

ALA MOANA & MAGIC ISLAND AREA DESCRIPTION

Ala Moana Beach Park and Magic Island (transects 0 - 86) are located on the south shore of O‘ahu. The beach park, including Magic Island Beach (transects 0 - 17), and Ala Moana Beach (transects 18 - 86), was constructed by dredging and filling of the shallow near-shore reef. The coast in this area is exposed to refracted easterly trade wind waves year-round; southerly swells, most frequent in summer months; and southerly Kona storm waves in winter months. The inner reef and shoreline at Ala Moana Beach are protected from the full energy of open-ocean waves by a shallow fringing reef.

Engineering events at the Ala Moana shoreline (adapted from Wiegel, 2008):

- 1920's Ala Moana is a wetland used as a garbage dump.
- 1925 Kewalo Basin built, entrance channel dredged in reef.
- 1928 Shore-parallel channel dredged linking Kewalo Basin and Ala Wai Canal.
- 1934 Ala Moana Beach Park constructed with coral and sand dredge material.
- 1935 Ala Wai Boat Harbor (original) constructed by dredging the reef.
- 1945 Kewalo Basin enlarged.
- 1951 Ala Wai entrance channel dredged.
- 1955 New shore-parallel swimming channel dredged, old channel filled with dredge material, new beach constructed with sand fill.
- 1964 Magic Island and beach constructed on reef flat from coral dredge material.
- 1976 Ala Moana Beach, sand placed on eroded beach.

Historical shorelines are available from aerial photographs 1927 - 2015 for most of the Ala Moana shoreline. Due to extensive shoreline reconstruction, only historical shorelines from the modern configuration of each beach are used to calculate change rates. Magic Island Beach (transects 0 - 17) is characterized by accretion in the east half of the beach (up to 0.6 ft/yr) and erosion in the west half (up to -1.2 ft/yr). Ala Moana Beach (transects 18 - 86) is characterized by alternating cells of erosion and accretion along the shore. The ends of the beach are the most erosive with rates up to -1.2 ft/yr at the west end (transect 86) and -2.1 ft/yr at the east end (transect 18). The remainder of the eastern and western ends of the beach (transects 25 - 42 and 67 - 78) experience moderate to high rates of accretion (averaging 1.0 and 0.2 ft/yr, respectively). The middle of the beach (transects 43 - 66) is experiencing low to moderate erosion (averaging -0.5 ft/yr).

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

Wiegel, R.L. (2008) "A history of Waikiki: the history of its transformation from a natural to an urban shoreline." *Shore and Beach*, 76(2).3-30.

Keywords:

O‘ahu; Ala Moana; Magic Island; Ala Moana Beach Park; Magic Island Beach; Kewalo Basin