



**U.S. Army Corps
of Engineers**
Alaska District

ALASKA BASELINE EROSION ASSESSMENT

Erosion Information Paper - Stebbins, Alaska

Current as of March 20, 2008

Community Information

Stebbins (STEB-inz), population 598, is on the northwest coast of Saint Michael Island on Norton Sound, 8 miles north of Saint Michael and 120 miles southeast of Nome. The community is incorporated as a 2nd class city in the unorganized borough. The Norton Sound shoreline is used for boat storage, fishing, hunting, beachcombing, and driftwood collecting.

Description of Erosion Problem

Stebbins has coastal erosion along Norton Sound reportedly caused primarily by storm surges and wind-driven waves. Over the last 40 years there have been approximately 10 major erosion events caused by storms, resulting in a loss of 30 to 40 feet of land above the beach. The 2007 *Stebbins Hydrologic and Hydraulic Report*, prepared for the Alaska Department of Transportation and Public Facilities by Baker and Coastal Frontiers states: “Based on this analysis from 1951 to 2004, the shoreline along the beach west of Stebbins has been relatively stable with little erosion or accretion. However, it was observed during the site visit, that the area from the west end of the runway to Bonok Point is not stable. The low beach berm in this area had been damaged during the 2004 storm season. The beach was subsequently repaired, but the long-term stability is tenuous. If this low beach section is breached, the back shore will flood and the runway may be flanked.” The report also states, “The shoreline south of Bonok Point has experienced approximately 300 to 600 feet of shoreline recession over the last 53 years. The resulting average shoreline retreat is approximately 5.7 to 11.3 feet per year.”

The Stebbins airport runway is approximately 3,000 feet from the shoreline south of Bonok Point with several lakes between the airport and shoreline. The lakes are 1,200 feet from the shoreline. According to the *Stebbins Hydrologic and Hydraulic Report* if the average rate of shoreline recession from 1951 to 2004 continues it will be 100–200 years before the lakes are breached. A 1988 Corps *Flood Damage Reduction Section 205 Reconnaissance Report - Stebbins* states that coastal storm flooding inundates the community from both Norton Sound to the west and the lowland marshes to the east. Norton Sound flooding is caused by storm surge and wave run-up crossing the beach into the community. According to a 1993 Corps *High Water Elevation Identification: Stebbins Report* the entire town of Stebbins is the 100-year floodplain. Seven floods occurred from 1959 to 1988 with the worst flood in 1964.

Potential Damages

The 1964 flood raised the water level 7 feet, flooding several homes and the airport. Several homes, outbuildings, sheds, the cemetery, community center, and airport are threatened by erosion. Erosion from the last storm damaged some saunas and smoke houses. All of the at-risk homes are less than 100 feet from the eroding coastline. The school building is less than 175 feet from the edge of the shoreline and the end of the airport runway is 50 feet from the shoreline.

There was up to 40 feet of ground and vegetation between the beach and the first row of housing in the early 1960s. Only 8 feet currently remain, leaving many homes close to the beach. Water level is close to the houses during storms. A revetment of sand-filled oil drums was constructed along the beach by the Youth Corp and the City of Stebbins in an effort to control erosion during the 1960s. The revetment has deteriorated as the oil drums have corroded and washed away.

Photos and Diagrams

Attached is a photo showing the proximity of buildings to the coastline, provided by the Division of Community and Regional Affairs. Also, attached is a diagram depicting the linear extent of erosion.

References

- AK DOT/PF.** 2007. *Stebbins Hydrologic and Hydraulic Report*. Alaska Department of Transportation and Public Facilities.
- USACE.** 1987. *Stebbins, Alaska Coastal Erosion Study: Telephone Log* (August 13, 1987) and *Trip Report, Stebbins*, (8 thru 10 September 1987). Alaska District, U.S. Army Corps of Engineers.
- USACE.** 1988. *Flood Damage Reduction Section 205 Reconnaissance Report Stebbins, Alaska*. Alaska District, U.S. Army Corps of Engineers.
- USACE.** 1993. *High Water Elevation Identification Stebbins*. Alaska District, U.S. Army Corps of Engineers.
- USACE.** 2008. *Alaska Community Erosion Survey*, OMB approved number 07100001, expires September 30, 2009 completed by Jean Ferris, Stebbins city administrator, on March 11, 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: Homes along the Norton Sound beach front in Stebbins; photo courtesy of the Division of Community and Regional Affairs, 2003.



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----- Linear Extent of Erosion



Alaska Baseline Erosion
Stebbins, Alaska