



U.S. Army Corps  
of Engineers  
Alaska District

## **ALASKA BASELINE EROSION ASSESSMENT**

### **Erosion Information Paper - Soldotna, Alaska**

Current as of March 28, 2008

#### **Community Information**

Soldotna (soul-DAHT-nuh), population 3,982, is on the Kenai River in the Kenai Peninsula, 10 miles inland from Cook Inlet and, 150 miles road miles south of Anchorage. Soldotna is a 1st class city in the Kenai Peninsula Borough. The riverbanks are used heavily for fishing and short-term boat docking.

#### **Description of Erosion Problem**

The Kenai River at Soldotna causes periodic and sometimes severe erosion. Seasonal fluctuations in river flow and levels, beach and bank traffic from people and animals, boat wakes, ice jams, and occasional outburst flooding (jökulhlaup) originating above Skilak Lake from a glacier-dammed lake at the headwaters of the Snow River reportedly cause and contribute to erosion. An outburst event in February, 2007 caused significant property damage. A previous jökulhlaup flood in 1969 resulted in ice-jam flooding downriver.

The Kenai River is an economically important salmon river, generating as much as \$78 million annually in direct benefits. Resource management agencies are concerned that increased sedimentation and loss of streamside cover may threaten salmon returns. Streambank erosion protection is restricted to preserve this habitat, so most stream bank protection in Soldotna is complex engineered systems of coconut or hay fiber biodegradable logs attached to the bank with live willow sprouts and covered with elevated walkways or spruce trees cabled to the bank. Those erosion protection measures have been effective with the exception of a site where cabled spruce trees washed away and the bank eroded considerably,

#### **Potential Damages**

Sections of the elevated walkway and stair structures at Soldotna Creek, Swiftwater Campground, Centennial Campground, the Kenai River Center, and Cunningham Park were damaged or destroyed by the 2007 jökulhlaup event. The ice damaged and carried away an assortment of other structures and vegetation, including, fish cleaning tables, docks, fishing platforms, uprooted trees and other items. The city estimated the damages at about \$1 million, not including the millions of dollars in private structures that were damaged or destroyed. Hard structures that have been installed for erosion protection on the Kenai River include two 5 x 5-foot gabions that protect the airport storm outfall and a timber crib wall at the mouth of Soldotna Creek. The gabions have stayed in place. The gravel has washed-out from behind the crib wall, but the crib wall is reported to be holding.

#### **Photos and Diagrams**

Attached are photos of erosion provided by the Kenai River Center. A diagram depicting the linear extent of erosion in the community is also attached.

## References

**Dorava, J.M., and Moore, G.W. 1997.** *Effects of Boat Wakes on Streambank Erosion, Kenai River, Alaska.* U.S. Geological Survey Water-Resources Investigations Report 97-4105.

**Kenai River Center and Kenai Watershed Forum. 2007.** *On the River – A Guide to Owning and Managing Waterfront Property on the Kenai Peninsula.* Prepared by the Kenai River Center and Kenai Watershed Forum.

**Kenaitze Indian Tribe. 2004.** *Environmental Protection Agency Watershed Nomination Initiative for the Kenai River Watershed..* Kenaitze Indian Tribe.

**USACE. 2008.** *Alaska Community Erosion Survey, OMB approved number 07100001, expires September 30, 2009 administered to Andrew Carmichael, Soldotna parks and recreation director and Steve Bonebrake, Soldotna public works/airport director on March 28, 2008.*

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## Additional Information

This information paper, as well as those for other communities, can be accessed on the internet at [www.alaskaerosion.com](http://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](mailto:Alaska.Erosion.POA@usace.army.mil)



**Photo 1: Staircase at the Kenai River Center damaged by ice in 2007.**



**Photo 2: Disabled access fishing platform damaged by ice in 2007.**



**NOTE:** The extent of erosion shown on this figure is based on interviews with the community. This data has not been field verified. This figure is only intended to show areas of erosion, not rates or severity of erosion



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--- Linear Extent of Erosion



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## Extent of Erosion Part 2



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