

Scoping Report for Potential Development of a Marine Debris Monitoring Strategy for San Francisco Bay

Estimated Cost: \$24,000
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Background

Marine debris is defined by NOAA as ‘any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment’. There are many types of marine debris and their potential impacts are wide ranging. Some known impacts of marine debris, the majority of which is plastic, include ingestion and entanglement by higher trophic level marine organisms such as turtles, seabirds, and marine mammals. Concern for the potential impacts of smaller plastic particles (‘microplastics’) on marine organisms and ecosystem health in general has increased in recent years, particularly since the discovery of large quantities of plastic in the North Pacific Central Gyre. Research studies are on-going in an effort to better characterize the potential impacts of microplastics and the role they play in controlling chemical contaminant exposure, however, the prevalence and fate of microplastics in nearshore, coastal environments are still major information gaps. The State Water Board is currently conducting assessments throughout the state of California, including San Francisco Bay, to provide baseline information on the distribution and amount of plastic pellets on beaches. Water column assessments in nearshore environments have been conducted less frequently. NOAA’s Marine Debris Program is currently developing standardized methods for the assessment of micoplastics in the water column of coastal environments, using Chesapeake Bay as a pilot program. Assessments of the extent of microplastics or other marine debris in the waters of San Francisco Bay have not yet been conducted.

Study Objective

The objective of this work is to prepare a report that summarizes the current knowledge on marine debris in nearshore environments, including sources, occurrence, fate, and potential impacts on ecosystem health. This report will be used to inform and guide future efforts of marine debris monitoring by the RMP.

Approach

Five information elements will be included in the report:

(1) Summary of current knowledge on marine debris in coastal environments

This element will include a summary of the different types of marine debris, potential sources, occurrence and fate in marine and coastal environments, and potential impacts on marine organisms and ecosystem health. Information sources will include peer-reviewed literature and researchers actively studying the issue.

(2) Summary of on-going assessment efforts

This element will include a summary of marine debris assessment efforts previously conducted or on-going by Federal (e.g. NOAA), State (e.g. Ocean Protection Council, Water Board, OEHHA), and other regional (various nonprofits) or local (SF Baykeeper) agencies and organizations.

(3) Conceptual model for San Francisco Bay

This element will include development of a preliminary conceptual model of the sources, fate, and transport of marine debris in San Francisco Bay. Both microplastics and larger debris (i.e. trash) will be considered.

(4) Potential management questions

This element will include development of a list of potential management questions for marine debris in San Francisco Bay. A discussion of how these relate to existing RMP management questions will be included.

(5) Recommendations for next steps

This element will include recommendations for potential next steps (e.g. formal strategy development and/or baseline monitoring) regarding monitoring of marine debris in San Francisco Bay. Potential partners for collaboration and funding of any future assessment efforts will also be identified.

Budget

Summary reporting	
-- Summary of current knowledge	\$10,000
-- Summary of on-going assessment efforts	\$5,000
-- Conceptual model	\$5,000
-- Management questions	\$2,000
-- Recommendations for next steps	\$2,000
Total	\$24,000