Stormwater Trash Reduction Success Stories and Remaining Challenges

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SF Bay Area communities are mandated by the Municipal Regional Stormwater Permit to significantly reduce the amount of trash that enters local water bodies through their storm drainage systems. Municipalities were required to achieve a 70% reduction of trash by July 2017. The City of San Jose has developed and implemented a number of trash control programs since the mandate was set in 2009 by the SF Bay Regional Water Quality Control Board. These innovative programs include the:

Installing 21 large trash capture systems and over 100 smaller systems into the City's storm drainage system that collectively treat over 8,000 acres of land;

Implementing a Direct Discharge Trash Control Program (DDTCP) that is aimed at reducing the homeless population living along the City's network of urban creeks and removed 6,697cubic yards of trash from creeks in 2016-17;

Conducting creek and shoreline cleanups via City staff, non-profit agencies, and community groups that removed an additional 2,000 cubic yards of trash during 2016-17; and

Designing and implementing the groundbreaking San José Bring Your Own Bag and Foam Food Container ordinances that reduce the levels of these litter-prone items in the environment.

Through the implementation of these and other programs, the City of San José has attained a 79% trash load reduction to-date, complying with the load reduction mandates in the stormwater permit. The lessons-learned by the City during the planning and implementation of these programs, and the challenges that the City is encountering with achieving the ultimate goal of "no adverse impacts" of trash discharged from its storm drainage system will be discussed in the presentation.

Session Title: Managing Trash Impacts in the SF Estuary

Speaker Biography: Napp Fukuda is the Deputy Director of the City of San José Environmental Services Department and has provided leadership in environmental compliance programs for San José for more than 23 years. Napp leads the City's Watershed Protection Division which provides programmatic services that protect water quality in local creeks and the San Francisco Bay, protecting and enhancing public health and the environment. These services are integral to the City's management of both wastewater and stormwater and are comprised of four key functions: Stormwater Management, Environmental Enforcement, Laboratory Services, and Pretreatment oversight. In addition to overseeing compliance programs, Napp with his terrific team helped design and implement the groundbreaking San José Bring Your Own Bag and Foam Food Container ordinances and anti-litter initiative. Napp has a Bachelor's Degree in Mechanical

Engineering from Santa Clara University and over 26 years of environmental compliance experience.

A New Trash Monitoring Program for Bay Area Receiving Waters

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Over the past two decades, trash has been identified as a pervasive problem near and in receiving waters, including local creeks, rivers, the San Francisco Bay Estuary and the Pacific Ocean. Although trash monitoring was conducted in creeks and shorelines around the Bay Area in the early 2000's and used by the San Francisco Bay Regional Water Quality Control Board to determine that local water bodies are impacted, an organized regional trash monitoring program was lacking in the Bay Area. In recent years, public and volunteer resources focused more on trash management - preventing the generation of trash within the watershed, intercepting this material before it reaches receiving waters, and cleaning up debris once it reaches local creeks and shorelines. In 2016, municipalities throughout the region joined together to develop a new *Trash Receiving Water Monitoring Program* for Bay Area. The program was developed based on the results of an extensive literature review and input from stakeholders and scientific peer reviewers. The program includes a robust statistically-based monitoring design, new trash assessment protocols, and quality assurance/control procedures. Beginning in the winter of 2017-18, the program will be implemented at a total of 225 creek, river and Bay shoreline sites where trash levels and sources will be monitored. Results from the initial two years of this innovative monitoring program will help test trash assessment protocols and provide valuable knowledge to Bay Area municipalities and water quality regulators on the magnitude and extent of trash in local receiving waters. Additionally, lessons learned will help other regions in California establish similar programs where trash monitoring is currently not conducted.

Keywords: Trash, litter, marine debris, stormwater, illegal dumping, monitoring, assessment

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Speaker Biography: Chris is a Managing Scientist at EOA, Inc. He has over 20 years of experience in designing and implementing stormwater monitoring and management programs in California. He currently manages the countywide creek monitoring program for the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP) and is high regarded as one of the leaders in stormwater trash management in California. Chris is a co-author of the new Bay Area Trash Receiving Water Monitoring Program and is currently focused on developing cost-effective trash monitoring programs that can help detect improvements in trash levels in urban environments, including local creeks and the San Francisco Bay.

Developing Trash Monitoring Methods for California

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In the wake of the passage of the Trash Amendments in 2015 that prohibit discharge of trash larger than 5 millimeters to state waters from stormwater systems, there is a need to develop tools to measure the amount of trash in the environment. The Ocean Protection Council (OPC) has supported the State Water Board's adoption of the Trash Amendments and is interested in the development and use of scientific measures to track and verify program effectiveness. Currently there is no agreed-upon scientific method to monitor for trash in water and receiving stormwater channels. This makes assessing permittees' compliance and general progress on reducing trash in state waters difficult.

With funding from the OPC, the Southern California Coastal Water Project (SCCWRP) and the San Francisco Estuary Institute (SFEI) have begun a project to develop a suite of methods to monitor State receiving waters for trash, aligning those methods with addressable management questions. The methods selected, described, and tested must be applicable to many parts of the State, and not exclusive to a single region.

By leveraging their extensive knowledge of and outreach to regional and local partners, SCCWRP and SFEI will collaborate with other interested parties in field-testing trash monitoring methodologies that will be useful to stakeholders required to monitor into the foreseeable future. In addition, SCCWRP and SFEI, because they are located in different parts of the state, will field test these methodologies to measure trash in water in different habitats, topographies, and flow conditions, ensuring their use throughout California.

The overall goal of this project is to provide the research needed to develop scientific measures to monitor trash. For this presentation, project representatives, Shelly Moore from SCCWRP and Tony Hale from SFEI, will provide an update on this new effort.

Keywords: Trash, Monitoring, Methods, Habitats, California

Session Title: Managing Trash Impacts in the SF Estuary

Speaker Biography: As Program Director for Environmental Informatics at the San Francisco Estuary Institute (SFEI), Dr. Tony Hale represents five technical teams: Geographic Information Systems, Application Development, Data Services, IT Systems, and Design & Communications. He also helps to steward positions of statewide influence to promote technology initiatives, environmental stewardship, and meaningful, collaborative innovations. Early on, Dr. Hale served as IT Director for Mills College. He then joined the California Ocean Science Trust and led the development of OceanSpaces, an online community to foster new knowledge of ocean health. Currently he is co-chair of the Data Management Workgroup affiliated with the California Water Quality Monitoring Council, and a steering committee member for the San Francisco Estuary Geospatial Workgroup. Since joining SFEI, Dr. Hale has advanced the Institute's communications

practices, overseen the development of new data visualization technologies, and partnered with state and federal agencies to address complex data management challenges.