A Holistic Assessment of Trash in Watersheds

Scientific Studies Program

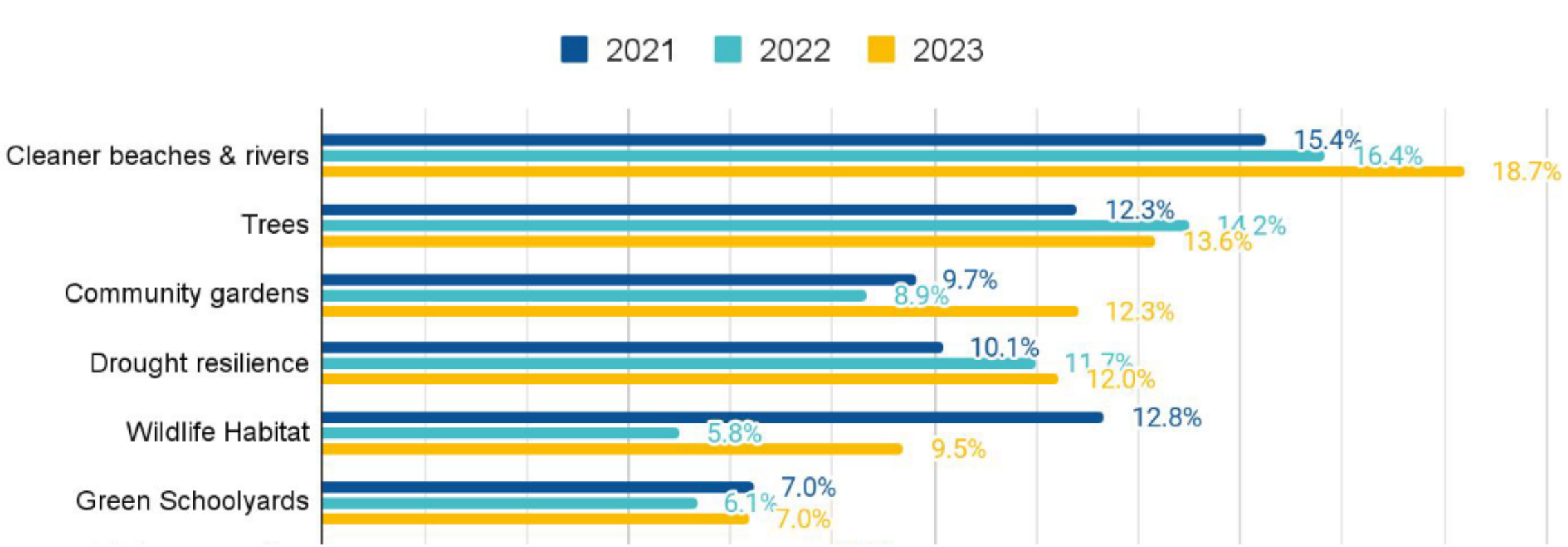
Fiscal Year 2026-2027

Watershed Area(s): All

Project Lead: Moore Institute for Plastic Pollution Research

Presenter Name(s): Dr. Win Cowger

Trash is the number one priority for our community



https://safecleanwaterla.org/content/uploads/2024/01/SCWROC-WatershedCoordinatorUpdate-Jan2024.pdf

However, to date, SCWP has not funded a scientific study focused on trash and currently lacks a means to track progress on trash throughout the county.

The county is undergoing a long-term transformation of trash policy and will need data to support it

Review of Conditional Waiver Order No. R4-2020-0112 and Recommendations for Waste Discharge Requirements

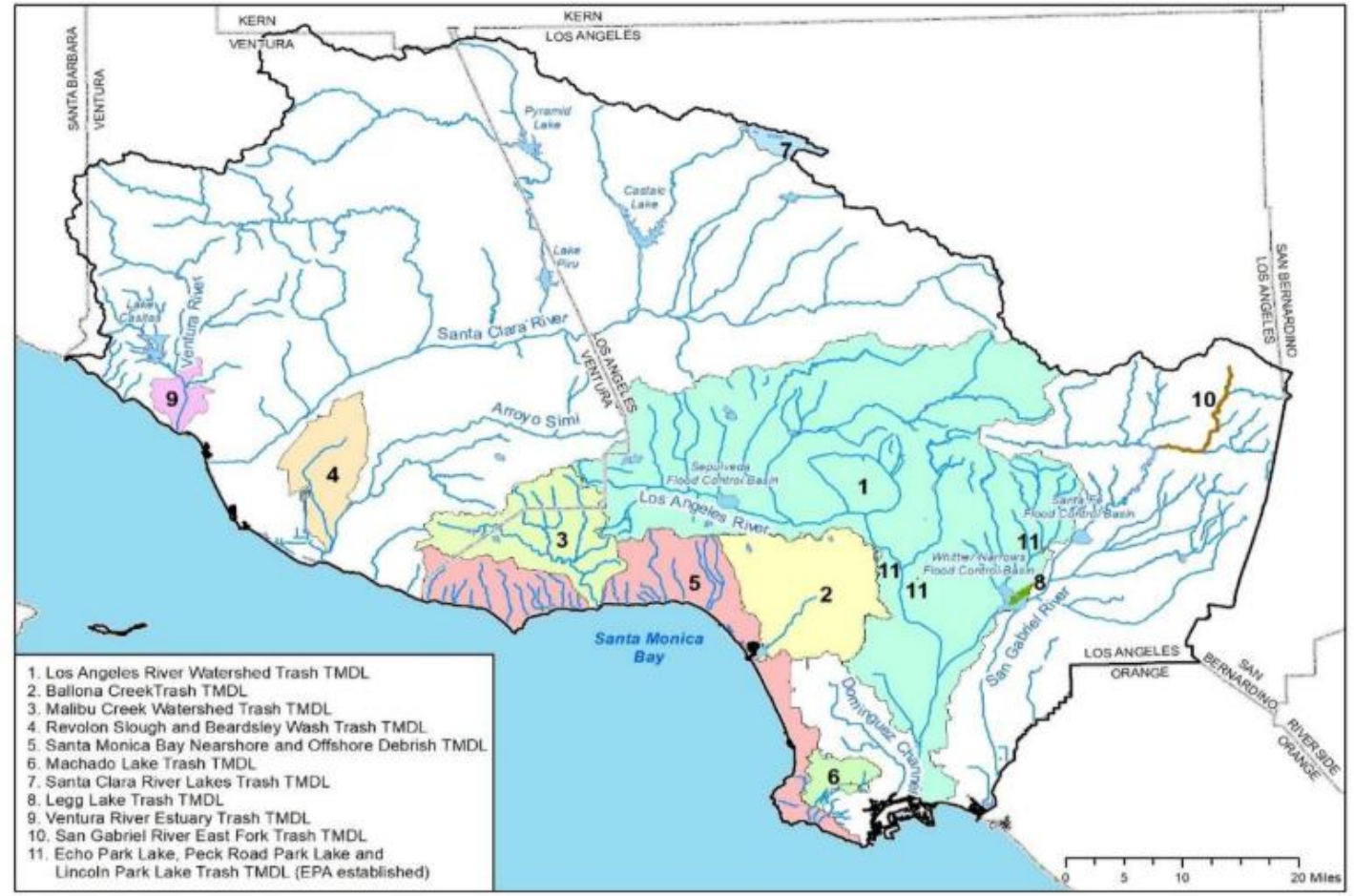


Figure 2. Existing Trash TMDLs within the Los Angeles region.

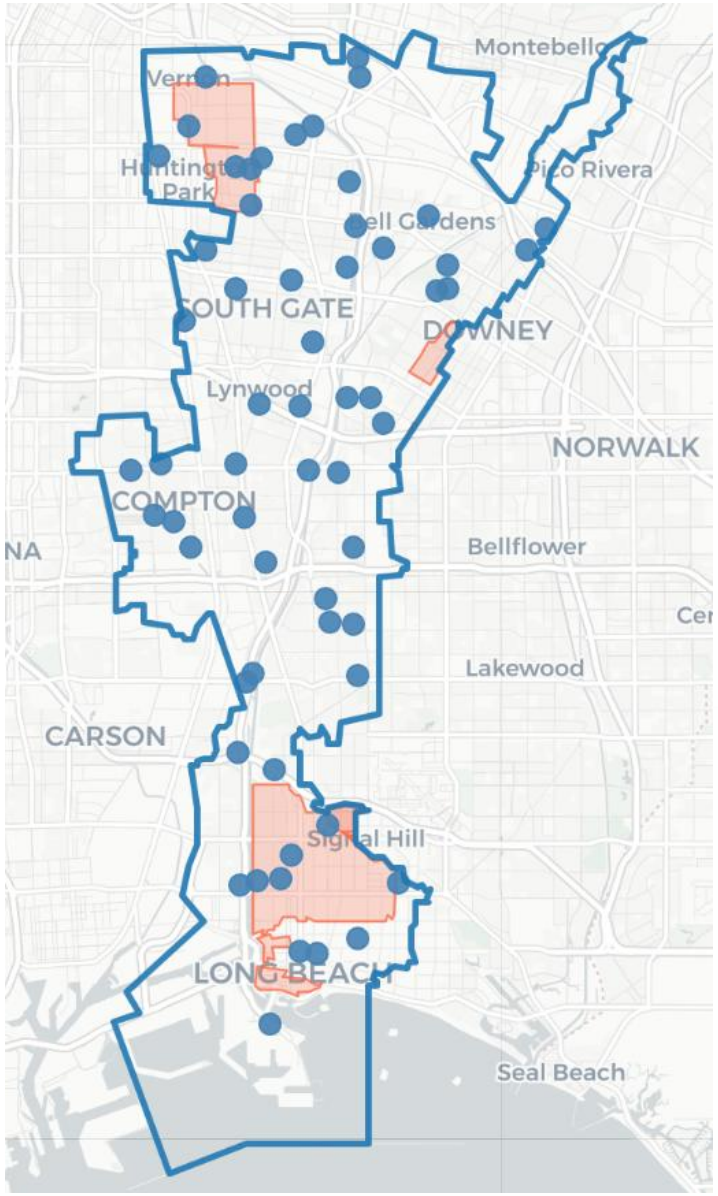
1. Making nonpoint source trash policy more permanent.
2. Making trash data more accessible and useful
3. Increase transparency and efficiency
4. Improving the clarity of the policy
5. Improving policy compliance

Study Overview

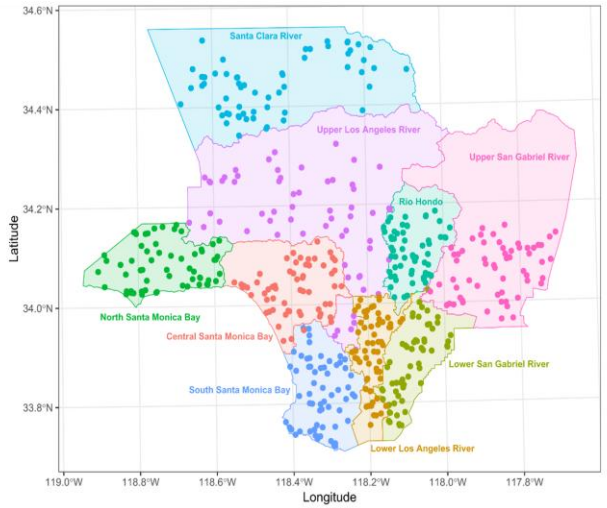
In this Scientific Study, The Moore Institute will:

1. Measure roadside trash loading
2. Harmonize public trash data
3. Create watershed trash models and data portals
4. This 4 year plan costs $366k per participating WASC

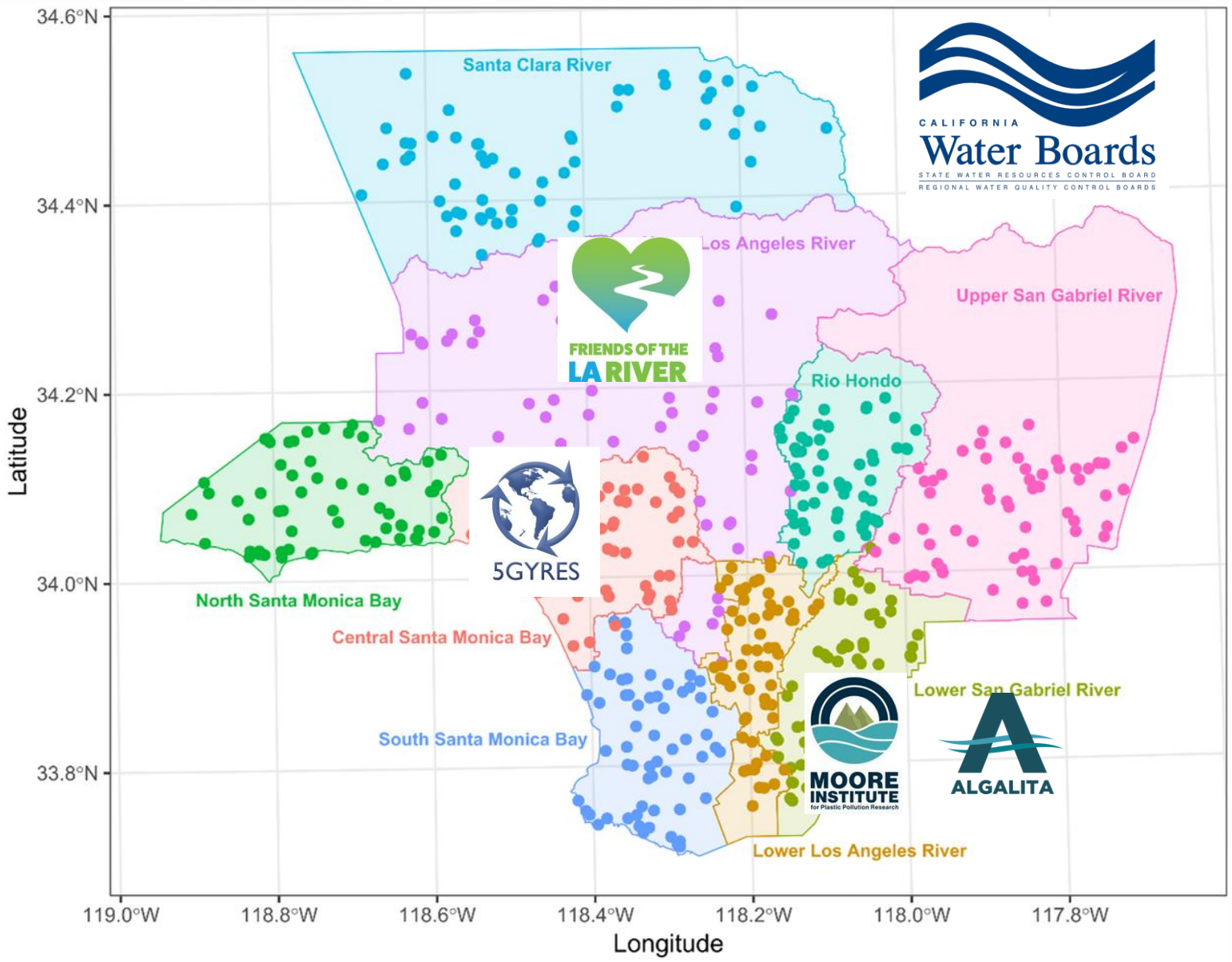
Study Location



- 60 randomly assigned trash survey locations along roads in each WASC.
- Final sites will be determined by the Technical Advisory Committee.
- Structural BMPs: Stormwater capture, filtration, diversion, trash traps
- Non-structural BMPs: Education, waste ordinances



Study Team



- This is an LA County organization led and operated project with long term partners.
- Moore Institute: ELAP accredited nonprofit research group will lead research aspects.
- Algalita, FOLAR, and 5 Gyres (CBOs): lead community engagement, dissemination, and education aspects.
- California Waterboard: advise on relevance to local and state policy and connect to other managers throughout the region.

Study Details: Problem Statement and Objectives

1. Little data exists on trash sources (roads)

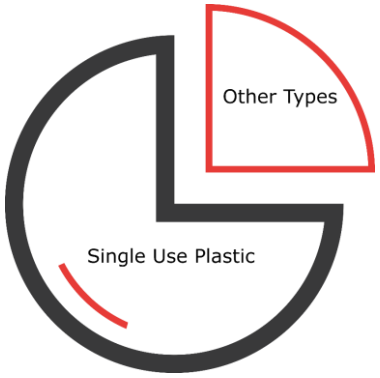
2. A significant amount of other trash data exists but is not harmonized.

3. We lack holistic models of watershed trash.

4. Data and models are not enough, we need portals.

Study Details: Methodology, Roadside Trash Data

1. Survey 60 sites 5 times per year.
2. During the survey, pick up all trash found at the site.
3. Record the count, material, morphology, brand, image, location, and the timestamp the trash was found.

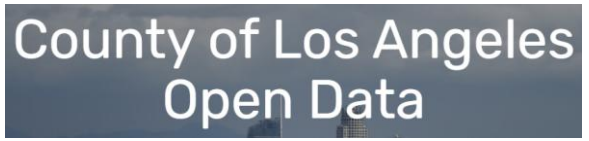


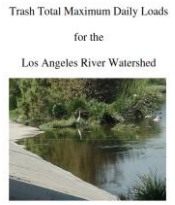
Study Details: Methodology, Public Data Aggregation

1. Search public archives for trash data.
2. Develop a list of potentially requestable trash datasets.
3. Harmonize all watershed trash data into a consistent format.

State

County



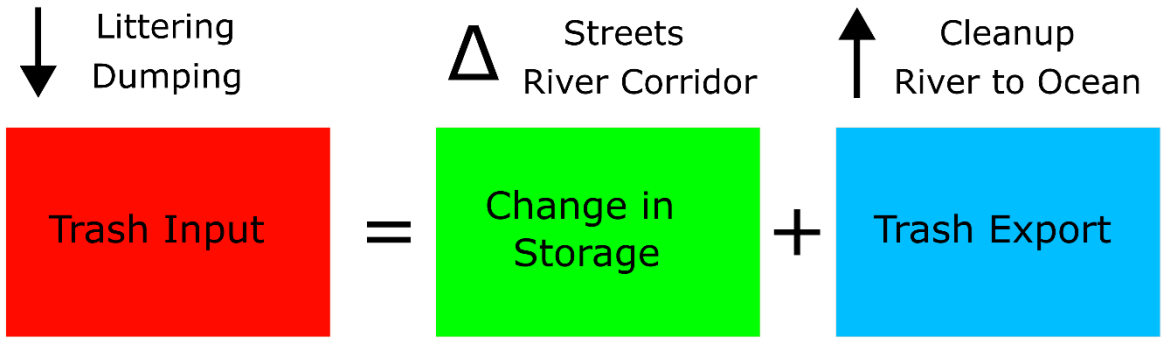


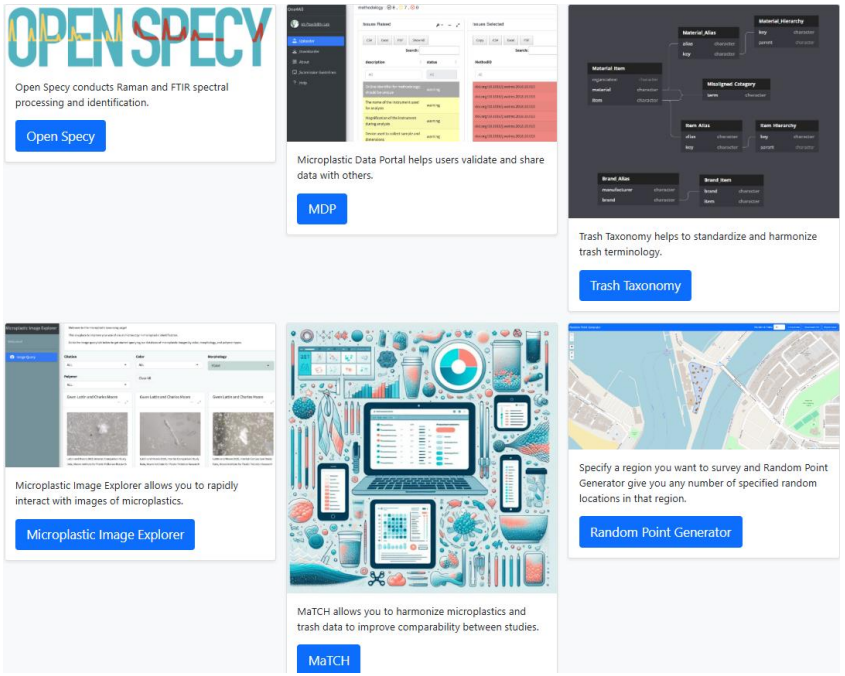
Community

Study Details: Methodology, Model Creation and Dissemination

1. Develop a model to predict trash fluxes throughout the watershed.
2. Create an online portal for community, managers, and policy makers to:

a. Plan for new BMPs
b. Assess the efficacy of current BMPs

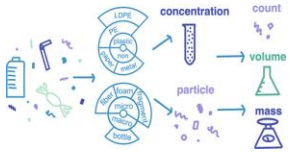




www.openanalysis.org

Study Details: Regional Collaboration and Similar Studies

We publish peer reviewed research on California trash including roadside trash in the Inland Empire (Cowger et al. 2021), and river trash in Pinole, CA and Riverside, CA (Cowger et al. 2022 and 2023).



Developed a framework for harmonizing trash data (Hapich et al., 2024).

Currently leading the Trash Data Subcommittee of the California Water Quality Monitoring Council.

We will be tracking a road dust study and a river microplastic study as they are the most closely related.

Cost & Schedule

Phase	Description	Cost	Completion Date
Pre-Study and Work Planning	Creating TAC, conducting first site visits, aggregating available data	$111,667	06/30/2027
Study Implementation	Surveying sites, compiling requestable data	$227,333	06/30/2029
Post-Study	Report writing, dissemination of results	$53,667	06/30/2030
TOTAL		**$392,667**	**06/30/2030**

- Costs are per WASC
- Project from 2026-2030
- In-kind facility rent of $240,000 from Moore Institute is included in the cost estimate

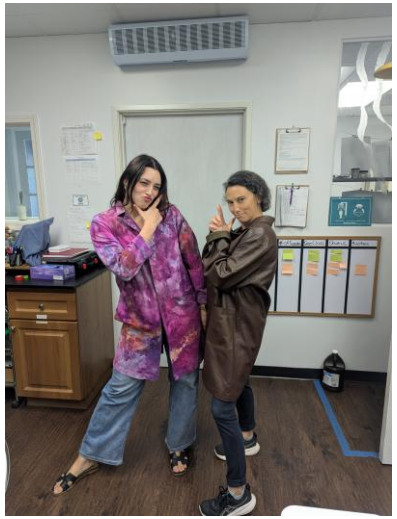
Funding Request

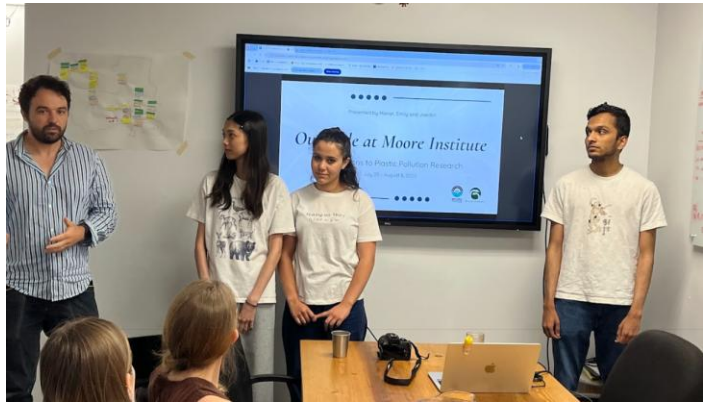
WASC	Year 1	Year 2	Year 3	Year 4
CSMB	105,000	107,000	107,000	47,000
LLAR	105,000	107,000	107,000	47,000
LSGR	105,000	107,000	107,000	47,000
NSMB	105,000	107,000	107,000	47,000
RH	105,000	107,000	107,000	47,000
SCR	105,000	107,000	107,000	47,000
SSMB	105,000	107,000	107,000	47,000
ULAR	105,000	107,000	107,000	47,000
USGR	105,000	107,000	107,000	47,000
TOTAL	**945,000**	**963,000**	**963,000**	**423,000**

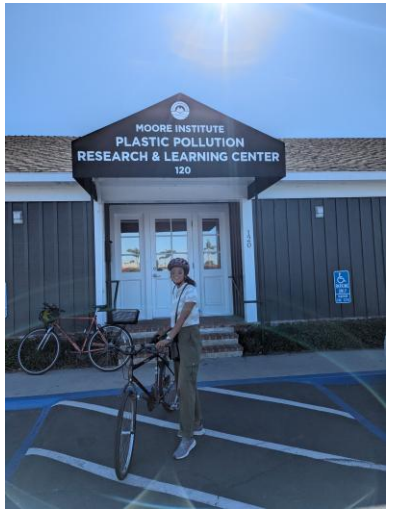
Summary of Benefits

- **Scientific:**
  - New dataset on roadside litter accumulation rates.
  - Watershed litter model.
  - 9 scientific presentations per participating Watershed Area.
  - 1-2 peer-reviewed manuscripts per participating WASC.
- **Management and Community:**
  - Data and management recommendations report delivered to each WASC.
  - Web application for management and public understanding of the results.
  - Two paid local young adult field crew members per WASC.
  - Wayfinder Society Action, an online research methodology training module.
  - Social media release of major findings and coverage of the work.
  - Up to 5,400 lbs of litter removed from the streets per WASC.

Questions?







Dr. Win Cowger