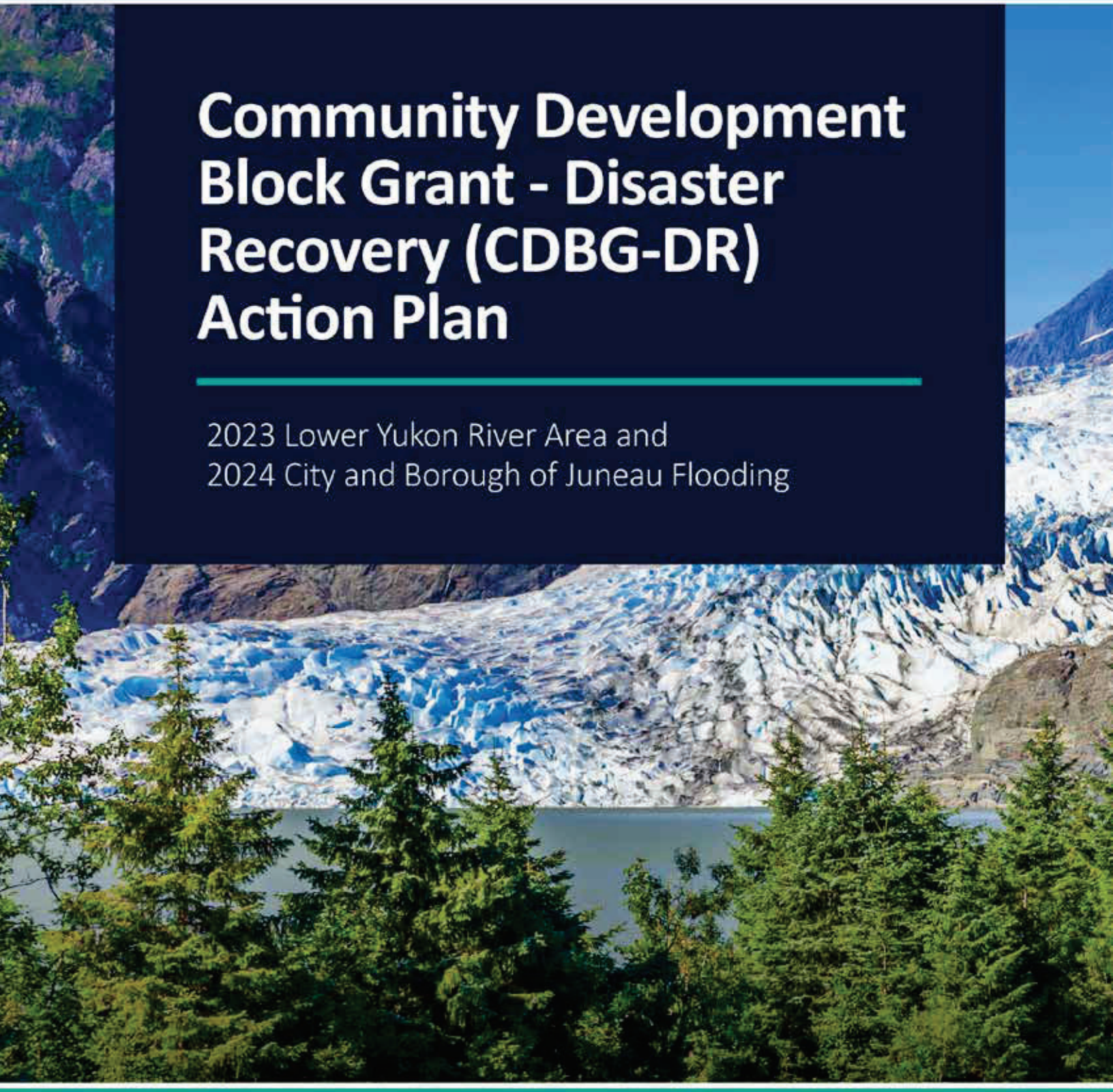
State of Alaska Department of Commerce, Community, and Economic Development (DCCED)

Community Development Block Grant - Disaster Recovery (CDBG-DR) Action Plan

2023 Lower Yukon River Area and
2024 City and Borough of Juneau Flooding



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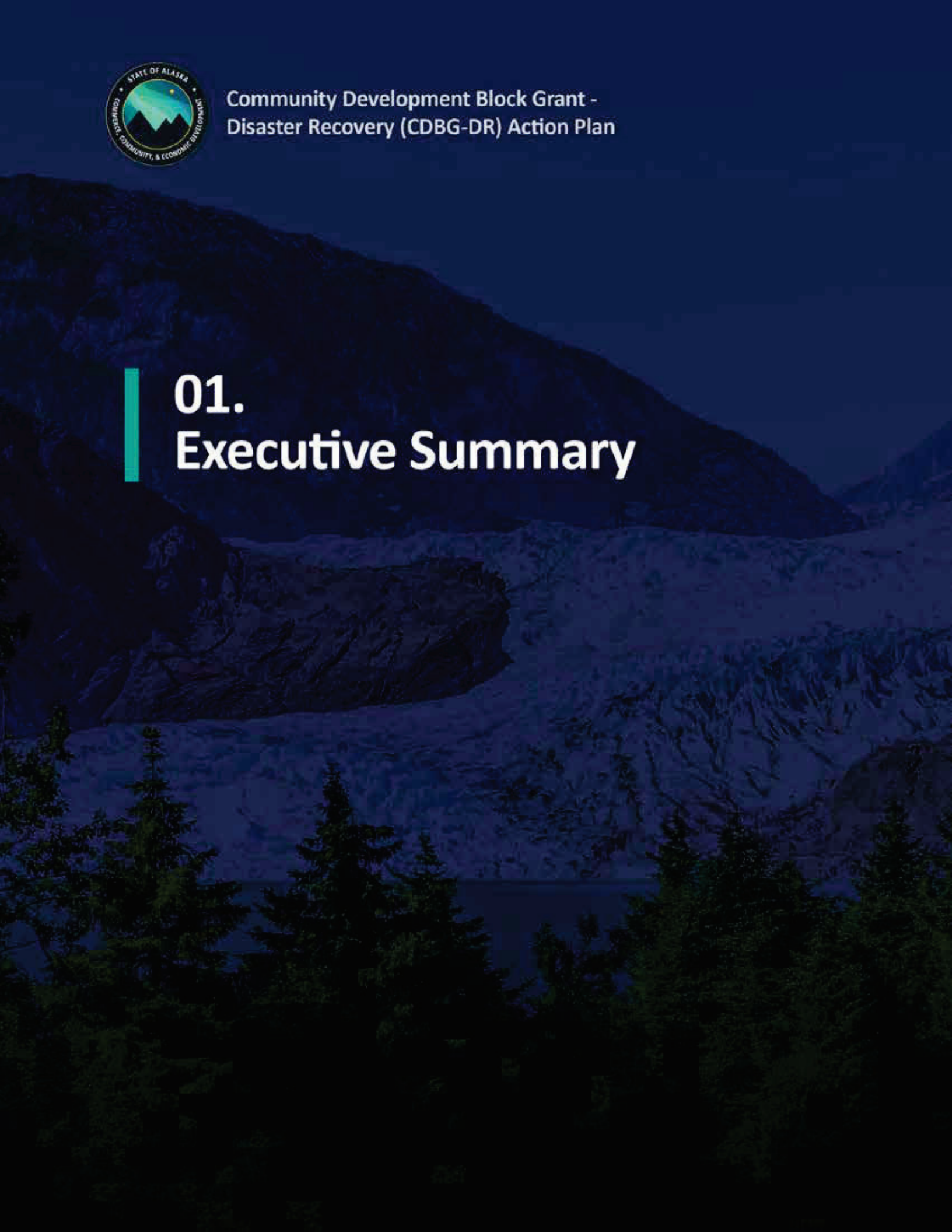

Community Development Block Grant -
Disaster Recovery (CDBG-DR) Action Plan

01.
Executive Summary

1. Executive Summary

1.1. Overview

The US Department of Housing and Urban Development (HUD) announced that, under Public Law 118-158 (Federal Register 6512-N01), the State of Alaska will receive $18,676,000 in funding to support recovery efforts following FEMA DR-4730-AK (Lower Yukon Flooding) in 2023 and FEMA DR-4836-AK (Juneau Flooding) in 2024, through the State of Alaska Department of Commerce, Community, and Economic Development (DCCED), Division of Community and Regional Affairs (DCRA). Of the total amount, $16,240,000 must be allocated to unmet needs, and $2,436,000 in Community Development Block Grant – Disaster Recovery (CDBG-DR) mitigation set-aside to reduce risk in the most impacted and distressed (MID) areas. CDBG-DR funding is designed to address needs that remain after all other assistance has been exhausted. This plan details how funds will be allocated to address the remaining unmet needs in Juneau and nine communities in the Lower Yukon River Area.

1.1.1. Lower Yukon River Area

The Lower Yukon Regional Educational Attendance Area (REAA) is located within the boundaries of the Kusilvak Census Area.[1] The population of the Lower Yukon REAA is approximately 12,607. The REAA encompasses approximately 30,000 square miles in Western Alaska and is isolated from roadways and only reachable via small aircraft, waterways in the summer, and snowmachines in the winter.[2] The River Watch program, run by the Alaska Division of Homeland Security and Emergency Management (DHS&EM) and the National Weather Service (NWS) Alaska-Pacific River Forecast Center, provides advanced warning to over 75 Alaska villages, boroughs, and tribal councils along the state's two largest rivers and tributaries.[3]

1.1.2. Juneau

Juneau, the capital city of Alaska, has a population of 31,459 and is Southeast Alaska's regional center. Juneau provides healthcare, commerce, and essential services to surrounding communities. Its geographic constraints, including limited buildable land and a lack of road access, contribute to higher construction and housing costs.

1.2. Disaster-Specific Overview and Impacts

1.2.1. 2023 Lower Yukon Flooding (DR-4730-AK)

Between May 12 and June 3, 2023, severe flooding impacted multiple Lower Yukon River Area (the geographic location of the Lower Yukon REAA) communities. On May 13, 2023, Alaska Governor Mike Dunleavy declared a state disaster emergency for the Alaska Gateway, Yukon Flats, Kuspuk, and Copper River REAAs due to flooding. On May 22, 2023, Governor Dunleavy added the Northwest Arctic Borough, Iditarod

[1] https://www.commerce.alaska.gov/web/dcra/GrantsSection/CDBG-DR-Yukon
[2] 2023 Lower Yukon REAA and 2024 Juneau Flooding Strategic Implementation Plan
[3] Alaska Flooding Disasters: Lower Yukon REAA 2023 & Juneau 2024—Overview and Way Ahead Options, DCCED DCRA, April 16, 2024

REAA, Lower Kuskokwim REAA, and Lower Yukon REAA to the declared disaster areas. Flooding inundated homes, public infrastructure, airports, and essential services across the Lower Yukon REAA. A presidential disaster was declared on August 23, 2023 (FEMA DR-4730-AK).

Figure 1: Lower Yukon Map
Source: Alaska Flooding Disasters: Lower Yukon REAA 2023 & Juneau 2024—Overview and Way Ahead Options, DCCED DCRA, April 16, 2024

On May 21, flooding reached the village of Holy Cross, inundating low-lying roads and a fueling station. On May 22, flooding reached Russian Mission, inundating the airstrip for weeks, along with several homes and fuel infrastructure. Homes were evacuated, and occupants were sheltered. Sustained airstrip flooding caused a shortage of food, medicine, and medical personnel, prompting the State Emergency Operations Center (SEOC) to order an Alaska Air National Guard helicopter mission to deliver a medical provider and supplies while evacuating the medically fragile. From May 27 through May 30, flooding reached Emmonak, inundating city-owned apartments, infrastructure, and a women's shelter, requiring evacuations. In Alakanuk, flooding damaged the community's water and sewage systems and multiple homes, requiring evacuation and sheltering.[4]

Record snowfall, thick ice, and delayed warming contributed to this severe flooding event along Alaska rivers. Cooler temperatures in 2023 delayed the spring breakup (typically in late April) to mid-May, resulting in the massive snowpack melting and attempting to pass through ice-covered rivers, which caused more severe flooding than normal. The floods damaged roads, homes, and community infrastructure.[5]

In the Lower Yukon River Area's 2023 flooding event, the State has verified that at least 21 homes were destroyed and 51 were damaged across 10 villages. Due to the remote nature of the region, impacts to households may be greater than has been documented so far. The floods also caused $13.1 million in infrastructure damage and many subsistence material losses, including 82 camps, 16 boats, and 61 generators. The nine MID communities in Lower Yukon are unconnected from Alaska's road system and accessible only by plane or boat in the summer and snowmachine in the winter. Travel to these communities

[4] https://www.commerce.alaska.gov/web/dcra/GrantsSection/CDBG-DR-Yukon
[5] Alaska Flooding Disasters: Lower Yukon REAA 2023 & Juneau 2024—Overview and Way Ahead Options, DCCED DCRA, April 16, 2024

is often hazardous or impossible during weather events and freeze-up and break-up periods, when ice is accumulating or breaking up. Lodging accommodations for visitors in most Lower Yukon MID communities are nonexistent.[6]

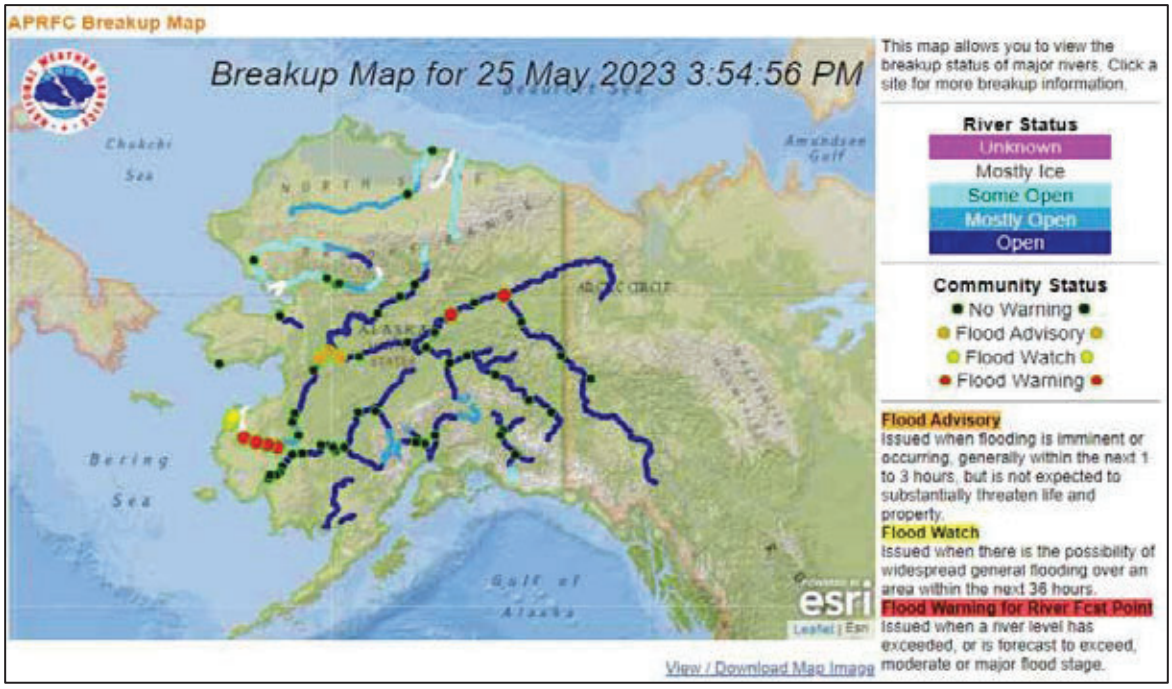

Figure 2: Spring 2023 Alaska Breakup Map
Source: Alaska Flooding Disasters: Lower Yukon REAA 2023 & Juneau 2024—Overview and Way Ahead Options, DCCED DCRA, April 16, 2024

Timeline of Events (2023)	Response
May 12: Severe flooding begins.	**May 13:** Governor Dunleavy declares a state disaster emergency for the Alaska Gateway, Yukon Flats, Kuspuk, and Copper River REAAs.
May 21 to 22: Flooding reaches Holy Cross and Russian Mission.	**May 22:** Governor Dunleavy adds the Northwest Arctic Borough, Iditarod REAA, Lower Kuskokwim REAA, and Lower Yukon REAA to the declared disaster areas.
May 27 to 30: Flooding reaches Emmonak and Alakanuk.	**August 23:** President Biden declares a presidential disaster (FEMA DR-4730-AK).

Table 1: Timeline of Events, Lower Yukon, 2023

1.2.2. 2024 Juneau Flooding (DR-4836-AK)

On August 6, 2024, the Mendenhall Valley in Juneau, Alaska, experienced a significant glacial lake outburst flood (GLOF), also known as a Jökulhlaup, approximately 10 miles northwest of downtown Juneau.[7] The

[6] 2023 Lower Yukon REAA and 2024 Juneau Flooding Strategic Implementation Plan
[7] https://www.commerce.alaska.gov/web/dcra/GrantsSection/CDBG-DR-Juneau

GLOF originated from Suicide Basin, a sub-basin of the Juneau Icefield, located less than one mile from the terminus of the Mendenhall Glacier. The flood released an estimated 16 billion gallons of water over a short period, causing the Mendenhall River to reach a record height of 15.99 feet. Floodwaters impacted densely populated residential areas, damaging over 290 homes, displacing residents, and affecting critical public infrastructure. The disaster was federally recognized on October 16, 2024 (FEMA DR-4836-AK).

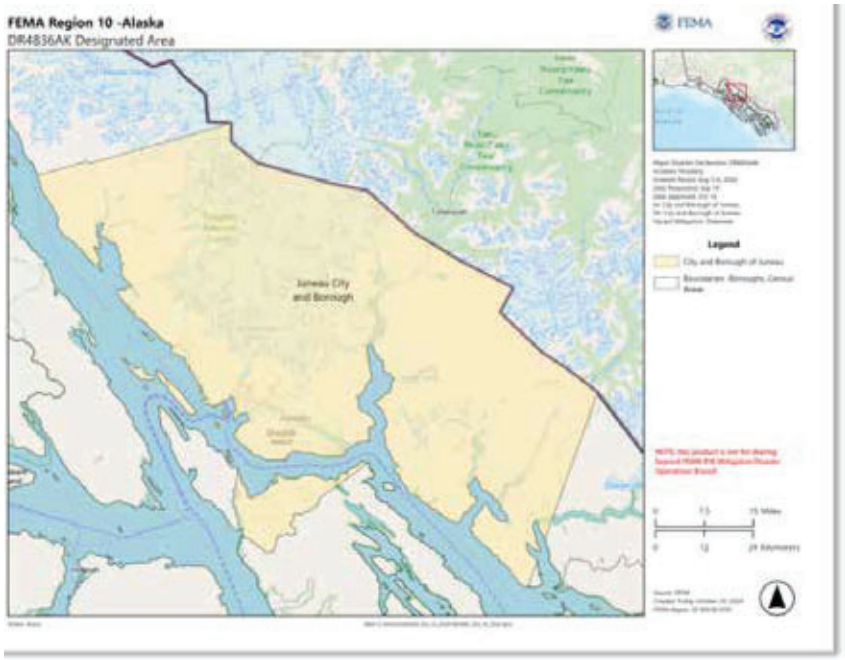

Figure 3: City and Borough of Juneau Map
Source: Alaska Flooding Disasters: Lower Yukon REAA 2023 & Juneau 2024—Overview and Way Ahead Options, DCCED DCRA, April 16, 2024

2024 was the second consecutive year of major flooding from Suicide Basin. A 2023 GLOF event released 13 billion gallons, causing extensive erosion, property loss, and flooding. DR-4836-AK surpassed the 2023 event in both volume and impact and has further strained the city's limited housing inventory and recovery capacity, particularly for low- and moderate-income residents living near the Mendenhall River. The rate of rise of Mendenhall Lake and the Mendenhall River, which flows six miles from Mendenhall Lake into Fritz Cove, was similar to the event in 2023; however, the peak stage in 2024 was one foot higher. These two large GLOF events were unprecedented compared to GLOFs before August 2023.[8] Experts studying glacial lake dynamics anticipate that annual full-basin releases are likely to continue, indicating a recurring hazard for the community.[9]

The US Army Corps of Engineers (USACE) has begun a pre-feasibility study technical report to identify and implement a permanent solution to the Mendenhall GLOF. Long-term solutions, including boring a drain tunnel ~1.5 miles to Suicide Basin through an adjacent mountain and using Mendenhall Lake as a reservoir to moderate the peak flow and keep flood waters within riverbanks, are seven to 10 years out. Near-term efforts include approximately 2 miles of HESCO barriers along the Mendenhall River; on-site technical guidance, support, and materials from USACE Flood Fighters; a Hydrologic and Hydraulic Study and Flood Inundation Mapping of Mendenhall River (underway); and a study based on the new flood elevation and river alignment post-erosion and flooding events.

Juneau is also experiencing a housing crisis; the city contains limited buildable land, and the cost of housing in Juneau is 42.3% higher than the national average. According to a City and Borough of Juneau (CBJ)

[8] https://www.commerce.alaska.gov/web/dcra/GrantsSection/CDBG-DR-Juneau
[9] 2023 Lower Yukon REAA and 2024 Juneau Flooding Strategic Implementation Plan

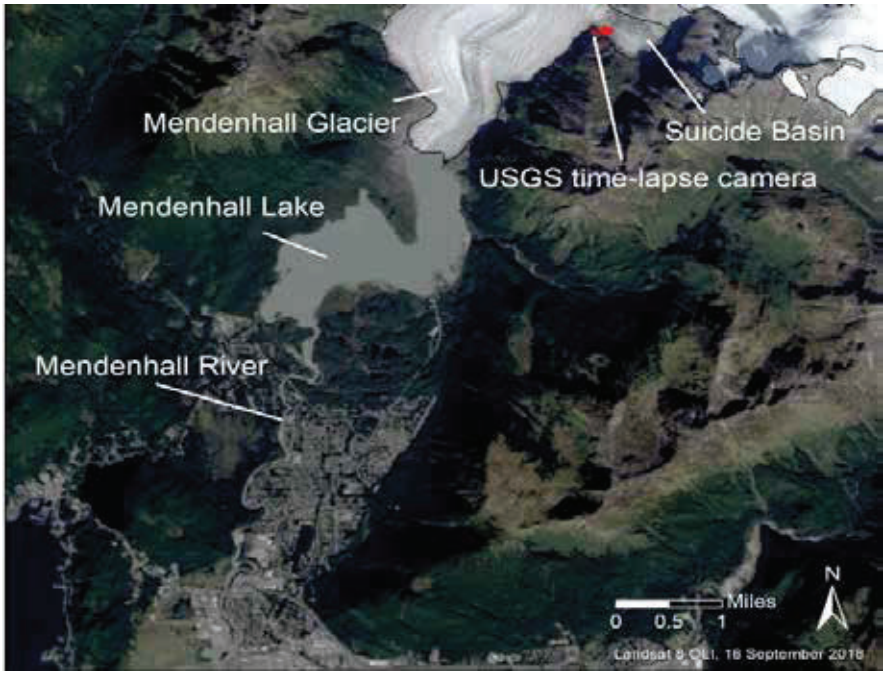

Figure 4: Mendenhall Valley Glacial Lake Outburst Flood, August 2024
Source: Alaska Flooding Disasters: Lower Yukon REAA 2023 & Juneau 2024—Overview and Way Ahead Options, DCCED DCRA, April 16, 2024

Housing Assessment from 2023, Juneau's remote location causes the cost of materials for rehabilitation to be more than 30% higher than the national average. Juneau faced a documented housing shortfall of 1,400 units across all income ranges prior to the 2024 flooding disaster. More than half of the housing units needed are for households earning below 80% of the area median income (AMI).

The Juneau Economic Development Council (JEDC) and City and Borough of Juneau have collaborated to launch an unmet needs survey in Juneau in the spring of 2025 to better understand the full scope and economic impacts on households and businesses affected by the 2024 flooding event, which is addressed within the Unmet Needs Assessment section of this Action Plan.[10]

Timeline of Events (2024)	Response
August 6: A significant GLOF hits the Mendenhall Valley in Juneau.	**October 16:** President Biden declares a presidential disaster (FEMA DR-4836-AK).

Table 2: Timeline of Events, Juneau, 2024

1.2.3. HUD- and Grantee-Identified Most Impacted and Distressed (MID) Areas

In Federal Register 6512-N01 on January 16, 2025, HUD identified two areas as the most impacted and distressed (MID) in Alaska for the 2023 and 2024 flooding disasters:

- **Juneau (Borough):** ZIP Code 99801
- **Lower Yukon Regional Education:** ZIP Code 99554

The State of Alaska must use at least 80% of the awarded $18,676,000 in CDBG-DR funds, or $14,940,800, to address unmet disaster needs or mitigation activities that benefit the HUD-identified MID areas. The

[10] Alaska Flooding Disasters: Lower Yukon REAA 2023 & Juneau 2024—Overview and Way Ahead Options, DCCED DCRA, April 16, 2024

State may use the remaining 20% of the allocation to address unmet disaster needs or mitigation activities in grantee-identified MID areas that received presidential disaster declarations (i.e., DR-4730-AK and DR-4836-AK).[11]

According to HUD's Universal Notice (FR-6489-N-01) policies, updated on March 19, 2025, "HUD may identify an entire jurisdiction or a ZIP code as a MID area. If HUD designates a ZIP code as a MID area for the purposes of allocating funds, the grantee may expand program operations to the whole county(ies), borough(s), parish(es), municipo/municipios, or equivalent jurisdictions that overlap with the HUD designated ZIP code. A grantee must indicate the decision to expand eligibility in its action plan."[12]

Based on the two ZIP Codes identified by HUD, the grantee (DCCED) has expanded the program operations to cover the entire City and Borough of Juneau, as well as several Lower Yukon River Area communities. DCCED used FEMA Individual Assistance (IA) data on impacts and remaining needs to determine these MID communities. The HUD-identified Lower Yukon ZIP Code (99554) is located in the Lower Yukon REAA, which is within the Kusilvak Census Area. The HUD-identified MID area has been expanded to include the Lower Yukon REAA geographical region, which includes Saint Mary's. The nine communities within this region listed below received notable damage:

- **Alakanuk:** a Yup'ik village in the Yukon River Delta, approximately 8 miles from the Bering Sea; primarily Alaska Native (over 87%); accessible by air and river with seasonal ice roads in winter (estimated population of 726)
- **Emmonak:** a predominantly Yup'ik community; key regional commercial fishing hub located near the mouth of the Yukon River; accessible by river and air with no road connections to other population centers (estimated population of 859)
- **Kotlik:** located at the northern edge of the Yukon Delta in Western Alaska; approximately 35 miles northeast of Emmonak; predominantly Alaska Native; flooding and erosion (estimated population of 616)
- **Marshall:** located along the Yukon River in Western Alaska; residents of Yup'ik, Inupiaq, and Russian descent (estimated population of 490)
- **Mountain Village:** situated on the north bank of the Yukon River in Western Alaska; regional hub in the Lower Yukon River Area; predominantly inhabited by Alaska Natives; also hosts headquarters of the Lower Yukon School District (estimated population of 610)
- **Pilot Station:** located along the Yukon River in Western Alaska; primarily Alaska Native; challenges related to transportation and access to resources (estimated population of 619)
- **Pitkas Point:** a Yup'ik Native Village located near the junction of the Yukon and Andreafsky Rivers; 3 miles by road from Saint Mary's airport; between Pilot Station and Mountain Village; easy access by water (estimated population of 102)[13]

[11] https://www.govinfo.gov/content/pkg/FR-2025-01-16/pdf/2025-00943.pdf
[12] https://www.govinfo.gov/content/pkg/FR-2025-01-08/pdf/2024-31621.pdf
[13] https://made-in-alaska-dcced.hub.arcgis.com/items/3eefc3962bbd4d0692450acee3401e6c

  - Due to intermittent internet connectivity, DCCED has not received confirmed damage information from Pitkas Point. However, due to its proximity to other damaged communities, DCCED assumes that there is flooding damage and will solicit feedback from the Native Village to confirm or deny actual impact.

- **Russian Mission:** Alaska Native village situated along the western bank of the Yukon River; approximately 70 miles northeast of Marshall; transportation limited to air and river travel with seasonal ice roads connecting to nearby villages in winter (estimated population of 417)[14]
- **Saint Mary's:** a Yup'ik community located on the north bank of the Andreafsky River, approximately 450 miles west-northwest of Anchorage; year-round access via gravel runway and crosswind strip; seasonal 22-mile road linked to Pitkas Point and Mountain Village; deep-water dock; not included in the Lower Yukon REAA but is within its geographical region—Saint Mary's has its own School District (estimated population of 534)[15]

1.3. Unmet Needs and Mitigation Needs Summary

Unmet needs are calculated for each of the three sectors defined by HUD—Housing, Infrastructure, and Economic Revitalization—following the HUD guidance in 90 FR 4759 (FR-6512-N01, Disasters 4730 and 4836), published on January 16, 2025.[16] HUD defines unmet needs as the resources necessary to recover from a disaster after accounting for all obligated and disbursed funding for recovery efforts, including FEMA Individual Assistance (IA) and/or Public Assistance (PA) funds, insurance claims, Small Business Administration (SBA) Disaster Recovery Loans, and/or other funding.

$18,676,000 in CDBG-DR funds has been allocated to the State of Alaska for these two disasters. The proposed allocation of funds aligns with the identified needs of communities within the most impacted and distressed areas and prioritizes areas with significant housing vulnerability. The allocation reflects a data-driven approach with the best currently available data. The following proposed allocation tables from HUD identify the unmet needs components by disaster:

Disaster Number	Disaster Description	Homes with Serious Unmet Housing Needs	Housing Serious Unmet Needs	Business Serious Unmet Needs	Infrastructure Serious Unmet Needs	Total HUD Formula Unmet Needs
4730	Flood	91	$5,847,133	$584,713	$3,961,124	**$10,392,969**
4836	Flood	110	$5,042,990	$504,299	$504,299	**$6,051,588**
Total		**201**	**$10,890,123**	**$1,089,012**	**$4,465,423**	$16,444,557

Table 3: Unmet Needs, Alaska, HUD, Federal Notice

[14] 2023 Lower Yukon REAA and 2024 Juneau Flooding Strategic Implementation Plan
[15] https://made-in-alaska-dcced.hub.arcgis.com/items/3eefc3962bbd4d0692450acee3401e6c
[16] https://www.govinfo.gov/content/pkg/FR-2025-01-16/pdf/2025-00943.pdf

Grantee	Disaster Number	Homes with Serious Unmet Housing Needs	Percentage of State	Unmet Housing Need	Total Unmet Need	Mitigation (15%)	Disaster Total (Need + Mitigation)[17]
State of Alaska	4730; 4836	201	100%	$10,890,123	$16,445,000	$2,467,000	$18,912,000

Table 4: Disaster Total, Alaska, HUD, Federal Notice

DCCED has updated HUD's analysis by incorporating the most recent federal data and accounting for the costs of hazard mitigation and elevated regional construction costs. After considering the identified primary unmet needs, citizen input, and the availability of funds awarded, DCCED proposes multiple programs to address unmet needs. The proposed allocation is as follows:

Eligible Cost Category	CDBG-DR Allocation Amount	Percent of CDBG-DR Allocation	Estimated Percent to CDBG-DR Mitigation Set-Aside	Estimated Percent to HUD-Identified MID Areas	Estimated Percent to LMI
Administration	$933,800	5%			
Planning	$2,801,400	15%	0%		
Housing	$9,329,880	50%	0%	100%	100%
Infrastructure	$2,988,160	16%	0%	100%	80%
Economic Revitalization	$0	0%	0%	N/A	N/A
Public Services	$186,760	0%	0%	100%	100%
Exempt Public Services	$0	0%	0%	N/A	N/A
Mitigation Set-Aside*	$2,436,000	13%	100%	100%	80%
Total	**$18,676,000**	**100%**	**15%**	**100.0%**	**92.7%**
Percent of Total	**100%**	**100%**	**15%**	**100.0%**	**92.7%**

*Mitigation needs are incorporated into housing, infrastructure, and economic revitalization needs.

Table 5: Grantee-Proposed Allocation of Funds

[17] https://www.commerce.alaska.gov/web/Portals/4/pub/CDBG-DR%E2%80%93Juneau_Flooding/State%20of%20AK%2023_24%20Allocation%20Brief.pdf

02.
Unmet Needs Assessment

2. Unmet Needs Assessment

2.1. Overview

Per 90 FR 4759, HUD requires the State of Alaska to conduct an unmet needs assessment to identify and quantify impacts from the disaster events, account for any potential financial recovery assistance, and determine the remaining recovery gaps. The unmet needs assessment informs program development and ensures that CDBG-DR funds are targeted effectively to support long-term recovery and resilience.

DCCED analyzed the best available data in the core areas of Housing, Infrastructure, and Economic Revitalization to evaluate the effects of the 2023 and 2024 disasters on the most impacted communities.

To prepare the unmet needs assessment, DCCED used a consistent, data-driven methodology that draws on publicly available information and federal data sources to quantify disaster impacts and remaining recovery gaps. The analysis incorporated data from the following sources:

- US Department of Housing and Urban Development (HUD)
- Federal Emergency Management Agency (FEMA)
- US Census Bureau and American Community Survey (ACS)
- Alaska Division of Homeland Security and Emergency Management (DHS&EM)
- Local government and tribal data sources, where available

This methodology is consistent with HUD guidance and CDBG-DR best practices and allows for a transparent, comparative analysis of disaster impacts and recovery needs across affected areas.

Because Alaska received a single CDBG-DR allocation covering two distinct disaster events, the 2023 Lower Yukon River Flooding (DR-4730-AK) and 2024 City and Borough of Juneau Flooding (DR-4836-AK) events, DCCED determined that two separate unmet needs analyses were necessary. This approach enables a clear understanding of the differing recovery needs in the Lower Yukon River Area and the City and Borough of Juneau, which are regions with distinct housing, infrastructure, and economic pre-disaster conditions that are experiencing very different types of damage and recovery challenges. Therefore, the following assessment is split into two separate sections, the first addressing the unmet housing, infrastructure, and economic revitalization needs in the Lower Yukon region resulting from the 2023 flooding event, followed by an assessment of the same topics for the City and Borough of Juneau resulting from the 2024 flooding event.

For the Lower Yukon Regional Education Attendance Area (REAA) and City of Saint Mary's analysis, DCCED relied primarily on publicly available FEMA data and relevant information collected during the development of the State's CDBG-DR Action Plan for the 2022 Typhoon Merbok event, completed in September 2025. Because the Lower Yukon REAA was determined a most impacted and distressed (MID) area under the Merbok allocation, this prior analysis provides valuable context for understanding regional vulnerabilities and ongoing recovery needs.

For the City and Borough of Juneau analysis, DCCED drew upon the most current publicly available data and incorporated additional information provided by local partners, including updated FEMA Public Assistance data and the results of a resident survey conducted by the Juneau Economic Development Council.

2.1.1. Limitations

The development of this unmet needs assessment faced several limitations—most notably, the devastation of Western Alaska, caused by the remnants of Typhoon Halong from October 8 to 13, 2025, and a federal government shutdown lasting from October 1, 2025, through November 12, 2025. The typhoon and concurrent government shutdown affected the availability of data and the ability to conduct outreach. During the shutdown, the US Census Bureau's data portal was inaccessible for the entirety of the assessment's formulation, limiting access to key demographic information. As a result, as much demographic data as possible was gathered from HUD and local sources to fill gaps. Small Business Administration (SBA) and FEMA Region X data were also unavailable or limited during the shutdown. Outreach and data collection in the Lower Yukon River Area were also affected by the devastation caused by Typhoon Halong, which occurred during the formulation of this unmet needs assessment. The State's DHS&EM and local partners were focused on immediate disaster response and recovery activities in that region. DCCED will continue to collect meaningful data and update this assessment, as well as the broader Action Plan, as additional information becomes available and impacted entities have greater capacity to engage.

2.2. Comparison of MID Region Unmet Needs

As with prior CDBG-DR appropriations, HUD is not required to allocate funds for all major disasters occurring in the statutory timeframes. HUD calculates unmet needs and allocates funds according to established national thresholds used to identify the most impacted and distressed (MID) areas.

Both disaster-impacted regions received allocations based on the disaster recovery needs analysis conducted by HUD. Using standard federal administrative data, HUD determined that each area—the Lower Yukon River Area and City and Borough of Juneau—exceeded the threshold for receiving CDBG-DR funds through the 2024 appropriation. DCCED has conducted an internal analysis updating this needs assessment using the most recent federal data and accounting for the costs of hazard mitigation and elevated regional construction costs.

The calculated needs resulting from this analysis show that Lower Yukon has 76% of the overall unmet need, $91,201,204, and the City and Borough of Juneau has 24%, $29,152,549, for a grand total of $120,353,753 in recovery need.

Comparison of Unmet Needs	Estimated Loss/Need*	Funding Awarded or Obligated	Unmet Need	% of CDBG-DR Total Unmet Need
Lower Yukon 2024 Flood Disaster				
Housing*	$71,131,717	$870,851	$70,260,865	73%
Infrastructure**	$25,030,022	$18,772,517	$13,914,252	93%
Economic Revitalization***	$0	$0	$7,026,087	73%
Total	$96,161,739	$19,643,368	$91,201,204	76%
Juneau 2024 GLOF				
Housing*	$29,522,937	$3,995,740	$25,527,198	27%
Infrastructure**	$1,950,240	$1,462,680	$1,072,632	7%
Economic Revitalization***	$0	$0	$2,552,720	27%
Total	$31,473,177	$5,458,419	$29,152,549	24%
Total CDBG-DR Unmet Needs				
Housing*	$100,654,654	$4,866,591	$95,788,063	80%
Infrastructure**	$26,980,262	$20,235,196	$14,986,884	12%
Economic Revitalization***	$0	$0	$9,578,806	8%
Total CDBG-DR Unmet Needs	$127,634,916	$25,101,787	$120,353,753	100%

* Estimate based on FEMA Individual Assistance data, National Flood Insurance Program (NFIP) data, a 30% Resilience Factor multiplier, and then multiplied by the Department of Defense's Area Cost Factor multiplier specific to the region.

** Estimate includes Resilience Factor of 30% applied to base cost, plus local cost share requirement.

*** Estimate is 10% of housing unmet need, per HUD guidelines.

Table 6: Overall Unmet Needs by Impact Area

In both impact areas, housing recovery needs drive the overall recovery need. While both areas have unique pre-disaster housing challenges, the quantitative analysis includes only discrete disaster recovery and mitigation needs information available for both regions. Pre-disaster housing market conditions, while relevant to program selection and design, are not incorporated into this quantitative analysis, but they are discussed within the unmet and mitigation needs assessments.

Owner- and Tenant-Occupied Damaged Properties by Damage Categories and Disaster						
Damage Category	Lower Yukon Flood: DR-4730-AK		Juneau GLOF: DR-4836-AK		Total	
	# of HH	% of Total	# of HH	% of Total	# of HH	% of Total
No FVL[18]	123	14.5%	70	8.3%	193	22.8%
Minor-Low	113	13.3%	31	3.7%	144	17.0%
Minor-High	41	4.8%	42	5.0%	83	9.8%
Major-Low	29	3.4%	68	8.0%	97	11.4%
Major-High	126	14.9%	55	6.5%	181	21.3%
Severe	137	16.2%	13	1.5%	150	17.7%
Total	569	67.1%	279	32.9%	848	100%

Table 7: Owner- and Tenant-Occupied Damaged Properties by Damage Categories and Disaster (Source: FEMA IA)

Information from FEMA's IA program indicates that 446 households in Lower Yukon and 209 households in the City and Borough of Juneau were verified to have been damaged by the respective disasters. Over two-thirds (68 percent) of homes that sustained severe or major damage from both disasters were in Lower Yukon, consistent with overall unmet needs estimates.

Unmet Need Calculation	Lower Yukon	Juneau	Total
Housing Unmet Need - Owner	$60,865,757	$23,256,103	$84,121,860
Housing Unmet Need - Renter	$9,395,109	$2,271,095	$11,666,203
Total Unmet Need	$70,260,865	$25,527,198	$95,788,063

Table 8: Comparison of MID Housing Unmet Need Estimates

When estimating costs of housing recovery, accounting for losses not covered by FEMA IA and NFIP, and adding resilience and local regional construction expenses, the unmet housing need across both disasters is $95,788,063, with approximately 73 percent of that housing need in the Lower Yukon communities impacted by the 2023 flood.

2.3. 2023 Lower Yukon Flooding (DR-4730-AK)

2.3.1. Unmet Housing Needs

Overview

This unmet housing needs assessment provides a comprehensive evaluation of the scale and distribution of housing-related damages resulting from the 2023 Lower Yukon Flooding event. It assesses the extent of

[18] FVL = Federal FEMA Verified Loss: A damage evaluation carried out by FEMA or another federal agency is used to verify losses tied to a disaster, whether to property or finances, in order to determine eligibility for aid. This process often requires FEMA to visit the affected home or request supporting documents that demonstrate the scale of the destruction and the related costs.

assistance delivered to affected communities and identifies the remaining unmet needs across the region. Additionally, this section offers a detailed profile of the Lower Yukon region's housing landscape, which will guide program allocation decisions.

The area impacted by the 2023 flooding is predominantly rural, consisting of small, remote communities where many residents participate in subsistence economies and often lack documented assets. While every effort has been made to quantify losses and needs to ensure allocations align with local realities, DCCED recognizes the inherent challenges in assigning precise dollar values. Ongoing outreach and analysis will continue to refine the understanding of how CDBG-DR funds can best support disaster recovery.

This analysis draws on data from FEMA's Individuals and Households Program and applies HUD's disaster loss multipliers to accurately reflect the severity of impacts and the true costs of recovery. It considers the needs of both owner- and renter-occupied households, encompassing real and personal property damage, occupancy types, assistance received, and financial gaps due to underinsurance or ineligibility for aid.

The unmet housing needs assessment also incorporates data on public and assisted housing, unhoused populations and shelters, household income demographics, and local housing market conditions. These factors have all informed DCCED's allocation decisions to ensure safe and affordable housing for the region.

Importantly, the Lower Yukon River Area was previously affected by Typhoon Merbok. The needs assessment from that Action Plan,[19] which includes pre-disaster housing needs, provides additional context for understanding ongoing conditions in the region. While pre-disaster needs are not included in the quantified unmet needs in this assessment, they offer important background that will inform future disaster recovery allocations.

CDBG-DR funds will be used to restore, protect, and strengthen housing and infrastructure in the most affected communities—areas that regularly experience extreme weather events. The Lower Yukon River Area has been impacted by three major disasters in recent years, and environmental conditions are expected to worsen. Recognizing these recurring hazards, DCCED is prioritizing recovery strategies that also mitigate future risks, including resilience costs in housing recovery estimates. Based on this needs assessment, DCCED proposes local housing recovery and infrastructure activities that address both urgent and long-term needs, including the ability for residents to choose to relocate to safer conditions.

Methodology

Damage Loss Multipliers

DCCED reviewed FEMA's Individuals and Households Program (IHP) - Valid Registrations[20] Dataset as of October 15, 2025, to estimate the total loss for households that applied for FEMA IA assistance. For each household determined to have a housing need, an estimated loss multiplier was calculated using the average Housing Assistance (HA) awarded amount for homeowners and renters, HUD guidance in the Federal Register, and FEMA HA maximums within three categories:

[19] CDBG-DR Public Action Plan 2022 Typhoon Merbok, Alaska Department of Commerce, Community, and Economic Development, 2025, https://www.commerce.alaska.gov/web/Portals/4/pub/CDBG-Merbok/Draft%20State%20of%20Alaska%202022%20Typhoon%20Merbok%20CDBG-DR%20Action%20Plan.pdf
[20] (3/1/25) - https://www.fema.gov/openfema-data-page/individuals-and-households-program-valid-registrations-v1

1. HUD Damage Category Application of Major-Low to Severe
2. HUD Damage Category Application of Minor-Low to Minor-High
3. FEMA IHP Applications without Inspection

The calculations for these three categories are separated by homeowners and renters and then totaled by disaster to help identify the needs of each category as well as show the total impact of each disaster. HUD-identified damage categories for disasters in 2023 and 2024 are based on FEMA IHP data on housing unit damage as of November 20, 2024.

FEMA IHP Inspected HUD Categories - Homeowners			
Damage Category	**Amount of FEMA Inspected Real Property Damage**	**Amount of Flooding on the 1st Floor**	**Amount of FEMA Inspected Personal Property Damage**
Minor-Low	<$3,000		<$2,500
Minor-High	$3,000 to $7,999		$2,500 to $3,499
Major-Low	$8,000 to $14,999	1 to 3.9 feet	$3,500 to $4,999
Major-High	$15,000 to $28,800	4 to 5.9 feet	$5,000 to $9,000
Severe	>$28,800 or destroyed	6 or more feet	>$9,000 or destroyed

FEMA IHP Inspected HUD Categories - Renters		
Damage Category	**Amount of FEMA Inspected Personal Property Damage**	**Amount of Flooding on the 1st Floor**
Minor-Low	<$1,000	
Minor-High	$1,000 to $1,999	
Major-Low	$2,000 to $3,499	1 to 3.9 feet
Major-High	$3,500 to $7,500	4 to 5.9 feet
Severe	>$7,500 or destroyed	6 or more feet

Table 9: HUD-Defined Damage Categories

For this disaster, DCCED determined the multipliers per damage category and housing using methods consistent with HUD's methodology:

- **Major-Low, Major-High, and Severe**: For owner-occupied housing within the Major-Low, Major-High, and Severe damage categories, the loss multiplier was provided by HUD in the January 13, 2025, Federal Register Notice (90 FR 1754). For renter-occupied housing with damage categories of Major-Low, Major-High, and Severe, the loss multiplier is the maximum HA award amount at the time of the disaster.
- **Minor-High and Minor-Low:** For owner-occupied housing within the Minor-Low and Minor-High damage categories, the count of applications for homeowners who received assistance for real

property losses for the respective disaster was divided by the overall HA awarded amount per damage category and rounded up to the nearest whole dollar value.

- **No Inspection:** FEMA IA applicants who have not received inspections are categorized as "No Inspection." Without an inspection of the property confirming that there was no real property or personal property damage, DCCED used the Minor-Low multiplier to estimate the total loss.

The following tables indicate multipliers for the categories of applicants to the FEMA IA program in Lower Yukon.[21]

Lower Yukon Owner-Occupied Loss Multiplier – Major-Low, Major-High, and Severe		
Damage Category	Site-Built Home Loss Multiplier	Mobile Home Loss Multiplier
Severe	$64,513	$134,834
Major-High	$57,856	$98,463
Major-Low	$47,074	$77,058
Minor-High	$5,540	
Minor-Low	$5,352	
No Inspection	$5,352	

Lower Yukon Tenant-Occupied Loss Multiplier – Major-Low, Major-High, and Severe		
Damage Category	Site-Built Home Loss Multiplier	Mobile Home Loss Multiplier
Severe	$41,500	$41,500
Major-High	$41,500	$41,500
Major-Low	$41,500	$41,500
Minor-High	$5,540	
Minor-Low	$5,352	
No Inspection	$5,352	

Table 10: Lower Yukon Owner- and Tenant-Occupied Loss Multipliers

Resilience Multiplier

DCCED is compelled to plan for the future by ensuring that any recovery construction incorporates features that make housing resilient to hazards and reduce the government's liability for future disasters. Therefore, recovery need estimates include a "resilience multiplier" to account for increased costs of building back stronger, similar to the approach used to estimate recovery costs following Typhoon Merbok. HUD does not have a fixed, mandated formula for calculating resiliency costs in CDBG-DR construction projects. For planning purposes, this analysis applies a resiliency formula of 30% of the base construction cost estimate. This is consistent with HUD's Federal Register notice (78 FR 69104, November 18, 2013)[22] following Hurricane Sandy, which established a calculation of "resiliency" to be 30% of the total basic cost to rebuild

[21] This is a conservative estimate. The State of Alaska assumes this amount is likely much higher than the Minor-Low average amount.
[22] FR Notice 78 FR 69104, Nov. 18, 2013. https://www.govinfo.gov/app/details/FR-2013-11-18/2013-27506

structures to pre-storm conditions. This "resiliency" allocation is calculated based on the relative share of needs HUD estimated are required to rebuild to a higher standard, such as elevating or retrofitting homes, hardening and/or upgrading facilities and structures to withstand current and future hazards, and other costs in excess of normal repair costs. The housing repair unmet need estimate is combined with the resiliency need to calculate the total housing unmet needs estimated to achieve long-term recovery.

Area Cost Factor

To account for regional constraints on labor and materials in the remote communities of the Lower Yukon River Area, DCCED applied a Department of Defense Area Construction Cost Factor[23] to FEMA damage estimates. According to the US Department of Defense, construction costs in Alaska are higher than other parts of the country on average due largely to higher labor, shipping, and supply costs. Area Cost Factors are publicly available and updated annually by the Department of Defense for all US states and territories, and take into account weather, seismic activity, labor availability, contractor overhead and profit, logistics and mobilization, and local labor productivity versus the US standard. The Area Cost Factor (ACF) below indicates that construction in the region costs over three times the national average. This ACF was applied to the total loss estimate with resilience included.

State	Geography	Area Cost Factor
Alaska	Kusilvak Census Area	3.07

Table 11: Area Cost Factor for Kusilvak Census Area: Source: US Army Corps of Engineers

Using this method, DCCED estimates the need for housing recovery in the Lower Yukon River Area to be $70,260,865, with 86% of that attributed to the recovery of owner-occupied households. While FEMA IA housing awards have provided much-needed immediate recovery aid following the disaster, DCCED's analysis indicates that only 1% of the true housing recovery need is met through FEMA alone. The FEMA recovery program grant maximum is established by the federal government, and homeowners can receive up to $41,500 for repairs to their homes, which is an estimated amount needed to return homes to habitability, but this amount is unlikely to fund full recovery for the most severely impacted structures. Other sources of assistance, such as state disaster assistance and SBA loans, are not included in this assessment and will be added when the relevant data sets become available. However, considering the magnitude of need compared to aid, there will be significant housing needs in the region that will not be met through other likely sources.

Lower Yukon Unmet Housing Need	
Housing Need Identified - Owner	$15,460,427
Housing Need Identified - Renter	$2,362,604
Resilience Multiplier	30%
Area Cost Factor	3.07

[23] UFC 3-701-01 DOD FACILITIES PRICING GUIDE (Revision Date: 07-25-2025). The Area Cost Factor was sourced from https://www.wbdg.org/dod/ufc/ufc-3-701-01

Lower Yukon Unmet Housing Need	
Total Housing Need Identified	$71,131,717
Disaster Award and Funding Sources	
FEMA Individual Assistance - Owner	$836,807
FEMA Individual Assistance - Renter	$34,044
SBA Disaster Loans	-
National Flood Insurance Program	$0
Total Assistance	$870,851
Unmet Need Calculation	
Housing Unmet Need - Owner	$60,865,757
Housing Unmet Need - Renter	$9,395,109
Total Unmet Need	$70,260,865

Table 12: Lower Yukon Overall Unmet Housing Needs

Household Damage by REAA

HUD requires the State of Alaska to allocate a minimum of 80% of its grant to the most impacted and distressed areas as identified by HUD, which—for this CDBG-DR grant—are the Lower Yukon River Area (including the City of Saint Mary's) and the City and Borough of Juneau. HUD defines the most impacted and distressed areas as either counties exceeding $10 million in serious unmet housing needs or [24]Codes with $2 million or more of serious unmet housing needs. Based on the concentration of impact to housing within the Lower Yukon River Area and Juneau, DCCED has decided to focus the entirety of its CDBG-DR allocation for this disaster on communities within the Lower Yukon River Area and the City and Borough of Juneau. As shown by FEMA IA data and verified loss information, the Lower Yukon region sustained the greatest concentration of housing impacts in the Lower Yukon disaster impacted area.

Throughout the MID, 569 households applied for assistance through the FEMA Individuals and Households Program, and 446 homes were found to be impacted by the disaster (inspected with any damage). Of all applicants, 51% percent sustained severe or major damage as defined by HUD.

The table below summarizes these housing impacts by REAA, providing information about disaster damages by severity and the most impacted areas. The housing impacts broken out by REAA indicate that the Lower Yukon REAA sustained well over twice the damage of any other REAA. At 36%, Lower Yukon communities have over two times the number of household applicants as any other single REAA. Considering the limited size of the grant and to ensure that funds reach communities most in need, DCCED is deciding to focus scarce resources on the region with the most concentrated damages. However, as DCCED continues to

[24] 90 FR 4759 16 January 2025. https://www.federalregister.gov/d/2025-00943

analyze needs through outreach and updated data analysis, it can reconsider opening disaster programs to other impacted regions, if warranted.

Owner- and Tenant-Occupied Damaged Properties by Damage Categories and Region												
Region	Minor-Low		Minor-High		Major-Low		Major-High		Severe		Total	
	# of HH	% Total	# of HH	% Total	# of HH	% Total	# of HH	% Total	# of HH	% Total	# of HH	% Total
Lower Yukon REAA*	31	7.0%	17	3.8%	10	2.2%	47	10.5%	59	13.2%	164	36.8%
Yupiit REAA	23	5.2%	6	1.3%	4	0.9%	20	4.5%	26	5.8%	79	17.7%
Lower Kuskokwim REAA	29	6.5%	12	2.7%	3	0.7%	28	6.3%	7	1.6%	79	17.7%
Yukon Flats REAA	18	4.0%	2	0.4%	8	1.8%	19	4.3%	31	7.0%	78	17.5%
Kuspuk REAA	5	1.1%	1	0.2%	3	0.7%	9	2.0%	14	3.1%	32	7.2%
Copper REAA	7	1.6%	3	0.7%	1	0.2%	3	0.7%	0	0.0%	14	3.1%
Total	113	25.3%	41	9.2%	29	6.5%	126	28.3%	137	30.7%	446	100%

* HUD-Identified Most Impacted and Destressed Region – Lower Yukon REAA plus Saint Mary's

Table 13: FEMA Individual Assistance by Damage Category and REAA

Owner-Occupied Housing

The information in the table below outlines the total population of owner-occupied disaster-damaged properties with FEMA-documented damages caused by the 2023 flood disaster. Throughout the area of impact, 378 owner-occupied homes sustained damage, with nearly 63% sustaining major or severe impacts.

Owner-Occupied Damaged Properties by Damage Categories and HUD MID						
Damage Category	HUD MID		Non-MID		Total	
	# of HH	% of Total	# of HH	% of Total	# of HH	% of Total
Minor-Low	30	7.9%	73	19.3%	103	27.2%
Minor-High	16	4.2%	22	5.8%	38	10.1%
Major-Low	9	2.4%	9	2.4%	18	4.8%
Major-High	37	9.8%	64	16.9%	101	26.7%
Severe	54	14.3%	64	16.9%	118	31.2%
Total	146	38.6%	232	61.4%	378	100%

Owner-Occupied Damaged Properties by Damage Categories and HUD MID (Source: FEMA IA)

Table 14: FEMA Individual Assistance, Owner-Occupied

Renter-Occupied Housing

18% of disaster assistance applicants were tenants; however, this figure likely undercounts the true number of tenant households impacted by the disaster due to tenants occupying homes of family and friends or other communal residential living conditions. As discussed below, the region is challenged with a low supply of high-quality and affordable housing; therefore, a higher portion of tenant households live together or in owner-occupied residences, often in overcrowded living conditions. FEMA IHP rules can create a barrier for renters in communal living situations who are attempting to apply for assistance, which can result in fewer resources for tenants. Tenants are only eligible for personal property assistance, and can be displaced by damage and unable to find alternative housing. Sixty-eight tenant households sustained verifiable damage, 80% of which experienced major or severe damage that may have rendered the home uninhabitable.

Tenant-Occupied Damaged Properties by Damage Categories and HUD MID						
Damage Category	HUD MID		Non-MID		Total	
	# of HH	% of Total	# of HH	% of Total	# of HH	% of Total
Minor-Low	1	1.5%	9	13.2%	10	14.7%
Minor-High	1	1.5%	2	2.9%	3	4.4%
Major-Low	1	1.5%	10	14.7%	11	16.2%
Major-High	10	14.7%	15	22.1%	25	36.8%
Severe	5	7.4%	14	20.6%	19	27.9%
Total	18	26.5%	50	73.5%	68	100%

Tenant-Occupied Damaged Properties by Damage Categories and HUD MID (Source: FEMA IA)

Table 15: FEMA Individual Assistance, Tenant-Occupied

Applications by Housing Type

The following table shows FEMA IA applicants by housing type. The vast majority of impacted homes were single-family, site-constructed houses. Overall, renter households make up 16% of all FEMA IA applicants and 16% of all households that sustained major or severe damage in the region. Only about 1.5% of applicants lived in apartments, which indicates that a large share of renters were in standalone homes or duplexes.

Impacted Housing Types and Estimated Loss				
Residency Type	**# of HH**	**% of HH**	**Estimated Loss**	**% of Estimated Loss**
Apartment	8	1.4%	$369,982	0.6%
Boat	1	0.2%	$21,360	0.0%
House/Duplex	536	94.2%	$67,911,538	95.5%
Mobile Home	9	1.6%	$1,511,930	2%
Other	14	2.5%	$1,295,546	1.9%
Townhouse	1	0.2%	$21,359	0.0%
Total	569	100.0%	$71,131,717	100.0%

Impacted Housing Types and Estimated Loss (Source: FEMA IA)

Table 16: FEMA Individual Assistance, Applications by Housing Type

Insurance Payments

DCCED analyzed insurance information provided within household FEMA applications. Of 446 homes that were found to have been damaged by the disaster, only four were covered by flood insurance and 24, or 5%, had standard homeowners' insurance, which does not cover flood damage. DCCED reviewed information about insurance payouts by the National Flood Insurance Program (NFIP) and was unable to identify any payments from the program to homeowners impacted by this disaster.

Governor Dunleavy's Request for Major Disaster Declaration for the 2022 Typhoon Merbok event states that private property insurance is largely unavailable or cost-prohibitive; therefore, almost all residents with reported home damage were likely uninsured against storm loss.[25] A 2013 study, conducted by the Government Accountability Office, describes reasons for low flood insurance participation rates specifically in tribal areas. Flood maps of rural areas, including many Indian lands, are incomplete and outdated. This may result in a lower awareness of flood risk and an inability to obtain property-specific information that is necessary to accurately price insurance policies. Rural and tribal communities may lack the resources and administrative capacity needed to administer NFIP requirements, and NFIP premiums are often too high for low-income tribal members. Finally, unique tribal issues can make participation difficult. For example, some Indian tribes do not have reservations over which they can enact and enforce the land use ordinances that are required for NFIP participation.[26] The low rate of homeowners covered by insurance indicates that the vast majority will need to bear the costs of repair or reconstruction using their own resources or rely on other forms of assistance.

[25] Gov. Dunleavy Request for Major Disaster Declaration. 20 September 2022. https://gov.alaska.gov/wp-content/uploads/Federal-Request-2022-West-Coast-Storm.pdf
[26] U.S. Government Accountability Office. (2013). Flood Insurance Participation of Indian Tribes in Federal and Private Programs. https://www.gao.gov/assets/gao-13-226.pdf

Lower Yukon Impacted Households by Insurance Type		
Insurance Type	**# of HH**	**% of HH**
Homeowners Insurance	24	5.4%
Flood Insurance	4	0.9%
Impacted Households	446	100%

Impacted Households by Insurance Type (Source: FEMA IA)

Table 17: Flood Insurance Analysis

Household Income and Populations

DCCED's Preliminary Damage Assessment indicates that most survivors of this disaster can be considered low-income, without insurance, and the data from FEMA and the Census Bureau support this.

Poverty and pre-disaster unemployment rates for the disaster census areas are double or triple the State of Alaska and/or national level (Table 19), and assistance applications indicate that many residents lack resources to recover without outside assistance. Applications also indicate that some survivors are elderly or have special needs, requiring additional support services.

DCCED analyzed FEMA applications by income level and occupancy type. Most impacted households were making less than $30,000, and 90% of all homes were making less than $60,000, much less than the median state income of $106,900. The median income of households in the Lower Yukon region is $37,975. One-third of the population lives below the poverty line, and the unemployment rate prior to the disaster was approximately four times the national average and 3.5 times the state average.

Number of Households by Gross Income and Occupancy Type										
Occupancy	**Less than $30,000**		**$30,001-$60,000**		**$60,001-$120,000**		**Greater than $120,000**		**Total**	
	# of HH	**% of Total**	**# of HH**	**% of Total**	**# of HH**	**% of Total**	**# of HH**	**% of Total**	**# of HH**	**% of Total**
Owner	310	54.5%	110	19.3%	49	8.6%	5	0.9%	474	83.3%
Renter	65	11.4%	27	4.7%	3	0.5%	0	0.0%	95	16.7%
Total	375	65.9%	137	24.1%	52	9.1%	5	0.9%	569	100%

Number of Households by Gross Income and Occupancy Type (Source: FEMA IA)

Table 18: FEMA IA Applicants by Housing Occupancy and Household Income

	Median Income	Persons Below Poverty Level	American Indian/Alaska Native (AIAN)	Disabled	Pre-Disaster Unemployment
National Average	$80,610	11.60%	1.30%	8.70%	3.10%
Alaska State Average	$106,900	10.50%	15.70%	9.00%	3.80%
Kusilvak Census Area	$37,975	30.40%	92.10%	9.90%	12.70%

Table 19: Lower Yukon Economic and Demographic Measures
Source: US Bureau of Census QuickFacts FactFinder at https://www.census.gov/quickfacts; Alaska Department of Labor and Workforce Development, Research and Analysis at Labor Force Home (alaska.gov), for April 2023 (i.e., one month prior to flooding); and US Bureau of Labor Statistics Data Tools at Bureau of Labor Statistics Data (bis.gov).

HUD makes available data on low- and moderate-income (LMI) populations. Under the requirements for the CDBG-DR grant, the State of Alaska must ensure that a minimum of 70% of grant funds benefit low- or moderate-income persons. In the Lower Yukon region, 81% of the population meets this definition.

	LMI Population	Total Population	LMI %
State of Alaska	301,055	709,940	42%
Kusilvak Census Area	6,430	7,965	81%

Table 20: LMI Data
Source: HUD LMI

This data cannot fully capture the economic circumstances across the region due to the existence of a prevalent informal subsistence economy that is not documented within federal data sources. As discussed in the Typhoon Merbok Action Plan, the villages and municipalities are largely Alaska Native, with complex landownership rights and a cultural emphasis on a subsistence economy, with many households living below the federal poverty level. The Alaska Department of Fish and Game's Division of Subsistence characterized this economy as a "mixed, subsistence-market" economy in a 2014 study: "Families invest money into small-scale, efficient technologies to harvest wild foods, such as fish wheels, gillnets, motorized skiffs, and snowmachines. Subsistence food production is directed toward meeting the self-limited needs of families and small communities, not market sale or accumulated profit as in commercial market production." The existence of this informal economy can make documentation of assets, income, and recovery needs for the purpose of this assessment less accurate, so DCCED will continue working with local leaders and communities to better understand the economic picture in the Lower Yukon River Area and align resources with the needs of residents and communities.

Homeless Populations and Emergency and Interim Shelters

Information about homeless populations and shelters impacted by the disaster is incomplete at the time of this assessment but will be updated if DCCED receives new information. Point-in-Time (PIT) Count data is collected annually and reported by Continuums of Care (CoCs) to the US Department of Housing and Urban

Development (HUD). The most relevant CoC for the impacted region is the Alaska Balance of State CoC (AK-501), which covers the majority of rural and remote communities across the state. However, PIT data is generally not disaggregated to the level of individual REAAs or communities, and disaster-specific counts are not available. This data indicates a significant increase in the number of homeless individuals across the state, excluding Anchorage, between 2022, the year of the Typhoon Merbok disaster, and 2024. During this time, the number of total known homeless individuals increased by 24% across rural communities throughout the state. While this jump cannot be specifically attributed to the disasters, it does show the growing need for housing resources to meet the needs of the most vulnerable populations.

Year	Geography	Emergency Shelter	Transitional Housing	Unsheltered Homeless	Total Known Homeless
2022	Alaska - Balance of State	423	171	191	785
2023	Alaska - Balance of State	555	166	133	854
2024	Alaska - Balance of State	635	209	133	977

Table 21: Point-in-Time Count, Alaska
Source: Alaska Coalition on Housing and Homelessness https://www.alaskahousing-homeless.org/data Accessed November 2025.

Further, the incidence of homelessness as defined by HUD does not include individuals living with friends or relatives, which is common in this region. According to the National Housing Needs Assessment of American Indians and Alaska Natives (HUD 2017), "homelessness in tribal areas mostly translates into overcrowding rather than having people sleeping on the street."[27] Overcrowding is often a proxy indicator for homelessness in Native American communities and is discussed in greater detail below.

In rural parts of Alaska, including the Lower Yukon River Area, permanent shelters for people experiencing homelessness are rare. Most individuals first rely on family or friends for temporary housing, but when that is no longer possible, they may be forced to sleep outdoors or in unsafe, unsuitable places. Some communities do open seasonal shelters during the winter months, when the extreme cold makes survival especially difficult. Because shelter options and supportive services are so limited in rural areas, many people experiencing homelessness eventually migrate from smaller communities to larger towns or cities in search of stability.

Public Housing (Including HUD-Assisted Housing) and Other Affordable Housing

It is important to highlight the shortage of public and assisted housing in this area. There are very few options available to people in need, and formal assisted housing is almost nonexistent. As a result, many individuals cannot find suitable housing and live with family or friends, contributing to overcrowded living conditions, as discussed below. DCCED could only collect limited information on impacted assisted housing units due to the limitations mentioned above.

[27] https://www.huduser.gov/portal/sites/default/files/pdf/HousingNeedsAmerIndians-ExecSumm.pdf

City/Village	No. of Units	No. of Units Assisted
Alakanuk	0	0
Saint Mary's	0	0
Russian Mission	0	0
Marshall	0	0
Mountain Village	0	0
Emmonak	0	0
Pitkas Point	0	0
Pilot Station	0	0
Kotlik	0	0

Table 22: List of Multifamily HUD-Assisted Housing in the Lower Yukon River Area
Source: Alaska Housing Finance Corporation (AHFC), n.d.

City/Municipality	Total # of PHAs	Total PHAs Damaged	# of Units Damaged	Remaining Unmet Need
Lower Yukon River Area	0	0	0	0

Table 23: Public Housing Authorities (PHAs) in Lower Yukon with Available and Occupied Units
Source: Public Housing Authorities, HUD Open Data Site

County/REAA	Total Housing Choice Vouchers	Total Impacted Housing Choice Voucher Units	Total Low Income Housing Tax Credit (LIHTC) Units	Total Impacted LIHTC Units	Total Public Housing Dwelling Units	Total Impacted Public Housing Dwelling Units
Lower Yukon River Area	N/A		20		N/A	

Table 24: HUD-Assisted Housing in Lower Yukon River Area Impacted by Disaster
Source: LIHTC Database Access, HUDuser.gov, https://www.huduser.gov/lihtc/index.html, Dataset/Assisted Housing: National and Local, Huduser.gov, https://www.huduser.gov/portal/datasets/assthsg.html

Housing Market Conditions

The Kusilvak Census Area faces its most pressing challenges in the form of overcrowded housing, poor conditions of existing housing, and the difficulties of developing new affordable housing. More than half of households in the area are overcrowded, which is over eight times the statewide average, and the pace of new construction is far too slow to address even modest growth.

Housing Gap

According to HUD's standards, Kusilvak has the highest overcrowding rate in Alaska. Over half of all homes in this area are either overcrowded (21%) or severely overcrowded (33%)—a figure more than 16 times the

national average.[28] Researchers behind the Assessment of American Indian, Alaska Native, and Native Hawaiian Housing Needs note that overcrowding often masks hidden homelessness, as families take in relatives who cannot secure affordable housing on their own. If construction continues at its current pace, it will fall short of meeting the needs of the growing population, worsening both overcrowding and affordability challenges.[29]

Affordable Housing Needs

The Kusilvak Census Area also struggles with affordability. The area has the lowest median income in the state and among the lowest average renter wages. While fair market rents are slightly below the statewide average, the income required to afford a two-bedroom unit at that rate equals 85% of the area's median income—one of the highest burdens in Alaska.[30]

Senior Housing Needs

As of the summer of 2024, there are no assisted-living or independent-living facilities for older adults in the Lower Yukon REAA (Kusilvak[31]). When the 2017 Alaska Housing Assessment was conducted, the Kusilvak Census Area[32] 469 seniors, and that number is projected to climb to 797 by 2030. Expanding senior housing options will be essential to provide adequate care and living arrangements for this growing population.[33]

Housing Development Needs

DCCED reviewed the 2025 Housing Need Forecast[34] for the Association of Village Council Presidents Regional Housing Authority (AVCP RHA), which addresses the housing needs of the broader region, including the Lower Yukon River Area. The 2025 Housing Need Forecast identifies a need of 581 new housing units and 91 units in need of repair, costing a total of $366.7 million. According to Census Bureau data, 38% of housing units in Lower Yukon meet HUD guidelines for overcrowding. Of 1,488 units, 500 additional units are needed to address overcrowding alone, indicating how prevalent overcrowding is. The area faces extraordinary burdens for developing housing due to a lack of financial resources, the remote nature of the region, and a lack of connecting road networks, which can challenge material shipping and identifying skilled home builders. This all contributes to housing development costs that are prohibitively high. As a result, there is a growing gap between the supply of available housing and the need.

[28] U.S. Census Bureau. (2016). American Community Survey, 2010–2014 American Community Survey Five-year Estimates.
[29] Pindus, N., Kngsley, G. T., Biess, J., Levy, D., Simington, J., & Hayes, C. (2017). Final Report: Housing Needs of American Indians and Alaska Natives. The Urban Institute. Retrieved from https://www.huduser.gov/portal/native_american_assessment/home.html
[30] Yentel, D., Aurand, A., Emmanuel, D., Errico, E., Leong, G. M., & Rodrigues, K. (2016). Out of Reach 2016. National Low Income Housing Coalition. Retrieved from http://nlihc.org/sites/default/files/oor/OOR_2016.pdf
[31] Senior Housing Office State of Alaska Inventory List Assisted Living Homes/Facilities, AHFC, 2024, https://www.ahfc.us/download_file/view/2572/445
[32] Senior Housing Office State of Alaska Inventory List Assisted Living Homes/Facilities, AHFC, 2024, https://www.ahfc.us/download_file/view/2572/445
[33] Hunsinger, Eddie, Sandberg, E., & Brooks, L. (2016). Alaska Population Projections 2015 to 2045. Alaska Department of Labor and Workforce Development, Research and Analysis Section.
[34] AVCP RHA Housing Need Forecast, 2025. Access November 2025.

Tribe/ Community	Current Housing Units	New Units Needed Due to Population Growth	New Units Due to Overcrowding	Environmentally Threatened Units	Total New Units	Units Needing Rehabilitation or Replacement	Cost of Total Housing Need
Alakanuk	238	10	95	0	105	17	$66.2M
Emmonak	281	21	64	0	85	23	$55.5M
Kotlik/ Ohogamiut	255	3	97	0	100	17	$63.2M
Marshall	100	9	43	0	52	3	$31.6M
Pilot Station	131	6	53	0	59	0	$35.7M
Pitkas Point	52	2	30	0	32	14	$21.8M
Russian Mission	63	22	28	0	50	3	$30.9M
Saint Mary's	290	4	76	0	80	2	$48.3M
Nunam Iqua	6	4	0	0	4	0	$2.2M
Andreafsky	72	1	14	0	15	12	$11.4M
Chulloonawick	0	0	0	0	0	0	$0
Mountain Village	238	0	65	0	65	17	$42.3M
Total	1,410	77	486	0	563	79	$409.1M

Table 25: Housing Need in Lower Yukon
Source: AVCP RHA Housing Need Forecast UPDATED APRIL 2025 https://www.avcphousing.org/

2.3.2. Unmet Infrastructure Needs

Disaster Damage and Impacts

Overview

During the 2023 spring floods, the Lower Yukon River Area experienced significant infrastructure impacts as a result of widespread ice jam and snowmelt flooding. Extremely high river water levels, compounded by persistent ice jams, led to the inundation of low-lying roads, airstrips, fuel stations, and essential community infrastructure.

Russian Mission faced severe consequences, with its airstrip submerged for weeks, resulting in shortages of food, medicine, and medical personnel. As stated in the Governor's request for a major disaster declaration, "This spring flood disaster severely affected rural Alaska. Over 40 predominantly Alaska Native villages reported community flooding, with three villages (Circle, Crooked Creek, and Russian Mission) experiencing record flooding with near-catastrophic impacts. Many of these villages are located along the state's two

longest rivers (the 1,210-mile-long Yukon River and 702-mile-long Kuskokwim River) and, in some of these communities, floodwaters reached depths of up to 15 feet and mobilized ice blocks weighing tons throughout the village. Most of these villages are remote and isolated, dependent on regional air carriers and seasonal river barges for all supplies."[35]

Several homes, fuel tanks, and infrastructure were flooded, necessitating the evacuation and sheltering of residents. Emergency helicopter missions were required to deliver medical supplies and evacuate those who were medically fragile. Once the floodwaters receded, emergency repairs were made to reopen the airstrip, but permanent repairs are required.

Emmonak's infrastructure and women's shelter were inundated, which led to further evacuations. In Alakanuk, the flooding damaged community water and sewage systems. Immediately following the disaster, the joint Preliminary Damage Assessment validated nearly $5.7 million in eligible Public Assistance costs for the Lower Yukon REAA, and that need has grown significantly as additional information has become available. The largest portion of these damages was attributed to parks, recreational facilities, and other community assets, with additional losses to roads, bridges, buildings, and equipment. Overall, the floods severely affected roads, bridges, airstrips, water and sewage systems, fuel stations, and housing, underscoring the vulnerability of the Lower Yukon River Area's infrastructure to extreme spring flooding events.

FEMA Public Assistance

The infrastructure unmet needs assessment is based primarily on FEMA Public Assistance (PA) data, which captures the estimated costs to repair or replace damaged public infrastructure and facilities following a federally declared disaster. FEMA's PA program assists state, local, territorial, and Tribal (SLTT) governments and certain private nonprofit (PNP) organizations with funding to help communities recover from major disasters or emergencies. In addition to supporting recovery, the PA program also funds hazard mitigation measures that protect damaged infrastructure from future impacts.

When a disaster exceeds the capacity of SLTT governments to respond, a joint Preliminary Damage Assessment (PDA) is conducted with FEMA to evaluate the scale and severity of damages. Based on PDA findings, a governor or tribal chief executive may request a presidential major disaster declaration. Once approved, FEMA works with eligible applicants to determine facility, work, and cost eligibility and obligates funds for approved recovery projects under specific categories of work.

FEMA PA projects are classified as either emergency work or permanent work:

- Emergency work addresses immediate threats to life and property and includes:
  - **Category A:** debris removal
  - **Category B:** emergency protective measures
- Permanent work involves restoring damaged facilities and includes:
  - **Category C:** roads and bridges

[35] DR-4370-AK Federal Request 2023 Floods August 1, 2023. https://www.commerce.alaska.gov/web/Portals/4/pub/CDBG-DR%E2%80%93Lower_Yukon/080123%20President%20Biden%202023%20Spring%20Floods%20RFA%20Ltr.pdf

- **Category D:** water control facilities
- **Category E:** buildings and equipment
- **Category F:** utilities
- **Category G:** parks, recreational, and other facilities

For purposes of the CDBG-DR infrastructure unmet needs assessment, only permanent work categories (C through G) are considered, as these categories represent longer-term recovery and rebuilding needs consistent with HUD's definition of eligible infrastructure activities.

The total FEMA project cost represents the estimated expense to restore each facility to its pre-disaster condition. Under the Public Assistance program, FEMA typically funds 75% of eligible project costs, while the remaining 25% represents the required local or non-federal cost share. For this analysis, the 25% local share is considered the base measure of unmet need for DR-4730-AK, representing costs not covered by FEMA assistance.

PA Category	Project Cost	Federal Cost Share	Non-Federal Cost Share
C: Roads and Bridges	$7,352,034.32	$5,514,025.78	$1,838,008.54
E: Buildings and Equipment	$9,394,080.58	$7,045,560.49	$2,348,520.09
F: Utilities	$200,075.83	$150,056.88	$50,018.95
G: Parks, Recreational Facilities, and Other Items	$5,913,480.72	$4,435,110.55	$1,478,370.17
Total	**$22,859,671.45**	**$17,144,753.70**	**$5,714,917.75**

Table 26: DR-4730-AK FEMA Public Assistance
Source: https://www.fema.gov/api/open/v2/PublicAssistanceFundedProjectsDetails

Hazard Mitigation Grant Program

In addition to the Public Assistance program, FEMA made Hazard Mitigation Grant Program (HMGP) funding available to support long-term risk reduction projects following DR-4730-AK. HMGP provides grants to state, local, territorial, and Tribal governments to implement measures that reduce future disaster losses and enhance community resilience. For the purposes of this analysis, HMGP projects are included as part of the overall infrastructure unmet needs assessment.

	Mitigation Dollars Available	Federal Cost Share	Non-Federal Cost Share
Hazard Mitigation Grant Program	$2,438,969.00	$1,829,226.75	$609,742.25

Table 27: Hazard Mitigation Grant Program Available Assistance: DR-4730-AK
Source: https://www.fema.gov/api/open/v2/HazardMitigationGrantProgramDisasterSummaries, October 26, 2025

Total Unmet Infrastructure Need

To calculate the total unmet infrastructure need for DR-4730-AK, DCCED used the combined non-federal share of the PA and HMGP assistance and applied a cost escalation factor for resilience. In alignment with HUD precedent and the methodology used in the Typhoon Merbok CDBG-DR Action Plan, a 30% resiliency cost is applied to the base infrastructure repair cost. This reflects the estimated additional investment needed to rebuild infrastructure to a more resilient standard, consistent with HUD's Federal Register guidance (78 FR 69104, November 18, 2013) following Hurricane Sandy. Resilience improvements make facilities less vulnerable to future disasters and may include relocating critical infrastructure outside of flood-prone areas, hardening utility systems, or integrating nature-based design elements that reduce long-term risk. The unmet infrastructure need is calculated by adding the 25% local share and the 30% resilience components.

The resulting figure reflects the non-federal share and resilience investment adjustment and represents the total estimated infrastructure unmet need of $13,914,252.14 under DR-4730-AK, as detailed in Table 28.

Assistance Type	Project Cost	Federal Cost Share	Non-Federal Cost Share	Resiliency Multiplier (30%)	Total Unmet Need: Non-federal Share + Resilience
Public Assistance	$22,859,671.45	$17,144,753.70	$5,714,917.75	$6,857,901.44	$12,572,819.19
HMGP	$2,438,969.00	$1,829,226.75	$609,742.25	$731,690.70	$1,341,432.95
Total	**$25,298,640.45**	**$18,973,980.45**	**$6,324,660.00**	**$7,589,592.14**	**$13,914,252.14**

Table 28: Total Unmet Infrastructure Need, Adjusted for Resilience Costs

Pre-Disaster Infrastructure Conditions

Infrastructure across the Lower Yukon River Area plays a foundational role in supporting community life, access to services, and economic stability. However, the region faces significant challenges related to its extreme remoteness, environmental conditions, and lack of connectivity. Communities are not linked by road systems and instead depend on a patchwork of airports, rivers, and seasonal trails to meet basic needs such as fuel delivery, freight transport, and emergency access. Persistent erosion, permafrost degradation, and limited availability of construction materials, such as gravel, further complicate the development and maintenance of essential systems. These conditions underscore the region's ongoing need for investment in resilient infrastructure that can safely and reliably support residents year-round.

The Yukon-Kuskokwim Delta Transportation Plan, completed in 2018,[36] provides an important framework for understanding the region's infrastructure needs and priorities. The Lower Yukon region, as part of this planning area, remains one of the most infrastructure-limited parts of Alaska. Its 56 isolated communities rely on small airports, marine routes, and winter trails for nearly all transportation and freight movement. Seasonal changes dictate accessibility, including boats and barges in the summer, snow machines and ice roads in the winter, and costly, weather-dependent air travel during freeze-up and break-up periods. The

[36] Yukon Kuskokwim Delta Transportation Plan, 2018. https://dot.alaska.gov/stwdplng/areaplans/area_regional/assets/ykd/3_YK_Transportation-Plan.pdf

Transportation Plan highlights critical priorities to improve safety, connectivity, and reliability, including the Emmonak Dock Expansion and Port Development, the Kalskag Yukon-Kuskokwim Freight and Energy Corridor, and area-wide projects such as erosion assessments, dust control, and winter trail marking with emergency shelters. Collectively, these efforts aim to create a more connected and resilient transportation network capable of supporting long-term recovery and economic vitality in the region.

Further underscoring these needs, a report from Adapt Y-K Delta rates community infrastructure across the region as "Poor," noting that "Y-K Delta communities rely on rivers and barge infrastructure to receive and distribute goods throughout the region. Low water, streambank erosion, and flooding are combining to make movement of freight by barge and maintenance of barge landing port infrastructure increasingly costly and unreliable."[37] The report also emphasizes trails as a vital artery for sustaining economic, social, and cultural well-being. With air transportation costs continuing to rise, these trails have become an even more essential form of intra-regional transport. Together, the Transportation Plan and the Adapt Y-K Delta findings demonstrate the urgent need for infrastructure investments that strengthen connectivity, address erosion and access challenges, and improve the resilience of critical transportation routes across the Lower Yukon River Area.

Overall, infrastructure in the Lower Yukon region is defined by isolation, environmental vulnerability, and high maintenance costs. The combination of limited transportation options, aging facilities, and accelerating erosion and permafrost loss leaves communities increasingly at risk. Each new disaster compounds these existing weaknesses, disrupting essential connections and further straining already fragile systems. Continued investment in infrastructure is critical to protect the region's residents and sustain long-term recovery.

2.3.3. Unmet Economic Revitalization Needs

Overview

According to the Yukon-Kuskokwim Region Comprehensive Economic Development Strategy (2018–2023),[38] the economy of the Kusilvak Census Area is structured differently from the broader Alaska economy. The area has a smaller private-sector base and a larger share of employment in local and tribal government, education, and fisheries. About 52% of all employment in the region is in the private sector, compared with 77% statewide. Local government, which includes tribal governments and school districts, represents the largest share of employment, accounting for approximately 46% of all jobs in the Kusilvak Census Area. This share has remained consistent over the past decade, underscoring the importance of public and tribal institutions to the regional labor market.

Employment outside of government is concentrated in several key sectors, including trade, transportation, and facilities, which account for about 15% of all employment, followed by manufacturing at 12% and educational and health services at 6%. Manufacturing employment is largely tied to fisheries and seafood processing, which play an important role in both wage employment and household subsistence. The

[37] Adapt Y-K Delta: Climate Adaptation Strategies for the Yukon-Kuskokwim (Y-K) Delta Region, 2019. https://adaptalaska.org/wp-content/uploads/2020/01/ADAPT-YK_Strategies_FINAL_sm.pdf
[38] Yukon-Kuskokwim Region Comprehensive Economic Development Strategy (2018–2023). https://www.avcp.org/wp-content/uploads/2020/03/Y-K-CEDS-2018-2023_FINAL_7-31-18_FULL.pdf

composition of these sectors differs somewhat from the statewide economy, where trade, transportation, and utilities account for about 21% of employment.

The Yukon-Kuskokwim Region Comprehensive Economic Development Strategy (CEDS) identifies the primary employers in the area as the Lower Yukon School District, Yukon-Kuskokwim Health Corporation, Kwik'pak Fisheries, AVCP RHA, Rural Alaska Community Action Program, Kashunamiut School District, Alaska Commercial Company, Asa'Carsamiut Tribal Council, Association of Village Council Presidents, and Hooper Bay City Council.[39] These organizations provide a mix of public administration, education, health, housing, and community services employment. Together, they illustrate the strong role of public, tribal, and nonprofit institutions in supporting the regional economy.

Income and employment data from the CEDS indicate that economic activity in the Kusilvak Census Area is characterized by lower wages and higher levels of seasonal or intermittent employment compared with state averages. Per capita income is reported at $11,701, which is approximately one-third of Alaska's statewide per capita income. It is important to note that this region is largely characterized as a subsistence economy, which contributes to this overall lower per capita income. Between 2010 and 2016, an average of 49% of workers in the Kusilvak Census Area were employed in all four quarters of the year, compared with 71% of workers statewide. These figures reflect the importance of seasonal and subsistence activities in household livelihoods, as well as the limited availability of year-round private-sector employment.

The CEDS also notes that the region's reliance on fisheries creates exposure to environmental and market fluctuations. In addition, areas impacted by the recent disaster include fisheries, subsistence gathering, and berry-picking areas, all of which are important to the economic and cultural well-being of local communities.

Conclusion and Estimated Unmet Need

Data regarding the economic impacts of the 2023 flooding event in the Lower Yukon River Area are limited, and SBA disaster loan data were not available during the formulation of this Action Plan. However, given the widespread residential and infrastructure damage, there is no doubt that communities also experienced significant economic disruption. Flooding events of this scale typically impact local employment, supply chains, transportation systems, and subsistence activities, which are all critical elements of the regional economy. Businesses in remote communities often serve as key hubs for freight, fuel, and essential goods; when these operations are disrupted, economic recovery can be slow and costly.

In alignment with HUD's established methodology for estimating economic impacts when direct data is unavailable, DCCED estimates the total unmet economic needs as 10% of the total unmet housing need. Applying this approach to the DR-4730-AK disaster yields an estimated total unmet economic need of $7,026,087. This estimate reflects the recognition that economic revitalization is integral to long-term recovery in the Lower Yukon region, where interconnected housing, infrastructure, and small business systems underpin community resilience and stability.

[39] Alaska Department of Labor and Workforce Development, as reported in the 2011 AVCP CEDS.

2.4. 2024 City and Borough of Juneau Flooding (DR-4836-AK)

2.4.1. Unmet Housing Needs

Overview

This unmet housing needs analysis provides a comprehensive evaluation of the scale and distribution of housing-related damages resulting from the 2024 glacial lake outburst flood (GLOF) in the City and Borough of Juneau (CBJ). It assesses the extent of assistance delivered to affected communities and identifies the remaining unmet needs across the region. Additionally, this section offers a detailed profile of CBJ's housing landscape, which will guide program allocation decisions.

The area impacted by the 2024 flood is limited to CBJ, which, in addition to facing an annual risk of this type of flooding, also faces a persistent lack of affordable housing to meet growing needs.

This analysis draws on data from FEMA's Individuals and Households Program and applies HUD's disaster loss multipliers to accurately reflect the severity of impacts and the true costs of recovery. It considers the needs of both owner- and renter-occupied households, encompassing real and personal property damage, occupancy types, assistance received, and financial gaps due to underinsurance or ineligibility for aid.

The unmet housing needs assessment also incorporates data on public and assisted housing, unhoused populations and shelters, household income demographics, and local housing market conditions. These factors have all informed DCCED's allocation decisions to ensure safe and affordable housing for CBJ.

CDBG-DR funds will be used to restore, protect, and strengthen housing and infrastructure in this vulnerable city. Based on this needs assessment, DCCED proposes local housing recovery and infrastructure activities that address both urgent and long-term needs, aiming to reduce future hazard risks and ensure lasting housing stability for residents.

Methodology

Damage Loss Multipliers

DCCED reviewed FEMA's Individuals and Households (IHP) Program - Valid Registrations[40] Dataset as of October 15, 2025, to estimate the total loss for households that applied for FEMA IA assistance. For each household determined to have a housing need, an estimated loss multiplier was calculated using the average Housing Assistance (HA) awarded amount for homeowners and renters, HUD guidance in the Federal Register, and FEMA HA maximums within three categories:

1. HUD Damage Category Application of Major-Low to Severe
2. HUD Damage Category Application of Minor-Low to Minor-High
3. FEMA IHP Applications without Inspection

[40] (3/1/25) - https://www.fema.gov/openfema-data-page/individuals-and-households-program-valid-registrations-v1

The calculations for these three categories are separated by homeowners and renters and then totaled by disaster to help identify the needs of each category and show the total impact of each disaster. HUD-identified damage categories for disasters in 2023-2024 are based on FEMA IHP data on housing unit damage as of November 20, 2024.

FEMA IHP Inspected HUD Categories - Homeowners			
Damage Category	**Amount of FEMA Inspected Real Property Damage**	**Amount of Flooding on the 1st Floor**	**Amount of FEMA Inspected Personal Property Damage**
Minor-Low	<$3,000		<$2,500
Minor-High	$3,000 to $7,999		$2,500 to $3,499
Major-Low	$8,000 to $14,999	1 to 3.9 feet	$3,500 to $4,999
Major-High	$15,000 to $28,800	4 to 5.9 feet	$5,000 to $9,000
Severe	>$28,800 or destroyed	6 or more feet	>$9,000 or destroyed

FEMA IHP Inspected HUD Categories - Renters		
Damage Category	**Amount of FEMA Inspected Personal Property Damage**	**Amount of Flooding on the 1st Floor**
Minor-Low	<$1,000	
Minor-High	$1,000 to $1,999	
Major-Low	$2,000 to $3,499	1 to 3.9 feet
Major-High	$3,500 to $7,500	4 to 5.9 feet
Severe	>$7,500 or destroyed	6 or more feet

Table 29: HUD-Defined Damage Categories

- Major-Low, Major-High, and Severe: For owner-occupied housing within the Major-Low, Major-High, and Severe damage categories, the loss multiplier was provided by HUD in the January 13, 2025, Federal Register Notice (90 FR 1754) and is based on analysis of FEMA and Small Business Administration (SBA) loss verification. For renter-occupied housing with damage categories of Major-Low, Major-High, and Severe, the loss multiplier is the maximum HA award amount at the time of the disaster.
- Minor-High and Minor-Low: For owner-occupied and tenant-occupied housing within the Minor-Low and Minor-High damage categories, the count of applications was divided by the overall HA awarded amount per damage category and rounded up to the nearest whole dollar value.
- No Inspection: FEMA IA applicants who have not received an inspection are categorized as "No Inspection." Without an inspection of the property confirming that there was no real property or personal property damage, DCCED used the Minor-Low multiplier to estimate the total loss.

The following tables indicate multipliers for the categories of applicants to the FEMA IA program in the City and Borough of Juneau.[41]

Juneau Owner-Occupied Loss Multiplier – Major-Low, Major-High, and Severe		
Damage Category	**Site-Built Home Loss Multiplier**	**Mobile Home Loss Multiplier**
Severe	$64,513	$134,834
Major-High	$57,856	$98,463
Major-Low	$47,074	$77,058
Minor-High	$8,056	
Minor-Low	$4,664	
No Inspections	$4,664	

Juneau Tenant-Occupied Loss Multiplier – Major-Low, Major-High, and Severe		
Damage Category	**Site-Built Home Loss Multiplier**	**Mobile Home Loss Multiplier**
Severe	$42,500	$42,500
Major-High	$42,500	$42,500
Major-Low	$42,500	$42,500
Minor-High	$8,056	
Minor-Low	$4,664	
No Inspection	$4,664	

Table 30: Juneau Owner- and Tenant-Occupied Loss Multipliers

Resilience Multiplier

DCCED is compelled to plan for the future by ensuring that any recovery construction incorporates features that make housing resilient to hazards and reduce the government's liability for future disasters. Therefore, recovery need estimates include a "resilience multiplier" to account for increased costs of building back stronger, similar to the approach used to estimate recovery costs following Typhoon Merbok.[42] HUD does not have a fixed, mandated formula for calculating resiliency costs in CDBG-DR construction projects. For planning purposes, this analysis applies a resiliency formula of 30% of the base construction cost estimate. This is consistent with HUD's Federal Register Notice (78 FR 69104, November 18, 2013) following Hurricane Sandy, which established a calculation of "resiliency" to be 30% of the total basic cost to rebuild structures to pre-storm conditions. This "resiliency" allocation is calculated based on the relative share of needs HUD estimated are required to rebuild to a higher standard consistent with CDBG program requirements. The

[41] This is a conservative estimate. The State of Alaska assumes this amount is much higher than the minor low average amount.
[42] CDBG-DR Public Action Plan 2022 Typhoon Merbok, Alaska Department of Commerce, Community, and Economic Development, 2025, https://www.commerce.alaska.gov/web/Portals/4/pub/CDBG-Merbok/Draft%20State%20of%20Alaska%202022%20Typhoon%20Merbok%20CDBG-DR%20Action%20Plan.pdf

housing repair unmet need estimate is combined with the resiliency need to calculate the total unmet housing needs estimated to achieve long-term recovery.

Area Cost Factor

To account for regional constraints on labor and materials in the City and Borough of Juneau, DCCED applied a Department of Defense Area Construction Cost Factor[43] to the recovery estimate. According to the US Department of Defense, construction costs in Alaska are higher than in other parts of the country on average due largely to higher labor, shipping, and supply costs. Area Cost Factors are publicly available and updated annually by the Department of Defense for all US states and territories and take into account weather, seismic activity, labor availability, contractor overhead and profit, logistics and mobilization, and local labor productivity versus the US standard. The Area Cost Factor (ACF) below indicates that construction in the region is over two times the national average. This ACF was applied to total the loss estimate with resilience included.

State	Geography	Area Cost Factor
Alaska	Juneau	2.33

Table 31: Area Cost Factor for Census Area Including Juneau REAA
Source: US Army Corps of Engineers

Using this method, DCCED estimates the need for housing recovery in Juneau to be $25,527,198, with 91% of that attributed to the recovery of owner-occupied households. While FEMA IA housing awards provided much-needed immediate recovery aid following the disaster, DCCED's analysis indicates that only 14% of the true housing recovery need is met through FEMA alone. The FEMA recovery grant program maximum is established by the federal government, and homeowners can receive up to $42,500 to repair their homes, which is explicitly for the purpose of making a house habitable and enabling occupants to return home, but this amount is unlikely to fund full recovery for the most severely impacted structures. Other sources of assistance, such as state disaster assistance and SBA loans, are not included in this analysis and will be added when data is available. However, considering the magnitude of need compared to aid, there will be significant housing needs in the region that will not be met through other sources.

[43]UFC 3-701-01 DOD FACILITIES PRICING GUIDE (Revision Date: 07-25-2025). The Area Cost Factor was sourced from https://www.wbdg.org/dod/ufc/ufc-3-701-01

Juneau Unmet Housing Need	
Housing Need Identified - Owner	$8,985,352
Housing Need Identified - Renter	$761,408
Resilience Multiplier	30%
Area Cost Factor	2.33
Total Housing Need Identified	**$29,522,937**
Disaster Award and Funding Sources	
FEMA Individual Assistance - Owner	$2,069,130
FEMA Individual Assistance - Renter	$35,210
SBA Disaster Loans	-
National Flood Insurance Program	$1,891,400
Total Assistance	**$3,995,740**
Unmet Need Calculation	
Housing Unmet Need - Owner	$23,256,103
Housing Unmet Need - Renter	$2,271,095
Total Unmet Need	**$25,527,198**

Table 32: Overall Unmet Housing Needs, Juneau

Household Damage by Severity

DCCED will allocate 100% of the Juneau grant allocation within CBJ, where all documented impacts from the disaster occurred.

Throughout CBJ, 279 households applied for assistance through the FEMA Individuals and Households Program, and 209 homes were found to be impacted by the disaster (inspected with damage). Of all applicants, 49% sustained severe or major damage as defined by HUD.

The table below summarizes these housing impacts in detail and provides information about disaster damages by severity and the most impacted areas.

Owner- and Tenant-Occupied Damaged Properties by Damage Category and HUD MID		
Damage Category	HUD MID	
	Estimated Loss	%
No FVL	70	25.1%
Minor-Low	31	11.1%
Minor-High	42	15.1%
Major-Low	68	24.4%
Major-High	55	19.7%
Severe	13	4.7%
Total	279	100.0%

Table 33: FEMA Individual Assistance by Damage Category

Owner-Occupied Housing

The information in the table below outlines the total number of owner-occupied properties with FEMA-documented damages caused by the 2024 GLOF disaster. Throughout the area of impact, 187 owner-occupied homes sustained damage, with nearly 65% sustaining major or severe impacts.

Owner-Occupied Damaged Properties by Damage Categories and HUD MID		
Damage Category	HUD MID	
	# of HH	%
Minor-Low	27	14.4%
Minor-High	40	21.4%
Major-Low	59	31.6%
Major-High	51	27.3%
Severe	10	5.3%
Total	187	100.0%

Owner-Occupied Damaged Properties by Damage Categories and HUD MID (Source: FEMA IA)

Table 34: FEMA Individual Assistance, Owner-Occupied

Renter-Occupied Housing

19% of applicants for disaster assistance were renters, which is less than the overall housing occupancy makeup of CBJ, where 37% of households are tenants, according to Census Bureau data. This data suggests that areas impacted by the flooding had greater shares of owner-occupied housing compared to the rest of CBJ. Still, of 22 renter households with verifiable damage, 16 were severely impacted and are not known to have insurance coverage or other assistance outside of FEMA IA.

Tenant-Occupied Damaged Properties by Damage Categories and HUD MID		
Damage Category	HUD MID	
	# of HH	%
Minor-Low	4	18.2%
Minor-High	2	9.1%
Major-Low	9	40.9%
Major-High	4	18.2%
Severe	3	13.6%
Total	22	100.0%

Tenant-Occupied Damaged Properties by Damage Categories and HUD MID (Source: FEMA IA)

Table 35: FEMA Individual Assistance, Tenant-Occupied

Applications by Housing Type

The following table shows FEMA IA applicants by housing type. The vast majority of impacted homes were single-family, site-constructed houses. Only about 1.9% of applicants lived in apartments, indicating that a large share of renters lived in standalone homes or duplexes.

Impacted Housing Types and FEMA IA Estimated Loss				
Residency Type	# of HH	% of HH	Estimated Loss	% of Estimated Loss
Apartment	5	1.8%	$171,114	0.9%
Assisted Living Facility	2	0.7%	$142,860	0.8%
House/Duplex	260	93.2%	$22,300,988	93%
Mobile Home	7	2.5%	$793,316	4.4%
Other	2	0.7%	$14,127	0.0%
Townhouse	3	1.1%	$203,500	0.7%
Total	279	100.0%	$23,625,906	100.0%

Impacted Housing Types and Estimated Loss (Source: FEMA IA)

Table 36: FEMA Individual Assistance Applications by Housing Type

Insurance Payments

DCCED analyzed insurance information provided within household FEMA applications. Of 187 homes that were found to have been damaged by the disaster, 19% were covered by flood insurance. Based on the DCCED analysis of NFIP information, those homeowners received $1,891,400 in payouts as a result of this disaster. As for homeowners' insurance, which does not cover flood damage, 185 households, or 89%, were covered according to FEMA IA applicant data. Despite some homeowners carrying flood insurance, the majority of homes impacted by flood were not covered and are likely to need additional resources for full recovery.

Impacted Households by Insurance Type		
Insurance Type	**# of HH**	**% of HH**
Homeowners Insurance	185	88.5%
Flood Insurance	40	19.1%
Impacted Households	209	100%

Impacted Households by Insurance Type (Source: FEMA IA)

Table 37: Flood Insurance Analysis

The Juneau Economic Development Council (JEDC) conducted a survey [44] of households and businesses affected by the disaster. Of 290 flood-affected properties, 76 property owners responded, for a response rate of 29%. Approximately three-quarters of the respondents indicated that they did not carry flood insurance. Among those who received flood insurance payouts, the average payout covered was $84,921, covering approximately 76% of damage incurred by these covered property owners, on average.

Household Income and LMI Populations

DCCED analyzed FEMA applications by income level and occupancy type. The disaster affected a broad range of income groups, with 36% of impacted households making between $60,000 and $120,000, and 31% making between $30,000 and $60,000. Households making less than $30,000 and more than $120,000 made up 15% and 18% of all households impacted, respectively.

Number of Households by Gross Income and Occupancy Type										
Occupancy	**Less than $30,000**		**$30,001 $60,000**		**$60,001 $120,000**		**Greater than $120,000**		**Total**	
	# of HH	**% of Total**	**# of HH**	**% of Total**	**# of HH**	**% of Total**	**# of HH**	**% of Total**	**# of HH**	**% of Total**
Owner	25	9.0%	68	24.4%	91	32.6%	50	17.9%	234	83.9%
Renter	17	6.1%	17	6.1%	10	3.6%	1	0.4%	45	16.1%
Total	42	15.1%	85	30.5%	101	36.2%	51	18.3%	279	100%

Number of Households by Gross Income and Occupancy Type (Source: FEMA IA)

Table 38: FEMA Individual Assistance by Income and Housing Occupancy

HUD makes available data on low- and moderate-income (LMI) populations. Under the requirements for the CDBG-DR grant, the State of Alaska must ensure that a minimum of 70% of grant funds benefit low- or moderate-income persons. Overall in CBJ, 38% of the population meets this definition, which is much lower than the Lower Yukon River Area and lower than the state average. Still, there are pockets of high LMI populations within CBJ. DCCED, in coordination with CBJ, will continue assessing the needs of LMI populations to ensure that efforts funded through the CDBG-DR grant prioritize low- and moderate-income households.

[44] Draft of JEDC Research Note: Results of the Mendenhall Glacier Outburst Survey, Juneau Economic Development Council, 09/03/25, Link will be made available when the final document is published.

	LMI Population	Total Population	LMI %
State of Alaska	301,055	709,940	42%
Juneau City and Borough	12,080	31,570	38%

Table 39: LMI Populations

LMI Population	Census Tract	LMI Population	Total Population	LMI %
Juneau	021100004001	1,015	1,350	75.20%
Juneau	021100005003	395	705	56.00%
Juneau	021100005002	815	1,475	55.30%
Juneau	021100003001	1,385	2,600	53.30%
Juneau	021100006002	2,250	4,380	51.40%
Juneau	021100004003	535	1,110	48.20%
Juneau	021100002002	480	1,010	47.50%
Juneau	021100004002	605	1,285	47.10%
Juneau	021100002005	795	1,760	45.20%
Juneau	021100005001	440	1,060	41.50%
Juneau	021100001002	540	1,500	36.00%
Juneau	021100003004	240	770	31.20%
Juneau	021100002003	485	1,615	30.00%
Juneau	021100002001	320	1,165	27.50%
Juneau	021100004004	285	1,150	24.80%
Juneau	021100003003	265	1,265	20.90%
Juneau	021100006001	430	2,070	20.80%
Juneau	021100003002	155	850	18.20%
Juneau	021100001001	360	2,045	17.60%
Juneau	021100002004	150	1,205	12.40%
Juneau	021100001003	135	1,200	11.30%

Table 40: LMI Populations by Census Area

Disaster Housing Survey

The JEDC survey responses have been analyzed and provide valuable insight into the impacts of the disaster and true costs experienced by households. For example, nearly two-thirds of property owners who responded indicated that the cost and availability of supplies were challenges in their recovery process, providing evidence that costs of labor and supplies are elevated and may be hindering recovery.

Figure 18: Please describe any challenges you've had with repairs to your property. (Open Response)

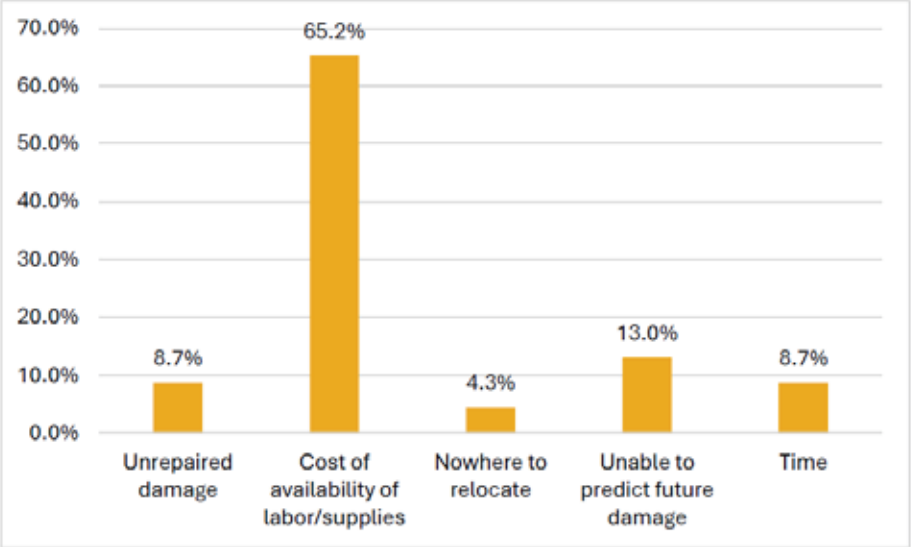

Figure 5: JEDC Survey Response (Question 18)
Source: Results of Mendenhall Glacier Outburst Flood Survey, Juneau Economic Development Council (JEDC), September 3, 2025

The following response shows other disaster-related costs or challenges households faced. Notably, an overwhelming percentage of respondents (94% were homeowners) said that declining home equity was an indirect cost of the disaster. To the extent that declining equity reduces opportunities for homeowners to finance home rehabilitation through home equity loans, this demonstrates another way in which homeowners are experiencing or will experience limitations in fully recovering from the impacts of the flooding event.

Figure 19: Please include other out-of-pocket costs that we haven't already addressed in the questions above and provide some details. Examples could include additional childcare costs, water/mold testing, moving costs, loss of equity, etc.

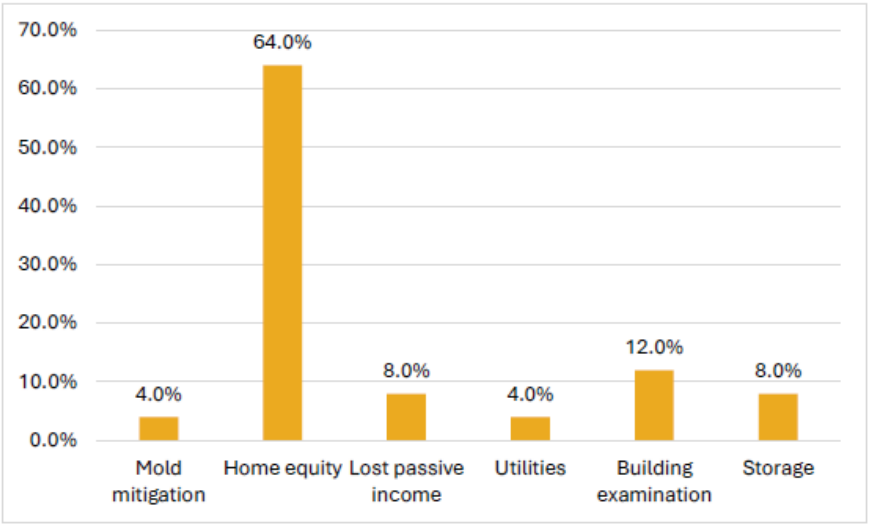

Figure 6: JEDC Survey Response (Question 19)
Source: Results of Mendenhall Glacier Outburst Flood Survey, Juneau Economic Development Council (JEDC), September 3, 2025

Homeless Populations and Emergency and Interim Shelters

The homeless Continuum of Care (CoC) system is built around four main components: emergency shelters, transitional housing, rapid rehousing, and permanent supportive housing. In Alaska, this system includes 32 emergency shelters offering 1,031 beds, 15 transitional housing programs with 270 beds, 19 rapid rehousing programs supporting 297 beds, and 17 permanent supportive housing facilities providing 439 beds. Across these facilities, specific resources are set aside for vulnerable groups: 12 beds for veterans and their families, 135 for individuals experiencing chronic homelessness, 333 for families, and 24 for unaccompanied youth. Altogether, the Alaska CoC operates 83 facilities that not only provide housing but also connect people to essential supportive services. These services range from case management—tailored to the level of need—to housing placement, employment assistance, medical care, and access to income supports, such as public benefits and Social Security.[45]

The table below shows that in the 2025 Point-in-Time (PIT) Count, which is an annual census of people experiencing homelessness, the City and Borough of Juneau CoC identified 725 individuals meeting the definition of homelessness in Juneau. Most people were in emergency shelters (377), and 126 were in transitional housing programs.

Scale of Data	Emergency Shelter	Transitional Housing	Permanent Supportive Housing	Total Known Homeless
City and Borough of Juneau	377	126	98	725

Table 41: Point-in-Time Count by Type of Shelter in Juneau
Source: Alaska Community Dashboards, Institute for Community Alliances, 10/2024- 09/2025, https://icalliances.org/alaska-communities-dashboard

In Juneau, the past year has brought a significant rise in homelessness. Despite CBJ's efforts to expand shelter space, add transitional housing, and grow supportive housing programs, the number of people without stable homes has surged. The annual HUD Point-in-Time Count revealed a 48% increase between 2023 and 2024, with the unhoused population climbing from 220 to 326 individuals. In CBJ, the effort to build and preserve housing faces a web of interconnected challenges that make progress difficult. The financial feasibility gap is wide, leaving many projects unable to move forward, and the small number of local developers lacks the capacity to take on the scale of work that is needed. CBJ's rugged terrain, environmental constraints, and exposure to natural hazards further limit the already scarce supply of land that can be developed. Geographic isolation compounds the problem, driving up the cost of transporting both materials and labor, while the absence of nearby communities within commuting distance reduces flexibility in the workforce. Additionally, Juneau cannot apply directly for HUD funding, and its land use code remains outdated, favoring single-use zoning, large lots, and low-density development patterns that no longer align with CBJ's urgent housing needs.

[45] Consolidated Housing and Community Development Plan for State of Alaska Five-Year Plan & Annual Action Plan, State Fiscal Years 2026-2023, Alaska Finance and Housing Corporation, https://www.ahfc.us/pros/references/plans

The market itself has been strained by the conversion of roughly 600 homes into short-term rentals over the past five years, shrinking the pool of available long-term housing. Much of the existing housing stock is aging and obsolete, requiring replacement sooner rather than later. Taken together, these pressures have created a severe and immediate housing shortage. The need will grow with the homeporting of a new US Coast Guard icebreaker in Juneau, expected to bring at least 190 enlisted personnel and their families to the area within the next two to five years, adding another layer of demand to an already overburdened system.[46]

Data from the Alaska Homeless Management Information System shows that, between August 2023 and July 2024, 807 different people sought help through Juneau's homeless services. More than half identified as American Indian, Alaska Native, or Indigenous, and half reported living with a disabling condition. Among them were 191 individuals experiencing chronic homelessness, serving as a reminder of how deeply rooted the crisis has become.

For a community of just 32,000 residents, these figures indicate an extreme need for shelter and housing resources. Even as new housing resources come online, the need continues to outpace what is available, leaving Juneau grappling with one of the most pressing social issues in its recent history.[47]

Public Housing (Including HUD-Assisted Housing) and Other Affordable Housing

HUD's Multifamily Housing property portfolio consists primarily of rental housing properties with five or more dwelling units, such as apartments or townhouses, but can also include nursing homes, hospitals, elderly housing, mobile home parks, retirement service centers, and occasionally vacant land. HUD provides subsidies and grants to property owners and developers in an effort to promote the development and preservation of affordable rental units for low- and moderate-income populations and those with special needs, such as the elderly and disabled. There is no data at this time indicating any physical damage to Housing Choice Voucher or Low-Income Housing Tax Credit (LIHTC) properties.

Management Org.	No. of Units	No. of Units Assisted
MAD/TIFF Development	64	64
MAD/TIFF Development	52	52
St. Vincent de Paul Society Diocesan Council of Southeast Alaska	24	24
Tlingit-Haida Regional Housing Authority	8	8
Total	148	148

Table 42: List of Multifamily HUD-Assisted Housing in the City and Borough of Juneau
Source: HUD Housing Data, 10/2025

[46] Grants, PRO Housing, City and Borough of Juneau, https://juneau.org/wp-content/uploads/2024/09/FY24-HUD-PRO-Housing_CBJ-Application-Narrative-final.pdf
[47] Grants, PRO Housing, City and Borough of Juneau, https://juneau.org/wp-content/uploads/2024/09/FY24-HUD-PRO-Housing_CBJ-Application-Narrative-final.pdf

Public housing was created to ensure safe and affordable rental options for qualifying low-income households, seniors, and individuals with disabilities. These housing units vary widely, ranging from single-family homes spread throughout communities to large apartment complexes designed for elderly residents. The US Department of Housing and Urban Development (HUD) provides federal funding to local Public Housing Agencies (PHAs), which oversee and operate these properties at rents residents can reasonably pay. At the time that this Action Plan was issued, there was no available data on which PHAs had been affected or how many assisted housing units had sustained damage from this GLOF disaster.

City/Municipality	Total # of PHAs	Total PHAs Damaged	# of Units Damaged	Remaining Unmet Need
N/A	0	0	0	$0.00
Total	0	0	0	$0.00

Table 43: PHAs in the City and Borough of Juneau with Available and Occupied Units
Source: Public Housing Authorities, HUD Open Data Site

Although HUD's Open Data Site does not identify any PHAs in the area, it is important to note that the Alaska Housing Finance Corporation owns and operates Mountain View (senior housing) and Cedar Park, Geneva Woods, and Riverbend (family housing) in CBJ.

County/REAA	Total Housing Choice Vouchers	Total Impacted Housing Choice Voucher Units	Total LIHTC Units	Total Impacted LIHTC Units	Total Public Housing Dwelling Units	Total Impacted Public Housing Dwelling Units
City and Borough of Juneau	318	N/A	458	N/A	206	N/A

Table 44: HUD-Assisted Housing in Juneau Impacted by Disaster
Source: LIHTC Database Access, HUDuser.gov, https://www.huduser.gov/lihtc/index.html, Dataset/Assisted Housing: National and Local, Huduser.gov, https://www.huduser.gov/portal/datasets/assthsg.html

At the time of the development of this Action Plan, no data indicated that physical damage was done to Housing Choice Voucher or LIHTC properties. Additionally, no data indicated that any program participants were displaced as a result of the disaster.

Housing Market Conditions

The housing situation in Juneau is strained due to very low vacancy rates. According to the 2023 Alaska Housing Finance Corporation (AHFC) survey of 1,115 rental units in the City and Borough of Juneau (CBJ), the rental vacancy rate stands at just 4%. Data from the American Community Survey (ACS) shows a nearly identical figure of 3.6%. Ownership vacancies are even tighter, dropping from 1.2% in 2020 to only 0.6% in 2022. Typically, a vacancy rate of around 5% is considered balanced, allowing households to move more

freely as part of normal relocation patterns. Anything below that threshold signals a shortage, where demand exceeds available housing. In Juneau, vacancy rates under 5% indicate that future housing needs cannot be met without new construction, since the existing market has no surplus capacity. Despite projections of a population decline between 2022 and 2032, Juneau faces an urgent need for at least 400 additional housing units. Roughly 3% of households are currently overcrowded, as defined by HUD. Population forecasts alone do not capture the full picture of housing demand, since families often double or triple up when affordable options are scarce. Overcrowding disproportionately affects lower- and middle-income households, which are left with few choices other than living in cramped conditions due to the lack of reasonably priced housing.[48]

Item	Low Income	Medium Income	High Income
Annual Household Income	Less than $72,000	Between $72,000 and $108,000	Greater than $108,000
Housing Need: New Units[2]	312	88	[3]
Affordable Monthly Housing Costs[4]	$1,800 or less	$1,800 to $2,700	More than $2,700
Ownership/Rental	131/181 units or 55%/45%	62/27 units or 70%/30%	See 'Housing Need: New Units' footnote or 78%/22%

Table 45: CBJ Housing Need and Affordability by Income Group
Source: NW Douglas Subarea Study Housing Need and Residential Financial Feasibility Findings, City and Borough of Juneau and NW Douglas Sub Area Planning Team, 07/2024, https://juneau.org/wp-content/uploads/2024/08/NW-Douglas-Sub-Area-Study-Housing-Need-and-Residential-Financial-Feasibility-Findings.pdf

Income patterns in Juneau show clear signs of a decline in middle-income households. At present, 39% of households earn below 80% of the area's median income—less than $72,000 per year. On the other end of the spectrum, half of all households bring in 120% of the median or more, meaning $108,000 or higher. That leaves only 11% of households in the middle-income bracket, earning between $72,000 and $108,000, or 80% to 120% of the median. Most of the demand for new housing in Juneau comes from low- and middle-income families. About 312 additional units are needed for households earning at or below 80% of the median. Overcrowding accounts for the largest share of measurable housing need, and these households are most likely concentrated among lower- and middle-income groups. Higher-income families generally have the means to avoid overcrowded living situations by securing other housing options, which reinforces the conclusion that the shortage most heavily impacts those with fewer resources.[49]

[48] NW Douglas Subarea Study Housing Need and Residential Financial Feasibility Findings, City and Borough of Juneau and NW Douglas Sub Area Planning Team, 07/2024, https://juneau.org/wp-content/uploads/2024/08/NW-Douglas-Sub-Area-Study-Housing-Need-and-Residential-Financial-Feasibility-Findings.pdf
[49] Although official forecasts show no population growth, projections do not account for housing demand among higher-income households. In reality, the presence of unfilled jobs in Juneau—particularly in healthcare—suggests that additional housing at higher income levels will be necessary. Without suitable housing options, employers may struggle to attract and retain professionals needed to fill critical positions.
[4] Assuming housing is 30% of gross income

2.4.2. Unmet Infrastructure Needs

Disaster Damage and Impacts

Overview

The annual glacial lake outburst flood (GLOF) in Juneau's Mendenhall Valley in August 2024 caused widespread infrastructure impacts as the Mendenhall River reached a record crest of 15.99 feet. Floodwaters inundated residential streets, with Killewich Drive submerged under two feet of water and other roads, such as Rivercourt Way and Lakeview Court, seeing about 1.5 feet. Riverside Drive near Tournure Street had roughly one foot of flooding, disrupting local traffic and emergency access. The flooding prompted voluntary evacuations and the opening of emergency shelters, signaling significant strain on transportation routes and public safety systems.[50]Beyond roadways, the flood overwhelmed stormwater infrastructure, as water backed up through drains and spread into yards and intersections. The CBJ reported damage to water treatment systems due to the unprecedented velocity and volume of water.[51]

FEMA Public Assistance

The unmet infrastructure needs assessment is based primarily on FEMA Public Assistance (PA) data, which captures the estimated costs to repair or replace damaged public infrastructure and facilities following a federally declared disaster. FEMA's PA program assists state, local, territorial, and Tribal (SLTT) governments and certain private nonprofit (PNP) organizations with funding to help communities recover from major disasters or emergencies. In addition to supporting recovery, the PA program also funds hazard mitigation measures that protect damaged infrastructure from future impacts.

When a disaster exceeds the capacity of SLTT governments to respond, a joint Preliminary Damage Assessment (PDA) is conducted with FEMA to evaluate the scale and severity of damages. Based on PDA findings, a governor or tribal chief executive may request a presidential major disaster declaration. Once approved, FEMA works with eligible applicants to determine facility, work, and cost eligibility and obligates funds for approved recovery projects under specific categories of work.

FEMA PA projects are classified as either emergency work or permanent work:

- Emergency work addresses immediate threats to life and property and includes:
  - **Category A:** debris removal
  - **Category B:** emergency protective measures
- Permanent work involves restoring damaged facilities and includes:
  - **Category C:** roads and bridges
  - **Category D:** water control facilities
  - **Category E:** buildings and equipment
  - **Category F:** utilities
  - **Category G:** parks, recreational, and other facilities

[5] NW Douglas Subarea Study Housing Need and Residential Financial Feasibility Findings, City and Borough of Juneau and NW Douglas Sub Area Planning Team, 07/2024, https://juneau.org/wp-content/uploads/2024/08/NW-Douglas-Sub-Area-Study-Housing-Need-and-Residential-Financial-Feasibility-Findings.pdf

[50] Annual glacial outburst flooding affects Juneau's Mendenhall Valley, August 6, 2024. https://alaskapublic.org/news/2024-08-06/annual-glacial-outburst-flooding-affects-juneaus-mendenhall-valley.

[51] Governor Mike Dunleavy, Request for Major Disaster Declaration Letter, September 19, 2024.

For purposes of the CDBG-DR unmet infrastructure needs assessment, only permanent work categories (C through G) are considered, as these categories represent longer-term recovery and rebuilding needs consistent with HUD's definition of eligible infrastructure activities.

The total FEMA project cost represents the estimated expense to restore each facility to its pre-disaster condition. Under the Public Assistance program, FEMA typically funds 75% of eligible project costs, while the remaining 25% represents the required local or non-federal cost share. For this analysis, the 25% local share is considered the base measure of unmet need for Juneau, representing costs not covered by FEMA assistance.

PA Category	Best Available Project Cost	Best Available Federal Cost Share	Non-Federal Cost Share
C: Roads and Bridges View Dr Road – Repair Emily Way Pipe Disconnect and Sinkhole	$152,781.00	$114,585.75	$38,195.25
D: Water Control Facilities Embankment Armoring - Antler Way Embankment Armoring - Rivercourt Way	$533,192.45	$399,894.34	$133,298.11
G: Parks, Recreational Facilities, and Other Items Mendenhall Pedestrian Bridge Abutment Repair Walking Trail Alternate Project	$517,436.12	$388,077.16	$129,358.96
Total	$1,203,409.57	$902,557.25	$300,852.32

Table 46: FEMA Public Assistance Program Permanent Work Categories C-G
Source: City and Borough of Juneau, AK, Best Available FEMA Public Assistance Project Data, October 24, 2025

Hazard Mitigation Grant Program

In addition to the Public Assistance program, FEMA made Hazard Mitigation Grant Program (HMGP) funding available to support long-term risk reduction projects following DR-4836-AK. HMGP provides grants to state, local, territorial, and Tribal governments to implement measures that reduce future disaster losses and enhance community resilience. For the purposes of this analysis, HMGP projects are included as part of the overall unmet infrastructure needs assessment.

	Mitigation Dollars Available	Federal Cost Share	Non-Federal Cost Share
Hazard Mitigation Grant Program	$746,830.00	$560,122.50	$186,707.50

Table 47: Hazard Mitigation Grant Program Available Assistance
Source: https://www.fema.gov/api/open/v2/HazardMitigationGrantProgramDisasterSummaries, October 26, 2025

Total Unmet Infrastructure Need

To calculate the total unmet infrastructure need for Juneau, DCCED used the combined non-federal share of the PA and HMGP assistance and applied a cost escalation factor for resilience. In alignment with HUD precedent and the methodology used in the Typhoon Merbok CDBG-DR Action Plan, a 30% resiliency cost is applied to the base infrastructure repair cost. This reflects the estimated additional investment needed to rebuild infrastructure to a more resilient standard, consistent with HUD's Federal Register guidance (78 FR 69104, November 18, 2013) following Hurricane Sandy. Resilience improvements make facilities less vulnerable to future disasters and may include relocating critical infrastructure outside of flood-prone areas, hardening utility systems, or integrating nature-based design elements that reduce long-term risk. The base unmet infrastructure need is calculated by adding the 25% local share and the 30% resilience component.

The resulting figure reflects the non-federal share and resilience investment and represents the total estimated unmet infrastructure need of $1,072,631.69 for Juneau under DR-4836-AK, as detailed in Error! Reference source not found.Table 49.

Assistance Type	Best Available Project Cost	Best Available Federal Cost Share	Non-Federal Cost Share	Resiliency Multiplier (30%)	Total Unmet Need: Non-Federal Cost Share + Resilience
Public Assistance	$1,203,409.57	$902,557.25	$300,852.32	$361,022.87	$661,875.19
HMGP	$746,830.00	$560,122.50	$186,707.50	$224,049.00	$410,756.50
Total	**$1,950,239.57**	**$1,462,679.75**	**$487,559.82**	**$585,071.87**	**$1,072,631.69**

Table 48: Total Unmet Infrastructure Need, Adjusted for Resilience and Area Cost Factor

Pre-Disaster Infrastructure Conditions

Recurring Glacial Lake Outburst Flooding

Juneau faces near-annual glacial lake outburst flooding events originating from Suicide Basin, a side basin of the Mendenhall Glacier. These floods occur when meltwater and rain accumulate behind an ice dam and suddenly release, sending torrents through the Mendenhall River Valley. Since 2011, the basin has drained multiple times per year, but recent events have been unprecedented in scale. The City and Borough of Juneau has been in close coordination with federal, state, and local government agencies, the local Tribal government, universities and scientists, nonprofit community groups, and individuals to limit the damage that may result from future floods. Paramount to these efforts is the HESCO Barrier infrastructure project.

The HESCO Barrier Phase 1 Project in Juneau was launched to address the growing threat of glacial lake outburst floods from the Mendenhall Glacier, which have intensified over the past three years. These floods pose significant risks to hundreds of homes, thousands of residents, and critical community infrastructure. To provide immediate protection while long-term solutions are developed, the City and Borough of Juneau installed HESCO barriers along approximately two miles of the Mendenhall River's most vulnerable banks. The work included site preparation, bank armoring, barrier placement, drainage improvements, and filling the barriers to withstand floodwaters up to 18 feet high. A subsequent extension, Phase 1A, added 3,000

feet of barriers to protect schools, a library, and recreational facilities. The project was guided by hydrological and hydraulic analysis and technical input from the US Army Corps of Engineers (USACE), ensuring that the barriers would not create adverse upstream or downstream impacts. Funded through a Local Improvement District process, Phase 1 was completed before the 2025 flood season, with additional phases planned to expand protection to other high-risk areas in the coming years.

Juneau will receive funding for Phase II of the HESCO Barrier project from USACE.

Capital Improvement Program

The City and Borough of Juneau's Capital Improvement Program (CIP)[52] is a strategic six-year plan that identifies, prioritizes, and budgets for major public infrastructure projects across the community. The CIP guides investments in transportation, utilities, public facilities, parks, and hazard mitigation, ensuring that Juneau's infrastructure meets current and future needs. The current CIP addresses "unscheduled funding" for projects that represent major infrastructure needs and have been identified as priorities but do not yet have committed funding or a set timeline for completion. These projects span a wide range of community needs, including large-scale public safety communication infrastructure, harbor and dock electrification, habitat restoration and flood resilience, recreational trail and park improvements, and sediment control for local waterways. Examples include the procurement of dock electrification transformers, upgrades to public safety radio systems, restoration grants for glacial outburst flood mitigation, and major harbor facility improvements. The nature of these projects is typically strategic, addressing long-term resilience, modernization, and capacity expansion for Juneau's transportation, utilities, recreation, and environmental protection systems. The total amount of unscheduled funding requested for these projects (excluding airport-related unscheduled funding) is $82,704,000.

Together, these ongoing and planned investments underscore the critical importance of building resilient infrastructure in Juneau. Both targeted protective measures, like the HESCO Barrier Project, and broader capital planning demonstrate a commitment to safeguarding residents, public facilities, and essential services. Strengthening and modernizing infrastructure not only reduces the risk of future disaster impacts but also enhances long-term community stability, economic vitality, and environmental stewardship.

2.4.3. Unmet Economic Revitalization Needs

Overview

The August 2024 glacial lake outburst flood (GLOF) in Juneau caused substantial economic disruption across the community, extending well beyond physical damage to homes and infrastructure. This section analyzes the broader economic impacts of the disaster, including effects on employment and wages, business operations, subsistence resources, and community revenue. At the time of this assessment, SBA data were not available, so this analysis draws primarily from two sources:

- **Juneau Economic Development Council (JEDC) Research Note: Results of Mendenhall Glacier Outburst Flood Survey** (September 2025), which summarizes household-level survey responses from a sample size of 263 flood-affected addresses. The report provides quantitative estimates of

[52] City and Borough of Juneau, Capital Improvement Program Fiscal Years 2025-2030, July 2024. https://juneau.org/engineering-public-works/cip.

lost income, business disruption, and financial assistance received, with a margin of error of ±8.6% at 95% confidence.

- **State of Alaska Request for Presidential Disaster Declaration** (September 19, 2024), which includes preliminary damage assessments, documentation of business and wage losses, and supporting statements from tribal and local authorities describing the broader economic and cultural consequences of the event.

Together, these sources provide a picture of the flood's impact on Juneau's economic landscape, revealing both measurable financial losses and longer-term effects on household stability, food security, and community livelihoods.

Labor and Wage Losses

The 2024 flooding event caused immediate and significant disruption to local employment. According to the JEDC survey, 62% of affected households reported missing work during the disaster and recovery period, losing an average of 79 work hours per household. Approximately half of this time was covered by paid leave, while the remainder represented direct income loss. These wage reductions translated into decreased household purchasing power and slowed the flow of money through Juneau's local economy.

Business Interruption and Enterprise Losses

Economic injury extended to both home-based and community businesses:

- **Home-Based Enterprises:** Approximately 17% of surveyed households operated a business from their residence. These businesses experienced an average financial loss of $37,321 and an average closure period of 77 days. Damage to equipment, inventory, and workspace, combined with lost revenue, created lasting financial strain and jeopardized the survival of some small enterprises.
- **Community Businesses:** The State's Preliminary Damage Assessment identified approximately $790,000 in losses across 25 businesses and nonprofits, including four major and 21 minor entities. These impacts met the eligibility threshold for SBA Economic Injury Disaster Loans (EIDLs), underscoring the scale of local business disruption beyond the household level.

Subsistence Economy and Cultural-Economic Losses

The GLOF also disrupted CBJ and the Central Council of Tlingit & Haida Tribes of Alaska's subsistence economy, which is a vital part of the local economic and cultural fabric. Floodwaters destroyed stored fish, game, berries, and seaweed, along with the tools and equipment used to harvest and process these foods. Because the event occurred during the subsistence season, contaminated or inaccessible resources could not be replaced, forcing households to rely on higher-cost store-bought food through the winter.

Beyond the financial impact, these losses weakened traditional food systems and community networks. Requests for federal assistance included support to replace freezers, tools, and food stocks, reflecting the combined cultural and economic dimensions of the loss.

Tourism and Community Revenue Impacts

Tourism, a major driver of Juneau's economy, suffered additional setbacks. The flood forced the closure of the Mendenhall Visitor Center, Juneau's most visited attraction, at the height of the summer tourism

season. This closure, combined with the cancellation or postponement of cultural events and visitor contracts, reduced income for tour operators, vendors, and related small businesses. These disruptions compounded household- and enterprise-level losses across the community.

Conclusion and Estimated Unmet Need

The August 2024 GLOF caused widespread economic hardship across Juneau's households, businesses, and cultural institutions. Without the availability of more reliable data from SBA, DCCED will estimate the current unmet need for economic revitalization at 10% of the overall unmet need for housing, which results in $2,552,720.

The true figure is likely higher when accounting for longer-term economic displacement and community recovery needs, and DCCED will revisit the overall economic impact needs as more data become available.

Community Development Block Grant - Disaster Recovery (CDBG-DR) Action Plan

03. Mitigation Needs Assessment

3. Mitigation Needs Assessment

3.1. Methodology

The purpose of the following needs assessment is to inform and provide a substantive basis for the mitigation activities proposed in this Action Plan, with a focus on addressing and analyzing all significant current and future hazard risks. Due to the unique locations of the two disasters, distinct hazard exposure, and differing community composition, two mitigation needs assessments were conducted and the results are displayed in separate sections—one for the 2023 Lower Yukon floods and one for the 2024 City and Borough of Juneau's GLOF event. A synthesis of findings from both assessments is available in Section 3.4. Synthesized Conclusion of Both Mitigation Needs Assessments. Each mitigation needs assessment was developed separately, but efforts were made to reduce duplication. Broad hazard profiles are presented in the 2024 City and Borough of Juneau's flooding assessment, while the 2023 Lower Yukon flood assessment offers more targeted, region-specific analysis of the same hazards. The level of detail in each profile reflects the availability of supporting data. As Alaska's capital and the subject of a recent Hazard Mitigation Plan update, the City and Borough of Juneau's assessment includes more in-depth hazard analysis than what was possible for the Lower Yukon region.

3.2. 2023 Lower Yukon Flooding (DR-4730-AK)

3.2.1. Overview

In accordance with HUD guidance, DCCED completed the following mitigation needs assessment. DCCED reviewed existing hazard plans and past state and regional action plans to develop a multi-hazard risk-based assessment.

There have been eight presidentially declared disasters in the Lower Yukon River Area (Lower Yukon REAA and City of Saint Mary's) since 1995.[53] The most common natural disasters that cause damage to an extent that results in federal disaster declarations are severe storms, severe winter storms and ice storms, pandemics, and flooding. Since 1995, there have been two declared severe storm-related disasters (excluding severe winter storms), five flooding disasters, and one fire-related disaster. This historical pattern of extreme weather is expected to continue and become more severe due to increasing hazards. Thus, mitigation measures to reduce impacts caused by these types of hazards are critical.

Every community in the Lower Yukon River Area has been impacted by one or more of these events, which have resulted in the hardship of Lower Yukon's residents, forcing many to relocate, exhaust their financial assets, and undermine the security of living in their homes or investing in their properties or businesses.

[53] Disasters and Other Declarations, FEMA, 2025 https://www.fema.gov/disaster/declarations?field_dv2_declaration_date_value%5Bmin%5D=1995&field_dv2_declaration_date_value%5Bmax%5D=2025&field_dv2_declaration_type_value=DR&field_dv2_incident_type_target_id_selective=All&field_dv2_state_territory_tribal_value%5B0%5D=AK&page=4

Flood loss insurance claims are not common, with one claim, totaling over $13,411.25, in the Lower Yukon River Area since 1995.[54]

This assessment will provide a basis upon which to propose programs and projects as part of this plan that will mitigate current and future hazards. In addition, the assessment will inform all projects undertaken through CDBG-DR such that, at a minimum, they do not exacerbate natural hazard threats and make use of scarce resources for recovery and mitigation.

As part of this assessment, DCCED also sought to identify and address risks to indispensable services, or those services that enable the continuous operation of critical business and government functions, and/or are critical to human health, safety, and economic security.

Categories Affected	A Total Need	B Financial Assistance Budgeted and Obligated	A-B Unmet Need
Housing	$71,131,717	$870,851	$70,260,865
Infrastructure	$25,030,022	$18,772,517	$13,914,252
Economic Development			$7,026,087
Total	**$96,161,739**	**$19,643,368**	**$91,201,204**

Table 49: Lower Yukon CDBG-DR Mitigation Set-Aside Needs Assessment

3.2.2. Relevant Resources

2023 State Hazard Mitigation Plan (SHMP)

DCCED's Division of Community and Regional Affairs (DCRA) partnered with the Department of Military and Veterans Affairs—specifically, the Division of Homeland Security and Emergency Management—to create and maintain the 2023 State Hazard Mitigation Plan (SHMP). The SHMP assesses the risk posed by natural hazards to the people and infrastructure throughout Alaska and identifies strategies to protect them from future disasters. This plan has been approved by FEMA and adopted by the State of Alaska. The update is valid for five years and can be found on the State's Mitigation page: https://ready.alaska.gov/Mitigation/SHMP. Alaska's SHMP outlines the State's approach to identifying natural threats, assessing vulnerabilities, and recommending actions to reduce risks to residents, infrastructure, the economy, and emergency personnel. The plan does not specifically address hazards or mitigation strategies for the area affected by the 2023 Lower Yukon flooding event.

Lower Yukon River Area (Kusilvak Census Area) Hazard Mitigation Plans (HMPs)

Of the nine communities within the Lower Yukon River Area, four have active HMPs. Six communities have expired HMPs. Although it is not technically within the Lower Yukon REAA, Saint Mary's has been included in this analysis as it is geographically part of the Lower Yukon River Area. This community's most recent HMP,

[54] Historical NFIP Claims Information and Trends, Federal Emergency Management Agency (FEMA) & National Flood Insurance Program (NFIP), 2024, https://www.floodsmart.gov/historical-nfip-claims-information-and-trends?map=countries/us/us-ak-all&region=us-ak-270&miny=1995&maxy=2024&county=Wade%20Hampton&gtype=county

the 2018 Saint Mary's Multi-Jurisdictional Hazard Mitigation Plan, was also referenced throughout this mitigation needs assessment.

Jurisdiction	Status	Date of Most Recent HMP	Plan Type
Alakanuk City and Village MJHMP	Approved	10/19/2021	Multi-Jurisdiction
Alakanuk City and Village MJMP	Plan in Progress		Multi-Jurisdiction
Emmonak HMP	Approved	03/15/2023	Single Jurisdiction
Kotlik City and Village MJHMP	Expired Plan in Progress at ANTHC	08/30/2019	Multi-Jurisdiction
Marshall HMP	Expired	11/06/2014	Single Jurisdiction
White Mountain Village and City MJHMP	Approved	07/14/2023	Multi-Jurisdiction
Pilot Station HMP	Expired	01/242019	Single Jurisdiction
Russian Mission HMP	Expired	10/18/2013	Single Jurisdiction

Table 50: HMP Status for Lower Yukon REAA Communities
Source: FEMA Hazard Mitigation Plan Status, FEMA, n.d., https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=aeb0e462543b4fa69aeaf858945e1262

3.2.3. Greatest Risk Hazards

Analysts identified the 'greatest risk hazards' as hazards with the highest damage costs and the highest frequencies of occurrence as designated by the 2025 NOAA National Centers for Environmental Information (NCEI) data for the State of Alaska as a whole.

Disaster Type	Events	Events/Year	Percent Frequency	Total Costs	Percent of Total Costs
Wildfire	8	0.2	100.0%	$2.0B-$5.0B	100.0%
All Disasters	36	0.2	100.0%	$2.0B-$5.0B	100.0%

Table 51: Billion-Dollar Events to Affect Alaska from 1980 to 2024 (CPI-Adjusted)
Source: National Centers for Environmental Information, NOAA, 2024 https://www.ncei.noaa.gov/access/billions/summary-stats/AK/1980-2024

To align the NCEI data above with Alaska's 2023 State Hazard Mitigation Plan and the available Lower Yukon River Area (Kusilvak Census Area) Hazard Mitigation Plans, this Action Plan includes the following hazards:

- Heavy snow, ice storm, and freeze/extreme cold events are within the Winter Storm hazard profile, which is a sub-profile of the Severe Weather profile.
- Shoreline/bank destabilization, erosion, and landslide events are grouped together within the Geological Hazards profile.

- Earthquake hazard profiles will be separate from the Geological Hazards profile, as these hazards have historical significance and relevance. Volcano events will not be covered in this mitigation needs assessment.
- Winter storms, high winds, atmospheric rivers, and thunderstorms will all be included in the Severe Weather hazard profile. Drought and extreme heat will not be covered in this mitigation needs assessment.
- Although typhoon events could be considered sub-profiles of Severe Weather, they will be featured in their own profile due to recent significant events. In this Action Plan, the term 'typhoon' also covers ex-typhoons and typhoon remnants, which are distinct from severe storms because of their rotational characteristics.

The greatest risk hazards identified for Lower Yukon are:

- Changes in the Cryosphere and Permafrost
- Earthquake
- Fire
- Flood
- Geological Hazards
- Severe Weather
- Tsunami
- Typhoon

3.2.4. Hazard Probabilities

For many natural hazards, the best available data with which to estimate probability are often based on past events. Though it is certainly not the only source of past event data, some information comes from the Storm Events Database of the US National Centers for Environmental Information (NCEI). NCEI data were analyzed for drought, flood, freeze, severe storm, tropical cyclone, wildfire, and winter storm hazards. As NCEI information is used throughout this document, it is important to note the following about the information in the NCEI Storm Events Database: [55]

- From 1950 through 1954, only tornado events were recorded.
- From 1955 through 1992, only tornado, thunderstorm, wind, and hail events were keyed from the paper publications into digital data.
- From 1993 through 1995, only tornado, thunderstorm, wind, and hail events were extracted from the unformatted text files.
- From 1996 to present, 48 event types were recorded as defined in NWS Directive 10-1605.

The vulnerability estimates in this assessment are based on the most reliable data currently available and are intended to provide a general understanding of relative risks and potential losses from identified hazards. These figures represent approximations, as all loss estimation methods involve some level of uncertainty, stemming from gaps in scientific knowledge about how hazards affect the built environment, as well as the need to simplify complex systems for analysis. It is also important to recognize that this quantitative assessment focuses solely on the exposure of people, buildings, and critical infrastructure. More detailed evaluations—such as projected annual losses, casualty estimates, shelter needs, service

[55] NOAA National Centers for Environmental Information, 2024, https://www.ncdc.noaa.gov/stormevents/

disruptions, or broader economic impacts—were beyond the scope of this mitigation needs assessment but may be explored in future updates.

3.2.5. Hazard Profiles

The following profiles and sub-profiles are presented alphabetically—not in any order denoting level of frequency or severity.

Changes in the Cryosphere and Permafrost

The cryosphere refers to the portions of Earth's surface and subsurface where water is in solid form, including ice, snow, glacial ice, and permafrost. Hazards of the cryosphere can be subdivided into four major groups: glaciers, permafrost, sea ice, and snow avalanches. Permafrost hazards are caused by the effects of changing perennially frozen soil, rock, or sediment (known as permafrost) and the landscape processes that result from extreme seasonal freezing and thawing. Permafrost is found in nearly 85% of Alaska. In the US, the presence of widespread permafrost results in classes of geologic hazards that are largely unique to Alaska. Permafrost is structurally important to the soils of the Lower Yukon, and the thawing of permafrost causes landslides, ground subsidence, and erosion, as well as lake disappearances, new lake development, and saltwater encroachment into aquifers and surface waters.

Usteq, from the Yup'ik word meaning "surface caves in," is a catastrophic form of permafrost thaw collapse that occurs when frozen ground disintegrates under the compounding influences of thawing permafrost, flooding, and erosion. Permafrost loss, due to a warming climate, can impact infrastructure installed onto or under the permafrost, leading to disruption in services, additional maintenance, and engineering retrofit costs. A reduction in permafrost can also lead to an increased or altered wildland fire risk.

Sea ice is frozen ocean water that forms, grows, and melts in the ocean. Sea ice grows during the winter and melts during the summer, but some sea ice remains all year in certain regions. The risks associated with ice processes and human activities are greatest in the Arctic and sub-Arctic regions because of the prevalence of sea ice in those high latitudes. Changes in the cryosphere, such as warmer temperatures and greater precipitation, are exacerbating continued threats to communities.[56] Permafrost is at an increased risk of thawing as a result of increasing hazards. The potential increase in snow depth predicted by the majority of climate models may lead to diminished permafrost stability, as snow insulates permafrost from low winter temperatures. Even a slight warming of permafrost can cause a reduction in its bearing capacity, impacting its ability to support structures.[57]

Earthquake

Alaska is the most seismically active state in the US, accounting for more than 50% of the nation's earthquakes each year.[58] This high activity is due to the tectonic interaction between the Pacific and North American plates, particularly along the Aleutian subduction zone. Earthquakes range in magnitude and depth, but even moderate events can cause significant damage in remote and urban areas alike.

[56] Alakanuk HMP, 2021, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt
[57] 2023 State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[58] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP

Alaska experiences:

- Subduction zone megathrust earthquakes, like the 1964 Great Alaska Earthquake (magnitude 9.2)
- Crustal and intraplate earthquakes, often near populated areas
- Aftershock sequences that can persist for months or years

Hazards from earthquakes include ground shaking, surface rupture, liquefaction, landslides, and, in some cases, tsunamis.[59] More information about the impact of tsunamis and landslides on the Lower Yukon River Area can be found in the Tsunami and Geological Hazards profiles.

Only 10 earthquakes have been documented, with an average magnitude of 3.5, within a 100-mile radius of Russian Mission. The strongest event in this range was a magnitude 4.6 quake on January 30, 1983, which caused no reported damage to homes, infrastructure, or critical facilities. According to the Russian Mission HMP Planning Team, residents felt moderate shaking from the magnitude 7.9 Denali earthquake on November 3, 2002, even though its epicenter was about 112 miles away. This event also resulted in no local damage. Russian Mission also experienced ground movement from the powerful magnitude 9.2 earthquake in Prince William Sound on March 27, 1964—the strongest ever recorded in North America—but again, no damage occurred in the community.[60]

Fire

Fire is a natural wildland management force in Alaska and a key environmental factor in cold-dominated ecosystems. Fire plays a role in rejuvenating ecosystems by removing decaying matter and returning nutrients to the soil. Many of Alaska's ecosystems would cease to thrive without wildland fires. A wildland fire of natural or human-caused origin that results in the destruction of life and property poses a serious public safety hazard. Wildland fires spread through the combustion of vegetation and other organic matter. They often begin unnoticed and spread quickly, sending dense smoke into the sky, which can travel for miles. Wildland fires can be caused by human activities or by natural events, such as lightning.[61]

In Alaska, there are four phases of fire season. The early fire season begins in April, when the soil below ground is still frozen. Wind is the key driver of fire activity during this phase, as surface fuels are primarily dead grasses. During this phase, fires generally cannot burn deeply into the frozen duff—a surface layer of decomposing moss, lichen, and litter—and are of low severity.

Peak fire season occurs around the summer solstice, when long, warm days dry out subsurface fuels after the green-up period. A layer of duff is a unique fuel bed that can allow wildfires to burn below the surface for days or weeks, reigniting surface fuels in favorable weather conditions. Lightning is a common cause of these fires. Later in July, the fire season can continue if temperatures remain high and precipitation is low.[62]

The frequency and severity of wildland fires are dependent on weather, fuel availability, topography, and ignition source. All of Alaska is vulnerable to wildland fires.[63] The communities included in this assessment

[59] Alaska Earthquake and Tsunami Hazards, Alaska Science Center, U.S. Geological Survey, 2024https://www.usgs.gov/centers/alaska-science-center/science/alaska-earthquake-and-tsunami-hazards
[60] City of Russian Mission Hazard Mitigation Plan, 2013, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt
[61] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[62] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[63] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP

are located within the EC4 Level II Bering Taiga and EC5 Level II Bering Tundra ecoregions of the state. These regions have a low fire load, although fires do happen under favorable conditions. These fires are mainly short in duration due to moisture impacting Alaska's western coastline. Wildland fires that are not adequately controlled can become emergencies. Even small wildfires can threaten life, resources, and property. Wildfires that burn large swathes of forest and vegetation can have catastrophic indirect impacts. Large, intense fires can lead to soil moisture retention loss in the event of emergencies.

Community	Extent	Impact	Probability of Future Events	Information Source
Alakanuk	Not reported	There have been 35 recorded wildfires within approximately 60 miles of Alakanuk since 1939.	Possible but not likely	2021 HMP
Emmonak	10.6% of the land area in Emmonak is in a high/very high fuel risk area	There have been no fires within 30 miles of Emmonak. The community experiences a decrease in air quality from other area fires.	Average recurrence rate of approximately every 10 years	2023 HMP
Kotlik	Highly vulnerable	Over 60 years, 26 wildland fire events have occurred within 60 miles of Kotlik.	Likely to experience future wildland fire events	2019 HMP
Marshall	Limited	170 tundra/wildland fires have occurred within 50 miles of the city as of the 2014 HMP, including fires in 2005 and 2006 that burned over 50,000 acres.	Likely to experience a wildland fire event in the next three years	2014 HMP (expired)
Mountain Village	Negligible	Since 1938, 103 wildland fire events have occurred within 50 miles of the community.	Unlikely but possible to experience a wildfire event in the next 10 years	2014 HMP (expired)
Pilot Station	Negligible	25 wildland fires have occurred within approximately 25 miles of Pilot Station with no direct impacts to residences or critical infrastructure. Indirect impacts include reduced air quality, reduced visibility, and transportation impacts.	Likely to experience a wildland fire event in the next three years	2018 HMP (expired)

Community	Extent	Impact	Probability of Future Events	Information Source
Russian Mission	Negligible	Since 1940, 72 wildland fires have occurred within 50 miles of Russian Mission with no direct impacts to residences or critical infrastructure. Indirect impacts include reduced air quality, reduced visibility, and transportation impacts.	Likely to experience a wildland fire event in the next three years	2013 HMP (expired)

Table 52: Lower Yukon REAA Communities Wildland Fire Hazard Profile
Source: Draft 2022 CDBG-DR Action Plan for Typhoon Merbok,https://aws.state.ak.us/OnlinePublicNotices/Notices/View.aspx?id=220634

The Pitkas Point and Saint Mary's communities were not included in the 2022 CDBG-DR Action Plan for Typhoon Merbok's analysis of Lower Yukon River Area Communities Wildland Fire Hazard Profile.

Flood

Flooding in Alaska is driven by riverine overflows, coastal storm surges, ice jams, and snowmelt. In western and southwestern Alaska, particularly in the Yukon-Kuskokwim Delta and Bering Strait regions, many communities are situated in low-lying areas along rivers or coastlines with little elevation buffer. The flood season typically peaks during spring break-up (due to ice jams) and during fall storms (due to coastal surges).[64] Approximately 6,600 miles of Alaska's coastline and many low-lying areas along the state's rivers are subject to severe flooding and erosion.

The Alaska Statewide Threat Assessment evaluated 187 communities that are at risk of flooding. The communities with the greatest flood risk are in group 1; the communities with a moderate threat are in group 2; and the communities with a lower risk of flooding are in group 3 (Alaska Statewide Threat Assessment). For more information on flood impacts on shoreline/bank destabilization, see the Shoreline, Bank Destabilization, and Erosion section in the Geological Hazards profile. The US Army Corps of Engineers has identified Alakanuk as a high-risk flood zone, with the entire community susceptible to flooding impacts. Residents report that spring break-up regularly brings floodwaters two to four feet deep across Alakanuk.[65]

Community	Flood Risk
Marshall	2
Mountain Village	3
Pilot Station	3
Russian Mission	3

Table 53: Flood Risk Levels for Communities in the Region
Source: Alaska Statewide Threat Assessment by Community, State of Alaska Geoportal, Dept. of Commerce, Community, & Economic Development, https://gis.data.alaska.gov/maps/DCCED::statewide-threat-assessment-by-community/about

[64] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[65] Alakanuk Hazard Mitigation Plan, 2021, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt

The data table above is directly from the Alaska Statewide Threat Assessment, which did not include the other MIDs (Pitkas Point, Alakanuk, Emmonak, Kotlik, or Saint Mary's) in its analysis.

Flood events with a 1% and 0.2% annual chance of occurring—commonly referred to as 100-year and 500-year floods, respectively—are classified as Special Flood Hazard Areas (SFHAs) and are shown on FEMA's Flood Insurance Rate Maps (FIRMs). Emmonak's map places the entire city within Zone AH, indicating that it lies inside the 100-year floodplain, where floodwaters are typically expected to reach depths between one and three feet. Flooding in Emmonak, one of the most frequently affects a short segment—about one-eighth of a mile—along the river, impacting businesses located near the frontage road.[66]

On May 13, 2023, Alaska Governor Mike Dunleavy declared a disaster emergency for several regions, including the Alaska Gateway, Yukon Flats, Kuspuk, and Copper River REAAs, following severe flooding. By May 22, the declaration was expanded to cover the Northwest Arctic Borough, Iditarod REAA, Lower Kuskokwim REAA, and Lower Yukon REAA. In Russian Mission, flooding damaged 1-2 homes and surrounded several others, forcing the evacuation of 10 households to higher ground. The community's runway was submerged, the old tank farm was inundated, and the pump house was swept away.[67] This 2023 flooding was far more severe than usual, with levels that had not been seen in decades. The extreme conditions were fueled by a colder-than-normal April, followed by a sudden warm spell in May, combined with an unusually deep winter snowpack. This rapid shift triggered what scientists call a *dynamic breakup*, where intact river ice fractures into large chunks that jam downstream, while snowmelt runoff adds even more water. By contrast, a slower spring thaw would have produced a *thermal breakup*, with ice gradually melting in place and reducing the risk of jams. As the breakup advanced, additional flooding struck communities along the Yukon River in late May, with ice moving downstream in bursts. The National Weather Service continued monitoring ice jams and flood activity throughout the event.[68]

Geological Hazards

Landslide

Landslides encompass a range of slope failures, including mudflows, debris slides, rock falls, and slump-earth movements. These events occur when masses of earth or rock become unstable and shift downslope. The likelihood of landslides in hilly or mountainous terrain depends on factors such as geology, slope steepness, vegetation cover, and weather conditions. Human activities, such as grading, excavation, or poorly planned development on unstable ground, can also trigger or worsen slope failures.

Landslides often occur alongside other hazards, compounding their impact. For example:

- Earthquakes can destabilize slopes, leading to hazards from small rock falls to large-scale slides. Landslides and debris flows can be triggered by the shaking of the ground during an earthquake, which generates horizontal forces that destabilize slopes. Typical earthquake-related slides include shallow movements such as rock falls, rockslides, and soil slips. Debris flows occur when water fully saturates the surface soil on steep terrain, causing it to lose cohesion and rush downslope rapidly—

[66] City of Emmonak HMP, 2023, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt/Plans
[67] 2023 Spring Floods Incident Situation Report, Alaska State Emergency Operations Center, 05/23/25, https://www.commerce.alaska.gov/web/Portals/4/pub/CDBG-DR%E2%80%93Lower_Yukon/5232023%20Spring%20Floods%20SITREP.pdf
[68] A Tumultuous Spring Breakup, Earth Observatory, n.d., https://earthobservatory.nasa.gov/images/151379/a-tumultuous-spring-breakup

often carrying vegetation and built structures with it. The likelihood of such slides increases following seismic activity, especially during wet winter conditions.[69] See the Earthquake hazard profile for additional information.

- Heavy or sustained rainfall can saturate soil, reducing stability and causing slope collapse.
- Wildfires strip vegetation from hillsides, increasing runoff and erosion, which heightens landslide risk. See the Fire hazard profile for additional information.

Construction and land use practices also play a role in landslides. Activities including hillside excavation, use of nonengineered fill, and vibrations from machinery can overload slopes. Changes in vegetation due to fire, logging, or clearing further reduce slope stability. Even infrastructure failures—such as broken water mains or blocked culverts—can alter water flow and saturate soil, increasing the chance of a slide. Natural processes, such as weathering and shifts in groundwater or surface water patterns, also contribute to landslide potential.[70]

Shoreline, Bank Destabilization, and Erosion

The Lower Yukon River Area experiences erosion from storm surge, coastal ice run-up, coastal wind scour along the shoreline, and riverine high-water flow scour along the area's rivers, streams, and creek embankments, as well as damage from coastal or riverine ice flows, wind, surface runoff, and boat traffic wakes.[71] Erosion in Alaska refers to the gradual removal of soil, sediment, or rock from coastal shorelines, riverbanks, and other landforms, often accelerated by wave action, thawing permafrost, storm surge, and human activities. Coastal erosion is especially severe in western and northern Alaska, where low-lying villages on barrier islands and river deltas face rapid shoreline retreat. Erosion threatens homes, infrastructure, and cultural sites, and is a primary driver for community relocations in the state.[72] Loss of protective sea ice and changes in storm patterns have intensified erosion rates in many communities.[73] Erosion is a continuous process that can be observed where it occurs, though its rate varies depending on environmental conditions. Forecasting erosion typically relies on monitoring current activity and anticipating how those rates might change. In contrast, flooding is episodic and visible only during an event, and predictions are based on historical patterns and potential shifts in climate. Damage from thawing permafrost is harder to detect and predict. It depends heavily on subsurface conditions, which are often poorly understood, and on climate and infrastructure design. Because thawing usually becomes apparent only after damage has occurred, it is challenging to assess risk in areas where no impacts have yet been seen.

The usteq risk (see more about this compound hazard in the Changes in the Cryosphere and Permafrost hazard profile) is highest in places where all three hazards overlap, such as Alakanuk, but it is not limited to coastal or river areas. Water transfers heat more efficiently than air, so any contact between water and ice-rich permafrost—either inland or near shorelines—can accelerate thaw and damage infrastructure.[74]The

[69] City of Marshall HMP, 2014, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt/Plans
[70] City of Russian Mission HMP, 2013, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt/Plans
[71] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[72] Denali Commission 2019: Statewide Threat Assessment for Alaska Native Villages, Denali Commission, USACE, UAF, November 2019.
[73] Arctic Report Card, National Oceanic and Atmospheric Administration, 2020, https://arctic.noaa.gov/archive/arctic-report-card-2020-2/

full impact of usteq often becomes clear only after it begins. Predictive models rarely account for the interaction between erosion, flooding, and permafrost thaw due to the limited understanding of how these threats compound. Forecasting any one of these hazards is already complex and site-specific; trying to anticipate their combined effects adds another layer of uncertainty.[75]

Severe Weather

Winter storms, heavy or freezing rain, thunderstorms, typhoon remnants, and subsequent secondary hazards, such as riverine or coastal storm surge floods, landslides, snow, wind, etc., all impact Alaska. These events can cause widespread damage to infrastructure, disrupt transportation and utilities, threaten public safety, and impact community operations. Severe weather is particularly challenging in Alaska due to its vast geography, limited road networks, and remote rural villages. Coastal storms can combine severe winds with storm surge and flooding, compounding impacts.[76]

High Wind

Strong winds in Alaska are typically driven by winter low-pressure systems forming over the North Pacific and the Gulf of Alaska. While these winds can reach hurricane-level speeds, they are classified differently since they lack the cyclonic structure of hurricanes. Coastal areas tend to experience the highest wind activity, though interior regions can also see powerful gusts due to steep pressure gradients, especially near mountain ranges. In places like Saint Mary's, wind speeds exceeding 58 miles per hour have been recorded.[77]

Thunderstorm

After analyzing local HMPs, it has been determined that thunderstorms present a lower risk to the Lower Yukon River Area compared to other hazards presented in this mitigation needs assessment. It is important to note that thunderstorms are becoming more frequent due to increasing hazards. Thunderstorm events will be more frequent due to changing weather patterns, which are creating conditions that leave western Alaska's environment more conducive to wildfires. Tundra and boreal forest regions are seeing larger and more frequent fires, and Alaska's wildfire season is getting longer. These changes are driven by multiple factors, including increasing summer temperatures.[78]

In the Yukon-Kuskokwim Delta, powerful fall storms are common, but the recent impact of ex-Typhoon Halong stood out due to its unusual path and resulting storm surge, which exposed growing risks in Alaska's coastal communities. According to climate expert Rick Thoman from the University of Alaska Fairbanks, the region faces a dangerous mix of sinking land, caused by thawing permafrost, and rising sea levels. With much of the area only about 10 feet above sea level, even small changes in elevation or ocean height can significantly increase flood risk. For more on thawing permafrost, see the Changes in the Cryosphere and Permafrost hazard profile. Thoman emphasized that this combination makes the region more susceptible to future storm damage, especially during high tides. He also warned that warming ocean temperatures, driven by increasing hazards, could intensify storms, making them more destructive over time.[79]

[75] Denali Commission 2019: Statewide Threat Assessment for Alaska Native Villages, Denali Commission, USACE, UAF, November 2019.
[76] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[77] City of St. Mary's, Alaska Multi-Jurisdictional Hazard Mitigation Plan, 2018, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt
[78] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[79] Climate expert highlights vulnerability of Yukon-Kuskokwim region after Ex-Typhoon Halong , Casandra Mancl, Alaska's New Source, 2025, https://www.alaskasnewssource.com/2025/10/16/climate-expert-highlights-vulnerability-yukon-kuskokwim-region-after-ex-typhoon-halong/

Winter Storm

This profile covers various hazards associated with winter storms, including heavy snow, extreme cold/freeze, and ice storms. Winter storms in Alaska can involve a mix of hazardous conditions, including strong winds, heavy snow, and ice.

Heavy Snow

Snowstorms develop when frigid air from the polar regions meets warmer air masses. The warm air rises rapidly while the cold air slides beneath it, forming thick clouds. Snow forms as ice crystals collide within the cloud, but only reaches the ground as snow if the air below remains colder than 40°F. Warmer air causes the flakes to melt into rain or sleet before reaching the surface.[80]

Extreme Cold

The threshold for extreme cold depends on a region's typical climate. In places where winter weather is rare, temperatures near freezing may be considered extreme. In Alaska, however, extreme cold generally refers to conditions ranging from -20°F to -40°F. These frigid temperatures can occur during winter storms, after storms pass, or even in calm weather. When combined with wind, the risk of cold-related injuries, like frostbite and hypothermia, increases significantly.[81]

Ice Storm

Ice storms—characterized by freezing rain, sleet, or hail—are among the most damaging hazards from winter storms, often leading to traffic accidents, power outages, and injuries. These storms occur when rain falls through a shallow layer of cold air near the ground, becoming supercooled. Though still liquid, the droplets freeze instantly upon contact with cold surfaces, forming a slick layer of ice on roads, trees, and power lines. The frequency and intensity of some severe weather events, including stronger coastal storms and fluctuating winter precipitation patterns, are expected. Warmer winters could lead to more freeze-thaw cycles, causing ice storms and unstable snowpack.[82]

Tsunami

A tsunami is a series of traveling waves of extremely long length generated by earthquakes occurring below or near the ocean floor. Tsunamis pose a significant hazard for many coastal communities in Alaska, particularly along the southern coast and Aleutian Islands, though their effects can extend across large ocean areas. Alaska has experienced some of the most powerful tsunami-generating events in US history—most notably the 1964 Great Alaska Earthquake, which produced waves over 200 feet in some locations.[83] The Lower Yukon River Area is composed mostly of inland communities that are not exposed to tsunami hazards due to their distance from the ocean.

[80] City of St. Mary's, Alaska Multi-Jurisdictional Hazard Mitigation Plan, 2018, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt
[81] City of St. Mary's, Alaska Multi-Jurisdictional Hazard Mitigation Plan, 2018, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt
[82] Denali Commission 2019: Statewide Threat Assessment for Alaska Native Villages, Denali Commission, USACE, UAF, November 2019.
[83] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP

Typhoon

Hurricanes and typhoons are actually the same type of storm—both are forms of tropical cyclones. Meteorologists use the term *tropical cyclone* to describe a rotating, organized system of thunderstorms and clouds that develops over tropical or subtropical seas and features a closed circulation near the surface.

The weakest stage of this system is known as a tropical depression. When sustained winds strengthen to at least 39 miles per hour, the system is upgraded to a tropical storm. If winds climb to 74 miles per hour or more, the system is classified as a hurricane, typhoon, or tropical cyclone, depending on its location. In the North Atlantic, central North Pacific, and eastern North Pacific, these storms are called hurricanes. In the Northwest Pacific, they are referred to as typhoons. In the South Pacific and Indian Ocean, the broader term *tropical cyclone* is used no matter the storm's intensity.

For these storms to form, several ingredients must come together: a pre-existing disturbance, warm ocean waters, abundant moisture, and relatively weak wind shear. When these conditions persist, they can fuel the destructive winds, heavy rainfall, storm surge, and flooding associated with tropical cyclones.

In western Alaska, powerful coastal winter storms can develop either from tropical systems that move northward and transition into ex-tropical cyclones or from sharp temperature contrasts between different air masses. In recent years, several significant ex-tropical cyclones have struck the region, including ex-Typhoon Merbok in 2022 and ex-Tropical Cyclone Nuri in November 2014. Because many of these storms originate east of Asia, they are initially classified as typhoons. Once they track poleward and lose their tropical traits, they are typically called "ex-typhoons." These systems often begin by drawing energy from warm, humid tropical air, but as they evolve, their power source shifts to the clash between warm and cold air masses and the sea surface temperatures of the North Pacific. Even after losing their tropical structure, such tropical cyclones can still produce hurricane- or tropical storm-force winds.[84]

2022 Typhoon Merbok

From September 15 to 20, 2022, Typhoon Merbok impacted approximately 1,300 miles of the Western and Northwestern Alaska coastline, affecting over 50 communities in the Bering Strait, Lower Yukon, Lower Kuskokwim, Kashunamiut, Yupiit, and Pribilof Islands Regional Educational Attendance Areas (REAAs). The storm began as a typhoon in the north-central Pacific Ocean, in atypically warm waters, and arrived in Alaska early in the autumn storm season when there was no sea ice to protect coastal communities. Communities across these six REAAs experienced damage to homes, critical infrastructure, and culturally significant sites. Coastal and riverine flooding damaged roads, airstrips, power systems, barge landings, and water and wastewater facilities. Many communities lost essential public services and floodwater protection infrastructure, such as berms and seawalls. Debris was scattered across the coastline. Personal property and subsistence resources—boats, drying racks, fish camps, and traditional hunting and gathering areas—were impacted in the middle of the fall subsistence season.[85]

[84] A Storm is Brewing: CC and Coastal Storms in Western Alaska, Climate Hubs, U.S. Department of Agriculture, n.d., https://www.climatehubs.usda.gov/hubs/northwest/topic/storm-brewing-climate-change-and-coastal-storms-western-alaska#:~:text=What's%20in%20a%20name:%20typhoon,Cyclone%20Nuri%20in%20November%202014.
[85] Draft Action Plan 2025 Community Development Block Grant – Disaster Recovery (CDBG-DR) 2022 Typhoon Merbok, Alaska Department of Commerce, Community, and Economic Development Division of Community and Regional Affairs,

2025 Typhoon Halong

In mid-October 2025, Typhoon Halong struck Alaska's western coast, driving storm surges more than six feet above normal high tides in some communities. The flooding was so severe that homes were swept from their foundations, boardwalk "streets" were torn apart, and residents had to be rescued from rooftops. Across the Yukon-Kuskokwim Delta—an area comparable in size to Oregon—at least 15 villages were inundated. Kipnuk and Kwigillingok suffered the worst destruction, with 90% and 35% of their buildings lost, respectively. One person died, two others went missing, and more than 650 residents were evacuated in what Governor Mike Dunleavy described as the largest humanitarian airlift in Alaska's history, relocating people nearly 500 miles to emergency shelters in Anchorage. In response, President Donald Trump authorized $25 million in federal disaster aid to support debris removal, temporary housing, and emergency relief. Still, rebuilding for the roughly 2,000 displaced residents is expected to cost far more—and some may choose not to return at all.[86]

3.2.6. Indispensable Services

Indispensable services enable the continuous operation of critical business and government functions and/or are critical to human health and safety and economic security. These services are largely operated out of critical facilities, which provide services and functions essential to a community, especially during and after a disaster.

Examples of indispensable service-providing facilities requiring special consideration include:

- Police stations, fire stations, critical vehicle and equipment storage facilities, and emergency operations centers needed for disaster response activities before, during, and after a disaster
- Medical facilities, including hospitals, nursing homes, blood banks, and health care facilities (including those storing vital medical records) likely to have occupants who may not be sufficiently mobile to avoid injury or death during a disaster
- Schools and day care centers, especially if designated as shelters or evacuation centers
- Power generating stations and other public and private utility facilities vital to maintaining or restoring normal services to flooded areas before, during, and after a flood
- Drinking water and wastewater treatment plants
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials[87]

https://www.commerce.alaska.gov/web/Portals/4/pub/CDBG-Merbok/Draft%20State%20of%20Alaska%202022%20Typhoon%20Merbok%20CDBG-DR%20Action%20Plan.pdf

[86] B. Berg, This Natural Disaster Has Upended Life for Rural Alaskans, Sierra Club Magazine, 11/05/2025, https://www.sierraclub.org/sierra/natural-disaster-has-upended-life-rural-alaskans?amp

[87] Community Lifelines, FEMA, n.d., https://www.fema.gov/el/emergency-managers/practitioners/lifelines

MID Area	Link to Plan	Location in Document
City of Saint Mary	2018 Saint Mary's Multi-Jurisdictional Hazard Mitigation Plan	Table 6-4 Critical Facilities and Infrastructure Table
City of Russian Mission	2013 City of Russian Mission Hazard Mitigation Plan	Table 6-4 Critical Facilities and Infrastructure
City of Marshall	2014 City of Marshall Hazard Mitigation Plan	Table 6-5 Potential Hazard Exposure Analysis – Critical Facilities and Table 6-6 Potential Hazard Exposure Analysis – Critical Infrastructure
Mountain Village	2014 Mountain Village Multi-Jurisdictional Hazard Mitigation Plan	Table 6-5 Potential Hazard Exposure Analysis – Critical Facilities and Table 6-6 Potential Hazard Exposure Analysis – Critical Infrastructure
City of Alakanuk	2021 City of Alakanuk and Native Village of Alakanuk Multi-Jurisdictional Hazard Mitigation Plan Update	Table 12 Critical Facilities and Infrastructure
Emmonak Village	2023 City of Emmonak Local Hazard Mitigation Plan	Table 4-4 Total Number of Critical Facilities in a Hazard Area
Kotlik	N/A	N/A
Pitkas Point	N/A	N/A
Pilot Station	2018 Pilot Station, Alaska Local Hazard Mitigation Plan Update	Table 6-2 Pilot Station Critical Facilities

Table 54: Location of Comprehensive Critical Facilities Lists by MID Area

3.2.7. Vulnerability of Regional Facilities by Hazard

Changes in the Cryosphere and Permafrost

The direct impacts of cryosphere hazards include damages to personal and public infrastructure, increases in maintenance costs for said infrastructure, and disrupted access to subsistence areas and resources. Indirect and cascading impacts include land subsidence, ground failure, exacerbated erosion and flooding, slope instability, and other ecosystem impacts. Ground failure can cause minor to major damage, potentially resulting in massive economic impacts and the destruction of critical community infrastructure, such as schools, airports, and medical facilities. Cryosphere hazards, including permafrost degradation and its cascading impacts, are felt by Lower Yukon River Area communities. Alakanuk, for example, experiences disruptions to its existing foundations, gravel pads, and pilings from permafrost degradation. Impacts associated with thawing the active layer of permafrost include surface subsidence and damages to roads, buildings, and other infrastructure.[88]

[88] Alakanuk HMP, 2021, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt

In Kotlik, infrastructure stability is a concern due to permafrost degradation. Other cryosphere hazards include sea ice, which is pushed inland during fall and winter storms, threatening community infrastructure.[89] In Pilot Station, periodic permafrost thawing causes houses in the new section of the city to shift and roads to settle unevenly. Permafrost in Pilot Station and other communities restricts the use of the ground surface, affects the location and design of roads and other infrastructure, and requires careful planning and design.[90] Hazards from sea ice include threats to shipping from running into ice, equipment or personnel breaking through ice when it is used as a seasonal platform for development activities, ice push (ivu) and gouging of the land or seafloor, and slush ice buildup that can clog intake valves. Lack of sea ice during fall and winter increases the risk of coastal flooding and erosion from storms in northern and western Alaska because the ice is not there to protect the shore.[91]

Earthquake

Earthquake impacts identified in the SHMP include:

- Structural damage to homes, schools, critical facilities, and utilities
- Disruption of transportation systems (e.g., bridges, airports, roads)
- Utility outages due to broken pipelines, downed lines, and facility damage
- Increased risk of landslides, avalanches, and ground failure, especially in areas with unstable soils or permafrost
- Risk of fires from ruptured gas lines or fuel systems
- Public safety concerns, including injuries, fatalities, and displacement

Areas like Mountain Village and Emmonak face moderate seismic risk; their vulnerability increases due to poor soil conditions and limited emergency infrastructure.[92]

Fire

Wildfires affecting Lower Yukon River Area communities have historically occurred predominantly outside of core population areas, resulting at times in reduced visibility, transportation impacts, and indirect ecosystem impacts. Many communities have limited fire facilities and personnel and are geographically isolated, relying on local volunteers. Mean annual temperatures are projected to rise another 2°C to 4°C across most of Alaska by midcentury. Communities may see overlapping hazards, such as permafrost degradation combined with flooding and wildfires. Long-term habitability is threatened in some communities. A growing number of communities may require relocation assistance or infrastructure overhauls.[93]

Fire impacts identified in the SHMP include:

- Infrastructure failure from permafrost thaw and erosion (roads, water/sewer systems, building foundations)
- Loss of access to subsistence resources due to ecosystem shifts or ice changes
- Increased costs for energy and transportation

[89] Kotlik HMP, 2019, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt
[90] Pilot Station HMP, 2018, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt
[91] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[92] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[93] State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP

- Greater reliance on emergency response due to cascading events (floods, storms, etc.)
- Relocation pressures for multiple communities

Flood

Flooding is the leading cause of death among natural hazards in the United States and can cause widespread physical and economic damage. Structural impacts include water intrusion into buildings, which can damage both the structure and its contents. Fast-moving floodwaters can erode riverbanks, road embankments, and building foundations, while also damaging roads, culverts, and other infrastructure. Debris carried by floodwaters can clog culverts, increasing pressure on these systems and potentially causing overflow or backflow damage. Flooding can also lead to the release of sewage and hazardous materials when treatment facilities, lagoons, storage tanks, or pipelines are compromised. Beyond physical damage, floods disrupt essential services—shutting down businesses, government operations, utilities, and transportation networks. Emergency response costs can be high, and the overall disruption can significantly affect a community's daily functioning.

Flooding also contributes to sediment-related issues. Deposition—the buildup of silt, soil, and debris in riverbeds or deltas—can destroy fish habitats, hinder navigation, and block access to traditional boat and barge landings. It also reduces channel capacity, increasing the risk of future flooding and bank erosion. Excessive erosion strips away riverbanks, leading to the loss of vegetation, habitat, and property. In some cases, sediment buildup can limit access for vessels, requiring dredging to maintain infrastructure and ensure continued use.[94]

Impacts from flooding identified in the SHMP include:

- High water flow storm surge floods scour (erode) coastal embankments and coastal protection barriers, and result in infrastructure and residential property losses. Additional impacts can include roadway embankment collapse, foundation exposure, and damage.
- Damage to structures, roads, bridges, culverts, and other features from high-velocity flow and debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, decreasing water conveyance and increasing loads, which may cause feature overtopping or backwater damages.
- Damage to water, power, and communications infrastructure from inundation.
- Rescues and injuries from entrapment in flood waters and loss of transportation routes.
- Sewage, hazardous or toxic materials release, materials transport from wastewater treatment plant or sewage lagoon inundation, storage tank damages, and/or severed pipeline damages, which can be catastrophic to rural remote communities.
- Economic losses through business and government facility closure; utilities, such as energy generation, communications, potable water, and wastewater; and transportation service disruptions.
- Excessive expenditures for emergency response and general disruption of the community's normal function and quality of life.

[94] Alakanuk Hazard Mitigation Plan, 2021, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt

Frequent riverine flooding and ice jams along the Yukon River affect Alakanuk, Emmonak, Mountain Village, Kotlik, and Pilot Station. Flooding damages fuel storage, homes, roads, and runways, and disrupts subsistence activities.[95] Community isolation during flood events is common, especially during high water years. The Denali Commission's 2019 statewide threat assessment ranks Emmonak in flood severity group 1, indicating that flooding poses a direct risk to essential infrastructure. Even a moderate flood could disrupt vital services, threaten public safety, and compromise the community's long-term viability. Such an event may also limit access to emergency response and require outside assistance to manage recovery efforts. Communities in this highest-risk category are encouraged to prioritize planning and allocate resources toward effective flood response strategies.

Geological Hazards

Ground Failure (Landslide, Shoreline, Bank Destabilization, and Erosion)

Impacts from ground failure identified in the SHMP include:

- Loss of land area: Erosion leads to the gradual loss of valuable land along coastlines and riverbanks, reducing the space available for housing, infrastructure, and subsistence activities.
- Damage to infrastructure: Roads, airstrips, fuel storage tanks, water and wastewater systems, schools, and community buildings located near shorelines or riverbanks are vulnerable to erosion damage or collapse.
- Threat to housing and public safety: Erosion can undermine homes and community facilities, resulting in unsafe living conditions and, in extreme cases, necessitating evacuation or relocation.
- Disruption of transportation and access: Erosion can destroy or compromise critical access routes, such as roads and airports, isolating communities and delaying emergency response.
- Environmental impacts: Loss of shoreline vegetation and habitat disruption for fish, wildlife, and migratory birds can occur, impacting subsistence resources and biodiversity.
- Cultural and archaeological site loss: Erosion threatens culturally significant sites, including burial grounds, historic village locations, and archaeological resources important to Alaska Native communities.
- Economic impacts: Property damage, loss of land, and relocation costs impose heavy financial burdens on small, rural communities.
- Increased vulnerability to flooding and storm surge: Erosion removes natural protective barriers, increasing the severity and frequency of flooding events.

Erosion along riverbanks and coastal areas impacts communities like Emmonak, Alakanuk, and Mountain Village. Ice-rich permafrost banks erode rapidly during spring thaw, threatening subsistence fishing camps and local infrastructure. Coastal communities in remote western Alaska rely on erosion mitigation measures such as seawalls, berms, and gabion baskets to protect homes, businesses, and public infrastructure against

[95] Denali Commission 2019: Statewide Threat Assessment for Alaska Native Villages, Denali Commission, USACE, UAF, November 2019.

erosion. Some flood risk management measures were damaged or destroyed during Typhoon Merbok in 2022. In other cases, this storm exacerbated existing erosion and necessitated new measures.

The Interagency Recovery Coordination (IRC) Team worked with nine communities—Chevak, Hooper Bay, Kipnuk, Nunam Iqua, Scammon Bay, Saint Michael, Stebbins, Toksook Bay, and Tuntutuliak—to submit applications to the US Army Corps of Engineers 165a Pilot Program. This program can fund 100% of the cost of projects that address flood, ecosystem, bank erosion, and/or navigational improvements for up to 20 economically disadvantaged communities nationwide. An outstanding erosion-related need in the MID area is that Nunam Iqua did not receive USACE grant funding. This community will need to seek alternative sources of funding for erosion mitigation measures.[96]

Severe Weather

Extreme Cold and Ice Storm

In Saint Mary's, Alaska, heavy snowfall and extreme cold can significantly disrupt daily life and pose serious risks to public safety and infrastructure. When snow accumulates rapidly, it can shut down transportation routes, including roads and airstrips, halting the delivery of supplies and limiting access to emergency and medical services. Snow loads may collapse roofs, down power lines, and damage small aircraft or boats. A sudden warm-up following a heavy snow event can also trigger localized flooding.

The economic toll of these events is substantial, with costs tied to snow removal, infrastructure repairs, and business interruptions. Injuries and fatalities often result from snow machine or vehicle accidents, overexertion while shoveling, or prolonged exposure to cold temperatures.

Extreme cold presents additional hazards. In Saint Mary's, aircraft may be grounded due to ice fog or dangerously low temperatures, isolating the community and delaying critical deliveries. Extended cold snaps can freeze rivers, disrupt barge traffic, and increase the risk of ice jams and flooding. Infrastructure is also vulnerable; fuel can gel in storage tanks and pipelines, halting power generation. Without electricity, heating systems fail, leading to frozen or burst water and sewer lines. When snow cover is minimal, frost can penetrate deeper into the ground, damaging buried utilities. The most serious threat from extreme cold is to human health. Frostbite and hypothermia can develop quickly, especially among infants and older adults. The risk of carbon monoxide poisoning also rises when residents rely on alternative heat sources during power outages.[97]

Tsunami

Tsunamis can arrive within minutes of a nearby earthquake, leaving little time for evacuation. They can cause catastrophic flooding, erosion, debris impact, loss of life, and destruction of critical infrastructure. Tsunami impacts identified in the SHMP include:

- Loss of life and injury due to rapid-onset, high-energy wave impacts
- Severe flooding and coastal erosion, damaging homes, public buildings, and roads
- Debris impacts from marine and built structures

[96] 2023 State of Alaska Hazard Mitigation Plan, 2023, https://ready.alaska.gov/Mitigation/SHMP
[97] City of St. Mary's, Alaska Multi-Jurisdictional Hazard Mitigation Plan, 2018, https://www.commerce.alaska.gov/dcra/admin/PlanMgmt

- Disruption of transportation and utilities, particularly in port or harbor communities
- Economic disruption due to damage to fisheries, transportation, fuel infrastructure, and public services

Typhoon

Typhoons pose devastating risks to essential community systems, and the 2025 Typhoon Halong disaster underscored just how vulnerable critical facilities can be. Several key weaknesses were exposed during the event:

- **Infrastructure collapse:** Boardwalks—functioning as the primary roadways in tundra villages—were torn apart and uprooted.
- **Power system failures:** Widespread flooding overwhelmed electrical networks, leaving communities without reliable energy.
- **Fuel storage damage:** Storage facilities sustained structural harm, raising the threat of leaks and contamination that could compromise vital subsistence resources.[98]

3.3. 2024 City and Borough of Juneau Flooding (DR-4836-AK)

3.3.1. Overview

In accordance with HUD guidance, DCCED completed the following mitigation needs assessment. DCCED reviewed existing hazard plans and past state and regional action plans to develop a multi-hazard risk-based assessment, which analyzes risks with specific sections detailing hazards in the City and Borough of Juneau.

There have been three presidentially declared disasters in the City and Borough of Juneau since 1995.[99] The most common natural disasters that cause damage to an extent that results in a federal disaster declaration are flooding, severe storms, mudslides, landslides, and pandemics. Since 1995, there has been one declared severe storm-related disaster (excluding severe winter storms), two flooding disasters, and one mudslide-related disaster. This historical pattern of extreme weather is expected to continue and become more severe due to increasing hazards. Thus, mitigation measures to reduce impacts caused by these types of hazards are critical. Many neighborhoods in the City and Borough of Juneau have been impacted by one or more of these events, which have resulted in hardship, forcing many to relocate, exhaust their financial assets, and undermine the security of living in their homes or investing in their properties or businesses. Flood loss insurance claims are particularly costly, with 64 claims totaling over $4,216,642.33 in the City and Borough of Juneau since 1995.[100]

[98] Alaska's Indigenous Communities Devastated by Typhoon Halong, Global Climate Risks, 10/27/25, https://globalclimaterisks.org/insights/blog/alaskas-indigenous-communities-devastated-by-typhoon-halong/
[99] Disasters and Other Declarations, Federal Emergency Management Agency (FEMA), 2025 https://www.fema.gov/disaster/declarations?field_dv2_declaration_date_value%5Bmin%5D=1995&field_dv2_declaration_date_value%5Bmax%5D=2025&field_dv2_declaration_type_value=DR&field_dv2_incident_type_target_id_selective=All&field_dv2_state_territory_tribal_value%5B0%5D=AK&page=4
[100] Historical NFIP Claims Information and Trends, National Flood Insurance Program (NFIP) & FEMA, https://www.floodsmart.gov/historical-nfip-claims-information-and-trends?map=countries/us/us-ak-all&region=us-ak-110&miny=1995&maxy=2024&county=Juneau&gtype=county

This assessment will provide a basis upon which to propose programs and projects as part of this plan that will mitigate current and future hazards. In addition, the assessment will inform all projects undertaken through CDBG-DR such that, at a minimum, they do not exacerbate hazard threats and make use of scarce resources for recovery and mitigation.

As part of this assessment, DCCED also sought to identify and address risks to indispensable services, or those services that enable continuous operation of critical business and government functions and/or are critical to human health and safety and economic security.

Categories Affected	A Total Need	B Financial Assistance Budgeted and Obligated	A-B Unmet Need
Housing	$29,522,937	$3,995,740	$25,527,198
Infrastructure	$1,950,240	$1,462,680	$1,072,632
Economic Development	$0.00	$0.00	$2,552,720
Total	$31,473,177	$5,458,419	$29,152,549

Table 55: Juneau CDBG-DR Mitigation Set-Aside Needs Assessment

3.3.2. Relevant Resources

2023 State Hazard Mitigation Plan (SHMP) Update

DCCED's Division of Community and Regional Affairs (DCRA) partnered with the Department of Military and Veterans Affairs—specifically, the Division of Homeland Security and Emergency Management—to update the 2023 State Hazard Mitigation Plan (SHMP), which has been approved by FEMA and adopted by the State of Alaska. The SHMP assesses the risk posed by natural hazards on the people and infrastructure throughout the state and identifies strategies to protect them from future disasters. This update is valid for five years and can be found on the State's Mitigation page: https://ready.alaska.gov/Mitigation/SHMP. Alaska's SHMP outlines the state's approach to identifying natural threats, assessing vulnerabilities, and recommending actions to reduce risks to residents, infrastructure, the economy, and emergency personnel. The plan does not specifically address hazards or mitigation strategies for the area affected by the 2024 the City and Borough of Juneau flooding event.

City and Borough of Juneau and Central Council of Tlingit and Haida Indian Tribes of Alaska 2025 Multi-Jurisdictional Hazard Mitigation Plan (HMP) Update

In 2025, the City and Borough of Juneau (CBJ) revised its 2012 HMP to include the Tlingit and Haida (T&H) Tribes as a partner, strengthening protections for residents of CBJ and surrounding traditional lands. The update followed the Disaster Mitigation Act of 2000 to ensure eligibility for FEMA's Hazard Mitigation Assistance and other federal programs. CBJ and T&H formed a joint planning team, reviewed the existing plan, assessed local hazards and vulnerabilities, and evaluated current mitigation efforts to guide future improvements. The 2025 FEMA-approved, locally adopted City and Borough of Juneau/Tligit-Haida Multi-Jurisdictional HMP is now posted on the DCRA website at: The City and Borough of Juneau All-Hazards Mitigation Plan.

3.3.3. Greatest Risk Hazards

Analysts identified the 'greatest risk hazards' as hazards with the highest damage costs and the highest frequencies of occurrence, as designated by the NOAA NCEI 2025 data for the State of Alaska as a whole.

Disaster Type	Events	Events/ Year	Percent Frequency	Total Costs	Percent of Total Costs
Wildfire	8	0.2	100.0%	$2.0B-$5.0B	100.0%
All Disasters	36	0.8	100.0%	$20.0B-$50.0B	100.0%

Table 56: Billion-Dollar Events to Affect Alaska from 1980 to 2024 (CPI-Adjusted)
Source: National Centers for Environmental Information, NOAA, 2024

To align the NCEI data above with the State of Alaska's 2023 SHMP and the CBJ/T&H 2025 Multi-Jurisdictional HMP Update, this Action Plan includes the following hazards:

- Heavy snow, ice storm, and freeze/extreme cold events are within the Winter Storm hazard profile, which is a sub-profile of the Severe Weather profile.
- Shoreline/bank destabilization, erosion, landslide, and ground failure events are grouped together within the Geological Hazards profile.
- Volcano and Earthquake hazard profiles are separated from the Geological Hazards profile, as these hazards have historical significance and relevance.
- Winter storms, extreme heat, high wind, atmospheric river, and thunderstorm events are included in the Severe Weather hazard profile.

The greatest risk hazards identified for Juneau are:

- Changes in the Cryosphere and Permafrost
- Earthquake
- Fire
- Flood
- Geological Hazards
- Severe Weather
- Tsunami
- Volcano

3.3.4. Hazard Probabilities

For many natural hazards, the best available data with which to estimate probability are often based on past events. Though it is certainly not the only source of past event data, a source for this information comes from the Storm Events Database of the US NCEI. NCEI data was analyzed for drought, flooding, freeze, severe storm, tropical cyclone, wildfire, and winter storm hazards. As NCEI information is used throughout this document, it is important to note the following about the information in the NCEI Storm Events Database:[101]

- From 1950 through 1954, only tornado events were recorded.

[101] NOAA National Centers for Environmental Information, 2024, https://www.ncdc.noaa.gov/stormevents/

- From 1955 through 1992, only tornado, thunderstorm, wind, and hail events were keyed from the paper publications into digital data.
- From 1993 through 1995, only tornado, thunderstorm, wind, and hail events were extracted from the unformatted text files.
- From 1996 to present, 48 event types were recorded as defined in NWS Directive 10-1605.

The vulnerability estimates in this assessment are based on the most reliable data currently available and are intended to provide a general understanding of relative risk and potential losses from identified hazards. These figures represent approximations, as all loss estimation methods involve some level of uncertainty, stemming from gaps in scientific knowledge about how hazards affect the built environment, as well as the need to simplify complex systems for analysis. It is also important to recognize that this quantitative assessment focuses solely on the exposure of people, buildings, and critical infrastructure. More detailed evaluations—such as projected annual losses, casualty estimates, shelter needs, service disruptions, or broader economic impacts—were beyond the scope of this mitigation needs assessment but may be explored in future updates.

3.3.5. Hazard Profiles

The following profiles and sub-profiles are presented alphabetically—not in any order denoting level of frequency or severity.

Changes in the Cryosphere and Permafrost

Glacier-related and avalanche (Dleit ñaadí) hazards are present throughout CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, affecting both developed and undeveloped regions. Since 2011, Suicide Basin—a side basin of Mendenhall Glacier—has released annual glacial lake outburst floods (GLOFs). These events vary in size, with some years experiencing multiple smaller floods and others seeing a single major release.

In 2014, floodwaters from Suicide Basin raised Mendenhall Lake by 12 feet, causing extensive damage to nearby properties. A 2018 event discharged over one billion cubic feet of water into the Mendenhall River. More recently, the 2023 GLOF led to record flooding and severe erosion along the lake and riverbanks. In 2024, another major flood from Suicide Basin inundated over 100 homes, businesses, and public facilities throughout Mendenhall Valley. For more about the 2025 GLOF, see the Flood hazard profile.

Glaciers in the Coast Mountains near CBJ and the Traditional Lands of Tlingit & Haida reached their current positions between the mid-1700s and late 1800s and have steadily retreated ever since. One exception is Taku Glacier, which continued to advance from the late 19th century until it began to recede only recently.[102]

[102] Plateau Icefields: Glacial geomorphology of Juneau Icefield, Davies et al., 2022, https://www.antarcticglaciers.org/glaciers-and-climate/glacier-recession/changing-alaska/juneau-icefield-geomorphology/

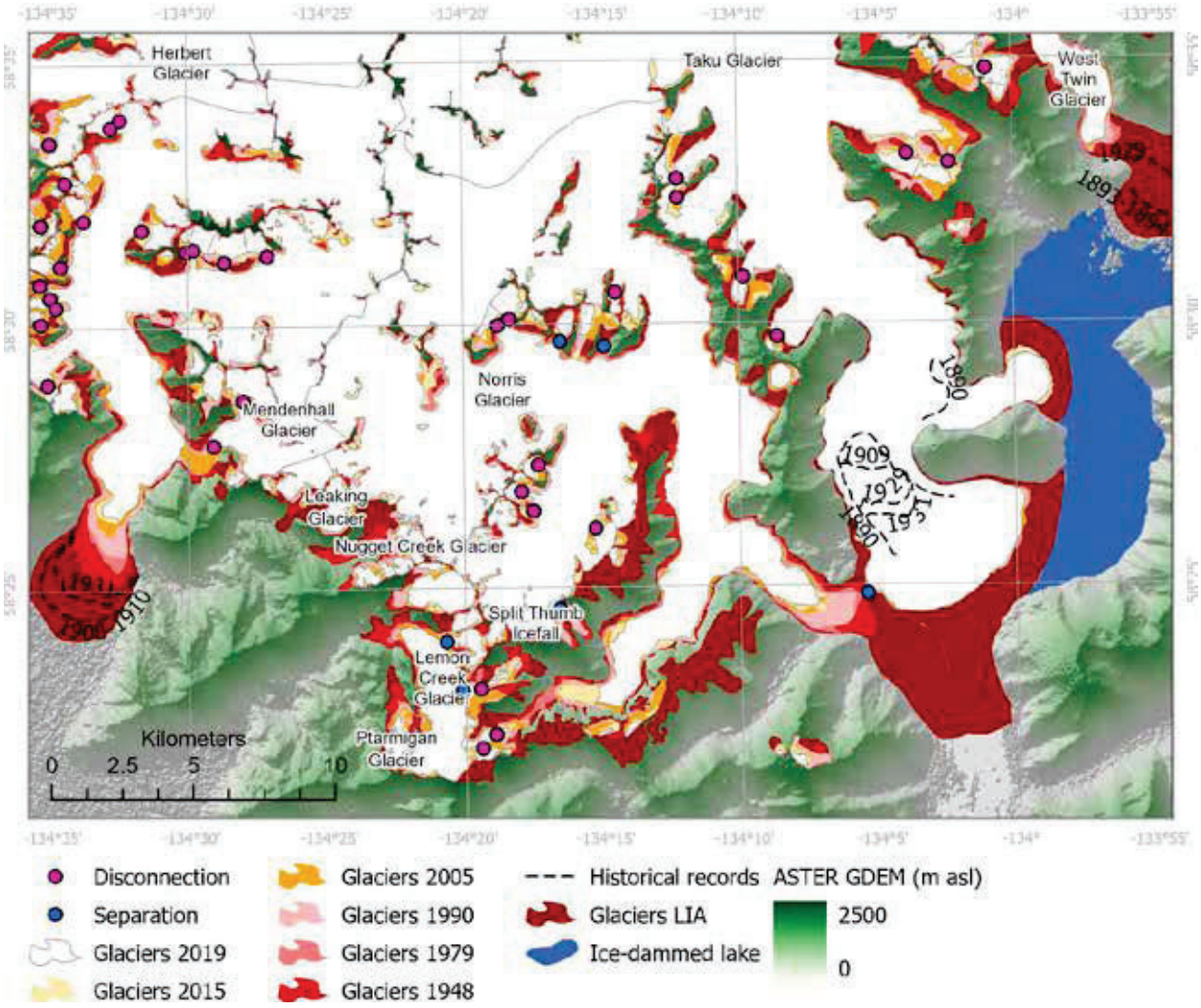

Figure 7: Glaciers and Climate
Source: Davis et. Al., 2022, https://www.antarcticglaciers.org/glaciers-and-climate/glacier-recession/changing-alaska/juneau-icefield-geomorphology/

Earthquake

An earthquake (Yoo aan ka.á) happens when built-up pressure along the earth's tectonic plates and fault lines is suddenly released, causing the ground to shake. This shaking can be felt far from the epicenter and often strikes without warning. Within seconds, the movement can intensify and lead to serious destruction and loss of life. The shaking is strongest near the source and weakens with distance, much like how sound fades the farther you are from it. Earthquakes generate different types of waves. Inside the earth, seismic waves travel in two main forms: primary (P) waves, which move in a push-pull motion along the direction of travel, and secondary (S) waves, which move more slowly and shake the ground side to side. On the surface, two other wave types, Rayleigh and Love waves, move more slowly and typically cause less damage than the seismic waves. In addition to shaking and structural damage, earthquakes can trigger other serious effects:

- **Fault Displacement:** Ground movement along fault lines can be dramatic—up to 7 meters vertically and over 60 kilometers in length. There are three main fault types:
  - **Strike-slip:** horizontal movement on either side of the fault
  - **Normal:** one side drops lower than the other
  - **Thrust (reverse):** one side pushes up and over the other
    - These shifts can severely damage infrastructure like roads, pipelines, and tunnels.
- **Liquefaction:** Saturated soils can lose strength and behave like a liquid due to shaking. This can lead to lateral spreading (up to 30 meters), large-scale flow failures (up to 6-7 kilometers), and structural collapse or sinking.

Earthquake severity is measured by both magnitude and intensity. Intensity reflects the observed impact on people, buildings, and nature and typically decreases with distance from the epicenter. In the US, the Modified Mercalli Intensity (MMI) Scale is commonly used to describe these effects.

Earthquakes pose a serious risk to CBJ and the Traditional Lands of the Tlingit & Haida due to their location near major fault systems and the potential for related hazards, such as landslides, avalanches, tsunamis, and seiches. Many faults in the region are considered active, meaning they experience ongoing or occasional movement—either sudden or gradual. The nearest documented active fault to CBJ and the Traditional Lands of the Tlingit & Haida is the Fairweather Fault, about 90 miles west. This offshore transform fault continues south into British Columbia as the Queen Charlotte Fault. Figure 8 shows the Queen Charlotte-Fairweather fault (QCFF) and the Chatham Strait Fault (CSF) in relation to CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida. Historical records suggest [103]additional active faults may exist, including those linked to the 1899 earthquakes, though they remain unmapped and may be hidden beneath glaciers or water. CBJ's location near the Fairweather Fault makes it vulnerable to earthquakes, including the powerful magnitude 7.8-8.3 Lituya Bay event in 1958, which struck about 116 miles northwest of the area. Since 1900, seven earthquakes have occurred within 100 miles of CBJ and the Traditional Lands of the Tlingit & Haida, with magnitudes ranging from 5.0 to 6.1.

Tsunamis are typically caused by sudden vertical shifts in the ocean floor. However, because the Fairweather and Denali/Chatham Strait Faults move sideways (strike-slip), they are unlikely to trigger tsunamis in CBJ and the Traditional Lands of the Tlingit & Haida. Still, strong earthquake shaking can lead to landslides in steep terrain, which—if they enter the ocean—can create fast-moving local waves that strike shorelines with little warning and cause serious damage. More information about the impact of tsunamis and landslides on CBJ and the Traditional Lands of the Tlingit & Haida can be found in the Tsunami and Geological Hazards profiles.

[103] City and Borough of Juneau and Tlingit & Haida 2025 Hazard Mitigation Plan Update, https://juneau.org/newsroom-item/draft-hazard-mitigation-plan-now-available-for-public-review-and-comment

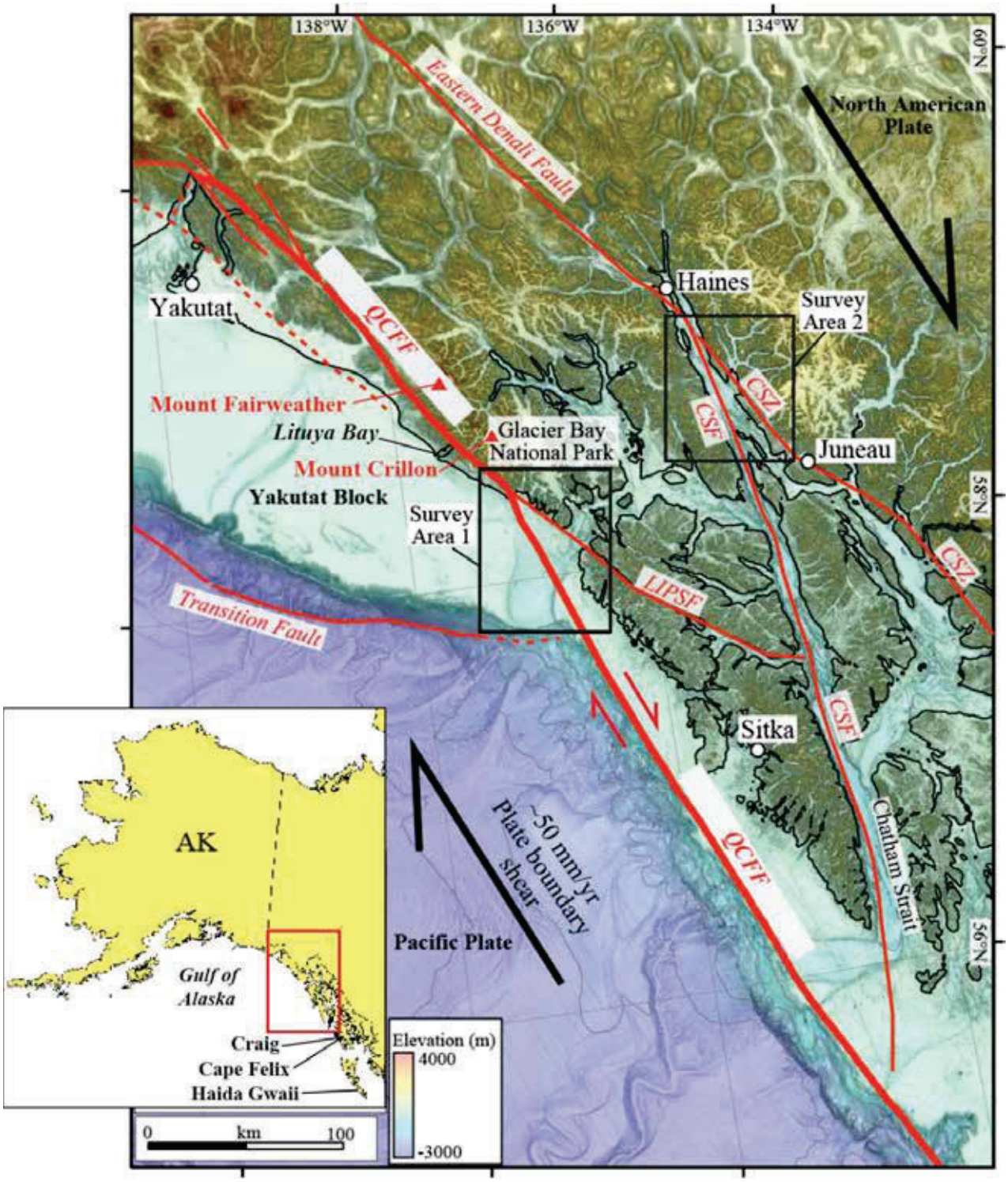

Figure 8: Study Region Along the Queen Charlotte-Fairweather Fault, USGS, 2015
Source: United States Geological Survey (USGS), 'Study region along the Queen Charlotte-Fairweather fault', Sound Waves Newsletter, 2015, https://www.usgs.gov/media/images/study-region-along-queen-charlotte-fairweather-fault

Fire

Fires are classified into several types based on where and why they occur:

- **Prescribed fires** are intentionally set under controlled conditions to reduce fire risk, protect communities, and support healthy ecosystems.
- **Wildland fires** are unplanned fires that burn in natural areas, excluding prescribed burns.
- **Wildland fire use** refers to naturally occurring fires that are allowed to burn because they help meet land management goals.
- **Urban fires** happen in populated areas, especially in city centers, and pose serious threats to nearby buildings and neighborhoods.
- **Wildland-urban interface fires** occur where developed areas meet undeveloped land. These fires are especially dangerous due to the mix of structures and vegetation, creating complex and hazardous conditions for both residents and emergency responders.

All of these fire types can affect the people and infrastructure of Juneau (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida.

Wildland Fire

Wildland fires are fast-moving blazes fueled by vegetation such as grass, brush, or trees. They often start unnoticed and can produce thick smoke visible for miles. These fires are most common in forested or grassy areas and are typically sparked by lightning or human actions, such as unattended campfires or discarded cigarettes.

Wildland fires are categorized based on their location or type—such as urban, tundra, interface, intermix, or prescribed burns. Several key factors influence how these fires behave and where they are most likely to occur:

- **Topography**: The shape and direction of slopes affect fire spread. South-facing slopes dry out faster due to more sun exposure, making them more fire-prone. Ridges can sometimes slow a fire's progress.
- **Fuel:** The type, amount, and condition of vegetation play a major role. Dense, dry, or dead plant material increases fire intensity. Droughts dry out both living and dead vegetation, raising the fire risk. Continuous fuel—both across the ground and vertically—facilitates the spread of fires.
- **Weather:** Conditions like high temperatures, low humidity, strong winds, and lightning can ignite and intensify wildfires. Increased hazards are lengthening dry seasons, increasing fire frequency and severity. On the other hand, cooler, wetter periods help reduce fire risk.
- **Season:** Late summer and early fall are peak wildfire seasons, when vegetation is driest and more flammable.

Community Fire

Urban fires are large-scale blazes that affect multiple developed areas within a community, unlike isolated structure fires that involve a single property. However, a small fire in one building can quickly escalate into a widespread urban fire if not contained.

These fires move fast—sometimes becoming uncontrollable in under 30 seconds—and can consume an entire home within minutes. The intense heat, which can reach 600°F at eye level, is often more dangerous than the flames themselves. It can cause severe internal injuries and melt clothing to the skin. In extreme cases, a flashover can occur, igniting everything in a room at once. Smoke and toxic gases are the leading causes of death in fires. As oxygen is depleted, invisible fumes can cause confusion, fatigue, and unconsciousness, making escape difficult. Even though flames are visible, thick smoke can obscure exits and trap occupants. The ease with which a fire spreads depends heavily on the materials and design of the buildings involved.

In the US, most structure fires are caused by everyday activities—unattended cooking is the top culprit, followed by fireplaces, candles, space heaters, cigarettes, faulty wiring, and lamps. Careless smoking is the leading cause of fatal fires, while arson ranks second. Because many of these fires are preventable, fire departments prioritize education and prevention. Fires in areas where homes meet wildland vegetation—the wildland-urban interface—are especially dangerous. A house fire can ignite nearby brush, spreading quickly to other buildings. Likewise, wildfires in these zones can jump into developed areas. Without strong fire suppression efforts, these fires can grow uncontrollably and threaten entire neighborhoods.

Flood

Flooding in CBJ (Dzantik'i H eni) and the Traditional Lands of the Tlingit & Haida is shaped by a mix of natural and human factors. Flooding occurs when water collects in areas not normally submerged, often due to compromised stream banks, levees, or artificial changes to the landscape. Floodplains—low-lying areas near water bodies—are especially vulnerable, and development in these zones can worsen flood impacts by reducing water flow capacity.

Flooding is Alaska's most frequent natural hazard, disrupting communities, damaging infrastructure, and occasionally causing loss of life. In CBJ, key contributors include heavy snowpack, rapid temperature shifts, intense rainfall, and ice dam activity. Glacial lake outburst floods (GLOFs) have become a recurring issue in the Mendenhall Valley since 2011, with major damage reported in 2023 and 2024.

Several types of flooding affect the region:

- **Flash floods** happen quickly, often due to heavy rain, ice jams, or dam failures. They are fast-moving and debris-filled, making them highly destructive—especially in steep coastal areas.
- **Fluctuating lake level floods** occur when lakes overflow due to excessive inflow, overwhelming their storage capacity.

- **Glacial lake outburst floods LOFs** result from the sudden release of water from glacier- or moraine-dammed lakes. These floods can be triggered by overtopping, seismic activity, melting, or internal drainage and they pose serious risks to downstream infrastructure and public safety.[104]
- **Groundwater floods** happen when saturated soil causes the water table to rise, flooding low-lying areas. While data is limited, the US Geological Survey (USGS) tracks groundwater levels across Alaska.
- **Rainfall-runoff floods** are the most common in Southeast Alaska. They are driven by prolonged rainfall, especially from atmospheric river events. From August to November, CBJ receives about half of its annual precipitation, making late summer and fall peak flood seasons.[105]
- **Snowmelt floods** occur in spring or early summer when warming temperatures rapidly melt stored snow. If the ground is still frozen, water runs off as surface flow, raising river levels. These floods depend on snowpack depth, spring weather, and watershed conditions.
- **Storm surge** happens when wind, pressure, and tides push ocean water inland. While rare in CBJ due to its deep fjords and steep coastal shelves, areas like the northern Gastineau Channel—where the slope is shallower—could be more vulnerable during extreme weather events.

Since 2011, the Mendenhall River system has experienced regular glacial lake outburst floods (GLOFs) caused by water releases from Suicide Basin, a side basin of the Mendenhall Glacier (Sít' Aant'aakú) above CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida. These events have led to record-breaking river levels and flow rates, resulting in repeated flooding of low-lying neighborhoods along the Mendenhall River—the most densely populated residential area in CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida. The Taku River (T'aakú Héeni), which flows into Taku Inlet about 10 miles south of CBJ, also experiences GLOFs. These originate from Lake No Lake, located along the Tulsequah Glacier in British Columbia, roughly 40 miles northeast of CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida. When the lake drains, it can cause flooding along the Taku River, occasionally damaging remote cabins in the area.

To manage flood risk, the City and Borough of Juneau (CBJ) participates in the National Flood Insurance Program (NFIP). FEMA's Flood Insurance Rate Maps (FIRMs), first issued in 1970 and most recently updated in 2018 (with revalidation in 2020), identify areas at risk of flooding and guide insurance coverage. Over the past 15 years, CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida have faced recurring GLOFs in the Mendenhall Valley. These events have become a near-annual hazard, with the most severe occurring in August 2025. It is important to note that this assessment identifies GLOFs as a recurring hazard, with additional impacts affecting the community since the most recent CDBG-DR allocation.

For more than a decade, Mendenhall Valley has experienced frequent GLOFs, primarily driven by releases from Suicide Basin. These events have become almost yearly occurrences, posing a persistent threat to the community. One of the most destructive to date occurred in August 2024, when nearly 300 homes were

[104] Neal, E.G., 2007, Hydrology and glacier-lake-outburst floods (1987-2004) and water quality (1988-2003) of the Taku River near Juneau, Alaska: U.S. Geological Survey Scientific Investigations Report 2007-5027, 27 p., https://pubs.usgs.gov/sir/2007/5027/
[105] JE Powell, 2022, Juneau Climate Report, City and Borough of Juneau, https://juneau.org/wp-content/uploads/2022/12/juneau-climate-report.pdf

flooded with several feet of water. Floodwaters can carry harmful contaminants and pose serious health risks as they move through communities. Sources like outhouses, septic systems, sewers, and livestock areas may release bacteria and disease into floodwater, especially when wastewater infrastructure is damaged. After a flood, homes and belongings often require thorough cleaning and disinfection, and in many cases, items must be discarded due to contamination. Flooding is the deadliest natural hazard in the United States, with fast-moving water posing a serious risk to life. Even shallow floodwaters—just six inches deep—can generate enough force to knock a person off their feet. Flood levels can rise suddenly, turning calm streams into dangerous torrents. In addition to strong currents, floodwaters often carry debris and large objects, increasing the danger for anyone caught in their path. In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, recent GLOFs have caused major property losses. The August 2024 event left roughly 290 homes submerged under 4 to 6 feet of water. The August 2023 GLOF also led to severe damage across four streets, including the condemnation of homes and multi-story condominiums.

The Mendenhall River in CBJ surged to an unprecedented height on Wednesday, August 13, 2025, the morning after a GLOF from Suicide Basin. The river peaked at 16.65 feet, surpassing the prior record of 15.99 feet set in 2024. On Wednesday morning, instruments at Mendenhall Lake measured the river's flow at 47,700 cubic feet per second (1,350 cubic meters per second), according to USGS records. For comparison, the same site registered 25,200 cubic feet per second (714 cubic meters per second) during the August 2023 flood—an event meteorologist Andrew Park of National Weather Service (NWS) Juneau described as "historic." Before that, the previous peak was 16,300 cubic feet per second (462 cubic meters per second) in 2016.[106]

For more information on flood impacts on shoreline and bank destabilization, see the Shoreline and Bank Destabilization section in the Geological Hazards profile.

Geological Hazards

Landslide

A landslide refers to any downward movement of soil, rock, or debris driven by gravity. These events can happen naturally when weak spots in the ground are triggered by factors like heavy rainfall, melting snow, shifts in groundwater, or seismic and volcanic activity. Some landslides occur in seconds, while others develop slowly over days or weeks, typically in steep terrain.

Human activities can also contribute to landslides—altering drainage patterns, adding water through irrigation or broken pipes, or removing vegetation from slopes can destabilize the ground. Subaerial landslides happen above water and are easier to observe. They are often caused by steep coastal slopes, glacial retreat, intense rain, or earthquakes. Submarine landslides occur underwater and are usually triggered by sediment buildup on steep slopes, seismic activity, tidal shifts, or coastal construction activities such as dredging or blasting.[107]

[106] Dieckman, Glacial Lake Outburst Causes Record River Crest in Juneau, EOS Science News by AGU, 09/15/25, https://eos.org/research-and-developments/glacial-lake-outburst-causes-record-river-crest-in-juneau
[107] Landslides, Alaska Earthquake Center, 2020, https://earthquake.alaska.edu/nontectonic/landslides

Three key factors influence landslide risk: topography, geology, and precipitation. Steep slopes and weak rock formations are more vulnerable, and rainfall can erode surfaces or increase water pressure underground, making slopes more likely to fail. Landslides often follow other natural hazards—earthquakes can trigger rockfalls, heavy rain can oversaturate slopes, and droughts can lead to wildfires that strip away stabilizing vegetation, increasing runoff and the chance of slope failure. Landslides have affected CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida for more than a century. One of the most devastating events occurred in 1936, when a major slide in the downtown area demolished multiple buildings and claimed 15 lives. Landslides can lead to serious consequences, including damage to roads, buildings, and infrastructure, ground sinking, and risk of injury or death. They are often linked to other natural hazards—floods, earthquakes, and volcanic activity can all trigger landslides due to saturated soil, ground movement, or runoff.

Shoreline and Bank Destabilization

Stream bank destabilization occurs when water erodes the edges of rivers or shorelines, removing soil and sediment. When this erosion becomes severe, it can strip away vegetation, destroy fish habitats, and lead to the loss of land and property. Storm surge and high-water flows can intensify this process, damaging coastal defenses and causing infrastructure failures, such as collapsed road embankments and exposed building foundations. In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, past flood events have led to notable shoreline erosion. During recent glacial lake outburst floods (GLOFs) on the Mendenhall River, floodwaters uprooted trees and swept buildings into the river. The August 2023 and 2024 GLOFs were especially destructive—FEMA IHP data identifies over 25 houses that received major or severe damage. The 2025 GLOF also resulted in erosion and bank destabilization. CBJ further noted severe erosion on the river's left bank near the Back Loop Road Bridge at the flood's peak. This erosion compromised the bridge approach, already closed at the time, and snapped utility and power lines when a pole collapsed into the river, cutting electricity and internet service to nearby residents and businesses.

Severe Weather

Severe weather refers to any hazardous atmospheric condition that can lead to damage, disruption, or even loss of life. In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, such events occur periodically and include heavy rainfall, fierce winds, thunderstorms with lightning or hail, dense fog, significant snowfall, extreme cold, freezing rain or ice storms, drought, and intense heat. This mitigation needs assessment will cover the severe weather hazards of atmospheric river, winter storm, thunderstorm, high wind, drought, and extreme heat events.

Atmospheric River

Southeast Alaska—including CBJ and the Traditional Lands of Tlingit & Haida—is frequently exposed to intense ocean storms that develop over the Pacific and move eastward, guided by the upper-level jet stream. These storms often carry strong frontal systems that funnel warm, moist air toward the region in a pattern known as the "warm conveyor belt." When these winds come from the south or southwest, they

collide with the area's steep terrain, forcing the air upward and increasing rainfall. These fronts can stall over the eastern Gulf of Alaska, extending heavy precipitation for one to three days.[108]

Atmospheric rivers are narrow bands of concentrated moisture in the atmosphere, visible in satellite imagery through integrated water vapor. They can produce 2 to 9 inches of rain, with hourly rates exceeding 0.30 inches or daily totals of 3 to 6 inches. These events often bring strong winds that can uproot trees in saturated soils, triggering landslides. Their impact is especially severe when they arrive during fall, when soils are already wet, or when they melt existing snowpack, increasing runoff and flood risk. Given past occurrences and hazard criteria, atmospheric rivers pose a critical threat to Juneau (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida. Potential consequences include permanent injuries or illness, prolonged shutdowns of essential services, and severe damage to more than a quarter of local properties.[109]

Drought

A drought occurs when a region receives significantly less rainfall than usual over an extended period. These dry spells can vary in intensity but often lead to serious environmental and public health challenges. Drought conditions can disrupt daily life by causing water shortages, degrading drinking water quality, harming air quality, damaging aquatic ecosystems, reducing vegetation and crop yields, and increasing the spread of certain diseases. Because droughts develop gradually, they may persist for weeks, months, or even years—and their effects can linger long after the dry period ends, impacting communities well into the future.

Extreme Heat

Extreme atmospheric heat refers to extended periods of unusually high temperatures, often paired with elevated humidity levels. These conditions can pose serious health risks and strain infrastructure and natural systems. What qualifies as extreme heat varies by region—temperatures that are typical in places like Phoenix, Arizona, would be considered unusually hot in Southeast Alaska. While there is no universal threshold, the National Oceanic and Atmospheric Administration (NOAA) issues Heat Advisories in Southeast Alaska when temperatures reach or exceed 80°F.[110]

High Wind

Strong winds can be hazardous depending on their speed. Sustained winds between 26 and 39 miles per hour, or gusts from 35 to 57 mph, present a moderate risk. When sustained winds reach 40 to 57 mph, the threat level becomes high. Winds exceeding 58 mph—either sustained or in gusts—pose an extreme danger. Although Alaska is not impacted by hurricanes, it can still experience winds strong enough to cause similar damage. Downtown Juneau and Douglas are known for a distinct weather event called Taku Winds. These powerful winds are caused by mountain waves forming over the Gastineau Channel near these communities. Depending on the intensity of the wave, wind gusts can range from 35 to 50 mph during mild conditions to as high as 60 to 100 mph when the waves are strong.[111]

[108] Atmospheric River Portal, National Oceanic and Atmospheric Administration, 2025, https://psl.noaa.gov/arportal/
[109] Juneau's Changing Climate & Community Response , Alaska Coastal Rainforest Center 2022, https://acrc.alaska.edu/docs/juneauclimate-report
[110] Heat Advisory FAQ- Juneau, National Weather Service, n.d., https://www.weather.gov/media/ajk/articles/Heat%20Advisory%20FAQ.pdf
[111] Taku Winds, National Weather Service (NWS), n.d., https://www.weather.gov/media/ajk/brochures/Taku_Winds.pdf

In Tlingit tradition, the North Wind (Xóon) is believed to draw its strength from spirits dwelling in the mountain cliffs (Shaa). Out of respect for this power, people refrain from speaking ill of the North Wind, no matter how fiercely it blows. An old tale tells of a noble man who first married the daughter of the East Wind (Dákde át). Later, he learned that the North Wind also had a strikingly beautiful daughter and took her as a second wife. When he returned to his village, the East Wind's daughter grew envious of her rival's shimmering attire, which sparkled and chimed as she moved. In her jealousy, she summoned the East Wind, bringing warm, cloudy weather. As a result, the North Wind's daughter lost her glittering garments, and the frost and icicles melted away.[112] This story illustrates how different winds influence the weather. When these forces grow stronger, they can lead to more intense and hazardous conditions. Even today, the direction of the wind remains a vital clue in forecasting weather and identifying potential risks.

Thunderstorm

Thunderstorms develop when warm, moist air rises rapidly into the atmosphere, creating unstable conditions that lead to cloud formation and rainfall. Under the right circumstances, these storms can become severe, producing strong winds, large hail, and flash floods. A thunderstorm is classified as severe if it generates winds of 58 mph or more, spawns a tornado, or drops hail at least one inch in diameter. Thunderstorms are relatively rare in Juneau and the Traditional Lands of the Tlingit & Haida, typically occur about once every two years. While they can happen during any season, they are most frequently observed in June and July. [113]

Hail

Hailstorms, which sometimes accompany thunderstorms, involve chunks of ice falling with rain. These ice balls or irregular lumps can exceed one inch in diameter, depending on the storm's strength. While damaging hail is common in the Midwest, it is rare in Alaska due to the region's less extreme atmospheric conditions. Southeast Alaska occasionally sees small hail, and while hailstones up to an inch are possible, they typically cause only minor damage.

Lightning

All thunderstorms contain lightning, which results from the buildup of electrical charges within the storm cloud. When lightning strikes the ground, it can injure people and ignite fires, making it the most serious thunderstorm-related threat in Southeast Alaska. A more common impact of thunderstorm activity in Alaska is wildfire. As wildfire danger rises, lightning strikes will become a more significant concern in Southeast Alaska.

Winter Storm

This hazard profile covers various hazards associated with winter storms, including heavy snow, extreme cold and freeze, and ice storm hazards.

Heavy Snow

[112] City and Borough of Juneau and Tlingit & Haida 2025 Hazard Mitigation Plan Update, https://juneau.org/newsroom-item/draft-hazard-mitigation-plan-now-available-for-public-review-and-comment
[113] City and Borough of Juneau and the Central Council of Tlingit and Haida Indian Tribes of Alaska (Tlingit & Haida) Multi-Jurisdictional Hazard Mitigation Plan Update, 2025, https://www.commerce.alaska.gov/web/dcra/GrantsSection/CDBG-DR-Juneau

Heavy snow (Dleit çéedi) refers to significant snowfall that builds up quickly—typically four inches or more within 12 hours, or six inches or more in 24 hours. In CBJ (Dzantik'i Héeni), local standards define heavy snow as six inches or more in just 12 hours. When combined with strong winds and dangerously low temperatures, this creates a winter storm, which can pose serious risks to safety and infrastructure.

For a winter storm to form, three key ingredients are needed:

- **Cold air:** Temperatures below freezing (32°F or 0°C) near the ground or in the clouds to produce snow or ice.
- **Moisture:** Enough water vapor in the air to generate clouds and precipitation.
- **Lift:** A process that pushes moist air upward, leading to cloud formation and snowfall. This can happen when air flows up mountain slopes, when warm air meets and rises over cold air at a front, or when low-pressure systems aloft create upward motion.

A snowstorm is a type of winter storm that develops when frigid polar air meets a warmer air mass. The warm air rises rapidly while the cold air slides beneath it, forming thick clouds. Snow forms as ice crystals collide within these clouds, but it only reaches the ground as snow if the air between the cloud base and the surface stays below 40°F. Warmer air causes the snowflakes to melt into rain or sleet.

Extreme Cold

Extreme cold refers to extended periods of dangerously low temperatures, which can occur with or without winter storms. In Alaska, this typically means temperatures ranging from -20°F to -50°F or lower. In 2024, the state revised its criteria for extreme cold based on regional climate patterns. For Juneau (Dzantik'i Héeni), an extreme cold alert is issued when the apparent temperature—factoring in wind chill or not—drops to -20°F.

Ice Storm

Freezing rain and ice storms happen when a shallow layer of cold air near the ground is not thick enough to freeze falling raindrops midair. Instead, the rain stays liquid until it hits the surface, where it instantly freezes, forming a layer of ice on roads, trees, power lines, and other exposed surfaces.

Tsunami

Tsunamis are powerful waves caused by sudden vertical shifts in water, often triggered by underwater earthquakes, landslides, or volcanic eruptions. In Alaska, the greatest tsunami threat comes from seismic activity near the Aleutian subduction zone, where waves can reach coastal communities within minutes to hours, requiring rapid evacuation.

There are several types of tsunamis:

- **Seismically generated tsunamis** are caused by earthquakes, especially along the Aleutian Arc. These waves typically arrive 20 to 45 minutes after the quake.

- **Landslide-generated tsunamis** result from underwater or land-based slides, often triggered by earthquakes. These can be massive and sudden, with little to no warning. Notable examples include the 1958 Lituya Bay and 2015 Taan Fjord events.[114]
- **Volcanic-generated tsunamis** are rare in Alaska. One known event occurred in 1883 when the Saint Augustine Volcano collapsed, producing 30-foot waves that hit Port Graham. For more about this hazard type, see the Volcano hazard profile.
- **Teletsunamis** (or distant tsunamis) originate far from Alaska but can still reach its shores. This allows more time for warnings and evacuations. Most have caused minimal damage, though the 1960 Chilean tsunami did impact parts of Southeast Alaska.
- **Seiches** are wave oscillations in enclosed water bodies like lakes, triggered by earthquakes, landslides, or atmospheric shifts. They can occur within minutes and cause repeated damage as water sloshes back and forth.

Tsunamis can travel over 500 mph in deep ocean water and cross entire oceans in a day. As they approach land, they slow down, grow taller, and become more destructive. Many go unnoticed at sea due to their long wavelengths and low wave height, making them invisible to mariners. The speed, height, and impact of a tsunami depend on the depth of the water and the nature of the triggering event. According to the Alaska Division of Geological and Geophysical Surveys (DGGS), while the chance of a tsunami striking Southeast Alaska is relatively low, the consequences could be severe. CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida are somewhat shielded from ocean-based tsunamis by surrounding islands and channels. However, waves generated by earthquakes in the Alaska-Aleutian Subduction Zone—especially segments KI, KP, PWS, and YY—and the Cascadia Subduction Zone could still reach the area, likely traveling through Icy Strait or Chatham Passage. More concerning for CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida are tsunamis triggered by landslides. DGGS notes that there is currently a lack of detailed geotechnical data on submarine sediments near Juneau, making it difficult to model these events accurately. Still, six high-risk locations have been identified: the head of Fritz Cove, offshore of Eagle River, the head of Berners Bay, offshore of Sheep Creek, South Franklin Street, and the Taku Inlet. These areas could potentially generate landslide-induced tsunamis that pose a serious threat to the region. A landslide took place above the end of Sawyer Glacier at 5:26 AM AKDT on Sunday, August 10, 2025. A tsunami was generated when this landslide entered the waters of Tracy Arm, resulting in vegetation damage, but there were no infrastructure impacts.[115]

[114] Tsunami Inundation Maps for Juneau, Alaska. By: E.N. Suleimani, D.J. Nicolsky, R.D. Koehler, and J.B. Salisbury., Alaska Division of Geological & Geophysical Surveys (DGGS) 2017, https://dggs.alaska.gov/webpubs/dggs/ri/text/ri2017_009.pdf
[115] Tsunami Events Information, NCEI, 2025, https://www.ngdc.noaa.gov/hazel/view/hazards/tsunami/event-more-info/6045#:~:text=Reference%20%2314138%3A,the%20waters%20of%20Tracy%20Arm.

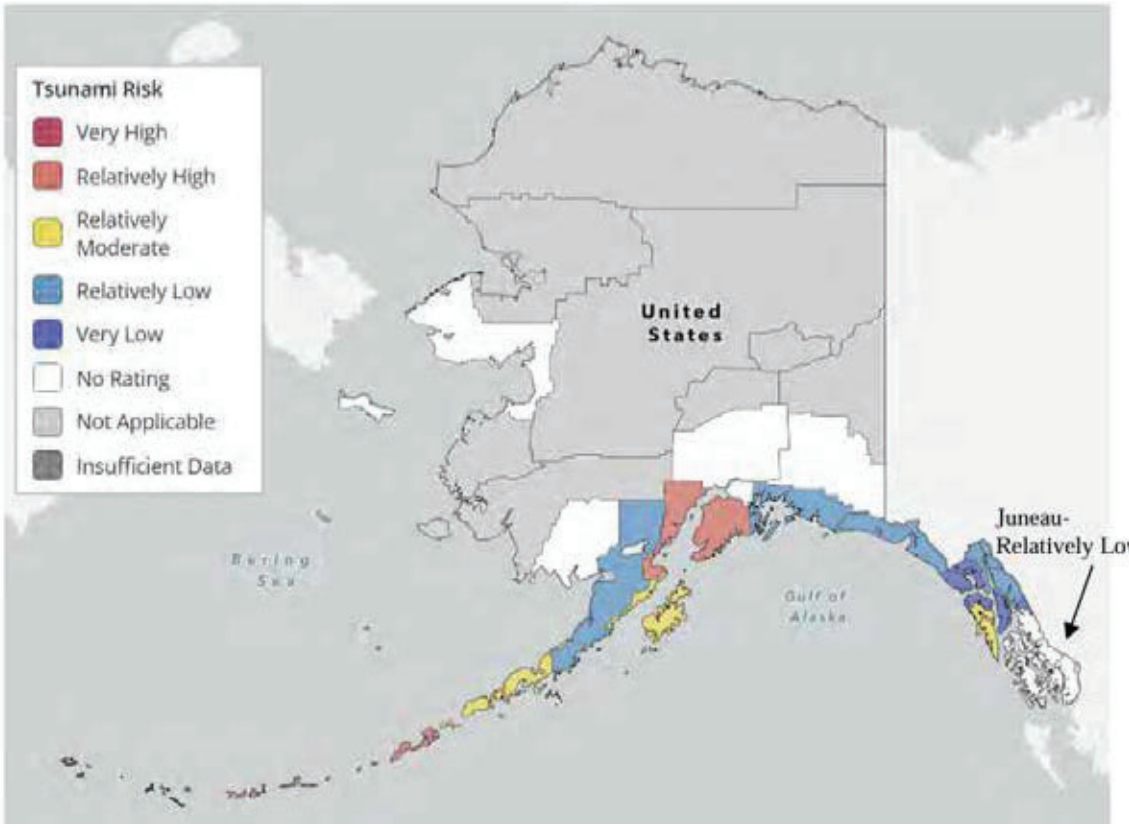

Figure 9: Tsunami Risk Index, National Risk Index, FEMA, 2025
Source: FEMA 2025 National Risk Index (Tsunami), https://hazards.fema.gov/nri/map

Volcano

Volcanoes are natural openings in the Earth's crust where molten rock (magma), gases, and debris erupt to the surface. These eruptions can be extremely powerful—sometimes more destructive than nuclear explosions—especially when they occur near populated areas. The US Geological Survey categorizes volcanoes in four primary types: Cinder Cone, Composite (Stratovolcano), Shield, and Lava Dome. Many volcanoes exhibit characteristics from more than one category; for instance, the Saint Augustine Volcano is classified as a stratovolcano but also forms lava domes. Alaska is home to more than 140 volcanoes and volcanic fields that have shown activity over the past two million years. Of these, approximately 90 have erupted within the last 10,000 years and are considered potentially active. Over 50 have erupted in the past 300 years, highlighting the ongoing volcanic risk in the region.[116]

The majority of Alaska's volcanoes are located along the Aleutian Island Chain, which stretches west toward Russia's Kamchatka Peninsula. Additional volcanoes with activity in the past several thousand years are found in southeastern Alaska and the Wrangell Mountains. Smaller volcanic features—some of which have erupted within the last 10,000 years—also exist in interior and western Alaska, reaching as far north as the Seward Peninsula.[117]

[116] Alaska Volcano Observatory, U.S. Geological Survey, n.d., https://avo.alaska.edu/volcano/
[117] Alaska Volcano Observatory, U.S. Geological Survey, n.d., https://avo.alaska.edu/volcano/

Beyond Alaska, several potentially active volcanoes are located in western Canada, primarily within the Northern Cordilleran Volcanic Province. This region has experienced multiple eruptions over the past 10,000 years and includes at least five volcanic areas considered potentially active today: the Garibaldi Volcanic Belt, Wells Gray-Clearwater volcanic field, Northern Cordilleran, Anahim Volcanic Belt, and Wrangell Volcanic Belt, as referenced in the 2025 CBJ and Tlingit & Haida Hazard Mitigation Plan. The most recent eruption in this region—Lava Fork—occurred roughly 150 years ago and produced a lava flow that crossed the US-Canada border.

The closest of these Canadian volcanoes to the planning area is the Mount Edziza volcanic complex, located about 145 miles east of CBJ and the Traditional Lands of the Tlingit & Haida. At present, Canada lacks sufficient monitoring of these volcanoes, and further research would be required to formally classify them as active. The type of volcanic eruption and prevailing wind conditions play a major role in determining the physical impacts and potential hazards to nearby communities. For CBJ and the Traditional Lands of the Tlingit & Haida, the region's location means that direct volcanic threats—such as lava flows, pyroclastic surges, and lahars—are unlikely. However, volcanic ashfall remains a significant concern due to its ability to travel long distances from the eruption site.

3.3.6. Indispensable Services

Indispensable services enable the continuous operation of critical business and government functions and/or are critical to human health and safety and economic security. These services are largely operated out of critical facilities, which provide services and functions essential to a community, especially during and after a disaster. A comprehensive list of critical facilities in CBJ and the Traditional Lands of the Tlingit & Haida can be found in Section 3.4.6: Critical Facilities Inventory of the 2025 City and Borough of Juneau All-Hazards Mitigation Plan.

Examples of indispensable service-providing facilities requiring special consideration include:

- Police stations, fire stations, critical vehicle and equipment storage facilities, and emergency operations centers needed for disaster response activities before, during, and after a disaster
- Medical facilities, including hospitals, nursing homes, blood banks, and health care facilities (including those storing vital medical records) likely to have occupants who may not be sufficiently mobile to avoid injury or death during a disaster
- Schools and day care centers, especially if designated as shelters or evacuation centers
- Power generating stations and other public and private utility facilities vital to maintaining or restoring normal services to flooded areas before, during, and after a flood
- Drinking water and wastewater treatment plants
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials[118]

[118] Community Lifelines, FEMA, n.d., https://www.fema.gov/el/emergency-managers/practitioners/lifelines

3.3.7. Vulnerability of Regional Facilities by Hazard

Changes in the Cryosphere and Permafrost

In Southeast Alaska, the rise in sea level is currently being offset by land surface uplift—known as isostatic rebound—caused by the retreat of glaciers. This phenomenon is especially pronounced in the planning area, where the ground is rising at an average rate of about 0.6 inches (15 mm) per year, based on GPS-based modeling.[119] The thinning of glaciers and icefields in the Coast Mountains since the end of the Little Ice Age, roughly 250 years ago, has reduced the weight on the Earth's crust, prompting this uplift.

As a result, CBJ is experiencing a relative drop in sea level, even as global sea levels continue to rise—currently at rates exceeding 0.12 inches per year. Historical shoreline data show that land elevation in the region has increased by approximately 10 feet since the late 1700s, and this trend is expected to continue for centuries due to ongoing glacier loss. While isostatic rebound occurs gradually, it can still pose risks to infrastructure. Over time, the shifting ground may weaken building foundations and damage roads, bridges, and culverts. Without proactive monitoring and mitigation, these changes could compromise critical infrastructure across CBJ.[120]

Over the last century, more than 70 structures within a 10-mile radius of Downtown Juneau have been impacted by avalanches. Currently, 60 buildings, including a hotel, expressway, and boat harbor, are located in areas identified as high avalanche risk within CBJ and the Traditional Lands of the Tlingit & Haida. The Behrends Avenue and White avalanche paths account for the highest number of documented avalanche incidents in CBJ (Dzantik'i H eni) and the Traditional Lands of the Tlingit & Haida.

Earthquake

An earthquake has the potential to impact the entire City and Borough of Juneau and the Traditional Lands of the Tlingit & Haida and nearby regions. Hazards linked to seismic activity include shaking, fault movement, landslides, avalanches, seiches, and tsunamis. Most injuries and deaths during earthquakes happen indoors due to collapsing structures, shattered glass, and falling debris. Therefore, the level of risk in this area is influenced not only by its proximity to fault lines, earthquake magnitude, and local geology, but also by building construction. Structures that do not meet seismic safety standards—especially older buildings in Downtown Juneau—are more likely to suffer serious damage and disrupt essential services. Widespread damage could affect critical infrastructure, possibly leading to the loss or abandonment of key facilities.

Earthquakes may also impact water systems, including private and public wells, and may temporarily or permanently alter aquifers. Historically, the City and Borough of Juneau and the Traditional Lands of the Tlingit & Haida have experienced limited earthquake damage, largely because CBJ lies near but not directly on the Fairweather Fault. Nonetheless, strong earthquakes elsewhere in Alaska have caused noticeable effects. For instance, the 1971 Saint Elias Earthquake, centered over 400 miles away, reportedly caused minor damage, such as cracked plaster and shifted furniture in the Mendenhall area.[121]

[119] Juneau's Changing Climate & Community Response, Alaska Coastal Rainforest Center, 2022, https://acrc.alaska.edu/docs/juneauclimate-report
[120] Juneau's Changing Climate & Community Response, Alaska Coastal Rainforest Center, 2022, https://acrc.alaska.edu/docs/juneauclimate-report
[121] City and Borough of Juneau and Tlingit & Haida 2025 Hazard Mitigation Plan Update, https://juneau.org/newsroom-item/draft-hazard-mitigation-plan-now-available-for-public-review-and-comment

Fire

Downtown Juneau includes clusters of older wooden buildings that lack modern fireproofing, making the area especially vulnerable to large fires. Many parts of downtown are labeled high-risk zones due to the potential for a widespread blaze. Strong southern winds and hillside homes with limited defensible space and escape routes add to the danger. If a fire were to break out under these conditions, it could rapidly spread through downtown and ignite homes and vegetation on the hillside, leading to major property loss, damage to historic sites, and possible fatalities. The stretch between Main Street and Gastineau Avenue—extending north to Sixth Street and south along Thane Road to the base of the Tram—is recognized as a High Fire Hazard Area. Most buildings here are wood-frame structures, with many resting on creosote-treated pilings, which are highly flammable. The hillside above contains both transient camps and abandoned buildings, adding to the risk. Southern winds, which are common in this area, blow directly from the most hazardous zone toward the rest of the city, increasing the potential for fire spread. During the summer, the population in this district swells due to cruise ship visitors and the concentration of tourist shops and restaurants. Buildings are tightly packed, often sharing walls, and few are equipped with sprinkler systems.

If a major fire were to break out, evacuation would be challenging. Traffic congestion is already a regular issue, and many streets only allow for one-way traffic. Gastineau Avenue, a narrow, dead-end road about 200 feet above South Franklin, is especially vulnerable. With limited access, dense vegetation, and scarce parking, evacuating by vehicle would be extremely difficult for residents.

Wildland fires in CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida have so far been relatively limited in scale, with only minor injuries reported and some risk of critical facilities being offline for over a week. While more than 10% of property or infrastructure could be seriously affected in a worst-case scenario, long-term damage to transportation systems or the broader economy has been minimal. That said, wildfires have the potential to cause severe environmental harm. They can destroy large swaths of vegetation and leave behind scorched soil that struggles to retain moisture or support new growth. Once the land is bare, it becomes more prone to erosion, which can destabilize riverbanks and increase sediment in waterways. This not only raises the risk of flooding but also degrades water quality, threatens aquatic habitats, and can damage nearby homes and infrastructure.

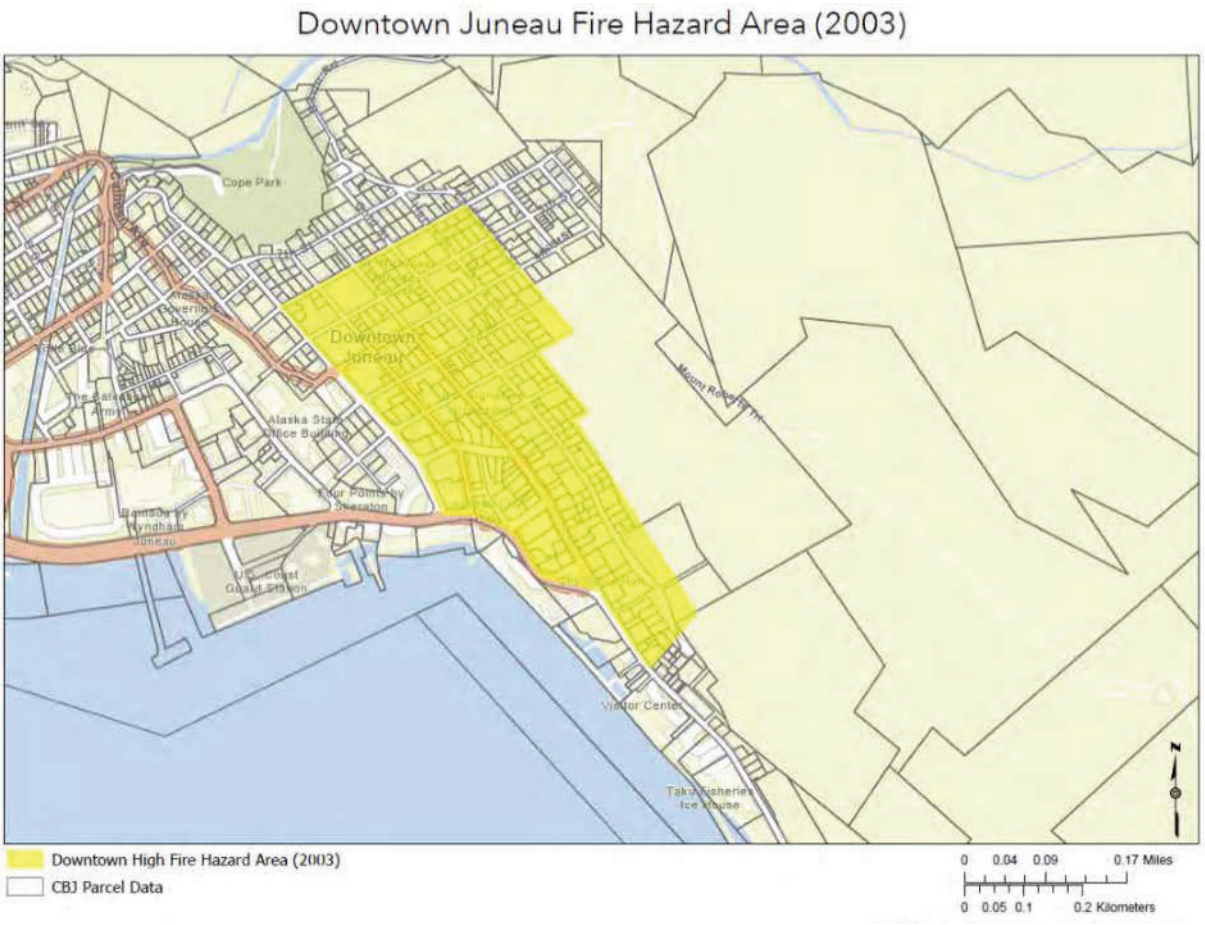

Figure 10: Urban Fire High Hazard Area of Downtown Juneau with Nearby Facilities (From the 2004 CBJ HMP)
Source: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, OpenStreetMap contributors, and the GIS User Community. Fairweather Science LLC, 06/14/25

Fires also strain water systems—either by draining storage tanks or making it difficult to restore pressure in distribution lines. Both wildland and urban fires can disrupt the water supply and require careful recovery planning. Smoke from large wildfires can travel long distances, affecting air quality and posing health risks to people and animals. Despite their destructive potential, wildfires also play a vital role in maintaining ecological balance. They help renew habitats, support biodiversity, and contribute to long-term ecosystem health. In Alaska, fire management strategies reflect this dual role. Planning efforts consider not only environmental and economic impacts but also the social toll on firefighters and communities. Decisions about how to respond to wildfires are shaped by the value of natural and cultural resources at risk, ensuring that fire management supports both safety and sustainability.

Flood

In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, past floods have led to hazardous material incidents. During the August 2023 GLOF, three sewage lift stations were overwhelmed and several fuel tanks were swept into the river, raising concerns about chemical spills. In August 2024, floodwaters in the Mendenhall River carried a noticeable petroleum odor, suggesting additional contamination. Flooding

can severely impact essential infrastructure, including water and wastewater systems, power lines, communications networks, roads, bridges, and culverts. Fast-moving floodwaters often carry debris that clogs culverts and bridge piers, reducing water flow and increasing pressure on structures—sometimes leading to overtopping or backwater flooding. Public water systems can also be compromised and must be tested to ensure that they are safe to drink. Private wells require similar testing and disinfection. When water supplies are contaminated, flood victims may rely solely on bottled water for safe consumption.

GLOFs have caused notable damage to critical facilities in recent years. During the August 2023 and 2024 events, the local utility company shut off power to homes along the Mendenhall River to prevent equipment damage and reduce the risk of electrocution. Floodwaters also compromised bank stabilization near water and wastewater treatment facilities, leading to infrastructure damage. Roads such as Skaters Cabin Road, View Drive, and Killewich Drive were affected, with the October 2024 GLOF rendering Skaters Cabin Road impassable. Flooding can cause extensive damage to buildings by saturating construction materials, which often swell and become distorted, making doors and windows difficult to operate. Once soaked, materials like drywall and wood become significantly heavier, increasing the risk of structural issues such as warping, shifting, or collapse. Drywall, in particular, can absorb water well above the flood line due to capillary action, spreading damage vertically through walls. During the 2025 GLOF event, CBJ reported that the flood caused major disruptions upstream of the Back Loop Road Bridge, with lesser effects downstream along the Mendenhall River. Using FEMA's damage classifications, officials counted 35 homes impacted—11 with minor damage and six with major damage. The hardest-hit neighborhood was View Drive, where five houses took on 4 to 5 feet of water inside living areas. On Meander Way, 15 homes were affected, including two with minor damage and one with major damage after water pushed past HESCO barriers. Properties near River Road also experienced flooding, while storm drains near the Safeway lot at Brotherhood Bridge overflowed, worsening local conditions.[122]

Flood damage is driven by two types of pressure: hydrostatic force from standing water and hydrodynamic force from moving water. Both can exert intense pressure on structures, leading to cracks, displacement, or collapse. After floodwaters recede, mildew can quickly develop, ruining furniture and posing health risks—especially for individuals with respiratory conditions or allergies. Floods also deposit large amounts of dirt and silt, which can coat interiors and belongings, causing additional damage even if water exposure was limited. Flooding can disrupt transportation by inundating roads and airport infrastructure, limiting the movement of people and goods. When floodwaters cover runways or roadways, travel becomes unsafe or impossible. In severe cases, flooding can damage the structural integrity of runway surfaces and destabilize surrounding embankments, leading to long-term impacts on airport operations and access routes.

Dam Failure

Salmon Creek Dam

Salmon Creek Dam releases water into Salmon Creek (ýáat héen), which flows through vegetated riparian zones before reaching Twin Lakes and eventually the Gastineau Channel. Roughly three miles downstream, key infrastructure lies in the floodplain, including Egan Drive, the Macauley Salmon Hatchery, the Ethel Lund

[122] Dieckman, Glacial Lake Outburst Causes Record River Crest in Juneau, EOS Science News by AGU, 09/15/25, https://eos.org/research-and-developments/glacial-lake-outburst-causes-record-river-crest-in-juneau

Medical Center, Bartlett Regional Hospital, the Juneau Empire offices, and the Alaska Marine Highway terminal. Egan Drive serves as the main access route in this area. Three bridges span Salmon Creek below the dam. The first, located about half a mile downstream, supports a gravel road leading to the reservoir. The other two—Egan Drive Bridge and Glacier Highway Bridge—are located 2.5 miles downstream and sit within 300 feet of each other. Flooding or bank erosion along Salmon Creek could send debris downstream, potentially inundating Egan Drive and Glacier Highway and cutting off access to critical facilities. The Macauley Salmon Hatchery is especially vulnerable to water quality issues, pen damage, and supply disruptions. A similar incident occurred in 2020 when a landslide triggered cascading effects that impacted the 2024 salmon sportfishing season across CBJ and the Traditional Lands of Tlingit & Haida.

Douglas Island Dam (Bear Creek Dam)

Development downstream of the Douglas Island Dam includes a combination of essential infrastructure and private homes. This area features major and minor roads, commercial and industrial sites, utility lines for power and communication, water and wastewater systems, and residential properties. Structures begin roughly 600 feet from the dam and sit about 10 feet above the streambed. Bear Creek flows beneath 4th through 1st Streets via culverts, with nearby housing starting at the 500 block of H Street and extending to the shoreline near 1st and D Streets. In the event of a dam failure, flooding could affect homes and businesses within this zone. At-risk structures include duplexes, apartments, office spaces, and the Island Pub. However, given the reservoir's limited capacity, a large-scale flood is considered unlikely.

Geological Hazards

Landslide

Landslides have historically caused significant damage in CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, with roads being the most frequently impacted critical infrastructure. However, other essential facilities and private homes are also located in landslide-prone zones and remain at risk. Past events, including deadly slides in 1920 and 1936, have claimed 19 lives.

Gastineau Avenue has been hit especially hard, suffering damage in five separate incidents. In some cases, homes on the uphill side were swept across the road, damaging or destroying structures below. Other affected roads include Egan Drive, Glacier Highway, South Franklin Street, and several residential streets, which have been blocked or damaged by debris flows, boulders, and flooding caused by landslide-triggered dams.

Beyond roads, landslides have damaged or destroyed key facilities, such as the Juneau Cold Storage Facility, the Macauley Salmon Hatchery, the Juneau Veterinary Clinic, Cope Park, a hydroelectric dam, the AWARE women's shelter, Juneau-Douglas High School, and various hotels, lodges, and businesses.

The most catastrophic event occurred on November 22, 1936, when a massive slide buried parts of Downtown Juneau, killed 15 people, and knocked out power for several days. In 2019, a landslide caused minor flooding and debris accumulation on the grounds of Juneau-Douglas High School. The following year, a slide damaged a water pipe at the Salmon Creek Reservoir Dam, which supplied the Macauley Salmon Hatchery. With limited freshwater, hatchery staff were forced to release Chinook, Coho, and Rainbow trout smolt prematurely, before they were ready for saltwater. This led to widespread fish loss and triggered

sportfishing closures for Chinook salmon in Auke Bay (Áak'w), Fritz Cove, Gastineau Channel, and near the hatchery dock during the 2024 season. On September 26, 2022, a landslide on Gastineau Avenue downed power lines, cutting electricity to Douglas, North Douglas, Downtown Juneau, and Thane. Power was restored to most of the 5,000 affected residents within hours, but about 50 residents remained without service until the next day.

Erosion, Shoreline, and Bank Destabilization

Shoreline and bank destabilization can lead to land loss and threaten nearby infrastructure. It may also damage utilities such as fuel systems, power lines, and water or wastewater services. Additional consequences include harm to native aquatic habitats, increased sedimentation that lowers water quality, and financial burdens tied to mitigation and repair efforts. Shoreline and bank erosion can affect air travel by damaging airport infrastructure or access roads. Coastal flooding at Juneau International Airport could compromise the tarmac or surrounding routes, halting flights until repairs are completed. Even if the airport itself remains intact, flooding, heavy rain, or landslides could destabilize nearby roads and block access.

Severe Weather

Severe weather in CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida has ranged from minor to major in impact. Depending on the event, outcomes could include temporary or lasting injuries, extended closures of essential services, and significant damage to 10% to 25% of local properties. Historical patterns and hazard criteria reflect a risk level from negligible to critical. Severe weather can seriously disrupt air travel by delaying departures or preventing planes from landing, impacting Juneau International Airport (JIA), a critical facility in the area. Heavy snowfall can block runways, strong winds can make flying unsafe, thick fog can reduce visibility, and ice can form on aircraft surfaces. For flights to resume safely, crews must clear snow from runways, wait for fog to lift and winds to calm, and ensure planes are fully de-iced. The impact of each severe weather hazard type on indispensable services is discussed below.

Drought

Drought conditions can jeopardize livelihoods by reducing water availability and degrading drinking water quality. They also contribute to poor air quality, damage aquatic ecosystems, destroy vegetation and crops, and heighten the risk of infectious disease outbreaks. In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, extended dry periods can lead to drinking water shortages, poor air quality from wildfire smoke and dust, increased health risks, and economic strain. Environmentally, droughts degrade soil, reduce fish and wildlife habitats, and lower water levels in lakes and reservoirs, making it harder for salmon to spawn.[123]

From 2016 to 2019, Southeast Alaska experienced record-low water levels. In Juneau and the Traditional Lands of the Tlingit & Haida—normally a rainforest—this lack of rain stressed local reservoirs. Crater and Long Lake dropped so low that the Snettisham Hydroelectric Facility had to cut power to major users like Greens Creek Mine. In 2019, warm water and low stream flows delayed salmon migration, forcing the

[123] Southeast Alaska Drought, International Arctic Research Center, University of Alaska Fairbanks (UAF-IARC), 2023, https://uaf-iarc.org/wp-content/uploads/2023/01/SoutheastAlaska-Drought-1.pdf

Macaulay Salmon Hatchery to release fry early. While these impacts were less severe than in other parts of Alaska, where warm waters caused widespread salmon die-offs, they still disrupted local fisheries.[124]

Drought also increases wildfire risk. On June 27, 2019, a statewide fireworks ban was issued due to extreme fire danger, with 130 active wildfires burning over 273,000 acres.[125] Smoke from large fires in Yukon and British Columbia drifted into Southeast Alaska. Additionally, the dry conditions triggered outbreaks of pests and invasive species. A hemlock sawfly outbreak that began in 2018 defoliated over 530,000 acres of forest—an event linked to the drought's suppression of the fungal diseases that normally keep sawfly populations in check.[126] Historical data and hazard criteria indicate that drought impacts in CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida are considered limited. While rare, such events could lead to week-long closures of essential services and cause significant damage to over 10% of local property or infrastructure.

Extreme Cold and Ice Storm

Extreme cold is uncommon in CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, and its historical effects have been minimal. However, understanding the potential consequences is essential should such an event occur in CBJ and the Traditional Lands of the Tlingit & Haida. Severe cold can disrupt transportation, especially when ice fog forms and grounds supply aircraft. Extended cold spells may freeze large water bodies, hindering shipping and raising the risk of ice jams and flooding—though Juneau has only seen surface ice in its harbor, not full ice jams. While residents have adapted to cold conditions, infrastructure has limits. Extremely low temperatures can interfere with power generation and cause fuel to thicken in pipes and tanks. Without electricity, heating systems fail, and water or sewage pipes may freeze or burst. When snow cover is minimal, the ground freezes deeper, increasing the chance of underground pipe damage.

The most serious threat from extreme cold is to human health. Prolonged exposure can quickly lead to frostbite or hypothermia, especially for infants and older adults. Additionally, using space heaters or other heat sources without proper ventilation can result in carbon monoxide poisoning. Ice buildup can cause severe damage to trees, power lines, and communication towers. When ice forms on these towers, it can interrupt transportation, electricity, and communication services across the City and Borough of Juneau and the Traditional Lands of the Tlingit & Haida. Ice storms are known to lead to car crashes, outages, and injuries. In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, past events have resulted in utility disruptions, hazardous driving conditions, and slick walkways.

Extreme Heat

Extreme heat in CBJ can lead to a wide range of challenges. Rapid snow and glacier melt may increase wildfire risk later in the year and reduce the availability of meltwater needed for hydroelectric power. Without enough water, CBJ may have to rely on costly and polluting diesel generators. This issue is especially concerning because some local hydro systems use flowing water rather than traditional reservoirs, making

[124] Southeast Alaska Drought, International Arctic Research Center, University of Alaska Fairbanks (UAF-IARC), 2023, https://uaf-iarc.org/wp-content/uploads/2023/01/SoutheastAlaska-Drought-1.pdf
[125] Data, United States Drought Monitor (USDM), 2025, https://droughtmonitor.unl.edu/Data.aspx
[126][126] Investigating the severity, drivers, and long-term impacts of widespread insect defoliator outbreaks in Southeast Alaska, University of Nevada, Reno Experiment Station, 2022, https://naes.unr.edu/research/project.aspx?GrantID=837

them more vulnerable to reduced streamflow in late summer and fall. Elevated temperatures also pose health risks, especially for vulnerable groups, such as older adults and children. Heat exhaustion, dehydration, and heat stroke can occur, and medical facilities may become overwhelmed during prolonged heat events. Although one in seven homes in CBJ has a heat pump, most households lack air conditioning, which could lead to overcrowding at cooling centers. Warmer freshwater temperatures can harm salmon and trout, disrupting local fisheries. These changes affect not only the fish but also recreational, guided, and subsistence fishing, impacting both the economy and cultural traditions tied to natural resources.

Heavy Rainfall

Heavy rainfall can lead to a range of hazards, including unstable shorelines, increased flood risk, and landslides caused by saturated soil. In Juneau (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, such rain events have caused localized flooding in rivers and streams, road washouts, and even injuries or fatalities. However, heavy rain can also have positive effects, such as boosting snowpack levels, which support the region's water supply.[127] One major source of extreme precipitation in Southeast Alaska is atmospheric rivers—narrow bands of moisture that often arrive from the south-southwest. While many of these systems are mild and beneficial, stronger ones can trigger severe flooding, landslides, and avalanches, posing serious threats to communities. A notable example occurred in December 2020, when an atmospheric river caused widespread flooding and debris flows in areas like Mountainside, Twin Lakes, and along Glacier Highway. In the Salmon Creek (Yáat Héen) watershed, a landslide damaged a water pipeline serving the DiPAC salmon hatchery, leading to the loss of thousands of fish.[128]

High Wind

Strong winds can lead to serious disruptions and damage, including fallen trees and power lines, flying debris, transportation delays, and harm to buildings, vehicles, and people. Power outages caused by high winds can interrupt heating, water supply, and refrigeration, and damage critical systems, such as water infrastructure, electronics, and medical devices. Hazards associated with Taku Winds range from nuisances, such as overblown garbage cans, to dangers, such as flying debris and overturned marine vessels.[129] In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, high wind events have caused utility failures, structural damage to homes and buildings, and impacts to JIA. Taku Winds, a recurring local phenomenon, have produced notable incidents:

- **December 2-3, 2007:** 74 mph winds created freezing spray in Douglas Harbor.
- **January 11-17, 2011:** Winds over 80 mph shattered windshields, overturned boats, and damaged infrastructure.
- **October 21, 2012:** 67 mph gusts knocked down trees and cut power to more than 2,000 residents in Douglas and West Juneau.
- **May 2, 2014:** 72 mph winds caused minor damage at the Douglas boat harbor.

[127] Nash et al. 2024. Atmospheric Rivers in Southeast Alaska: Meteorological Conditions Associated With Extreme Precipitation. https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2023JD039294
[128] Juneau's Changing Climate & Community Response, ACRC 2022, https://acrc.alaska.edu/docs/juneauclimate-report
[129] Taku Winds, National Weather Service (NWS), n.d., https://www.weather.gov/media/ajk/brochures/Taku_Winds.pdf

- **January 2-4, 2015:** 70 mph winds broke car windows, led to outages, and tore siding off homes in Mendenhall Valley.
- **January 31, 2015:** 80 mph gusts overturned bleachers, shattered windows, and displaced a 15,000-pound gangway in Douglas Harbor.
- **June 16, 2025:** A gustnado from a squall line pushed a cruise ship off its dock into the channel.

Winter Storm

Snowstorms, like ice storms, can disrupt indispensable services for extended periods. Heavy snow can lead to the collapse of buildings and trees, while drifting snow—caused by strong winds—can create uneven snow coverage during or after the storm. Heavy snow (Dleit çéedi) can severely disrupt a community by shutting down roads and airports, delaying emergency services, and cutting off supply routes. The weight of accumulated snow can collapse roofs, trees, and power lines, while also damaging boats and small aircraft. When snow begins to melt, it can lead to flooding. These events often result in costly repairs, utility outages, and economic losses. In CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida, heavy snow has caused structural damage (including to the Juneau Clinic), dangerous driving conditions, and disaster declarations. Notable incidents include the January 2022 storm that added up to 2 feet of snow, damaging commercial buildings, and a 2024 event that sank two boats and collapsed a boathouse. Winter storms can last from hours to days, increasing the risk of car accidents, hypothermia, frostbite, and overexertion injuries. They can also damage critical facilities through roof collapses, frozen pipes, and foundation issues. Blowing and drifting snow—especially during Taku Wind events—can reduce visibility and make travel hazardous, particularly in remote areas.

Tsunami

Alaska Division of Geological and Geophysical Surveys (DGGS) modeling shows that a seismically generated tsunami—based on enhanced scenarios, like the 2011 Tohoku or 1964 earthquake with doubled wave amplitudes—could produce significant flooding in parts of CBJ (Dzantik'i Héeni) and the Traditional Lands of the Tlingit & Haida. The highest modeled waves, up to 10 feet, would impact areas around JIA and Gastineau Channel. Lower wave heights are expected in Favorite Channel and Lynn Canal, though localized amplification near the Eagle River could reach nearly 5 feet. The bridge between Downtown Juneau and Douglas Island creates a bottleneck in the Gastineau Channel, reducing wave energy upstream but still allowing flooding in low-lying areas.

Landslide-generated tsunamis pose a more immediate threat to indispensable services. For more information on landslides, see the Geological Hazards profile. DGGS has identified six high-risk locations where underwater or coastal landslides could trigger waves ranging from 13 to 49 feet, including:

- **Fritz Cove:** Waves could reach Auke Bay in 4 to 5 minutes and the airport in 10 minutes, flooding wetlands.
- **Eagle River:** Waves up to 36 feet could damage highways and bridges, with run-up on nearby islands reaching 23 feet.
- **Berners Bay:** There is potential flooding for Cowee Creek estuary and Echo Cove, with wave energy extending into Lynn Canal.

- **Sheep Creek:** Waves could reach Downtown Juneau in 5 minutes, inundating both sides of Gastineau Channel.
- **South Franklin Street:** Waves may arrive within 60 seconds, flooding beach areas and the Lawson Creek Delta.
- **Taku Inlet:** Initial waves near Jaw Point could reach 45 feet, with reduced wave heights of about 10 feet in Gastineau Channel and Downtown Juneau within 6 to 7 minutes.

Air transportation could also be affected. A major tsunami might flood roads leading to the airport and, in extreme cases, inundate the runway and airport facilities. Floatplanes operating on nearby waters could be directly impacted by incoming waves, posing risks to aircraft and passengers.[130]

Volcano

Ashfall can affect the entire planning area, posing health risks—especially to infants, older adults, and individuals with respiratory conditions—and creating hazardous conditions for travel and equipment operation. Wet ash can make roads slippery and may lead to power outages. Although the region is at low risk for near-field volcanic impacts, Alaska's high level of volcanic activity places CBJ and the surrounding areas at risk for secondary effects like ash clouds, ash fallout, and volcanic tsunamis.

Historically, the area experienced ashfall in 1992 following the eruption of Mount Spurr, which temporarily disrupted flights at Juneau International Airport. Additionally, tephra deposits from a Mount Edgecumbe eruption over 12,000 years ago have been found in CBJ, indicating the potential reach of volcanic material. Recent signs of activity beneath Mount Edgecumbe highlight the need for continued research and monitoring to better understand and prepare for future volcanic hazards.

3.4. Synthesized Conclusion of Mitigation Needs Assessments

These mitigation needs assessments provide a comprehensive foundation for hazard-informed planning across the MID areas, the City and Borough of Juneau and the Lower Yukon River Area. By integrating federal disaster data, local Hazard Mitigation Plans, and NOAA's historical records, the assessment identifies the most pressing threats, including, but not limited to, flooding, geological hazards, severe weather, fire, and cryosphere changes, and outlines their impacts on infrastructure, public safety, and community resilience. Many of these hazards are not rare "once-in-a-decade" events; in fact, some occur on an annual basis, raising difficult questions about whether rebuilding in the same locations is sustainable. Given their recurring nature, the state should prioritize proactive land use planning to reduce exposure and long-term risk for the most impacted communities. Together, these assessments support the development of targeted CDBG-DR programs that reduce risk, protect critical services, and strengthen long-term resilience. They also emphasize the importance of aligning mitigation investments with local priorities, tribal partnerships, and regional planning efforts. By addressing both immediate threats and future risks, this document equips stakeholders with the insights needed to safeguard Alaska's communities and ensure sustainable recovery across a variety of landscapes.

[130] Tsunami Inundation Maps for Juneau, Alaska. By: E.N. Suleimani, D.J. Nicolsky, R.D. Koehler, and J.B. Salisbury, DGGS, 2017, https://dggs.alaska.gov/webpubs/dggs/ri/text/ri2017_009.pdf

04. Grantee-Proposed Use of Funds

4. Grantee-Proposed Use of Funds

4.1. Overview

The State of Alaska Department of Commerce, Community, and Economic Development (DCCED) is the lead agency responsible for administering the allocation of $18,676,000 in CDBG-DR funds in response to the 2023 Lower Yukon Flooding (DR-4730-AK) and 2024 Juneau Flooding (DR-4836-AK) events.

In this initial Action Plan, DCCED has prioritized the allocation to address housing, infrastructure, and mitigation—identified through the above Unmet Needs and Mitigation Needs assessments as the most significant remaining needs that have not yet been addressed through other available resources. Funds will also be dedicated to further mitigation, resilience planning, and public services that are essential to supporting residents in the recovery process.

This section outlines a proposed budget for the allocation, how the allocation was developed in response to the identified remaining unmet recovery and mitigation needs, and required details for each program, including the purpose of the program, proposed activities, who is eligible to apply, application criteria, and the maximum award. The details of each program also include how DCCED and its implementing partners will ensure accessibility to the programs and, when applicable, how mitigation activities will be applied.

The portfolio of programs is informed by initial stakeholder consultation detailed in Section 5. General Requirements. As noted elsewhere in this plan, stakeholder outreach and engagement are of utmost priority to DCCED. Additional opportunities to contribute to the program budget and design of programs outlined in this initial Action Plan will be available throughout the public comment period through the end of this year and extensive community engagement in January 2026.

4.2. General Exception Criteria

Maximum award amounts, where applicable, are detailed within each program below. At the time of submission to HUD, maximum award amounts were established for most required programs. Some maximum awards may be modified during the development of program policies and procedures. DCCED will make exceptions to the maximum award amounts when necessary to comply with federal accessibility standards or to reasonably accommodate a person with disabilities. Should data and program circumstances warrant the need for a future change in the maximum award amount, the State will follow the process for completing a non-substantial or substantial amendment as required by HUD before awarding funds using the revised amount outlined in the State of Alaska's Citizen Participation Plan and Section 5. General Requirements.

4.3. Connection of Programs to Unmet Recovery and Mitigation Needs

The analysis of unmet needs identified a total unmet recovery need of $120,335,375—644% greater than the available CDBG-DR allocation. As the mitigation needs assessment further demonstrates, hazards are

becoming more frequent, and major hazards such as typhoons, which never previously impacted the region, are now becoming a near-annual event. Mitigation activities are necessary to prevent future catastrophic damage, as well as protect current investments in recovery. While this allocation is not sufficient to meet the total unmet need, DCCED has developed a portfolio of programs to invest in the continued recovery of residents and communities with a focus on building stronger to withstand future threats and hazards. Other federal, state, local, and Tribal resources, as well as private sector resources, will be leveraged to meet a portion of the remaining need.

Based on the unmet needs analyses, the State is prioritizing housing recovery, including the creation of new affordable housing to relieve a severe pre-disaster shortage of affordable and accessible housing made greater by the compounding disasters in the regions. The housing programs will also include legal and other services to support homeowners and tenants with common challenges of post-disaster rebuilding. Two of the most common challenges are the need to replace identification that is lost in the disaster event and clearing titles for residents who live in homes that have been passed down from generation to generation. The Housing programs will include a Public Services activity to provide these much-needed legal services to residents to clear up issues such as “cloudy titles,” encroachment, and unmarked property boundaries that slow down recovery efforts.

Infrastructure rebuilt to updated codes and hardened against future disaster hazards is key to reducing loss of essential community infrastructure for households and small businesses. The Infrastructure programs will support the repair and hardening of essential infrastructure, which will both support the rehabilitation and construction of new housing and restore and build needed infrastructure.

Building better to prevent future damage is critical to communities facing extreme weather events. This is especially true of the Lower Yukon Area, which, at the time of this writing, is experiencing the direct aftermath of the remnants of Typhoon Halong in many of the same communities that were affected by Typhoon Merbok in 2022 and the floods in 2023 that are the subject of this Action Plan. This is also true for Juneau, where the annual glacial lake outburst floods (GLOFs) have increased in intensity. HUD requires that grantees incorporate mitigation measures when carrying out activities to construct, reconstruct, or rehabilitate residential or non-residential buildings with CDBG-DR funds as part of activities eligible under 42 U.S.C. 5305(a) (including activities authorized by waiver and alternative requirement). To meet this alternative requirement, grantees must demonstrate that they have incorporated mitigation measures into CDBG-DR activities as a construction standard to create communities that are more resilient to the impacts of recurring natural disasters and the impacts of changing weather patterns.

Mitigation measures will be incorporated into both the Housing and Infrastructure programs, as required, to ensure that all rebuilding and new construction is built to withstand future extreme weather events.

The CBDG-DR allocation also includes a 13.04% set-aside for stand-alone mitigation projects to address flood control and erosion and meet criteria defined by the State. The Mitigation set-aside has different requirements than the requirements for mitigation in recovery programs. HUD allows activities that do not necessarily have a “tie back to the disaster,” but will address current and future risks faced by communities. Other public services may include education and outreach activities to help individual homeowners and

businesses understand and access the National Flood Insurance Program (NFIP), as well as private flood insurance programs.

The State has determined a need for additional mitigation and resilience planning to assist communities in updating or creating FEMA and/or local Hazard Mitigation Plans, resilience plans, and other local planning measures to protect communities from future risk.

These priorities may be modified in the future through ongoing citizen engagement and an amendment process outlined in Section 5. General Requirements.

4.3.1. Minimizing Displacement

To minimize the displacement of persons and other entities that may be affected by the activities outlined in this Action Plan, DCCED and subrecipients will coordinate with federal, State, local, and tribal organizations; homeowners; and tenants. In the event that displacement becomes unavoidable, relocation activities will be conducted in accordance with the Uniform Relocation Assistance (URA) and Real Property Acquisition Act of 1970, as amended (49 CFR Part 24), and Section 104(d) of the Housing and Community Development Act of 1974, as amended, and implementing regulations at 24 CFR Part 570.496(a).

DCCED will follow the requirements outlined in the Universal Notice (FR-6489-N-01) to ensure that implementation entities are fully aware of and follow the regulations and requirements for the prevention of displacement and provision of relocation assistance. These requirements apply to public and private property owners and tenants in the event that proposed projects cause the displacement of persons or other entities. The requirements outlined in the Universal Notice include:

- Provide a description of how the grantee plans to minimize displacement of persons or entities, and assist any persons or entities displaced, and ensure accessibility needs of displaced persons with disabilities.
- Amend an existing Residential Anti-displacement and Relocation Assistance Plan (RARAP) or create a new RARAP specific to CDBG-DR.
- Plan and budget for such relocation activities.

Currently, the proposed programs are not expected to cause displacement.

DCCED will incorporate accessibility considerations into its relocation policies and procedures for displaced persons with disabilities. These considerations include identifying accessible temporary and permanent housing options, providing reasonable accommodations during the relocation process, and coordinating with relevant agencies and advocacy organizations to support individuals with disabilities in accordance with applicable federal accessibility standards.

CDBG-DR funds may not be used to support any federal, State, or local projects that seek to use the power of eminent domain, unless eminent domain is employed only for a public use. None of the currently planned projects under this Action Plan contemplate the use of eminent domain.

4.4. Proposed Allocation and Award Caps

The proposed budget was developed based on the critical needs that remain in each of the impacted regions detailed in the Unmet Needs and Mitigation Needs analyses (Sections 2 and 3) using the best available data. As stated above, the allocation of CDBG-DR reflects a fraction of the actual remaining needs. Changes to the budget and program priorities may be made in the future based on continued citizen engagement, program utilization rates, and the availability of other resources secured to address outstanding needs.

As a note, the proportion of funding for each disaster region is based on HUD's analysis of unmet needs. Based on early data, HUD determined that 63% of overall unmet needs were in the Lower Yukon Area and 37% of unmet needs in Juneau. HUD also determined the set-aside for mitigation to be 13.04% of the overall allocation.[131]

The rehabilitation and reconstruction of damaged housing units represent 80% of the overall unmet recovery need and, thus, 49.6% of the overall allocation has been set aside for housing. As stated above, the housing programs seek to address a severe shortage of affordable housing before future disasters.

A set-aside of 1% of the allocation will be for public services that support legal and other needs of residents to succeed in the housing program and will be eligible within the Housing program and as a standalone program to provides additional public services to assist residents in securing needed recovery services.

The Infrastructure and Mitigation program represents 16% of the allocation.

Planning activities to address the need for additional mitigation and resilience planning represent 15% of the overall allocation within the allowable 15% cap for this activity.

HUD allows grantees to set aside up to 5% for administration of the grant.

The State recognizes that disasters create significant disruption in local economies and individual livelihoods. While the full scale of economic impact from these disasters is not fully realized in the available data, it is understood that the economic loss is significant, especially in communities that rely on subsistence economies. Due to the limited funding available and the magnitude of the housing need, funds were not made available for economic revitalization in this allocation. However, the State is committed to ensuring—through coordination with local communities—that the investment of this allocation includes opportunities to involve local small businesses and residents in the recovery work.

Category	Remaining Unmet Recovery Need	% of Unmet Need	Lower Yukon (63%)	Juneau (37%)	CDBG-DR Program Allocation Amount	% of CDBG-DR Allocation
Administration	N/A	N/A			$933,800	5.00%

[131] HUD's Allocation of CDBG-DR funds for 2023/2024 Disasters for the State of Alaska stated that the unmet needs and mitigation were slightly greater than the amount allocated to the State. Therefore, the amount allocated reflects the unmet needs and mitigation less a 1.2488 percent pro-rata reduction.

Category	Remaining Unmet Recovery Need	% of Unmet Need	Lower Yukon (63%)	Juneau (37%)	CDBG-DR Program Allocation Amount	% of CDBG-DR Allocation
Planning	N/A	N/A	$1,764,882	$1,036,518	$2,801,400	15.00%
Housing	$95,788,063	80%	$5,877,824	$3,452,056	$9,329,880	49.96%
Homeowner Disaster Recovery Housing Program	$82,868,040		$2,938,912	$1,726,028	$4,664,940	24.98%
State of Alaska Multifamily Housing Program	$12,920,023		$2,938,912	$1,726,028	$4,664,940	24.98%
Infrastructure	$14,986,884	12%	$1,882,541	$1,105,619	$2,988,160	16.00%
Infrastructure in Support of Housing			$941,270	$552,810	$1,494,080	
General Infrastructure			$941,270	$552,810	$1,494,080	
Mitigation Set-Aside			$1,534,680	$901,320	$2,436,000	13.04%
Economic Revitalization	$9,578,806	8%	$0	$0	$0	0.00%
Public Services			$0	$0	$186,760	1.00%
Total	$120,353,753		$11,059,927	$6,495,513	$18,676,000	100.00%
Remaining Unmet Need					$101,677,753	84.48%
100% of CDBG-DR program allocations will be expended in the HUD MID.						

Table 57: Proposed Allocation of CDBG-DR Funds for the 2023 and 2024 Disasters

4.5. Proposed Programs

4.5.1. Program Design Elements

HUD requires that each program include the following elements to assist residents in understanding how the funds will be used and where they may be eligible to participate in a program. In some instances, the program elements may change slightly depending on the activity. For example, housing programs define a maximum award per beneficiary, where planning, infrastructure, and mitigation programs define a maximum award per project.

Table 62 provides a brief definition of each of the required program design elements.

National Objective

The authorizing statute of the CDBG program requires that each activity, except for administration and planning, meet one of three national objectives:

- Benefit to low- and moderate-income (LMI) persons defined as those with incomes at or below 80% of the area median income;
- Aid in the prevention or elimination of slums or blight; and
- Meet a need having a particular urgency (referred to as an urgent need).

The majority of activities under this Action Plan will benefit LMI persons. For projects that do not fit the first two criteria, urgent need can be used for up to 36 months in specific circumstance, including: i) describe in the unmet needs assessment why specific needs have a particular urgency, including how the existing conditions pose a serious and immediate threat to the health or welfare of the community; ii) identify each program or activity that will use the urgent need national objective—either through its initial submission or through a substantial amendment to the Action Plan submitted by the grantee within 36 months of the applicability date of the grantee's initial AAN (January 16,2025); and iii) document how each program and/or activity funded under the urgent need national objective responds to the urgency, type, scale, and location of the disaster-related impact as described in the grantee's unmet needs assessment.

Overall Benefit Requirement

Grantees are also required to comply with the overall benefit requirement that 70% of the funds be used for activities that benefit persons with incomes at or below 80% of the area median income (AMI). In certain circumstances, grantees may request a waiver to the overall benefit requirement.

At this time, the State of Alaska does not anticipate a need for such a waiver and is committed to meeting this requirement.

Program Design Elements	Description of Program Design Elements
Program Description	Description of program purpose, goals, and components.
Total Budget/CDBG-DR Allocation	Remember to calculate Program Delivery Costs within allocation budget.
Eligible Activities	Outlined in 24 CFR 570.201 and section 105(a) of the HCDA plus waivers and alternative requirements. Can choose more than one under a program. In very few instances, unanticipated/uncommon activities may require a waiver or alternative requirement.
National Objective(s)	Choose one: Low to Moderate Income; Urgent Need; Slum & Blight
Lead Agency and Distribution Model	1. Direct implementation by grantee (through employees, contractors, or subrecipients), OR 2. Method of distribution to local governments and Indian tribes (for states, as permitted by Universal Notice section III.C.4) 3. Combination of direct implementation and a method of distribution model.
Responsible Entity for Environmental Review	State or other entity that is Responsible Entity for HUD National Environmental Policy Act (NEPA) Reviews
Eligible Geographic Areas	HUD-identified Most Impacted and Distressed areas
Eligible Applicants	To be defined based on goals and requirements.
Maximum Amount of Assistance Per Beneficiary	Award Cap; include acknowledgement that will make exceptions to award cap to comply with federal accessibility standards or to reasonably accommodate a person with disabilities
Maximum Income of Beneficiary	Income Cap for direct benefit activities
Mitigation Measures	How the proposed use of funds will meet the definition of mitigation activities
Reducing Barriers for Assistance	Explain how grantee will identify and then reduce impediments that individuals may face in accessing assistance.

Table 58: Required Program Design Elements

4.5.2. Administration

The State will utilize $933,800 (5%) of the total CDBG-DR allocation for administrative costs associated with the grant. The State will seek to recover pre-award and/or pre-application costs related to administrative expenses consistent with the guidance provided in the Universal Notice.

4.5.3. Planning

The State has dedicated $2,801,400 (15%) of the total allocation to planning activities that support local and regional communities to develop recovery, mitigation, and resilience plans and build local community capacity to respond to identified threats and hazards. Planning funds support the gathering and analysis of

local data and studies and analysis to enhance community resilience through comprehensive capital improvements.

The Planning program acknowledges Tribal-led relocation and protection-in-place initiatives as critical to long-term community sustainability. The Planning program will also support the success of activities in the Housing, Infrastructure, and Mitigation set-aside programs, such as research, planning, and other activities related to determining site selections for potential relocation strategies.

Program Design Elements	Disaster Recovery, Resilience, and Mitigation Planning Program
Program Description	Planning activities support local and regional communities to develop recovery, mitigation, and resilience plans and build local community capacity to respond to and reduce long-term risk and increase local resilience.
Total Budget/CDBG-DR Allocation	$2,801,400
Eligible Activities	Planning Activities, HCDA Section 105(a)(12), 24 CFR 570.205, and Universal Notice (90 FR 1754)
National Objective(s)	N/A
Lead Agency and Distribution Model	DCCED may award funding directly to units of local government and/or nonprofit organizations with a regional focus or may establish a competitive process to award projects to jurisdictions and other qualified applicants. Process to be further defined in the policies and procedures.
Eligible Geographic Areas	100% to HUD-identified MID
Eligible Applicants	Local municipalities, regional entities, and Tribal governments and entities
Eligibility Criteria	Projects will address unmet recovery and mitigation needs detailed in this Action Plan; provide analysis, strategies, and solutions to mitigate the impacts of extreme weather and increased flooding and erosion.
Maximum Amount of Assistance Per Project	$100,000 Exceptions to the maximum award will be determined on a case-by-case basis.
Maximum Income of Beneficiary	N/A
Mitigation Measures	N/A
Reducing Barriers for Assistance	The State and its contractor and/or subawardees will conduct extensive outreach and marketing of the program to disaster-impacted residents and stakeholders in the impacted geographies. This will include providing translation services upon request and allowing paper applications in addition to online applications.

Table 59: Planning Program Design Elements

4.5.4. Housing

As detailed in the unmet needs analyses, housing is the greatest area of remaining need for both the Lower Yukon REAA and the City and Borough of Juneau. Both areas, like most of the State, recorded a severe pre-disaster shortage of affordable and accessible housing. In response, DCCED has identified the rehabilitation and reconstruction of damaged housing as one of the most pressing remaining recovery needs. To address these interrelated challenges, the State has directed $9,329,880 (49.6%) of the allocation to address the recovery needs of homeowners and renters. Preventing future damage is critical to individuals and communities facing extreme weather events. As noted above, HUD requires that grantees incorporate mitigation when carrying out activities to construct, reconstruct, or rehabilitate residential or non-residential buildings with CDBG-DR funds. Mitigation measures will be incorporated to withstand existing and future natural hazards expected to occur over the life of the project.

DCCED's housing programs will focus on rehabilitation and reconstruction of owner-occupied and rental housing. Priority will be made to support the most vulnerable households in the community—elders and special needs individuals who remain displaced by the disasters or living in homes damaged by the disasters. DCCED recognizes that some homes may not be suitable for reconstruction on the existing parcel of land due to repeat extreme weather hazards and will facilitate voluntary relocation to safer locations. The State will also fund the creation of new affordable rental housing to address the severe pre-disaster shortage of affordable rental housing.

The State recognizes that many homes in the impacted regions have been passed down through generations and may not have clear legal titles. Legal services to help clear ownership issues will be provided as needed through the Homeowner Disaster Recovery Housing program.

Eligible activities under both Housing programs include rehabilitation, reconstruction, and voluntary relocation. Under the Homeowner Disaster Recovery Housing Program, new construction is allowable to facilitate voluntary relocations for individuals and families living in homes that cannot be reconstructed within the same footprint. While, within the rehabilitation and reconstruction activities, costs may only be charged for activities completed within the same footprint of the damaged structure, sidewalk, driveway, parking lot, or other developed area, some structures are on land that has been undermined by severe weather conditions and is not structurally sound for reconstruction. In these instances, households may choose to relocate to higher ground to ensure future safety. The voluntary relocation activity under these programs will be conducted in keeping with the requirements of the Uniform Relocation Act.

New construction is an eligible activity under the State of Alaska Multifamily Housing Program to address the severe shortage of affordable and accessible housing available in these regions.

For this allocation, the State intends to solicit an experienced contractor to support its efforts in implementing the program. The contractor would assist in intake, inspecting homes, ensuring compliance with current building codes, and estimating the cost to repair within the program guidelines and HUD requirements. The State may also subaward a portion of the program allocation to entities with previously demonstrated experience with HUD funding and capacity to implement, such as the Tribally Designated Housing Entities (TDHEs) like the Tlingit Haida Regional Housing Authority, Association of Village Council

Presidents Regional Housing Authority, and others. Programs will be coordinated with the City and Borough of Juneau and the communities of the Lower Yukon REAA.

The initial phase of the Homeowner Disaster Recovery Housing program will prioritize vulnerable seniors 65 years and above and special needs homeowners with homes that have remaining unmet housing needs as a result of the disaster.

Program details for the recovery housing programs are provided below. Additional program requirements will be developed in program-specific policies and procedures with input from the public through the outreach strategy outlined in Section 5. General Requirements.

Homeowner Disaster Recovery Housing Program

Program Design Elements	Homeowner Disaster Recovery Housing Program
Program Description	Rehabilitation, Reconstruction, Voluntary Buyout/Relocation, Elevation, New Construction (tied to Buyout/Relocation); Mitigation
Total Budget/CDBG-DR Allocation	$4,664,940
Eligible Activities	• Acquisition of real property under HCDA Section 105(a)(1), 24 CFR 570.201(a) • Clearance, demolition, removal, reconstruction, and rehabilitation of buildings and improvements under HCDA Section 105(a)(4), 24 CFR 570.202 • Disposition of real property acquired under HCDA Section 105(a)(7), 24 CFR 570.201(b) • Relocation payments and assistance for displaced individuals and families under HCDA Section 105(a)(11), 24 CFR 570.201(i) • Optional Relocation Assistance under 24 CFR 570.606(d) • Homeownership assistance under HCDA Section 105(a)(24), FR 6489-N-01 III.D.5.d, 24 CFR 570.201(n) • Safe Housing Incentives FR-6489-N-01, III.D.5.i • New construction under FR-6489-N-01, III.D.5.a • Public Services under HCDA Section 105(a)(18), 24 CFR 570.201(e) • Other applicable waivers identified in the Allocation Announcement Notice (90 FR 4759) and Universal Notice (FR-6489-N-01)
National Objective(s)	Activities benefitting low- and moderate-income individuals, Low and Moderate Income Housing (LMH), Low and Moderate Income Housing Incentive (LMHI), or Urgent Need
Eligible Geographic Areas	100% to HUD-identified MID

Program Design Elements	Homeowner Disaster Recovery Housing Program
Lead Agency and Distribution Model	Direct implementation by DCCED, including procurement of qualified contractor(s) AND direct allocation to qualified subawardees with capacity, such as Tribally Designated Housing Entities (TDHEs) like the Tlingit Haida Regional Housing Authority and Association of Village Council Presidents Regional Housing Authority. Process to be further defined in the policies and procedures.
Eligible Applicants	Owner-occupants with incomes at or below 80% of AMI
Other Eligibility Criteria	Priority will be given to: • Applicants: – Seniors (65 years and above) or individuals living with disabilities – Remain displaced or living in homes damaged by the disaster event • Property: – Owner-occupied single-family – Property with documented damage from the disaster event
Maximum Amount of Assistance Per Beneficiary	• Up to $200,000 per unit due to the increased cost of rebuilding and new construction in these areas of the State. • Maximum assistance per beneficiary is dependent on pathway to recover. • Further analysis of the cost of rehabilitation, new construction, and relocation will be conducted during development of the program policies and procedures. • Exceptions will be determined on a case-by-case basis.
Maximum Income of Beneficiary	At or below 80% AMI
Mitigation Measures	Measures to harden the home, such as fortifying roofs and elevations, are allowable under this program. Homes located within a NFIP participating community, i.e., the cities of Emmonak, and Juneau can be elevated above the known high-water line. The homeowner will be required to participate in the NFIP.
Reducing Barriers for Assistance	The State and its contractor and/or subawardees will conduct extensive outreach and marketing of the program to disaster-impacted residents in the impacted geographies. This will include providing translation services upon request and allowing paper applications in addition to online applications.

Table 60: Homeowner Disaster Recovery Housing Program Design Elements

State of Alaska Multifamily Housing Program

Program Design Elements	State of Alaska Multifamily Housing Program
Program Description	Rehabilitation, Reconstruction, Relocation, Elevation, New Construction
Total Budget/CDBG-DR Allocation	$4,664,940
Eligible Activities	• Acquisition of real property under HCDA Section 105(a)(1), 24 CFR 570.201(a) • Clearance, demolition, removal, reconstruction, and rehabilitation of buildings and improvements under HCDA Section 105(a)(4), 24 CFR 570.202 • Disposition of real property acquired under HCDA Section 105(a)(7), 24 CFR 570.201(b) • Relocation payments and assistance for displaced individuals and families under HCDA Section 105(a)(11), 24 CFR 570.201(i) • Optional Relocation Assistance under 24 CFR 570.606(d) • Homeownership assistance under HCDA Section 105(a)(24), FR 6489-N-01 III.D.5.d, 24 CFR 570.201(n) • Safe Housing Incentives FR-6489-N-01, III.D.5.i • New construction under FR-6489-N-01, III.D.5.a • Public Services under HCDA Section 105(a) (18), 24 CFR 570.201(e) • Other applicable waivers identified in the Allocation Announcement Notice (90 FR 4759) and Universal Notice (FR-6489-N-01)
National Objective(s)	Activities benefitting low- and moderate-income individuals, Low and Moderate Income Housing (LMH), Low and Moderate Income Housing Incentive (LMHI), or Urgent Need2.
Lead Agency and Distribution Model	Direct implementation by DCCED, including procurement of qualified contractor(s) AND direct allocation to qualified subawardees with capacity, such as Tribally Designated Housing Entities (TDHEs) like the Tlingit Haida Regional Housing Authority and Association of Village Council Presidents Regional Housing Authority. Process to be further defined in the policies and procedures.
Eligible Geographic Areas	100% to HUD-identified MID
Eligible Applicants	TDHEs, regional housing authorities, or other nonprofit property owners

Program Design Elements	State of Alaska Multifamily Housing Program
Eligibility Criteria	• Units damaged by disaster event. • New construction to assist in providing affordable housing for residents impacted by the disaster and to alleviate overcrowding and overall housing shortage. The criteria used to evaluate each project and award funds will include, but are not limited to: • The development team has financial stability and demonstrates experience. • The project is ready to proceed. • The other sources of funding are well documented. • The developer must demonstrate ownership or site control of the building site. • The budget is comprehensive and reasonable for the project scope. • The designs and plans demonstrate that future hazards will be mitigated. • Further criteria will be developed during the development of policies and procedures.
Maximum Amount of Assistance	$1,000,000 Further analysis of the cost of construction will be conducted during development of the program policies and procedures. Exceptions to the maximum award will be determined on a case-by-case basis.
Maximum Income of Beneficiary	At or below 80% area median income
Mitigation Measures	Measures to harden the home, such as fortifying roofs and elevations, are allowable under this program. Properties located within a NFIP participating community, i.e., the cities of Emmonak, and Juneau can be elevated above the known high-water line. Property owners will be required to participate in the NFIP.
Reducing Barriers for Assistance	The State and its contractor and/or subawardees will conduct extensive outreach and marketing of the program to disaster-impacted residents in the impacted geographies. This will include providing translation services upon request and allowing paper applications in addition to online applications.

Table 61: State of Alaska Multifamily Housing Program Design Elements

4.5.5. Infrastructure

Without the repair and mitigation of critical public infrastructure, communities will not be able to protect their "community lifelines"—critical services like government, public safety, and health care that enable a community to function. Restoring critical public infrastructure is essential to ensuring that impacted communities can recover and thrive.

The State has prioritized $2,988,160 (16%) for two programs within the infrastructure portfolio. The first program creates infrastructure in support of housing. For the Infrastructure in Support of Housing Program activities may include adding neighborhood streets, shoring up access to utilities, or upgrading stormwater systems in residential neighborhoods. HUD requires that grantees incorporate mitigation when carrying out activities to construct, reconstruct, or rehabilitate residential or non-residential buildings with CDBG-DR funds as part of activities eligible under 42 U.S.C. 5305(a) (including activities authorized by waiver and alternative requirement). The separate Infrastructure and Mitigation program provides funding for eligible infrastructure and mitigation projects, such as repairs to disaster-damaged infrastructure or facilities that provide essential services to communities, including subsistence storage, emergency management facilities that provide shelter in disaster events, installation of flood barriers, and erosion protection measures.

The $2,427,800 Mitigation set-aside is incorporated into this program which allows applicants to apply for a mitigation only project that follows HUD's requirements for the set-aside detailed below. As stated in the Universal Notice, the mitigation set-aside is not required to show a "tie back" to the disaster but must demonstrate that activities funded by the additional mitigation funds will (1) meet the definition of mitigation activities; (2) address the current and future risks as identified in the grantee's mitigation needs assessment in the MID areas; (3) be CDBG-eligible activities under title I of the HCDA or otherwise eligible pursuant to a waiver or alternative requirement; and (4) meet a national objective.

Further guidance on the Infrastructure and Mitigation program will be developed in policies and procedures.

Infrastructure in Support of Housing

Program Design Elements	Infrastructure in Support of Housing
Program Description	To assist in increasing stock of affordable housing
Total Budget/CDBG-DR Allocation	$1,494,080
Eligible Activities	• Acquisition of Real Property under HCDA Section 105(a)(1), 24 CFR 570.201(a), HCDA Section 105(a)(1) • Public Facilities and Improvements under HCDA Section 105(a)(2), 24 CFR 570.201(c) • Clearance, demolition, rehabilitation, and reconstruction of buildings under HCDA Section 105(a)(4), 24 CFR 570.201 (d) • Payment of Non-Federal Share under HCDA Section 105(a)(9), 24 CFR 570.201(g) • Relocation Assistance under HCDA Section 105(a)(11), 24 CFR 570.201(i) • Other applicable waivers identified in the Allocation Announcement Notice (90 FR 4759) and Universal Notice (FR-6489-N-01) • Funds cannot be used to cover the costs for maintenance and operation or purchase of construction equipment
National Objective(s)	Low- and Moderate-Income Area (LMA), Low- and Moderate-Income Limited Clientele (LMC), or Urgent Need
Lead Agency and Distribution Model	Direct implementation by DCCED through qualified subawardees based on demonstrated experience and capacity and a detailed project plan. Process to be further defined in the policies and procedures.
Eligible Geographic Areas	100% to HUD-identified MID
Eligible Applicants	Local municipalities and federally recognized tribes
Eligibility Criteria	Funding for this program will be part of the application process for infrastructure necessary to reconstruct or create new housing in either the Homeowner Disaster Recovery Housing program or the State of Alaska Multifamily Housing Program. For more details on funding criteria, refer to the descriptions for those programs in this document.
Maximum Amount of Assistance Per Project	$1,000,000 • Further analysis of the cost of infrastructure and mitigation construction in support of housing will be conducted during development of the program policies and procedures. • Exceptions to the maximum award will be determined on a case-by-case basis.
Maximum Income of Beneficiary	Projects that support LMI persons or areas.

Program Design Elements	Infrastructure in Support of Housing
Mitigation Measures	Measures to protect the infrastructure and/or housing unit(s) from future hazards are allowable under this program.
Reducing Barriers for Assistance	The State and its contractor and/or subawardees will conduct extensive outreach and marketing of the program to disaster-impacted residents in the impacted geographies. This will include providing translation services upon request.

Table 62: Housing Infrastructure Program Design Elements

Infrastructure Program

Program Design Elements	Infrastructure Program
Program Description	This program provides funding for infrastructure projects, such as repairs to disaster-damaged infrastructure, installation of flood barriers, and erosion protection measures. Projects must include mitigation measures.
Total Budget/CDBG-DR Allocation	$1,494,080
Eligible Activities	• Acquisition of Real Property under HCDA Section 105(a)(1), 24 CFR 570.201(a), HCDA Section 105(a)(1) • Public Facilities and Improvements under HCDA Section 105(a)(2), 24 CFR 570.201(c) • Clearance, demolition, rehabilitation, and reconstruction of buildings under HCDA Section 105(a)(4), 24 CFR 570.201(d) • Payment of Non-Federal Share under HCDA Section 105(a)(9), 24 CFR 570.201(g) • Relocation Assistance under HCDA Section 105(a)(11), 24 CFR 570.201(i) • Other applicable waivers identified in the Allocation Announcement Notice (90 FR 4759) and Universal Notice (FR-6489-N-01) • Funds cannot be used to cover the costs for maintenance and operation or purchase of construction equipment
National Objective(s)	Low- and Moderate-Income Area (LMA), Low- and Moderate-Income Limited Clientele (LMC), or Urgent Need
Lead Agency and Distribution Model	DCCED may directly fund units of local government or establish a competitive process to award projects to jurisdictions and other qualified applicants. Process to be further defined in the policies and procedures.
Eligible Geographic Areas	100% to HUD-identified MID
Eligible Applicants	Tribal entities, local jurisdictions, agencies, schools, hospitals, and private nonprofits.
Eligibility Criteria	Eligible project criteria include: • Tied to the disaster, and • In a FEMA or locally approved HMGP plan, or • Prioritized and approved by local planning process, and • Cost reasonable Localities will be required to submit a prioritized list of projects for consideration following an open planning process and at least one public hearing. DCCED will accept applications from eligible applicants during an application period. A minimum threshold score will be established

Program Design Elements	Infrastructure Program
	to ensure that high-quality projects are selected. The criteria used to evaluate each application and award funds will include, but are not limited to: • The project will be located in the HUD-identified MID areas. • The project will be considered public infrastructure. • There is clear evidence that there are mechanisms in place to ensure long-term maintenance of the project. • The project is ready to proceed. • The other sources of funding, as applicable, are well documented. • The budget is comprehensive and reasonable for the project scope. • The designs and plans demonstrate that future hazards will be mitigated. • The project is based on engineered plans and cost estimates. Each project will be evaluated related to the costs and benefits of the infrastructure project. Benefits will include both recovery and protection against future risks.
Maximum Amount of Assistance Per Project	$1,000,000 • Further analysis of the cost of infrastructure construction and mitigation measures will be conducted during development of the program policies and procedures. • Exceptions will be determined on a case-by-case basis.
Maximum Income of Beneficiary	Projects that support LMI persons or areas
Mitigation Measures	Measures to protect community infrastructure, housing, and other community assets from future hazards are allowable under this program.
Reducing Barriers for Assistance	The State and its contractor and/or subawardees will conduct extensive outreach and marketing of the program to disaster-impacted residents in the impacted geographies. This will include providing translation services upon request and allowing paper applications in addition to online submissions.

Table 63: Infrastructure Program Design Elements

4.5.6. Mitigation Set-Aside Program

HUD designated 13.04% of the entire allocation to be set aside to fund specific mitigation projects. As outlined in the Universal Notice, "unlike recovery activities where grantees must demonstrate that their activities 'tie-back' to the specific disaster and address a specific unmet recovery need for which the CDBG-DR funds were appropriated, activities funded by additional mitigation funds do not require such a 'tie-back' to the specific qualified disaster that has served as the basis for the grantee's allocation. Instead, grantees

must demonstrate that activities funded by the additional mitigation funds will (1) meet the definition of mitigation activities; (2) address the current and future risks as identified in the grantee's mitigation needs assessment in the MID areas; (3) be CDBG-eligible activities under title I of the HCDA or otherwise eligible pursuant to a waiver or alternative requirement; and (4) meet a national objective. For purposes of grants subject to the Universal Notice, mitigation activities are defined as those activities that increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship, by lessening the impact of future disasters."

Projects funded through the Mitigation Set-Aside allocation will address a mitigation need, like flooding or erosion, identified in the mitigation needs analysis. A detailed description of the Mitigation set-aside process will be provided in the program policies and procedures.

Mitigation Set-Aside Program

Program Design Elements	Mitigation Set-Aside Program
Program Description	This program provides funding for projects, such as the installation of flood barriers and erosion protection measures, to protect communities from known and future risks.
Total Budget/CDBG-DR Allocation	$2,436,000
Eligible Activities	• Acquisition of Real Property under HCDA Section 105(a)(1), 24 CFR 570.201(a), HCDA Section 105(a)(1) • Public Facilities and Improvements under HCDA Section 105(a)(2), 24 CFR 570.201(c) • Clearance, demolition, rehabilitation, and reconstruction of buildings under HCDA Section 105(a)(4), 24 CFR 570.201(d) • Payment of Non-Federal Share under HCDA Section 105(a)(9), 24 CFR 570.201(g) • Relocation Assistance under HCDA Section 105(a)(11), 24 CFR 570.201(i) • Other applicable waivers identified in the Allocation Announcement Notice (90 FR 4759) and Universal Notice (FR-6489-N-01) • Funds cannot be used to cover the costs for maintenance and operation or purchase of construction equipment
National Objective(s)	Low- and Moderate-Income Area (LMA); Low- and Moderate-Income Limited Clientele (LMC), or Urgent Need
Lead Agency and Distribution Model	DCCED may directly fund units of local government and/or establish a competitive process to award projects to jurisdictions and other qualified applicants. Process to be further defined in the policies and procedures.
Eligible Geographic Areas	100% to HUD-identified MID
Eligible Applicants	Tribal entities, local jurisdictions, agencies, schools, hospitals, and private nonprofits.

Program Design Elements	Mitigation Set-Aside Program
Eligibility Criteria	**Eligible project criteria include:** • Tied to the disaster, and • In a FEMA or locally approved HMGP plan, or • Prioritized and approved by local planning process, and • Cost reasonable Localities will be required to submit a prioritized list of projects for consideration following an open planning process and at least one public hearing. DCCED will accept applications from eligible applicants during an application period. A minimum threshold score will be established to ensure that high-quality projects are selected. The criteria used to evaluate each application and award funds will include, but are not limited to: • The project will be located in the HUD-identified MID areas. • The project will be considered public infrastructure. • There is clear evidence that there are mechanisms in place to ensure long-term maintenance of the project. • The project is ready to proceed. • The other sources of funding, as applicable, are well documented. • The budget is comprehensive and reasonable for the project scope. • The designs and plans demonstrate that future hazards will be mitigated. • The project is based on engineered plans and cost estimates. Further outreach with the communities affected by the disasters will inform the remaining mitigation needs and assist in the development of additional program criteria. Specific information on the scoring criteria will be defined in the Notice of Funding Opportunities (NOFOs), which will be shared with eligible applicants. Each project will be evaluated related to the costs and benefits of the infrastructure project. Benefits will include both recovery and protection against future risks.
Maximum Amount of Assistance Per Project	$1,000,000 • Further analysis of the cost of mitigation measures will be conducted during development of the program policies and procedures. • Exceptions will be determined on a case-by-case basis.
Maximum Income of Beneficiary	Projects that support LMI persons or areas

Program Design Elements	Mitigation Set-Aside Program
Mitigation Measures	Measures to protect community infrastructure, housing, and other community assets from current or future hazards are allowable under this program.
Reducing Barriers for Assistance	The State and its contractor and/or subawardees will conduct extensive outreach and marketing of the program to disaster-impacted residents in the impacted geographies. This will include providing translation services upon request and allowing paper applications in addition to online submissions.

Table 64: Mitigation Set-Aside Program Design Elements

4.5.7. Public Services

DCCED has allocated $187,760 (1%) of the overall allocation to provide public services to support essential community functions that may have been disrupted by the disaster event. This can include employment training, crime prevention, childcare, and health support. The most critical public services identified to date are legal services to help sort out ownership and title issues in the Homeowner Disaster Recovery Housing Program. The lack of a clear title is a serious barrier to recovery and can lead to delays in accessing much-needed resources. Other public services may include replacing identification papers, resolving insurance claims, responding to unlawful evictions and foreclosures, protecting against contractor scams and fraud, and other legal services to support access to disaster recovery resources. The State is also interested in providing education for homeowners, property owners, and businesses on the benefits of participation in the National Flood Insurance Program (NFIP). Other public services may be determined during additional community engagement.

Program Design Elements	Public Services
Program Description	Funding for public services will first and foremost fund legal services to help resolve title issues as part of the Homeowner Disaster Recovery Housing Program. Remaining funds will provide additional public services, such as education to homeowners, property owners, and businesses on the benefits of participation in the National Flood Insurance Program (NFIP) and other assistance necessary to help impacted residents resolve title issues to maintain housing, transition to more permanent housing, and support other recovery needs.
Total Budget/CDBG-DR Allocation	$186,760
Eligible Activities	Public Services under HCDA Section 105(a) (18), 24 CFR 570.201(e), and Universal Notice (FR-6489-N-01)
National Objective(s)	Low to Moderate Income Limited Clientele (LMC)

Program Design Elements	Public Services
Lead Agency and Distribution Model	Direct implementation by DCCED, including procurement of qualified contractor(s) AND direct allocation to qualified subawardees. Process to be further defined in the policies and procedures.
Eligible Geographic Areas	100% to HUD-identified MID
Eligible Applicants	Determination of eligibility will be developed along with policies and procedures for the program.
Eligibility Criteria	Priority applicants are renters or homeowners who are actively participating in the Housing program and have a household income at or below 80% AMI. Other eligible applicants may include individuals with an unmet recovery need that legal services could assist in resolving. Further eligibility criteria will be developed along with policies and procedures for the program.
Maximum Amount of Assistance Per Beneficiary	$10,000 in services per household. Exceptions to the maximum award will be determined on a case-by-case basis.
Maximum Income of Beneficiary	
Mitigation Measures	N/A
Reducing Barriers for Assistance	The State and its contractor and/or subawardees will conduct extensive outreach and marketing of the program to disaster-impacted residents in the impacted geographies. This will include providing translation services upon request and providing printed material hard copies as well as information online.

Table 65: Public Services Program Design Elements

4.6. Protocols for Substantial Amendments

Changes to areas such as the budget or program eligibility criteria are often needed during the implementation phase. In CDBG-DR, this process is called an amendment. There are two common types of amendments—amendments and substantial amendments.

A substantial amendment requires public comment. At a minimum, the following modifications constitute a substantial amendment:

- A change in program benefit or eligibility criteria (including the expansion of eligible beneficiaries, such as establishing a new grantee-identified MID area);
- The addition or deletion of an activity;
- A proposed reduction in the overall benefit requirement (as described in Universal Notice, section III.B.1.);

  - The overall benefit requirement is that 70% of funds be used for activities that benefit LMI persons, unless the grantee requests a waiver through a process described in the Universal Notice.

- The allocation or reallocation of a reasonable monetary threshold specified by the grantee in its Action Plan; and
- An update to the submitted initial Action Plan if the original submission was incomplete, as allowed under Universal Notice, section I.C.1.d. paragraph 7 and section I.C.1.e.

The State has determined that a change of 20% or $3,735,200 of the total allocation is the "reasonable monetary threshold" to require a substantial amendment.

4.7. Leverage

The disaster recovery process relies on partnerships at the federal, state, and local governmental levels, as well as philanthropy, nonprofits, and the business sector. DCCED works closely with HUD, FEMA, and other federal partners, as well as the Division of Homeland Security and Emergency Management, FEMA's counterpart in Alaska. CDBG-DR funds are designed to complement FEMA Public Assistance, Individual Assistance, and Hazard Mitigation Grant Program resources, as well as resources secured and deployed by local governments and philanthropic, nonprofit, and other private-sector entities.

05.
General Requirements

5. General Requirements

5.1. Program Administration

5.1.1. Financial Controls and Grant Management

The State of Alaska Department of Commerce, Community, and Economic Development (DCCED) has established financial management systems that comply with 2 CFR Part 200, Subpart D. These systems include internal controls to prevent fraud, waste, and abuse; procedures for fund drawdowns and reporting through Disaster Recovery Grant Reporting (DRGR); and segregation of duties to ensure accountability. Supporting documentation for expenditures will be retained in accordance with federal recordkeeping requirements.

5.1.2. Procurement Policies and Standards

All procurements under this public Action Plan will comply with 2 CFR 200.317-327 and applicable State of Alaska procurement statutes.

5.1.3. Environmental Review

All projects funded under this public Action Plan will comply with HUD's regulations at 24 CFR Part 58—specifically, parts 24 CFR 58.4, 58.4(b)(2), and 58.18. DCCED will act as the responsible entity and maintain an Environmental Review Record (ERR) for each project. Funds will not be committed or expended until HUD issues an Authority to Use Grant Funds (AUGF).

5.2. Consultation Plan

5.2.1. Outreach and Engagement

DCCED's stakeholder engagement plan for the 2023 Lower Yukon Flooding (DR-4730-AK) and 2024 Juneau Flooding (DR-4836-AK) disasters is based on the requirements outlined in Federal Register 6512-N-01 published on January 16, 2025.

This Action Plan has been developed and published to accelerate recovery funding and address unmet needs linked to or exacerbated by these flooding disasters in Lower Yukon and Juneau. The information presented is based on the best currently available data. Formal consultation began on the Action Plan in the fall of 2025. It is anticipated that the Plan will be amended in 2026 with revisions and updates informed by additional outreach and consultation with stakeholders and community members. Identified gaps and limitations will be further examined during this future stakeholder engagement.

Throughout the continued engagement process, DCCED will consult with disaster-impacted citizens, federally recognized tribes, native corporations, nonprofits, local municipalities, public housing authorities, and other affected parties in the most impacted areas to ensure consistency of the disaster impacts identified in the Action Plan. Through this approach, DCCED will establish a mechanism for residents and

stakeholders to share the unmet and mitigation needs and participate in the development of a thorough and representative plan.

DCCED will ensure access to programs and equal opportunity for individuals with disabilities and Limited English Proficiency (LEP), including making appropriate Americans with Disabilities Act (ADA) accommodations upon request and providing translation services where applicable. This plan will also be published on the project website.

Special Considerations for Public Involvement

The ability to conduct comprehensive stakeholder engagement during the development of this Action Plan was impacted by two circumstances: (1) landfall of Typhoon Halong in the Lower Yukon River Area, and (2) the requirement to submit a complete Action Plan by the end of 2025. These circumstances resulted in an Action Plan process directly coinciding with the impacts and immediate aftermath of a devastating disaster. Typhoon Halong made landfall in Western Alaska shortly after DCCED began developing this Action Plan (October 12, 2025), marking the third major disaster in the region in the past four years. The devastation was widespread and affected all the Lower Yukon MID communities included in this plan. Due to these external circumstances, DCCED took extra care in its communications with the Lower Yukon MID communities and stakeholders, including some alternative approaches to public notifications and data collection.

To reduce the engagement burden on communities impacted by Typhoon Halong, DCCED utilized existing channels of communication by working with Local Government Specialists and Typhoon Merbok CDBG-DR consulting team and Steering Committee members, as well as outreach conducted since the flooding events of 2023. Recent outreach events include those conducted during the development of the Typhoon Merbok CDBG-DR Action Plan earlier in 2025 to identify existing applicable regional development plans to ensure consistency. This is intended to reduce duplicative requests for information and to clarify the processes for these concurrent plan development efforts.

Examples of this collaboration include a flyer developed by both Action Plan consulting teams, which included information about both Action Plans and a steering committee meeting for the Typhoon Merbok Action Plan in which information was shared about the Lower Yukon portion of this plan, including the draft plan public comment period and a virtual public hearing. DCCED also attended a Rural Resilience Workshop in Bethel, Alaska, in September 2025, where they shared information with community members, municipal officials, and tribal representatives from Lower Yukon MID communities about the CDBG-DR program and plan development process.

DCCED will conduct robust engagement with all stakeholders after submission of the initial Action Plan, in early 2026. The outreach will supplement the Unmet Needs Assessment portion of this plan and refine the program allocations

Stakeholder Engagement and Consultation

In the development of this disaster recovery Action Plan, DCCED consulted with many stakeholders, including the following:

Partners Consulted	Consultation Description
Federal Partners	• HUD: Biweekly meetings began in January 2025 and are ongoing. • Small Business Administration: DCCED requested data on November 7, 2025 and received a response that it would be provided after the end of the government shutdown. • FEMA: DCCED requested Incident Management Assistance Team data on October 20, 2025 and received a response on November 17, 2025 at the conclusion of the government shutdown that the request was received and data would be provided at a future date.
State Agencies	Emails were sent to the following entities on October 31, 2025: • Alaska Housing Finance Corporation
Local Governments and Municipalities	• City and Borough of Juneau: virtual meeting with Public Works, Planning, and Emergency Management (October 28, 2025) and Juneau email and survey to assembly and mayor (sent October 31, 2025) • Emails were sent by DCRA Local Government Specialists to the Cities of Alakanuk, Kotlik, Russian Mission, and Marshall on November 13, 2025 and to the Cities of Emmonak, Mountain Village, Pilot Station, and Saint Mary's on November 14, 2025. • DCCED staff attended the Rural Resilience Workshop in Bethel in September 2025 and shared information about the CDBG-DR program and process with representatives from the Cities of Alakanuk, Emmonak, and Russian Mission.
Federally Recognized Tribes	• Emails were sent to the Central Council of the Tlingit & Haida Indian Tribes of Alaska on October 31, 2025. • Phone calls were attempted to the following federally recognized tribes on November 18, 2025: Algaaciq Native Village (Saint Mary's), Asa'carsarmiut Tribe (Mountain Village), Emmonak Village, Iqurmuit Traditional Council (Russian Mission), Native Village of Marshall, Native Village of Pitkas Point, Pilot Station Traditional Village, Village of Alakanuk, Village of Kotlik. When possible, phone calls were followed up with emails with additional information. • DCCED staff attended the Rural Resilience Workshop in Bethel in September 2025 and shared information about the CDBG-DR program and process with representatives from Asa'carsarmiut Tribe, Pilot Station Traditional Village, Native Village of Pitkas Point, and Iqugmiut Traditional Council.

Partners Consulted	Consultation Description
Nonprofits and Tribal Consortia	Emails were sent to the following entities on October 31, 2025: • Alaska Native Tribal Health Consortium • Rural Alaska Community Action Program • Tlingit Haida Regional Housing Authority A discussion about the Lower Yukon portion of the Action Plan occurred at a virtual meeting on November 12, 2025 with: • Alaska Native Tribal Health Consortium • Association of Village Council Presidents Regional Housing Authority DCCED attended the Rural Resilience Workshop in Bethel in September 2025 and shared information about the CDBG-DR program and process with representatives from the Association of Village Council Presidents.
Native Village Corporations	• Goldbelt Incorporated (email sent October 31, 2025) • Native Village Corporations in Lower Yukon are asked to submit input during the public comment period prior to submission to HUD in December 2025, and will be directly engaged in early 2026 to provide input on needs and use of allocation.
Alaska Native Claims Settlement Act (ANCSA) Regional Corporations	• Sealaska Corporation (email sent October 31, 2025) • Calista Corporation (message sent via website November 18, 2025)
Alaska Native Claims Settlement Act (ANCSA) Regional Corporations	• Sealaska Corporation (email sent October 31, 2025) • Calista Corporation (message sent via website November 18, 2025)
Public and Regional Housing Authorities, Local Continuum of Care, HUD-approved Housing Counseling Agencies	Email sent to the following entities on October 31, 2025: • Tlingit Haida Regional Housing Authority • Alaska Coalition on Housing and Homelessness • Family Promise of Juneau • Gastineau Human Services Corporation • Juneau Coalition on Housing and Homelessness • Juneau Housing First Collaborative • Society of St. Vincent de Paul

Table 66: Partner Consultation

Public Hearings

Two public hearings are being held in December to present the draft Action Plan to the public and solicit input. Additional public hearings will be held in early 2026 to work with MID stakeholders and communities and receive feedback on unmet needs and proposed programs. The hearings will include presentations of the plan, surveys, and live questions as a means of receiving input on needs and desired use of funds.

Language Access Accommodations

Both Juneau and Lower Yukon communities have LEP populations that may be affected by the Action Plan. To ensure that all residents have access to the draft plan and public communications, a note will be included

in all public meeting announcements, in public outreach, and on the project websites (Lower Yukon and Juneau) offering translation services upon request.

In addition, to accommodate the higher LEP needs of Lower Yukon communities, the Executive Summary from this Action Plan will be translated into Yup'ik and posted to the project website. The translated Executive Summary will include a note in Yup'ik offering translations of additional documents when requested. As time and budget allow, additional documents, including public service announcements, may also be translated.

Should any comments be received in a language other than English, a translator will be identified to translate the comments and responses.

Disability Accommodations

All in-person public meetings will be held in facilities that are accessible to wheelchair users. Where transit services are available, meetings will be held in facilities close to bus stops. All public meeting announcements will include contact information with offers to provide accommodation to those with disabilities when requested.

All documents will be accessible to screen readers, including through the use of header styles and alt text for images. Graphics will be developed with high-contrast, colorblind-friendly designs. Web content will comply with Web Content Accessibility 2.2 AA guidelines to the greatest extent possible. Public communications will be written in accordance with Plain Language principles.

5.2.2. Public Meetings

The following is a summary of proposed public meetings:

Activity and Brief Description	Proposed Stakeholders	Date
Virtual Public Hearing During Public Comment Period Targeted Toward Juneau	These public meetings are open to and promoted among MID communities and intend to reach community members, local entities, tribal organizations, regional service organizations, and government agencies.	December 2, 2025
Virtual Public Hearing During Public Comment Period Targeted Toward Lower Yukon	These public meetings are open to and promoted among MID communities and intend to reach community members, local entities, tribal organizations, regional service organizations, and government agencies.	December 3, 2025
Public Participation Meeting in Lower Yukon	These public meetings will be open to and promoted among MID communities and intended to reach community members, local entities, tribal organizations, regional service organizations, and government agencies.	TBD, 2026

Activity and Brief Description	Proposed Stakeholders	Date
Public Participation Meeting in Juneau	These public meetings will be open to and promoted among MID communities and intended to reach community members, local entities, tribal organizations, regional service organizations, and government agencies.	TBD, 2026

Table 67: Public Meetings

Public Comment Period

The draft Action Plan was published on November 20, 2025 for a 30-day comment period. The draft Action Plan was posted to the Disaster Recovery website for public access. The public was notified of the Action Plan via public and local channels in accordance with requirements outlined in the Federal Register. Notice was distributed among the impacted communities via email, social media, newspaper advertisements, radio public service announcements, the Alaska Online Public Notice website, and through local and regional service organizations.

DCCED will take comments via mail, email, fax, or through the DCCED's project website:

- Brandon McNaughton: DCCED DCRA, Anchorage
  - Phone: (907) 269-4501
  - Fax: (907) 269-4563
- Anita Baker: DCCED DCRA, Anchorage
  - Phone: (907) 269-4252
  - Fax: (907) 269-4563
- Email: cdbgdr@alaska.gov

A summary of citizen comments on this Action Plan, along with DCCED's responses, will be included in the appendices and submitted to HUD with the Action Plan on December 30, 2025.

5.2.3. Document Publication and Website Requirements

DCCED will maintain a disaster recovery website that provides information on how the grant funds are used, managed, and administered, including links to the Action Plan. The website will also include Action Plan amendments, program policies and procedures, reports, citizen participation requirements, activity and program information described in this plan, and details of all contracts and ongoing procurement processes.

The publication of all relevant program documentation will allow robust citizen participation and full transparency into CDBG-DR-funded activities. These documents will be available in a form accessible to people with disabilities.

5.2.4. Complaints

Concerned citizens can submit complaints to the Alaska Ombudsman Office via email or in writing on a complaint form to:

- Email: ombudsman@akleg.gov
- Phone: (907) 269-5290
- Mail: Alaska Ombudsmen, 1500 West Benson Blvd., Anchorage, AK 99502

5.3. Amendments

Over time, recovery needs will change and new information will become available. DCCED will amend the disaster recovery Action Plan as often as necessary to best address long-term recovery needs and goals. This plan describes proposed programs and activities. As programs and activities develop over time, an amendment may not be triggered if the program or activity is consistent with the description provided in this plan. Programs are subject to change based on citizen engagement feedback.

Changes to areas such as the budget or program eligibility criteria are often needed during the implementation phase. In CDBG-DR, this process is called an amendment. There are two common types of amendments—substantial amendments and non-substantial amendments.

5.3.1. Substantial Amendment

A substantial amendment requires public comment. At a minimum, the following modifications constitute a substantial amendment:

- A change in program benefit or eligibility criteria (including the expansion of eligible beneficiaries, such as establishing a new grantee-identified MID area);
- The addition or deletion of an activity;
- A proposed reduction in the overall benefit requirement (as described in Universal Notice, section III.B.1.);
  - The overall benefit requirement is that 70% of funds be used for activities that benefit LMI persons, unless the grantee requests a waiver through a process described in the Universal Notice.
- The allocation or reallocation of a reasonable monetary threshold specified by the grantee in its Action Plan; and
- An update to the submitted initial Action Plan if the original submission was incomplete, as allowed under Universal Notice, section I.C.1.d. paragraph 7 and section I.C.1.e.

The State has determined that a change of 20% or $3,735,200 of the total allocation is the “reasonable monetary threshold” to require a substantial amendment.

When DCCED pursues the substantial amendment process, the amendment will be posted on the Division of Community and Regional Affairs (DCRA) website for a 30-day public comment period. The amendment will

be posted in adherence with ADA and LEP requirements. DCCED will review and respond to all public comments received and submit them to HUD for approval.

5.3.2. Non-substantial Amendment

A non-substantial amendment is an amendment to the plan that includes technical corrections and clarifications and budget changes that do not meet the monetary threshold for a substantial amendment to the plan and do not require posting for public comment. DCCED will notify HUD five (5) business days before the changes are effective.

All amendments will be numbered sequentially and posted to the website in one final, consolidated plan.

5.4. Performance Reports

In accordance with the federal requirements for the CDBG-DR program, DCCED must submit a Quarterly Performance Report (QPR) through HUD's Disaster Recovery Grant Reporting (DRGR) system no later than 30 days following the end of each calendar quarter. QPRs will be posted on the DCRA official website for public review within three days of approval by HUD. DCCED's first QPR is due after the first full calendar quarter after the initial grant agreement is signed. QPRs will be posted on a quarterly basis until all funds have been expended and all expenditures have been reported.

Each QPR will include information about how the funds are used, as described in the Action Plan. This information includes, but is not limited to, project name, activity, location, and national objective; funds budgeted, obligated, drawn down, and expended; the funding source and total amount of any non-CDBG-DR funds to be expended on each activity; beginning and actual completion dates of completed activities; achieved performance outcomes, such as number of housing units complete or number of low- and moderate-income persons benefiting; and the race and ethnicity of persons assisted under direct-benefit activities. DCCED must also record the amount of funding expended for each contractor identified in the Action Plan.

During the term of the grant, DCCED will provide citizens, affected local governments, and other interested parties with reasonable and timely access to information and records relating to the approved program and to DCCED's use of grant funds and contracts procured with CDBG-DR funding. This information will be posted on DCCED's official website and provided upon request.

6. Appendix A

Public Comment

#	Public Comment	Response
1	There are community members that were severely impacted by the 2023 flood here in Russian mission, Alaska that the homes were damaged beyond repair now has moldy and falling foundation and water/sewer "boxes/belongs to the City" that were also affected now falling apart too. Our lower town's water/sewer system was under water for two weeks or longer, as well...FEMA denied funding the City of Russion mission stating they had no losses, as well as homes.	We received your comment regarding the impacts of the 2023 flood on homes in the City of Russian Mission. Unfortunately, the decision can no longer be appealed, as the individual household appeal date for FEMA individual assistance related to the 2023 flood has passed. However, the information you have provided us is critical to our understanding of the unmet needs of your community, particularly those needs that were not met with federal individual assistance and public assistance. As a part of the Recovery Action Planning process, the State of Alaska will be engaging with the City of Russian Mission and other impacted municipalities in early 2026 to request more local data and information regarding the impacts from the 2023 flooding. The results of the engagement will be incorporated into an Amended Action Plan.