

An Overview of Erosion, Flooding, and Relocation Efforts in the Native Village of Newtok



Photo: Jon Menough, DEC Village Safe Water Program

Introduction

In Federal Fiscal Year 2003, Congress directed the U.S. General Accounting Office (GAO) to study Alaska Native villages affected by flooding and erosion to determine the extent to which these villages are affected, to identify the current status of government programs that provide assistance to these communities, the current status of this assistance, and to identify alternatives for Congress to consider when providing assistance for flooding and erosion.

The GAO Report found that 184 of 213 (86%) Alaskan Native villages are affected to some extent by flooding and erosion. The report identified nine communities on the coast or along rivers that are seriously affected by annual and episodic flooding and erosion. Of these nine communities, four -- Shishmaref, Kivalina, Newtok and Koyukuk -- were identified as being in imminent danger from flooding and making plans to relocate. Shishmaref, Kivalina and Newtok are coastal communities along the western coast of Alaska.

Two of the three most vulnerable coastal communities, Shishmaref and Kivalina, have been able to utilize shoreline protection strategies to “buy time” at the existing community sites. In the case of the village of Newtok, shoreline protection measures have been determined to be an infeasible option. Studies conducted since 1983 have concluded that the village must relocate as there is no permanent, cost-effective means for the community to remain at the current site.

Advancing erosion of the Ninglick River near the village has been so progressive that critical infrastructure has been lost and the community has become increasingly vulnerable to severe flooding and related public health issues during coastal storms. The Newtok community has demonstrated strong local initiative by acquiring land for the village relocation site, by educating agencies and the public of the seriousness of their situation, and by seeking funding for and participating in the relocation effort. A major dilemma the village faces is reduced or eliminated funding to maintain the infrastructure and investments at the existing village, and resistance to investment in a new community where no population yet exists. The community is very concerned that the next major storm will render the village uninhabitable.

Background

Newtok is a traditional Yup'ik Eskimo village located on a sweeping bend of the Ninglick River, north of Nelson Island near the Bering Sea. The village is located within the boundaries of the Yukon Delta National Wildlife Refuge on the lowland plain of the Yukon-Kuskokwim Delta, one of the largest river deltas in the world. The Yukon Delta National Wildlife Refuge contains an abundance of water and wetland types that provides some of the richest waterfowl habitat in North America. The Refuge's biological wealth is thought to be the reason why the early Yup'ik people settled in the area. Modern day villagers continue to rely directly on the abundance of fish, mammals and fowl of the region for most of their food supply.



Photo: Sally Russell Cox, DCCED Division of Community Advocacy

The Qaluyaarmiut, “People of the Dip Net”

The people of Newtok and the Nelson Island area are known as the *Qaluyaarmiut*, or “dip net people”. The Qaluyaarmiut reside primarily in five villages: Newtok to the north of Nelson Island, the Nelson Island villages of Tununak, Nightmute, and Toksook Bay, and Cheformak to the south. The ancestors of the Qaluyaarmiut people have lived on the Bering Sea Coast for the last 2000 years. The residents of the five villages are closely connected and share many traditions that have been retained over generations, in part due to the isolation of the region and infrequent contact with people outside the area.

Settlement at Newtok in 1949

Newtok was first reported in 1949 by the U.S. Geologic Survey. Village residents had just moved to the Newtok site from Old Kealavik, located to the northwest of the current Newtok site across the Newtok River. The community relocated to the Newtok site to escape seasonal flooding and because there was not a suitable site for a school at the old village. The Newtok site was the farthest point upriver that the Bureau of Indian Affairs (BIA) barge could navigate to offload school building materials. The BIA school was built in 1958.

Early Efforts to Address Erosion

Over the next three decades, residents of Newtok became increasingly aware that the north bank of the Ninglick River was rapidly losing ground. Concerned with the future well-being of the community, the (then) City of Newtok requested and received funding through the Alaska Legislature for an assessment of the erosion problem as well as an evaluation of alternatives for erosion control to protect several miles of the Ninglick River bank. In 1983, Woodward-Clyde Consultants was hired to prepare the *Ninglick River Erosion Assessment*.

As part of the erosion assessment, historical bank erosion rates were evaluated from aerial photographs dated 1957, 1974 and 1977 and from a site visit prior to ice breakup in May 1983. This evaluation determined that between June 1957 and May 1983, the north bank of the Ninglick River had eroded at an average annual rate of 19 to 88 feet and that if this process could not be slowed, community structures would be endangered within 25 to 30 years (2008-2013).

The conclusion of the erosion assessment was that providing full protection to stop the erosion process over the entire length of the Ninglick River bank would be prohibitively expensive. In an addendum to the study, Woodward Clyde concluded that ***“Relocating Newtok would likely be less expensive than trying to hold back the Ninglick River.”***



June 10, 1983



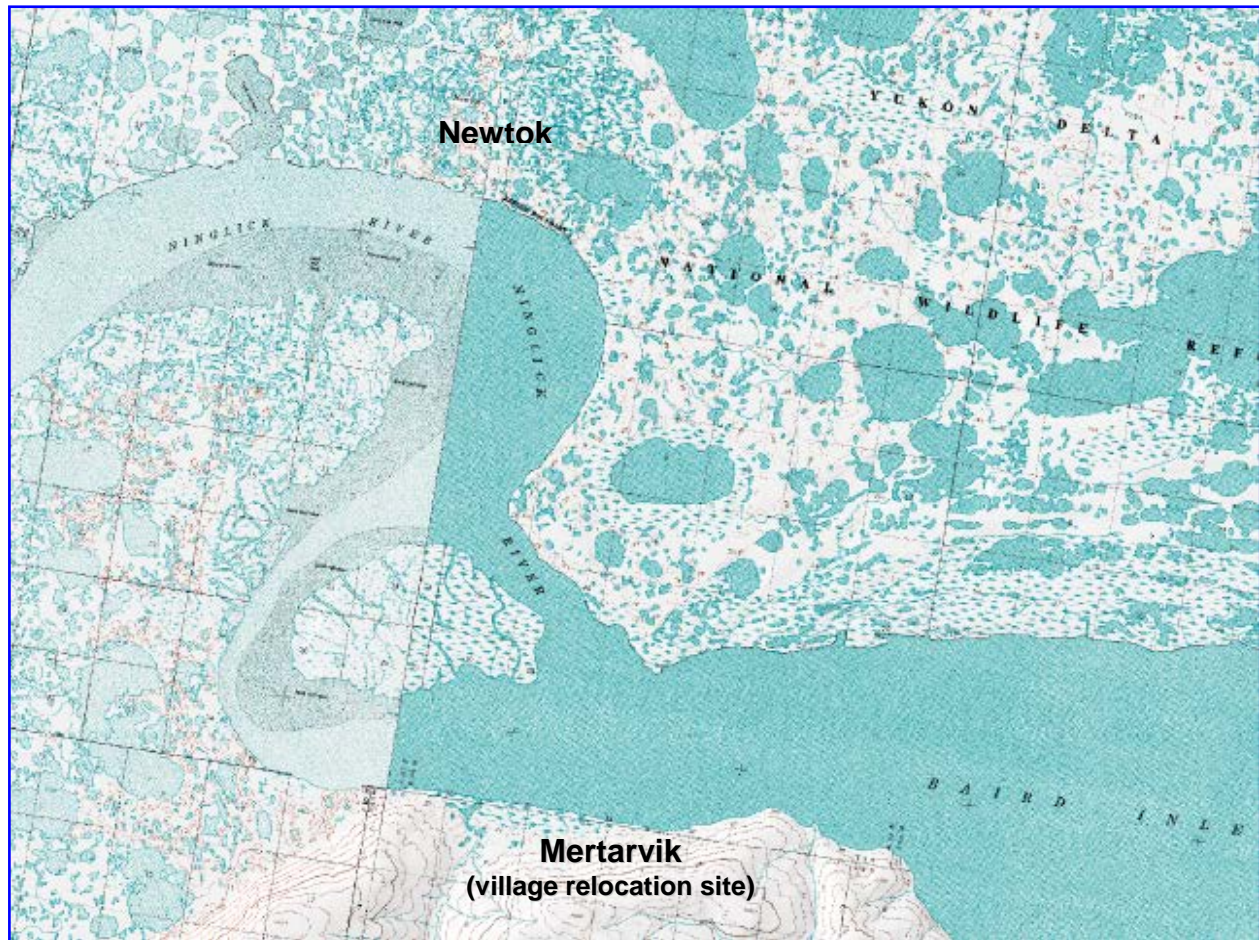
July 4, 1996

Source: Newtok Background for Relocation Report

The photos above show the extent of flooding over a thirteen year period. In the July 4, 1996 photo, the Ninglick River Bank has eroded up to the bend in the Newtok River.

Early Relocation Planning

In 1994, the Newtok Traditional Council initiated a relocation planning process in response to the village's progressing erosion problem. The Traditional Council analyzed six potential village relocation sites. The selected relocation site, located on the north end of Nelson Island, was within the Yukon Delta National Wildlife Refuge and under the management of the U.S. Fish and Wildlife Service (USFWS). The site, approximately nine miles southeast of Newtok, is called *Mertarvik**, which in Yup'ik means "getting water from the spring".



In 2000, the Newtok Traditional Council hired Arctic Slope Consulting Group (ASCG) to assist in the development of relocation plans through funding provided by the Bureau of Indian Affairs (BIA) and U.S. Army Corps of Engineers (USACE). Three reports were prepared as a result of these early planning efforts:

- **Newtok Background for Relocation Report:** This report provided background documentation to government agencies in order to justify the efforts of the village's relocation to Nelson Island and to support requests for government assistance in this process. The report summarized the relocation options considered by the community, including relocation to one of the three existing Nelson Island villages, to Bethel, or to one of six potential new development sites in the region. The report also summarized the

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Newtok Traditional Council's evaluation of each alternative and the selection of the Mertarvik site on the north of Nelson Island.

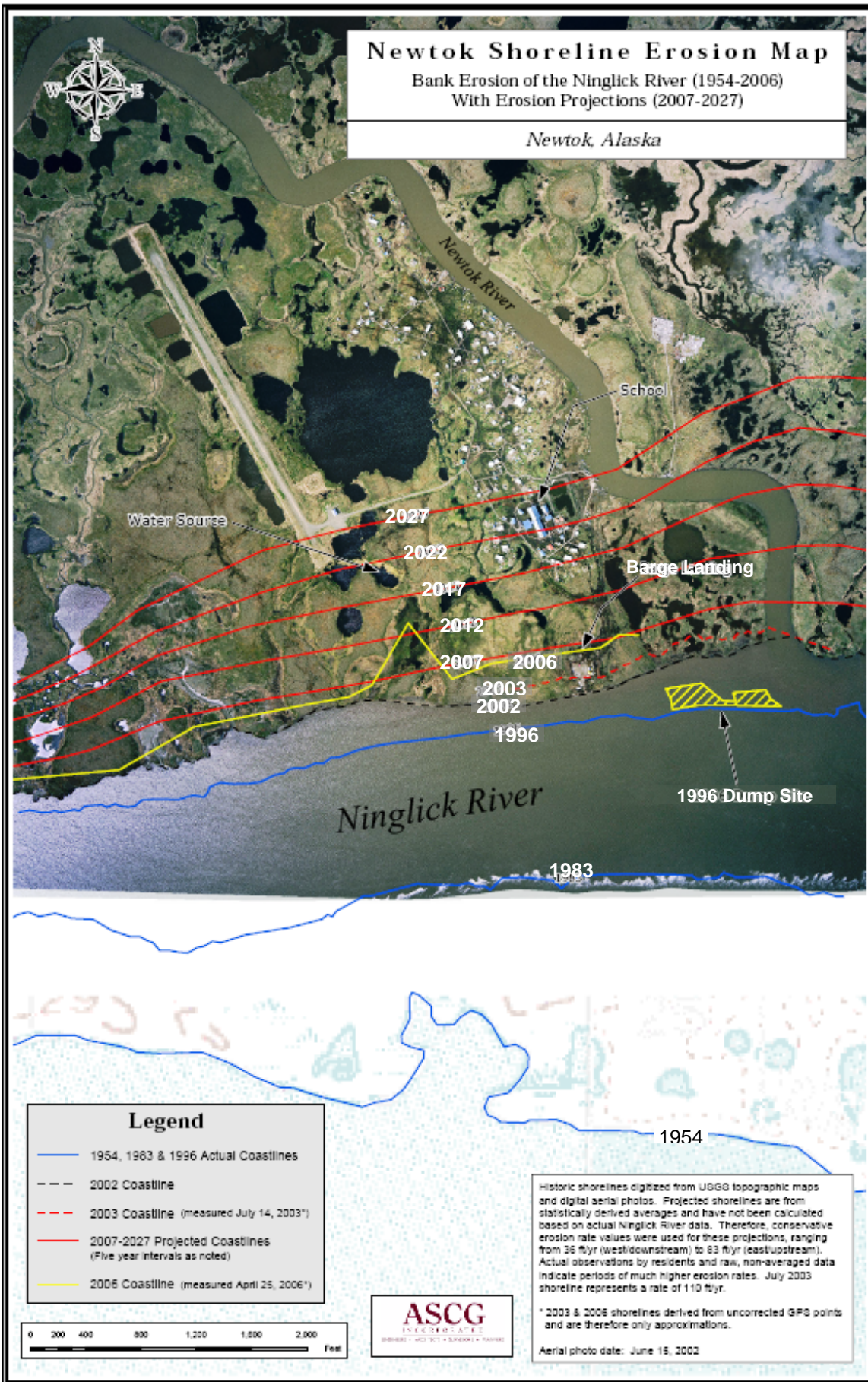
- **Preliminary Geotechnical Overview:** The USACE performed a site reconnaissance to visually evaluate the surface and subsurface conditions at Mertarvik. The study concluded that based on visual evaluation; there were no geotechnical site conditions that would preclude Mertarvik from use as the area for relocation of the village of Newtok.
- **Newtok Transportation Plan:** ASCG developed a preliminary transportation plan for the Mertarvik site through funding provided by the BIA Indian Reservation Roads Program. The purpose of this effort was to develop a land use map and transportation plan for the proposed relocation site with prioritized roads, justifications, and estimated costs as a guide for future community development studies.

As part of the relocation planning effort, ASCG prepared a Shoreline Erosion Map based on historic shorelines digitized from USGS topographic maps and digital aerial photos. It was found that average rates of erosion along the Ninglick River varied from 36 feet to over 83 feet per year upstream. The average rate of erosion occurring directly in front of the village between 1954 and 2003 was measured to be 68 feet per year. The loss to erosion has been continuous from the base year of 1954 (see map, next page).



Studying the undercutting effect of the Ninglick River at low tide.

Source: Newtok Background for Relocation Report



An Act of Congress: The Land Exchange

The community's efforts to acquire land at the village's selected relocation site ran concurrent with the early relocation planning efforts. Newtok's village corporation under the Alaska Native Claims Settlement Act (ANCSA), **Newtok Native Corporation**, took an active leadership role in the land transfer with support from the community.

In November, 1996, the Corporation passed a resolution authorizing the negotiation of a land exchange within the Yukon Delta National Wildlife Refuge with the U.S. Fish and Wildlife Service (USFWS). Immediately thereafter, negotiations began, and by December 1997, the Regional Director for the USFWS submitted an *Intent to Exchange Agreement* for a land exchange to Newtok Native Corporation.

Negotiations between the Corporation and USFWS ensued over the next several years. Land exchange efforts gained momentum when the Corporation enlisted the services of a lobbyist at the federal level. Soon thereafter, the Corporation was able to secure the support of the Alaska Congressional Delegation as well as Washington D.C staff of the USFWS. With the assistance of legal council, Newtok Native Corporation negotiated the terms of the land transfer and drafted federal legislation. The Corporation assisted Congressman Young and Senators Stevens and Murkowski in obtaining the votes for enactment of the land exchange law. On November 17, 2003, United States Public Law 108-129 was signed into law.



Secretary of the Interior Gale A. Norton signs the land exchange legislation as members of Newtok Native Corporation look on. (Source: Landye Bennett Blumstein LLP)

Progressive Erosion Brings New Problems: Increased Flooding, Public Health Issues and Difficulties Delivering Fuel

The progressive erosion of the Ninglick River has removed the land buffer that once existed between the Ninglick and the Newtok Rivers, creating a direct connection between the Ninglick and the village. Fall storms have sent flood waters surging through the Ninglick River, up the Newtok River and into the village.



The land lost by erosion has altered the flow of the Newtok River, effectively turning the river into a slough. The Newtok River used to be busy with daily boat traffic, providing easy access to residences and barge off-loading facilities. The encroachment of the Ninglick River has caused the Newtok River to become progressively shallower with built up silt, stopping the flow of the Newtok River. At low tide, the Newtok River is similar to a mud flat, making boat and barge navigation extremely difficult and limited.

Public Health Concerns

The Newtok River has long been used as the village's honey bucket disposal site. With the changed hydrology of the river, disposed waste has no place to go. During storms, flood water now rushes up the Ninglick River unimpeded into the Newtok River, forcing the stagnant water of the Newtok River into the village. This has created a serious public health threat to the community.

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The map below illustrates the extent of flooding that occurred in Newtok as a result of a fall storm that occurred on September 22, 2005. Residents indicated on aerial photos the extent of flooding around and within the village. According to Newtok residents, the floodwaters completely surrounded the village, turning it into an island for several days.



Newtok Flood – September 22, 2005. Source: Newtok Traditional Council and USACE

Several houses were only connected to the village by boardwalks that were floating in the floodwater.



Source: Stanley Tom

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As a result of the September 2005 flood and another event that occurred in 2004, Newtok was included in two federal disaster declarations, DR-1571-AK (2004 Bering Sea Storm) and DR-1618-AK (2005 Fall Sea Storm).

Difficulties Delivering Fuel

The village barge landing was lost to erosion of the Ninglick River in 2005 leaving the community with no cost-effective way to receive the delivery of construction materials or other large items.



Barge deliveries to the village are now restricted to the Newtok River, however the altered hydrology of the Newtok River has severely limited when barge deliveries can be made. In August 2006, a fuel barge was grounded in the Newtok River for three days (below). Recently, fuel had to be flown into the village when delivery could not be made by barge.



Additional Challenges: Deferred Community Maintenance and Investment

Advancing erosion, increased flooding, and the subsequent loss and damage to Newtok’s infrastructure have led to the delay in expenditures of capital funds at Newtok. The concern has been the loss of new capital facilities from the Ninglick River advancing upon the village.

State of Alaska Administrative Order No. 224 requires that “New facilities will be protected against imminent environmental threats, such as flooding and erosion, consistent with Administrative Order No. 175.” and that “Priority will be given to the infrastructure needs of existing communities before consideration of proposals to create new communities, unless there is a congressionally directed relocation of an existing community.” This has been interpreted as “we can’t build anything substantial in a threatened community and we can’t build anything in a future community site without people living there.”

The deferment of new construction to replace old facilities has and will continue to create hardships on the residents of Newtok. This situation can be expected to continue for some time, even as village residents begin moving over to the new village site. As relocation is expected to be an incremental process, there will be populations whose needs must be met at both locations.



Aging and deteriorating fuel tanks

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Remains of barge landing



The old landfill eroded away in 1996. The new landfill is accessible by boat at high tide only

The Newtok Planning Group

In late spring 2006, a group of representatives from State and Federal agencies and other organizations with an interest in the relocation of Newtok began meeting to identify agency resources and to establish an overall strategy to assist Newtok in its relocation effort. The Newtok Traditional Council and Newtok Native Corporation are active members of the Newtok Planning Group. The Division of Community Advocacy within the Department of Commerce, Community and Economic Development is facilitating this group.

The Newtok Planning Group is focusing on two primary efforts to assist Newtok:

- Addressing the community's *short-term needs* at the existing village and critical infrastructure needs at the new village site.
- Addressing the community's *long-term relocation planning needs* through the development of a comprehensive relocation planning strategy, including overall project management.

Some of the ways in which the Newtok Planning Group has collaborated to date include:

- Identification and assessment of the resources each agency can provide to Newtok in an effort to find areas of collaboration, potential cost sharing, gaps in funding, and to avoid potential conflicts in relocation activities.
- Development of a relocation planning schedule to provide a framework for relocation efforts and to keep agencies informed of relocation activities
- Development of an RFP for a Strategic Management Plan for the comprehensive relocation effort.
- Creation of a website that serves as a clearinghouse for reports, studies and Newtok Planning Group (NPG) updates:

http://www.commerce.state.ak.us/dca/planning/Newtok_Planning_Group_Webpage.htm

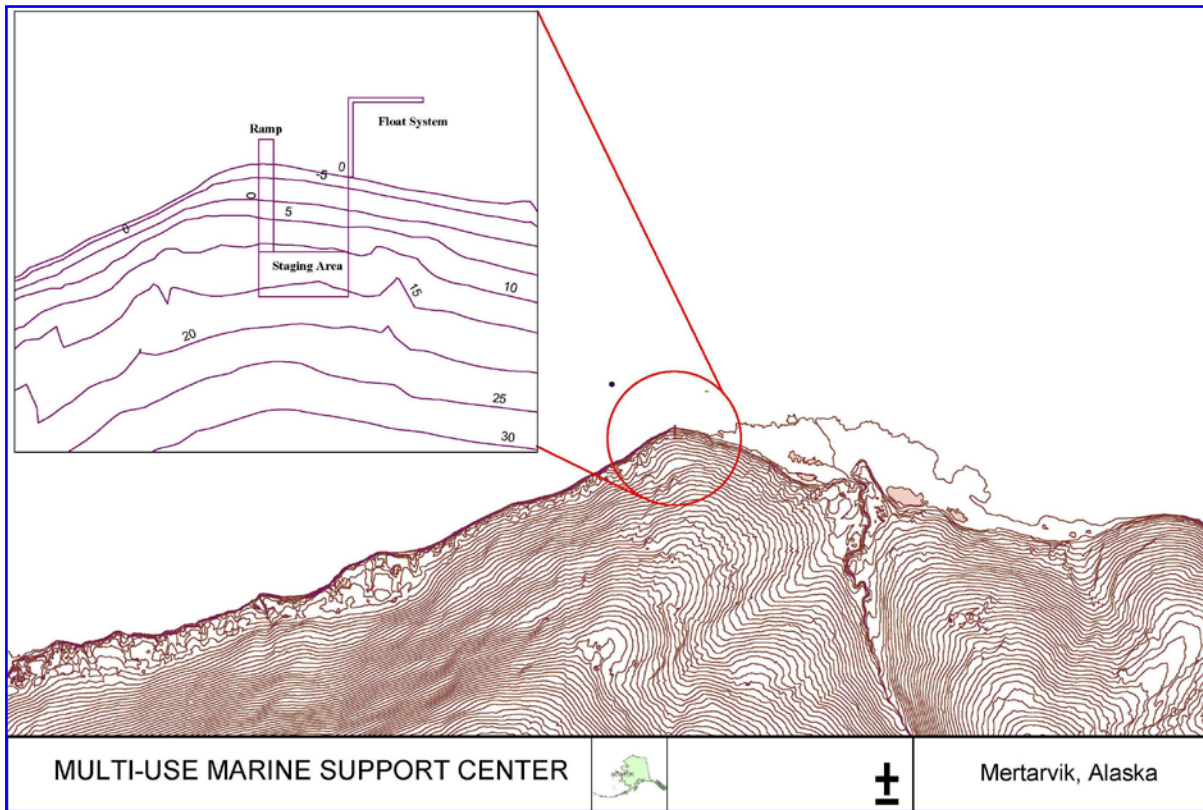


Recent products of the Newtok Planning Group's efforts include the following:

Funding for Barge Facility at New Village Site: The Department of Commerce, Community and Economic Development prepared on behalf of Newtok Traditional Council a grant application for Investment Assistance to the Economic Development Administration (EDA). This resulted in the \$800,000 award for design and construction of a Multi-Use Marine Support Facility (barge Ramp, dock and staging area). The Alaska District Corps of Engineers and the Department of Transportation and Public Facilities (DOT/PF) provided assistance on the application. The DOT/PF is providing the \$200,000 local match for the \$1 million project. The

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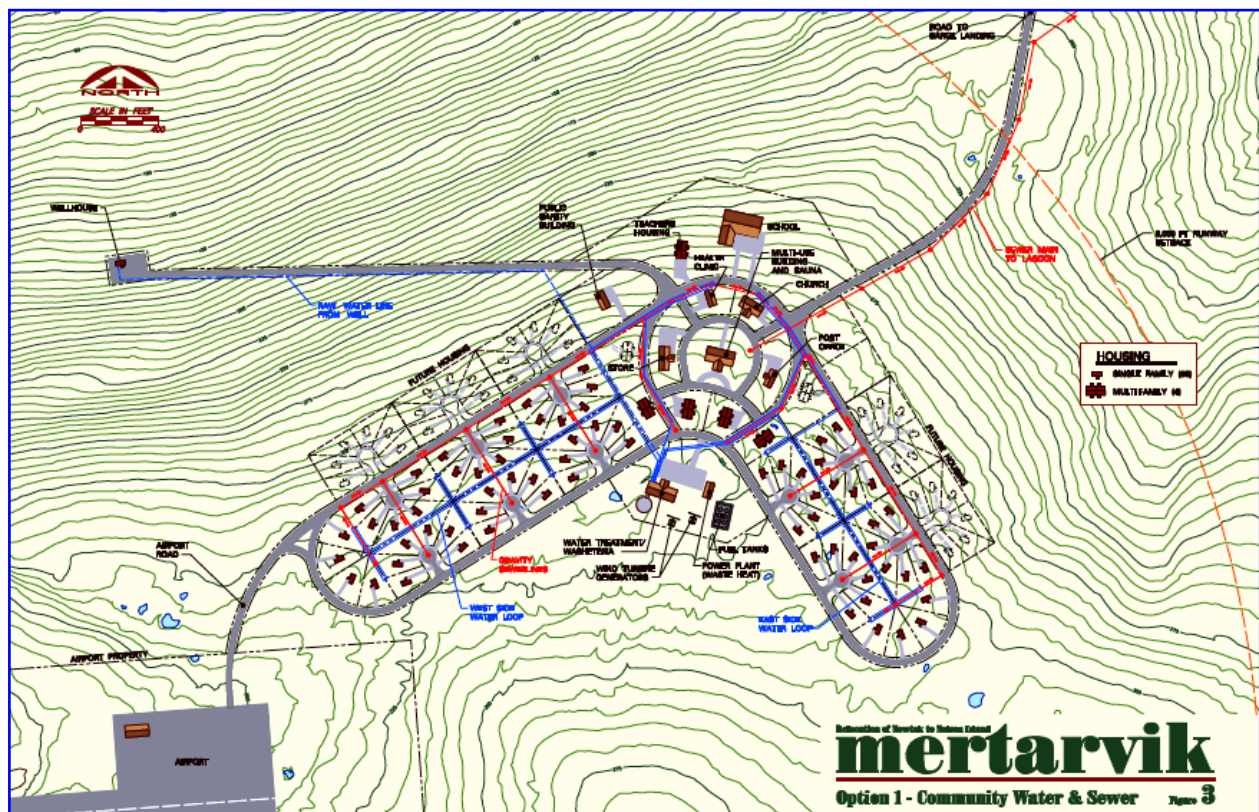
barge landing is a critical first step in developing the new village site as the facility will provide for the delivery of equipment and construction materials to Mertarvik. Construction of the facility is expected to be completed during the summer of 2008.



Concept drawings by ADOT/PF

Funding for Community Planning at the New Village Site: the Department of Commerce, Community and Economic Development provided technical assistance to the Newtok Traditional Council in its application for a Mini-Grant for the development of a community layout plan for the new village site. The Traditional Council was awarded a Mini-Grant (funded by Denali Commission and administered by DCA) of \$26,682 for development of a community layout plan for new village site. The community layout plan will guide the efficient and orderly development of Mertarvik.

Preliminary Layout of Water/Sewer Infrastructure: the Department of Environmental Conservation's Village Safe Water Program has developed preliminary community layouts identifying water/sewer infrastructure at the new village site. The alternative selected by the community is based on sustainable water and sewer systems. The piped sewer system would be operated by gravity flow and would not require lift stations to pipe sewage to the lagoon. The community planning effort funded by the Mini-Grant will be based on these water/sewer layouts.



Source: DEC Village Safe Water Program

Water Source Investigations: This spring, the Village Safe Water Program will be conducting investigations at Mertarvik to locate a source for the new village water supply.

Geotechnical Studies: The Corps of Engineers will be collaborating with the Alaska Department of Transportation and Public Facilities and the Village Safe Water Program on geotechnical investigations at Mertarvik during the 2007 construction season.

Fisheries Support Center: The Coastal Villages Region Fund plans to build a fisheries support center at Mertarvik in the near future. The fishery support center will consist of an area for boat and net repair, office space, bunk space, and storage space for fishery operations in the community.

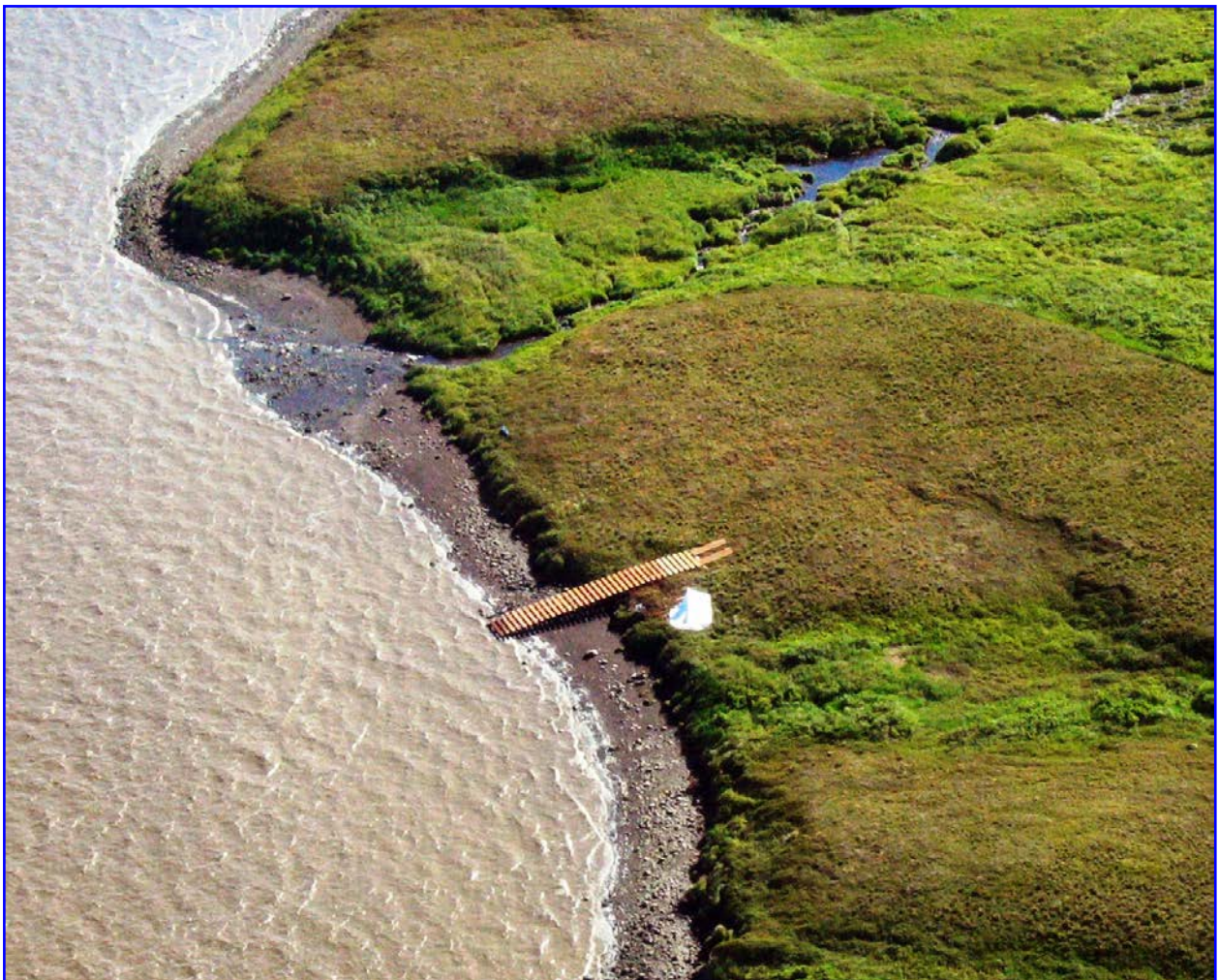
Mertarvik: Getting Water from the Spring

In 2006, Newtok residents applied for and were awarded three Bureau of Indian Affairs (BIA) Housing Improvement Program (HIP) homes, with the intent to construct the new homes at the new village site. The housing packages were delivered to Tununak, where they were stored until the village could make arrangements to have the housing packages delivered to the new site.

In preparation for the barge delivery, village residents built their own barge ramp to facilitate delivery of the housing packages to the undeveloped Mertarvik land.



Mertarvik Spring



The barge ramp built by Newtok residents. Mertarvik spring flows near the top of the photo.

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In September 2006, a barge company was able to deliver the homes to the new site with the help of village residents. A work party of Newtok residents met the landing craft at Mertarvik, disassembled the housing packages on the landing craft and carried the housing materials to shore. Construction of the three homes is nearly complete. The homes will be moved to the location of the new village once community planning and basic infrastructure is complete.



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Constructing the new homes at Mertarvik



NEXT STEPS: FUTURE NEEDS

❖ Designation of a Lead State Agency to Assist Communities with Relocation

❖ Direction to Agencies to Provide Assistance in Relocation Efforts

An overriding issue regarding government's ability to provide relocation assistance to communities such as Newtok is the fact that there is no designated State or Federal agency responsible for addressing the relocation needs of Alaskan communities affected by flooding and erosion.

The Department of Commerce, Community and Economic Development (DCCED), Division of Community Advocacy is the State agency established to advise and assist local governments. (*Article X, Section 14, Alaska State Constitution*). Administrative Order 231 directs DCCED to act as the state coordinating agency *“to coordinate with other state and federal agencies to propose long-term solutions to the ongoing erosion issues in the City of Kivalina and other affected coastal communities in this state.”* However, no State agency has been designated as a lead for providing relocation assistance to local governments.

DCCED has been coordinating agency assistance and funding to Newtok through the Newtok Planning Group. This effort has been largely dependant on the good-will and voluntary cooperation of participating agencies, but there is no guarantee that this level of cooperation will continue. In addition, the “patchwork approach” to funding may not address all the community's needs.

A designated lead agency could provide critical assistance to communities, particularly those lacking the resources, expertise and support necessary to identify, request and procure funding sources for relocation assistance. A lead agency could also serve a coordinating function among the agencies responsible for community infrastructure, housing, education, health and related needs.

❖ Relocation Assistance when Mitigation Measures are Technically and Financially Infeasible

When measures for prevention, minimization or mitigation of flooding and erosion have been determined to be technically and financially infeasible, village relocation is usually the best option. Unfortunately when this determination is made, communities such as Newtok have been faced with the dilemma of reduced or eliminated funding to maintain the infrastructure and investments at the existing village. To make matters worse, the infrastructure needs of existing communities are given priority over proposals to create new communities, so the village relocation site is left out of the funding loop. In addition, cost estimates for relocation have been so high that funding agencies have been discouraged from making resources available to address village relocation needs.

There is a clear need for funding, without extraordinary costs, for basic infrastructure at village relocation sites while providing for the maintenance of facilities at the existing community while the relocation process is taking place. A minimal investment in “pioneering infrastructure” can allow village relocation sites to serve as evacuation sites if the existing community becomes uninhabitable. An investment in pioneering infrastructure can encourage local-initiative during the relocation process and avoid the prohibitively large costs of relocation that have discouraged funding agencies from making resources available in the past.

PARTICIPANTS IN THE NEWTOK PLANNING GROUP

Native Village of Newtok

- Newtok Traditional Council (NTC)
- Newtok Native Corporation (NNC)

State

- Alaska Department of Commerce, Community, and Economic Development (DCCED), Division of Community Advocacy
- Alaska Industrial Development and Export Authority (AIDEA)/Alaska Energy Authority (AEA)
- Alaska Department of Environmental Conservation/Village Safe Water Program (VSW)
- Alaska Department of Transportation and Public Facilities (DOT/PF)
- Alaska Department of Military and Veterans Affairs/Division of Homeland Security and Emergency Management (DHS&EM)
- Alaska Department of Education and Early Development (DEED)
- Alaska Department of Health and Social Services (DHSS)
- Alaska Governor's Office

Federal

- U.S. Army Corps of Engineers (USACE), Alaska District
- U.S. Department of Commerce, Economic Development Administration (EDA)
- U.S. Department of Agriculture, Rural Development
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS)
- U.S. Department of Housing and Urban Development (HUD)
- U.S. Department of the Interior, Bureau of Indian Affairs (BIA)
- U.S. Department of Transportation, Federal Aviation Administration (FAA).
- U.S. Environmental Protection Agency (EPA)
- Denali Commission
- Senator Lisa Murkowski's Office

Regional Organizations

- Association of Village Council Presidents (AVCP), Housing Improvement Program (HIP)
- Coastal Villages Region Fund (CVRF)
- Lower Kuskokwim School District (LKSD)
- Rural Alaska Community Action Program (RurAL CAP)
- Yukon-Kuskokwim Health Corporation

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