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Storm effects on regional beach water quality along the southern California shoreline

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ABSTRACT

Two regional studies conducted during dry weather demonstrated that the Southern California Bight (SCB) shoreline has good water quality, except near areas that drain land-based runoff. Here, we repeat those regional studies 36 h after a rainstorm to assess the influence of runoff under high flow conditions. Two hundred and fifty-four shoreline sites between Santa Barbara, California, and Ensenada, Mexico, were sampled using a stratified random sampling design with four strata: sandy beaches, rocky shoreline, shoreline adjacent to urban runoff outlets that flow intermittently, and shoreline adjacent to outlets that flow year-round. Each site was sampled for total coliforms, fecal coliforms (or *E. coli*), and enterococci. Sixty percent of the shoreline failed water quality standards after the storm compared to only 6% during dry weather. Failure of water quality standards increased to more than 90% for shoreline areas adjacent to urban runoff outlets. During dry weather, most water quality failures occurred for only one of the three bacterial indicators and concentrations were barely above State of California standards; following the storm, most failures were for multiple indicators and exceeded State of California standards by a large margin. The condition of the shoreline in Mexico and the United States was similar following rainfall, which was not the case during dry weather.

Full Text

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