Image 1: Eroding Barge Landing, Chevak, May 24, 2023

Recovery Needs Assessment

Second Edition

DR-4672-AK

Summary of recovery needs identified in: Chefornak, Chevak, Gambell, Golovin, Hooper Bay, Kipnuk, Koyuk, Napakiak, Newtok, Nightmute, Nome, Nunam Iqua, Scammon Bay, Shaktoolik, Shishmaref, Saint Michael, Stebbins, Toksook Bay, and Tuntutuliak resulting from the remnants of Typhoon Merbok (DR-4672-AK).

October 2023

FEMA

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Introduction

The Recovery Needs Assessment (RNA) process occurs in the Recovery Life Cycle, Stage 2: Scope Recovery Requirements, which precedes Stage 3: Deliver Recovery Support. The RNA provides information on State, Local, Tribal, Territorial (SLTT) issues, challenges, priorities, and areas of concern, and is an essential foundation in the recovery strategic planning process (see Table 2: IRC Strategic Planning Process).

The ***RNA Second Edition*** captures needs gathered from the remaining 12 of the 15 communities where IRC staff or partners conducted site visits and is meant to supersede the First Edition. New information is in blue. Under the Interagency Recovery Coordination (IRC) field delivery model, the delivery timeline used in Alaska was extended to adapt to several operational environment considerations. First, access and distance to remote Alaska Native Villages and the extreme weather environment limit when travel and site visits are possible. Second, the unique governance and government structure of tribal communities established by the Alaska Native Claims and Settlement Act (ANCSA) necessitates planned and appropriate outreach. Third, the necessity of prioritizing subsistence hunting and gathering in the summer, creates complexity in scheduling. Communities in the impacted area are primarily structured around subsistence economies, which integrate harvest, use, and sharing of wild resources into the social and familial fabric of the community. Harmonizing government community visits with related disaster response and recovery activities was imperative to avoid overwhelming impacted remote communities. This translated to deconflicting State and FEMA program visits with the IRC RNA visits and other federal agency assistance visits under their own authority.

As of October 2023, IRC was able to complete 12 site visits: **Chevak**, **Toksook Bay**, **Stebbins**, **St. Michael**, **Kipnuk, Gambell, Tuntutuliak, Nightmute, Hooper Bay**, **Koyuk**, **Golovin**, and **Scammon Bay**. Partners conducted site visits to **Elim**, **Shaktoolik** and **Shishmaref**. Information on impacts in other communities came from interagency partners during their consultations with the communities.

IRC supports a whole-community approach to recovery. Throughout the document, an emphasis is placed on addressing disaster impacts with the goal of the future resilience of the community, as opposed to just returning it to a pre-disaster state. Some projects are already planned to address the issues contained in this report. These projects will be detailed in a separate document, the Recovery Strategy.

Note: In this Second Edition, the "Planning Support" need category has been renamed "Community Planning/Capacity Building. "Maritime Infrastructure" has been renamed "Transportation Infrastructure" to encompass issues related to roads and boardwalks, in addition to impacts to barge landings. Information on Churches has been added to Section 8.

Executive Summary

On September 23, 2022, the President issued a major disaster declaration for damage caused to western Alaska by the remnants of Typhoon Merbok. In February, a Federal Disaster Recovery Officer (FDRO) was requested by the Federal Coordinating Officer (FCO) to conduct an Initial Assessment for long term recovery, which was completed in March 2023 and is attached as Appendix F. Based on the recommendation of the FDRO, the FCO activated three Recovery Support Functions (RSFs) and a U.S. Department of Agriculture – Rural Development Advisor (USDA-RD) to join the FEMA Interagency Recovery Coordination (IRC) team. The RSFs activated were Community Assistance, Infrastructure Systems, and Natural and Cultural Resources.[1] A FEMA Hazard Mitigation Advisor from FEMA Region 10 also supported.

Table 1: Community Groupings

Group 1	Group 2	Group 3
Chevak	Alakanuk	Akiachak
Elim	Bethel	Kasigluk
Golovin	Brevig Mission	Kwethluk
Hooper Bay	Chefornak	Kwigillingok
Koyuk	Diomede	Marshall
Napakiak	Emmonak	Mekoryuk
Newtok	**Gambell**	Nunapitchuk
Nightmute	**Kipnuk**	Oscarville
Nome	Kongiganak	Pilot Station
Nunam Iqua	Kotlik	Pitkas Point
St. Michael	Mountain Village	Quinhagak
Scammon Bay	Napaskiak	St.George Island
Shaktoolik	Shishmaref	St. Paul
Stebbins	Teller	Tuluksak
Unalakleet	**Toksook Bay**	Wales
	Tuntutuliak	
	Tununak	
	White Mountain	

The RSFs and Advisors explored the recovery issues identified in the Initial Assessment and identified additional issues through outreach with state, local government, and other recovery stakeholders in western Alaska. IRC targeted outreach to communities based on reported impacts and capacity indicators. Group 1 communities had the highest impacts and low capacity indicators. The State concurred with these groupings.

As a result of this outreach, recovery needs were identified. The Recovery Needs Assessment (RNA) presents these unmet needs. Long-term recovery challenges for the impacted communities relate to eleven overarching categories:

1. Erosion
2. Emergency Management Limitations
3. Community Planning/Capacity Building
4. Wastewater Infrastructure
5. Housing Recovery
6. Solid Waste Disposal
7. Subsistence
8. Cemeteries, Churches, and Artifacts
9. Drinking Water Systems
10. Transportation Infrastructure
11. Energy Infrastructure

Each overarching category section below contains (1) a description of community-specific recovery needs relating to that issue, and (2) a list of tentative assistance avenues to fill the unmet need.

[1] See Appendix D for more detailed information about which agencies lead and are represented in each RSF.

This document represents an iterative step in a larger strategic planning process. IRC is concurrently developing a plan, called a **Recovery Strategy**. The plan details the proposed strategies, actions, resources, and timelines required to achieve equitable outcomes for the impacted communities. IRC and partners will work to implement the recovery strategy as practical.

Table 2: IRC Strategic Planning Process

1. Initial Assessment Process	2. Recovery Needs Assessment Process	3. Recovery Strategy Development Process
Informs the decision on whether SLTT recovery capacity may have been exceeded so that federal leaders and federal interagency partners can scale support to achieve an effective recovery of the whole community.	Recognizes SLTT issues, challenges, priorities, and areas of concern. Provides information and analysis on cross-cutting issues and capacity gaps. Enables RSF partners to scope and define level of support needed, and to inform federal decision making.	Outlines the support strategies that RSFs will take to help address SLTT recovery capacity gaps and identified recovery needs and issues.

State Priorities

- **Preservation of Alaskan Natural and Cultural Resources**
- **Infrastructure Systems Resiliency in Rural Communities**
- **Community Assistance**
- **Housing Solutions in Rural Communities**

Recovery Outcomes[2]

Community Assistance

Resilient recovery of Alaska's communities, through the execution of local recovery strategies in Bering Strait Regional Education Assistance Area (REAA), Kashunamiut REAA, Lower Kuskokwim REAA, Lower Yukon REAA, and Pribilof REAA.

Infrastructure Systems

Alaska infrastructure systems impacted by the flooding and severe weather have been restored and made resilient.

Natural & Cultural Resources

Alaska's natural and cultural resources in the affected communities have been restored for the protection of people and the ecosystem.

[2] These are the recovery outcomes the State of Alaska and FEMA agreed upon during the last update to the Integrated Strategic Plan, the wording may still change.

Recovery Support Function and Advisor Findings

The following sections outline the unmet recovery needs shared by communities during the RNA process. Each geographically specific need is followed by a preliminary indication provided by the RSF Field Coordinators about potential resources and strategies to address the need. *Note:* The chart is meant to summarize the information contained within this document. Communities may be experiencing issues in a certain category even if an "X" is not indicated. Communities may share additional needs during follow-up meetings. IRC will work to resource these too.

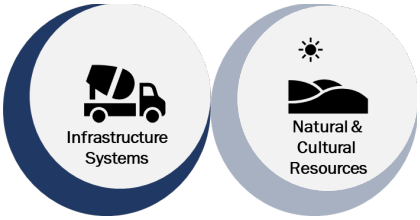
Table 3 : Unmet Need Categories by Impacted Communities[3]

Legend		No Gaps Identified	X	Gap Identified	*	IRC Did Not Visit

Impacted Communities	1. Erosion	2. Emergency Management	3. Community Planning/Capacity Building	4. Wastewater Infrastructure	5. Housing Recovery	6. Solid Waste Disposal	7. Subsistence Impacts	8. Cemeteries, Churches, and Artifacts	9. Drinking Water Systems	10. Transportation Infrastructure	11. Energy Infrastructure Impacts	**Source**
Chefornak*										X		Economic Development Admin.
Chevak	X	X	X	X	X	X	X			X		05/24/2023 IRC RNA Visit
Gambell	X	X	X		X	X	X			X		08/08/2023 IRC RNA Visit
Golovin	X	X			X		X		X	X	X	09/20/2023 IRC RNA Visit
Hooper Bay	X	X	X	X		X		X	X		X	09/07/2023 IRC RNA Visit
Kipnuk	X	X	X	X	X	X	X	X	X	X		08/02/2023 IRC RNA Visit
Koyuk	X	X	X	X	X	X		X	X	X	X	09/12/2023 IRC RNA Visit
Napakiak*					X		X		X			04/18/23 FCO Site Visit
Newtok*		X										05/4/23 IRC Sync Meeting
Nightmute	X		X	X	X	X			X			09/04/2023 IRC RNA Visit
Nome*					X							Housing Task Force
Nunam Iqua*	X							X				FEMA Public Assistance
Scammon Bay	X		X	X	X		X		X	X	X	09/27/2023 IRC RNA Visit
Shaktoolik*	X											USDA RPN Visit 24-28
Shishmaref*							X					03/30/23 Tribal Symposium
Saint Michael	X		X	X	X	X	X	X	X	X	X	07/12/2023 IRC RNA Visit
Stebbins	X	X	X	X	X		X	X	X	X		07/11/2023 IRC RNA Visit
Toksook Bay	X	X	X		X			X		X		06/28/2023 IRC RNA Visit
Tuntutuliak	X	X	X	X	X	X	X	X	X	X	X	08/17/2023 IRC RNA Visit
Total	13	9	10	8	12	7	9	7	9	10	5	

[3] Nunam Iqua declined an IRC RNA Site Visit but has requested IRC support with erosion issues. IRC partners visited Elim, Shaktoolik, and Shishmaref. No needs needing IRC support were reported in Elim.

1. Erosion



Unmet Needs Summary: 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 erosion. Some flood risk management measures were damaged or destroyed during the storm. In other cases, the storm exacerbated existing erosion and created the necessity for new measures.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEVAK	Severe erosion has impacted the riverbank, barge landing area, and village access road. The bluff overlooking the riverbank has been eroded back horizontally at least 50 feet. The barge landing area has been all but destroyed. There is approximately 10 percent of the original sheet pile remaining that formed the pier; none of the fill forming the deck of the pier remains. Getting heavy equipment to the village via barge will be next to impossible until reconstruction of the barge landing and access ramp. The ramp was eroded to a depth of 20 feet, down to sea level, and is not serviceable even by an ATV. Getting items up the bluff from the current offload area is extremely difficult. Items are offloaded and carried by hand up the bluff; then loaded onto ATVs for transport. Drainage pipes on the bluff are exposed, which continues to exacerbate erosion.	5/24/23 IRC Site Visit
GAMBELL	The coastline is losing land and has already lost 500 feet. Typhoon Merbok made erosion worse. A seawall is needed to help mitigate erosion. The community has made a seawall with some boulders, but they sink in the gravel. The airport, school, homes, and other buildings are vulnerable.	8/8/23 IRC Site Visit
GOLOVIN	Typhoon Merbok flooded the lower part of Golovin, intensifying coastal erosion and depositing piles of sand into homes along the shorefront. A project is planned to elevate Front Street (a sandy road), but it will likely wash out with future storm. Vegetation along the coast was destroyed from Merbok and is no longer protecting the shoreline from erosion. Protecting and mitigating against erosion from both water and sheet ice is one of the community's top priorities.	9/20/23 IRC Site Visit
HOOPER BAY	Prior to the storm, the Hooper Bay School was approximately 30 feet from the adjacent beach; post-storm the water is only five feet away. FEMA Public Assistance agreed the school is highly susceptible to future damage. The school is the biggest building in the village; it also serves as an emergency shelter. Purportedly, there used to be 12-14 rows of dunes along the beach just a few generations ago, but they have since eroded away, leaving just one dune.	9/7/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
KIPNUK	Riverbank erosion along 2,000 feet of shoreline was greatly accelerated by Merbok. This has now undermined the community dock and barge landing, which could fail next storm. Numerous containers and supplies are stored nearby, and containers have fallen into the river before. Erosion rates are 10 to 20 feet a year. The community is losing infrastructure, including fuel tanks, to the river. Prior to Merbok, erosion uncovered graves that the community did not know were there. They attempted to install riprap/rocks to mitigate against further erosion, but the rocks were taken away with the ice in the spring.	8/2/23 IRC Site Visit
KOYUK	A long seawall or rock revetment is needed. The whole area in front of the school is subject to flooding. During Merbok storm waters and debris came all the way to the school fence. Debris would have been in the playground if not for the fence. The IRA building, which includes the post office is settling and cracking due to permafrost degradation. The corporation does not have water because of this.	9/12/23 IRC Site Visit
NIGHTMUTE	The community explained that the hillside, specifically the area behind the church, is susceptible to sliding. Huge boulders are exposed, and they have seen smaller slides take place. Instability along this hillside presents a real threat to the community and there is considerable concern that a large-scale slide could occur. The whole length of the community is located along the riverbank. Erosion control measures consisting of boulders have been placed along much of the riverbank extending from the airport runway to the east. However, the riverbank is eroding on the west end of the community where it appears there are no boulders.	9/5/23 IRC Site Visit
NUNAM IQUA	Nunam Iqua declined an IRC RNA Site Visit but has requested IRC support with erosion issues. The city mentioned that Merbok and two subsequent storms have exacerbated erosion to the dock.	IRC Outreach
SCAMMON BAY	See entry in *Transportation* Infrastructure.	
SHAKTOOLIK	The earthen berm that parallels the coast was destroyed by the storm. A rock revetment is necessary to mitigate the impacts of wave action on the community. This damage is accounted for in the FEMA Public Assistance Damage Inventory.	2/24/23 IRC/Economic Development Administration (EDA) Meeting
ST. MICHAEL	Significant shoreline erosion is endangering 29 homes. Five homes are in critical danger of tumbling into Norton Sound. Other important infrastructure and cemeteries are at risk of falling due to erosion. Old garbage/dump sites are being	7/12/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
	exposed by erosion causing an environmental hazard. Design and construction of a seawall is needed to protect infrastructure.	
STEBBINS	The community needs a robust seawall. The airport runway is being raised and resurfaced by an Alaska Department of Transportation project, scheduled to begin in 2024 or 2025. The airport project will construct approximately 40 percent of the needed seawall. A plan is needed for the other 60 percent. During Merbok, the storm driven sea level was as much as 24 feet above normal. The community officials are requesting a seawall to break the energy of storm surge events to reduce the height and erosion damage. The Stebbins officials stated that there is a local rock source that can be used as a quarry.	7/11/23 IRC Site Visit
TOKSOOK BAY	The failing seawall is a gabion basket (homemade cable stuffed with rock) built in the 1980s. It may have helped mitigate impacts, but wide sections of it were destroyed during the storm. The remaining gabion basket seawall is very low. It has shifted and settled to a height of approximately six feet. This offers limited protection from erosion because the cliff is 20 feet high and composed of fine-grained soils with a layer of tundra on top. There was significant erosion to the coastline, particularly where the seawall was destroyed. This has left several downtown homes exposed and in dangerous proximity to the erosion line, with one home cantilevered over the cliff. The fish camps on the east side of the bluff lost 1-2 feet of land due to erosion. The drying racks and equipment will need to be moved further inland.	6/28/23 IRC Site Visit
TUNTUTULIAK	Erosion is threatening the north side of the river from the airport to the barge landing, including near the pump station. As a result of Merbok the north side of the river experienced 1-3 meters of erosion affecting access to the barge landing. There is also an old wastewater pump station that is dangerously close to the edge of the river. There are no erosion control measures in the upper village.	8/17/23 IRC Site Visit
TUNTUTULIAK	The community has been experiencing permafrost changes since the early 2000s, but Typhoon Merbok greatly exacerbated existing concerns. The ground has sunk from 3-8 feet throughout the community and is wet where it used to be dry. Residents feel that climate change has created underground rivers beneath the tundra, which contribute to sink holes and land failure. This impacts the structural integrity of all buildings in the community, except for the newly built school. It is very likely the land subsidence and sinkholes increased because of the Merbok storm surge flooding and saltwater intrusion. The salt water ponded in low areas further thawing the permafrost.	8/17/23 IRC Site Visit

1.1.1. POTENTIAL ASSISTANCE

Image 2: Eroding Russian Orthodox Cemetery St. Michael July 12, 2023

- **USACE Section 165a Pilot Program Continuing Authority Projects in Small or Disadvantaged Communities** - Will fund 100 percent of the cost of projects that address flood, ecosystem, and/or bank erosion, navigational improvements for up to 20 economically disadvantaged communities nationwide as part of a pilot program. May be used for erosion measures near landfills.
- **FEMA Public Assistance (PA) – 406 Mitigation** - Funds work to protect damaged facilities against future damage, restore facilities, encourage hazard-resistant design, relocation of facilities (from hazard prone areas).
- **FEMA Hazard Mitigation Grant Program** - Funds provided to state, local, tribal, and territorial governments so they can rebuild in a way that reduces, or mitigates, future disaster losses in their communities.
- **FEMA Building Resilient Infrastructure & Communities (BRIC)** - Annual mitigation funds to support states, local communities, tribes, and territories, as they undertake hazard mitigation projects reducing the risks they face from disasters and natural hazards.
- **U.S. Army Corps of Engineers (USACE) Continuing Authorities Program (CAP) Small Beach Erosion Control** - Provides protection or restoration of public shorelines by construction of revetments, groins[4], and jetties.
- **USACE Continuing Authorities Program (CAP) Small Flood Risk Management:** The Small Flood Risk Management Program (Section 205) provides a continuing authority for USACE to construct projects (structural or nonstructural) to reduce damages caused by flooding in urban areas, towns, and villages.
- **Environmental Protection Agency Indian General Assistance Program (EPA IGAP)** – This program helps tribes develop capacity to administer environmental programs.

[4] A groin is a medium-sized artificial structure built perpendicular to the shoreline.

2. Emergency Management Limitations

Unmet Needs Summary: Communities expressed a desire to be more prepared for the next storm by strengthening communications infrastructure, repairing shelters, building response teams, and informing themselves on the Stafford Act programs.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEVAK	Per the city's emergency management plan, Chevak is an evacuation point for Hooper Bay residents. The Yukon Kuskokwim School District operates a radio station in Chevak out of the school. The tower was damaged during the storm. The community would like to make their tower more resilient and connected to a back-up generator or battery to support emergency communications.	5/24/23 IRC Site Visit
GAMBELL	In order of importance, the community needs an off-road truck, a loader, and a backhoe. The current evacuation center is the school, but it is in a vulnerable location on low ground adjacent to the coastline, in one of the first places to flood. During Typhoon Merbok the Army provided emergency tent shelters that eventually blew away and they had to shelter in trucks. The community would like to build a new evacuation center on higher ground along the road to Savoonga. They would like a permanent structure, a steel building with concrete floors, that can withstand intensifying storms and is fully stocked with enough water, food, power, etc. to sustain 800-1,000 community members for an adequate period.	8/8/23 IRC Site Visit
GOLOVIN	The Village Public Safety Officer (VPSO) in Golovin proposed the idea of a fully stocked emergency shelter facility, expressing concern that the community doesn't have a facility that can comfortably serve this purpose. The Tribal Office was used as a shelter facility after Typhoon Merbok, but it did not adequately meet the needs of the community in this capacity – it was crowded which resulted in residents camping outside of the office building.	9/20/23 IRC Site Visit
HOOPER BAY	Hooper Bay leadership shared the need for additional VPSOs and law enforcement assistance due to increases in crime within the community.	9/7/23 IRC Site Visit
HOOPER BAY	The land surrounding the Village of Hooper Bay is low, so flooding from Typhoon Merbok severed the community down the middle. Residents (including many elders) living in the "old town" were cut off from essential services located in the "new town" and vice versa. Since the community has never experienced floodwaters reaching this far into their village, nor has their community ever been bisected from flooding before, it is now clear that an emergency evacuation facility is needed to provide residents of the community a safe place to go if a similar flooding event were to occur.	9/7/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
KIPNUK	The police/fire/search and rescue building needs repairs and expansion, including storage. Additionally, the community currently uses the school as an evacuation site, but representatives indicated they could use a dedicated building for an evacuation center that also functions as a community center. Representatives shared they would like to connect new Elder Housing, the proposed community center, a new proposed temporary shelter for domestic violence victims, and a proposed Head Start Building to the existing public safety facility.	8/2/23 IRC Site Visit
KOYUK	The community shared a need to review, update and exercise the Small Community Emergency Response Plan.	9/12/23 IRC Site Visit
STEBBINS	The only evacuation route was inundated four feet for a length of about 100 feet, impeding evacuations from the end of town. The community wants an alternate route. Some design concepts are in place, all on corporation land.	7/11/23 IRC Site Visit
STEBBINS	Current evacuation sites, i.e., the school and the IRA building[5], are insufficient to house evacuated residents. The community would like a new, larger shelter. The corporation is going to take the lead and is beginning the first phase, including where to locate the new building. The need is documented in the Economic Development Plan. The building would include space for community programs as well as sheltering, and space for emergency supplies to be stored.	7/11/23 IRC Site Visit
STEBBINS	During Merbok communications went down briefly. Representatives expressed a desire for new/updated emergency communications equipment, such as handheld devices, VHF or Ham radio, and satellite phones. No backup power option for emergency communications is in place.	7/11/23 IRC Site Visit
STEBBINS	Community does not have fire equipment or fire fighters. There was a devastating fire in November 2022, and they did not have the resources to respond.	7/11/23 IRC Site Visit
NEWTOK	Newtok reported damages to the Ayaprun School, which serves as an emergency shelter. Newtok started relocating to its new location, Mertarvik, in 2019, but more than 200 residents remain in Newtok.	5/4/23 IRC Sync Meeting
TOKSOOK BAY	The city leadership stated they were unaware of the Public Assistance (PA) program. The community leadership wanted to learn more about FEMA programs and how to participate, so that they can be better prepared in the event of a future disaster.	6/28/23 IRC Site Visit

[5] The main community/tribal building.

COMMUNITY	DISASTER IMPACT	SOURCE
TUNTUTULIAK	The community used to have fire equipment, such as water pumps and chemicals, but they no longer have that equipment. When a dump fire on the tundra was blowing towards the village, employees from the school and village had to form a bucket brigade to put it out. On another occasion a home caught fire, but they were unable to save the structure because there was no equipment.	8/17/23 IRC Site Visit

2.1.1. POTENTIAL ASSISTANCE

- USDA Rural Development Community Facilities Loan/Grant Program – Can assist with things like fire equipment and emergency communication equipment.
- USDA Community Facilities Technical Assistance and Training (TAT) Grant – Intended to address capacity challenges faced by small, low-income rural communities with limited resources and staff. Helps communities access USDA funding for essential community facilities.
- Alaska Department of Natural Resources Fire Protection Volunteer Fire Assistance Grant - Provides assistance in training, equipment purchases, and prevention activities, on a cost share basis. The assistance is provided to increase firefighter safety, improve the firefighting capabilities of rural volunteer fire departments, and enhance protection in the urban-wildland interface.
- FEMA Fire Prevention and Safety Grants - Provides critically needed resources to carry out fire prevention education and training, fire code enforcement, fire/arson investigation, firefighter safety and health programming, prevention efforts, and research and development.
- FEMA Staffing for Adequate Fire & Emergency Response (SAFER) - Assists local fire departments with staffing and deployment capabilities in order to respond to emergencies and assure that communities have adequate protection from fire and fire-related hazards.
- FEMA Assistance to Firefighters Grant (AFG) Program - Enhances the safety of the public & firefighters by providing direct financial assistance to eligible fire departments, nonaffiliated EMS organizations, & State Fire Training Academies for critically needed resources to equip/train emergency personnel.
- FEMA Public Assistance (PA) – 406 Mitigation - Funds work to protect damaged facilities against future damage, restore facilities, encourage hazard-resistant design, relocation of facilities (from hazard prone areas).
- FEMA Hazard Mitigation Grant Program - Funds provided to state, local, tribal, and territorial governments so they can rebuild in a way that reduces, or mitigates, future disaster losses in their communities.
- FEMA Building Resilient Infrastructure & Communities (BRIC) - Annual mitigation funds to support states, local communities, tribes, and territories, as they undertake hazard mitigation projects reducing the risks they face from disasters and natural hazards.

3. Community Planning/Capacity Building

Unmet Needs Summary: The impacted communities generally have a low capacity to apply for grants, coordinate among federal agencies, and develop community plans. "Most small, rural Alaska communities do not have dedicated planning and public works departments to plan, design, and construct infrastructure projects, nor do they have sufficient staff for robust accounting, contracting, legal, and administrative departments. Often, a single administrator wears all of these hats, and staff turnover is high." - Unmet Needs of Environmentally Threatened Alaska Native Villages: Assessment and Recommendations, Alaska Native Tribal Health Consortium (ANTHC) 2023.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEVAK, ST. MICHAEL	Community leaders reported residents had difficulty navigating the Individual Assistance (IA) process and/or other FEMA programs and would like to be more prepared to help the residents before the next disaster.	5/24/23 & 7/12/23 IRC Site Visits
GAMBELL	The tribe has a grant writer and recently had a Starlink unit/account provided by Kawerak. The grant writer would like more training and assistance with putting together competitive grants.	8/8/23 IRC Site Visit
GAMBELL	Gambell has a typical land ownership arrangement for Alaska Native Villages, with the Native Village Corporation, Sivuqaq, Inc (a for-profit corporation) owning titles to the land. Because of this, the corporation is frequently rejected from grant and other award programs and are told they are ineligible because the land is owned by a for-profit corporation. Most federal and state grants require that the land be publicly or tribally owned.	8/8/23 IRC Site Visit
HOOPER BAY	Representatives of Hooper Bay are interested in assessing the pros and cons of relocation as a long-term solution and fortification as a short-term solution. Community-wide consensus on relocation is not yet reached. Community representatives understand how long relocation has taken other communities (i.e., Newtok) and believe they should consider the alternatives and select their best option sooner rather than later. This is a difficult and complex topic to resolve. They would like to complete a feasibility study to help inform this important decision.	9/7/23 IRC Site Visit
HOOPER BAY	Lack of proper identification documents, such as social security cards and tax records, has prevented some applicants from completing applications for home improvement project grants and funding. The community feels they would benefit from trainings on renewal of lost social security cards.	9/7/23 IRC Site Visit
KIPNUK	Community members were unsure of how to navigate social services systems, such as disability assistance, and need additional information.	8/2/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
KIPNUK	Representatives expressed the need for funding to hire a local person to navigate the FEMA and interagency disaster recovery process, including grant writing and project management.	8/2/23 IRC Site Visit
KOYUK	There are resources available to assist with disaster recovery and community development/improvement projects, but the community does not have the capacity to identify and apply for grants.	9/12/23 IRC Site Visit
NIGHTMUTE	The City of Nightmute's Hazard Mitigation Plan expired two years ago and needs an update.	9/5/23 IRC Site Visit
SCAMMON BAY	The City of Scammon Bay Hazard Mitigation Plan (HMP) has expired, and community representatives would like to renew the HMP using a multijurisdictional approach between the City of Scammon Bay and the Native Village of Scammon Bay.	9/27/23 IRC Site Visit
STEBBINS	The Stebbins Hazard Mitigation Plan is expired and needs revision. The community is interested in a multijurisdictional (Tribe and City) plan and has been referred to both the FEMA Hazard Mitigation Program Alaska Lead and the Alaska Division of Homeland Security & Emergency Management (DHS&EM). City representatives expressed a need for grant writers and managers. The IRA[6] has a grant writer and is seeking training. Grant management may also be a need. The community needs a way to track and communicate successes.	7/11/23 IRC Site Visit
TOKSOOK BAY	The 2014 Hazard Mitigation Plan is due to be updated. The tribal government expressed interest in developing a separate plan from the city. The city is also interested in updating their HMP.	6/28/23 IRC Site Visit
TUNTUTULIAK	The community worked with a university student in the 2010s on a plan incorporating land use, economic development, and community development elements, but it was never completed or adopted. The community leadership is interested in developing and implementing a new plan, but consistent staffing has been a challenge. Qualified community members move away in search of better wages/benefits.	8/17/2023 IRC Site Visit

[6] IRA is another way to refer to the Alaska Native Village.

3.1.1. POTENTIAL ASSISTANCE

- USDA Community Facilities Technical Assistance and Training (TAT) Grant – Intended to address capacity challenges faced by small, low-income rural communities with limited resources and staff. Helps communities access USDA funding for essential community facilities.
- Alaska Municipal League (AML) - The Alaska Municipal League (AML) has offered to help communities complete the longer application steps for USACE programs. AML can assist with grant writing initiatives and has training programs for rural and remote community clerk positions related to financial management, reporting and closeout of awarded grant funds.

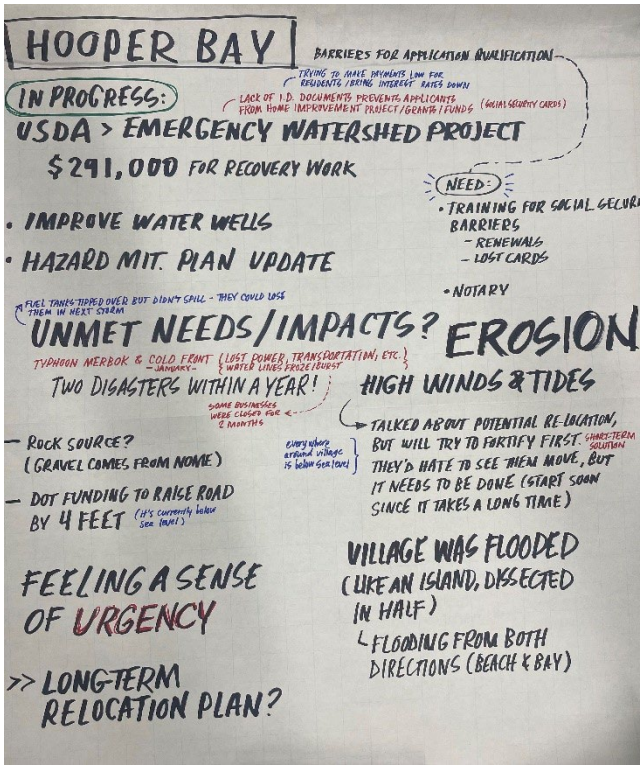
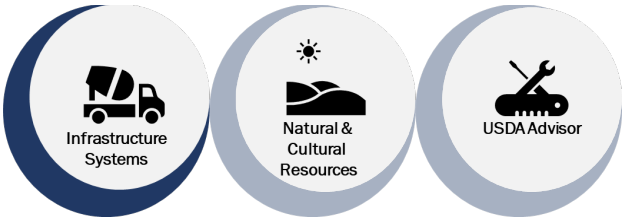


Image 3: Butcher Paper Brainstorming RNA Site Visit to Hooper Bay, September 7, 2023

- Just-in-Time Recovery Management Training – Coordinate the delivery of a three-part Just-in-Time Recovery Management Training for Alaska Division of Community and Regional Affairs (DCRA) Local Government Specialists (LGS), Native Non-Profits, Alaska DHS&EM, and others as identified. The training will cover Stafford Act Programs, procurement, financial management, CDBG-DR, planning and resilience. *This training concluded on September 26, 2023.*
- Direct Technical Assistance -- Hold regular meetings with community leadership to help them navigate application processes and connect with points of contact for resources. Assist the community in developing implementation plans. *This effort is ongoing.*
- Alaska Native Tribal Health Corporation (ANTHC) Center for Environmentally Threatened Communities (CETC) – Supports rural Alaska communities experiencing infrastructure impacts resulting from flooding, erosion, and melting permafrost. CETC can provide grant writing and management services to Environmentally Threatened Communities, as identified in the Statewide Threat Assessment. They help to secure and manage funding to replace damaged community infrastructure, move homes and community buildings, develop new subdivisions, gain a better understanding of risk, and advance long-term planning. They can also build capacity to respond to threats by providing grant training and technical assistance.
- HAZWOPER Training – The U.S. Department of the Interior (DOI) offers free 40-hour HAZWOPER (Hazardous Waste Operations and Emergency Response) training to communities that request it.

4. Wastewater Infrastructure



Unmet Needs Summary: Communities in western Alaska generally rely on lagoons and leach fields as wastewater management solutions. When the community floods, contaminants are released into the surrounding environment. Repairing and hardening the wastewater infrastructure will make communities more resilient to future disasters.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEVAK	The sewage lagoon berm is breached, and contaminants are leaking into the surrounding area.	5/24/23 IRC Site Visit
HOOPER BAY	The sewage lagoon berm is breached, in part due to impacts from Typhoon Merbok, but also from permafrost degradation, overfilling, and excessive rain. Raw sewage is running out onto the tundra, creating a public health problem for the community. Since Typhoon Merbok and the cold front last January, most of the community is using honey buckets again, overwhelming the sewage lagoon. The existing lagoon was not intended to meet the current population capacity demands. The sewage lagoon was originally intended to service only the school and the teacher housing apartments but is now servicing 127 homes and businesses.	9/7/23 IRC Site Visit
KIPNUK	Stormwater inundated much of the community, causing widespread environmental impacts. Small steel dumpsters used as honey bucket collection containers are located around the village. These containers tip over frequently, especially during spring break-up. Representatives indicated they need a more functional central collection facility to meet basic sanitation standards.	8/2/23 IRC Site Visit
KOYUK	The community stated that water and sewer systems suffered great damage during the Merbok storm surge, and that repair of these utilities is the highest priority for the community. Many of the home connections for water and sewer have had extreme settlement resulting in leakage or failure. The sewage and water lines are difficult to access because they are buried. As the land settles/drops due to permafrost degradation, it is difficult and expensive to locate leaks.	9/12/23 IRC Site Visit
NIGHTMUTE	The storm flooded the landfill and sewage lagoon, depositing trash and pollution into the adjacent wetlands and river. The sewage lagoon has since been plugged by sandbags, but high waters during Spring and Fall continue to flood both the landfill and the sewage lagoon, exacerbating erosion and permafrost degradation.	9/5/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
	Most homes are using a honey bucket system. The sewage lagoon is connected to the river via a small channel/breach. A significant number of bags containing human waste and other trash have ended up in the sewage lagoon as well as the river due to repetitive storm surge flooding. The community is working with ANTHC on a piped water system, but the timeline for building the system in unknown and could be 5-15 years away.	
SCAMMON BAY	Native Village of Scammon Bay (NVSB) representatives shared a desire to improve the village's sewer system. During the storm, contaminants from the lagoon washed through the village. NVSB is worried about future distribution of pathogens and septic contamination.	6/29/23 PA Recovery Scoping Meeting
ST. MICHAEL	Merbok's storm surge caused additional damage to the vacuum plant building, weakening the floor. IRC observed that the building floor is rotting through. The vacuum pump is ready to fall through. This damage is accounted for in the FEMA Public Assistance Damage Inventory.	7/12/23 IRC Site Visit
STEBBINS	The transfer pumps and septic tank were flooded by Merbok's storm surge and wave action. The inundation carried silt and beach material, depositing it in the septic system utilidors and pump pit. The material contaminated with sewage, was pumped into the leach field, and the leach field may no longer meet its designed service requirements.	7/11/23 IRC Site Visit
TUNTUTULIAK	The landfill and sewage lagoon, a lake, are adjacent to each other. Fencing around the landfill ("the dump") and sewage lagoon/lake has collapsed and no longer contains trash, leaving trash strewn about the tundra. There are no waste reduction efforts, no trenches, no cover material, no incineration. There is a lack of adequate heavy equipment in this community to properly handle solid waste. Furthermore, the solid waste landfill leachate flows downgradient to a small natural lake which serves as the improvised sewage treatment pond. It is not lined and does not have adequate berms to contain the waste for an actual treatment retention period. The sewage follows a natural drainage through a chain of small lakes and eventually flows into the river. This contamination has forced the community to cease using the lower reaches of the river as a potable water source. The community now travels several miles upstream to collect potable water.	8/17/2023 IRC Site Visit

4.1.1. POTENTIAL ASSISTANCE

Image 4: Aerial View of Chevak Lagoon and Landfill, May 24, 2023

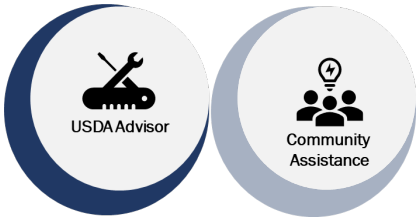
- **Village Safe Water Capital Improvement Program and Related Programs** – The Alaska Department of Environmental Conservation (ADEC), the U.S. Environmental Protection Agency (EPA), the Indian Health Service (IHS), USDA-RD, and the ANTHC work together to collectively fund sanitation projects in the impacted area. IRC will identify and monitor planned construction efforts that will contribute to the resilience of water and wastewater infrastructure.
- **Indian Health Service (IHS) Sanitation Facilities Construction Program** - Provides technical and financial assistance to American Tribes and Alaska Native villages for the cooperative development and construction of safe drinking water supply, sewage, and solid waste disposal facilities, and related support facilities. The Bipartisan Infrastructure Law bill directs the Indian Health Service to use up to $2.2 billion of the $3.5 billion appropriation on economically infeasible projects.
- **Federal Emergency Management Agency (FEMA) Public Assistance (PA) Grant Program** - Provides supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies.
- **Community Development Block Grant Program (CDBG-DR)** - Funding for eligible Indian Tribes and Alaska Native Villages to help improve the housing stock, provide community facilities, and make infrastructure improvements.
- **USDA-RD Water & Environmental Programs –** Several funding programs are available to help with impacts to community infrastructure systems for drinking water, waste disposal, landfills, washeterias, and decentralized systems.
- **USACE Continuing Authorities Program (CAP) Small Beach Erosion Control** - Provides protection or restoration of public shorelines by construction of revetments, groins[7], and jetties.

Image 5: Honey Bucket Waste Disposal Container Near Body of Water in Golovin, September 20, 2023

- **USACE Continuing Authorities Program (CAP) Small Flood Risk Management:** The Small Flood Risk Management Program (Section 205) provides a continuing authority for USACE to construct projects (structural or nonstructural) to reduce damages caused by flooding in urban areas, towns, and villages.

[7] A groin is a medium-sized artificial structure built perpendicular to the shoreline.

5. Housing Recovery



Unmet Needs Summary: Storm surge damaged homes, displacing around 30 families. Families are still repairing their homes but are encountering shortfalls in materials and funding. Some homes are threatened by erosion and will need to be relocated.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEVAK	At least one household was displaced, other homes were damaged. A home is at risk of falling off the bluff and is not structurally sound enough to be relocated so the home is being demolished.	5/24/23 IRC Site Visit
GAMBELL	Community members mentioned damages to their homes and shared they were not familiar with the FEMA Individual Assistance Program. Some had applied to the State IA program but did not know who to contact to follow-up on the status of their applications.	8/8/23 IRC Site Visit
GOLOVIN	Three homes were removed from their foundations and 16 homes were flooded. Some homes in the lower part of town are in the floodplain and need to be elevated. Approximately four homes cannot be elevated due to issues with their foundations. The city proposed a possible berm around the homes that cannot be elevated, protecting them from water and ice. Additionally, individual damaged homes need repairs and home improvements. Some residents mentioned non-functioning windows and other issues with their homes that need repairing.	9/20/23 IRC Site Visit
HOOPER BAY	The community expressed a need for more housing, as well as repairs to at least five homes damaged by Typhoon Merbok. The Association of Village Council Presidents (AVCP) multi-family housing building (19 units) is not properly weatherized to meet arctic standards. This is a major concern for residents of the building each winter. Hooper Bay leadership have sought solutions to this problem but have not yet been able to get the building retrofitted.	9/7/23 IRC Site Visit
KIPNUK	Houses were damaged, T-111 siding was loosened or ripped off, wood pile foundation structures were broken, and homes are sinking throughout the community. One home fell off its piles and into the water due to Merbok winds; the home may have been recovered, but it suffered water damage. Storm surge and high tides are causing flooding around several near-shore homes causing foundation failure. Some residents cannot afford to fix their homes.	8/2/23 IRC Site Visit
KOYUK	Four or five homes along the shore are imminently threatened by erosion and flooding. They were severely damaged during Merbok. Another seven are in danger and will need to be relocated as well. Homes also need to be winterized and mitigated against future hazards. Some homes have fuel and gas tanks outside of the homes. In another area of town, homes need to be evaluated for	9/12/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
	potential landslide threat. Homes that are on pilings are getting pushed up and shifted by seasonal frost jacking. This shifting of the homes affects the water and sewer hookups causing breakage and freeze-up.	
NAPAKIAK	At least one household was displaced; other homes were damaged.	Housing Task Force
NIGHTMUTE	Homes located near the river are falling into the water, due to extensive erosion along the riverbank. These homes are still being lived in despite water entering the homes during high tide. The community expressed that there isn't any room for them to grow within the lowlands along the river. Higher elevation real estate is available behind the village; however, residents are constrained from relocating there due to privately owned native land allotments. They do not have proper right of way to build a road up to the hills behind the village either. Community leaders were also concerned residents would need to endure very strong winds if they relocated to the higher location.	9/5/23 IRC Site Visit
NOME	At least 12 households were displaced; other homes were damaged.	Housing Task Force
SCAMMON BAY	Homes in low-lying areas were also damaged, including those closest to the tank farm. Five to six are vulnerable to future storms and may need to be moved to alternate locations or have other significant mitigation measures implemented, but alternate sites have not been considered at this stage. The homes are still livable.	9/27/23 IRC Site Visit
STEBBINS	Ten families were displaced with no plan for how to rebuild/recover. Sixty additional houses needed repairs. First Street was affected as well as the neighborhood near the airport. Many of the homes were knocked off their foundations or are no longer level. Houses are now moldy and there are related health issues. Houses have shifted, wiring is in jeopardy and insulation is wet. Voluntary Organizations Active on Disasters (VOAD) did assessments of the housing, but the community is uncertain what the next steps are. The community has repair materials that were sent by the Governor but doesn't know the requirements to account for their use. The community has the labor force to rebuild, they just need the funding to move forward with rebuilding locally. Representatives expressed a desire to pool funding for home repairs.	7/11/23 IRC Site Visit, FEMA PA
ST. MICHAEL	Twenty-nine houses are in danger, five critically. The community needs to identify a location for the homes, create a relocation plan, and secure funding. To meet the regulatory requirements to relocate damaged and threatened homes the community must also provide water and sewer service at the new locations and demonstrate that the homes will not require mitigation in the future.	

COMMUNITY	DISASTER IMPACT	SOURCE
TOKSOOK BAY	One home is completely unlivable because of its location on the erosion line but the owner does not have the material or funding to address it. The home will likely need to be demolished because it is not structurally sound to survive a move. It is believed that the homeowner is an existing FEMA IA applicant. Additionally, two unoccupied homes were damaged and there were damages to the storage sheds and porches of occupied homes.	6/28/23 IRC Site Visit
TUNTUTULIAK	At least seven homes were heavily impacted, with about 20-25 more impacted. The 20-25 new homes in the middle-to-uptown areas are on piers and lack proper bracing. Foundations have shifted and homes could potentially fall over in high winds, flooding, or seismic activity. The land is thawing, which is causing ponding in areas around most homes. Resources are needed to fix the foundations or move homes to higher ground. Some homes have collapsed on their foundations and are too damaged to be relocated. Most homes are unlevel due to soil failure. Several homes have been undercut due to the extreme erosion caused by Merbok. The collapsed foundations have resulted in daily tidal saltwater inundation into several homes. Additionally, there are more minor damages, such as leaks in walls and roofs, which have had temporary fixes. Machinery, heavy equipment, and tools are needed for relocation and repairs. Black mold is also developing in many homes. In addition to moving old homes, new homes are needed.	8/17/23 IRC Site Visit

5.1.1. POTENTIAL ASSISTANCE

- USDA Natural Resources Conservation Service (NRCS) Emergency Watershed Protection Program - Offers vital recovery options for local communities to help reduce hazards to life and property caused by floodwaters, droughts, wildfires, earthquakes, windstorms, and other natural disasters. Project funds address erosion related watershed activities. Can pay for the relocation of homes.
- U.S. Department of Housing and Urban Development (HUD) FY23 Community Development Block Grant Program for Indian Tribes and Alaska Native Villages - Projects funded with Imminent Threat grant funds can address issues that have an immediate negative impact on public health or safety of tribal residents. Awards are made through a non-competitive process. Uses include repairing barge landings, repairing sewers, and the movement of threatened homes.
- USDA Rural Disaster Home Repair Grant Program - Through this program, eligible homeowners may apply to receive grants of up to $40,675 directly from USDA to repair their homes.
- Bureau of Indian Affairs (BIA) Emergency Aid to Tribal Government – Covers destroyed or damaged homes, damaged property boundary markers, replacement of subsistence food and food harvesting equipment, solid waste collection and removal, and minor construction associated with infrastructure and homes.

- **Voluntary Organizations Active in Disasters (VOAD) Mission –** Voluntary agencies conducted a mission to help residents prepare repair materials lists in Hooper Bay and Stebbins. They may return to help rebuild later in the summer.
- **Community Development Block Grant Program (CDBG-DR)** - Funding for eligible Indian Tribes and Alaska Native Villages to help improve the housing stock, provide community facilities, make infrastructure improvements, fund microenterprises, and expand job opportunities.

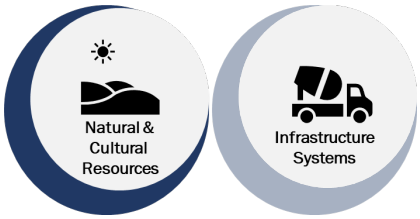
Image 7: Geodesic Home in Hooper Bay Dented by Floating Driftwood and Logs Propelled by Merbok Winds and Storm Surge Flooding that Exceeded 20 Feet in Height, September 7, 2023

Image 6: Threatened Home Toksook Bay, June 28, 2023

Image 8: Threatened Home Hooper Bay, September 7, 2023

Image 9: Threatened Home in Golovin, September 20, 2023

6. Solid Waste Disposal



Unmet Needs Summary: Some fencing surrounding landfills was damaged during the storm. Lighter waste has shifted due to wind and flooding. Additionally, direct storm impacts to landfill facilities reported by communities exacerbated larger planning issues surrounding solid waste. When a flood or storm occurs, landfills are overwhelmed. There is a lack of equipment and planning for storm debris and routine residential solid waste management. Permitting compliant landfills and planning debris disposal for future disasters will make these communities more resilient. Very few communities have a hazardous waste collection building or even a Conex to segregate and sort waste for backhaul to permitted facilities.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEVAK	Chevak has at least two landfills. The old one, which is covered over and no longer in use, is located next to the eroding bluff. Waste is falling into the river. The new landfill is much further away from town. The waste there is separated (electronics, batteries, household trash, etc.), and it is open-air with a fenced perimeter. It is vulnerable to wind, and waste is spread out across a very large area. A hazardous waste shed or Conex is needed.	5/24/23 IRC Site Visit
HOOPER BAY	Hooper Bay is concerned about not having proper heavy equipment on hand to be prepared for fall storms, for things such as debris removal.	9/7/23 IRC Site Visit
GAMBELL	The fencing of the landfill closest to the water was damaged, causing debris to blow out of the landfill.	8/8/23 IRC Site Visit
KIPNUK	The dumpsite is very full. Heavy equipment isn't being used to compress the waste. There is a burn unit, but it is undersized. There is a pond inside the landfill that is fenced, but dump debris is in the water. Community members are depositing trash outside the landfill. There is a planned backhaul this fall, but that will only address the removal of hazardous materials and will not significantly reduce the amount of waste at the dump.	8/2/23 IRC Site Visit
KOYUK	The landfill is at capacity and past due for closeout, it is also contaminated with hazardous waste. The fence is failing. There was a fire recently. There is no landfill operator or equipment.	9/12/23 IRC Site Visit
KOYUK	Some of the debris from Typhoon Merbok still litters the beach. There are Conex trailers slammed into the bank. Ownership of these containers has not been determined. Honey bucket waste was dumped onto the beach.	9/12/IRC Site Visit
NIGHTMUTE	The City of Nightmute is trying to identify a sustainable location for its landfill. The two current locations in use are both across the river from the community. The summer dumpsite is along the banks of	9/5/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
	the river; the winter dumpsite is also across the river from the village but further inland. Neither location, the summer or the winter dumpsites, are permitted. Both are un-fenced. Waste from the summer landfill is falling into the river. To use the winter or the summer dumpsite it is necessary to cross the river, resulting in an accumulation of garbage near homes until it can be taken across. Both dumpsites are subject to flooding and winds, resulting in trash entering adjacent areas. The community is working with Zender Environmental to move waste from the summer/riverbank site to the winter/inland site. Back in the 2010s, a landfill was permitted for a location that the community did not want. There is another location proposed that the community prefers. USDA has provided funds for preliminary engineering and environmental documents to evaluate a new landfill located in uplands.	
NIGHTMUTE	Heavy equipment is needed to clean up debris around the lagoon. The community has a skid steer and a loader, but a mini excavator with rubber tracks would help them with their ongoing landfill cleanup project. Due to lack of personnel to operate the equipment and assist with the community cleanup, they inquired about training and certification requirements for heavy equipment operators.	9/5/2023 IRC Site Visit
ST. MICHAEL	Storm surge has exposed old dump sites along the water's edge. Waste is eroding into the water.	7/12/23 IRC Site Visit

6.1.1. POTENTIAL ASSISTANCE

- **IHS Sanitation Facilities Construction Program** - Provides technical and financial assistance to American Tribes and Alaska Native villages for the cooperative development and construction of safe drinking water supply, sewage, and solid waste disposal facilities, and related support facilities. The Bipartisan Infrastructure Law bill directs the Indian Health Service to use up to $2.2 billion of the $3.5 billion appropriation on economically infeasible projects.
- **FEMA PA Grant Program** - Provides supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies.

Image 10: Solid Waste Disposal in Nightmute, September 5, 2023

- **ADEC Solid Waste Program** - Regulates health and environmental compliance at solid waste facilities through a combination of design review, permits and authorizations, inspections, monitoring, and compliance assistance.
- **Alaska Backhaul Program** - The EPA-funded backhaul program is a long-term program in which a community collects, stores, and backhauls specified materials out of the community on a regular basis.
- **Sanitary Deficiency System (SDS)** – The SDS contains a list of identified sanitation issues that state, federal, regional health partners use to prioritize projects.
- **USDA-RD Water & Environmental Programs –** Several funding programs are available to help with impacts to community infrastructure systems for drinking water, waste disposal, landfills, washeterias and decentralized systems.
- **USACE Continuing Authorities Program (CAP) Small Beach Erosion Control** - Provides protection or restoration of public shorelines by construction of revetments, groins[8], and jetties.
- **USACE Continuing Authorities Program (CAP) Small Flood Risk Management:** The Small Flood Risk Management Program (Section 205) provides a continuing authority for USACE to construct projects (structural or nonstructural) to reduce damages caused by flooding in urban areas, towns, and villages.

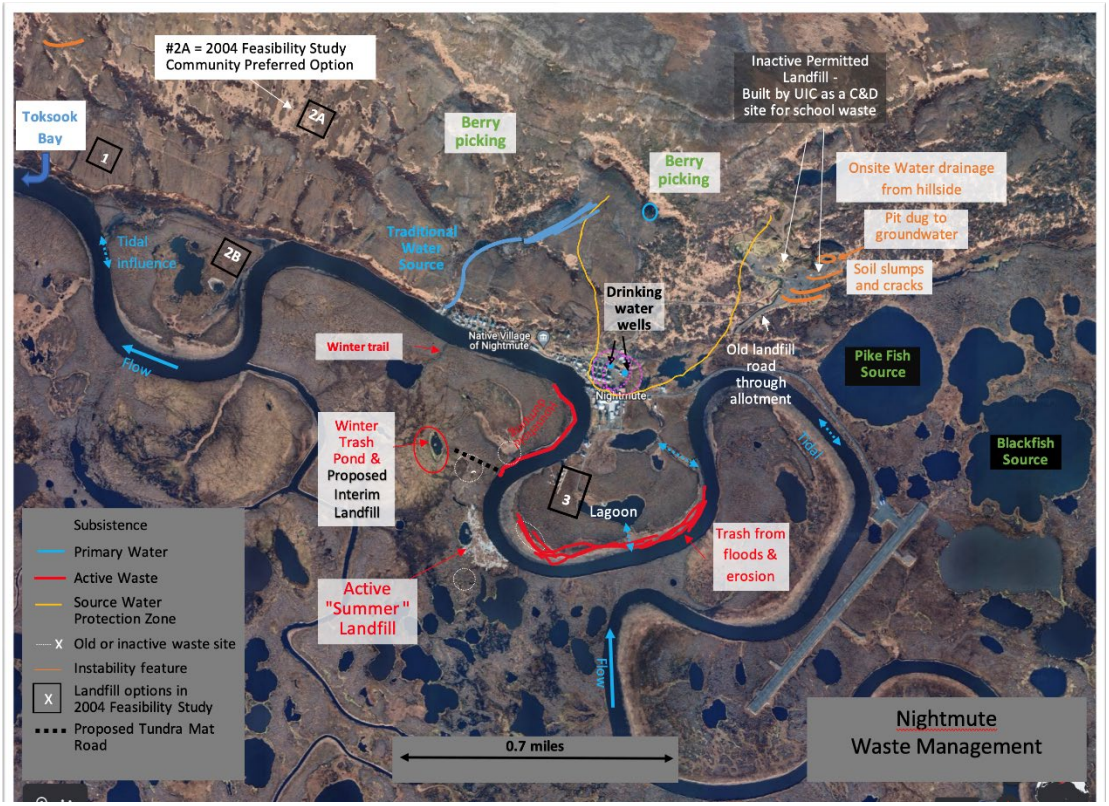
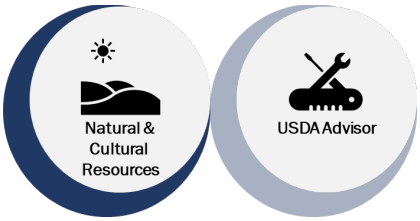


Image 11: Zender Environmental Map of Current and Proposed Landfills in Nightmute, 2023

[8] A groin is a medium-sized artificial structure built perpendicular to the shoreline.

7. Subsistence Impacts



Unmet Needs Summary: Residents lost subsistence equipment and stored food. While the FEMA and State Individual Assistance programs were able to adjust policies to reimburse applicants for damaged or lost subsistence equipment, not all impacted residents applied, and gaps remain.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEVAK	Approximately 90 of 100 boats were destroyed or lost, fish camps were damaged and other subsistence equipment lost.	5/24/23 IRC Site Visit
KIPNUK	Representatives reported loss of subsistence equipment and food supplies. Most fish camps are located on the ground next to houses, and some of them were damaged. With the high cost of fuel, employment is needed to conduct subsistence activities. Tomcod (saffron cod) is an important subsistence food, and the representatives observed there have been fewer tomcods in the last three to four years. They also observed smelts with unusual green spots.	8/2/23 IRC Site Visit
GAMBELL	Twenty-five (25) boat racks were destroyed in Typhoon Merbok. 2x6' boards are needed to rebuild them.	8/8/23 IRC Site Visit
GOLOVIN	The community garden in Golovin was destroyed during the storm. The community would like to replace it, incorporating a greenhouse.	9/20/23 IRC Site Visit
GOLOVIN	The community is considering a centralized food processing facility that would be safely located uphill on higher ground. This facility would have large fans, generators, and freezers for community members to process their harvested fish and game. It could also be used to store their food during times of emergency and/or power outages.	9/20/23 IRC Site Visit
GOLOVIN	Approximately 8-10 generational subsistence cabins, 15-19 fish racks, and other subsistence equipment were damaged or destroyed by Typhoon Merbok. Ideally, residents of Golovin would prefer to rebuild the cabins in the same locations if possible.	9/20/23 IRC Site Visit
NAPAKIAK	Village of Napakiak community representatives reported a desire for emergency preparedness measures, e.g., pressure cookers, salt/sugar, and canning supplies, to prevent food spoilage during future disasters.	4/18/23 FCO Visit
SCAMMON BAY	Permafrost melt eroded land along the river, causing fishing nets to float away and destroying fish camps and fish racks during the storm.	9/27/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
SHISHMAREF	The beach eroded where boats are stored, smoke houses and fish racks are located, and subsistence food is processed.	3/30/23 Tribal Symposium
ST. MICHAEL	Erosion affected the subsistence grounds/fish camps along the shoreline in town, and community members lost gear, such as nets, drying racks, and smokehouses. Resources to replace equipment are not yet secured.	7/12/23 IRC Site Visit
STEBBINS	A fire last fall affected the only store. Prices at the Alaska Commercial Company store in St. Michael increased due to inflation. Access to food will still be an issue this winter because the store is at 1/3 capacity and a lot of subsistence equipment has not been replaced. People are not able to access fish camps because boats were destroyed. There used to be 50-60 fish racks on the beach and now there are only three.	7/11/23 IRC Site Visit
TUNTUTULIAK	The community expressed a desire to mitigate erosion to the bank where the fish racks are located. Fish racks are generally flooded on each high tide, but they were tipped over by Merbok. A berm would prevent flooding of the fish racks. When asked about food security related issues, representatives reported concerns about hunting and fishing regulations. When asked, community leadership did not think a community freezer would be helpful, and suggested subsidizing grocery store items to lessen the expense of food instead.	8/17/23 IRC Site Visit

7.1.1. POTENTIAL ASSISTANCE

Image 12: Drying Racks in Toksook Bay, June 28, 2023

- USDA Micro-Grants for Food Security Program – Assists agricultural agencies or departments in eligible states and territories to increase the quantity and quality of locally grown food in food insecure communities through small-scale gardening, herding, and livestock operations.
- Supplemental Nutrition Assistance Program (SNAP) - Federal program that provides nutrition benefits that are used at stores to purchase food to low-income individuals and families. It is administered by the State of Alaska Department of Health and Social Services Division of Public Assistance. Alaska has special rules that allow for higher SNAP benefits in rural areas, and the use of benefits to purchase certain hunting and fishing subsistence supplies.

- **Temporary Assistance for Needy Families (TANF) -** Designed to help needy families achieve self-sufficiency. This federal program is administered by the State of Alaska Department of Health and Social Services Division of Public Assistance via the Alaska Temporary Assistance Program (ATAP).
- **BIA Emergency Aid to Tribal Governments** – Covers destroyed or damaged homes, damaged property boundary markers, replacement of subsistence food and food harvesting equipment, solid waste collection and removal, and minor construction associated with infrastructure and homes.
- **Community Development Block Grant Program (CDBG-DR)** - Funding for eligible Indian Tribes and Alaska Native Villages to help improve the housing stock, provide community facilities, make infrastructure improvements, fund microenterprises, and expand job opportunities.

Image 13: Subsistence Camps in St. Michael, July 12, 2023

Image 14: Subsistence Equipment in Koyuk, September 12, 2023

8. Damaged Cemeteries, Churches, and Artifacts

Unmet Needs Summary: Storm surge from Typhoon Merbok affected cemeteries, churches, and cultural artifacts. Communities are seeking assistance identifying alternative cemetery locations, fixing damage to crosses, reinterring remains, repairing churches, and addressing erosion threats to existing locations.

COMMUNITY	DISASTER IMPACT	SOURCE
HOOPER BAY	Erosion on private land near the main road uncovered cultural artifacts.	FEMA PA
KIPNUK	The cemetery near the lake has an eroding fence and grave markers were knocked down. Funding for repairs has not been identified.	8/2/23 IRC Site Visit
KOYUK	Twenty-one wooden crosses were broken. The city owns the cemetery and is responsible for the upkeep and maintenance. *Note: The community did not mention this issue during the IRC site visit.*	FEMA PA
NUNAM IQUA	Seven coffins were displaced from cemetery sites around the community due to storm surge but have since been reinterred. The community withdrew this damage from the Public Assistance process and hopes to relocate the cemetery.	FEMA PA
ST. MICHAEL	The community experienced erosion from the storm resulting in coffins from 50 graves from the Old Russian Cemetery dropping 50 to 60 feet to the beach. Remains were being housed in the City Morgue. The community was able to rebury the remains over the winter; however, erosion continues to expose a substantial amount of new remains and coffins, which fell to the beach or were poised to. The Division of Veterans and Military Affairs (DVMA) mobilized a small team in Sept 2023 to quickly respond to the village's concerns. Staff collected and wrapped newly exposed remains and turned them over to the morgue. However, there is an expectation that erosion will continue to expose remains. A long-term solution is still needed.	7/12/23 IRC Site Visit
STEBBINS	A historic cemetery (above ground graves) and historic home sites were damaged and destroyed by storm surge waters. No markers were remaining in place.	7/11/23 IRC Site Visit
TOKSOOK BAY	Many grave crosses were knocked over or broken in the old and new cemeteries during the storm. Fencing also appeared knocked down in the new cemetery. Visual markers indicate that the new cemetery contained many veterans with crosses damaged or broken off. The old cemetery is located near the beach, where erosion was made worse by the storm. The old cemetery is not in imminent danger but will need to be moved eventually. No remains are currently affected.	6/28/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
TUNTUTULIAK	Churches built on dry tundra (higher grounds) have sunk or been damaged due to high winds from Typhoon Merbok. The Orthodox Church and parsonage are sinking and surrounded by standing water. The cupola fell over and broke. The Moravian church steeple was also knocked over by Merbok, and the church itself is about to fall into the river. There is not enough funding to demolish it. The churches have limited funding for repairs.	8/17/23 IRC Site Visit
TUNTUTULIAK	Two cemeteries have significant ground failure creating ground level fluctuations of up to 8'. The community would like to keep the graves where they are but put more soil throughout the cemeteries to bring them up to grade. Repairs to crosses and grave markers are needed, but lumber, including treated lumber, is not very accessible. Visual markers indicate that there are at least a small number of veterans buried in both cemeteries.	8/17/IRC Site Visit

8.1.1. POTENTIAL ASSISTANCE

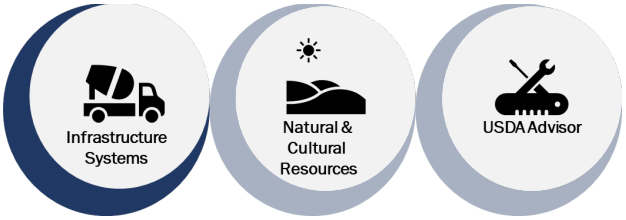
- PA Public Assistance Grant Program - Provides supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies. Applicants can receive reimbursement for eligible damages to cemeteries, e.g., to grave markers and fencing.
- NCR RSF Working Group Sessions on Cemeteries – The NCR RSF Field Coordinator facilitates sessions with Federal, State, and Local stakeholders who can contribute expertise and/or funding.
- National Park Service (NPS) National Center for Preservation Technology – This program provides technical assistance on online resources for cemetery recovery.
- Cemetery Recovery Guidebook for Communities – A representative of the Alaska Department of Military and Veterans Affairs is working on a guidebook for communities experiencing erosion to their cemeteries. He hopes to complete it by January 2024.
- National Endowment for the Humanities Grant – This grant for archaeological field research may help communities with damaged/uncovered artifacts.
- U.S. Department of Health and Human Services Disaster Mortuary Operational Response Team - Composed of personnel with different fields of expertise who can assist local authorities in managing the remains of the deceased.
- Alaska Office of History and Archaeology (OHA) – Can conduct surveys and provide technical assistance.
- NPS Tribal Heritage Grant – Provides grants to Federally recognized Indian Tribes for cultural and historic preservation projects.

- **USDA-RD Community Facilities Direct Loan & Grant Program** – This program provides affordable funding to develop essential community facilities in rural areas. May pay for heavy equipment to build a new cemetery.
- **BIA Emergency Aid to Tribal Governments** – Covers destroyed or damaged homes, damaged property boundary markers, replacement of subsistence food and food harvesting equipment, solid waste collection and removal, and minor construction associated with infrastructure and homes.
- **USACE Continuing Authorities Program (CAP) Small Flood Risk Management:** The Small Flood Risk Management Program (Section 205) provides a continuing authority for USACE to construct projects (structural or nonstructural) to reduce damages caused by flooding in urban areas, towns, and villages.
- **University of Alaska** – Potential for a partnership with Alaska universities for research and assessment of archeological sites.
- **Alaska Native Interest Lands Conservation Act (ANILCA) Section 1318** – Alaska Native groups and corporations may request assistance from the U.S Department of the Interior for the preservation, display, and interpretation of cultural resources.

Image 16: Cemetery in Toksook Bay, June 28, 2023

Image 15: Old Moravian Church Falling into Body of Water in Tuntutuliak, August 17, 2023

9. Drinking Water Systems



Unmet Needs Summary: Some communities in the impacted area rely on fill-and-draw systems where large batches of water are gathered from well or above-ground sources for use during the winter. Operators pump water during the summer months, filling storage tanks. The storm damaged these water distribution systems and exposed opportunities to improve resilience.

COMMUNITY	DISASTER IMPACT	SOURCE
GOLOVIN	The Tribal Council of the Chinik Eskimo Community shared that they would like a new water treatment system. The existing Golovin Water Treatment Plant was constructed in 2014 as the primary facility for water intake, treatment, and distribution within the community. The community uses a fill-and-draw system where large batches of water are made that will last the community for the entire year. The operators pump water during the summer months for a total of approximately 20-30 days to fill the two water storage tanks for the winter. *Note: The community did not mention this issue during the 9/20/23 IRC site visit.*	5/18/23 PA Recovery Scoping Meeting
HOOPER BAY	Water lines froze during the January 2023 cold snap, impacting the community's water plant. They ran out of treated water and had to create new treated water, nearly running out of the treatment chemicals. The community expressed concern about a water shortage for this upcoming winter. They need an assessment of the water treatment and distribution system.	9/7/23 IRC Site Visit
KIPNUK	Kipnuk has no piped water service. One is planned but may not be installed for 5-10 years.	8/2/23 IRC Site Visit
KOYUK	The community stated that water and sewer systems suffered great damage during the Merbok storm surge, and that repair of these utilities is the highest priority for the community. Many of the home connections for water and sewer have had extreme settlement resulting in leakage or failure. The sewage and water lines are difficult to access because they are buried. As the land settles/drops due to permafrost degradation it is difficult and expensive to locate leaks. Pipes freeze every year, sometimes for half of the year. The pipes are already past their life expectancy. The water plant staff noted that they pump over 20,000 gallons per day but use only about 6,000 gallons. The Tribe recently received new heavy equipment with American Rescue Plan Act (ARPA) funding. The new equipment included a large front-end loader (Doosan DL250), a large excavation (Doosan DX225), a new dump truck, a new Dozer D3, Bobcat T575 skid steer	9/12/23 IRC Site Visit

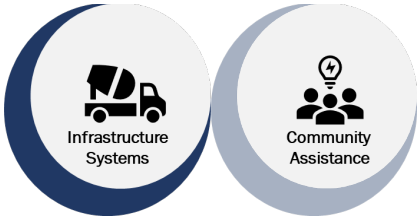
COMMUNITY	DISASTER IMPACT	SOURCE
	and a Ford 150. This equipment will be very useful for maintaining the utility lines.	
NAPAKIAK	The William Miller Memorial School and the "city building" are the only two structures in town on a piped water system. All residents and building owners haul water from the well to tanks inside their homes. City officials reported a gap in funding for water distribution. The community needs an assessment of the water treatment and distribution system.	4/18/23 FCO Visit
NIGHTMUTE	Nightmute has limited piped water service. ANTHC is assessing options for water and sewer.	9/4/23 IRC Site Visit
SCAMMON BAY	The Native Village of Scammon Bay (NVSB) representatives shared a desire to improve the village's drinking water system. There is only one source of fresh water through a stream that runs off a nearby mountain. The water is taken from the stream and stored in a tank for community use. The community needs an assessment of the water treatment and distribution system.	6/29/23 PA Recovery Scoping Meeting
ST. MICHAEL	Public water is supplied by a public water distribution system. Freezing of water lines causes seasonal issues with the distribution system. An additional water storage tank may address seasonal potable water shortage issues; the community would not have to ration water toward the end of the winter season. The community needs an assessment of the water treatment and distribution system.	7/12/23 IRC Site Visit
STEBBINS	Stebbins has no piped water service. One is planned but may not be installed for 5-10 years.	7/11/23 IRC Site Visit
TUNTUTULIAK	See entry under *Wastewater Infrastructure* above.	

9.1.1. POTENTIAL ASSISTANCE

- See *Potential Assistance* for Wastewater Infrastructure.

Image 17: One of Few Examples in Koyuk of Above-Ground Water Pipes, September 12, 2023

10. Transportation Infrastructure



Unmet Needs Summary: Coastal communities in remote western Alaska are not accessible by an intrastate highway system. Many of these communities receive supplies via airplane and sea vessels and use local roads and boardwalks to transport supplies. Over a hundred small fishing vessels are estimated to have sunk in the narrow waterways in western Alaska, forming new hazards to the navigation of barges. Well before Typhoon Merbok, a January 2009 USACE report concluded that all barge landings in coastal Alaska needed upgrades. Repairing and improving barge landings will improve communities' food security, fuel delivery, and ability to recover after future disasters.

COMMUNITY	DISASTER IMPACT	SOURCE
CHEFORNAK	The barge landing was impacted by Merbok and also by a storm before it. The barge landing consists of a rock/gravel causeway that juts out into the river and ramps up to an upland staging area. Barge companies have threatened to stop serving the city due to the damages, and noted the landing needed upgrades as early as 2009.	2/24/23 IRC/EDA Meeting
CHEVAK	See entry in the *Erosion* section above. The barge landing was damaged and less than 50 percent of the structure remains. The associated access ramp was 100 percent eroded away by Typhoon Merbok storm surge waves. The community must pack all supplies up the bluff by hand.	5/24/23 IRC Site Visit
GAMBELL	Storm waves can cover the airport runway and flood evacuation routes. There is concern that high waves and storm surge could cut the community off from the rest of the island, trapping and isolating them. The village is repeatedly damaged by storm surge flooding. The road has been about 50% eroded away and currently has numerous large potholes that would affect the community's ability to safely evacuate. This is the only evacuation route and requires extensive repairs as well as armor rock in many sections to make it reliable and resilient during future storms.	8/8/23 IRC Site Visit
GOLOVIN	Typhoon Merbok caused damage to roads that had just been repaired before the storm event. These near-shore roads require armor rock to resist climate-change-induced flooding.	9/20/23 IRC Site Visit
HOOPER BAY	The end of the airport runway was submerged – attempts were made to prevent it from flooding using cinder blocks, but it didn't seem to help. Information is needed on the bedrock in the area.	9/7/23 IRC Site Visit
KIPNUK	Trail markers around the community and to other villages were damaged during Merbok. They need to be replaced.	8/2/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
KIPNUK	Transportation facilities, including boardwalks, roads, bridges, and the barge landing, were damaged from Merbok storm surge and related rains. Many boardwalks are now sinking and are covered by water. Some boardwalks have come apart, with just loose boards laying on the ground. Gravel is needed for placement under boardwalks. The boardwalks are built on pilings and are designed to be elevated above the tundra.	8/2/23 IRC Site Visit
KOYUK	The community feels the airport needs erosion protection and expansion. The community would like to see Koyuk become a hub city with more direct flights.	9/12/23 IRC Site Visit
KOYUK	The barge landing access road is constantly being damaged and in need of repairs. It is located very close to the beach. At the time of the IRC site visit, the road was mostly underwater. The village prefers to focus on construction of a new road located up along the hills behind the community. This relocation is needed to break the cycle of constant erosion and repairs.	9/12/23 IRC Site Visit
KOYUK	The community's only marine fuel header is located down by the beach and floods frequently.	9/12/23 IRC Site Visit
SCAMMON BAY	The community expressed a desire to relocate the airstrip. The airport is currently in a water saturated lowland, and it flooded during Typhoon Merbok. They feel that relocation of the airport is a better option than just adding more gravel to the existing airport. The barge landing is located adjacent to the airport, causing congestion. A future storm could cut off the community's access to both the airport and the barge landing, leaving them without access to their only transportation out of the area.	9/27/23 IRC Site Visit
SCAMMON BAY	The barge landing facility and access road were severely eroded by Typhoon Merbok. The community would like to restore and expand the barge landing. The area surrounding it lost about a foot of surface material during Typhoon Merbok. The Conex boxes from the barges take up the whole area. There are many boats, and the community must get creative on where to put them during storm surge flooding. There are concerns that boats could be destroyed or float away during storms.	9/27/23 IRC Site Visit
SCAMMON BAY	Due to storm water inundation caused by Typhoon Merbok the community lost about a foot of roadway surface as sand and other surface material was washed away. This road, along the road west of the tank farms, acts as a barrier wall, protecting local infrastructure. Now the road needs to be restored and protected with armor rock to survive erosion from storm surge flooding. In order to do the road repair themselves, the community needs heavy equipment, including a dump truck, a bulldozer, and a front-end loader.	9/27 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
ST. MICHAEL	The dock was destroyed by the storm and St. Michael no longer has access to the water and the primary source for delivery of supplies. Tidal surge dislodged an old barge that was being used as a dock, pushing it up against the bank and fuel tanks. The staging area was washed away. Residents depend on the dock for transferring items that cannot be flown in. The dock needs to be rebuilt as soon as possible to facilitate other recovery actions.	7/12/23 IRC Site Visit
ST. MICHAEL	The community had navigational aids in the form of tripods along the shore from the Little Island to the mouth of the canal, and then from the mouth of the canal to Kotlik, so people could get from St. Michael to Kotlik. The channel extends from St. Michael about 4.5 miles to the open sea. The mouth of the canal to Kotlik is 80 miles. In St. Michael Harbor, buoys washed away in the storm. These navigational aids are important for health and safety when someone needs to find the village. Without the navigational aids there is real danger, people have already drowned. Other equipment desired: sonar, fish finder to show depth, anchors. Stebbins would also be involved in this project.	7/12/23 IRC Site Visit
STEBBINS	The "BIA road" is the only way out of town, and it flooded during the storm, culverts were destroyed. In addition to creating an alternate evacuation route, the community wants to raise the BIA road, resurface it, and install new culverts to allow water passage below it. The road is under the IRA's jurisdiction and Kawerak is contracted through BIA to address transportation matters in Stebbins.	7/11/23 IRC Site Visit
TOKSOOK BAY	The river was used as a boat harbor, but now it is too shallow and small due to storm-driven sedimentation. Boats are overcrowded along the beach without any protection from storm surge. The storm pushed large quantities of sediment into the small boat harbor, so now it resembles a field. The river has changed course, which is also impacting space for boat storage. The community previously received a grant to improve the boat harbor. A separate barge landing is heavily eroded but is functioning as a temporary landing area.	6/28/23 IRC Site Visit
TUNTUTULIAK	Boardwalks in the community are sinking, separating, or breaking in many areas. Many boardwalks in the Lower Village were destroyed by the storm or are covered in water due to erosion, permafrost failure, and subsidence. The access road to the wind turbines was severely damaged limiting equipment access to service and maintain the turbines. In the mid-80s, there was a pilot project to build 12-foot-wide boardwalks, but the design was not sustainable. The current boardwalks were built in the 90s, with some renovations taking place since. Some of the original boardwalk has been dismantled and reinstalled on higher ground. In the 2000s, the community submitted a proposal to rebuild the boardwalks, pursuing BIA funding to do so. They did not receive the grant funding and most of the boardwalks are beyond their serviceable life. The community needs an assessment regarding more serviceable roads made with gravel.	8/17/23 IRC Site Visit

10.1.1. POTENTIAL ASSISTANCE

- **Federal Highway Administration (FHWA) Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT)** – The Bipartisan Infrastructure Law (BIL) established the PROTECT Program to help make surface transportation more resilient to natural hazards, including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities; resilience improvements; community resilience and evacuation routes; and at-risk costal infrastructure improvements.
- **Denali Commission Transportation Program** – The program includes two major components (1) the roads portion of the program targets the planning, design, and construction of basic road improvements; and (2) the waterfront portion of the program addresses planning, design, and construction of port, harbor, and other rural waterfront needs. Eligible project types include, but are not limited to, regional ports, barge landings and docking facilities.
- **BIA Tribal Transportation Program** – BIA, together with its partners at the FHWA, oversees planning, design, construction, and reconstruction of eligible transportation facilities through the Tribal Transportation Program. The BIA alone oversees the BIA Road Maintenance Program for the maintenance of BIA transportation facilities.
- **USDA NRCS Watershed Protection Programs** – These programs can be used for restoring streambanks, restoring watershed habitat, restoring or decommissioning dams, and installing flood control measures. In Alaska, this program has been used to restore boardwalks and move homes that threaten wildlife habitat and/or bodies of water.
- **U.S. Department of Housing and Urban Development (HUD) FY2023 Community Development Block Grant Program for Indian Tribes and Alaska Native Villages** - Projects funded with Imminent Threat grant funds can address issues that have an immediate negative impact on public health or safety of tribal residents. Awards are made through a non-competitive process. Uses include repairing barge landings, repairing sewers, and moving threatened homes.
- **Economic Development Administration (EDA) Disaster Supplemental** - Grant funding to address economic challenges in areas where a Presidential declaration of a major disaster was issued for disasters in 2021 and 2022.
- **USACE Continuing Authorities Program (CAP) Small Beach Erosion Control** - Provides protection or restoration of public shorelines by construction of revetments, groins[9], and jetties.
- **USACE Section 165a Pilot Program** – Will fund 100 percent of the cost of projects that address flood, ecosystem, bank erosion, navigational improvements for up to 20 economically disadvantaged communities nationwide as part of a pilot program. Communities must submit a letter by October 20.

[9] A groin is a medium-sized artificial structure built perpendicular to the shoreline.

Image 18: Accelerated Permafrost Degradation Tuntutuliak, August 17, 2023

Image 19: St. Michael Barge Landing, May 2023

11. Energy Infrastructure

Unmet Needs Summary: Coastal communities in remote rural western Alaska rely on diesel-powered microgrids and renewable energy sources such as wind turbines. Energy infrastructure was damaged during the storm. Some communities need upgrades to their energy infrastructure to become more resilient to future risks. Additionally, several communities need small (5kw) generators, and some need a medium size trailer-mounted generator (20kw) to provide backup power. This is a critical unmet need, because most village homes are heated with Toyo or Monitor oil stoves, and these stoves require electricity to ignite the burner and operate the fan. A power outage also means no home heat and associated freezing of the plumbing.

COMMUNITY	DISASTER IMPACT	SOURCE
GOLOVIN	The Chinik Eskimo Community in Golovin experienced considerable flooding, which resulted in the loss of 30 feet of beach and damage to their berm. The community reported a need to either move their powerplant out of the flood zone or create a new power generation system. The City of Golovin owns and operates Golovin Power Utilities, which provides electricity to the residents of the community as well as all commercial and public facilities. According to a 2021 report from the State of Alaska Department of Natural Resources, Golovin has experienced many flooding events that have impacted its public infrastructure. During the 9/20/23 IRC site visit, representatives also suggested elevating the powerplant.	9/20/23 IRC Site Visit
HOOPER BAY	Hooper Bay is a subsistence economy that relies on hunting, fishing, and gathering, so food security is a communitywide concern and priority. Food was lost when stores closed from power outages, so the community is focused on improving their power generation infrastructure. Most of their energy is diesel-generated; the community is exploring the idea of backup generators connected to the grid. They are interested in replacing the existing turbines with larger turbines and potentially establishing an electric village co-op. The Alaska Village Electric Cooperative (AVEC) owns the electricity infrastructure now. The City of Hooper Bay is aiming for 10 community generators and has been pursuing different avenues, but the city is still seeking more funding for this effort. Hooper Bay has begun to migrate to higher ground as new homes and infrastructure are constructed. The power lines are in a radial configuration, so they need a medium size (20kw) trailer-mounted backup generator to restore power to groups of homes during severe storm power outages. Residents use oil heaters in homes which require electrical power.	9/7/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
KOYUK	The community reported that there is an abandoned AVEC powerplant located next to the school. Old tanks are also located in this area. The location is susceptible to flooding. These hazards need to be removed.	9/12/23 IRC Site Visit
KOYUK	Some of the power poles are in low-lying areas and subject to damage due to failing permafrost and storm surge flooding. During Merbok, some homes were without power for one-to-two months. The community needs a medium size (20kw) trailer-mounted backup generator. The community also needs 10 small portable 5kw generators to power vulnerable individual homes during extended power outages.	9/12/23 IRC Site Visit
SCAMMON BAY	The community expressed a desire to improve the dikes to protect the powerplant and associated tank farm. Typhoon Merbok is the first time the community saw water enter the tank farm and the power plant, which could have caused loss of power throughout the community.	9/27/23 IRC Site Visit
SCAMMON BAY	The NVSB owns a heating oil and gasoline tank farm that is located on unstable soils on the west side of the village. This tank farm is approximately 50 years old and long past its useful life. Meanwhile it is the only source of heating oil for village homes and the only source of gasoline for subsistence and survival equipment. Typhoon Merbok caused saltwater flooding into the tank farm and this saltwater greatly accelerated erosion and corrosion at the aging tank farm. Past storms have driven piles of ice ashore and badly damaged the fuel header and piping used to fill the tanks. Four tanks have been condemned and taken out of service. The remaining capacity of the tank farm is around 35,000 gallons of heating oil. The community requires a minimum of 50,000 gallons of heating oil to get through winter. During the winter of 2023, the NVSB ran out of heating oil. They had to haul the fuel from nearby villages using snow machines and 5-gallon cans. The NVSB is in urgent need of approximately 12,000 gallons of heating oil storage capacity to maintain home heat through the winters of 2024 and 2025. A replacement tank farm for home heating oil and gasoline has been designed and sited by Alaska Energy Authority. The construction process is scheduled to begin in summer 2024 and complete in fall 2025.	9/27/23 IRC Site Visit
ST. MICHAEL	5,000-gallon tanks were condemned, and fuel tanks were displaced near the beach. The community needs four 10,000-gallon diesel tanks and a 7,000 square foot diked foundation and pad for environmentally compliant fuel storage. A tank was purchased but not shipped. The fence surrounding the tanks was also damaged, which increases the risk of damage during future storm events.	7/12/23 IRC Site Visit

COMMUNITY	DISASTER IMPACT	SOURCE
TUNTUTULIAK	A fire, caused by turbine equipment failure, damaged one of the wind turbines, so it is off-line. In addition to repairing the damaged turbine, the community would like to install more wind turbines. The community directly owns the power company and does not work through any intermediaries. Power outages are frequent. The community shared they had applied to USDA for a solar battery project to store electricity, but status of that project is unknown. The community needs a medium size (20kw) trailer-mounted backup generator. The community also needs 10 small portable 5kw generators to power vulnerable individual homes during extended power outages.	8/17/ IRC Site Visit

11.1.1. POTENTIAL ASSISTANCE

- USDA Community Facilities Programs - Offers direct loans, loan guarantees and grants to develop or improve essential public services and facilities in communities across rural America.
- Denali Commission – Solicits applications for rural infrastructure projects and workforce/economic development programs.
- PA Public Assistance Grant Program - Provides supplemental grants to state, tribal, territorial, and local governments, and certain types of private non-profits so communities can quickly respond to and recover from major disasters or emergencies.
- BIA Tribal Electrification Program - For (1) the provision of electricity to unelectrified Tribal homes through zero-emissions energy systems; (2) transitioning electrified Tribal homes to zero-emissions energy systems; and (3) associated home repairs and retrofitting necessary to install the zero-emissions energy systems.

Image 21: Bent Fuel Line Due to Ice Scammon Bay, September 27, 2023

Image 20: Threatened Fuel Tank Farm in Scammon Bay, September 27, 2023

Appendix A: Declaration Background

DR-4672-AK Alaska Severe Storm, Flooding, and Landslides[10]

On September 23, 2022, the President issued a major disaster declaration under the authority of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 et seq. (the "Stafford Act"), as follows: "I have determined that the damage in certain areas of the State of Alaska resulting from an Alaska Severe Storm, Flooding and Landslides during the period of September 15 to September 20, 2022. In order to provide Federal assistance, you are hereby authorized to allocate from funds available for these purposes such amounts as you find necessary for Federal disaster assistance and administrative expenses. You are authorized to provide Public Assistance in the designated areas and Hazard Mitigation throughout the State. The following areas of the State of Alaska have been designated as adversely affected by this major disaster: Bering Strait Regional Educational Attendance Area (REAA), Kashunamiut REAA, Lower Kuskokwim REAA, and Lower Yukon REAA for emergency protective measures (Category B) under the Public Assistance program. All areas within the State of Alaska are eligible for assistance under the Hazard Mitigation Grant Program."

On September 23, 2022, **Amendment #01** was issued to extend the deadline for filing applications for physical damages as a result of this disaster to 12/06/2022.

On November 21, 2022, **Amendment #02** was issued announcing the addition of debris removal (Category A) and permanent work (Categories C-G) for Bering Strait REAA, Kashunamiut REAA, Lower Kuskokwim REAA, and Lower Yukon REAA and Public Assistance (Categories A-G) for Pribilof Islands REAA. The deadline for Public Assistance RPAs was extended until 12/23/2022.

[10] This information was taken from the Integrated Strategic Plan for DR-4672-AK. More background information is available in the DR-4672-AK Initial Assessment, Appendix F.

Appendix B: Issues by Community

This appendix provides a list of issues by community, whereas the issues are grouped by general topic above.

COMMUNITY	CATEGORY	LEAD RSF OR ADVISOR	SUPPORTING RSF(S)	ADVISOR
CHEFORNAK	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
CHEVAK	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		
	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Housing Recovery	USDA-RD	Community Assistance	
	6. Solid Waste Disposal	Natural & Cultural Resources	Infrastructure Systems	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
GAMBELL	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	6. Solid Waste Disposal	Natural & Cultural Resources	Infrastructure Systems	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	

GOLOVIN	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
	11. Energy Infrastructure	Infrastructure Systems		
HOOPER BAY	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		
	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	6. Solid Waste Disposal	Natural & Cultural Resources	Infrastructure Systems	
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
	11. Energy Infrastructure	Infrastructure Systems		
KIPNUK	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		

	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	6. Solid Waste Disposal	Natural & Cultural Resources	Infrastructure Systems	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
KOYUK	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		
	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	6. Solid Waste Disposal	Natural & Cultural Resources	Infrastructure Systems	
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
	11. Energy Infrastructure	Infrastructure Systems		
NAPAKIAK	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
NEWTOK	2. Emergency Management Limitations	Community Assistance		

NIGHTMUTE	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	3. Community Planning/Capacity Building	Community Assistance		
	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	6. Solid Waste Disposal	Natural & Cultural Resources	Infrastructure Systems	
NOME	5. Individual Housing Recovery	USDA-RD	Community Assistance	
NUNAM IQUA	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
SCAMMON BAY	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	3. Community Planning/Capacity Building	Community Assistance		
	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
	11. Energy Infrastructure	Infrastructure Systems		
SHAKTOOLIK	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
SHISHMAREF	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
ST. MICHAEL	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	3. Community Planning/Capacity Building	Community Assistance		

	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	6. Solid Waste Disposal	Natural & Cultural Resources	Infrastructure Systems	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
	11. Energy Infrastructure	Infrastructure Systems		
STEBBINS	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		
	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
TOKSOOK BAY	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		

	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
TUNTUTULIAK	1. Erosion	Infrastructure Systems	Natural & Cultural Resources	
	2. Emergency Management Limitations	Community Assistance		
	3. Community Planning/Capacity Building	Community Assistance		
	4. Wastewater	Infrastructure Systems	Natural & Cultural Resources	
	5. Individual Housing Recovery	USDA-RD	Community Assistance	
	7. Subsistence Impacts	Natural & Cultural Resources		USDA-RD
	8. Cemeteries, Churches and Artifacts	Natural & Cultural Resources		
	9. Drinking Water Systems	Infrastructure Systems	Natural & Cultural Resources	USDA-RD
	10. Transportation Infrastructure	Infrastructure Systems	Community Assistance	
	11. Energy Infrastructure	Infrastructure Systems		

Appendix C: About Interagency Recovery Coordination (IRC) Cadre

The Interagency Recovery Coordination Cadre was created to operationalize the National Disaster Recovery Framework (NDRF) and is rooted in lessons learned on unmet recovery needs in previous disasters. The primary function of IRC is to bring together federal and national partners to support state and local recovery priorities.

IRC efforts go beyond traditional disaster recovery programs by helping interagency and non-government partners align resources to support recovery. The IRC function leverages subject matter expertise, as well as funding and technical assistance resources to assist State, Local, Tribal and Territorial (SLTT) communities recover from disasters.

The Federal Disaster Recovery Officer (FDRO) leads the IRC mission and works with the Recovery Support Function (RSF) field coordinators to identify unmet recovery needs. The RSFs are organized into six components, and each is headed by a different Federal partner. Three of the six RSFs were activated for the DR-4672-AK: Community Assistance (CA)[11], Infrastructure Systems, and Natural & Cultural Resources. RSFs not activated were Economic, Health and Social Services, and Housing. Additionally, one federal partner agency was activated, the United States Department of Agriculture – Rural Development (USDA-RD), to support the recovery assessments and strategy development.

RSFs holistically support recovery needs and objectives of SLTTs and coordinate with over 30 other federal agencies on recovery efforts. The IRC approach emphasizes whole community, ensures the effective use of resources, reduces duplication of effort, and encourages information sharing.

[11] Community Planning and Capacity Building (CPCB) changed its name to Community Assistance (CA).

Appendix D: About the Recovery Support Functions and Advisors

1.1. Community Assistance (CA) RSF

CA RSF Field Coordinator: Beth Otto, FEMA

NDRF CA Overview: The Community Assistance RSF unifies and coordinates expertise and assistance programs from across the Federal Government as well as nongovernment partners to aid local and tribal governments in building their local capabilities to effectively plan for recovery and engage the whole community in the recovery planning process.

Coordinating Agency: Department of Homeland Security/FEMA

Primary Agencies: FEMA; Department of Housing and Urban Development

Supporting Organizations: American Red Cross; Corporation for National and Community Service; Delta Regional Authority; Department of Agriculture; Department of Commerce; Department of Education; Department of Health and Human Services; Department of Homeland Security; Department of Housing and Urban Development; Department of the Interior; Department of Justice; Department of Transportation; Environmental Protection Agency; General Services Administration; National Voluntary Organizations Active in Disaster; Small Business Administration; U.S. Access Board; U.S. Army Corps of Engineers

Source: National Disaster Recovery Framework (NDRF) – FEMA Recovery Doctrine

1.2. Infrastructure Systems (IS) RSF

Infrastructure RSF Field Coordinator: Clare Jaeger, USACE

NDRF IS RSF Overview: The Infrastructure Systems RSF works to facilitate the restoration of infrastructure systems and services to support a viable, sustainable community and improves resilience to and protection from future hazards.

Coordinating Agency: U.S. Army Corps of Engineers

Primary Agencies: Department of Energy; Department of Homeland Security; Department of Transportation; Federal Emergency Management Agency; U.S. Army Corps of Engineers

Supporting Organizations: Delta Regional Authority; Department of Agriculture; Department of Commerce; Department of Defense; Department of Education; Department of Health and Human Services; Department of Homeland Security; Department of Housing and Urban Development; Department of the Interior; Department of the Treasury; Environmental Protection Agency; Federal Communications Commission; General Services Administration; Nuclear Regulatory Commission; Tennessee Valley Authority

Source: National Disaster Recovery Framework (NDRF) – FEMA Recovery Doctrine

1.3. Natural and Cultural Resources (NCR) RSF

NCR RSF Field Coordinator: Frances Mann, U.S. Department of the Interior

NDRF NCR RSF Overview: The Natural and Cultural Resources RSF works to protect natural and cultural resources and historic properties through appropriate planning, mitigation, response, and recovery actions to preserve, conserve, rehabilitate, and restore them consistent with post-disaster community priorities and best practices and in compliance with applicable environmental and historic preservation laws and executive orders.

Coordinating Agency: U.S. Department of the Interior

Primary Agencies: Department of Energy; Department of Homeland Security; Department of Transportation; Federal Emergency Management Agency; U.S. Army Corps of Engineers

Supporting Organizations: Advisory Council on Historic Preservation; Corporation for National and Community Service; Council on Environmental Quality; Delta Regional Authority; Department of Agriculture; Department of Commerce; Department of Homeland Security/National Protection and Programs Directorate; General Services Administration; Heritage Emergency National Task Force; Institute of Museum and Library Services; Library of Congress; National Archives and Records Administration; National Endowment for the Arts; National Endowment for the Humanities; U.S. Army Corps of Engineers

Source: National Disaster Recovery Framework (NDRF) – FEMA Recovery Doctrine

1.4. United States Department of Agriculture–Rural Development (USDA-RD)

Within this disaster advisors are intended to act in a supporting role to provide additional assistance for needs that fall outside the RSFs and FEMA's scope of work. The advisors will be particularly helpful during the Recovery Strategy Phase of the long-term recovery process.

USDA Advisor: Sarah Marquart

USDA-RD Advisor Overview: USDA-RD works to improve the economy and quality of life for rural living in the U.S. There are numerous loans, grants and guarantees that USDA-RD can offer to assist in the creation of jobs, economic development, and provide services like housing, health care, first response, water, electric, and communications infrastructure. There are many ways USDA-RD can help; frequently used is community-managed lending pools and technical support to provide the agriculture industry on how to be the most effective. USDA-RD is divided into three agencies: Rural Housing Service, Rural Utilities Service and Rural Business-Cooperative Service.

USDA (Department) Overview: The United States Department of Agriculture provides leadership on issues related to public policy, rural development, natural resources, agriculture, food, and effective management techniques. The USDA realizes the importance of innovation and promoting the agricultural production while also preserving the natural resources through conservation, restoring forest regions and watershed improvement.

Source: U.S. Department of Agriculture | usda.gov

USDA Agencies include:

- Agricultural Marketing Service (AMS)
- Agricultural Research Service (ARS)
- Animal and Plant Health Inspection Service (APHIS)
- Economic Research Service (ERS)
- Farm Service Agency (FSA)
- Food and Nutrition Service (FNS)
- Food Safety and Inspection Service (FSIS)
- Foreign Agricultural Service (FAS)
- Forest Service (FS)
- FPAC Business Center
- National Agricultural Statistics Service (NASS)
- National Institute of Food and Agriculture
- Natural Resources Conservation Service (NRCS)
- Risk Management Agency (RMA)
- Rural Development (RD)

Appendix E: Glossary

Alaska Department of Environmental Conservation (ADEC)
Alaska Division of Community and Regional Affairs (DCRA)
Alaska Division of Homeland Security & Emergency Management (DHS&EM)
Alaska Municipal League (AML)
Alaska Native Interest Lands Conservation Act (ANILCA)
Alaska Native Tribal Health Consortium (ANTHC)
Alaska Office of History and Archaeology (OHA)
Alaska Village Electric Cooperative (AVEC)
American Rescue Plan Act (ARPA)
Association of Village Council Presidents (AVCP)
Building Resilient Infrastructure and Communities (BRIC)
Community Assistance (CA – RSF)
Economic Development Administration (EDA)
Environmental Protection Agency (EPA)
Federal Coordinating Officer (FCO)
Federal Disaster Recovery Officer (FDRO)
Federal Emergency Management Agency (FEMA)
Federal Highway Administration (FHWA)
Hazard Mitigation Program (HMP)
Indian Environment General Assistance Program (IGAP)
Indian Health Service (IHS)
Individual Assistance (IA)
Infrastructure Systems RSF (IS - RSF)
Interagency Recovery Coordination (IRC)
Local Government Specialist (LGS)
MAX-TRAX: FEMA Program utilized by the IRC to record and manage inputs to ensure visibility across the operation on status and progress.
National Disaster Recovery Framework (NDRF)
National Park Service (NPS)
Native Village of Scammon Bay (NVSB)
Natural Resources Conservation Service (NRCS)
Public Assistance (PA)
Recovery Needs Assessment (RNA)
Recovery Support Function (RSF)
State, Local, Tribal, Territorial (SLTT)
Supplemental Nutrition Assistance Program (SNAP)
Temporary Assistance to Need Families (TANF)
U.S. Department of Housing and Urban Development (HUD)
U.S. Department of the Interior (DOI)
United States Army Corps of Engineers (USACE)
United States Department of Agriculture Rural Development (USDA-RD)
Village Public Safety Officer (VPSO)
Voluntary Agencies Active on Disasters (VOAD)

Appendix F: DR-4672-AK Initial Assessment

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Interagency Recovery Coordination
Initial Assessment Report
FEMA-4672-DR-AK
March 13, 2023

Destroyed subsistence camps near Nome, AK

Storm debris and coastal erosion, Newtok, AK

FEMA

Contents

Executive Summary

This report provides a recommendation to disaster leadership for the activation of federal partners to conduct a comprehensive recovery needs assessment. On September 23, 2022, the President issued a major disaster declaration due to damage resulting from Typhoon Merbok during the period of September 15 to September 20, 2022. Typhoon Merbok impacted approximately 1,300 miles of coastline in western Alaska, affecting more than 40 villages and municipalities. More than 300 homes,[1] approximately four percent[2] of occupied housing units included in the declaration area, were eligible for Housing Assistance under the FEMA Individual Assistance program (IA). Primary equipment for gathering food, fishing, and hunting for subsistence-based communities, upwards of 1,000 fishing boats and/or motors, were also destroyed. The total population of declared jurisdictions is approximately 25,000 people. Winter weather prevented completion of a full damage assessment. As of the date of this assessment, the FEMA Public Assistance Damage Inventory includes 120 entries, documenting damages to roads, sea walls, municipal buildings, sewage systems, cemeteries, and more. The Unified Command Group (UCG) deployed a Federal Disaster Recovery Officer (FDRO) with Interagency Recovery Coordination (IRC) personnel in February 2023 to conduct an Initial Assessment for possible National Disaster Recovery Framework - Recovery Support Function (RSF) activation.

The disaster impacted area in rural Western Alaska presents many unique environmental and logistical challenges that affect both daily life and disaster recovery. Many of the communities impacted by Typhoon Merbok are isolated and remote villages. These communities are not connected to an intrastate road system, and some are not connected to reliable community water, wastewater, and electricity utility systems. Many of these communities rely on barges to deliver necessary supplies, which can only operate during a few months of the year when the rivers are not frozen.

Sixty villages are in the declared area, of which approximately 40 are associated with Federally Recognized Tribes. Federally Recognized Tribes in Alaska have rights to self-governance, but do not have reservations. Through the Alaskan Native Claims and Settlement Act (ANCSA) of 1971[3], Alaska Native Regional Corporations and Alaska Native Village Corporations were established to manage the land for the benefit of their Alaska Native shareholders.

The governance and management structure in Alaska is complex and may include: an incorporated municipality led by mayoral staff, a Federally Recognized Tribe led by a Tribal Council, and/or a Village Corporation, led by a Board of Directors. Additionally, geographic areas such as boroughs and Regional Education Attendance Areas (REAAs) exist.

Communities are primarily structured around traditional subsistence culture and economies. Coastal erosion, flooding, and permafrost degradation, in large part stemming from climate change, threaten the subsistence livelihoods and lands of rural Alaskan communities. Efforts to mitigate the impacts of these threats, including relocating villages, have been ongoing for decades.

The *Special Considerations* section details Alaska-specific complexities and issues that are relevant to all Recovery Support Functions. The complex characteristics of rural Alaska and the disaster impacted area, including capacity challenges, extreme remoteness, limited infrastructure, environmental conditions, and vulnerability to loss from future disasters, have influenced the recommendations in this report.

Recommendation Summary

The FDRO recommends the activation of the following RSFs and other federal agencies to support a more in-depth recovery needs assessment:

Primary Issues	Activate ?	RSF-OFA	Agency	Proposed Actions/Remarks
Impacts to rural, low-capacity communities that were already trying to address loss of land and livelihood challenges caused by climate change	**Yes**	Community Assistance RSF	FEMA	Conduct a recovery needs assessment; Coordinate with state and federal agencies to determine a local outreach strategy and technical assistance
Damage assessment ongoing due to winter freeze, anticipated substantial damages, including protective coastal infrastructure, bulk fuel storage, and water systems, pre-existing limited connectivity of physical and broadband infrastructure	**Yes**	Infrastructure Systems RSF	USACE	Conduct a recovery needs assessment; Identify needs, review current studies, programs, and identify potential partnerships to support long-term disaster recovery and resilience
Damage to coastal cultural sites already facing environmental threats to their culture and villages. Reliance on vulnerable infrastructure related to food security, cemetery damages	**Yes**	Natural & Cultural Resources RSF	DOI	Conduct a recovery needs assessment; Review current programs, studies, and identify any partnerships to support disaster recovery
Approximately 30 families still displaced, pre-existing high housing costs and limited availability	No	Housing Recovery RSF	HUD	Local level engagement recommended with State Housing Task Force
Disaster impacts to subsistence economy and pre-existing lack of tax-base for municipal financing	No	Economic RSF	EDA	Local level engagement recommended, Coordinate with EDA regional office
Food insecurity issues resulting from disaster impacts to subsistence economy and pre-existing vulnerabilities due to limited access to healthcare and social services	Decision Pending	Health & Social Services RSF	HHS	Local level engagement recommended; Coordinate with agencies involved in food security and monitor for additional needs
Damaged community facilities, shortage of affordable housing	Yes	OFA Advisor	USDA-RD	Support recovery needs assessment
Damage to water facilities	Yes	OFA Advisor	EPA	Support recovery needs assessment

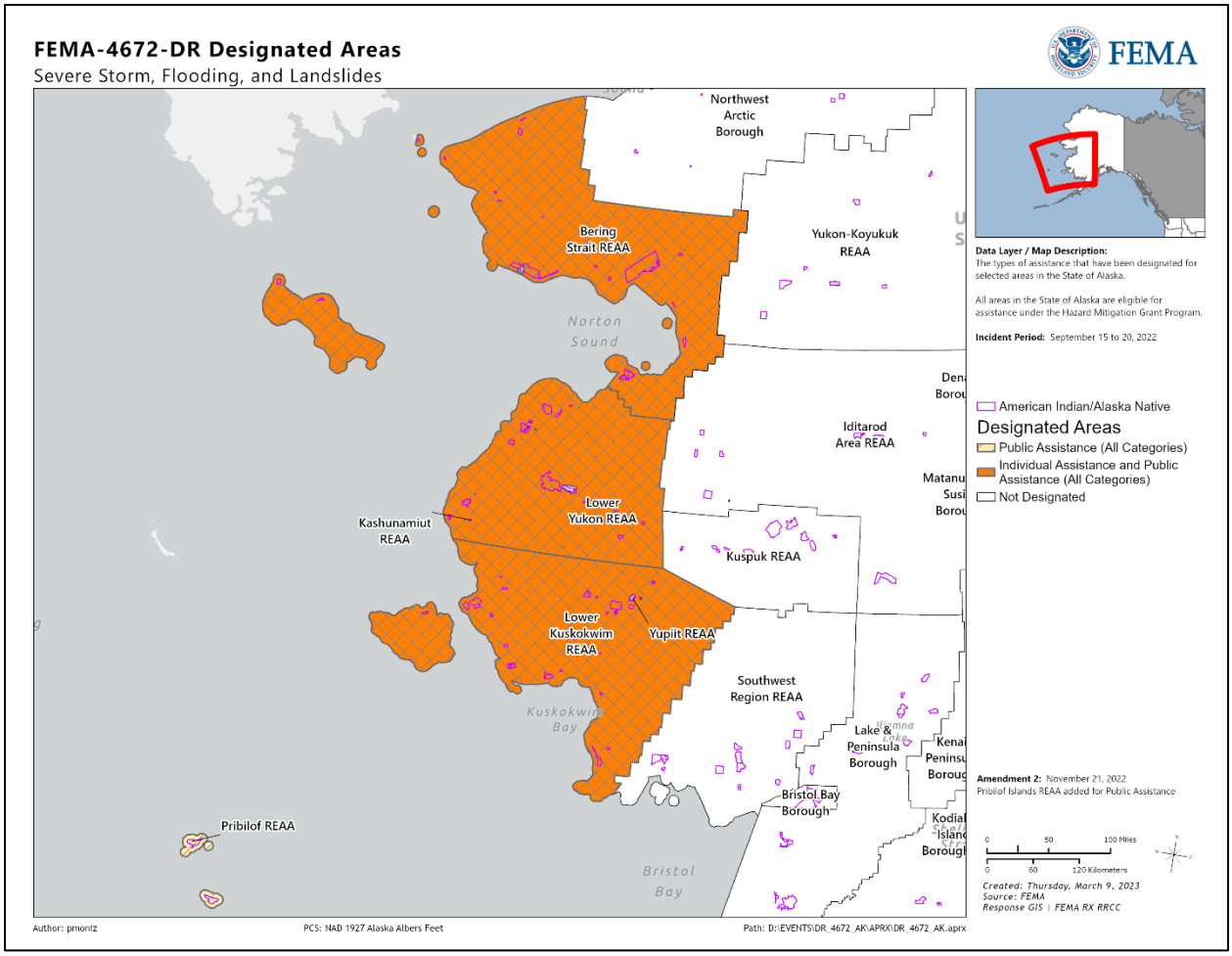
State/Unified Command Group Priorities Identified

The current initial State/Unified Command Group recovery priorities are:

Priority/Issue	Details
Preservation of Alaskan Natural and Cultural Resources	• Alaska Native Tribal Culture (Food Security, Environmental challenges, etc.)
Infrastructure Systems Resiliency in Rural Communities	• Coastal villages and communities threaten by climate changes: ports, roads, fuel storage, etc. • Landslide Technical Assistance (DR-4661-AK and DR-4667-AK)
Community Assistance	• Planning Technical Assistance • Grant Writing and Management Technical Assistance
Housing Solutions in Rural Communities	• Rehouse displaced survivors

Incident Background

On September 23, 2022, the President issued a major disaster declaration due to damage resulting from the remnants of Typhoon Merbok during the period of September 15 to September 20, 2022. The **Bering Strait Regional Educational Attendance Area (REAA), Kashunamiut REAA, Lower Kuskokwim REAA, and Lower Yukon REAA** were designated major disaster areas for Individual Assistance (IA) and Public Assistance (PA) Category B - Emergency Protective Measures. The declaration further made Hazard Mitigation Grant Program assistance available statewide.[4] An amendment was subsequently issued to include all categories of PA programs and to add **Pribilof Islands REAA** for Public Assistance Categories A-G, but not IA.[5] Another amendment authorized federal funds for Category B - Emergency Protective Measures at 100 percent of the total eligible cost for the first 30 days of the incident period due to the severity and magnitude of damage in certain areas. This guidance replaced the previous 70 percent cost share for Category B.[6]



Typhoon Merbok impacted approximately 1,300 miles of coastline in western Alaska. An offshore ocean buoy reported waves at or above 35 feet for 12 hours, peaking at more than 50 feet, while winds gusted over 70 mph for 11 hours. The winds and waves caused coastal erosion in many already vulnerable locations, damaging, or destroying protective berms, dunes, and seawalls. The storm was unusual for how far north it formed and for its slow approach, which increased the size and duration of the storm surges.[7]

More than 300 homes[8] were damaged or destroyed along with upwards of 1,000 fishing boats and/or motors, the primary means of gathering food, fishing, and hunting for the communities living in the region. The storm hit at the tail end of the fishing and berry-picking season, in the middle of the moose-hunting season. Many residents lost power, causing the loss of winter food stocks, foods unique to the area, that could not be easily replaced until the next harvesting and hunting season.

Special Considerations

The following special considerations, unique to the impacted area, will influence communications and operations for all RSF activations.

Government Structure

The government structures in the impacted area are different from those typically found in the lower 48 states. The summary below provides a brief overview of the nuances at the local and regional level.

Alaska has organized and unorganized boroughs. Organized boroughs function in a similar way as counties or parishes in other states, while unorganized boroughs do not have a governance structure. For this event, the impacted communities fall within one unorganized borough. The State of Alaska used Regional Education Attendance Areas (REAAs) to define the boundaries of the declared area[9]. REAAs do not perform functions in alignment with those of a borough/county/parish government. **The declared REAAs fall within the Nome, Bethel, Kusilvak, and Aleutians West Census Areas (Pribilof Islands).**

The census areas within the declared REAAs include more than 25,000 residents, approximately three percent of the population of Alaska.[10] The largest population centers are Nome (pop. 3,729) and Bethel (pop. 6,472) with most communities ranging from 200 to 800 residents.

At the local level, villages may have one or a combination of the following entities that provide governance and/or land management: an incorporated municipality led by mayoral staff, a Federally Recognized Tribe led by a Tribal Council, and an Alaskan Native Claims and Settlement Act (ANCSA) Village Corporation, led by a Board of Directors. Formal agreements may exist between these entities, but not always, and sometimes one person may have a role in more than one entity.

The ANCSA Village Corporations derive from the ANCSA Regional Corporations. The ANCSA Regional Corporations were established in 1971 to clarify land claims following the discovery of Alaskan oil reserves. The agreement identified 44 million acres (about 10 percent of Alaska) as belonging to tribal communities and assigned these lands to one of 12 private for-profit Regional Corporations. Each Regional Corporation is owned by shareholders who meet the requirements for tribal membership in affiliated communities. Village corporations were allowed to select lands on which any part of the village was located, and the village corporations received titles to the surface rights of those lands.

The 12 Regional Corporations are mandated to share 70 percent of the proceeds from timber, oil and mineral reserves found in their lands, which are then distributed amongst the Village Corporations that fall within their borders. The for-profit Regional Corporations were not established to provide services. Alaska Native regional non-profit organizations for each Regional Corporation were created to provide social services and healthcare. The non-profit organizations vary in their priorities, but generally focus on health, cultural, and educational opportunities. While the for-profit and non-profit arms of the ANCSA Regional Corporations represent and support the interests of the Village Corporations that fall within their boundaries, each village has a unique relationship with these organizations.

Regional Corporations, Village Corporations, and Communities

The for-profit and non-profit arms of ANCSA which correspond with the declared areas are:

For-Profit ANCSA Regional Corporation	Non-Profit ANCSA Regional Entity	Census Area	Number of Federally Recognized Tribes	Number of Village Corporations Represented	Number of Communities Represented
Bering Straits Native Corp.	Kawerak	Nome	20[11]	16	17
Calista Corp.	Association of Village Council Presidents (AVCP)	Bethel, Kusilvak	56[12]	49	60
Aleut Corp.	Aleutian/Pribilof Islands Association	Aleutians West	14[13]	13	13
Totals:			90	78	90

Additional details on Native Corporations can be found at Overview of Entities Operating in the Twelve Regions - ANCSA Regional Association.

Environmentally Threatened Communities

Coastal erosion, flooding, and permafrost degradation, in large part stemming from climate change, threaten the livelihoods and lands of rural Alaskan communities. The Alaska State Hazard Mitigation Plan has termed the combined effect of these three threats, *usteq*. Stemming from a Yupik word equivalent to "surface caves in," it is used to signify an extreme form of permafrost collapse in which frozen ground disintegrates from the combined effect of thawing permafrost, flooding, and erosion. A report published in 2019 by the Denali Commission and prepared by the University of Alaska Fairbanks and the U.S. Army Corp of Engineers titled, "*Statewide Threat Assessment: Identification of Threats from Erosion, Flooding, and Thawing Permafrost in Remote Alaska Communities*" studied the effects of *usteq* and created a combined ranking for each rural community. As a result, 144 communities were identified

as being environmentally threatened. **Nine of the top ten communities at risk are within the disaster impacted area, creating further vulnerabilities**.

Many of these threatened communities are considering options for making their communities more resilient, including exploring or undergoing relocation to safer grounds. The Alaska Department of Commerce, Community, and Economic Development Division of Community and Regional Affairs, in partnership with the Alaska Native Tribal Health Consortium and the Denali Commission, has identified 27 of the environmentally threatened communities as focus areas for their support, 15 of which fall within the disaster impacted area. [14] The Denali Commission, U.S. Department of the Interior Bureau of Indian Affairs, U.S. Department of Housing and Urban Development, FEMA Hazard Mitigation, and Economic Development Administration are providing support to Newtok to relocate to a new location at Mertarvik. This effort began in 2006.[15]

In November 2022 the White House launched the Voluntary Community-Driven Relocation program led by the Department of the Interior with support from FEMA and the Denali Commission. The program commits $115 million through the Bipartisan Infrastructure Law and Inflation Reduction Act to advance relocation and adaptation planning in 11 severely impacted tribal communities, two of which are Newtok Village and the Native Village of Napakiak. These are both in the impacted area and will each receive $25 million towards their relocation.[16]

Subsistence Culture and Economy

Communities in the impacted area are primarily structured around subsistence economies, which integrate labor and food production into the social and familial fabric of the community. While traditionally communities would have moved with the changing seasons to harvest according to seasonal abundances, now most communities remain in one primary location year-round but travel to camps to collect resources. Camp locations have been carefully selected based on knowledge of natural resource patterns, and ease and rights of access to them. At the camps, the main resources harvested in the impacted area are marine mammals, such as walrus, seals, and whales; plants; salmon; and land mammals, such as caribou and moose.

The March 2022 Bering Strait Community Needs Report published for the non-profit Regional Corporation Kawerak reports that 70 percent of those responding to a survey indicated that 25 percent of their annual food resources come from subsistence.[17] The non-profit Regional Corporation Association of Village Council Presidents (AVCP) Comprehensive Economic Development Strategy (CEDS) reports that Nome Census Area residents harvested an estimated 388 pounds per resident of wild food resources in 2017.[18] Recent shifts in environmental conditions, however, have made traditional methods of hunting, fishing, trapping, and gathering more difficult than in the past. Contributing factors include fewer hard freezes, making travel through winter months more difficult for snowmobiles or dogsleds, and changed animal habitats because of climate change.[19]

Damage and destruction of subsistence camps and their associated tools was one of the major impacts of Typhoon Merbok. Although they do not easily align with standard FEMA and other federal agency disaster programs, subsistence camps are a key component in the infrastructure, economic and cultural recovery of impacted communities. President and CEO Melanie Bahnke of Kawerak said in an interview with radio station KNOM following Typhoon Merbok, “[fish camps] are means for our food security but also for our cultural continuation and they connect us to the land and our ancestors.”[20] Kawerak and

AVCP report community members rank subsistence opportunities as among their regions' "Top 5 Strengths." In so doing, communities have emphasized subsistence harvesting as something to be preserved rather than supplanted by other food/economic systems.

Recognizing the important role these locations and items played in impacted communities, federal partners adjusted their programs to address these context-specific needs. The Small Business Administration (SBA) received fewer than typical applications due to the lack of traditional businesses but allowed personal property in subsistence camps to be eligible for loan assistance. Similarly, the FEMA IA program covered the replacement of 248 outboard motors, and 147 boats. Non-federal partners have also opened avenues for repair or replacement of fish camps, including the State of Alaska IA Program and the tribal non-profit Kawerak.

Purpose and Scope of the Initial Assessment

The purpose of the Initial Assessment process is to quickly determine the potential need for additional federal disaster recovery resources through the NDRF-RSFs as part of the Interagency Recovery Coordination (IRC) mission. The Initial Assessment document will:

- Provide an initial recommendation on potential Recovery Support Function (RSF) and other federal agency advisor activations and/or Mission Assignments
- Offer a preliminary glimpse of potential recovery issues and challenges and possible approaches to dealing with them
- Identify areas of concern that warrant further investigation by the RSFs to determine more accurately what recovery challenges the State and local communities in preparation for the next step, which is conducting a Recovery Needs Assessment (RNA)

Methodology

The Initial Assessment process is conducted by Interagency Recovery Coordination (IRC) Cadre members led by a Federal Disaster Recovery Officer (FDRO). The initial assessment is the first of three-disaster scoping and assessment processes in which the IRC Cadre is involved. The other two sequential processes are the Recovery Needs Assessment (RNA) and Recovery Strategy development. IRC staff analyze information from a variety of sources including state and local agencies, other federal agencies, nonprofit organizations, public data sources, and media reports. The staff weigh impacts discovered against the estimated capacity of the impacted communities to recover from the event. IRC staff produce a summary of this analysis, called the Initial Assessment, that includes recommendations on how to scale federal interagency support to address the communities' recovery needs. The FDRO presents the Initial Assessment recommendations to FEMA leadership for State concurrence. Much more in-depth state, regional, and local engagement is conducted next during the Recovery Needs Assessment, which may reveal additional needs for federal engagement and Mission Assignments or other contracts for technical assistance.

Interagency Recovery Coordination Mission and Doctrine

Mission

The Interagency Recovery Coordination (IRC) mission in Alaska is to coordinate disaster resources and technical assistance from federal, state, and nongovernmental partners to support Alaska Native Corporation, Alaska Native Village, and municipality efforts to achieve their desired recovery outcomes.

Supporting Doctrine

Recovery Federal Interagency Operations Plan (FIOP): Outlines the criteria for an Interagency Recovery Coordination mission:

- The affected communities have suffered significant impacts and have limited capacity to recover from them.
- The disaster has created unique challenges for recovery, reconstruction, and redevelopment, such that greater coordination of federal recovery resources and support is required to address particularly complex recovery issues that exceed local and state area capabilities.
- The scale of the disaster is so extensive that enhanced coordination of traditional and non-traditional recovery resource providers is anticipated.

National Disaster Recovery Framework (NDRF): Outlines coordinating structures, leadership roles, and operating concepts to ensure that the federal government maximizes the support it provides to states and local governments during disaster recovery. Among NDRF guiding principles, the highest is the concept of local primacy, which acknowledges that recovery begins and ends at the local level. When a disaster overwhelms the capabilities of local and state governments, the IRC structure can deliver substantial resources to fill the gaps. Interagency coordination becomes particularly useful when recovery issues involve multiple sectors or jurisdictions.

Recommendations and Findings

Community Assistance – FEMA Community Assistance

Activation Recommended

The level of impact in rural, low-capacity communities and the pre-existing vulnerability justify activation of the Community Assistance RSF, which can assess the long-term recovery and resilience needs at the local level and explore possible options for a coordinated federal and state approach to providing planning technical assistance.

As detailed in the *Government Structure* section, much of the rural Alaskan community structure is different compared to rural communities in the lower 48 states. Communities are not connected to an intrastate road system, making travel challenging and expensive, the economy is largely subsistence based, and the villages/municipalities are mostly Native Alaskan with complex landownership rights. Many of the impacted villages are extremely small, with most populations ranging from 200 to 800 residents.

Community systems that were already severely stressed due to climate change (see *Environmentally Threatened Communities*) received significant community level impacts from Typhoon Merbok. These included damages to homes, municipal buildings, schools, and infrastructure. The impacted communities are highly vulnerable to future disaster loss, and some are already engaged in the relocation process.

Because the villages are rural with very small populations, they generally have limited resources for planning and may require support. The Alaska Division of Community and Regional Affairs (DCRA) is providing planning assistance to the prioritized list of Environmentally Threatened Communities discussed in the *Environmentally Threatened Communities* section, many of which are among the disaster impacted communities. There may be an opportunity to partner with DCRA and others to deliver recovery planning technical assistance to interested communities.

USDA Rural Development is also standing up a Rural Partners Network, which will put community liaisons, who are community planners, in each of the 12 Alaska Native regional corporations. The intention is that these liaisons will connect communities with 20 different federal agencies. While this will likely be an important resource for resilience planning, hiring is ongoing for these positions and for an Anchorage-based director.

Given these factors, activation of the Community Assistance RSF is requested to: Conduct a complete review of plans and programs in the affected areas; conduct a complete review of all relevant technical assistance programs in the affected areas; determine a local outreach strategy; document high level needs; and work with disaster leadership to secure resources for Community Recovery Planning Technical Assistance.

Infrastructure Systems – U.S. Army Corps of Engineers

Activation Recommended

Based on the challenging nature of transportation and other infrastructure systems in Alaska and a lack of a complete picture of disaster impacts, it is recommended that the Infrastructure Systems RSF be activated to help identify any recovery gaps. Additionally, the U.S. Army Corps of Engineers has rural Alaska relocation planning experience.

The communities in the disaster impacted area are isolated and rural. Most communities are not connected to a road system and can only be accessed by air, by sea, or, during the winter months, by snowmobiles. Many of these communities rely on barges to deliver necessary supplies, which can only operate a few months of the year when rivers are not frozen. Additionally, some communities do not have access to community water and sewer systems. Electrical generation systems are powered by diesel fuel, necessitating the storage of diesel in bulk fuel storage tanks. Many of these storage tanks are in vulnerable coastal erosion and/or flooding areas, are aging, and need replacement.

As noted in the *Environmentally Threatened Communities* section, many impacted villages were previously identified as environmentally threatened and are strong candidates for relocation or other significant climate change mitigation. Typhoon Merbok exacerbated these issues by causing severe erosion of the coastline and destroying protective berms. Impacted seawalls, breakwaters, and berms were generally the main protective infrastructure from storms, further increasing communities' vulnerability to future disaster impacts. In Newtok, for example, the storm brought waves so intense that the water claimed roughly half of the 80 feet of land that stands between the school and the edge of the Ningliq River.

In addition to the coastal protective structures, Typhoon Merbok caused significant damage to other community infrastructure systems. Initial assessments of damage across the region also include bridges, roads, water treatment plants, bulk fuel tanks, airstrips, generators, and power plants. One of the most immediate needs was potable water. Several communities suffered complete failures to water treatment infrastructure. Additionally, damage to and loss of power infrastructure resulted in lost winter food stores, creating significant hardship for communities.

While some damages were reported, the arrival of winter weather shortly after the disaster prevented a full damage assessment from being completed and Emergency Support Function #3 - Public Works and Engineering was not activated to assist with damage assessments. As of the date of this assessment, FEMA Public Assistance has logged 120 entries in their Damage Inventory.

Given these factors, activation of the **Infrastructure Systems RSF, a U.S. Department of Agriculture – Rural Development Advisor and an EPA Sustainability Advisor** is requested to: Conduct an assessment of village level infrastructure needs, review current studies in more detail, and identify partnerships to support long-term disaster recovery and resilience.

Natural and Cultural Resources – U.S. Department of the Interior

Activation Recommended

Given the incomplete picture of impacts to natural and cultural resources in Western Alaska, where significant emphasis is placed on maintaining indigenous cultural traditions and subsistence living, activation of the Natural and Cultural Resources RSF is recommended to survey impacts further.

The approximately 40 communities in the disaster impacted area are almost all majority Alaska Native. As detailed in the *Environmentally Threatened Communities* section, the traditional subsistence economy is being threatened by environmental and climate factors. Subsistence culture, along with language preservation, are important elements of maintaining cultural traditions and should be incorporated into the recovery process.

FEMA PA has logged several impacts to cemeteries and other culturally significant structures in the Damage Inventory for this disaster. In Stebbins, buried graves at a historic cemetery were damaged by storm surge waters, including 300 grave sites and 85 grave markers. Fifty graves were damaged in the community of St. Michael Historic Russian Orthodox Cemetery due to a landslide, which caused coffins to drop 50 to 60 feet to the beach. A beach-side subsistence property and an inner harbor in Nome were also damaged. FEMA PA may identify additional culturally significant impacts during their ongoing Exploratory Calls and Recovery Scoping Meetings.

Much of the land in the declared area is owned by the Bureau of Land Management, U.S. Fish & Wildlife Services, National Park Service, and the U.S. Forest Service. Natural Resources are an important part of the way of life in Alaska and a key aspect of the economic system. Although no indication of significant disruption to these resources were identified in this assessment, as environmentally threatened communities assess options of mitigating threats, including relocation, these landowners may be important partners.

While the storms caused isolated fuel spills, State of Alaska capacity to address them does not appear to have been exceeded. In Newtok, Joint Task Force Alaska cleaned up debris and a fuel spill and restored power to an essential fuel pump.[21] Several empty fuel tanks in Hooper Bay toppled and disconnected from the power plant, but local power plant operators were able to address the issue and no widespread fuel spill was reported.[22] According to the U.S. Coast Guard, Chevak was the only community where recoverable pollution was observed and a contracted cleanup was required.[23]

Alaskan coasts have few observation systems to assess coastal water level, current, and wind-wave simulation capacity.[24] Only two systems are found in the impacted area. The National Oceanic and Atmospheric Administration (NOAA) has an active project to address some of these gaps.[25]

Given these factors, activation of the Natural and Cultural Resources RSF is recommended to: Conduct a comprehensive review of the cultural impacts related to Typhoon Merbok, review current programs and studies, and identify partnerships to support disaster recovery.

Housing Recovery – U.S. Department of Housing and Urban Development

Activation Not Recommended; Local Level Engagement Recommended

The scale of housing impacts, an existing active coordination structure surrounding housing, and seasonal considerations surrounding work, make it unnecessary to activate a Housing RSF Field Coordinator at this time. If additional needs are identified, an activation may be requested.

Housing costs are high compared to the rest of the United States. Housing costs and availability are two of the most important factors in the cost of living. New rental and owner-occupied housing building activity is limited. Pre-disaster housing stock in the affected region was aging and in short supply. Families often live in multi-generational housing, sometimes resulting in overcrowding. Not all housing is connected to community sanitation and water systems.

Due to the quickly approaching winter snows that made travel to the remote affected areas of Western Alaska unfeasible, FEMA Individual Assistance (IA) made the decision to disburse funding to 1,085 applicants before a housing inspection. As a result, impacted families in the region have already received awards under the Individuals and Households Program (IHP), with inspections to be scheduled for the late Spring of 2023. To address the added cost of transporting replacement items to Western Alaska, FEMA IA offered an additional shipping supplement of $1,300.[26] At the height of the disaster the affected area had 459 residents in congregate shelters.

A State-led Housing Task Force, including representation from FEMA, State of Alaska IA, the U.S. Department of Housing and Urban Development (HUD), and Voluntary Agencies Active in Disasters (VOAD), has developed a plan and milestones to house the remaining 25-32 displaced families[27] who registered for both FEMA and State of Alaska IA programs. As part of this plan, the United Methodist Committee on Relief (UMCOR) will bring 3-4 teams of volunteers and materials to conduct a repair/rebuild mission for these families this summer.

Remaining unmet needs will become clearer once the weather permits and disaster recovery staff start to make trips to the impacted communities. Existing deployed Community Assistance staff can assess unmet housing needs in their on-the-ground field work during that time. Interagency Recovery Coordination (IRC) Staff can also obtain information from IA inspectors, EA staff, State staff, and others who visit the remote areas as part of their missions. FEMA IA indicated that additional affordable housing is needed and that some existing housing is aging and lacking connection to sanitation services. Relatedly, several communities are considering relocation, and existing village-level building codes need to be assessed before additional housing construction (see the *Environmentally Threatened Communities* section).

Recovery Coordination Group staff can connect interested community members with USDA Rural Development, HUD representatives, and other resources as the unmet needs become clearer. Activation of the Housing RSF led by a HUD coordinator is not recommended at this time.

Economic – Economic Development Administration

Activation Not Recommended; Local Level Engagement Recommended

Activation of the Economic RSF is not recommended at this time because (1) several federal, tribal, and state programs addressed damage to subsistence camps; (2) communities highlight subsistence economies as a strength of their communities; and (3) the EDA Alaska Field Office is actively involved in disaster recovery. It is recommended that the EDA Alaska Field Office be a key coordination partner.

Although fish camps are an important resource for impacted communities (see *Subsistence Culture and Economy* section), the cost of living remains far higher than average due to factors such as communities' isolated locations and extreme climate. This contributes to high poverty rates across the impacted area. United States Census Data lists 67.73 percent of the population of the Bethel Census Area as being in poverty, compared to the national average of 14.83%. For the Kusilvak and Nome Census Areas the poverty rates are 39% and 19% respectively.[28]

Opportunities for traditional employment are few and concentrated in local government, education and healthcare services, trades, transportation, and utilities. This limited tax-base creates challenges for municipal financing. While subsistence fishing is commonly practiced in impacted communities, large-scale commercial fishing is not. Although there is currently limited capacity for processing large-scale catches, both Kawerak and AVCP reports suggest an interest in pursuing reindeer processing as a means for economic development. Additionally, natural resources extraction has been considered in several locations, but there are no current active projects.[2930]

The regional center of Nome is different economically from other impacted areas. The cost of living is lower, wages are higher, and there is more economic opportunity in sectors such as tourism, particularly cruise ships. These opportunities will likely only increase now that $250 million in federal infrastructure funding is being used to construct an Arctic deep-water port. While the port will bring increased opportunity in the shipping and tourism sector, it has also raised concerns about the project's impact on subsistence practices, the environment and increased cost to the average taxpayer.[31]

The primary economic impacts of Typhoon Merbok were the destruction of subsistence camps, their associated tools and equipment, fishing vessels, and spoilage of winter stores. These losses created initial challenges as these needs did not align with the typical federal disaster funding categories. Recognizing the important role these locations and items played in impacted communities, federal partners adjusted their programs to address these context-specific needs. See the *Subsistence Culture and Economy* section for a summary of the Small Business Administration (SBA), FEMA Individual Assistance (IA), and the State of Alaska IA programs adjusted their policies to cover subsistence related materials.

The Economic Development Administration (EDA), through its Alaska Field Office (AFO), has worked with tribal communities to develop regional Comprehensive Economic Development Strategies (CEDS) and has identified 2-3 disaster-specific recovery projects that may be eligible for EDA funding. EDA has also received a commitment from the Fisheries Community Development Quota Program[32] to provide any necessary cost share for recovery projects in the communities it works with. The EDA AFO will continue to explore unmet needs as it meets with impacted communities. If additional need arises Economic RSF activation may be reconsidered.

Health & Social Services – U.S. Department of Health and Human Services

Activation Not Recommended; Local Level Engagement Recommended

Interagency Recovery Coordination (IRC) staff could find no immediate evidence that Typhoon Merbok caused new significant health and social concerns. Although activation of the Health and Social Services RSF is not being recommended at this time, HHS is currently evaluating the need for support within its program areas. Official activation may be reconsidered if new needs emerge.

Pre-disaster, the population in the impacted area was already vulnerable. The Bethel, Nome, Kusilvak, and Aleutians West census areas had Social Vulnerability Index (SVI) scores of .97, .93, .93, and .43 respectively.[33] The SVI uses U.S. Census data to determine vulnerability by census area based on 15 social factors, including poverty, lack of vehicle access, crowded housing, and others. The scores range from 0-1 with 1 being most vulnerable.

Before the disaster, some residents of Western Alaska experienced difficulty obtaining enough food. Thirty-three percent of children in the Nome Census Area lived below the Alaska federal poverty line, compared to 19 percent of children statewide. The proportion of the population of that census area receiving Supplemental Nutrition Assistance Program (SNAP) benefits was 35 percent, compared to 13 percent statewide.[34] These federal benefits are significantly supplemented by subsistence hunting and gathering; however, erosion and melting permafrost, have impacted these traditional methods (see *Environmentally Threatened Communities*).

While many subsistence food storage items and collection tools were destroyed during the Typhoon, numerous agencies made programs available to address the immediate impacts (see *Subsistence Culture and Economy*). The Alaska Food Policy Council[35] and other agencies continue to work on the longer-term issue.[36]

Educational access has a complex history and can be a challenge in the impacted areas. About 15 percent of adults 25 years and older in the Nome Census area do not have a high school diploma.[37] While there are several school districts in the declared area, impacts to schools and social services are still being identified. Due to access delays, FEMA PA is still scoping damages. One need has already been identified: Martin L. Olson School in Golovin, which serves around 50 students and has 5 teachers in a community of about 145 residents, experienced damages to its facilities and teacher housing.[38]

IRC has not currently identified any impacts to the already limited health facilities in the rural impacted areas. While some local clinics exist, residents travel to Nome or Anchorage for more complex health issues. Respondents to the Bering Straits Needs Assessment reported a pre-disaster desire for more in-region alcohol treatment and mental health centers; additional local facilities for youth treatment; and additional spaces for youth to spend time together.[39]

A possible impact to health from the disaster that has been reported in conversations with partners but has not yet been fully explored by the IRC team is the existence of mold in housing reoccupied by those impacted by the disaster.

While many of these are challenging long-term issues, new disaster-caused health and social issues have not been identified thus far. If unmet needs are later identified, activation of this RSF may be reconsidered.

END OF REPORT

Appendix A: Acronyms

Alaska DHS&EM	Alaska Department of Homeland Security and Emergency Management
CEDS	Comprehensive Economic Development Strategy
CIP	Capital Improvement Plan
DOI	Department of the Interior
EDA	Economic Development Administration
EPA	Environmental Protection Agency
ESF	Emergency Support Function
FCO	Federal Coordinating Officer
FDRO	Federal Disaster Recovery Officer
FIMA	Federal Insurance Management Agency
FIOP	Federal Interagency Operations Plan
HMGP	Hazard Mitigation Grant Program
HRSA	Health Resources and Services Administration
HHS	U.S. Department of Health and Human Services.
HSS	Health and Social Services
HUD	Department of Housing and Urban Development
IA	Individual Assistance
IRC	Interagency Recovery Coordination
JFO	Joint Field Office
NDRF	National Disaster Recovery Framework
NDRS	National Disaster Recovery Support

NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
PA	Public Assistance
REAA	Regional Education Attendance Area
RSF	Recovery Support Functions
SBA	Small Business Administration
SNAP	Supplemental Nutrition Assistance Program
UCG	Unified Command Group
USACE	U.S. Army Corps of Engineers
USDA-RD	U.S. Department of Agriculture-Rural Development
VAL	Voluntary Agency Liaisons

Endnotes

[1] FEMA Individual Assistance Daily Status Report, March 14, 2023

[2] My Tribal Area (census.gov); Occupied housing units from the Census My Tribal Area Website: Bering Straits Regional Corp 6,335, Calista Regional Corp 2,714, St. George (Pribilof) 26, St Paul (Pribilof) 86. Total Occupied Housing Units: 9,161

[3] Overview of Entities Operating in the Twelve Regions - ANCSA Regional Association

[4] 4672-DR-AK Initial Notice | FEMA.gov

[5] 4672-DR-AK Amendment 002 | FEMA.gov

[6] 4672-DR-AK Amendment 001 | FEMA.gov

[7] Storm repairs move ahead in Western Alaska as freeze-up closes in (adn.com)

[8] FEMA Individual Assistance Daily Status Report, March 14, 2023

[9] 4672 | FEMA.gov

[10] External Affairs West Coast Storm Impacted Communities, FEMA SharePoint.

[11] List of Federally Recognized Tribes in the Bering Straits Region - ANCSA Regional Association

[12] List of Federally Recognized Tribes in the Calista Region - ANCSA Regional Association

[13] List of Federally Recognized Tribes in the Aleut Region - ANCSA Regional Association

[14] Alaska's Environmentally Threatened Communities (arcgis.com)

[15] https://www.commerce.alaska.gov/web/Portals/4/pub/mertarvik_housing_master_plan.pdf

[16] Biden-Harris Administration Makes $135 Million Commitment to Support Relocation of Tribal Communities Affected by Climate Change | FEMA.gov

[17] Bering-Strait-Community-NEEDS-Assessment.pdf

[18] Y-K-CEDS-2018-2023_FINAL_7-31-18_no-Appendices.pdf (avcp.org)

[19] Community Partnerships for Self-Reliance. (2018). "Living Off the Land: Environmental Impacts to Access in Interior Alaska."

[20] Generational subsistence camps relocated, damaged, and lost in major storm - KNOM Radio Mission

[21] Alaska National Guard Helps Clean up in Merbok's Wake > National Guard > State Partnership Program News - The National Guard

[22] In the midst of the storm, a mad rush to keep the power on in Hooper Bay (kyuk.org)

[23] USCG Typhoon Merbok Alaska response | IHMA (harbourmaster.org)

[24] Alaska Ocean Observing System. (ND). "Monitoring Water Levels and Space Weather Using Global Position Satellite (GPS) Receivers." Accessed at https://aoos.org/project-page/coastal-hazards-data-portal-

highlights/monitoring-water-levels-and-space-weather-using-global-position-satellite-gps-receivers/

[25] Typhoon Merbok spotlights Alaska's need for science and climate-resilient infrastructure - Alaska Public Media

[26] Two-hundred and eighty-three households were found eligible for Repair or Replacement under FEMA IHP. Workbook: IHP Eligibility Summary (fema.net)

[27] Housing Taskforce Meeting on February 28, 2023. The eight communities are Golovin, Hooper Bay, Koyuk, Napakiak, Nome, Stebbins, St. Michaels, and Chevak.

[28] CCA

[29] Bering-Strait-Community-NEEDS-Assessment.pdf

[30] Y-K-CEDS-2018-2023_FINAL_7-31-18_no-Appendices.pdf (avcp.org)

[31] Bering-Strait-Community-NEEDS-Assessment.pdf

[32] This is a National Oceanic and Atmospheric Administration (NOAA) program.

[33] Social Vulnerability Index | Data | Centers for Disease Control and Prevention (cdc.gov)

[34] Bering Strait Community Needs Assessment, p.48

[35] 2021 Alaska Food Security Investment Recommendations — Alaska Food Policy Council (akfoodpolicycouncil.org)

[36] The U.S. Department of Health and Human Services (HHS) supports many agencies that work primarily with Alaskan Natives, including the Indian Health Service (IHS). Other agencies under HHS that also work closely with Alaskan Natives include the Administration for Children and Families; Administration for Native Americans; Centers for Medicare and Medicaid Services American Indian/Native Center; Tribal Affairs office within the Food and Drug Administration; Office of Intergovernmental Affairs – Tribal Affairs; Office of Minority Health Resource Center and Services Administration; National Institute of Health, Substance Abuse, and Mental Health Services Administration.

[37] Bering-Strait-Community-NEEDS-Assessment.pdf

[38] Bering Straits School District Informational Video, https://www.youtube.com/watch?v=nxQuilt-38c&t=36s

[39] KAW_BeringStraitCommunityNeeds_2022.pdf (nna-co.org), p.144