed out during high tides in the past. The road was repaired and part was relocated approximately 20 feet inland. The main road is currently not a problem and the road along* ***Eastside of King Cove*** *Lagoon is* not *at serious risk from erosion or in imminent risk of failure. According to the City Manager, King Cove roads have been or will be upgraded to a 50-year flood design standard. The City* ~~*plans to*~~ ***has paved all the roads in the city and plans to pave King Cove Lagoon road in the future.*** ~~*pave all roads during 2008 (USACE, 2009)."*~~

In 2021, community members stated that projects discussed in the USACE *BEA* had been completed with the exception of paving West Lagoon road.

Nelson Lagoon

The 2009 USACE *BEA* developed Figure 19 to show the extent of erosion in Nelson Lagoon and stated:

"Factors causing and contributing to erosion at the site include high tides and storm surges. There is a constant prevailing wind of 20 to 25 miles per hour, which combined with wave action also contributes to erosion. The soil structure is primarily sand which is more susceptible to erosion than larger-grained soil types like gravel.

The erosion problems in Nelson Lagoon include coastline erosion on the Bering Sea and Nelson Lagoon side of the narrow sand spit that the community is situated on. The spit is getting longer and narrower as erosion advances on both sides. The community survey indicated that factors causing and contributing to erosion include high tides, storm surges, and wind and wave action. Much of Nelson Lagoon was protected by ice for part of the winter storm season until the 1990s, but this protection has not been present.

The active erosion area along the Nelson Lagoon side of the spit was less than 100 feet from community structures, including housing and the airstrip in 2007. In this area during the winter of 1998, a storm event resulted in the exposure of 3,000 feet of the community's 10.5-mile-long water line, which then froze. The community water lines were replaced three times in past years due to erosion and storm damage. The water

Table 15. King Cove Critical Infrastructure

Infrastructure/Structures	Earthquake	Volcanoes	Tsunami	Severe Weather	Erosion	Changes in the Cryosphere
1. City of King Cove Tank Farm	M	M	H	M	N/A	L
2. Warehouse ~~& Powerhouse~~	M	M	H	M	N/A	L
3. Alaska Commercial Co.	M	M	H	M	N/A	L
4. **The old** School	M	M	H	M	N/A	L
5. ~~King Cove School Bus Barn~~ **City Storage**	M	M	H	M	N/A	L
6. GCI Satellite Station	M	M	H	M	N/A	L
7. ~~Police and EMT Stations~~ **Department of Public Safety**	M	M	H	M	N/A	L
8. Post Office	M	M	H	M	N/A	L
9. ~~City of King Cove Building~~ **King Cove City Hall**	M	M	H	M	N/A	L
10. King Cove Harbor House	M	M	H	M	N/A	L
11. King Cove ~~Community Center and Emergency Shelter~~ **Senior Center**	M	M	L	M	N/A	L
12. Ram's General Store	M	M	L	M	N/A	L
13. Aleutian Housing Office	M	M	L	M	N/A	L
14. King Cove Clinic	M	M	L	M	N/A	L
15. King Cove School **& Emergency Shelter**	M	M	L	M	N/A	L
16. City Shop	M	M	L	M	N/A	L
17. AEB **Finance** Office	M	M	L	M	N/A	L

Table 2. Hazard Mitigation Planning Team

Name	Title	Organization	Contact Information
Alvin Osterback	Mayor	AEB	aosterback@aeboro.org
Anne Bailey	Administrator	AEB	abailey@aeboro.org
Mary Tesche	Assistant Administrator	AEB	mtesche@aeboro.org
Laura Tanis	Communications Director	AEB	ltanis@aeboro.org
Tina Anderson	Clerk/Planner	AEB	tanderson@aeboro.org
Tuna Scanlan	City Administrator	Akutan	tuna.scanlan@akutanak.us
Farha Karim	Assistant City Administrator	Akutan	farha.karim@akutanak.us
Nikki Hobelt	Mayor	False Pass	mayor@falsepass.net
Carleen Hobelt	Deputy Clerk	False Pass	carleenh@falsepass.net
Shane Hobelt	City Council Member	False Pass	
Gary Hennigh	City Administrator	King Cove	ghennigh@kingcoveak.org
Jordan Keeler	City Administrator	Sand Point	jkeeler@sanpointak.org
Justine Gunderson	Tribal Administrator	Village of Nelson Lagoon	jgunde1125@aol.com
Mark McNeley	Indian General Assistant Program Coordinator	Village of Nelson Lagoon	mr.mcneley@gmail.com
Warren Wilson	Assembly Member/Resident of King Cove	AEB Assembly	
Paul Gronholdt	Assembly Member/Resident of Sand Point	AEB Assembly	
Chris Babcock	Assembly Member/~~Public Safety Director~~ Fire Chief/Resident of King Cove	AEB Assembly	
Brenda Wilson	Assembly Member/Resident of King Cove	AEB Assembly	
Carol Foster	Assembly Member/Resident of Sand Point	AEB Assembly	
Josephine Shangin	Assembly Member/Resident of Akutan	AEB Assembly	
Denise Mobeck	Assembly Member/Resident of Sand Point	AEB Assembly	
Samantha McNeley	Advisor to Assembly Member/Resident of Nelson Lagoon	AEB Assembly Advisor	

Figure 18. USACE Identified Linear Extent of Erosion in King Cove, Part 2

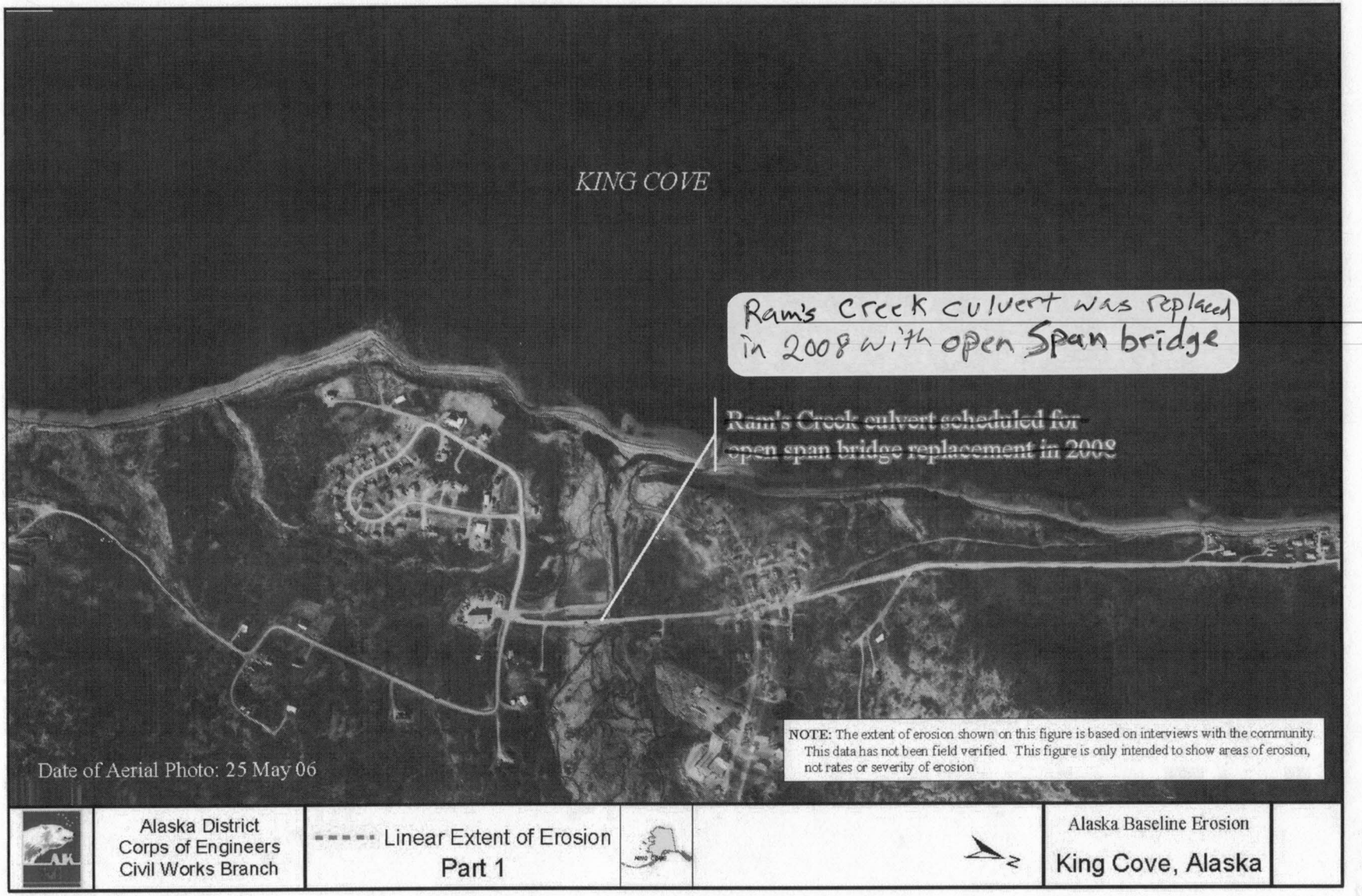


Figure 17. USACE Identified Linear Extent of Erosion in King Cove, Part 1

Gmail Jennifer LeMay <jenniferlemaype@gmail.com>

Assembly mtg.

2 messages

Tina Anderson <tanderson@aeboro.org> Fri, Apr 2, 2021 at 8:21 AM
To: "jenniferlemaype@gmail.com" <jenniferlemaype@gmail.com>
Cc: Anne Bailey <abailey@aeboro.org>

To Jennifer,

Are you just expecting to do a presentation or do you prefer to be under New Business? I plan to put you under presentations, at this time, unless I hear different from you.

I've been on vacation so haven't had time to review the draft thoroughly yet, but immediately saw a couple small errors.

Table 2 on page 21, last names spelt incorrectly on three people. Correct spelling for Nikki, Carleen and Shane is HOBLET.

Table 2, page 21, Advisory Member representing Cold Bay is missing -- Dailey Schaack.

Also, change the wording for Advisory Member, not advisor. Should be, Samantha McNeley, Advisory Member representing Nelson Lagoon, Tom Hoblet Advisory Member representing False Pass, Dailey Schaack Advisory Member representing Cold Bay.

If you have any questions regarding the meeting call or e-mail.

Thank you,

Tina Anderson, Clerk

Aleutians East Borough

PO Box 349

Sand Point, Alaska 99661

Ph.: (907)383-2699

E-Fax: 1-888-737-3524

E-mail: tanderson@aeboro.org

Assembly mtg.

Jennifer LeMay <jenniferlemaype@gmail.com> Fri, Apr 2, 2021 at 10:32 AM
To: Tina Anderson <tanderson@aeboro.org>

Thanks, Tina. That makes sense.

Jennifer

On Fri, Apr 2, 2021 at 10:21 AM Tina Anderson <tanderson@aeboro.org> wrote:

> They do have official e-mail addresses, however, let's not put their e-mail addresses on there since all correspondence to them goes through the Clerks Dept. to disperse just because the Assembly is a body not an individual. Hope that makes sense.
>
> ***Tina Anderson, Clerk***
>
> *Aleutians East Borough*
>
> *PO Box 349*
>
> *Sand Point, Alaska 99661*
>
> *Ph.: (907)383-2699*
>
> *E-Fax: 1-888-737-3524*
>
> *E-mail: tanderson@aeboro.org*
>
> ---
>
> **From:** Jennifer LeMay [mailto:jenniferlemaype@gmail.com]
> **Sent:** Friday, April 02, 2021 9:48 AM
> **To:** Tina Anderson <tanderson@aeboro.org>
> **Cc:** Anne Bailey <abailey@aeboro.org>
> **Subject:** Re: Assembly mtg.
>
> **[External Email]**
>
> [Quoted text hidden]

To: Honorable Mayor Alvin Osterback and Aleutians East Borough Assembly
From: Laura Tanis, AEB Communications Director
Through: Anne Bailey, AEB Administrator
Subject: Communications Director's Report to the Assembly
Date: April 2, 2021

Strategic Plan – PR and Marketing Improvement Plan:

I've been busy working on my sections of the Strategic Plan. I've completed a couple of drafts of the website design RFP after conducting some research. That has included looking at multiple municipal website designs as well as other RFPs. I also did some inventory about what improvements are needed with our website. The latest draft is in the hands of Anne and Mary. I also sent a draft to Tina, to see if she has additional feedback. I'm also looking into whether we might be able to obtain some grant money to help with this project.

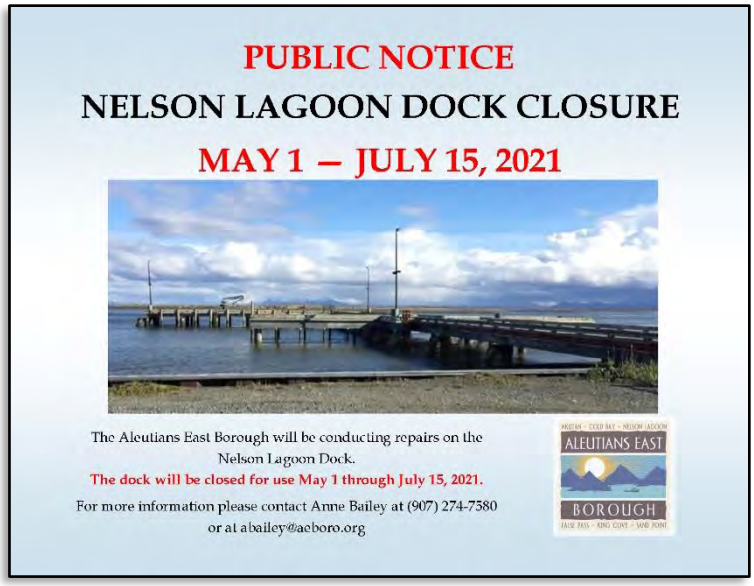
Strategic Plan – Marine Highway Narrative:

I've had a couple of Borough Administration meetings recently regarding the marine highway online petition and discussion paper after multiple edits (part of the Government & Policy Advocacy portion of the Strategic Plan.) We're are at a near final copy and will post soon to Change.org. Before doing so, I contacted Mark Hickey, as well as SWAMC's Shirley Marquardt, AML's Nils Andreassen and Robert Venables of the Southeast Conference to have them review it one last time. Outreach will be the next step.

In the Loop:

I sent out a couple of In the Loop newsletters recently. The one on March 26th announced that the Nelson Lagoon dock will be closed May 1st through July 15th this summer for repairs.

Another newsletter went out on March 29th, announcing that the draft Hazard Mitigation Plan has been posted for public review. Those items were also posted to the website and on the Borough's Facebook page. The public comment period will end on April 16th.



I also plan to do a story for the newsletter regarding the military exercises that will be conducted in Cold Bay in May. On March 31st, I attended a press conference via Zoom, in which Colonel Lieutenant Mike Boyer discussed the exercises that will take place in Cold Bay as well as in other locations in Alaska.

Miscellaneous items:

- Updates to Facebook page as needed;
- Continuing work on the PCE white paper;
- Weekly/bi-weekly/as-needed meetings regarding COVID-19/Borough projects (below).

As always, I'm happy to help get the word out about events/issues going on in your community. Please feel free to contact me and let me know how I can help.

In the Loop

ALEUTIANS EAST BOROUGH

Draft Hazard Mitigation Plan Available for Public Review

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency to update the 2010 hazard mitigation plan (HMP) for the Aleutians East Borough and its communities of Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point. Cold Bay will develop its own HMP at a later date. Communities must have a State- and FEMA-approved and community-adopted HMP to receive FEMA pre- and post-disaster grants.

LeMay Engineering & Consulting, Inc. was contracted to assist in updating the HMP. The Draft HMP has been posted at www.aleutianseast.org for your review. Everyone is invited to review and add their input to the plan. Comments can be provided verbally to Jennifer LeMay at (907) 350-6061 or emailed to jenniferlemaype@gmail.com. Comments can also be provided verbally during the AEB Assembly meeting on April 8 starting at 3 pm as the HMP is an agenda item. The public comment period will end Friday, April 16, 2021.

Link to Draft HMP: https://www.aleutianseast.org/vertical/sites/%7BEBDABE05-9D39-4ED4-98D4-908383A7714A%7D/uploads/Draft_AEB_MJHMP.pdf

In the Loop newsletter Published by the Aleutians East Borough March 29, 2021 Page 1

Meetings Attended:

SOA Emergency Manager Meeting – COVID-19	Teleconference	3-31-21
Northern Edge – Military – Press Conference	Zoom	3-31-21
Borough Admin – Comms Dir. - Budget Meeting	Teams	3-29-21
Bor. Admin – Comms Dir. - AMHS Petition Discussion	Teams	3-29-21
SOA Emergency Manager Meeting – COVID-19	Teleconference	3-24-21
AFISH	Zoom	3-17-21
SOA Emergency Manager Meeting – COVID-19	Teleconference	3-17-21
Bor. Admin – Comms Dir. – Website RFP Discussion	Teams	3-14-21

Agenda
Assembly Meeting
(packet available on website www.aleutianseast.org)

Date: Thursday, April 8, 2021
Time: Workshop: 1:00 p.m. Meeting: 3:00 p.m.

Due to Covid-19, the Assembly meeting will not have public locations. All Assembly Members will dial in from individual locations, for the purpose of following the mandates, social distancing and protecting the public health.

The meeting will be broadcast on KSDP Public Radio. If you do not have the radio station broadcasting in your community, you can go to KSDP website, http://apradio.org/ to stream the meeting.

Prior to and during the meeting, Public Comments on Agenda items or Public Comments on other issues can be e-mailed to ltanis@aeboro.org, Subject: *April Assembly Meeting*, to be read at the appropriate time during the meeting.

ASSEMBLY MEETING AGENDA

1. Roll Call & Establishment of Quorum.

2. Adoption of the Agenda.

3. Public Comments on Agenda Items *(to be e-mailed to ltanis@aeboro.org)*.

4. Presentations:
   - Alaska Permanent Capital Management Presentation.
   - Jennifer LeMay, *DRAFT* AEB Hazard Mitigation Plan.

5. Conflict of Interest.

6. Minutes.
   - March 11, 2021 Assembly Meeting Minutes.

7. Financial Reports.
   - February Financials.
   - February Investment Report.

8. Consent Agenda
   - Resolution 21-42, Assembly authorizes the Mayor to execute a contract with Moffatt & Nichol to assist the Aleutians East Borough with preparing a 2021 MARAD Port Infrastructure

Development Grant Application for the Sand Point and Akutan Harbors Floating Docks Project in an amount not to exceed $32,000.00.

- Resolution 21-43, Assembly authorizes the mayor to negotiate and execute a contract agreement with Levesque Law Group, LLC to provide general legal counsel for the Aleutians East Borough.
- Resolution 21-44, Assembly approves Phase 1 of the Aleutians East Borough Offices Reopening Plan.
- Emergency Ordinance 21-11, Declaration of Disaster and Authorization of Telephonic Quorum.

9. Ordinances

10. Resolutions.

11. Old Business.

12. New Business
    - CARES Act funding discussion.

13. Reports and Updates.

14. Assembly Comments.

15. Public Comments. *(to be e-mailed to ltanis@aeboro.org).*

16. Next Meeting Date.

17. Adjournment.

Hazard Mitigation Action Plan Strategy

For the 2021 Aleutians East Borough Multi-Jurisdictional

Hazard Mitigation Plan Update

Jennifer LeMay, PE, PMP
(907) 350-6061
jlemay@lemayengineering.com or jenniferlemaype@gmail.com

Public Meeting #3: April 8, 2021

What is Hazard Mitigation and Hazard Mitigation Planning?

- Hazard mitigation is the effort to reduce loss of life and property by lessening the impacts of natural disasters.

- Mitigation planning is the process used by State, Local, and Tribal leaders to understand risks from natural hazards and develop long-term strategies that will reduce the impacts of future disaster events on people, property, and the environment.

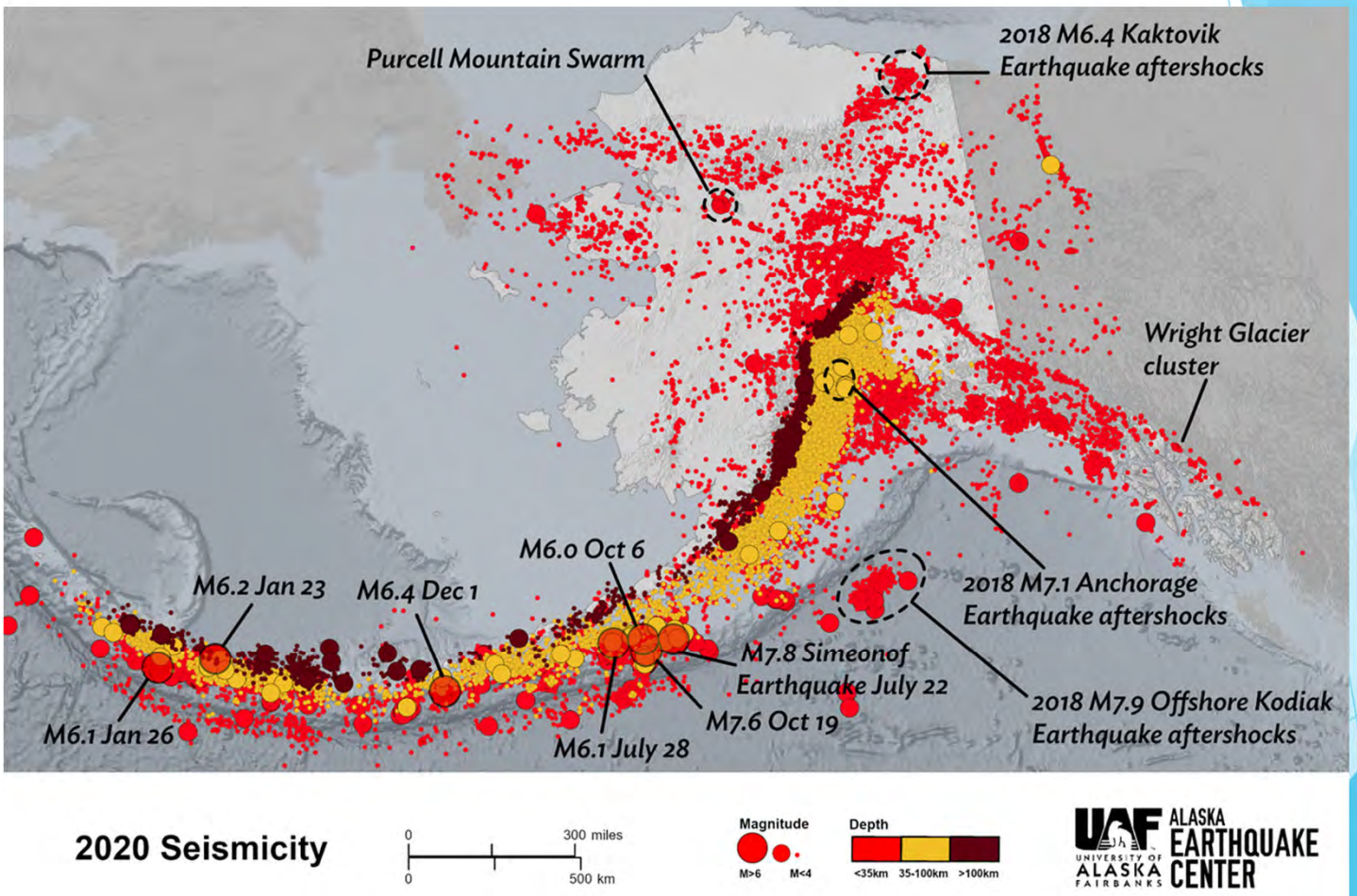
What is the Hazard Mitigation Planning Process?

- During the December 10, 2020 Assembly meeting, we discussed hazard mitigation planning and the project schedule.
- On January 20, 2021, the points of contact for the AEB, Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point had a telephonic meeting and started the process of updating the expired Hazard Mitigation Plan that was adopted by the communities in 2010.
- Online Public Survey: January 21 to February 12, 2021. 57 people completed the survey.
- During the February 11, 2021 Assembly meeting, we summarized the natural hazards that have the potential to impact the planning area as well as possible mitigation actions.
- On March 29, 2021, the Draft Hazard Mitigation Plan Update was posted on the AEB's website and Facebook page and an **In the Loop** newsletter was distributed, announcing the beginning of the public comment period.
- During the April 8, 2021, there will be a public hearing on the Draft Plan.
- DHS&EM and FEMA review and pre-approval of Revised Draft Plan (Late April thru June).
- Borough Assembly, City Councils, and Tribal Council adoption (July or August).
- Final Approval from FEMA (August).

What new information has been included in the 2021 Draft Hazard Mitigation Planning Update?

This is a list of highlights and graphics and is not an exhaustive list of updates.

- Division of Geological and Geophysical Survey (DGGS) *Regional Tsunami Hazard Assessment for Communities of Bristol Bay and the Pribilof Islands, Alaska*, 2020.
- DGGS *Regional Tsunami Hazard Assessment for False Pass and Perryville, Alaska*, 2019.
- DGGS *Tsunami Inundation Maps for the City of Sand Point, Alaska*, 2017.
- DGGS *Tsunami Inundation Maps for King Cove and Cold Bay Communities, Alaska*, 2016.
- DGGS *Tsunami Inundation Maps of Fox Islands Communities, Including Dutch Harbor and Akutan, Alaska*, 2015.
- *Nelson Lagoon Coastal Hazard Assessment*, 2021, prepared by Reyce Bogardus and Dr. Chris Maio, University of Alaska Fairbanks, Arctic Coastal Geoscience Lab, February 2021.
- *Nelson Lagoon Coastal Erosion Study, 20% Preliminary Design Report*, 2015, prepared by HDR, Inc.
- *Nelson Lagoon Coastal Erosion Study Historical Shoreline Map Report,* 2014, prepared by HDR Alaska, Inc.
- *Nelson Lagoon Hazard Impact Statement*, 2011, prepared by HDR Alaska Inc. with Shannon and Wilson.


Purcell Mountain Swarm
2018 M6.4 Kaktovik Earthquake aftershocks
Wright Glacier cluster
M6.0 Oct 6
M6.2 Jan 23
M6.4 Dec 1
2018 M7.1 Anchorage Earthquake aftershocks
M7.8 Simeonof Earthquake July 22
2018 M7.9 Offshore Kodiak Earthquake aftershocks
M7.6 Oct 19
M6.1 Jan 26
M6.1 July 28
2020 Seismicity
0
300 miles
0
500 km
Magnitude
M>6
M<4
Depth
<35km
35-100km
>100km
UAF
UNIVERSITY OF ALASKA FAIRBANKS
ALASKA EARTHQUAKE CENTER

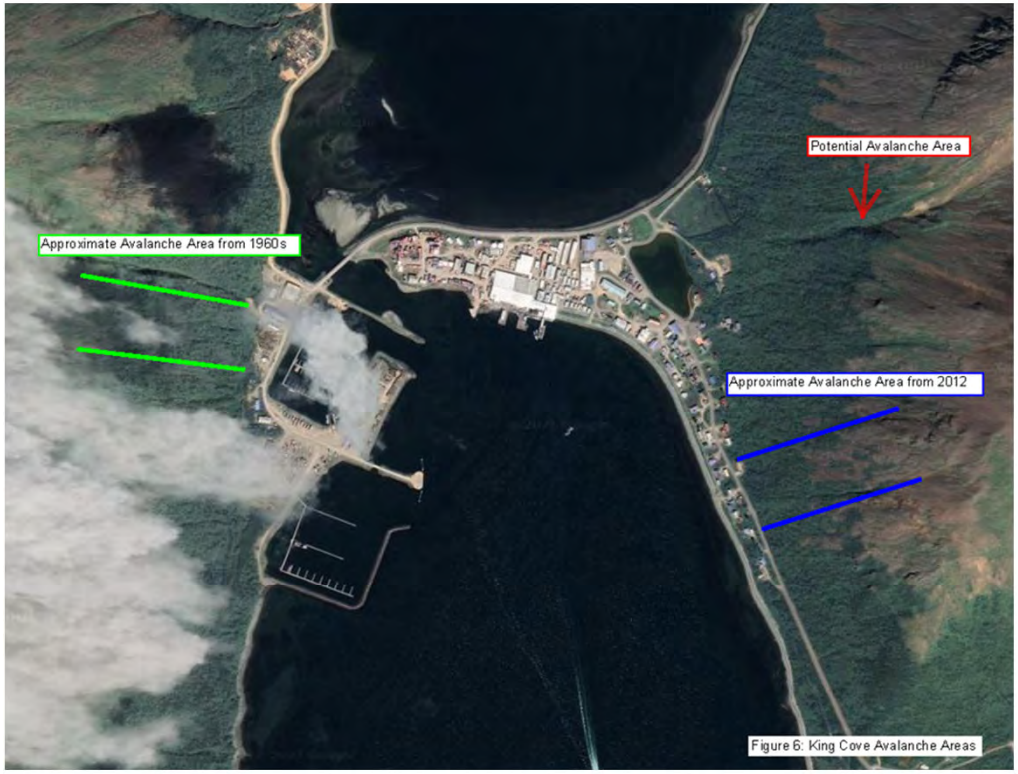
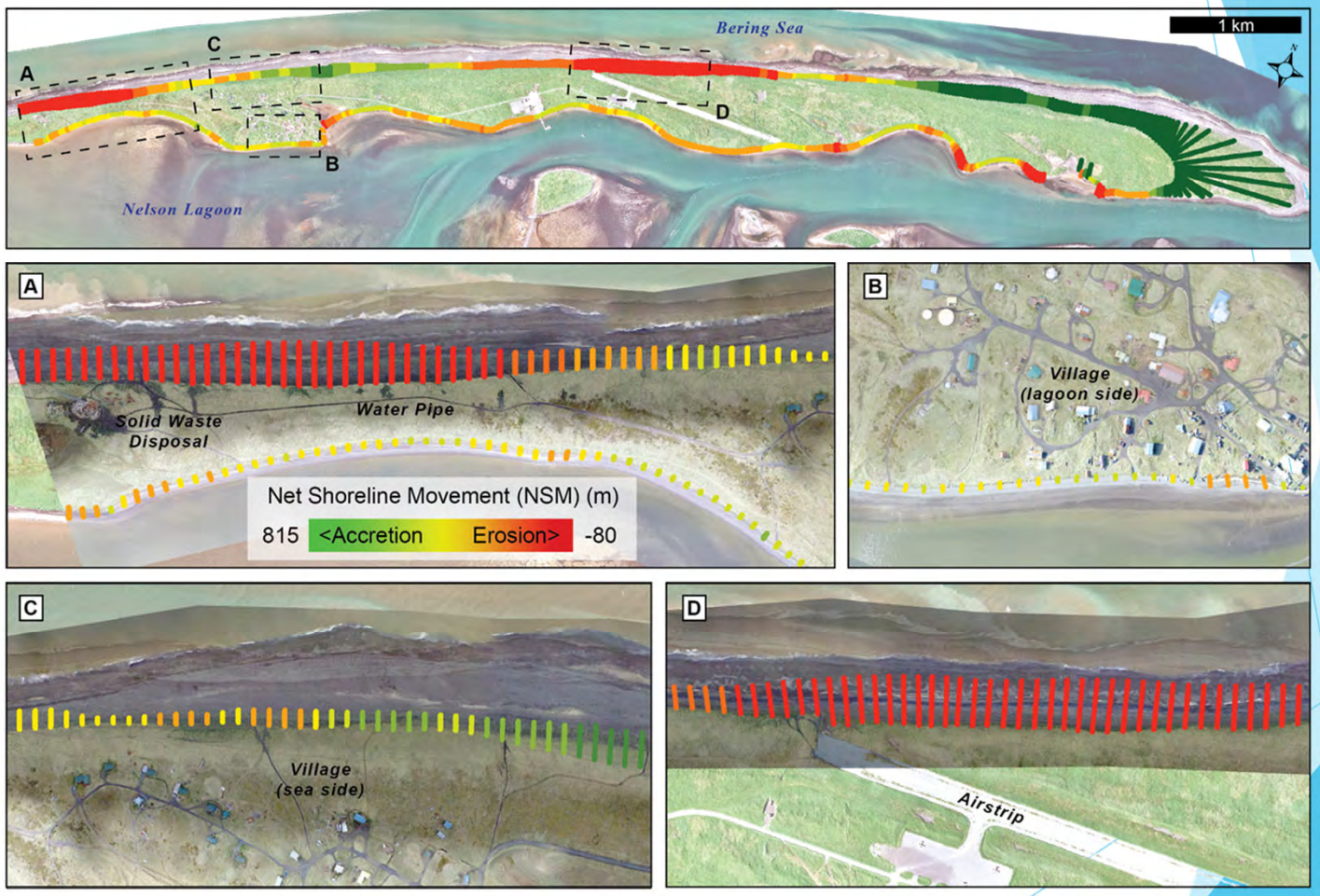


Figure 6: King Cove Avalanche Areas


Bering Sea
1 km
N
A
B
C
D
Nelson Lagoon
A
Solid Waste
Disposal
Water Pipe
Net Shoreline Movement (NSM) (m)
815
<Accretion
Erosion>
-80
B
Village
(lagoon side)
C
Village
(sea side)
D
Airstrip

Mitigation Actions

Handout #1 provides mitigation actions. Please feel free to add your input on mitigation actions that can lessen the impacts of natural hazards in your community.

Public Comment Period Ends April 16 at 5 pm. Submit comments to:

Jennifer LeMay, PE, PMP
(907) 350-6061
jlemay@lemayengineering.com or jenniferlemaype@gmail.com

Table 22. AEB and its Communities' Mitigation Action Plan Matrix

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
Akutan						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2015. Buildings and facilities intended as shelters that are located outside the inundation zone should be equipped with generators and emergency supplies.	High	City Administrator	DHS&EM BRIC and HMGP	2026	B/C: Life/Safety project. Residents identified in the 2021 survey that shelters aren't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Now that the tsunami zone has been mapped, the City Mayor is able to research participation requirements and make a decision.	High	City Mayor	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
TS 2	**New in 2021:** Install a second tsunami siren.	High	City Administrator	DHS&EM, NOAA	2026	B/C: Life/Safety Issue TF: Staff time
TS 3	Replace Tsunami Shelter. **2021 Progress:** Funding has been procured. Once COVID allows, shelter will be re-located to allow better access.	High	City Administrator	In hand	2021	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2020 Progress:** The City supports the Tribe's and Village Corporation's educational awareness efforts.	Low	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
SW 2	Improve City Dock. **2021 Progress:** DOT replaced City Dock with a small boat harbor in 2015. This action will be deleted in next HMP Update.	Completed.				
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	City	2026	B/C: Life/Safety Issue TF: Staff time

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	City	2022	B/C: Life/Safety Issue TF: Staff time
ER 1	Protect water source and transmission line. **2021 Progress:** System has been replaced. This action will be deleted in next HMP Update.	Completed.				
ER 2	**New in 2021:** Erosion is occurring near housing by the Library/Recreation. Center. Mitigate Erosion.	High	City Mayor is working with Tribe.	Scope and nature of hazard is being determined.	2021	B/C: This hazard was discovered in 2021 during the updating of this MJHMP. TF: It's less expensive to mitigate erosion in its early stages.
False Pass						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2019. Buildings and facilities intended as shelters that are located outside the inundation zone should be equipped with generators and emergency supplies.	High	City Mayor	DHS&EM BRIC and HMGP	2026	B/C: Life/Safety project. Residents identified in the 2021 survey that shelters aren't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Now that the tsunami zone has been mapped, the City Mayor is able to research participation requirements and make a decision.	High	City Mayor	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
TS 2	**New in 2021:** Install a tsunami siren.	High	City Mayor	DHS&EM, NOAA	2026	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week.	Low	City Mayor	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	2021 Progress: Health fairs and the Fire Department pass out natural hazard information to the community.					
SW 2	**New in 2021:** Dilapidated homes and debris become projectiles in severe wind storms with gusts greater than 100 mph. Remove debris.	High	City Mayor	Staff Time	2025	B/C: Life/Safety Issue TF: Local labor could remove debris if funding was obtained.
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	Staff Time	2022	B/C: Life/Safety Issue TF: Staff time
FL/ER 1	Consider benefits of joining the NFIP. **2021 Progress:** The community would need to be mapped for flooding first.	High	City Mayor	DHS&EM, NOAA	2026	B/C: Flooding is limited to Round Top Creek. Benefit may not outweigh the costs of the program. TF: Staff time
FL/ER 2	Continue to monitor the concrete blocks and gravel at Unimak Drive, and report to the USACE any erosion issues. **2021 Progress:** Erosion mitigation is working as intended.	High	City Administrator	Staff Time	2021	B/C: Maintain investment. TF: Staff time.
FL/ER3	**New in 2021:** Erosion has occurred further south on the access road to Unimak Drive from City Pier to Fuel Road. Implement mitigation action.	High	City Administrator	Staff Time	2021	B/C: Action is needed to mitigate erosion. TF: Staff time.
FL/ER 4	**New in 2021:** Install culverts at Mountain Valley subdivision to prevent flooding over the road.	High	City Administrator	DHS&EM BRIC or HMGP	2026	B/C: Inexpensive solution. TF: Staff time.
FL/ER 5	**New in 2021:** Repair the upper portion of the concrete boat ramp that has washed away.	High	City Administrator	DHS&EM HMGP	2022	B/C: Action is needed to mitigate erosion. TF: Staff time.
FL/ER 6	**New in 2021:** False Pass has a substandard gravel runway measuring 2,150 feet long by 60 feet wide, and the State requires a 3,100-foot runway. The runway also gets soft	High	AEB Administrator	State of Alaska, DOT&PF, FAA	2026	B/C: Life/Safety Issue TF: Funding would be required.

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	and becomes difficult to use during spring break-up, melting ice/snow and heavy rains, reducing aircraft performance and safety. The AEB is working with the City for a project to upgrade the runway.					
King Cove						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2016. The school is intended as a shelter and should be equipped with generators and emergency supplies.	High	City Administrator	DHS&EM BRIC and HMGP	2026	B/C: Life/Safety project. Residents identified in the 2021 survey that shelters aren't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** King Cove is now designated a tsunami-ready community.	High	City Administrator	Staff Time	Completed.	
TS 2	**New in 2021:** Install an additional tsunami siren by the City Shop.	High	City Administrator	DHS&EM, NOAA	2026	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2021 Progress:** Health fairs are used by the City to pass out natural hazard information to the community. The City participates in the Great Alaska Shake-out. Tsunami drills occur twice a year at the school.	Low	City Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	Staff Time	2022	B/C: Life/Safety Issue TF: Staff time

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
FL/ER 1	**New in 2021:** The City has several small erosion/flooding projects planned for the spring.	High	City Administrator	DHS&EM, NOAA	2021	B/C: The City is proactive in mitigation projects. TF: Funding is in hand.
CC 1	**New in 2021:** Install warning signage in known avalanche zones.	High	City Administrator	City	2021	B/C: Life/Safety Issue TF: Staff time
CC 2	**New in 2021:** Map avalanche hazard zones.	High	City Administrator	DGGS	2024	B/C: Life/Safety Issue TF: Staff time
CC 3	**New in 2021:** Conduct a time-lapsed photographic study of the glaciers on Mt. Dutton that power the hydroelectric facilities to ensure there will be enough water to power the facilities well into the future.	Low	City Administrator	AEB, City	2026	B/C: Future Planning TF: A drone could potentially capture this information.
Nelson Lagoon						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** The school is intended as a shelter and should be equipped with generators and emergency supplies.	High	Tribal Administrator	DHS&EM	2026	B/C: Life/Safety Issue. Residents identified in the 2021 survey that the shelter isn't equipped with supplies and a source of heat. TF: This action can be accomplished with existing workers once funding is obtained.
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Now that the tsunami zone has been mapped, the Tribal Administrator is able to research participation requirements and make a decision.	High	Tribal Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2021 Progress:** Health fairs are used by the Village to pass out natural hazard information to the community.	Low	Tribal Administrator	Staff Time	Ongoing	B/C: Life/Safety Issue TF: Staff time
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	Tribal Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure	High	Tribal	Staff Time	2022	B/C: Life/Safety Issue

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
	that ashfall can't enter the system.		Administrator			TF: Staff time
FL/ER 1	Implement long-term erosion control project to protect waterline and other infrastructure. **2021 Progress:** Studies have been completed. Actions to be implemented are: • If the airstrip is to stay operational during extreme storm-tide events, mitigation action needs to occur. • The landfill needs to have erosion mitigation actions installed or to be relocated. • The current seawall failed in 2013 and needs to be replaced and mitigation structures need to be placed and extended to the west of the existing seawall as described by HDR, 2015.	High	Tribal Administrator	DHS&EM, NOAA	2026	B/C: Hazards have been identified and prioritized. Mitigation is necessary. TF: Funding is needed to implement recommended solutions.
FL/ER 2	Relocate Nelson Lagoon water transmission line away from shoreline. **2021 Progress:** This action has not occurred.	High	Tribal Administrator	DHS&EM BRIC and HMGP, Denali Commission	2026	B/C: Life/Safety Issue TF: Staff time
FL/ER 3	Install geodetically referenced, permanent, real-time water level gauge and wave buoys.	Medium	Tribal Administrator	UAF-ACGL, DGGS, FEMA, NWS	2022	B/C: Accurate flood mapping, tide predictions (important for surge forecasting and impact), quantify changes to wave regime, improved validation and forecasting of NWS surge prediction models
Sand Point						
EQ 1	Identify buildings and facilities that must be able to remain operable during and following an earthquake event. **2021 Progress:** Tsunami mapping was completed in 2017. The school is intended as a shelter and should be equipped with generators and emergency supplies.	High	City Administrator	DHS&EM	2026	B/C: Life/Safety Issue. Residents identified in the 2021 survey that the shelter isn't equipped with supplies and a source of heat. TF: This action can be

Action ID	Description	Priority	Responsible Entity	Potential Funding	Time-frame	Benefit-Cost/Technical Feasibility
						accomplished with existing workers once funding is obtained.
EQ 2	New in 2021: Harden the water and sewer system.	High	City Administrator	DHS&EM	2026	B/C: Life/Safety Issue TF: Staff time
TS 1	Consider participation in the Tsunami Awareness Program. **2021 Progress:** Sand Point is now designated a tsunami-ready community.	High	City Administrator	Staff Time	Completed.	
TS 2	**New in 2021:** Install an additional tsunami siren.	High	City Administrator	DHS&EM, NOAA	2026	
TS 3	Build a road to a higher elevation in case of a tsunami. **2021 Progress:** Most of the community is above sea level so this isn't a concern. This mitigation action will be deleted in the next HMP Update.	This mitigation action will be deleted in the next HMP Update.				
TS 4	Construct a heliport. **2021 Progress:** This mitigation action is not a priority and will be deleted in the next HMP Update.	This mitigation action will be deleted in the next HMP Update.				
SW 1	Conduct special awareness activities, such as Winter Weather Awareness Week. **2021 Progress:** Health fairs are used by the City to pass out natural hazard information to the community.	Low	City Administrator	Staff Time	Ongoing	B/C: Pre-planning saves lives. TF: Easily implementable.
V 1	**New in 2021:** Update, as needed, emergency notification procedures and emergency planning for ash fall events.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time
V 2	**New in 2021:** Evaluate water treatment plant to ensure that ashfall can't enter the system.	High	City Administrator	Staff Time	2026	B/C: Life/Safety Issue TF: Staff time

In the Loop

Reminder: Public Comment Period for the Aleutians East Borough's Draft Hazard Mitigation Plan Ends April 16th

The State of Alaska, Department of Military and Veterans Affairs, Division of Homeland Security and Emergency Management was awarded a Pre-Disaster Mitigation Program grant from the Federal Emergency Management Agency to update the 2010 hazard mitigation plan (HMP) for the Aleutians East Borough and its communities of Akutan, False Pass, King Cove, Nelson Lagoon, and Sand Point. Cold Bay will develop its own HMP at a later date. Communities must have a State- and FEMA-approved and community-adopted HMP to receive FEMA pre- and post-disaster grants.

LeMay Engineering & Consulting, Inc. was contracted to assist in updating the HMP. The Draft HMP has been posted at www.aleutianseast.org for your review. Everyone is invited to review and add their input to the plan. Comments can be provided verbally to Jennifer LeMay at (907) 350-6061 or emailed to jenniferlemaype@gmail.com. The public comment period will end Friday, April 16.

To read the Draft Hazard Mitigation Plan, go here.

REWARD FOR TAGGED PACIFIC COD

Alaska Fisheries Science Center and Aleutians East Borough tagged Pacific cod in March 2021 with satellite and conventional tags to study their distribution and migration. Those who return tags will receive swag, and satellite tag returns will be entered for a chance to win a cash prize!

CONVENTIONAL TAGS

Tags are orange and located below the first dorsal fin, there may be one or two tags on each side.

SATELLITE TAGS

Satellite tags are larger and attached to a harness, located between the two dorsal fins. Tag numbers should be written in silver.

STEP 1: Please write down the following information:

- → Name of Vessel
- → Date of recovery
- → Location and depth of recovery
- → Tag numbers
- → Contact for rewards (name, phone, mailing address)

You can either give this information to a federal groundfish observer or follow step 2 (no observer on vessel)

STEP 2: Send us your tags and collect your reward!

- Conventional Tags: Text/email a picture of the tags with the written info to **(907) 885-5184** or **clevy@aeboro.org**
- Satellite Tags: Call **(907) 274-7566** to request a pre-paid envelope. Mail written info and the actual satellite tag to:

Susanne McDermott, NOAA NMFS
7600 Sand Point Way Seattle, WA 98115

For general questions about the reward program please contact: Charlotte Levy at (907) 274-7556 or clevy@aeboro.org

APICDA Offers Regional Scholarship Opportunities

APICDA is offering ten NEW college undergraduate scholarship awards for the 2021-22 academic year. Eligibility requirements include being a full-time, permanent resident of an Aleutian region community or St. George Island. The college scholarship application is due by June 1. APICDA is also offering a regional vocational training scholarship with a rolling deadline. Flyers for both Haginaa Kidul (Helping to Grow) programs are below.

The APICDA board initiated the Haginaa Kidul scholarship in 2020 because of their strong belief in the social benefits that education provides and to broaden our educational offerings in recognition of the interconnectedness of communities within the region.

Haginaa Kidul *(Helping to Grow)* College Scholarship

TEN $2,000 college undergraduate scholarship awards are available for the 2021-2022 academic year.

APICDA and its board recognize the interconnectedness of students, families and communities within the Aleutian/Pribilof region. We believe that expanding access to education and training offerings beyond CDQ member communities will help increase opportunities for networking, collaboration and information sharing, and in turn will help grow and strengthen our regional economy.

Is this scholarship program right for me?

1. Are you a full-time, permanent resident of an APICDA CDQ member community; Akutan, Atka, False Pass, Nelson Lagoon, Nikolski, St. George, or one of the following non-CDQ Aleutian/Pribilof region communities: Adak, Cold Bay, King Cove, Sand Point, or Unalaska?
2. Are you registered or planning to attend college full-time?
3. Are you community-minded and highly motivated to earn a degree that will help support sustainability of your community or the Aleutian/Pribilof region?

If you answered yes to each of the above questions, apply for a scholarship by the annual deadline of June 1. Applications and more information are available on our website at www.apicda.com

Haginaa Kidul *(Helping to Grow)* Vocational Training Scholarship

A limited number of vocational training scholarships, up to $2,000 each, are available for the remainder of 2021.

APICDA and its board recognize the interconnectedness of students, families and communities within the Aleutian/Pribilof region. We believe that expanding access to education and training offerings beyond CDQ member communities will help increase opportunities for networking, collaboration and information sharing, and in turn will help grow and strengthen our regional economy.

Is this scholarship program right for me?

1. Are you a full-time, permanent resident of an APICDA CDQ member community; Akutan, Atka, False Pass, Nelson Lagoon, Nikolski, St. George or one of the following non-CDQ Aleutian/Pribilof region communities: Adak, Cold Bay, King Cove, Sand Point, or Unalaska?
2. In one or more months from now, are you planning to attend a certified vocational school or training program?
3. After training, will you have potential employment opportunities and/or make contributions to your community or the Aleutian/Pribilof region?

If you answered yes to each of the above questions, apply for a scholarship.

Applications and more information are available on our website at www.apicda.com

PUBLIC NOTICE

NELSON LAGOON DOCK CLOSURE

MAY 1 – JULY 15, 2021

The Aleutians East Borough will be conducting repairs on the Nelson Lagoon Dock.

The dock will be closed for use May 1 through July 15, 2021.

For more information please contact Anne Bailey at (907) 274-7580 or at abailey@aeboro.org

AKUTAN • COLD BAY • NELSON LAGOON
ALEUTIANS EAST
BOROUGH
FALSE PASS • KING COVE • SAND POINT

If you'd like to subscribe, please email ltanis@aeboro.org .

Thank you for reading In the Loop. If you would like to subscribe or unsubscribe, please send an email to ltanis@aeboro.org. For more information about our communities, our people, and our fisheries, please visit us at www.aleutianseast.org and www.aebfish.org. For the latest news, find us on Facebook:

Link to AEB's Facebook page

Link to King Cove's Facebook page

Link to Cold Bay's Facebook page

Appendix B: Adoption Resolutions and FEMA Approval Letters

This page was intentionally left blank.

U.S. Department of Homeland Security
FEMA Region 10
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

December 22, 2021

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

Dear Mr. Murphy:

The Federal Emergency Management Agency (FEMA) Region 10 completed a pre-adoption review of the draft Aleutians East Borough 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 201.6, as well as identifies the jurisdictions participating in the planning process. This letter serves as Region 10's commitment to approve the plan upon receiving documentation of its adoption by participating jurisdictions.

Formal adoption documentation must be submitted to FEMA Region 10 by at least one jurisdiction within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review. Once FEMA approves the plan, the jurisdictions are eligible to apply for FEMA Hazard Mitigation Assistance grants.

Please contact Kyle McCormick, *acting* Regional Mitigation Planning Program Manager, at 202-856-2030 or kyle.mccormick@fema.dhs.gov with any questions.

Sincerely,

John D. Schelling
Risk Analysis Branch Chief
Mitigation Division

Enclosures

JM:js

U.S. Department of Homeland Security
FEMA Region 10
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

December 22, 2021

The Honorable Paul Gundersen
President, Native Village of Nelson Lagoon
P.O. Box 13
Nelson Lagoon, Alaska 99571

Dear President Gundersen:

The Federal Emergency Management Agency (FEMA) Region 10 completed a pre-adoption review of the draft Native Village of Nelson Lagoon Tribal Mitigation Plan as part of the draft Aleutians East Borough 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 Kyle McCormick, acting Regional Mitigation Planning Program Manager, at 202-856-2030 or kyle.mccormick@fema.dhs.gov with any questions.

Sincerely,

John D. Schelling
Risk Analysis Branch Chief
Branch Mitigation Division

Enclosures

cc: Terry Murphy, Alaska Division of Homeland Security and Emergency Management

JM:js

Appendix C: FEMA Review Tools

This page was intentionally left blank.

APPENDIX A:
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 the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths, as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

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

Jurisdiction: Aleutians East Borough (Region 10)	**Title of Plan:** Draft Aleutians East Borough (including the Cities of Akutan, King Cove, False Pass, and Sand Point, and the Native Village of Nelson Lagoon) MJHMP Update	**Date of Plan:** April 16, 2021
Local Point of Contact: Anne Bailey (see Page A-11 for all jurisdictions) **Title:** Borough Administrator **Agency:** Aleutians East Borough **Phone Number:** (907) 274-7580	**Address:** 3380 C St., Suite 205 Anchorage, AK 99503 **E-Mail:** abailey@aeboro.org	

State Reviewer:	**Title:**	**Date:**
JJ Little Erin Leaders (revisions)	EMS II /AK State Planner EMS II /AK State Planner	11 May 2021 17 November 2021

FEMA Reviewer:	**Title:**	**Date:**
John McCandless Kyle McCormick John McCandless	Community Planner Community Planner Community Planner	6/9/2021 6/22/2021 12/22/2021
Date Received in FEMA Region ***(insert #)***	5/11/2021	
Plan Not Approved	6/22/2021	
Plan Approvable Pending Adoption	12/22/2021	
Plan Approved		

SECTION 1:
REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, 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 27-33, Appendix A: PDF 145-254	Met	
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 30-31 (The AEB does not release its **In the Loop** distribution list, but considers this criteria met). Appendix A: PDF 169-170, 172, 219-221, and 250-254)	Met	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	PDF 28, 30-33, Appendix A: PDF 145-254	Met	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	PDF 33-34, 140-142	Met	
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 134, Appendix E: 268-272	Met	
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 130-132, Appendix E: 265-272	Met	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A: REQUIRED REVISIONS			
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))	CC: PDF 37-40; EQ: PDF 41-43, 48; FL&ER: PDF 50-52, 73-74; TS: PDF 76, 78-84; SW: PDF 85-86, 93-94; V: PDF 95-97	Met	
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))	CC: PDF 39, 41; EQ: PDF 43-50; FL&ER: PDF 52-72, 74-75; TS: PDF 76-78, 85; SW: PDF 86-93, 94; V: PDF 96, 99	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))	CC: 41, 101, 116-117; EQ: PDF 49, 101, 115; FL&ER: PDF 75, 116; TS: PDF 84, 115; SW: PDF 94 116; V: PDF 97-98, 116; Akutan: PDF 105; False Pass: PDF 107; King Cove: PDF 110; Nelson Lagoon: PDF 112; Sand Point: PDF 114	Met	
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 10, 102	Met	
ELEMENT B: REQUIRED REVISIONS ~~**B2b:** Some of the hazards include general descriptions of probability using words such as likely, highly likely, etc. – If general descriptors are used, then they **must** be defined in the plan. Please see the definition of probability in Element B2b (pg. 20) of FEMA's plan review guide for more information.~~ Update: Revisions made; descriptors have been defined.			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	PDF 13, 132-134	Met	
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))	PDF 10, 102	Met	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	PDF 120	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 120-121, 123-129	Met	
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 122-129, Appendix E: PDF 265-267	Met	
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 132-134	Met	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT C: REQUIRED REVISIONS ~~**C1:** The plan **must** describe each jurisdiction's existing authorities, policies, programs, and resources available to accomplish hazard mitigation – the current plan does not describe the capabilities for each jurisdiction. Section 8.3 shows general capabilities for the planning area, but it is difficult to determine the differences in capabilities between all participating jurisdiction. Please include capabilities for each jurisdiction and see Element C1a in the plan review guide for additional information.~~ Update: Revisions made, capabilities of each jurisdiction described. ~~**C2:** The plan only states that AEB and its communities do not participate in the NFIP; however, jurisdictions that are currently not participating in the NFIP and where an FHBM or FIRM has been issued **must** describe the reasons why the community does not participate. Please include these descriptions and see Element C2a in FEMA's Plan Review Guide for more information.~~ Update: Revisions made, reasons for non-participation in NFIP described. ~~**C4:** AEB was not included in Table 22's Mitigation Action Matrix and has not listed a comprehensive range of mitigation actions that reduce the effects of hazards. Please include mitigation actions for AEB and see Element C4 a,b,c for more information.~~ Update: Revisions made, AEB included in Table 22's Mitigation Action Matrix.			

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))	PDF 117	Met	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	PDF 120-121, 123-129	Met	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	PDF 122-129	Met	

ELEMENT D: REQUIRED REVISIONS

~~**D1:** Changes in development that have occurred in hazard prone areas **must** be identified for **each jurisdiction** *since the last plan was approved* – the current plan only lists future projects and does not identify which jurisdictions have experienced changes. If no changes in development impacted the jurisdiction's overall vulnerability, plan updates may validate the information in the previously approved plan. See Element D1a in FEMA's Plan Review Guide for additional information.~~

Update: Revisions made, plan states that no changes in development have occurred since the last plan was approved.

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))	PDF 13, Appendix B		Not Met

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	PDF 13, Appendix B		Not Met
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 2:
PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

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

Strengths:

- It's great to see that the plan included and summarized the survey results within the planning process section.
- The Annual Review Workshop is a great way to continually monitor progress in implementing the MJHMP and reviewing the progress on achieving the mitigation goals and implementing the MAP activities.
- There is a lot of documentation included in the appendix.

Opportunities for Improvement:

- The Aleutians HMP includes a list of existing plans that were incorporated into the MJHMP; however, while it meets requirements, it isn't very descriptive in "how" they were incorporated. Consider expanding upon this for the next update or show how each plan/resource was individually utilized and integrated.

Element B: Hazard Identification and Risk Assessment

Strengths:

- There is an extensive list of erosion maps – this is a great addition that compliments the already great flooding/erosion hazard profile.

Opportunities for Improvement:

- Some of the hazards – such as flooding and erosion – distinctly and descriptively address how the hazard effects **every jurisdiction** while other hazards appear very vague when describing how each jurisdiction is affected. Consider listing the jurisdictions and how they are affected for every hazard in a uniform manner.
- The plan provides an overall summary of each jurisdiction's vulnerability and identifies the greatest vulnerabilities for the area; however, *Table 18. Hazard Identification by Area* incorrectly prioritizes/numbers the hazards and some hazards have no ranking at all. Consider updating this for better organization.

Element C: Mitigation Strategy

Strengths:

- There are mitigation actions for each of the identified hazards. These are generally achievable and realistic for the capabilities identified.

Opportunities for Improvement:

- While the plan's goals are consistent with the hazards identified in the plan and explain what AEB would like to achieve, they don't specifically address the individual jurisdictions. Consider including both overarching goals and jurisdiction-focused goals in order to address the hazards most prevalent within each community.
- The jurisdictions have outlined some great mitigation actions in the mitigation strategy but the vast majority of them are preparedness/response focused. Try to include more actions that reduce or eliminate the long-term risks from hazards.
- The "ID" column in *Table 20: Potential Mitigation Actions* does not clarify what it means nor does it correlate with Action Plan Matrix. Consider eliminating this for the next update to alleviate any confusion.

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

Strengths:

-

Opportunities for Improvement:

- Think about including a more robust description of the changes that have occurred in AEB since the last update. By comparing and contrasting this update with the last one, the participating jurisdictions can effectively adjust their actions to better address current realities.
- For future updates, consider adding in success stories or lessons learned from mitigation projects that have been implemented.
- The plan states that the reprioritized actions can be found in Table 18 except Table 18 is a table that prioritizes hazards, not actions. Describe how priorities have changed since the last update if applicable.

B. Resources for Implementing Your Approved Plan

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

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, Terry Murphy at Terry.Murphy@alaska.gov, for more information.

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, 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 should be used as an optional worksheet 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												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township / village, etc.)	Plan POC	Mailing Address	Email	Phone	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 Requirements
1	City of Akutan Tuna Scanlan, City Administrator P.O. Box 109 Akutan, AK 99553 Tuna.scanlan@akutanak.us (907) 698-2228						Yes	Yes	Yes	Yes		
2	City of False Pass Nikki Hobelt, Mayor P.O. Box 50 False Pass, AK 99583-0050 mayor@falsepass.net (907) 548-2319						Yes	Yes	Yes	Yes		
3	City of King Cove Gary Hennigh, City Administrator P.O. Box 37 King Cove, AK 99612 ghennigh@kingcoveak.org (907) 497-2340						Yes	Yes	Yes	Yes		
4	Native Village of Nelson Lagoon Justine Gunderson, Tribal Administrator P.O. Box 13 Nelson Lagoon, AK 99571 Jgunde1125@aol.om (907) 989-2204 See Tribal Review Tool						Yes	Yes	Yes	Yes		
5	City of Sand Point Jordan Keeler, City Administrator P.O. Box 249 Sand Point, AK 99661 jkeeler@sandpointak.org (907) 383-2696						Yes	Yes	Yes	Yes		

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township / village, etc.)	Plan POC	Mailing Address	Email	Phone	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 Requirements
6	Aleutians East Borough (AEB)						Yes	Yes	Yes	Yes		

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: Nelson Lagoon, AK (Region 10)	**Title of Plan:** Draft Aleutians East Borough (including the Cities of Akutan, King Cove, False Pass, and Sand Point, and the Native Village of Nelson Lagoon) MJHMP Update	**Date of Plan:** April 16, 2021
Tribal Point of Contact: Justine Gundersen		**Address:** Nelson Lagoon Tribal Council PO Box 13 Nelson Lagoon, AK 99571
Title: Tribal Administrator		
Agency: Native Village of Nelson Lagoon		
Phone Number: (907) 989-4000		**Email:** jgunde1125@aol.com

State Reviewer (if applicable):	**Title:**	**Date:**
JJ Little	EMS II /AK State Planner	11 May 2021
Erin Leaders	EMS II /AK State Planner	30 November 2021

FEMA Reviewer:	**Title:**	**Date:**
John McCandless	Community Planner	6/22/2021
John McCandless	Community Planner	12/22/2021
Date Received in FEMA Region 10	5/11/2021	
Plan Not Approved	6/22/2021	
Plan Approvable Pending Adoption	12/22/2021	
Plan Approved		

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 27-33, Appendix A: PDF 145-254	Met	
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 28, 30-33, 102, Appendix A: PDF 145-254	Met	
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)]	PDF 30-31 (The AEB does not release its **In the Loop** distribution list, but considers this criteria met). Appendix A: PDF 169-170, 172, 219-221, and 250-254)	Met	
A4. Does the plan describe the review and incorporation of existing plans, studies, and reports? [44 CFR § 201.7(c)(1)(iii)]	PDF 33-34, 140-142	Met	
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)]	PDF 122	Met	
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 130-132, Appendix E: 265-272	Met	
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)]	PDF 134, Appendix E: 268-272	Met	
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)]	CC: PDF 37-40; EQ: PDF 41-43, 48; FL&ER: PDF 50-52, 73-74; TS: PDF 76, 78-84; SW: PDF 85-86, 93-94; V: PDF 95-97	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)]	CC: PDF 39, 41; EQ: PDF 43-50; FL&ER: PDF 52-72, 74-75; TS: PDF 76-78, 85; SW: PDF 86-93, 94; V: PDF 96, 99	Met	
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)]	CC: 41, 101, 116-117; EQ: PDF 49, 101, 115; FL&ER: PDF 75, 116; TS: PDF 84, 115; SW: PDF 94 116; V: PDF 97-98, 116; Nelson Lagoon: PDF 112	Met	
ELEMENT B: REQUIRED REVISIONS ~~**B2b:** Some of the hazards include general descriptions of probability using words such as likely, highly likely, etc. – If general descriptors are used, then they **must** be defined in the plan. Please see the definition of probability in Element B2b (pg. 13) of FEMA's Tribal Mitigation Plan Review Guide for more information.~~ Update: Update: Revisions made; descriptors have been defined.			
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)]	PDF 122	Met	
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)]	PDF 134-139	Met	
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)]	PDF 120	Met	

1. Standard Regulation Checklist **Regulation** (44 CFR § 201.7 Tribal 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 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)]	PDF 120-121, 123-129	Met	
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)]	PDF 122-129, Appendix E: PDF 265-267	Met	
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)]	PDF 132-134	Met	
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)]	PDF 130-132, Appendix E: 265-272	Met	
ELEMENT C: REQUIRED REVISIONS			
ELEMENT D. PLAN UPDATES			
D1. Was the plan revised to reflect changes in development? [44 CFR § 201.7(d)(3)]	PDF 117	Met	
D2. Was the plan revised to reflect progress in tribal mitigation efforts? [44 CFR §§ 201.7(d)(3) and 201.7(c)(4)(iii)]	PDF 120-121, 123-129	Met	
D3. Was the plan revised to reflect changes in priorities? [44 CFR § 201.7(d)(3)]	PDF 122-129	Met	
ELEMENT D: REQUIRED REVISIONS ~~**D1:** Changes in development that have occurred in hazard prone areas **must** be identified for the Tribe *since the last plan was approved* – the current plan only lists future projects and does not identify which jurisdictions have experienced changes. If no changes in development impacted the Tribe's overall vulnerability, plan updates may validate the information in the previously approved plan. See Element D1 in FEMA's Tribal Mitigation Plan Review Guide for additional information.~~ Update: Revisions made, plan states that no changes in development have occurred since the last plan was approved.			
ELEMENT E. ASSURANCES AND PLAN ADOPTION			

1. Standard Regulation Checklist **Regulation** (44 CFR § 201.7 Tribal Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
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)]	PDF 13, Appendix B	Met	
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)]	PDF 13, Appendix B		Not Met
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]			
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)]			
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)]			
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)]			
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)]			
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)]			
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)]			
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)]			
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)]			
ENHANCED ELEMENT I: REQUIRED REVISIONS			

Section 2: STRENGTHS AND OPPORTUNITIES FOR IMPROVEMENT

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

Strengths:

- It's great to see that the plan included and summarized the survey results within the planning process section.
- The Annual Review Workshop is a great way to continually monitor progress in implementing the MJHMP and reviewing the progress on achieving the mitigation goals and implementing the MAP activities.
- There is a lot of documentation included in the appendix.

Opportunities for Improvement:

- The Aleutians HMP includes a list of existing plans that were incorporated into the MJHMP; however, while it meets requirements, it isn't very descriptive in "how" they were incorporated. Consider expanding upon this for the next update or show how each plan/resource was individually utilized and integrated.

Element B: Hazard Identification and Risk Assessment

Strengths:

- There is an extensive list of erosion maps – this is a great addition that compliments the already great flooding/erosion hazard profile.

Opportunities for Improvement:

- Some of the hazards – such as flooding and erosion – distinctly and descriptively address how the hazard effects **the Tribe** while other hazards appear very vague when describing how they affect the Tribe specifically. Consider listing the jurisdictions and how they are affected for every hazard in a uniform manner.
- The plan provides an overall summary of each jurisdiction's vulnerability and identifies the greatest vulnerabilities for the area; however, *Table 18. Hazard Identification by Area* incorrectly prioritizes/numbers the hazards for Nelson Lagoon. Consider updating this for better organization.

Element C: Mitigation Strategy

Strengths:

- There are mitigation actions for each of the identified hazards. These are generally achievable and realistic for the capabilities identified.

Opportunities for Improvement:

- While the plan's goals are consistent with the hazards identified in the plan and explain what AEB would like to achieve, they don't specifically address individual goals for the Tribe. Consider including both overarching goals and Tribal-focused goals in order to address the hazards most prevalent within the Tribe.
- The Tribe has outlined some great mitigation actions in the mitigation strategy but the vast majority of them are preparedness/response focused. Try to include more actions that reduce or eliminate the long-term risks from hazards.
- The "ID" column in *Table 20: Potential Mitigation Actions* does not clarify what it means nor does it correlate with Action Plan Matrix. Consider eliminating this for the next update to alleviate any confusion.

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

Strengths:

-

Opportunities for Improvement:

- Think about including a more robust description of the changes that have occurred in the Tribal planning area since the last update. By comparing and contrasting this update with the last one, the participating jurisdictions can effectively adjust their actions to better address current realities.
- For future updates, consider adding in success stories or lessons learned from mitigation projects that have been implemented.
- The plan states that the reprioritized actions can be found in Table 18 except Table 18 is a table that prioritizes hazards, not actions. Describe how priorities have changed since the last update if applicable.

B. Resources for Implementing Your Approved Plan

The Tribal Mitigation Planning Handbook (Handbook) provides practical approaches and advice for Tribal governments as they develop their hazard mitigation plans. The Handbook is organized around the seven recommended steps for developing a Tribal mitigation plan. It also provides considerations for how to implement the mitigation plan, advance mitigation activities, and incorporate risk reduction into other Tribal plans and programs. The Handbook is a companion to the Tribal Mitigation Plan Review Guide, released by FEMA in 2017.

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.

Resources for the Building Resilient Infrastructure Communities Program (BRIC) - https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities/resources

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

National Fire Adapted Communities Learning Network-https://fireadaptednetwork.org/about/
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.

Appendix D: Benefit-Cost Analysis Fact Sheet

This page was intentionally left blank.

Benefit Cost Analysis

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 (VLD) BCA module cannot be used to support cost-effectiveness (screening purposes only).
- Alternative BCA software MUST be approved in writing by FEMA HQ and the Region prior to submittal of the application.

Damage and Benefit Data

- Well documented for each damage event.
- Include estimated frequency and method of determination per damage event.
- Data used in place of FEMA standard or default values MUST be documented and justified.

- The Level of Protection MUST be documented and readily apparent.
- When using the Limited Data (LD) BCA module, users cannot extrapolate data for higher frequency events for unknown lower frequency events.

Building Data

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

Use Correct Occupancy Data

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

Questions to Be Answered

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

Common Shortcomings

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

Appendix E: Plan Maintenance Documents

This page was intentionally left blank.

Annual Review Questionnaire

PLAN SECTION	QUESTIONS	YES	NO	COMMENTS
PLANNING PROCESS	Are there internal or external organizations and agencies that have been invaluable to the planning process or to mitigation action			
	Are there procedures (e.g. meeting announcements, plan updates) that can be done more efficiently?			
	Has the Planning Team undertaken any public outreach activities regarding the HMP or implementation of mitigation actions?			
HAZARD PROFILES	Has a natural disaster occurred during this reporting period?			
	Is there a natural hazards that has 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 of 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?			

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

- ☐ **Project on schedule**
- ☐ **Project completed**
- ☐ **Project delayed***

*** explain:**

- ☐ **Project 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:

Hazard Awareness and Mitigation Survey Questions

This survey is an opportunity for you to share your opinions and participate in the hazard mitigation planning process. The information that you provide will help us better understand your concerns for hazards and risks, which could lead to mitigation projects that will help reduce those risks and the impacts of future hazard events. **The hazard mitigation process is not complete without your feedback.** All individual responses are strictly confidential and will be used for mitigation planning purposes only.

Please help us by taking a few minutes to complete this survey and return it to:

Aleutians East Borough (AEB) Administrator

1. In which community do you live?
    a. Akutan
    b. Cold Bay
    c. False Pass
    d. King Cove
    e. Sand Point
    f. Nelson Lagoon

2. How long have you lived in your community?
    a. Less than 5 years
    b. 5-10 years
    c. 11-20 years
    d. 21 or more years

3. Do you own or rent your home?
    a. Own
    b. Rent

4. What is the most efficient way for you to receive information on emergencies and other AEB topics (please rank in order of best to worst with 1 being the best way to receive information)?
    a. Newspaper advertisement
    b. Radio
    c. Email
    d. Social media
    e. Borough website
    f. Mail
    g. Public workshops/meetings

5. Which hazards present the greatest risk to you (please rank in order of highest to lowest with 1 being the hazard of most concern to you, followed by the second most hazard of concern, etc.)?
    a. Earthquakes
    b. Tsunamis/seiches

c. Volcanoes
d. Severe weather
e. Ground failure (landslides)
f. Changes to the cryosphere (climate change, changes in the permafrost active layer, avalanches)

6. How informed do you feel about natural hazards with the potential to affect the Borough?
    a. Very informed
    b. Somewhat informed
    c. Not informed

7. What information do you expect to receive from the Borough during a natural disaster?
    a. Current information of present situation
    b. Responses and projections on response timing
    c. School, road, and bridge closures; emergency shelter locations and openings
    d. Warnings
    e. Evacuations
    f. What is expected of residents (safety measures to be taken)
    g. Available resources
    h. Priorities of first responders
    i. Is water safe to consume?
    j. All of the above.

8. What is the frequency that the Borough should provide updates during a natural disaster?
    a. Daily
    b. As Needed
    c. Every four hours even if there is no new information
    d. Hourly

9. How important are hazard mitigation prevention measures such as planning and zoning, building codes, open space preservation, and floodplain regulations to influence the way land is developed and buildings are built?
    a. Extremely important
    b. Very important
    c. Somewhat important
    d. Not important

10. How important are public education and awareness such as outreach programs, public service announcements, and notices to residents and property owners to inform the public about natural hazards and the actions necessary to avoid potential injury or damage?
    a. Extremely important
    b. Very important
    c. Somewhat important
    d. Not important

11. How important are natural resource protection actions such as habitat preservation, slope stabilizations, riparian buffers, and forest management to preserve or restore the functions of natural systems?
    a. Extremely important
    b. Very important
    c. Somewhat important
    d. Not important

12. How important is critical facility protection such as placing generators at community centers to ensure electrical power during a widespread power failure?
    a. Extremely important
    b. Very important
    c. Somewhat important
    d. Not important

13. How important are emergency service actions such as warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems to protect people and property during and immediately after a hazard event?
    a. Extremely important
    b. Very important
    c. Somewhat important
    d. Not important

14. How vulnerable are critical facilities (schools, community centers, government buildings, places of worship, communications towers, water and wastewater treatment buildings, fire stations, landfills) in your community to hazards?
    a. Very vulnerable
    b. Average vulnerability
    c. Minimal vulnerability
    d. None

15. How vulnerable to displacement, evacuation, or life safety is your community?
    a. Very vulnerable
    b. Average vulnerability
    c. My community isn't vulnerable.

16. Does your property (rented or owned) have a history of recorded damages?
    a. Yes
    b. No
    c. Write in answer: Estimated amount for each hazard event and year it occurred.
       _____

17. Are you willing to spend money to make your home more resilient to damage from natural hazards?
    a. Yes
    b. No

18. Would you be willing to make your property more resistant to natural hazards?
    a. Yes
    b. No

Preparedness

Preparedness activities are often the first line of defense for protection of your family and the community. In the following list, please check those activities that you have done, plan to do in the near future, have not done, or are unable to do. *Please check one answer for each preparedness activity*.

Have you or someone in your household:	Have Done	Plan to do	Not Done	Unable to do
Attended meetings or received written information on natural disasters or emergency preparedness?	☐	☐	☐	☐
Talked with family members about what to do in case of a disaster or emergency?	☐	☐	☐	☐
Made a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	☐	☐	☐	☐
Prepared an "Emergency Supply Kit" extra food, water, medications, batteries, first aid items, and other emergency supplies)?	☐	☐	☐	☐
In the last year, has anyone in your household been trained in First Aid or CPR?	☐	☐	☐	☐

How much are you willing to spend to better protect your home from natural disasters? *(Check only one)*

□	Less than $100	□	Desire to relocate for protection
□	$100-$499	□	Other, please explain
□	$500 and above		
□	Nothing / Don't know		
□	Whatever it takes		

Mitigation Activities

A component of the Local Hazard Mitigation Plan activities is developing and documenting additional mitigation strategies that will help the community in protecting life and property from the impacts of future natural disasters.

Mitigation activities are those types of actions you can take to protect your home and property from natural hazard events such as tsunamis, severe weather, and ground failure. Please check the box for the following statements to best describe their importance to you. Your responses will help us determine your community's priorities for planning for these mitigation activities.

Statement	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property	☐	☐	☐	☐	☐

Protecting critical facilities (clinic, school, community center, police/fire department, water/sewer, landfill)	☐	☐	☐	☐	☐
Preventing development in hazard areas	☐	☐	☐	☐	☐
Protecting natural environment	☐	☐	☐	☐	☐
Protecting historical and cultural landmarks	☐	☐	☐	☐	☐
Promoting cooperation within the community	☐	☐	☐	☐	☐
Protecting and reducing damage to utilities, roads, or water sources	☐	☐	☐	☐	☐
Strengthening emergency services (clinic workers, police/fire)	☐	☐	☐	☐	☐

Do you have other suggestions for possible mitigation actions/strategies?

_____

_____

_____

_____

_____

_____

Thank You for Your Participation!

This survey may be submitted anonymously; however, if you provide us with your name and contact information, we will have the ability to follow up with you to learn more about your ideas or concerns (optional):

Name: _____

Address: _____

_____

Phone: _____