

CHARACTERIZATION OF THE PHYSICAL ENVIRONMENT IN HE'EIA
FISHPOND, 'OAHU, HAWAI'I

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The physical characteristics of Heeia Fishpond are important in studying the fishpond system as a whole. Information about the flow rates and water exchange, the forces influencing water movement, and the physical gradients in the pond is essential to understanding the environment. Acoustic current meters were placed at the pond makahas, or openings, to collect data to make rating curves. Pressure sensors were used to collect pressure data for both flow rate calculations and frequency spectra. A YSI probe was used at the makaha and internal sites to monitor surface and bottom temperature and salinity. The majority (63%) of the water exchange with the environment occurs through the northeast corner, through sites TM and OM1. Most of the variability in the water flux is due to the tides, though a shift in the winds from Trade to Kona does have some effect. Surface and bottom gradients in temperature and salinity are due to colder, low salinity river inputs in the northwest and warmer, high salinity inputs along the eastern side of the pond. This thesis forms a physical framework for the continuing biological and chemical studies in He'eia Fishpond.