

KAHUKU AREA DESCRIPTION

Kahuku Beach (transects 24 - 82) is located on the northeast coast of O‘ahu between Ka‘ohana and Makahoa Point. The beach is composed of calcareous sand with limestone beach rock fronting the middle of the beach near the low water line. Headlands to the north and south consist of exposed limestone shelf with 'perched' beach above the high-water line. The area is exposed to north and refracted northwesterly swells during winter months and easterly tradewind waves throughout the year.

Annual shoreline change rates are calculated using a subset of historical shorelines (1967 - 2015) resulting in mild to moderate accretion rates averaging 0.9 ft/yr. Shoreline data prior to 1967 were omitted from calculations to remove the effects of sand mining, visible in the 1949 air photos. Over the course of available data, three stages of shoreline change are discernable for Kahuku Beach. Between 1910 and 1933 the shoreline was approximately stable. Prior to 1949, the shoreline began high rates of landward retreat due to removal of beach sand by sand mining operations, visible in 1949 aerial photographs. The shoreline retreat (over 200 ft) exposed beach rock in the middle of the beach and lengthened the exposure of limestone shelf at either end. Sand mining ceased prior to 1967 and the beach has since been relatively stable or accreting. High rates of accretion since 1949 (>2.3 ft/yr) are observed fronting the sand-filled channel (transects 69 – 77) indicating that the channel may be a source of sediment to the beach.

Results are similar to those of Hwang's (1981) analysis using the water line as a shoreline proxy, which found net landward movement of the water line (erosion) between 1949 and 1975. Hwang's (1981) and Sea Engineering's (1988) findings of net seaward movement of the vegetation line between 1949 and 1988 was due to recovery of coastal dune vegetation after sand mining ceased.

For more information see: <http://www.soest.hawaii.edu/asp/coasts/oahu/index.asp>

¹ Hwang, D. (1981) "Beach changes on O‘ahu as revealed by aerial photographs", State of Hawaii, Department of Planning and Economic Development.

² Sea Engineering, Inc. (1988) "O‘ahu shoreline study", City and County of Honolulu, Department of Land Utilization.

Keywords:

O‘ahu; Kahuku Beach; Kaohana Point; Makahoa Point