



San Mateo County Litter Characterization Study

Phase I Preliminary Draft Results

Litter Work Group Roundtable

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Presentation Outline

- Background & Purpose of Study
- Scope and Design
- Monitoring/Assessment Methods
- Results (Draft – *Do Not Cite*)
- Conclusions & Recommended Next Steps

Background

Litter (Trash) Sources & Pathways



Background

Stormwater as a Trash Pathway

- Trash is deposited onto impervious areas
- Runoff/wind transports trash to storm drain systems
- Stormwater transports trash through systems to local waterways
- **Municipal Regional Stormwater Permit (MRP)**
 - Reduce trash in stormwater by:
 - 90% : July 2023
 - 100% : July 2025
 - Install full capture devices or reduce trash on streets/sidewalks/parking lots to consistently low levels via source controls



Purpose of Phase I Litter Characterization Study

- Evaluate the effectiveness of existing source controls (ordinances) in San Mateo County in reducing trash in stormwater
- Identify the types and quantities of commonly littered items in San Mateo County to inform future (expanded) source controls
 - Sets baseline (pre-ordinance)

Trash Source Control Ordinances in San Mateo County (www.smcsustainability.org/waste-reduction/foodware)			
City/County	Single-use Carryout Plastic Bag Ordinance	EPS Food Service Ware Ordinance	Single-use Food Service Ware Ordinance
Atherton	X	X	X
Belmont	X	X	X
Brisbane	X	X	X
Burlingame	X	X	X
Colma	X	X	X
Daly City	X	X	X
East Palo Alto	X		
Foster City	X	X	X
Half Moon Bay	X	X	X
Hillsborough	X	X	X
Menlo Park	X		
Millbrae	X	X	X
Pacifica	X	X	X
Portola Valley	X		
Redwood City	X		
San Bruno	X	X	X
San Carlos	X	X	X
San Mateo (City)	X	X	X
San Mateo (County)	X	X	X
South San Francisco	X	X	X
Woodside	X		

Management Questions

1. Single-Use Carryout Plastic Bags and EPS Food Service Ware

- a) Extent & magnitude of items currently littered?
- b) Changes since ordinance implementation?



2. Disposable Food Service Ware

- a) What other types of disposable food service ware items are littered?
- b) What factors might affect the magnitude and/or extent of these littered items?



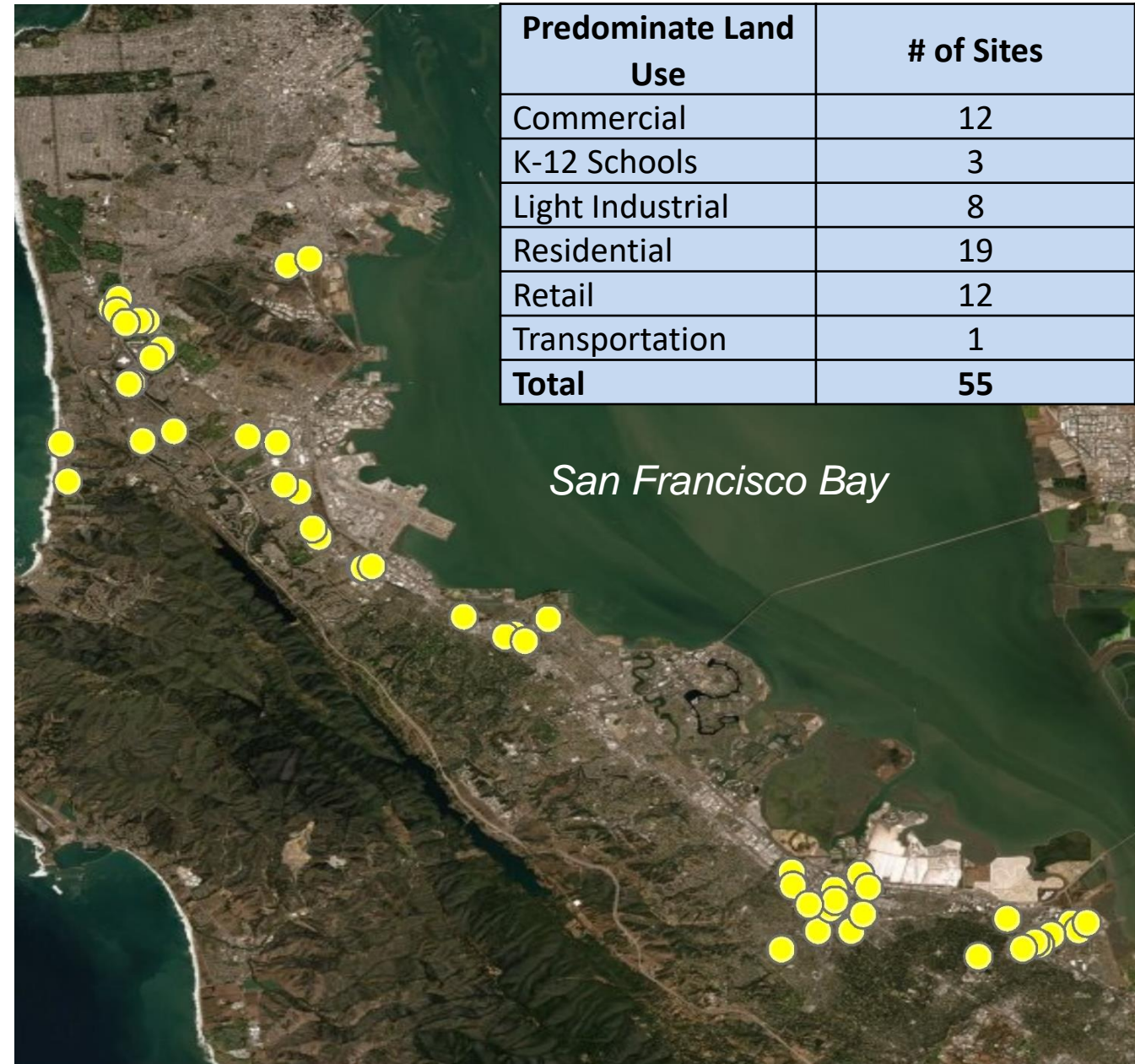
Study Scope and Design

- **Site:** 250-foot contiguous segment of public right-of-way
 - Streets & Sidewalks
 - Vegetated areas
- **Site Selection Criteria**
 - Currently assessed via SMCWPPP's OVTA assessment program
 - Data collected between July 2018 and November 2020
 - Moderate (B) to Very High (D) OVTA scores
 - Predominately drain residential, retail, or commercial land uses
 - Safe to monitor/assess



Monitoring Sites

City/County	# Sites
Burlingame	1
Colma	2
Daly City	9
East Palo Alto	7
Menlo Park	2
Millbrae	5
Pacifica	3
Redwood City	11
San Bruno	2
San Mateo (City)	4
San Mateo (County)	5
South San Francisco	4
Total	55

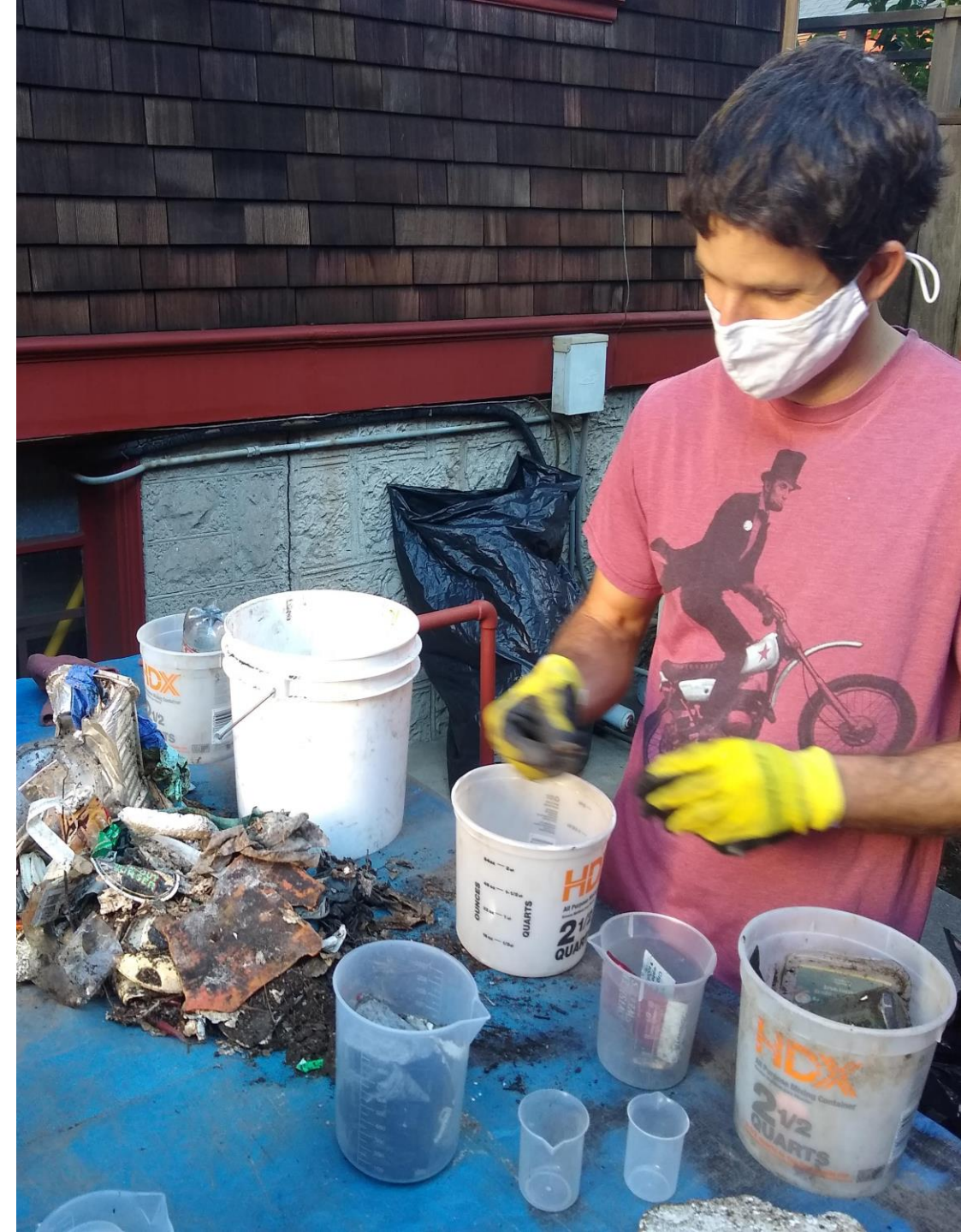


Monitoring Events & Methods

- Two events (108 total samples/assessments)
 - Wet Season (March 2021)
 - 55 sites
 - Dry Season (June 2021)
 - 53 sites due to construction and unsafe conditions
- Monitoring/Assessment Methods
 - Qualitative - On-land Visual Trash Assessment (OVTA)
 - Quantitative – Trash (anthropogenic items >5mm) collected and stored for characterization

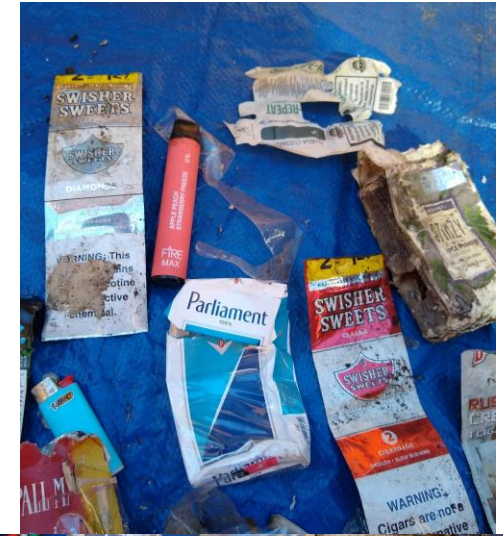
Litter Characterization

- October 2021
 - Characterization of trash from events #1 & #2
- Trash sorted into 19 categories & volumes measured
- Items & trash type (material) counted for 13 of 19 categories
- Standardized SOPs



Category #	Trash Category/Type	Item Count	Volume
A. Beverage Containers			
1	Recyclable Beverage Containers (CRV-labeled)	X	X
2	Beverage Containers (non CRV-labeled or Exempted)	X	X
B. Bags			
3	Single-use Carryout Plastic Bags with handles	X	X
4	Certified Plastic Reusable Grocery Bags	X	X
5	Plastic Bags without handles	X	X
6	Paper Bags	X	X
C. Food Service Ware			
7	Expanded Polystyrene (EPS) Food Service Ware	X	X
8	EPS Cup & Container Lids	X	X
9	Straws - Plastic, Paper, and Metal	X	X
10	Natural Fiber-Based Cups with Wax/Polyethylene/Plastic Coatings	X	X
11	Plastic Food Service Ware	X	X
12	Non-Plastic, Compostable Food Service Ware	X	X
13	Food Service Ware Accessories	X	X
D. Tobacco/Vape-Related Products			
14	Cigarette Butts		X
15	Tobacco Packaging & Wrappers		X
16	Vape Packaging, Cartridges & Accessories		X
E. Other Trash Types			
17	Other Plastic		X
18	Other Paper		X
19	Other Types of Trash (not plastic or paper)		X

Example Trash Categories



Preliminary Results

Preliminary – Do not Cite or Quote

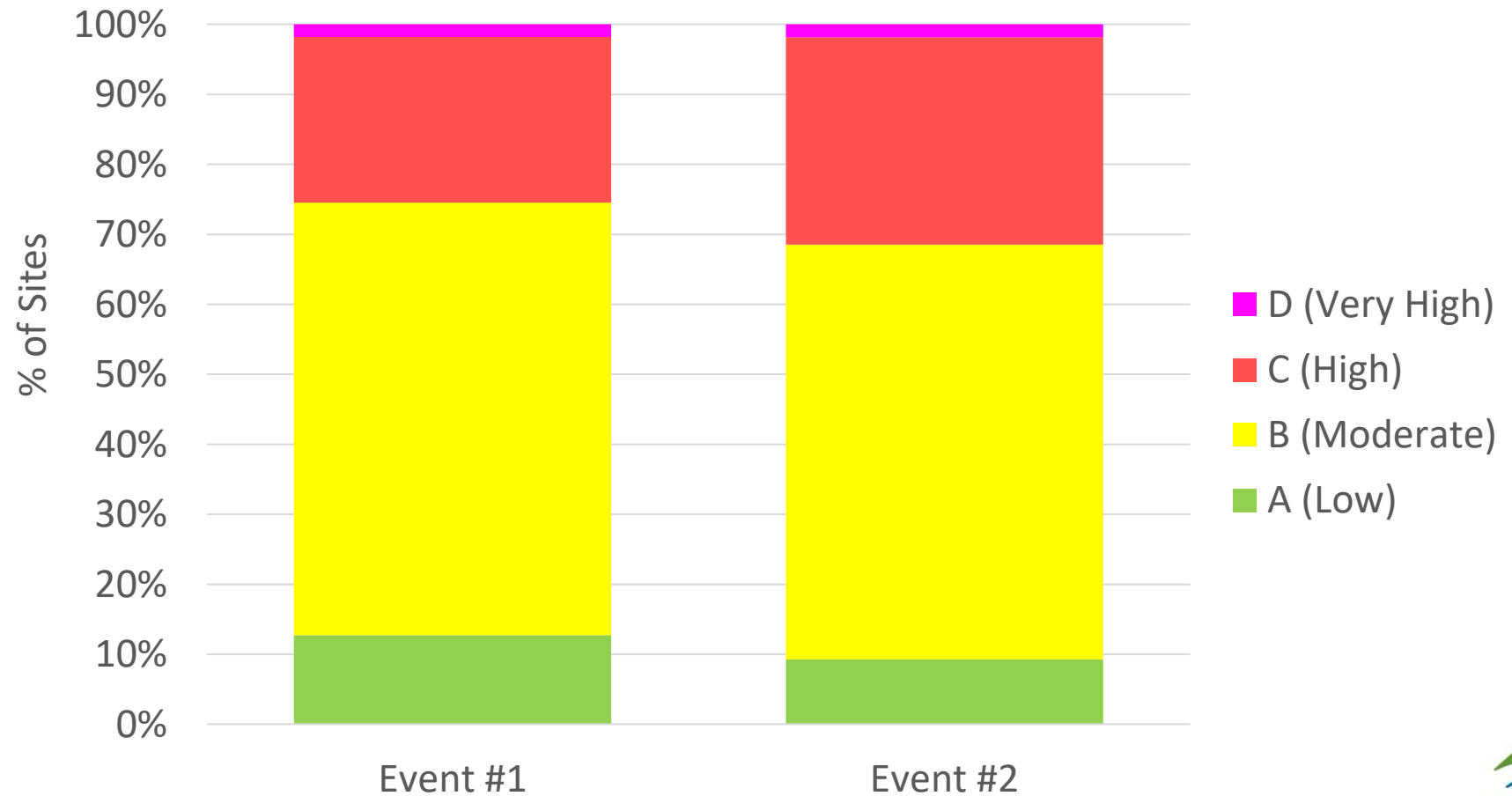
Accumulation Period & Rainfall Between Events

- Average accumulation period - 97 days
- No/limited loss of trash via stormwater runoff
 - Rainfall between events was negligible
 - No days with significant rainfall*

Statistic	Accumulation Period (Days)	Precipitation (Inches)
Maximum	105	0.37
75 th %	99	0.37
Median	97	0.20
Mean	97	0.25
25 th %	92	0.19
Minimum	91	0.17

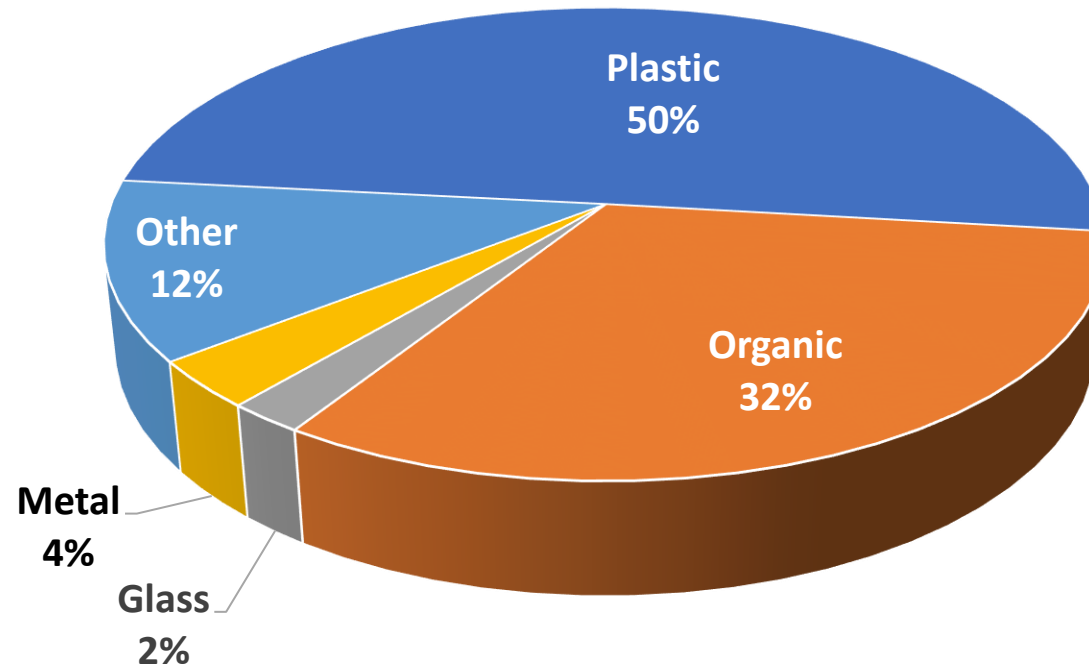
* Significant rainfall is > 0.25 inches of precipitation within a 24-hour period

Qualitative On-land Visual Trash Assessment (OVTA) Scores



Quantitative Monitoring Results

- ~ 184 gallons of trash collected and characterized
- 17% less trash volume in Event #2
- Aggregate plastic volume accounted for approximately 50% of all sampled trash

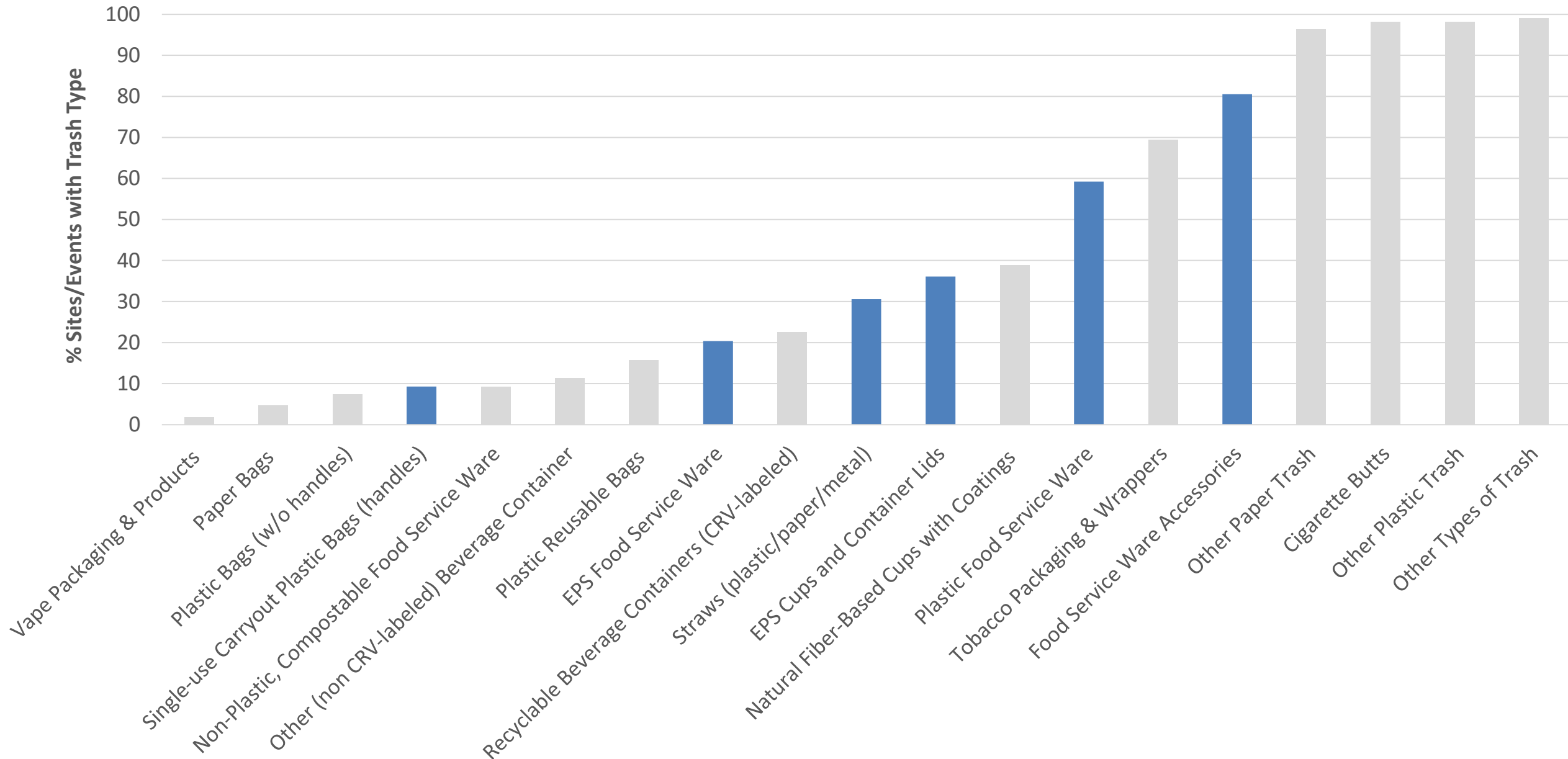


Ranking (All Trash Categories)	Trash Types	Total (Events 1 & 2)	
		Volume (gallons)	%
1	Other Plastic Trash	46.7	25.4%
2	Other Paper Trash	36.0	19.5%
3	Other Trash Types	21.8	11.8%
4	Beverage (CRV-labeled)	22.5	12.2%
5	Natural Fiber-Based Cups with Coatings	12.6	6.8%
6	Plastic Food Service Ware	11.1	6.0%
7	Food Service Ware Accessories	7.9	4.3%
8	Beverage (non CRV-labeled)	5.8	3.1%
9	EPS Cups and Container Lids	4.8	2.6%
10	Cigarette Butts	3.0	1.6%
11	Tobacco Packaging	2.7	1.5%
12	Single-use Carryout Plastic Bags (with handles)	2.0	1.1%
13	Plastic Reusable Bags	1.9	1.0%
14	EPS Food Service Ware	1.8	1.0%
15	Paper Bags	0.8	0.4%
16	Straws	0.8	0.4%
17	Non-Plastic, Compostable Food Service Ware	0.8	0.4%
18	Plastic Bags (w/o handles)	1.5	0.8%
19	Vape Products	0.1	0.0%
	Total	184.3	--

Categories Impacted by Trash Source Control Ordinances

Ranking	Trash Types	% of Total
Single-use Plastic Grocery Bags		
12	Single-use Carryout Plastic Bags (with handles)	1.1%
EPS Takeout Food Service Ware		
9	EPS Cups and Container Lids	2.6%
14	EPS Food Service Ware	1.0%
	Total	3.6%
Disposable Plastic Food Service Ware		
6	Plastic Food Service Ware	6.0%
7	Food Service Ware Accessories	4.3%
16	Straws	0.4%
	Total	10.7%

Trash Prevalence (Present at Site/Event?)



Conclusions

1. Single-Use Carryout Plastic Bags and EPS Food Service Ware

a) Extent & magnitude of items littered?

- a) EPS Food Service Ware – 3.6% of all trash (by volume)
- b) Single-Use Plastic Grocery Bags – 1.1% of all trash (by volume)

b) Changes since ordinance implementation?

Ordinance	Pre-Ordinance (storm drain)	Post-Ordinance (street/sidewalk)
Single-use Carryout Plastic Bags	8%	1.1%
EPS Food Service Ware, Cups, Lids	6%	3.6%

Conclusions

2. Disposable Food Service Ware

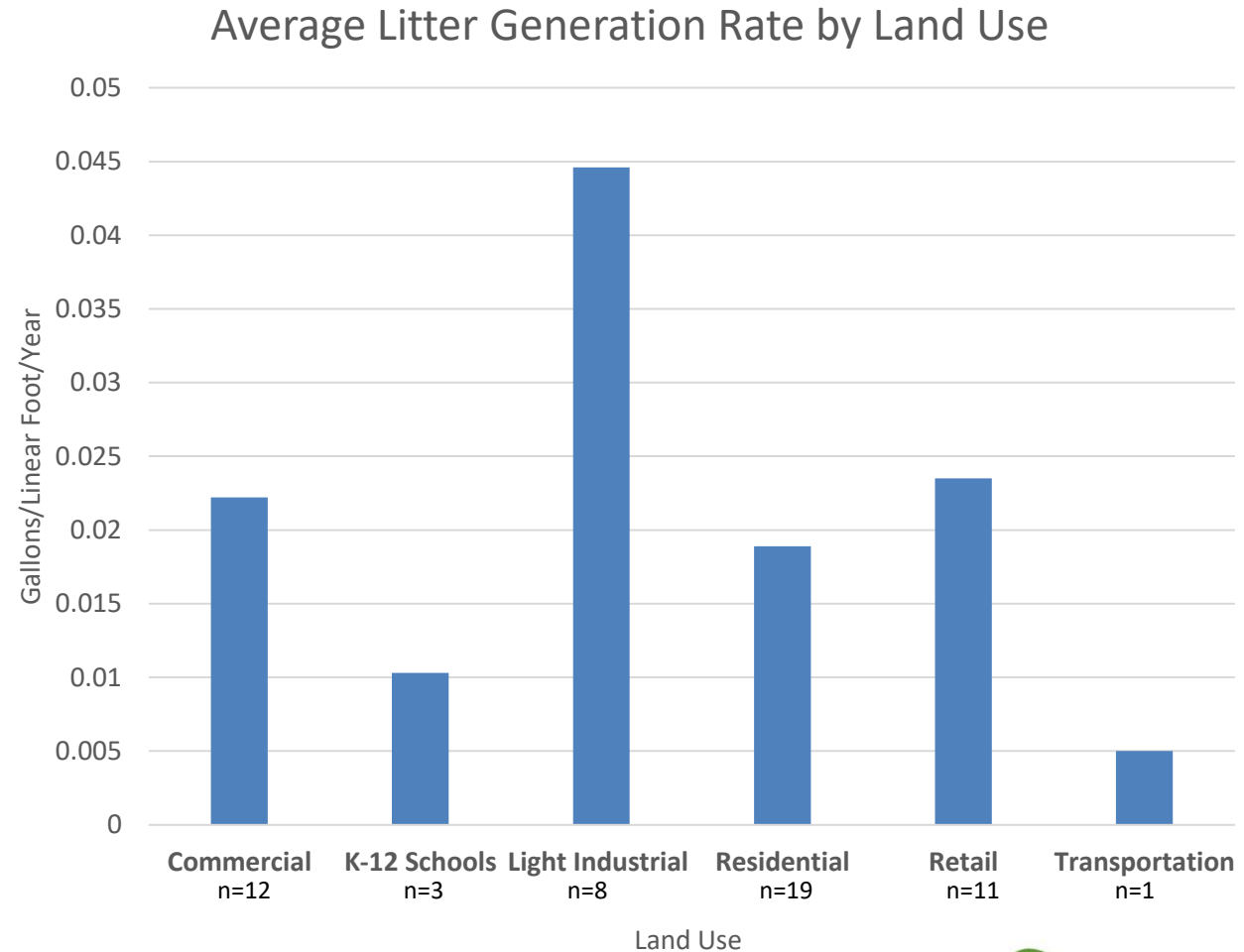
- a) What other types of disposable food service ware items are littered?
- **Food Service Ware** - bowls, plates, cups, trays, boxes, clamshells, and other containers
 - **Food Service Ware Accessories** - stirrers, cup spill plugs, cup sleeves, condiment packets, eating utensils (including chopsticks), cocktail sticks/picks, toothpicks, cardboard cartons, and other similar accessory or accompanying food service ware containers



Conclusions

2. Disposable Food Service Ware

- a) What other types of disposable food service ware items are littered?
- b) What factors might affect the magnitude and/or extent of these littered items?



Recommended Next Steps

- **Finalization of Phase I Report**
 - Draft for Review in early September 2022; Final late Sept
- **Tracking New Disposable Food Service Ware Source Control Ordinances Implementation**
- **Planning for Litter Characterization Study – Phase II**
 - Post Implementation Evaluation

Special Thanks to the EOA Team!



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