



U.S. Army Corps  
of Engineers  
Alaska District

## ALASKA BASELINE EROSION ASSESSMENT

### AVETA Report Summary– Kaktovik, Alaska

#### Community Information

Kaktovik is on the north shore of Barter Island between the Okpilak and Jago Rivers on the Beaufort Sea coast. It is the only community within the boundaries of the Arctic National Wildlife Refuge, which is 19.6 million acres and an occasional calving ground for the Porcupine caribou herd. The community is at approximately 70° North Latitude and -143° (West) Longitude (Sec. 13, T009N, R033E, Umiat Meridian). Kaktovik is in the Barrow Recording District. The area encompasses 0.8 square mile of land and 0.2 square mile of water. The climate of Kaktovik is arctic. Temperatures range from -56 to 78 degrees Fahrenheit. Precipitation is light, at 5 inches, with snowfall averaging 20 inches.



The Village of Kaktovik



Shoreline Erosion

#### What are the costs associated with continued erosion?

There are three elements related to costs associated with erosion: past protection endeavors, the cost of ongoing repair and maintenance, and future damages. These are discussed in more detail in the following paragraphs.

## Erosion Protection Costs

### *Shoreline Erosion*

The only notable erosion that has had a direct effect on the community is along the frontage within the lagoon (Pipsuk Bight). Protection of this area was provided in the 1990's by construction of a timber crib wall. This structure has performed well and has essentially stabilized the area such that erosion is not a problem for the community along this portion of the lagoon.

The existing airstrip is on the low elevation sand spit immediately north of the community. Erosion protection measures have been constructed in the past along the seaward edge of the airstrip. Recent surveys and aerial photography indicate that the airstrip is stable. Flooding due to storm surge increases in water surface elevation is an ongoing problem during open water storm season.

The U.S. Air Force Long Range Radar Site (LRRS) is immediately west of the community of Kaktovik. Numerous buildings, fuel tanks, a sewage lagoon, and an old landfill are located there. The northern limits of this site are directly exposed to the wave action in the Beaufort Sea. A gravel bag revetment was designed by the Corps and constructed in 1999 along with a groin field to build a beach in front of the revetment to reduce the amount of wave energy at this site.



Corps Gravel Bag Revetment in 1999



Revetment in 2003

Four sites in the vicinity of Kaktovik eligible for listing on the National Register of Historic Places are affected by erosion. Artifacts eroded from these areas are being lost. Local government agencies and members of the community are concerned about the loss of artifacts and history associated with this area. Without the protection of the sites or documentation and preservation of the artifacts, valuable information will be lost, which will reduce our understanding of the history of the culture along the coastal community in the Arctic National Wildlife Refuge (ANWR).

### **Future Damages**

With the exception of the airport and cultural resources, the community of Kaktovik is not experiencing significant damages such as erosion, wave attack, or flooding from coastal storms. There have been no reports of damaged or destroyed infrastructure or buildings from coastal storms with the exception of a snow fence west of the community. Minor erosion in Kaktovik Lagoon was reported, but would not pose any threat for at least 100 years.

### ***Airport***

If a new airport is constructed, this would eliminate the erosion and flood damages the current airport is experiencing. Protection for the existing runway is estimated to cost approximately \$40 million.

### ***Cultural Sites***

For centuries, as the name implies, trade has been conducted at Barter Island between people along the Beaufort Sea coast from Barrow to central Canada. The people of Kaktovik trace their roots to many areas of northern Alaska and Canada. The *Archaeological Evaluation of Cultural Resources Near Kaktovik, Barter Island, Alaska* prepared in October 2004 recommended the site Qaaktugvik be examined for the National Register of Historic Places as a traditional cultural property. This parcel is in danger of being lost to erosion. Because of its significance, the Corps is undertaking a study to more closely examine and catalog the area.

### ***Summary of Erosion Costs***

Protection of the airport would be approximately \$40 million. Because of the unknown quantity and quality of artifacts, and the inherent difficulties in assigning a monetary value to an item of cultural significance, the costs of damages to the cultural sites has not been determined.

### **What are potential costs associated with moving to a new location or an existing community?**

There is no reasonable need for Kaktovik to relocate. With the exception of the airport and a few small segments, the erosion at Kaktovik has been contained. In addition, the community and State have not expressed interest in relocating Kaktovik; therefore, numbers for relocation were not developed. The cost to relocate the airport at Kaktovik is estimated at \$20 to \$40 million

### **What is the expected time line for a complete failure of the usable land?**

Though there are some localized areas of concern (the airport and cultural sites) erosion is not expected to cause failure of the community within the foreseeable future (hundreds of years).



Alaska District  
Corps of Engineers  
Civil Works Branch

### Predicted and Historical Shorelines

1995 2003



Image dated July 2003



Alaska Village Erosion  
Technical Assistance Program

## Kaktovik, Alaska