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Areas of Special Biological Significance: Northern California Bioaccumulation Monitoring

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INTRODUCTION

The California State Water Resources Control Board (SWRCB) designated Areas of Special Biological Significance (ASBSs) as marine regions that require water quality protection. Waste discharges into ASBSs, such as polluted storm water, are prohibited, but the SWRCB grants exceptions if it can be shown that the protection of marine life in receiving ocean waters is not compromised. The standard for protection is that discharges "shall not alter natural ocean water quality in an ASBS" (*1*). There are approximately 1,658 known discharges into California ASBSs, nearly all of them storm water outfalls, which have a potential to impact ASBS water quality (*2*).

Wet-weather water column contamination in ASBS receiving waters was monitored in southern California starting in 2008 (*3*), and then in northern California starting in 2012. In order to define "natural", these studies used reference sites that were minimally impacted by human activities. These studies found that water column concentrations near discharges were, on average, comparable to concentrations near reference sites. However, in some cases individual ASBS discharge sites exceeded reference-site based natural water quality guidelines. While these results were encouraging, neither study focused on bioaccumulating compounds. Bioaccumulation was first assessed in southern California ASBSs in 2013 where, with some exceptions, discharge concentrations were comparable to reference concentrations (*4*).

Based on the needs of the Northern California Regional Monitoring collaborative, which includes ASBS dischargers and the SWRCB, this survey was designed to answer the following questions: 1) What is the range of natural water quality for bioaccumulative compounds, as defined by bivalve tissue sampled near reference stations? 2) Is the water quality for bioaccumulative compounds at ASBS discharge stations similar to that at reference stations representing natural water quality? Bivalves are filter feeders that accumulate contaminants over a longer period of time compared to storm water grab samples, and may bioconcentrate contaminants resulting in potential impacts at low water column concentrations. Bivalves, including mussels, have been used for decades in NOAA's Mussel Watch Program to monitor bioaccumulative contaminants across the U.S. coastline (*5*), but have not been previously utilized to assess regional ASBS water quality along the North Coast.

Full text: 857_ASBSNorCal_Bioacc.pdf