

EFFECTS OF ENTRAINMENT ON MARINE MICROBIOTA IN THE MOSS

LANDING POWER PLANT

A Thesis

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ABSTRACT

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The impacts of once-through cooling to bacteria and phytoplankton passing through the Moss Landing Power Plant (MLPP) were investigated. Measurements were made along the cooling-water flow-path, such that conditions before intake, during entrainment and after discharge into Monterey Bay could be assessed. Bacterial growth was enhanced as a result of passage through the MLPP cooling system, as evidenced from increases in bacterial growth, frequency of dividing cells, and respiration in water sampled at the immediate exit from the power plant. Phytoplankton were negatively impacted after passage through the MLPP cooling system as shown by reductions in photochemical quantum efficiency (F_v/F_m), primary productivity, and increases in pheopigment/Chl *a* ratios at the power plant exit station. Thus, bacteria and phytoplankton were differentially impacted by once-through cooling transport. However, differential enhancement and inhibition effects on bacteria and phytoplankton, respectively, were not detected after discharge and dilution into local Monterey Bay waters.