Coliphages have been suggested as water quality indicators. The objective of this research was to evaluate effects of environmental factors on coliphage concentrations in San Diego surface waters using both field sampling of recreational waters and controlled mesocosm experiments. Water samples were collected from beach sites during rainfall and tidal events and analyzed for F+ and somatic coliphages, and from a controlled freshwater system in summer and winter. Regression models determined significance of coliphage concentration with different environmental factors. Coliphage concentrations were significantly affected by sample location, rainfall, water temperature, and season, but not by surf height, sea state, salinity, kelp coverage, tide height, wind speed, and turbidity ($\alpha = 0.05$). Potential coliphage die-off was observed along the San Diego River. This research informs how environmental factors affect coliphage concentrations and demonstrates timing and conditions for viral contamination of surface waters.