



U.S. Army Corps
of Engineers
Alaska District

ALASKA BASELINE EROSION ASSESSMENT

Erosion Information Paper - Kotzebue, Alaska

Current as of January 24, 2008

Community Information

Kotzebue (KAWT-zuh-byoo), population 3,104, is on the Baldwin Peninsula on Kotzebue Sound. It is 26 miles above the Arctic Circle and 549 miles northwest of Anchorage. The community is incorporated as a 2nd class city in the Northwest Arctic Borough. The beach and shoreline are used for boating, snow machining, ATV access, barge access, boat storage, fishing, hunting, processing catch, beachcombing, cultural and social events, and driftwood collecting.

Description of Erosion Problem

Kotzebue is on a 3-mile-long spit ranging in width from 1,100 to 3,600 feet. Storm surges, storm-driven waves, and ice action contribute to periodic beach erosion. These contributors were also described in the 1984 *Task Force on Erosion Control Report*, prepared by the Alaska Department of Transportation and Public Facilities (DOT&PF). The bank along Shore Avenue, from Lake Street to Crowley Marine Dock, is being eroded. This area abuts Kotzebue Sound and is approximately 4,600 feet long and 4 to 10 feet high. The erosion rate is estimated to be 1 to 3 feet per year.

Areas of Kotzebue flood about every 8 to 10 years. The worst erosion and flooding event was during a 1990 storm when waters were 6 to 7 feet above normal high water, flooding 4 residences, the airport, lift stations, and sewer mains. Storms in October of 2002 and the fall of 2004 caused damaging storm surges .

Potential Damages

An October 2002 storm surge resulted in major damage to Shore Avenue. This damage was repaired in 2004. A fall 2004 storm resulted in damage that was repaired in 2006. The total costs of these repairs were reported to be just under \$500,000. The DOT&PF has scheduled a project for 2009 to rehabilitate and provide erosion protection for Shore Avenue from Lake Street, extending approximately 4,600 feet to the end of the road at Crowley Dock. DOT&PF, reportedly, has about \$6.4 million earmarked for widening the existing Shore Avenue right-of-way by 30-50 feet, paving with new sidewalks, a pathway, parallel parking, an open space on the seaward side, installation of a riprap revetment, and a sheet pile wall for erosion protection along a majority of the project length.

Placement of gravel-filled 55-gallon steel barrels to form a groin along the beach, galvanized wire gabion baskets filled with rock and gravel, and various types of plastic or fabric bags filled with sand and gravel were installed in the 1980s by the community as erosion protection measures along the beachfront. These protective measures reportedly proved somewhat successful, but

short-lived. Most of the 55 gallon drums rusted out and the gravel fill spilled out by 1984. The galvanized wire gabion baskets eventually collapsed and were destroyed by waves.

Structures and facilities threatened by erosion include residences, outbuildings, sheds, water tanks and lines, fuel tanks, food storage structures, a retail store, Shore Avenue, the boat launch, boat storage and repair structures, utility poles, sites of significant cultural and archeological value, schools, clinics, churches, other public buildings, the airport runway, and airport facilities.

Photos and Diagrams

Photos of erosion provided by the City of Kotzebue are attached. Also, attached is a diagram depicting linear extent of erosion.

References

AK DOT/PF. 1984. *Task Force on Erosion Control Final Report.* Department of Transportation and Public Facilities.

HUD. 1979. *Flood Insurance Study. Kotzebue, Alaska.* Department of Housing and Urban Development.

Kotzebue. 2000. *City of Kotzebue Comprehensive Plan.*

USACE. 1999. *Alaska Environmental Infrastructure - Special Investigation, Volume 1 - Main Report and Volume 2 - Appendixes,* Alaska District, U.S. Army Corps of Engineers.

USACE. 2008. *Alaska Community Erosion Survey, OMB approved number 07100001,* expires September 30, 2009 completed by Derek Martin, City of Kotzebue, and submitted to the Corps via email on January 24, 2008.

Additional Information

This information paper, as well as those for other communities, can be accessed on the internet at www.alaskaerosion.com. For more information please contact the Corps of Engineers, project manager at (907) 753-5694 or email Alaska.Erosion.POA@usace.army.mil



Photo 1: Shore Drive looking toward Crowley dock, 2007.



Photo 2: Kotzebue lagoon and Swan Lake merge as a large low pressure weather system over the Seward Peninsula and high tide raised water levels higher than usual on Sept. 23, 2005.



Photo 3: Dozing ice off of Shore Drive, May 2002.



Photo 4: Ice piles up near Nullagvik Hotel, May 2002.



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--- Linear Extent of Erosion



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