



Staff Recommendation
June 19, 2020

Consideration of Authorization to Disburse Funds to Address Microplastics in Coastal and Marine Ecosystems

Holly Wyer, Program Manager

RECOMMENDED ACTION: Authorization to disburse up to \$120,233 to the San Francisco Estuary Institute to identify potential sources and pathways of microplastics in stormwater; and to disburse up to \$225,236 to the Southern California Coastal Water Research Project Authority to conduct a study assessing the efficacy of microplastic removal with various wastewater treatment methods.

LOCATION: Statewide

STRATEGIC PLAN OBJECTIVE: 3.4. Improve Coastal and Ocean Water Quality; Target 3.4.4 – Develop a Statewide Microplastics Strategy

EXHIBITS:

Exhibit A: Letters of Support for Project 9a

Exhibit B: Letters of Support for Project 9b

FINDINGS AND RESOLUTION:

Staff recommends that the Ocean Protection Council (OPC) adopt the following findings:

“Based on the accompanying staff report and attached exhibit(s), OPC hereby finds that:

- 1) The proposed projects are consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act;
- 2) The proposed projects are consistent with OPC's Proposition 84 grant program and environmental license plate funding guidelines (Interim Standards and Protocols, August 2013); and

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- 3) The proposed projects are not ‘legal projects’ that trigger the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section, section 15378.”

Staff further recommends that OPC adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

“OPC hereby approves the disbursement of up to \$120,233 to the San Francisco Estuary Institute (SFEI) to identify potential sources and pathways of microplastics in stormwater; and to disburse up to \$225,236 to the Southern California Coastal Water Research Project Authority (SCCWRP) to conduct a study assessing the efficacy of microplastic removal with various wastewater treatment methods.

This authorization is subject to the condition that prior to disbursement of funds, SFEI and SCCWRP shall each submit for the review and approval of the Executive Director of the OPC detailed work plans, schedules, staff requirements, budgets, and the names of any contractors intended to be used to complete the projects, as well as discrete deliverables that can be produced in intervals to ensure the projects are on target for successful completion. All projects will be developed under a shared understanding of process, management and delivery.”

PROJECT SUMMARY:

Microplastics are a ubiquitous pollutant that have been found nearly everywhere researchers have looked, and studies on microplastics and their impacts are an emerging field of science. OPC’s work on microplastics is driven by the [California Ocean Litter Prevention Strategy](#) and by [Senate Bill 1263](#), which requires OPC to develop and submit a statewide Microplastics Strategy to the legislature by the end of 2021, with a follow up progress report due at the end of 2025. The Microplastics Strategy is a comprehensive, prioritized, research plan to support the development of risk assessments for microplastics in California’s marine habitats. The Microplastics Strategy also includes developing a better understanding of the sources and pathways of microplastics to the environment and identifying solutions to prevent microplastic pollution. OPC has partnered with Ocean Science Trust to convene an OPC-SAT Working Group to develop a risk assessment framework for the Microplastics Strategy, and the two projects described below work to advance our knowledge of sources and pathways, and solutions to prevent microplastic pollution. These projects are consistent with Target 3.4.4 of OPC’s Strategic Priorities to Protect California’s Coast and Ocean for 2020-2025:

“3.4.4: Develop a statewide microplastics strategy by 2021 with implementation of the recommendations starting in 2022.”

9a. Identification of sources and pathways for microplastics in stormwater

This project will provide up to \$120,233 to SFEI to explore and identify sources and pathways for microplastics in stormwater.

Background

In 2019, SFEI completed one of the most comprehensive studies to date on microplastics in the environment and the pathways that contribute to microplastic pollution. One of the major findings of this study was that stormwater was a major pathway for microplastics to enter the environment; stormwater was found to carry an estimated 300 times more microplastics to San Francisco Bay than wastewater effluent. Prior research on microplastics pathways focused primarily on wastewater as a pathway, and further information on which sources of microplastics are entering stormwater and how they are entering stormwater is lacking. Learning more about how microplastics enter stormwater and urban runoff is important, as the sources are likely to be much more diffuse, and pathways much more complex and poorly understood compared to wastewater.

Project Summary

This project would develop conceptual models that synthesize and integrate the current understanding of microplastics sources and pathways to urban stormwater, specifically from single-use food serviceware, cigarettes, and textile fibers. This project would enable SFEI to perform a review of the existing literature and compile available information to develop the conceptual model and would support additional analysis of the existing microplastic data from San Francisco Bay. The final report from this project would tie together the conceptual models with the analysis of microplastics data to provide recommendations for future research and management approaches that will inform the OPC microplastics strategy, which is due at the end of 2021.

The overarching goal of the project is to develop detailed conceptual models of how microplastics from single use food serviceware, cigarettes and textile fibers enter stormwater, tie the conceptual models to microplastics data from San Francisco Bay, and provide future research and management recommendations.

9b. Efficacy of microplastic removal from various wastewater treatment methods

This project would provide up to \$225,236 to SCCWRP to study assessing the efficacy of microplastic removal with various wastewater treatment methods.

Background

In comparison to stormwater, wastewater has received more attention as a pathway for microplastics to enter the environment, and there have been numerous studies examining concentrations of microplastics in wastewater effluent. However, less work has been done examining how effective various wastewater treatment methods are at removing microplastics from effluent. SB 1263 charges OPC with identifying and recommending solutions to prevent or reduce microplastic pollution. This project would assist OPC in meeting the requirements of SB 1263 by identifying which wastewater treatment methods are most effective at removing microplastics from wastewater effluent.

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Project Summary

This project will determine the microplastics removal efficiency of various wastewater treatment levels and processes at approximately ten wastewater treatment plants in California. The project will focus on two of the major coastal regions of the state: southern (San Diego to Point Conception) and central (Point Conception to San Francisco Bay). These regions collectively represent the majority of wastewater discharged into the oceans or coastal tributaries. They also encompass different serviced businesses, industries, and residential populations as well as wastewater treatment processes and sizes of facilities (ranging from less than 1 to more than 300 million gallons per day).

Microplastics in raw wastewater influent from up to ten treatment plants (including representation of primary, secondary, tertiary, and advanced treatment) will be quantified to estimate the levels of microplastics entering California wastewater streams. Partially treated samples between various treatment steps will be analyzed to assess removal efficiencies of individual processes. Wastewater effluent will also be studied to compare how effective the various treatment types are at removing microplastics overall. Finally, biosolid samples will be evaluated to determine how much microplastics removed from the effluent during treatment processes are deposited to the biosolids, which could be dispersed to the environment through disposal processes (e.g., leakage from landfilling, or use as fertilizer).

The overall goal of this project is to determine the removal efficiencies of microplastics for wastewater treatment plants representative of discharge into California coastal waters and evaluate the efficiency of microplastic removal from different processes within the treatment system.

About the Grantees

SFEI is one of California's premier aquatic and ecosystem science institutes. Their mission is to provide scientific support and tools for decision-making and communication through collaborative efforts. They provide independent science to assess and improve the health of water, wetlands, wildlife and landscapes. SFEI is a national leader on microplastics research in the aquatic and marine environments.

SCCWRP is a public research and development agency that develops and applies next-generation science to improve management of aquatic systems in Southern California and beyond. Since its founding, SCCWRP has been developing strategies, tools and technologies that the region's water-quality management community relies on to more effectively protect and enhance the ecological health of Southern California's coastal ocean and watersheds. SCCWRP is leading critical work to advance the field of microplastics science, including a study to validate and recommend the best methodologies for detecting and analyzing microplastic.

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Project Timelines

SFEI, *Identification of sources and pathways for microplastics in stormwater* – September 2020-December 2021

SCCWRP, *Efficacy of microplastic removal from various wastewater treatment methods* - September 2020-September 2022

PROJECT FINANCING:

Staff recommends that the Ocean Protection Council (OPC) authorize encumbrance of up to \$120,182 to SFEI to identify potential sources and pathways of microplastics in stormwater; to authorize an encumbrance of up to \$225,236 to SCCWRP to conduct a study assessing the efficacy of microplastic removal with various wastewater treatment methods.

Identify sources and pathways of microplastics in stormwater	\$120,233
Assess the efficacy of microplastic removal with various wastewater treatment methods	\$225,236
TOTAL	\$345,469

The anticipated source of funds will be from the Ocean Protection Council’s appropriation of California Environmental License Plate Funds (ELPF). Using these funds to support this project is consistent with the California Ocean Protection Act, Section 35650(b), as well as OPC’s Strategic Plan and Grant Program Funding Guidelines as discussed in more detail in the following section.

CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:

The proposed project is consistent with the Ocean Protection Act, Division 26.5 of the Public Resources Code, because it is consistent with trust-fund allowable projects, defined in Public Resources Code Section 35650(b)(2) as projects which provide monitoring and scientific data to improve state efforts to protect and conserve ocean resources.

CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:

These projects implement Goal 3.4: Improve Ocean and Coastal Water Quality. Specifically, target 3.4.4: Develop a Statewide Microplastic Strategy by 2021.

CONSISTENCY WITH THE OPC'S GRANT PROGRAM FUNDING GUIDELINES:

The proposed project is consistent with the OPC’s Grant Program Funding Guidelines for Proposition 84 and Environmental License Plate funds, in the following respects:

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Required Criteria

1. Directly relate to the ocean, coast, associated estuaries, or coastal-draining watersheds: *Both projects study and relate directly to the ocean, coast, coastal-draining watersheds.*
2. Support of the public: *See Exhibits A and B*
3. Greater-than-local interest: *Both of these projects take a statewide approach to examining microplastics in stormwater and wastewater and will provide results that are applicable statewide.*

Additional Criteria

4. Improvements to management approaches or techniques: *The results of these projects will inform and improve management approaches to preventing microplastics from entering the environment.*
5. Timeliness or Urgency: *OPC must submit the Microplastics Strategy to the legislature by 2021. The results and or preliminary results of these projects will inform OPC's Microplastics Strategy.*
6. Coordination: *OPC works closely with the State Water Resources Control Board (Water Board) on microplastics and will continue to coordinate with the Water Board and other interested agencies as these projects move forward.*

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA):

The proposed project is categorically exempt from review under the California Environmental Quality Act ("CEQA") pursuant to 14 Cal. Code of Regulations Section 15306 because the project involves only data collection, research and resource evaluation activities that will not result in a serious or major disturbance to an environmental resource. Staff will file a Notice of Exemption upon approval by the OPC.