CITY OF HAYWARD

Hayward City Hall
777 B Street
Hayward, CA 94541
www.Hayward-CA.gov

CITY OF
HAYWARD
HEART OF THE BAY

Agenda

Monday, May 8, 2023

5:30 PM

Hybrid/Conference Room 2A

Council Sustainability Committee

NOTICE: The Council Sustainability Committee will hold a hybrid meeting in Conference Room 2A and virtually via Zoom.

How to submit written Public Comment:

Send an email to erik.pearson@hayward-ca.gov by 1:00 p.m. the day of the meeting. Please identify the Agenda Item Number in the subject line of your email. Emails will be compiled into one file, distributed to the Council Sustainability Committee and City staff, and published on the City's Meeting and Agenda Center under Documents Received After Published Agenda.

How to provide live Public Comment during the Council Sustainability Committee Meeting:

There are three ways you can provide live public comments during the meeting:

1. Attend in person in Conference Room 2A in Hayward City Hall

2. Please click the link below to join the webinar:
https://hayward.zoom.us/j/81825401890?pwd=M2R1YnNVWndBRXBnQ1BkSXlZb0M5Zz09
Webinar ID: 818 2540 1890
Password: MAYCSC528@

3. Join by phone
US: +1 669 900 6833 or +1 646 931 3860
Webinar ID: 818 2540 1890
Password: 4548547717

CALL TO ORDER

ROLL CALL

PUBLIC COMMENTS

REPORTS/ACTION ITEMS

MIN 23-056	Approval of Minutes of the Council Sustainability Committee (CSC) Meeting Held on March 13, 2023
Attachments:	Attachment I Minutes from March 13, 2023

ACT 23-028 Litter Assessment by Litterati

Attachments: Attachment I Staff Report
Attachment II Litterati Final Report
Attachment III Cigarette Receptacles Pros & Cons

ACT 23-034 New Solid Waste and Recycling Franchise Agreement: Update on Implementation - Review and Comment

Attachments: Attachment I Staff Report

FUTURE AGENDA ITEMS

ACT 23-036 Proposed 2023 Agenda Planning Calendar: Review and Comment

Attachments: Attachment I Staff Report

ORAL REPORTS

COMMITTEE MEMBER/STAFF ANNOUNCEMENTS AND REFERRALS

ADJOURNMENT

Next Meeting: Monday, June 26, 2023 SPECIAL MEETING

File #: MIN 23-056

DATE: May 8, 2023

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT

Approval of Minutes of the Council Sustainability Committee (CSC) Meeting Held on March 13, 2023

RECOMMENDATION

That the CSC reviews and approves the March 13, 2023 CSC meeting minutes.

ATTACHMENTS

Attachment I March 13, 2023 Council Sustainability Committee Meeting Minutes

CITY COUNCIL SUSTAINABILITY COMMITTEE MEETING
Remote Participation – Digital Zoom Meeting
March 13, 2023
5:30 p.m.
MEETING MINUTES

CALL TO ORDER: Meeting called to order at 5:30 p.m. by Chair Márquez.

ROLL CALL:

Members:
Present
- Elisa Márquez /CSC Chair
- Angela Andrews, Council Member
- Julie Roche, Council Member

Staff:
- Alex Ameri, Director of Public Works
- Dustin Claussen, Assistant City Manager
- Erik Pearson, Environmental Services Manager
- Elisa Wilfong, WPSC Administrator
- Nicole Grucky, Sustainability Specialist
- Leigha Schmidt, Principal Planner
- Sierra Cannon, Climate Corps Fellow
- Linda Ko, Senior Secretary (Meeting Recorder)

PUBLIC COMMENTS

There were no public comments.

1. **Election of the Chair**

   Council Member (CM) Andrews nominated CM Márquez as Chair, seconded by CM Roche; approved unanimously.

2. **Approval of Minutes from the Council Sustainability Committee (CSC) Meeting Held on October 6, 2022**

3. **Approval of Minutes from the Council Sustainability Committee (CSC) Meeting on November 14, 2022**

   Chair Márquez moved items 2 and 3; items approved unanimously.

4. **Climate Action Plan - Draft Survey with Proposed Policies and Programs - Information and Discussion**
   (Item moved up from #5 to #4)

   Nicole Grucky, Sustainability Specialist, presented the informational report on the Climate Action Plan.

Public Comments

There were no public comments.

Committee Comments

CM Andrews expressed support for the survey but would like to see different terminology used in the response options, specifically not using "Do not Support" or anything that sounds negative and final. Erik Pearson, Environmental Services Manager, advised that responses can be revisited and revised.

CM Roche likes the idea of businesses creating a Transportation Demand Management (TDM) Plan but asked how tracking would be completed and what is the end goal expected; will the end goal justify the added staff time and other resources needed to implement ordinances? Mr. Pearson confirmed that it would take additional staff time to track programs and he would look into the ability to provide program information to the City via the business license process and other existing mechanisms. Mr. Pearson reiterated the goal of the program being to confirm that businesses do have some type of program in place to reduce single occupancy car use and for staff to collect that information and be able to assist in expanding their program, when possible.

CM Andrews asked to look into alternatives to shuttle services that would take residents and visitors from the BART stations to industrial areas, shopping centers and the Downtown.

She also asked that tree planting proactively focus on areas in need versus waiting for requests to be received from the public. Ms. Grucky advised that an existing action item is to assess canopy coverage. Once that study is completed, staff will be able to prioritize areas with greater needs to ensure the City is being equitable.

Chair Márquez thanked staff for their public outreach, being receptive to feedback and implementing that into the proposed actions. She feels staff is and has properly engaged the community. She asked if the feedback provided by the Committee was sufficient to move forward. Ms. Grucky requested confirmation on how the action items should be presented for ranking to Council; as Action Items or by Sector. The CSC confirmed that presenting by Sector makes more sense, and requested Council be given at least ten days to complete the survey due to competing priorities.

5. Options for Spending Energy Efficiency & Conservation Block Grant Funds - Information and Discussion
(Item moved from #6 to #5)

Erik Pearson, Environmental Services Manager, presented this informational report.

Public Comments

There were no public comments.

Committee Comments

CM Andrews clarified if the goal was to reduce as much emissions as possible and asked staff which actions would have the greatest effects. Mr. Pearson advised that the street lighting and retrofitting of existing buildings would provide long-term benefits, and that the goal is not just to reduce emissions but to follow the Department of Energy's suggestion to create project(s) that obtain long-term effects and benefit disadvantaged communities. Taking this into consideration, CM Andrews advised her preferences would be Project 3, Streetlight Conversation to LEDs and Project 4, EV charging at City Facilities; however, she would like to see this expanded to add EV charging stations for public use at other locations throughout the City and not just the Downtown and surrounding areas. She asked if on-street charging could be considered, to which Mr. Pearson advised that it is difficult due to equipment placement and locating property the City has control of is challenging, but he would research further.

CM Andrews asked if battery storage was included in Project 5 for solar projects or EV charging stations. Mr. Pearson confirmed that battery storage can be included in solar projects, but there are no specific solar projects working at this time. He did note that most solar projects being proposed do include battery storage.

CM Roche asked if we could partner with other agencies, such as Block Power and EBCE to complete the existing building retrofits, since the City has already had those discussions, versus using this funding. Mr. Pearson advised that the existing roadmap would provide for approximately $200,000 towards charging stations and will partner with agencies like EBCE and BayREN; however, those funds would be depleted with the install of two EV charging stations.

CM Roche asked if Project 2, Existing Home Electrification Roadmap would help us meet our long-term goal. Chair Márquez asked if partnering with Habitat for Humanity would allow for screening to electrify homes for families with existing medical conditions. Not violating HIPPA, would we be able to identify families with medical needs. Mr. Pearson advised that Habitat for Humanity already has homeowners that have been vetted in their queue. In addition, staff would investigate further the possibility of working with the local health community to identify candidates. Chair Márquez was very interested in this option.

Chair Márquez asked for additional EV chargers to be installed in the basement garage at City Hall and to ensure the existing chargers are always functioning correctly.

Mr. Pearson asked for specific direction from the CIC on the projects to present to Council. The CIC recommended Project 2, Existing Home Electrification Roadmap (priority), and Project 3, Streetlight Conversion to LEDs, be presented to Council for their consideration.

6. Draft Hazards Element Update - Information and Discussion
(Item moved from #3 to #6)

Erik Pearson, Environmental Services Manager, presented this report.

Public Comments

There were no public comments.

Committee Comments

CM Andrews asked if the City could partner with CalTrans for any interchange projects. Director Ameri advised that Caltrans currently has four interchange projects that all have environmental best practices in place such as installation of bike and pedestrian access, tree trimming and trash capture devices. Director Ameri also advised of a trash capture device being installed at Tennyson Avenue in conjunction with Caltrans.

CM Roche asked about future plans to plant additional trees. She is concerned with residential areas near freeways and roadways where particles are kicked-up constantly into the air and cause additional concerns to residents with respiratory concerns. Director Ameri took note of her concerns and advised he would research further.

CM Roche also asked to continue to implement the Recycled Water Program to keep the City resilient during drought situations. Director Ameri updated the Committee of the success of Phase I of the Recycled Water Program that has been providing service to thirty industrial customers since March 2022. Due to inquiries from customers interested in recycled water for industrial cooling use, the City is working to expand the plan to implement Phase 2 and will also work to create a detailed Recycled Water Master Plan. The City is looking into expanding treatment capacity, distribution pipelines and pumping.

CM Roche asked to confirm that staff worked with the Fire Department and used Zonehaven as a tool for traffic reporting during emergency evacuations. Leigh Schmidt, Principal Planner, confirmed Zonehaven was used as a basis in coordination with the Fire and Police Departments. She explained that Zonehaven is an app that provides traffic information during emergency response situations.

Chair Márquez thanked staff for their comprehensive response to Save the Bay and for including it in the Plan. She asked if any responses had been received. Mr. Pearson said he had not received a response but would contact them. She also expressed her concern for hillside road evacuations and asked if access points have been reviewed. Director Ameri explained that Public Works is working with the Fire Department to allow access to the closed end of Highland Blvd within the next twelve months.

7. Stormwater Ordinance Amendments Related to Municipal Regional (Stormwater) Permit-MRP 3.0 - Discussion and Recommendation to Council

Elisa Wilfong, WSC Administrator, presented the report.

Public Comments

There were no public comments.

Committee Comments

CM Andrews asked if areas of high trash reporting can be targeted and assessed for trash capture needs. Ms. Wilfong confirmed that yes, the WPSC already has a robust inspection program, they do target areas that they receive complaints, and this program will further assist in addressing the needs of those high priority areas.

CM Roche asked if the vacant site where Kmart was located already has trash capture device installed. Ms. Wilfong advised that she is not aware of one currently, but staff will be assessing that site.

The item was moved by CM Roche and seconded by CM Andrews and approved unanimously, for recommendation to Council.

8. Proposed 2023 Agenda Planning Calendar

Mr. Pearson introduced the Go Green Initiative to the Committee, advised of discussions with HARD to host a compost giveaway at the Hayward Community Gardens, and other topics that will be returned to the CSC.

Chair Márquez asked that an annual report on EBCE be brought to the Committee to update on work completed within that last year. CM Andrews asked staff to please look at condiment packets that are being distributed with takeout orders; she asked that business be reminded that they should be added by request only and not automatically.

COMMITTEE MEMBER/STAFF ANNOUNCEMENTS AND REFERRALS:

Mr. Pearson shared preliminary plans to add a transformer and EV chargers to the Cinema Parking Structure that will allow for up to twelve EV vehicles to charge at once.

Mr. Pearson advised that the new WMAC agreement went into effect March 1 with replacement of carts to be completed within eight weeks, with outdated carts being recycled.

He also announced that the July CIC meeting will be rescheduled to June due to Council Recess.

ADJOURNMENT: 7:12 p.m.

		MEETINGS		
Attendance	Present 03/14/23 Meeting	Present to Date This Fiscal Year	Excused to Date This Fiscal Year	Absent to Date This Fiscal Year
Elisa Márquez	✓	2	0	0
Angela Andrews	✓	1	0	0
Julie Roche	✓	1	0	0

File #: ACT 23-028

DATE: May 8, 2023

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT

Litter Assessment by Litterati

RECOMMENDATION

That the Council Sustainability Committee (CSC) reviews and comments on this report.

SUMMARY

In an effort to better understand Hayward's litter problem, staff worked with the global litter data science company, Litterati, throughout 2022. Litterati, selected the City of Hayward, alongside the cities of Memphis, TN and Norfolk, VA, to participate in a new pilot project, the City Fingerprint Project (CFP). CFP allows cities to take a data science approach to develop a composite litter baseline throughout the City. To do so, Litterati hired Litter Researchers to record observed litter at 300 locations across the City during three data collection periods (April, July, and September). Litterati staff then analyzed that data and compiled it into a litter assessment.

ATTACHMENTS

Attachment I Staff Report
Attachment II Litterati Final Report
Attachment III Cigarette Receptacles Pros & Cons

DATE: May 8, 2023

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT: Litter Assessment by Litterati

RECOMMENDATION

That the Council Sustainability Committee (CSC) reviews and comments on this report.

SUMMARY

In an effort to better understand Hayward's litter problem, staff worked with the global litter data science company, Litterati, throughout 2022. Litterati, selected the City of Hayward, alongside the cities of Memphis, TN and Norfolk, VA, to participate in a new pilot project, the City Fingerprint Project (CFP). CFP allows cities to take a data science approach to develop a composite litter baseline throughout the City. To do so, Litterati hired Litter Researchers to record observed litter at 300 locations across the City during three data collection periods (April, July, and September). Litterati staff then analyzed that data and compiled it into a litter assessment.

BACKGROUND

The City allocates significant resources to remove litter throughout the community, including eight full time employees dedicated to the street sweeping program and three full time employees dedicated to stormwater maintenance. The City's Keep Hayward Clean and Green Taskforce hosts clean-up events across the City throughout the year and Maintenance Services manages the Adopt-a-Block program. Altogether, the City spends more than $2 million per year on litter collection.

The City's new agreement with Waste Management of Alameda County (WMAC) took effect on March 1 this year. The agreement calls for new Big Belly trash and recycling receptacles to be located throughout the City. The information in this report will be used to help guide the placement of the new receptacles.

DISCUSSION

In an effort to better understand Hayward's litter problem, staff worked with the global litter data science company, Litterati, throughout 2022. Litterati, selected the City of Hayward, alongside the cities of Memphis, TN and Norfolk, VA, to participate in the CFP pilot. CFP allows cities to take a data science approach to develop a litter composite baseline throughout the City. To do so, Litterati hired Litter Researchers to record observed litter at 300 locations across the City during three seven-day data collection periods (April, July, and September). Litterati staff then analyzed that data and compiled it into a litter assessment (Attachment II).

The CFP measured two aspects of litter in each area: 1) Litter Composition (the general makeup of litter observed by the researchers) and 2) Litter Density (a normalized measurement of litter per square meter).

The main categories of litter found were: smoking, drink, and personal hygiene. The most identifiable pieces of litter were cigarette butts and bottle caps. The top ten identifiable objects in each data collection period are listed in Table 1 below.

Table 1: Most Common Identifiable Pieces of Litter

Spring	Summer	Fall
Cigarette butt: 2,923	Cigarette butt: 2,651	Cigarette butt: 2,445
Bottlecap: 450	Bottlecap: 421	Bottlecap: 459
Tissue: 313	Tissue: 350	Tissue: 308
Cup: 235	Bottle: 280	Cup: 248
Bottle: 231	Cup: 267	Bottle: 239
Facemask: 205	Facemask: 187	Facemask: 159
Label: 140	Lid: 157	Lid: 131
Can: 125	Straw: 148	Straw: 121
Straw: 122	Box: 126	Can: 103
Box: 119	Label: 113	Label: 102

Cigarette Litter

The State of California has prohibited smoking or using tobacco or cannabis related products on public school campuses and playgrounds. Council adopted the Smoking Pollution Control Ordinance 14-18 in 2014 and amended it with Ordinance 17-14 in 2017,[1] which prohibits smoking in public places (whether enclosed or unenclosed) and prohibits disposing of smoking waste within the boundaries of an area in which smoking is prohibited. Currently, the City has a contract with the Downtown Hayward Improvement Association to collect litter, including cigarette butts, in Downtown Hayward and a contract with the Downtown Streets Team to collect litter, including cigarette butts, in Downtown Hayward and along Tennyson Road. Despite these regulations and mitigation measures, cigarette butts were the most common piece of litter identified during all three litter research periods.

[1] https://library.municode.com/ca/hayward/codes/municipal_code?nodeId=HAYWARD_MUNICIPAL_CODE_CH5SAHE_ART6SMPOCO

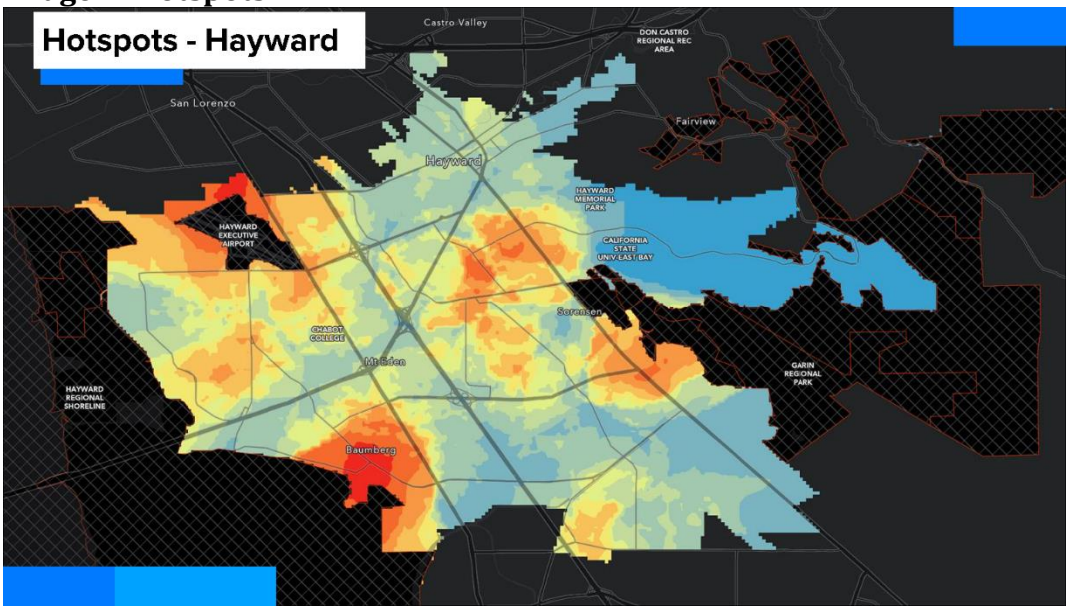
Other cities have used receptacles customized to collect cigarette butt litter to address this specific litter problem. The Ballot Bin is one customized receptacle that has proven to reduce cigarette butt litter by 46%.[2] The Cities of Pittsburgh, PA; Port of Seattle; and Redwood City, CA have all installed Ballot Bins (Image 1). The City of Pittsburgh funded their Ballot Bins through a Keep America Beautiful grant. Staff is seeking direction from the CSC on whether similar funding and pilot project should be pursued. The City of Hayward adopted a Smoking Pollution Control Ordinance in 2017 which in part states "smoking shall be prohibited in all facilities, areas, and vehicles owned, leased, operated, or controlled by the City of Hayward, and all such areas shall be subject to the provisions of this "Article". Placing the receptacles in the public right-of-way seems inconsistent with the City Ordinance. If there is support for installing Ballot bins in Hayward, staff would develop a plan for maintaining the bins, which would include emptying the bins, addressing potential vandalism, and updating the City's Smoking Pollution Control Ordinance . Staff is concerned that the receptacles may be considered unsightly and add to visual clutter. Furthermore, these devices can be yet another target for additional vandalism in public places. A list of pros and cons of cigarette receptacles can be found in Attachment III.

Image 1: Ballot Bin in Pittsburgh, PA

[2] https://ballotbin.co.uk/about/

Hotspots were identified, which can be viewed in Image 2, below. Most of the hotspots were found in medium to high density residential areas, as well as near the Hayward Executive Airport, Costco, and along Industrial Ave near the hills.

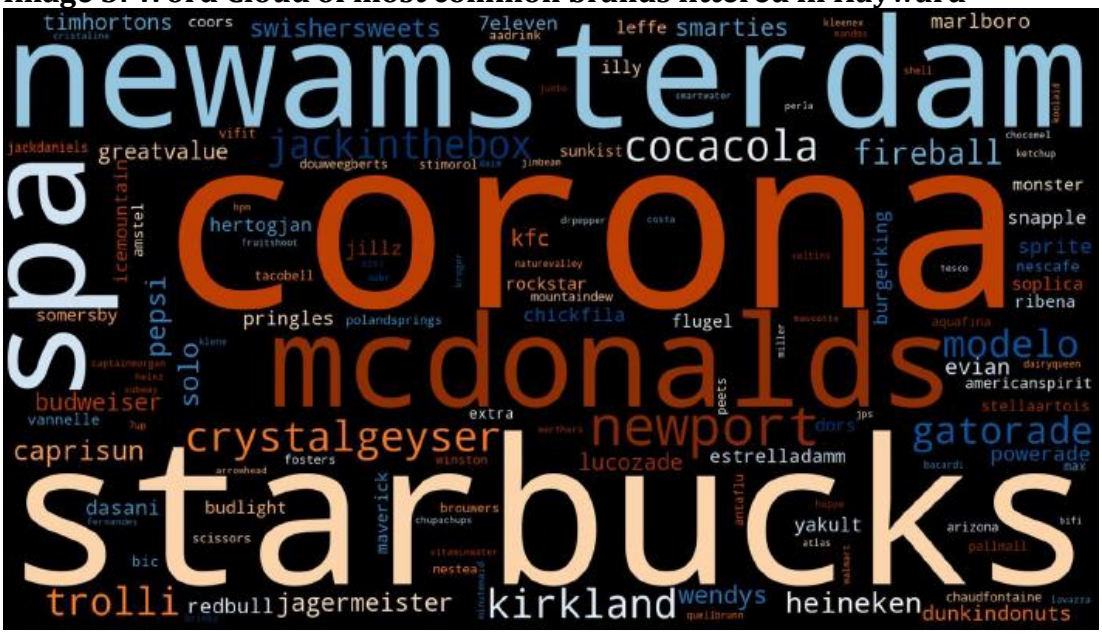
Image 2: Hotspots



The hotspots identified by the litter assessment confirm insight gathered from field staffs' on-the-ground observations.

Litterati technology is also able to read the labels on litter to associate with a brand. A word cloud (Image 3) was created to show the most common brands littered, which included Corona, Starbucks, and McDonalds.

Image 3: Word Cloud of most common brands littered in Hayward



City staff has layered Litterati's litter hot spot data with other City databases in ArcGIS, including City public litter cans. This data (Image 4 & 5) will help inform staff on possible causations of litter hot spots and identify mitigation strategies. For instance, litter hot spots that do not currently have a public litter can will be considered as locations for new public litter cans.

Image 4: Litter Hotspots vs. City Public Litter Cans

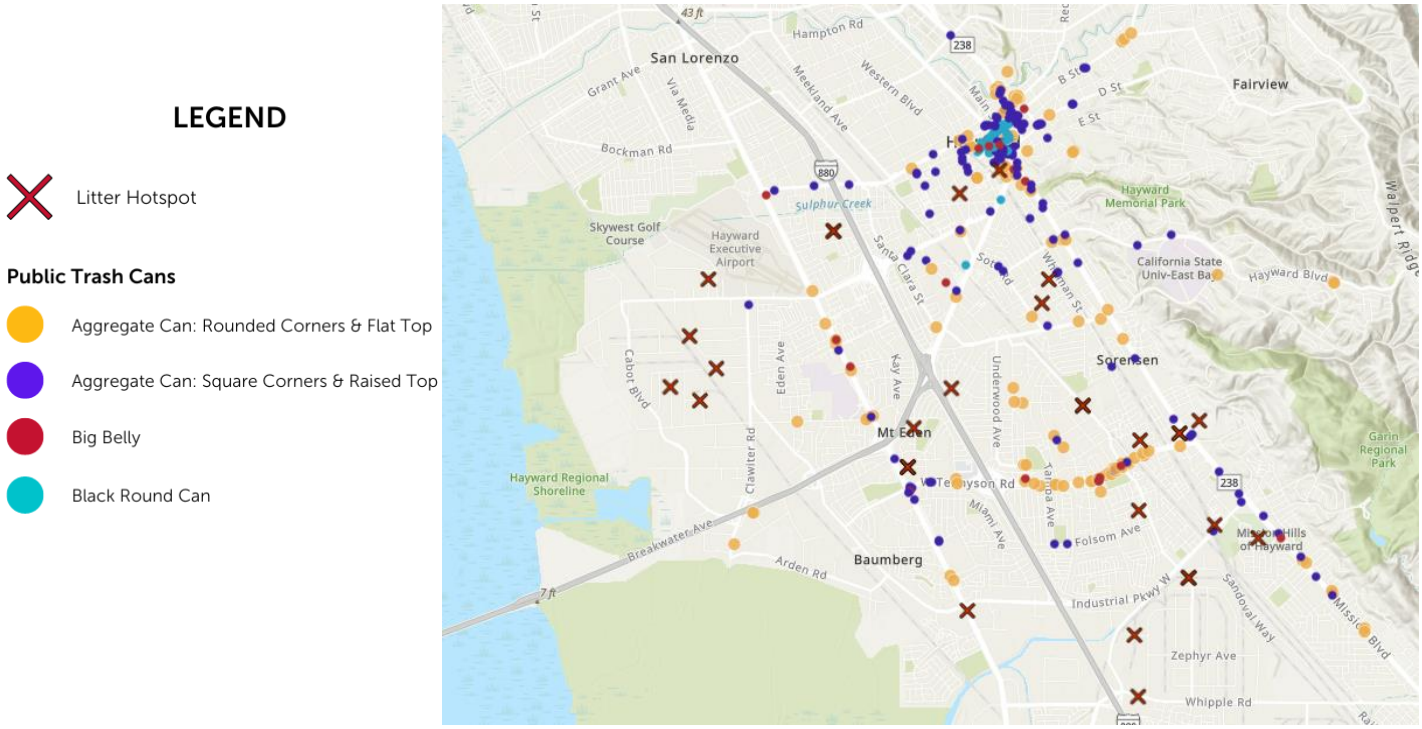
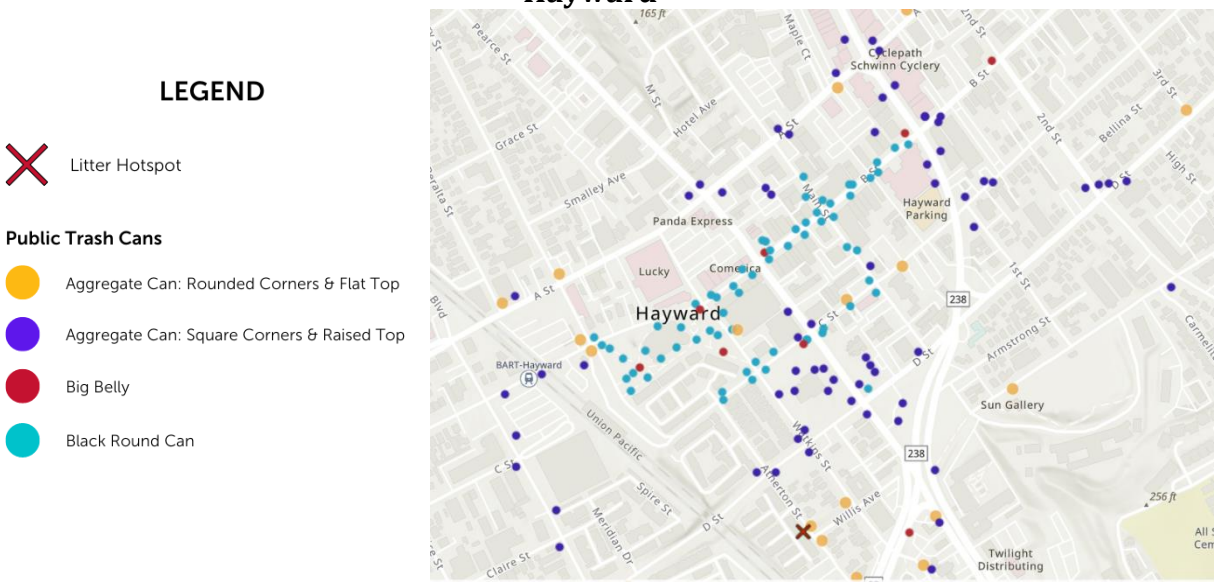


Image 5: Litter Hotspots vs. City Public Litter Cans – Zoomed in View of Downtown Hayward



Litterati's CFP has provided the City with baseline, science-based litter mapping. As staff implements mitigation measures, future litter mapping can be conducted to assess the effectiveness of the mitigation measures.

ECONOMIC IMPACT

According to a Keep America Beautiful Litter Cost Study,[3] litter clean-up costs the United States more than $11.5 billion each year, with businesses paying almost 80% of those costs. In addition to the hard costs associated with litter clean-ups, there are indirect costs of litter on the quality of life including property value, customers entering a business, and a new employer locating into a community.

FISCAL IMPACT

Participation in Litterati's CFP cost the City $1,875, which was paid for with Measure D funds. The majority of the project was covered by Litterati, who estimated the value of participation of the CFP at $50,000. The purchase of new public litter containers will be paid for through the agreement with WMAC.

STRATEGIC ROADMAP

This agenda item relates to the Strategic Priority of Confront Climate Crisis & Champion Environmental Justice. Specifically, this agenda item relates to the implementation of the following project:

[3] https://keeplouisianabeautiful.org/wp-content/uploads/2019/09/LitterinAmerica_ExecutiveSummary_Final.pdf

Project C11: Develop ordinance regulating single-use food ware in restaurants and coordinate with county-wide efforts.

AB 1276 eliminated the need for a local ordinance to regulate single-use food ware; however, it accelerates the need for the City to conduct outreach to ensure the City's restaurants are aware of the new requirements.

SUSTAINABILITY FEATURES

When trash is littered on the ground instead of being properly disposed of, it often ends up in storm drains, streams, and the Bay, which can affect water quality, endangers plants and animals, and pollutes the outdoors spaces that we depend on for recreation. By completing a litter assessment, staff can use the information reported to address litter hot spots and create programs and policies to reduce the amount of litter in Hayward and associated harm.

PUBLIC CONTACT

There has been no public contact for this agenda item.

NEXT STEPS

Staff will consider the information from the Litterati assessment, among other factors, to determine locations where new public litter cans may be installed. Staff intends to present the CSC with proposed locations for the new Big Belly trash and recycling receptacles at the May 2023 meeting.

Prepared by: Nicole Grucky, Sustainability Specialist
Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Public Works

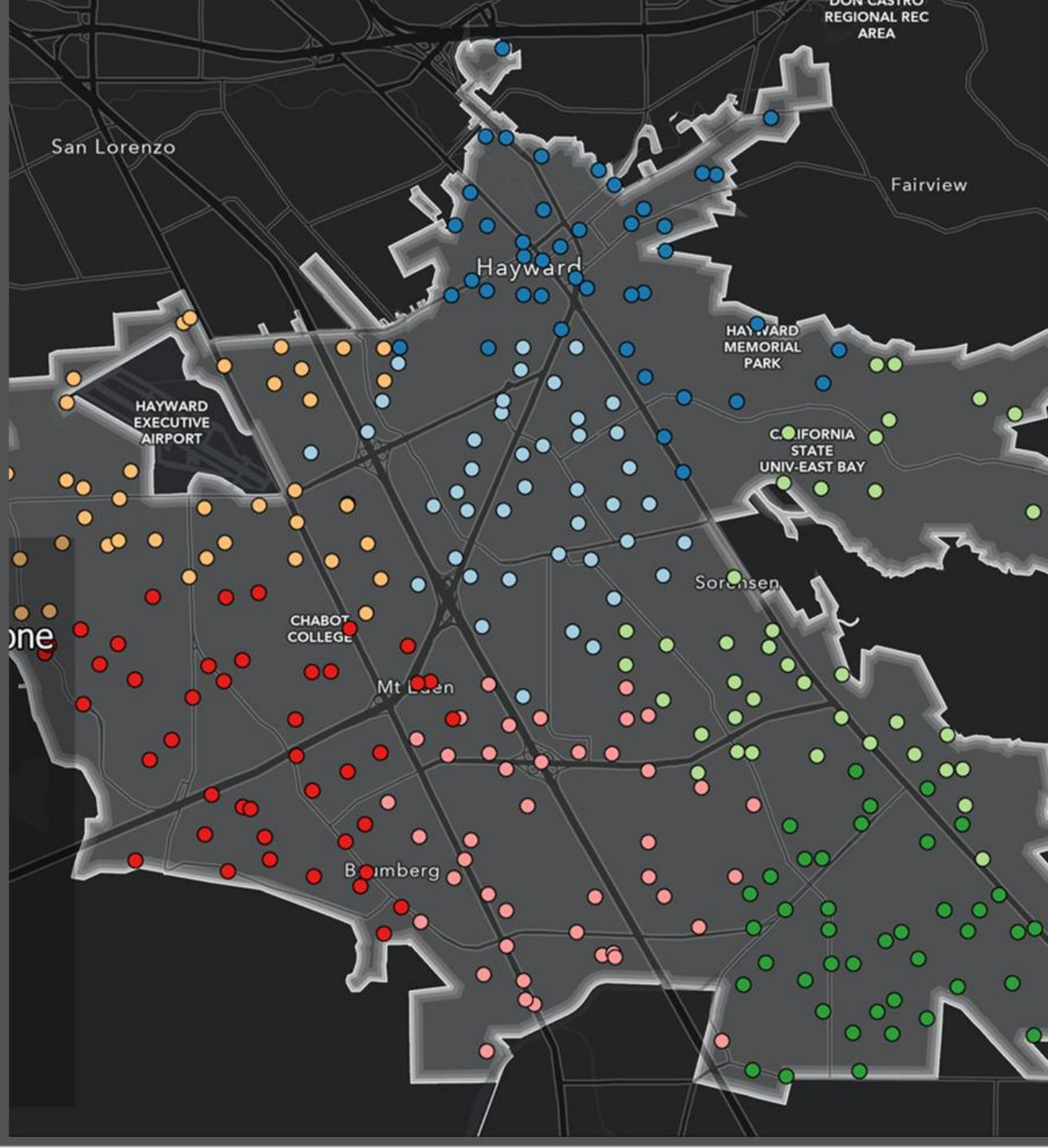
Approved by:

_____
Kelly McAdoo, City Manager

City Fingerprint Project

HAYWARD

City Fingerprint 2022



HAYWARD

“**Hayward is a data-driven city that prioritizes being clean and green.** I’m looking forward to seeing how the City Fingerprint Project can help us develop policies and practices to respond more quickly and efficiently to litter and illegal dumping hot spots.”

Mayor Barbara Halliday

INDEX

Executive Summary

Executive Summary - Project Overview

Overall context: Litterati will establish a litter fingerprint and baseline for each Study Area in the city.

Seasonality: To account for this, the baseline was carried out in Spring, Summer, and Fall.

The Study: Our research measured two aspects of litter in each area:

- Litter Composition*:
  - The general makeup of litter observed by our researchers.
- Litter Density:
  - A normalized measurement of litter per square meter in each study area.
  - This measurement will be denoted as Identifiable Litter per Meter (iLPM)

*Litter composition as determined by our taxonomy

Executive Summary - Project Overview

Study Objectives

- To determine the spatial concentrations of litter within each Study Area, we built a model that considers the effects of land-use type, proximity to places of interest, or demographic characteristics on litter density to extrapolate litter concentrations across the study area.
- Based on that, we utilized the Empirical Bayesian Kriging (EBK) method and Prediction tool in ArcGIS Pro to extrapolate a litter density map for each Study Area.

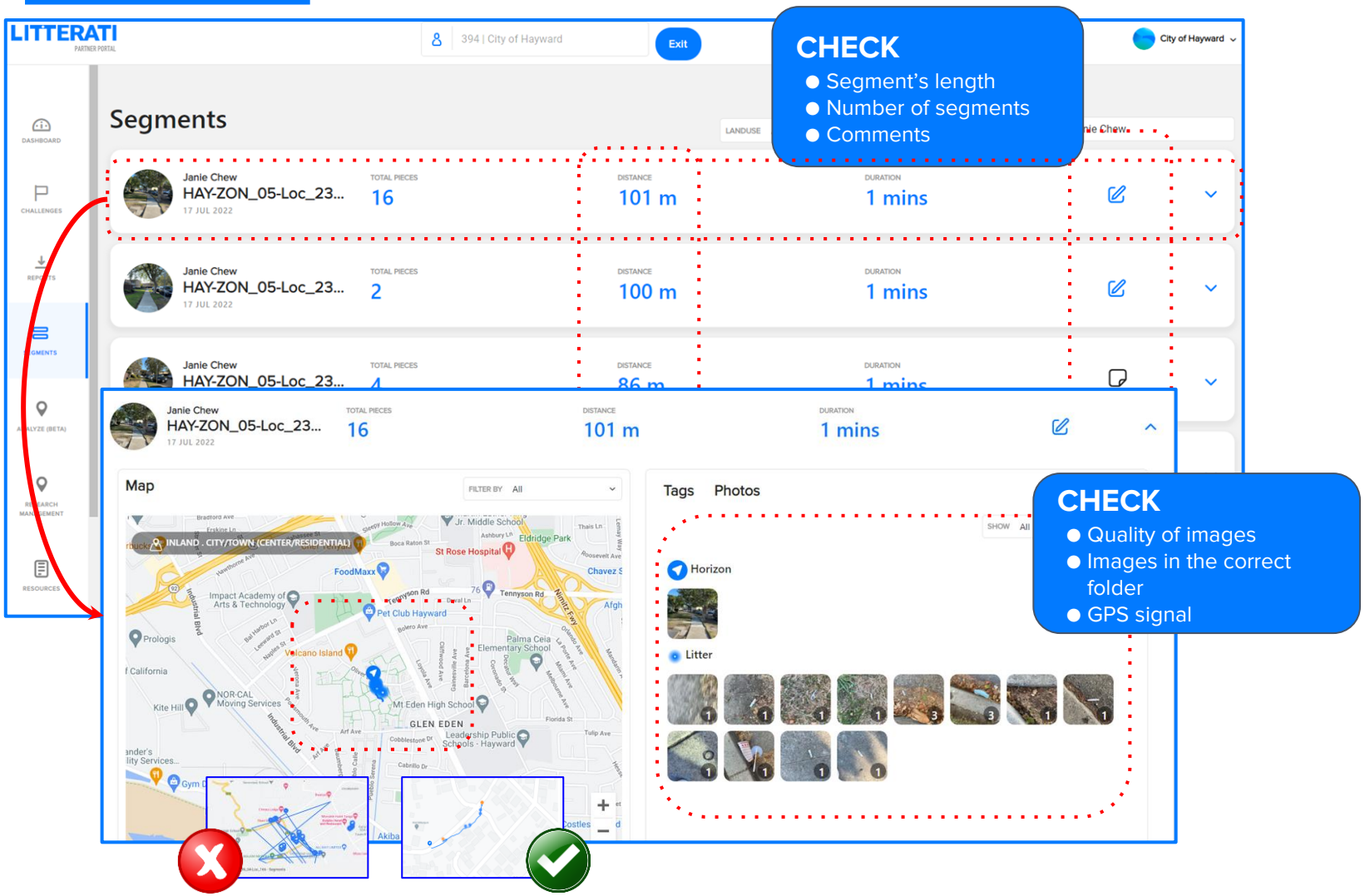
Executive Summary - Project Overview

Study Timeline

- Week long collection period
- One week QA period
- 300 locations per city

Phase 1	Phase 2	Phase 3
April 11- 18	**July 11-18**	**September 19-26**
10 Zones	**7 Zones**	**7 Zones**
30 Locations per zone	**43 Locations per zone**	**43 Locations per zone**

Executive Summary - QA Process and Results - Hayward*



Approved	Skipped / Rejected
252 (84%)	48 (16%)

Total Number of Sampling Locations: 300 per phase

Skipped / Rejected

- Locations not accessible
- Dangerous road/place

** Averaged approved/rejected over all 3 phases*

Executive Summary - QA Process and Results - All Cities*

Hayward

Approved	Skipped / Rejected
252 (84%)	48 (16%)

Memphis

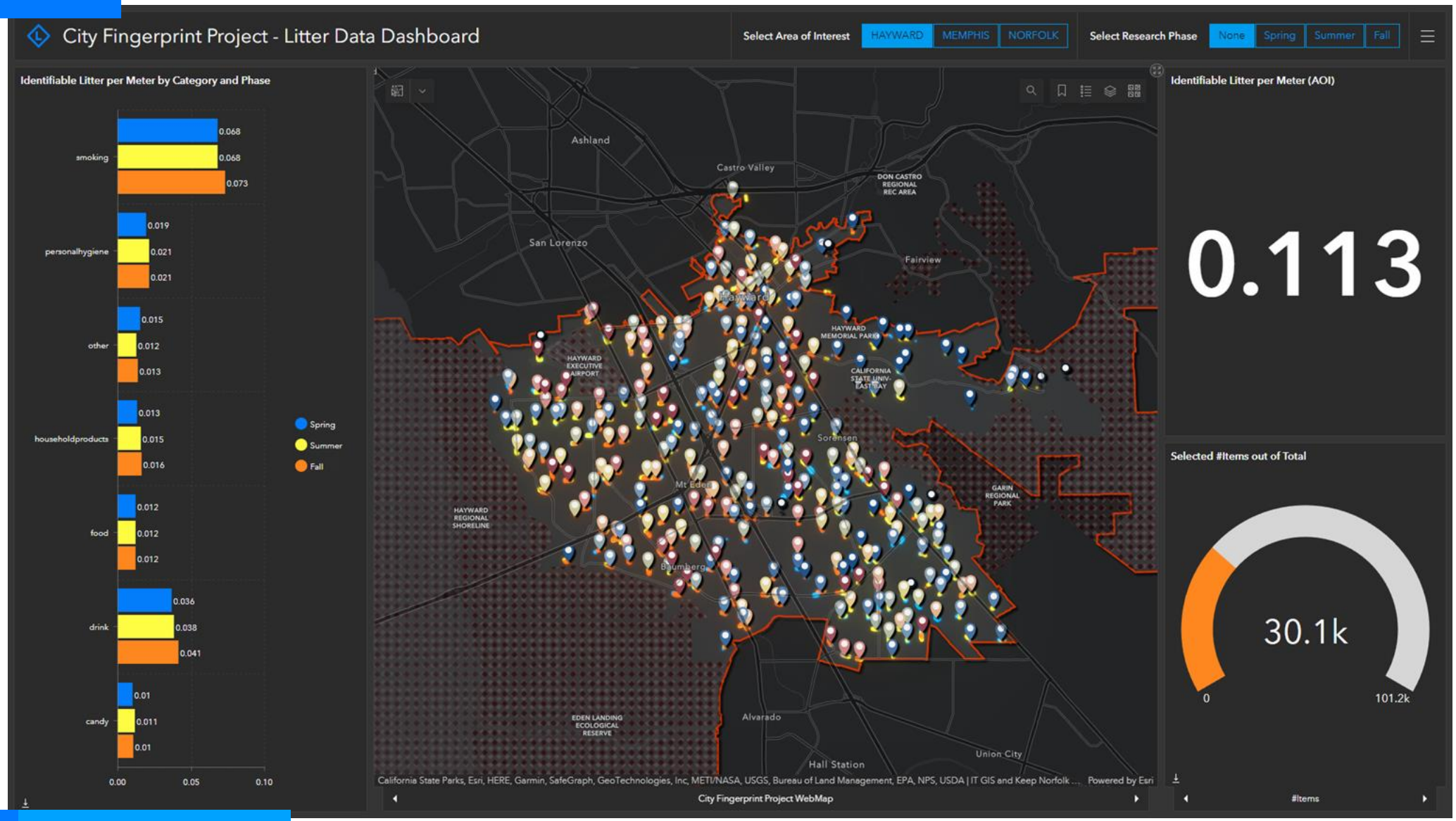
Approved	Skipped / Rejected
217 (72%)	83 (28%)

Norfolk

Approved	Skipped / Rejected
289 (96%)	15 (5%)

** Averaged approved/rejected over all 3 phases*

Executive Summary - City Fingerprint Dashboard*



** View Additional Statistics (e.g, Litter per Meter by Landuse/Demographics) on the [City Fingerprint Project - Dashboard.]*

Key Insights

Overall Litter: Key Descriptive Statistics

- Norfolk had the most items overall
- Memphis had the most weight and volume collected
- Hayward and Norfolk had a higher average of Identifiable Litter per Meter (iLPM), due to smoking related litter
- Drink items being larger, this increased the weight and volume significantly in Memphis

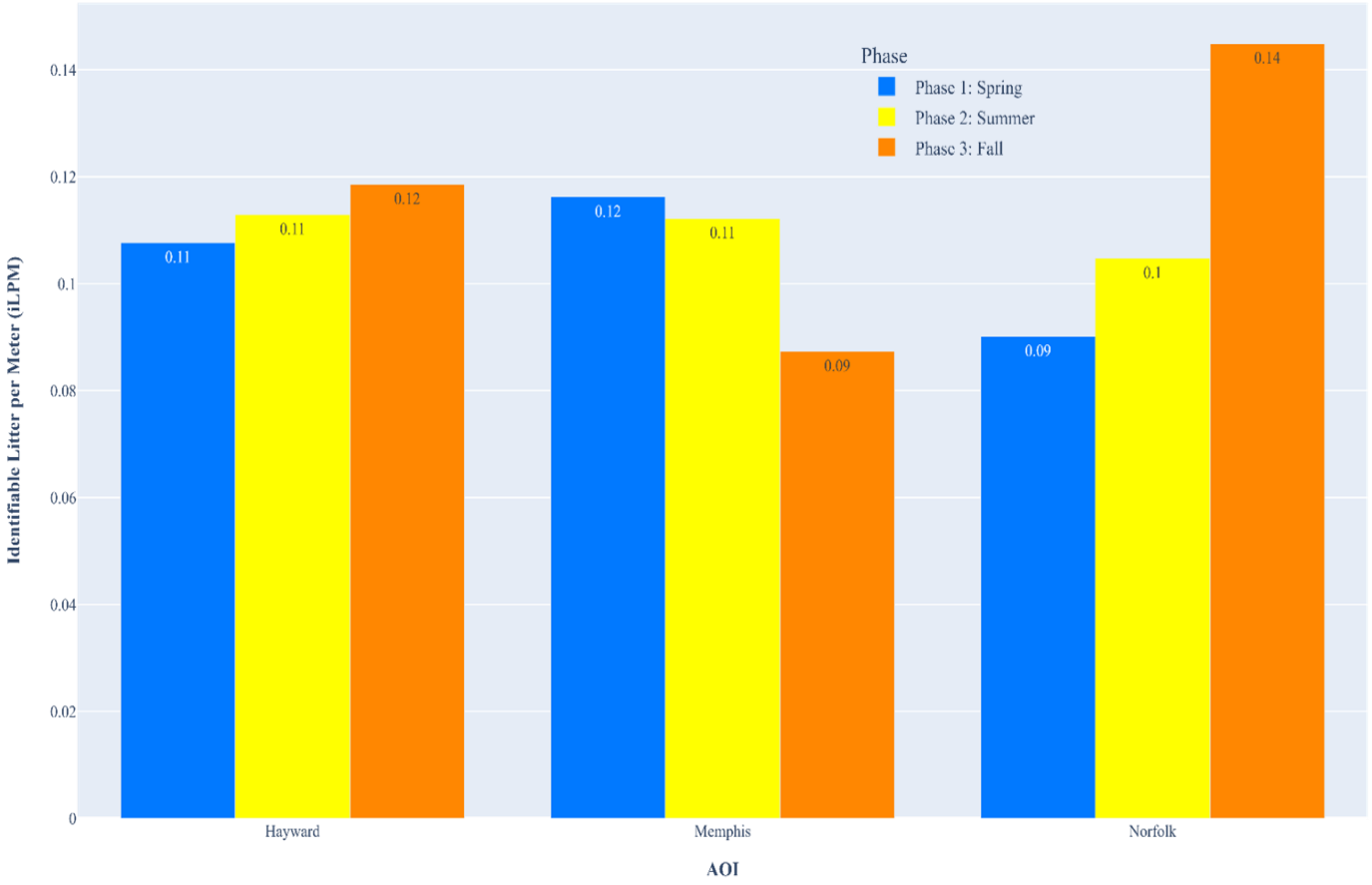
City	Average (iLPM)	#Items (Identifiable)	#Items (Unidentifiable)	Weight (grams)	Volume (milliliters)
Hayward	**0.113**	16,131	14,171	77,304	721,910
Memphis	0.105	12,713	16,429	**137,746**	**1,246,921**
Norfolk	**0.113**	**21,073**	**21,183**	107,031	1,160,556
Total	**0.111**	**49,917**	**51,783**	**322,181**	**3,129,837**

** Identifiable Litter per Meter (iLPM) is the average amount of litter our ML can identify per segment length (meters) in each city.*
*** Labeling confidence @0.78 - 0.86*

Key Insights - All Three Cities

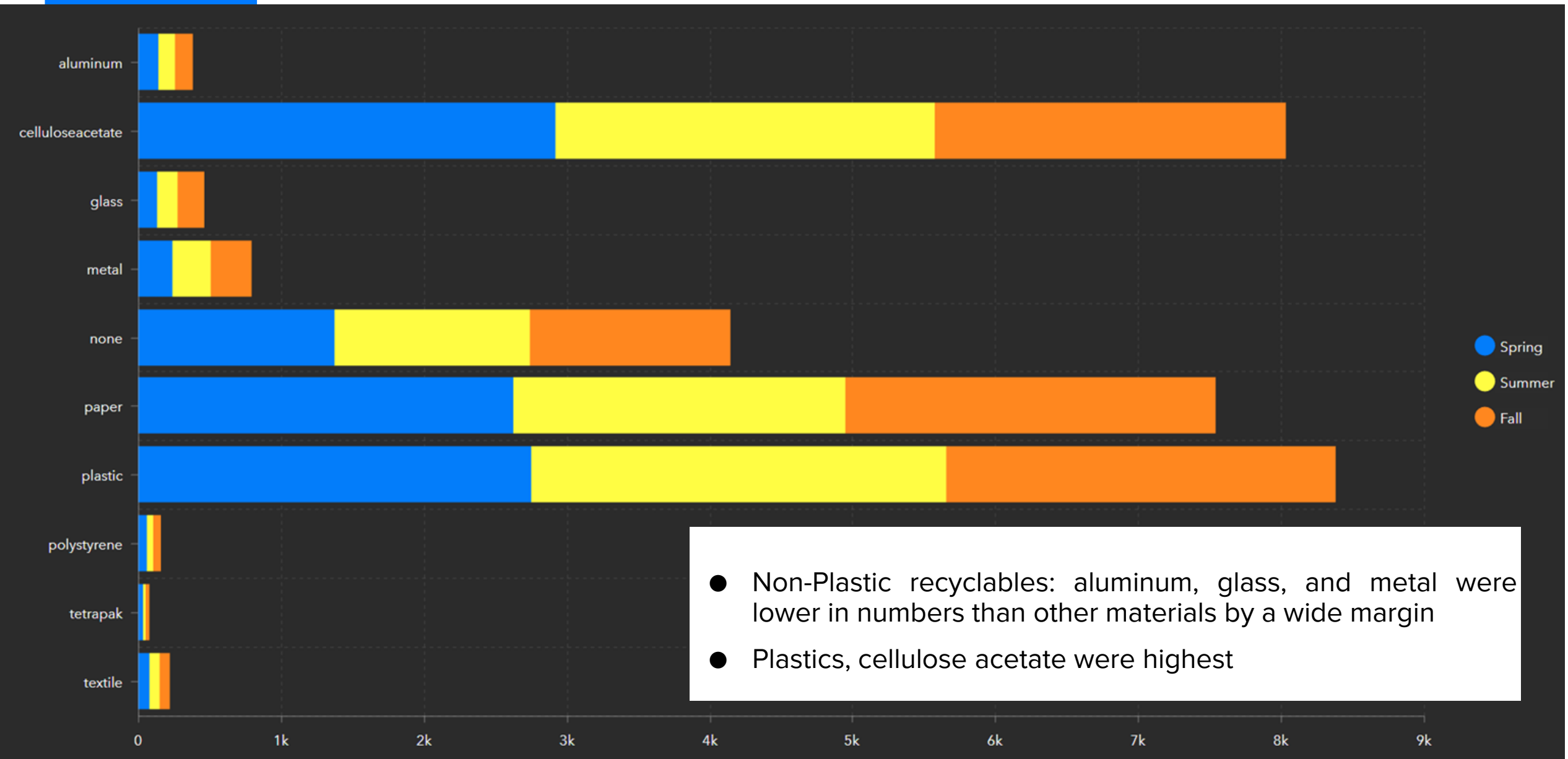
Insights Span all Three Study Periods

- Norfolk and Hayward had an increase of iLPM found over the three studies*
- For all three cities, the main categories found were
  - Smoking
  - Drink
  - Personal hygiene



*iLPM - Only litter that was identified, pieces were not counted

Key insights - Hayward - Materials



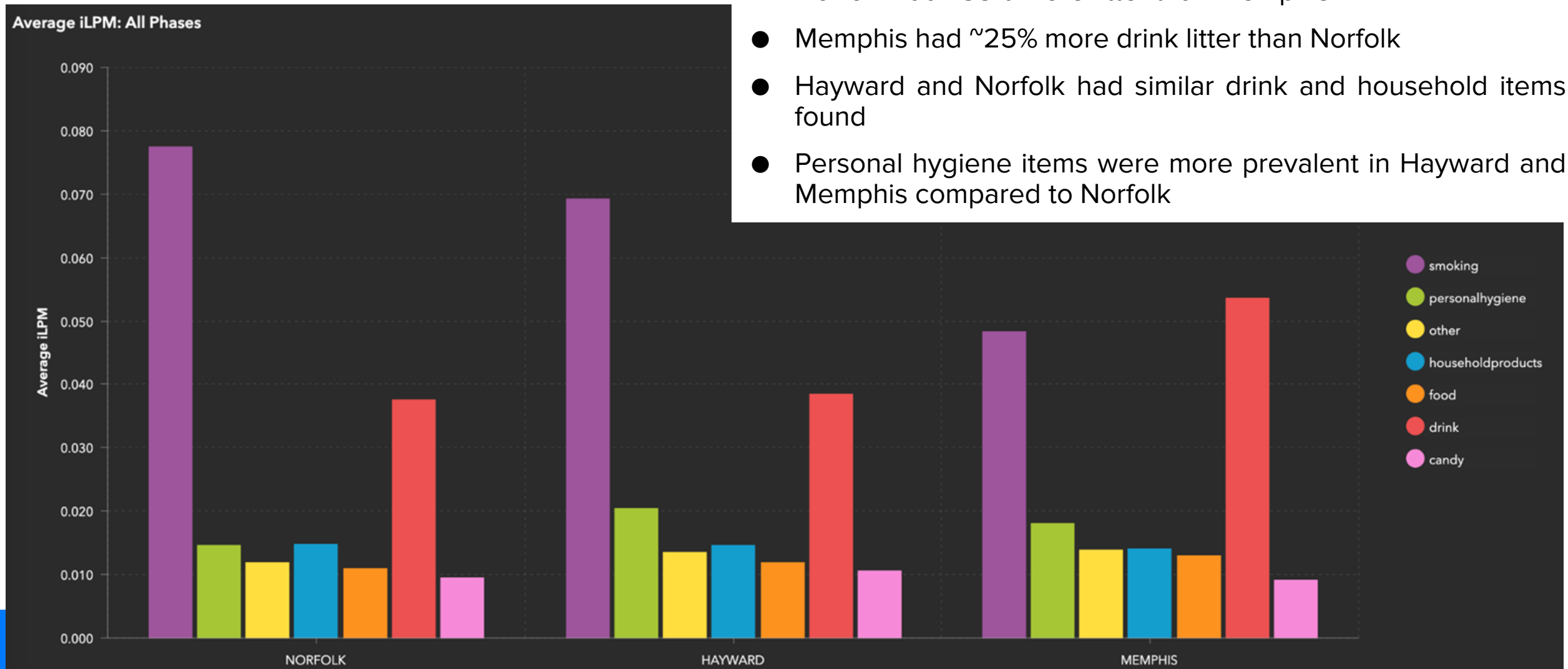
- Non-Plastic recyclables: aluminum, glass, and metal were lower in numbers than other materials by a wide margin
- Plastics, cellulose acetate were highest

Key insights - Hayward - Categories

- Smoking, drink, household product items increased phase over phase (PoP)
- Food mostly stayed flat
- Personal hygiene items increased in the summer, but didn't continue to increase moving into fall. This seems to track with mask mandates going away
- Smoking items seemed to jump markedly from summer to fall

Average Comparison

- Smoking was the highest amount of litter found, however Norfolk had ~38% more litter than Memphis
- Memphis had ~25% more drink litter than Norfolk
- Hayward and Norfolk had similar drink and household items found
- Personal hygiene items were more prevalent in Hayward and Memphis compared to Norfolk

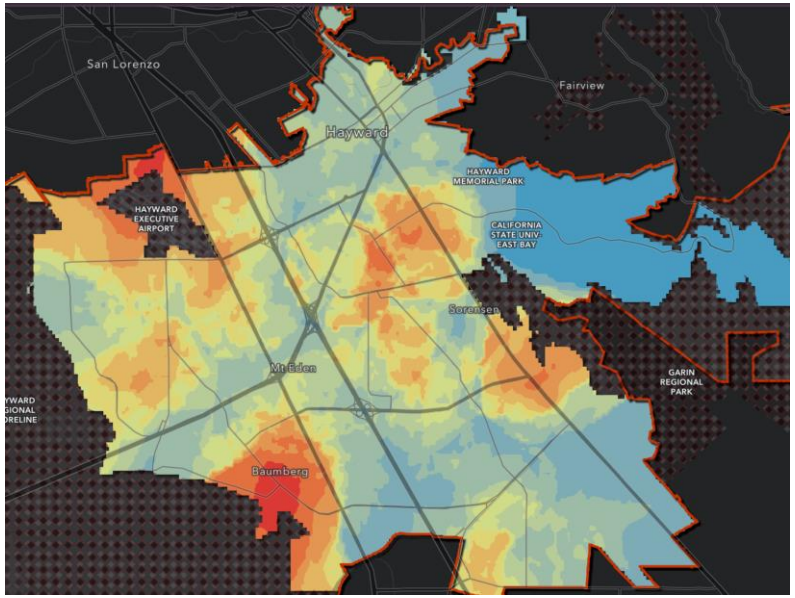


Key Insights in detail

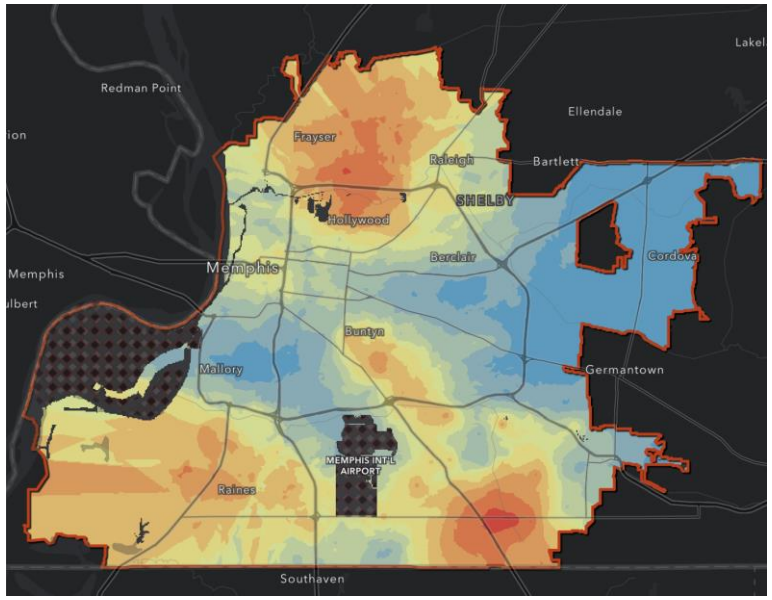
Across the 3 CFP cities

1. *Smoking and Drink related categories were significantly higher than other categories*
2. *Norfolk's smoking related data is higher than all three cities*
3. *Memphis's open container law could be contributing to higher levels of drink litter*

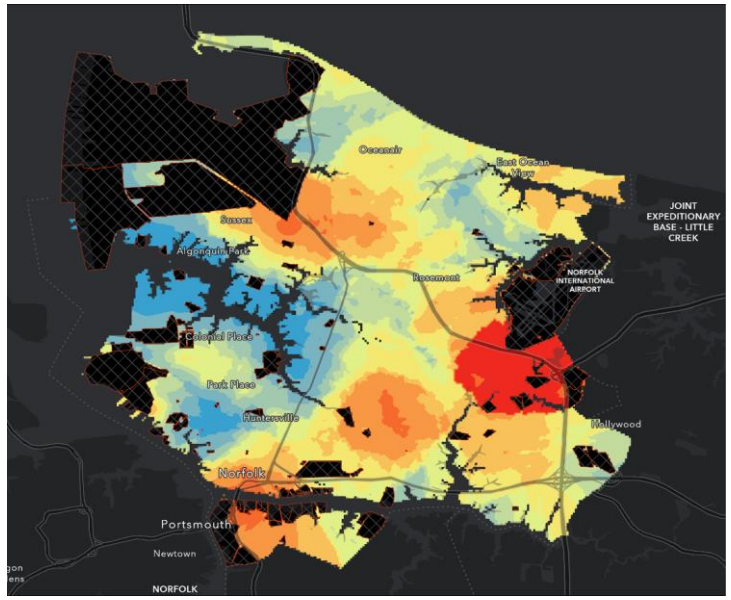
Hotspot Concentrations* *(All Litter over 3 studies)*



Hayward



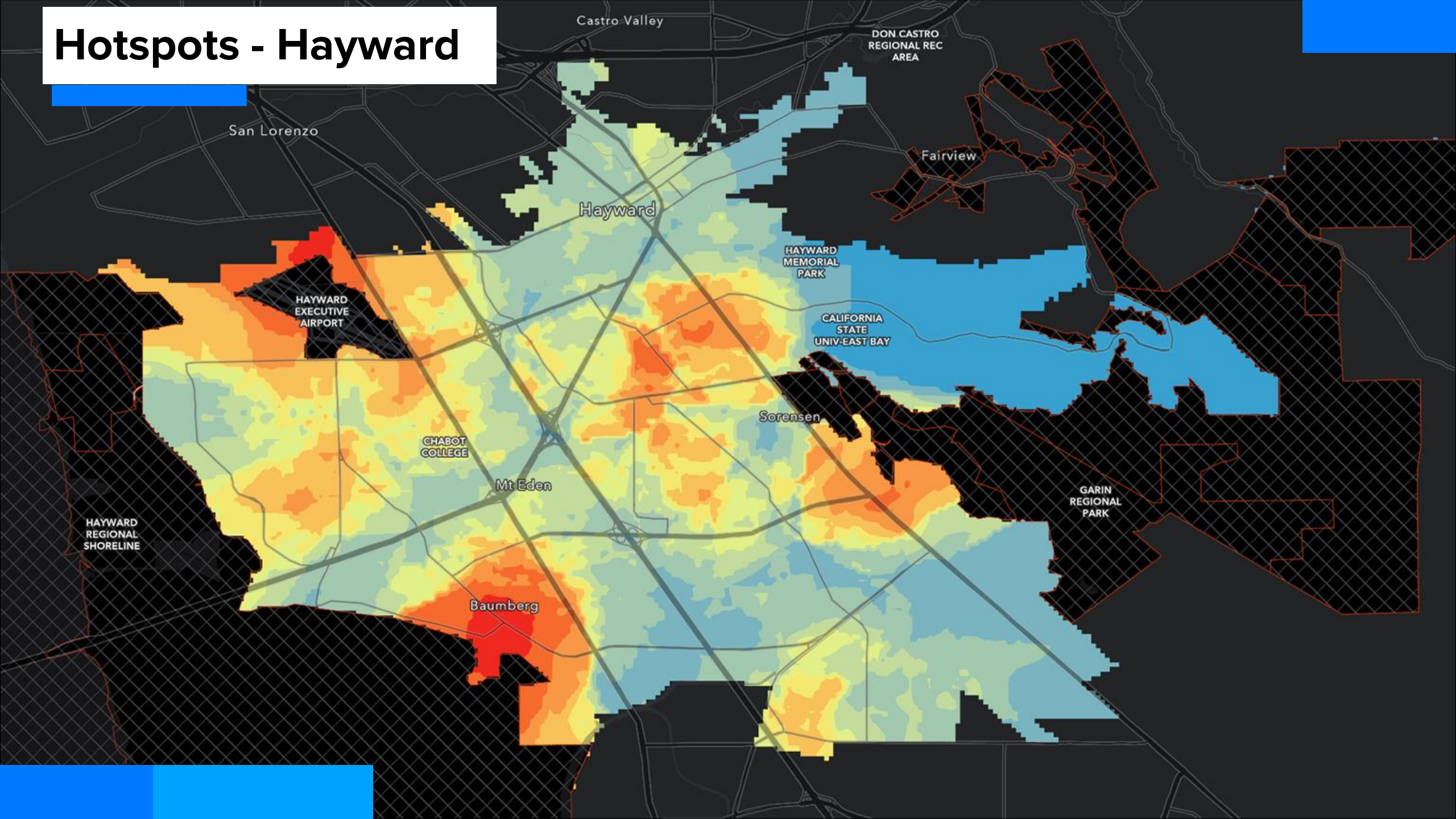
Memphis



Norfolk

*Based value input on iLPM and the Mask on AOI Boundaries (without Exclusion Zones). Based on EBK analysis: https://pro.arcgis.com/en/pro-app/latest/help/analysis/geostatistical-analyst/what-is-empirical-bayesian-kriging-.htm

Hotspots - Hayward



Results

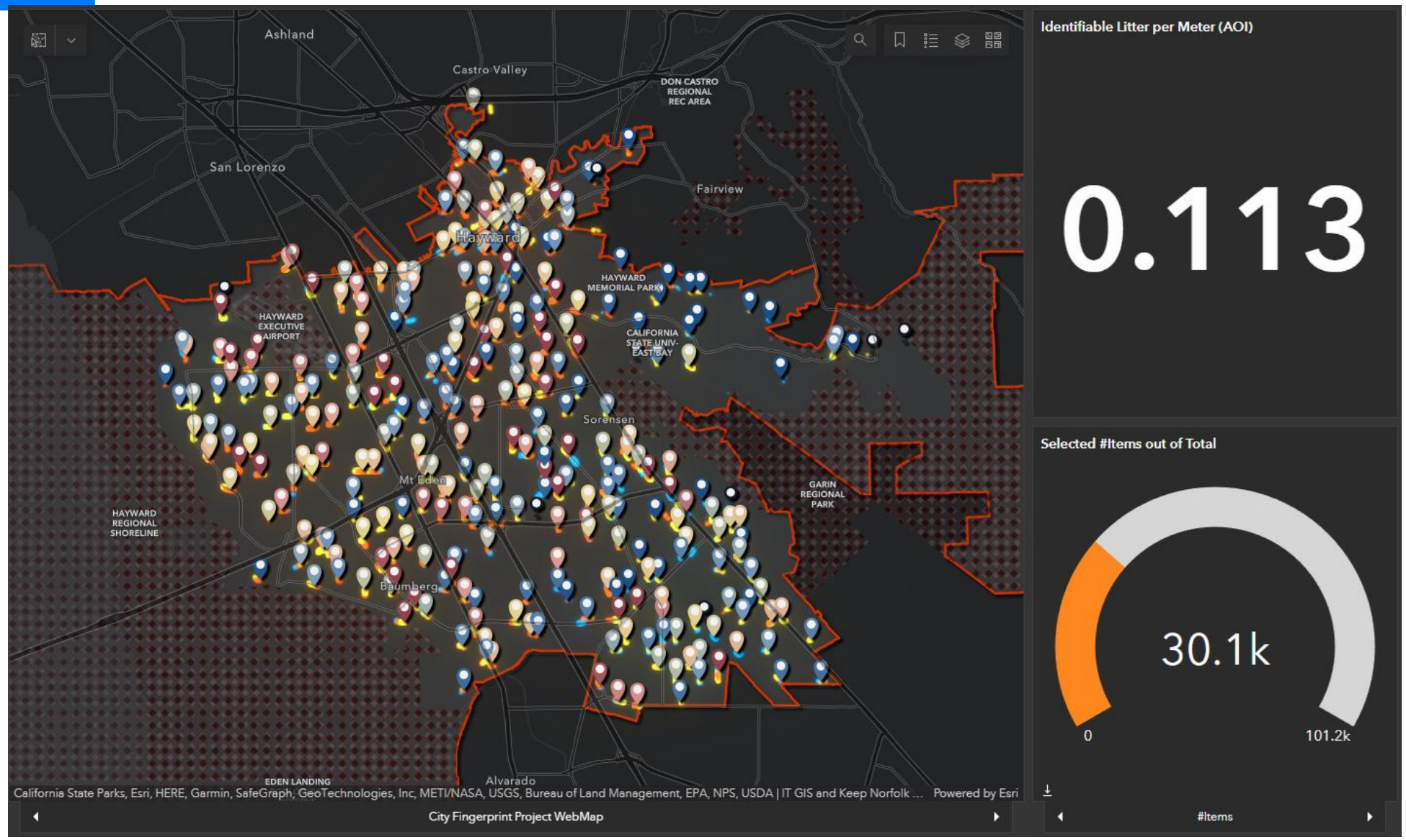
RESEARCHER TEAM - Hayward

Name	Phase 1	Phase 2*	Phase 3*†
Alexa Rivas*	x		x
Alfredo Coronado	x		
Allie Oilar		x	
Bert Manzo	x		
Isabella Casique		x	
Janie Chew		x	
Joanna Sizemore	x		
Juan-Carlos Martinez	x		x
Justin Oilar		x	
Leah Martinez	x		x
Mathew Humphreys-Martin			x
Melissa Milleman	x	x	
Michael Chang		x	
Nicole Nelli	x		x
Robert Martinez	x	x	x
Roderick Robles	x		

Notes

- *Dropped from 10 to 7 zones
- †One researcher covered multiple zones

Identifiable Litter per City - Hayward



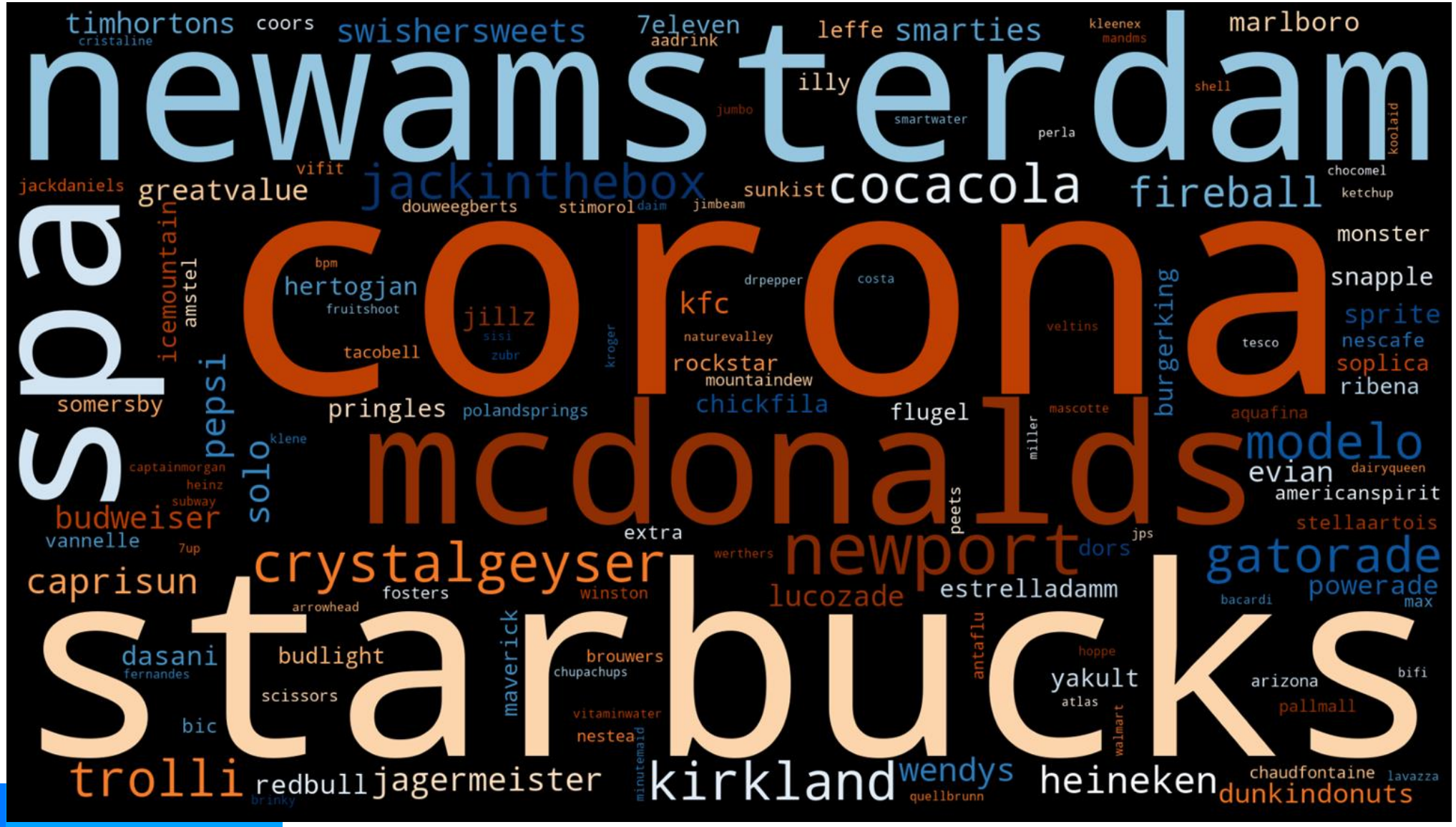
[Click here to view the ArcGIS dashboard]

Most littered objects - Hayward

Cigarette Butts and Bottle Caps are the most common identifiable pieces of litter

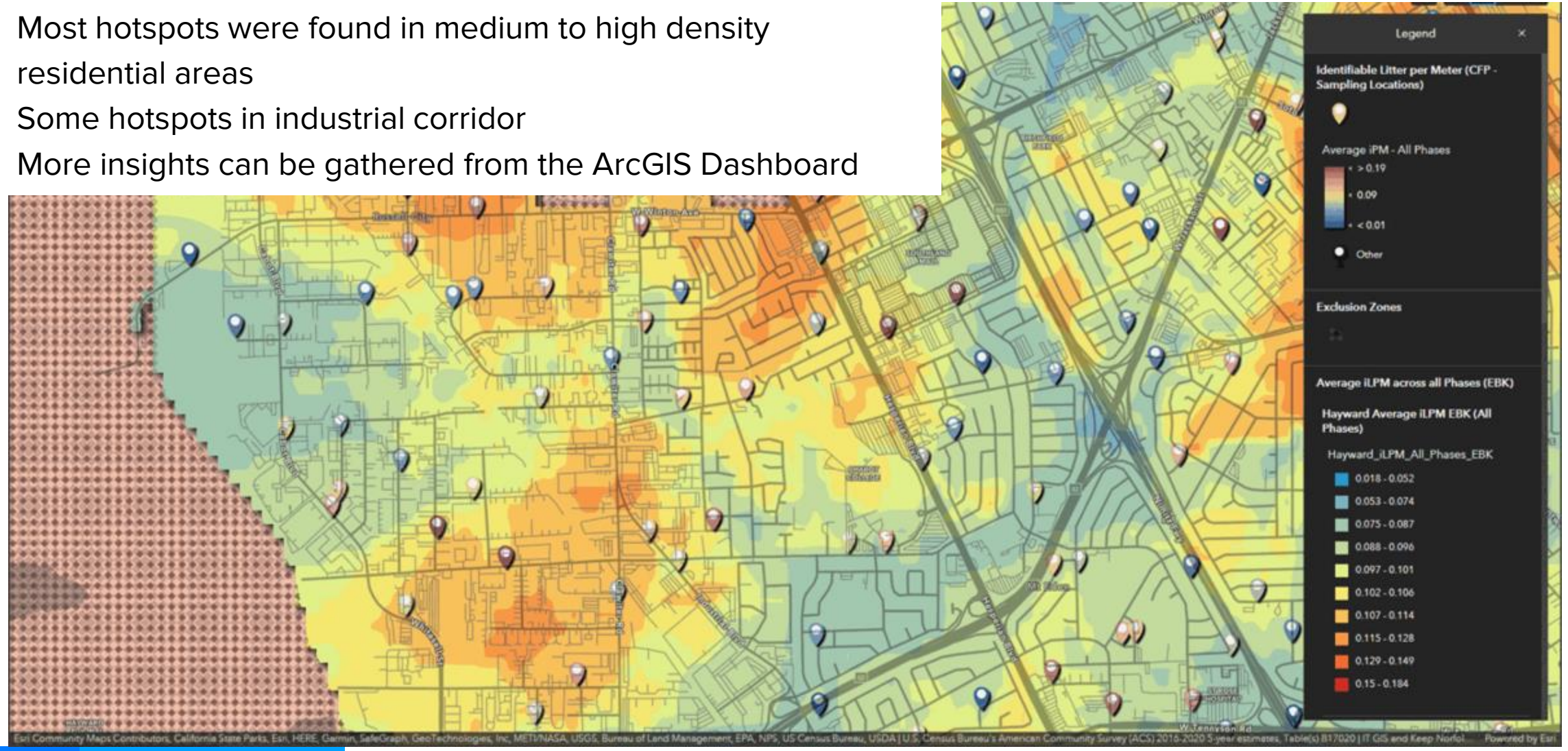
Classement	Spring	Summer	Fall
1	cigarettebutt: 2923	cigarettebutt: 2651	cigarettebutt: 2445
2	bottlecap: 450	bottlecap: 421	bottlecap: 459
3	tissue: 313	tissue: 350	tissue: 308
4	cup: 235	bottle: 280	cup: 248
5	bottle: 231	cup: 267	bottle: 239
6	facemask: 205	facemask: 187	facemask: 159
7	label: 140	lid: 157	lid: 131
8	can: 125	straw: 148	straw: 121
9	straw: 122	box: 126	can: 103
10	box: 119	label: 113	label: 102

Most common brands - Hayward



Land Use Type - Hayward*

- Most hotspots were found in medium to high density residential areas
- Some hotspots in industrial corridor
- More insights can be gathered from the ArcGIS Dashboard

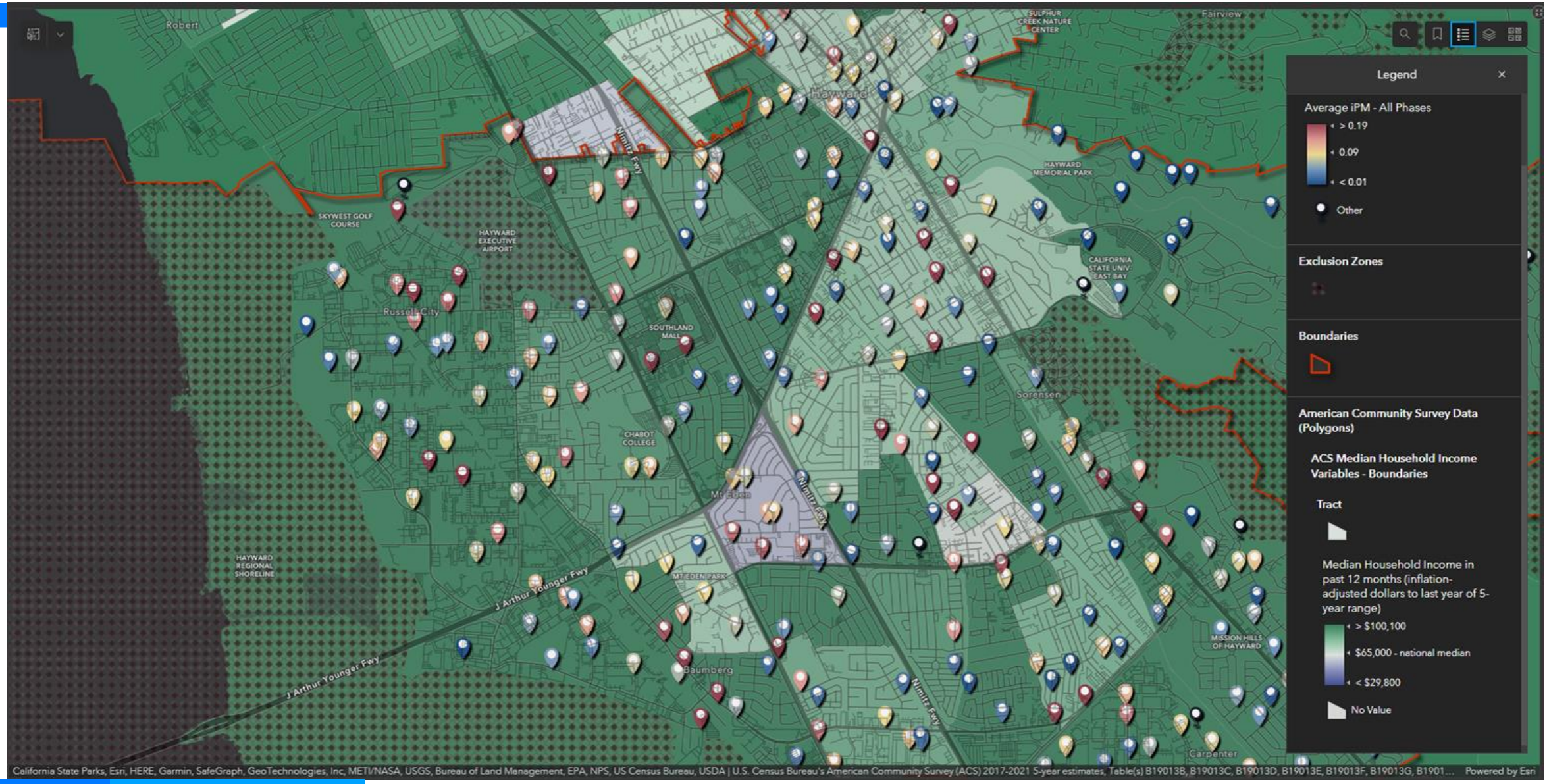


** View Additional Statistics (e.g, Litter per Meter by Land use/Demographics) on the [City Fingerprint Project - Dashboard.]*

Heatmap Analysis - Litter by Points of Interest*

** View Additional Statistics (e.g, Litter per Meter by Land use/Demographics) on the [City Fingerprint Project - Dashboard.]*

Heatmap Analysis - Litter by Census data*



** View Additional Statistics (e.g, Litter per Meter by Land use/Demographics) on the [City Fingerprint Project - Dashboard.]*

Considerations

Go Forward Considerations

Researchers Considerations:

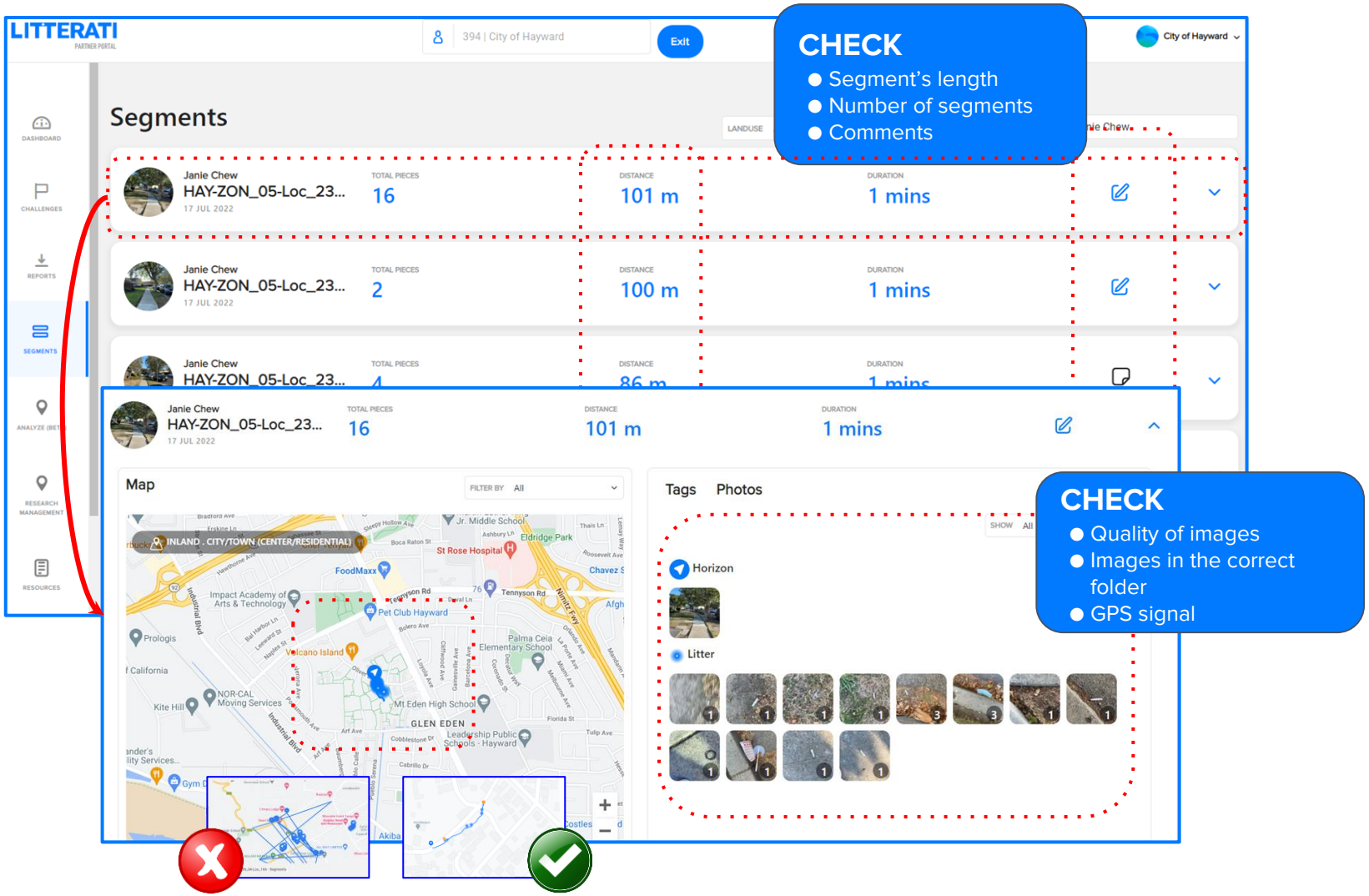
- Researcher safety should be considered above all else
- Research vigilance is important
  - Capturing all observations
  - Taking time to review for quality
- Researchers need to remain consistent and not stray from their transect

Seasonality:

- Date selection should occur in the middle or ⅔'s through a season, to allow for organic littering behavior to occur
- Too early a collection would potentially lead to observations more inline with the previous season

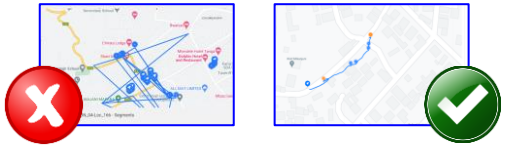
Annex

Segment QA process



QA CHECKs

1. **N° SEGMENTS** - each location needs to have 2 segments
2. **SEGMENT LENGTH** - distance in all segments around 100m
3. **NOTE** - if any important feedback from researcher
4. **PHOTOS**
   - ❖ quality of images (not blurred, distance, light...)
   - ❖ correct folder (litter/bins/hotspots)
5. **GPS signal** - segment track is as much as possible a straight line



* *As of September 12th 2022*

RESEARCH IMPLEMENTATION STRATEGY

In order to perform the field activities Litterati engaged with:

- **City Organizers:** Many of the researchers were from the city organizer's own personal network and were referred to the project.
- **Educational Establishments:** A few of our researchers were recommended through university postings
- **Friends/Relatives of Researchers**: Many of our later phase researchers came from direct recommendation from our phase 1 researchers

RESEARCHERS TRAINING PROGRAM

To ensure all researchers were trained in the use of the Litterati App and the Litterati methodology our participants went through various types of training:

- **Online training** and **certification** (Citizen Scientist Researcher) through Zoho Recruit
- **Online meetings** and training overview session through Google Meet
- **Online training** through video and corresponding slideshow review.

Research methodology and execution

Litter Monitoring Design

The resource to be monitored: Litter

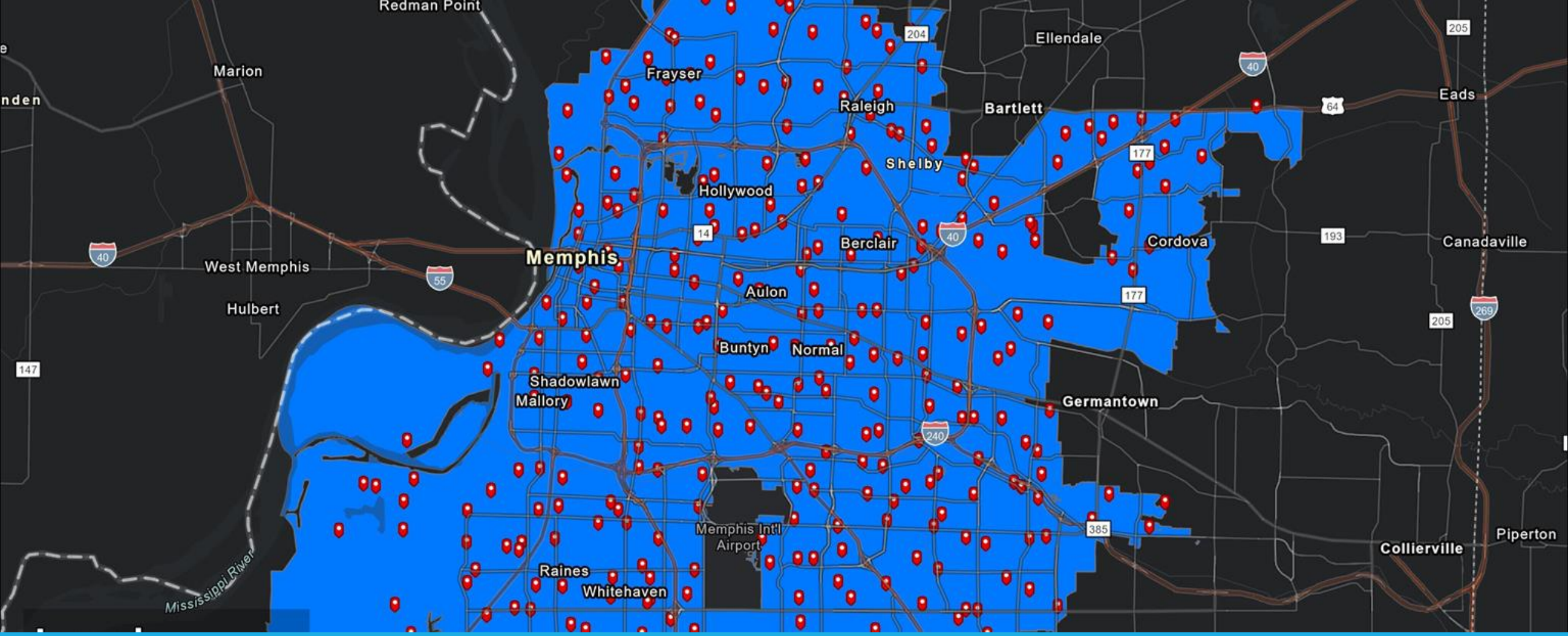
What will be measured (indicator)?: Litter per m^2

How it will be measured (respond design)?: See Data Collection

Where it will be monitored (survey design)?: Spatially Balanced Sampling (SBS) will be used to identify up to 300 sampling locations in each study area.

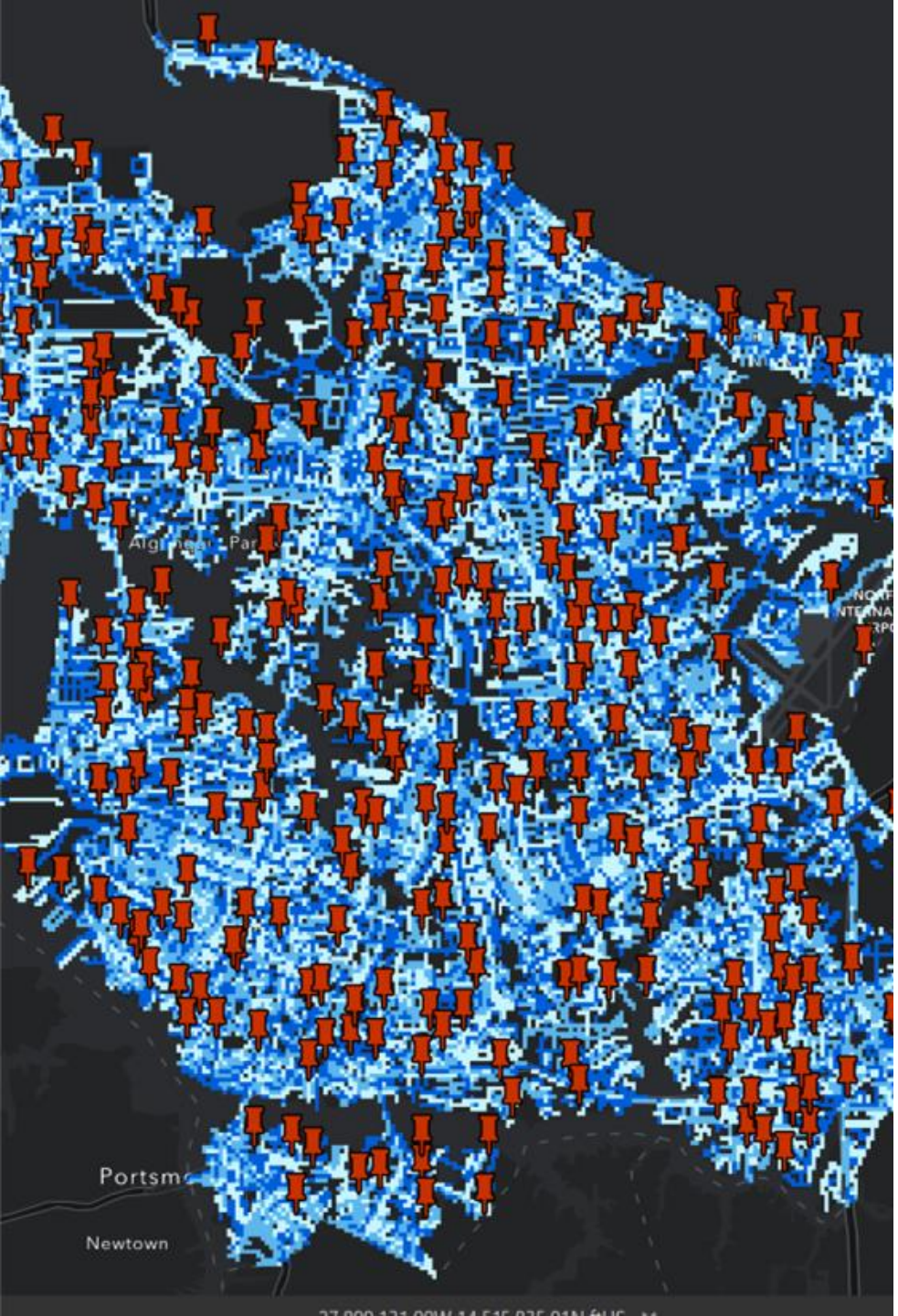
How frequently it will be monitored (time selection)?: Quarterly (four-times per year)

How measurements will be summarized (population estimation)?: See Analysis



Sampling Design: Determination of Survey Areas

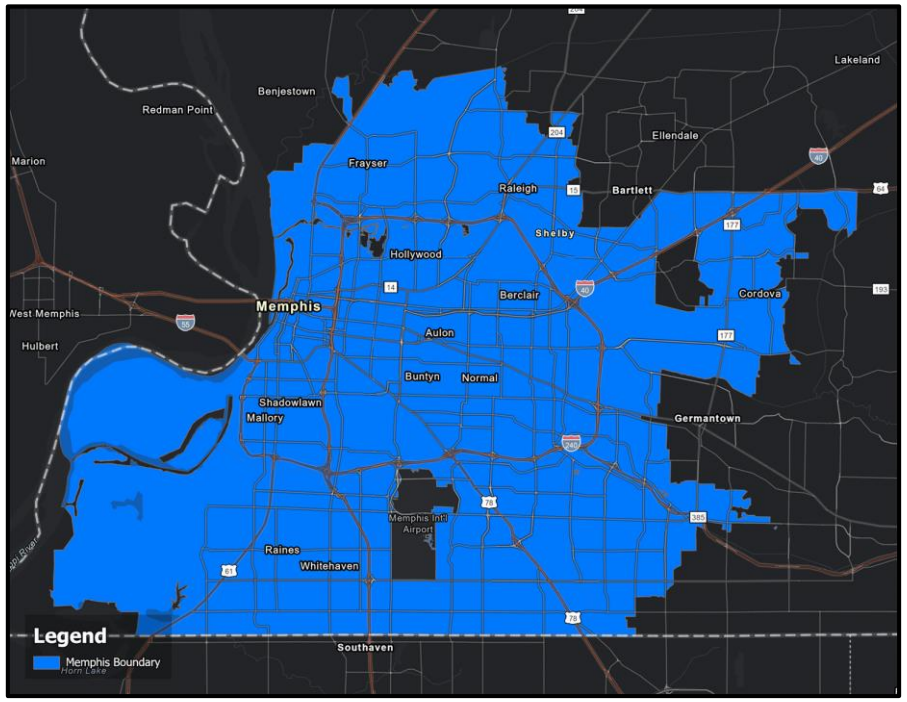
"The set of geographic locations where measurements are taken is called a ***spatial sampling design***. An efficient sampling design specifies sampling locations that allow the researcher to confidently estimate the value of the sampled variable, such as pollution, at unsampled locations" (Link).



A Spatially Balanced Sampling Design

- **Spatially Balanced Sampling** (SBS) is a sampling method that *maximizes spatial independence* among sample locations, ensuring that every sample is distributed across the population (Theobald et al. 2007)
- Considers spatial heterogeneity and spatial autocorrelation
- SBS should be used when the spatial pattern of the response variable is *unknown prior to sampling*.
  - One of the objectives of the CFP is to identify explanatory variables influencing the amount and density of litter within each study area.
  - Following the CFP, it may be more appropriate to utilize a stratified random sample guided using multivariate clusters derived from the CFP.
- Lastly, SBS allows for *oversampling* (i.e. regeneration of additional sample locations if some are inaccessible).
  - This is especially important considering we do not yet know how many samples are required to correctly reject our null hypotheses.
- Literati uses SBS to select Survey Areas within the study area.
- Once determined, Litterati assigns trained researchers to systematically record litter along at least two transects (1x100m) within each Survey Area.

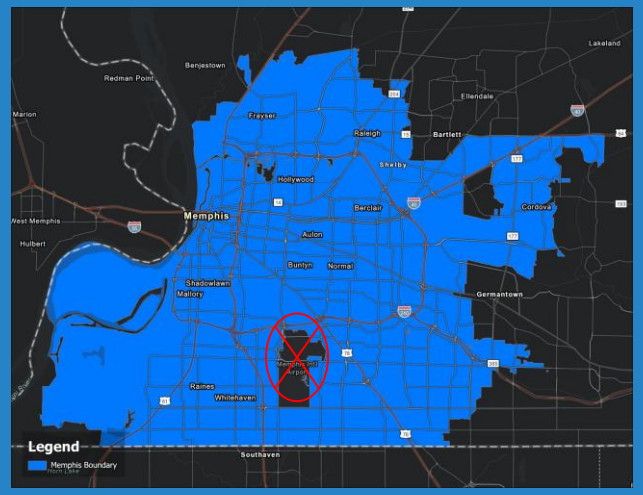
Determination of Survey Areas



Here is an animated example of these steps being applied to Memphis, TN.

1. **Establish the Study Area Boundary and Exclusion Zone (Mask).**
   a. Inputs: City Boundary, Census Blocks, Airports, and other excluded areas (polygon required).
   b. Output: Study Area Boundary
   c. Determine Optimum Sampling Size (*n*)
2. **Create Inclusion-Probability Raster (IPR)**
   a. **Clip SafeGraph CORE Places POI Dataset to Mask**
   b. Create a Distance Allocation Raster of POI Dataset.
      i. Inputs: SafeGraph POI Data or OSM Data
   c. **Rescale the Values** using the MSSmall Function to assign a higher inclusion probability score to the areas closest to all POIs.
3. **Use the Spatially Balanced Sampling** tool to distribute *300** points across the Study Area (*See Discussion on Determining Optimum Sample Size).
   a. Input: Reclassed Distance Raster (Areas with a score closer to 1 have a higher probability of being Sampled).
   b. Output: Point feature class with 300 points .
4. **Snap points to the nearest roadway** (excluding major highways) **or pedestrian footpath**.
   a. This step can either use city-provided data, data from the US TIGER Database, or OpenStreetMap.
   b. The roads and sidewalks must also be clipped to the same Mask.

Identification of Study Area Boundary and Exclusion Zones



Sample Exclusion Zones (Red X) in Memphis Tennessee: Airport

Define Study Area:

- The Study Area is the research boundary. Any area located outside of this area will not be surveyed by Litterati Researchers. Additional, exclusion zones within the study area will not be surveyed by Litterati researchers and must be identified early-on in the sampling design.
- The term ‘exclusion zone’ refers to areas within each municipality that are inaccessible by our researchers because of denied access, safety concerns, or because the areas are otherwise difficult to access. For example, water features, military zones, construction sites, and airports are frequently excluded from the study area.

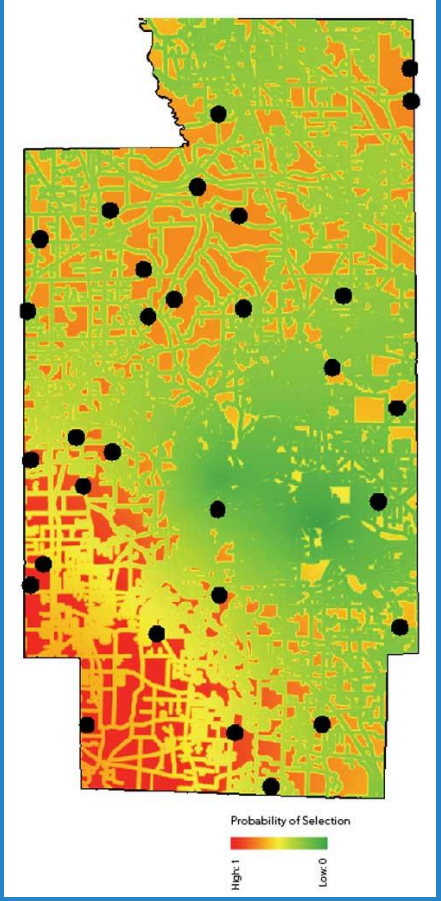
Create Mask:

- Once the exclusion zones have been determined, they are clipped out from the Study Area. The resulting polygon is used as a Mask in subsequent steps and analyses.

Example: Memphis, Tennessee

- The map on the left shows the mask for Memphis, TN created by extracting bodies of water (Census Blocks where the total of area of land equals zero) and removing the Memphis International Airport (surmised from city-provided land-use data).

Create the Inclusion Probability Raster



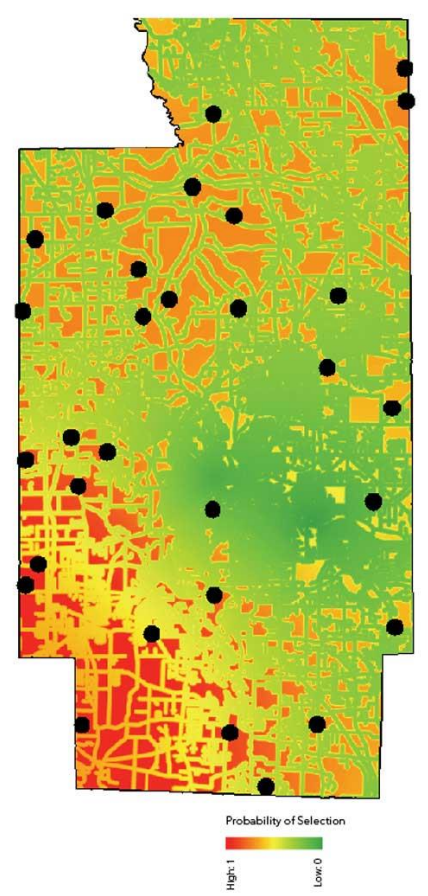
SBS is an unequal probability-based sampling strategy, meaning that some locations within the study area have a higher or lower probability of being selected. These probabilities are assigned via an Inclusion-Probability Raster (IPR) where each cell is assigned a value between 0 and 1. As long as the raster cell has a value greater than 0, it has a change of being selected.

How does Litterati assign a probability score?

- A raster cell is assigned a value of zero if it falls outside of the previously established mask – if a raster cell is located outside the initial study area or within one of the exclusion zones, it will be assigned a 0. It will not be sampled.
- While Litterati could assign a value of 1 to every other raster cell, to reduce bias in our sampling design, the IPR allows for the application of a priori knowledge.
- For example: Litterati assumes that litter is more likely to accumulate near walkable roads, pathways, and points of interest (PoIs). Furthermore, these are the places where researchers are most likely to have unfettered access.
  - Using the Distance Allocation and Rescale by Function Tools in ArcGIS Pro, Litterati is able to create a raster map with values between 0 and 1 with the highest sampling probability being assigned to the raster cells closest to any PoI.
  - Although this does increase the amount of bias in the Sampling Design, some bias is mitigated by allowing any PoI, regardless of category to influence the inclusion probability.

As we learn more about the relationship between litter and other explanatory variables, Litterati can create and more sophisticated IPRs.

Create Spatially Balanced Points



The Create Spatially Balanced Points tool is then used to randomly distribute sampling locations across the study area.

Important Environment Settings:

- **Mask**: Study Area Minus Exclusion Zones
- **Cell Size**: Assigned 200 meters
  - Helps to ensure that sampling locations are spaced at least 200 meters apart (direct distance: as the crow flies).
- **Spatial Reference**: WGS 1984 Web Mercator (Auxiliary Sphere)
  - Units of Measure: 1 Meter

Snap Points to Nearest Walkable Path

- After the samples have been collected, they are then snapped to the nearest street or sidewalk to ensure that our researchers are able to access that location.
  - This helps to reduce the chance that a point is dropped on private property.
  - However, it does increase bias and may lead to some points being closer than 100 meters.
  - In cases like this, trained researchers should do their best to ensure transects for different survey areas do not overlap.

Data Collection: Assigning Survey Area's to Researchers

Spatial Criteria

- Uploading Survey Area's to Litterati Partner Dashboard Application (see link)
- Evaluating the number of locations per person and the average distance (drive-time) between locations.
  - How do we give an accurate estimate to the cities to say you have 300 locations and X zones that have Y locations each?
  - You will need Z researchers to do this amount research in one time-frame.

Temporal Criteria

- Determination of Time of Day/Time of Week
  - During the week? Not on the weekends? Time of Day?
  - Other Concerns: Rain and other weather conditions, Street Cleaning

Data Collection: Systematic Observations of Litter at each Survey Area

Survey Areas:

At the start of each project, Litterati researchers will be assigned a geographic cluster of survey areas based on proximity. The number of survey areas assigned to each researcher is contingent upon the total number of researchers available as well as the the total number of survey areas for each project*.

Once the researcher arrives at a survey area (e.g. blue pin on map), they will be asked to record litter using a specific data collection methodology.

Data Collection:

The goal of data collection is to be able to accurately estimate the total litter per square meter in the study area. Our toolkit for data collection must be able to handle various methodological approaches.

We have identified the ability to collect data along transects as the lowest common denominator amongst various methodologies.

For the City Fingerprint Project, our researchers will collect litter along two 1 x 100 meter transects.

Continued on next slide

Data Collection along Transects

1. **Transects** are defined as 1 by 100 meter line adhering to the edge of a street, sidewalk, or curb. Each researcher will be asked to complete *two transects* per survey area. Each pair of transects must:
   a. Be on opposite sides of a walkable street or path
   b. Be in parallel to one another
   c. Follow the same cardinal orientation (e.g. North, West, South, East)
   d. And cover the same length (100 meters)*.
2. What information needs to be recorded before starting each transect?
   a. The researcher should note the most predominant land-use types along that Transect (e.g. roadway, school, park, etc. – see example on right from CSIRO).
   b. The researcher will also be asked to record a horizon photo at the start of each transect.
3. What happens if no litter is recorded in either transect?
   a. That's alright! We will count that location as a zero.
4. Does it matter *when* a transect is completed?
   a. Yes, each ANALYZE project should have a clear set of parameters for when a transect should be completed at a given sampling location.
   b. This may be influenced by the research design, street cleaning schedules, inclimate weather, and other known events.

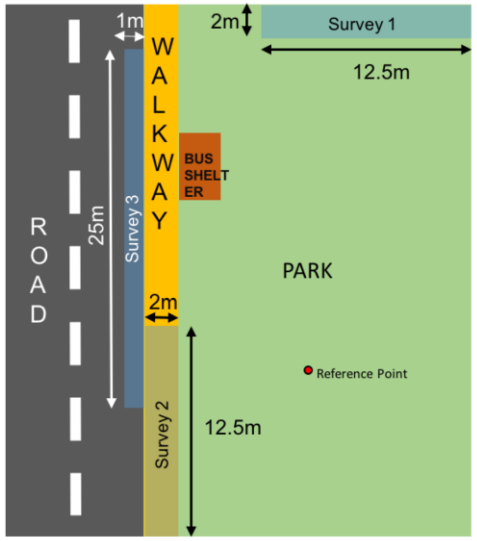


Figure 2.3 Example of an inland survey across different land use types

Type of transect:	Walkway	Car park	Roadway	School	Public transport	*Circle the best option to describe the type of land use of the transect area*
	Drain	Natural Veg.	Wetland	Park	Disused	
	Ag/ pasture	Ag/ cultivated	Other (specify):			

Sample Transect Guides

- Create a 50m buffer around each sampling location pin.
- Clip the streets and sidewalks feature class to that buffer.
- Select street & sidewalk features that do not intersect with the sampling location and delete those features.
- Create a copy of this feature class.
- Run the CopyParallel python function on the copy to create two parallel lines 7.62m* away from the street/sidewalk centerline.

Data Collection

Recording Litter along Parallel 1 x 100 meter Transects

Pro's

- Easy to Complete in a Timely Manner
- Transects can be pre-assigned and easily replicated as long as the same guide is made available to subsequent researchers.
- Does not require much equipment, although a 100 meter tape would help ensure that the researcher is walking a straight line rather than weaving in and out as they see litter.
  - A compass reading within the application would also be useful, especially if it notified the researcher when they were continuing in the wrong direction based on previous segments.

Con's

- It is difficult to extrapolate the average litter per square meter in a given location*.
  - See Discussion in slide notes below.
- It is difficult to ensure that the researcher has walked exactly 100 meters
- It is also difficult to ensure that the researcher is creating parallel research transects that do not overlap with each other or transects from nearby survey areas.
- We do not currently have an adequate QA-method in place.

Data Collection Quality Assessment

- Several steps are required to determine if a research transect was completed.
  - Segment length meets requirements
  - Minimum amount of required segments per location/task
  - Quality of images organized correctly
  - Quality of GPS coordinates, to accurate show researcher's progression through transect

Data Analysis: Report Deliverables

- Establish a litter fingerprint and baseline for each city
- Evaluate the relationship between litter and commercial corridors, storm drains, and illegal dumping hotspots
- Extrapolate Litter per Square Meter along walkable paths in each city using Empirical Bayesian Kriging and Prediction (explored further on remaining slides)

Litter Fingerprint & Baseline

- Establish a litter fingerprint and baseline for each city
  - Raw COMB Breakdown (count, weight, and volume)
  - Normalized COMB Breakdown (count, weight, and volume) per m2*
    - Additionally, we ought to find a way to parse out Single-Use Plastics for Analysis
    - *These calculations are dependent upon knowing the number of 1 X 1 meter grid cells that have a walkable street or path passing through
- This analysis will be made available in both the report (static) via the Dashboard(s) (dynamic).

Developing Key Performance Indicators (KPIs): *Litter per Square Meter*

a priori (theory-driven)

- This KPI threshold for could be pre-determined by existing theory and research on how much litter is too much litter.
- This version of the KPI ought to be the default for a project.
- During Year 1 of a project, this KPI will inform the Data Science Dashboard. After the baseline is established, it is up to the client whether they would like to continue with this KPI Threshold or build a custom data-driven KPI Threshold.

a posteriori (data-driven)

- Once we establish a baseline for the amount of litter per square meter in the study area, we can operationalize how much litter to comparatively too much litter.
  - Option A: Setting the KPI threshold has 1 or 2 standard deviations above the mean.
  - Option B: Using Natural Breaks to Classify the amount of litter per square meter.

Geospatial Analysis of Litter and Places of Interest

- Evaluate the relationship between litter and commercial corridors, storm drains, and illegal dumping hotspots
  - Chart/ Map the correlation between litter and distance to nearest commercial corridor, storm drain, and/or illegal dumping hotspot.

Empirical Bayesian Kriging with Prediction (Regression)

- Extrapolate Litter per Square Meter along walkable paths in each city using Empirical Bayesian Kriging* and Prediction.
  - **See appendix* for several slides illustrate how the results of EBK can be spatially joined with walkable paths to create an extrapolated litter heatmap.*
- Over the course of the City Fingerprint Project, we will need to devise a regression model that will help predict the litter per square meter in each study area with greater statistical power. Here are some steps we can take:
  - Consolidate a list of potential explanatory variables (*spreadsheet in progress*)
  - After Phase 1 Data Collection is Complete:
    - Perform an Exploratory Regression Analysis in ArcGIS Pro for each Study Area.
    - Compare the results
    - Test models across study areas

Data Collection

This study evaluates the effects of introducing prevention signs in four locations, known to have litter issues.

In each location, the whole area was sampled. Using the Litterati App, researchers documented all pieces of litter larger than one centimeter. Organic waste was not documented. Researchers also documented waste infrastructures (bins, ashtrays, containers) and hotspots of litter located in the study area.

The research process was repeated a total of eight times, each Thursday between May 5th and June 23rd 2022 to better understand the effect of these new signs on litter in the surrounding area.

Our Litterati mobile phone application enables researchers to record geotagged and time-stamped images of litter, illegal dumping hotspots, and waste infrastructure.

Prior to data collection, researchers selected by Litterati underwent training (link) to review this protocol as well as how to use the Litterati app. The researchers were then assigned two research locations and asked to record litter over the entire area.

Data Annotation

Once collected, the data is then assessed to determine if all relevant locations were sampled, and all images were correctly uploaded and registered according to their specific location. Each image is then annotated by a human according to the Litterati taxonomy (link).

These results are then used to validate other data by the machine learning items and added other items that were not defined or picked up by computer vision model, to understand the performance of the models please refer to the computer vision model performance section.

Litter AI

Litterati has a defined taxonomy of Category, Object, Material and Brand (link). As users consistently label their litter images with OBJECT, MATERIAL and BRAND, the LitterAI is trained to better predict these specific labels in future images. General Categories (ex. Drink, Food, Personal Hygiene) are derived from the different combinations of Objects and Materials. Where possible, a proxy weight and volume value is applied to each combination. The combinations of Objects and Materials are then mapped to international standards such as CSIRO, OSPAR, UNEP-IOC, NOAA etc., as well as data sheets from organizations like Break Free From Plastic (BFFP).

Litterati's computer vision model has a mean average precision of 80% across 39 classes of Object-Material combinations such as Plastic-Bottle, Aluminum-Can, and Cellulose Acetate-Cigarette Butt. These 39 classes represent over 80% of the typical identifiable litter found in the urban environment by # of items.

STUDY LIMITATIONS

Research - Limitations

- Researcher Bias
  - As the project unfolds, it is possible that researchers became more attuned to the presence of smaller pieces of litter while collecting data.
  - Also, the orientation and quality of the image recorded by each researcher affects the ability of LitterAI to predict and classify the type of litter in that image.

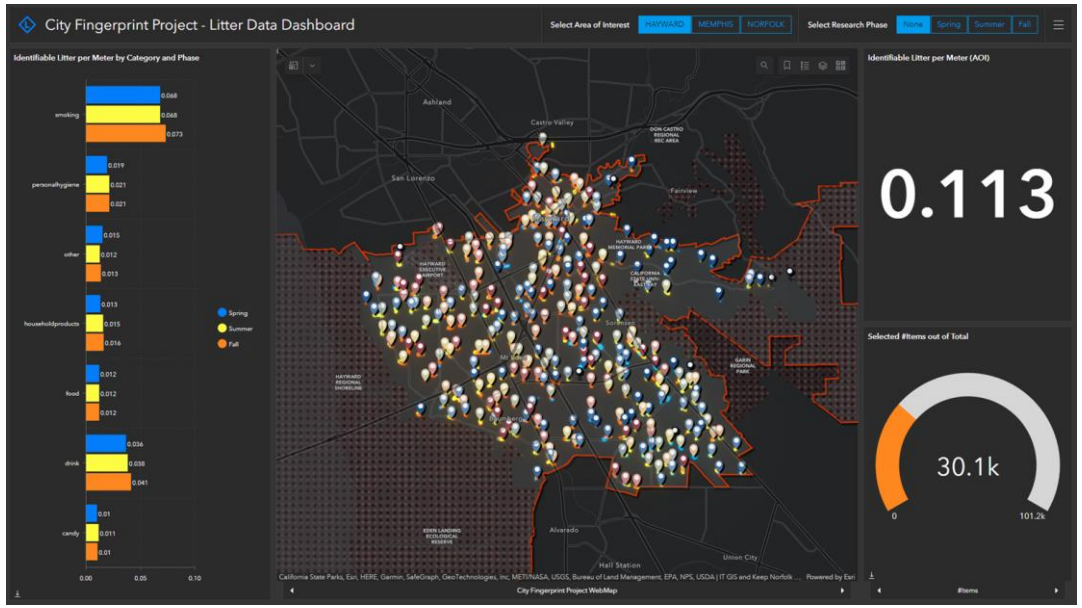
- Litter annotation

  Litter data recorded during this study was split into the two main groups:
  - **Identifiable litter** includes major objects that we classify with high confidence such as bottles, cans, and cigarette butts.
  - **Unidentifiable litter** includes small pieces of plastic and paper and are characteristically challenging to classify using models & human annotators.

Data Sources

DATA SOURCES

Litter Data



Dashboard:

- Click here to view the City Fingerprint Project - Data Dashboard (arcgis.com).
- Download filtered Litter Data by clicking the download button in the bottom left corner of the “Selected #Items out of Total” panel.

Project Data:

- Click here to download Litter Data spreadsheet
- Click here to download iLPM Spreadsheet

Secondary Data

External Datasets

- OpenStreetMap:
  - Points of Interest (POI) – North America (link)
  - Highways – North America (link)
- SafeGraph's Places (POI Data) (link)
- American Community Survey Datasets (link)

WE'VE GOT A

PLANET TO CLEAN

LITTERATI

JOIN US.

Pros and Cons of Cigarette Receptacles in Public Spaces

Pros

- Cigarette butts have toxic impacts, leaching toxic chemicals, such as arsenic and lead, and the filters contain microplastics. Once littered, they can easily make their way into waterways, negatively impacting the environment and marine life. If cigarette butt receptacles are used and prevent littering, they will help avoid the negative impacts on the environment and marine life.[1,2]
- According to "Litter in America", a Keep America Beautiful national study, just one additional ash receptacle can decrease the amount of cigarette litter by nine percent in its respective area.[3]
- Surfrider's San Francisco chapter installed public cigarette receptacles in select neighborhoods and have experienced a 60% decrease in cigarette butt litter (2019).[4] As of 2021, Surfrider has installed 175 new cigarette receptacles (total of 250), in addition to a public service announcement and infographic.[5]
- Communities who have participated in Keep America Beautiful's Cigarette Litter Prevention Program have consistently cut cigarette litter by 50%.[6]

Cons

- City staff would need to find time to service the receptacles.
- Potential fire hazard if community members do not put out their cigarette before using the receptacle.[7]
- Potential to encourage smoking. However, a case study in San Francisco's Union Square did not show any increase in smoker activity.[8]
- Some cities have seen an increase in vandalism, as people attempt to break into the receptacles to access remaining cigarettes.[9]
- The receptacles may be considered unsightly and may add to visual clutter.

[1] https://www.nytimes.com/2012/07/08/magazine/who-made-that-cigarette-filter.html#:~:text=In%20the%201950s%2C%20an%20RJ
[2] https://pubmed.ncbi.nlm.nih.gov/31357681/
[3] https://kab.org/wp-content/uploads/2019/09/LitterinAmerica_FactSheet_CigaretteButtLitter.pdf
[4] https://therevelator.org/cigarette-butt-litter-solutions/
[5] https://sf.surfrider.org/news/2021/08/26/surfrider-foundation-and-noaa-launch-love-sf-hold-on-to-your-butt-campaign-to-prevent-cigarette-litter-in-san-francisco
[6] https://www.nrpa.org/parks-recreation-magazine/2019/june/keep-america-beautiful-cigarette-litter-prevention-program/
[7] https://www.ellsworthamerican.com/news/no-butts-about-it-fire-department-urges-caution-with-use-of-cigarette-receptacles/article_baded2d2-ac45-5600-b031-a8e8e56db596.html
[8] https://sf.surfrider.org/news/2017/04/24/terracycle-and-the-union-square-bid-a-cigarette-litter-reduction-success-story#:~:text=Have%20they%20seen%20any%20evidence%20that%20the%20receptacles,included%20nightclubs%2C%20youth%20hostels%2C%20and%20near%20trash%20cans%29.
[9] https://www.brisbanetimes.com.au/national/queensland/vandals-blamed-for-cigarette-butts-being-strewn-across-brisbane-city-20171013-p4ywgj.html

File #: ACT 23-034

DATE: May 8, 2023

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT

New Solid Waste and Recycling Franchise Agreement: Update on Implementation - Review and Comment

RECOMMENDATION

That the Council Sustainability Committee (CSC) receives an update on the implementation of the new Solid Waste and Recycling Franchise Agreement between Hayward and Waste Management of Alameda County (WMAC) and provides comments to staff.

SUMMARY

The City holds a franchise agreement with WMAC to provide solid waste, recycling, and organic materials collection, and processing services. The new ten-year franchise agreement was approved by Council on June 28, 2022, and became effective on March 1, 2023. This report provides an update on some key elements of the new contract, including the deployment of new state-required blue recycling carts and dark-gray trash carts, new public litter cans, surcharges for contamination and overages, and new trucks, including a new fleet of trucks for residential recycling provider Tri-CED.

ATTACHMENTS

Attachment I Staff Report

DATE: May 8, 2023

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT New Solid Waste and Recycling Franchise Agreement**:** Update on Implementation – Review and Comment

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SUMMARY

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BACKGROUND

WMAC has been the City's solid waste and recycling services franchisee since at least the mid-1970s and has, in the past thirty years, subcontracted with Tri-CED Community Recycling for residential recycling services. After approximately two years of negotiating, on June 28, 2022[1], Council approved the new franchise agreement with WMAC as well as adjustments to the refuse, recycling and organics rates. Council also approved a resolution extending the memorandum of understanding between Hayward, WMAC and the Oro Loma Sanitary District for WMAC to provide recycling services to about 3,500 homes in the district.

[1] https://hayward.legistar.com/LegislationDetail.aspx?ID=5709695&GUID=E5867537-1E85-495D-95E4-BB7A6B590715&Options=&Search=

On February 7, 2023[2], Council approved the rates for rate year one (March 1, 2023 through February 28, 2024) of the new franchise agreement. On March 1, 2023, the new franchise agreement commenced.

DISCUSSION

The new franchise agreement is essentially a renegotiation of the previous agreement with the addition of a few elements to achieve compliance with state law SB1383 to improve service and reduce litter. The following provides an update of some of the key new elements that WMAC started implementing March 1, 2023.

Deployment of Blue Recycling Carts and Dark Gray Trash Carts

SB 1383 and subsequent regulations developed by CalRecycle[3] include several requirements that the franchise agreement helps address, including a mandate regarding the color of collection carts. Trash carts in California are mandated to be black or gray, recycling carts are mandated to be blue, and organics carts are mandated to be green. Hayward residents already had green organics carts. However, the burgundy trash carts and gray recycling carts need to be replaced. WMAC and Tri-CED are currently replacing all trash and recycling carts to meet these SB 1383 requirements, which in addition to being compliant, will also provide Hayward customers with sturdy carts over the life of the contract, which if extended, could last 13 years. The old burgundy WMAC trash carts and gray Tri-CED recycling carts will be recycled.

In total, 68,716 carts will be replaced in Hayward. WMAC started exchanging carts in early March of 2023, and expects to complete the majority of exchanges in about 9 weeks, about mid-May 2023. As of April 4th, approximately 56,300 carts had been replaced. WMAC anticipates some customers will miss their original exchange date and is prepared to continue exchanging carts for households and businesses on an as-needed basis throughout the year.

While the cart exchange program has been implemented relatively smoothly, there have been a few issues. A few households' old carts were not collected, and some residents experienced challenges when telephoning WMAC's call center. Occasionally calls were forwarded to WMAC's national call center and some customer service representatives were unfamiliar with Hayward's contract, causing frustration for Hayward customers. WMAC is working to improve phone service and ensure all of its customers service representatives can address Hayward-specific issues.

Surcharges for Contamination and Overages

SB 1383 requires monitoring customers' containers for contamination. Hayward's new franchise agreement with WMAC includes a new program that monitors recycling and organics containers for contamination, and simultaneously looks for overfilled containers. WMAC will use cameras on their trucks to perform the monitoring. The cameras can view

[2] https://hayward.legistar.com/LegislationDetail.aspx?ID=6016048&GUID=BE2A3AB7-4454-4B81-AF42-EE237E320B49&Options=&Search=

[3] https://www.calrecycle.ca.gov/organics/slcp/

material as it's dumped from containers into the trucks and the cameras can also view containers on the curb. Drivers have been using truck-mounted cameras for years to improve safety, document overages for business accounts, and identify inappropriate material entering the truck.

During negotiations, staff and WMAC discussed at length the procedures and criteria to be used to define and determine levels of contamination. Contamination is defined as 10% by volume of a container being filled with non-recyclable material. Overage is defined as a container's lid being open by 12 inches or more. If an unacceptable amount of non-recyclable or non-organic material is noticed, or if a container is considerably overfilled, the customer will receive a warning letter informing them about the contamination or overage issue. Customers will receive two warning letters before being charged a fee. If no violations occur for a year, then the customer's account resets, and they will once again receive two warning letters before being charged a fee.

To help familiarize Hayward customers with the new contamination and overage surcharge program, WMAC mailed customers introductory information about the program in March of 2023. From March 2023, through June 30, 2023, WMAC will not assess any surcharges and will only send courtesy notices including photographs to customers, letting them know when their container was contaminated or overfilled. The surcharge program will officially start July 1, 2023. At that point customers will receive two additional warning letters before being charged a fee for contaminating their recycling or organics container or overfilling their trash container. The fee schedule is listed in Table 1 below.

Table 1: Contamination and Overage Fee Schedule

	Contamination fee (after 2 warnings)	Overage fee (after 2 warnings)
Carts	$25	$10
Bins	$75	$75 Trash Bins; $35 Recycling Bins

The primary contaminant WMAC will look for is plastic bags. Plastic bags don't get recycled, and often clog sorting equipment, creating delays on the sorting lines as workers untangle and remove the bags. WMAC is asking customers to dump recyclables and organics out of plastic bags, so they fall loose into the container when placing out for collection. The plastic bags can be reused or placed in the trash container.

New Public Litter Cans

Hayward will increase the total number of public litter cans citywide from about 300 to more than 400 over the course of the new franchise agreement, with a maximum of 500 that may be serviced by WMAC. The majority of the new cans will be Big Belly brand dual containers (trash & recycling), and over the first few years of the franchise agreement, the Big Belly stations will be strategically placed to address litter hot spots identified through both the City "Fingerprint Project" that Hayward conducted with litter data science company, Litterati, as well as can location recommendations provided by the Downtown Hayward Improvement Association (DHIA). The DHIA is a contractor that provides Hayward with a team of workers to beautify Downtown Hayward. Their efforts include

picking up litter. Staff is working to update a GIS map of the public litter cans throughout the City to streamline the installation of new cans

Staff will replace the majority of the black metal cans and deteriorating aggregate cans in the Downtown area with new Big Belly dual containers. Many of the lids from these black metal cans and aggregate cans have been removed. Scavengers took some lids and staff removed other lids to prevent vandals from using them as projectiles. The removal of the lids makes it easier for scavengers to rummage through the cans, and also easier for the cans to be inappropriately filled with household waste. In addition, the lack of lids on these cans led to issues with rainwater accumulation during the atmospheric rivers this winter. WMAC needed to deploy extra crews to lift the heavy, rain-filled containers. The Big Belly design deters over-filling and scavenging and prevents rain from filling the cans.

In the first year of the contract a total of 102 new litter cans are scheduled to be deployed. Big Belly has indicated that the first shipment of Hayward's new cans should arrive in late June or early July of 2023. In years two through four of the contract, 35 cans are scheduled to be replaced each year. In years five through ten of the contract, ten cans are scheduled to be replaced each year, for a total of 267 new litter cans during the term of the contract.

To help the city monitor the frequency of litter can service, WMAC will provide the City with the truck-video recordings of the servicing of public litter cans to ensure cans receive the agreed-upon level of service. Upon request from the City, WMAC will provide video, monthly summaries of locations, and dates of servicing for each container and agreed to increased liquidated damages for missed collections.

Vehicles

During negotiations, staff asked WMAC to leverage the opportunity presented by a new franchise agreement to investigate deploying new electric collection trucks instead of acquiring new compressed natural gas (CNG) trucks. WMAC indicated that electric vehicle technology needs to mature further in order to feasibly and reliably power heavy duty trucks. WMAC agreed to include some electric-power trucks to perform route service, should technological and economical changes occur through the course of the contact. WMAC, however, has added smaller electric support vehicles to its fleet that serves Hayward, including supervisor pick-ups, and trucks that deliver carts and collect bulky material. Tri-CED also agreed to add an electric pickup truck and a flatbed truck for container distribution to its fleet. Tri-CED's new fleet of route collection trucks will be compressed natural gas (CNG) trucks and are not scheduled to arrive for another 18 months. Electric route trucks will likely become more common near the end of the term of the franchise agreement, as new state regulations require transitioning to zero-emission trucks and vans over the next decade.[4]

FISCAL AND ECONOMIC IMPACTS

The new contract includes a reduced cost of recycling bins for multi-family dwellings, retains the smallest, lowest cost garbage cart rate and continues to offer bulky collection for multi-family dwellings. The low-income rate assistance program remains part of the

[4] https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-summary

agreement. Maintaining reasonable solid waste and recycling service fees and improving service levels can have a positive impact on the community. In March 2023, a 13.18% rate increase took effect, including 7.88% for service enhancements, mainly consisting of SB1383-required elements and new route trucks for Tri-CED, and 5.3% for CPI. The new contract includes annual rate adjustments based on CPI, with the CPI not allowed to exceed 6%. The contract also allows for a cost-based rate review in year 5 of the contract with the increase not to exceed 10%. With the March 2023 rate increase, the Franchise Fees will modestly increase by approximately $1.3 million annually, which will benefit the City's, Recycling Fund, Stormwater Fund, Street System Improvement Fund, and General Fund.

STRATEGIC ROADMAP

This agenda item does not directly relate to any of the projects listed in the Council's Strategic Roadmap, however, the recycling and litter prevention programs that at part of the WMAC franchise agreement support the priorities to *Support Quality of Life* and *Confront Climate Crisis & Champion Environmental Justice.*

SUSTAINABILITY FEATURES

Solid waste management involves the safe and responsible management of discarded material from generation through processing to disposal. Reducing waste landfilled by maximizing the reuse, recycling, and composting of materials increases diversion, conserves natural resources, and plays an important role in making a community sustainable.

PUBLIC CONTACT

WMAC mailed Hayward customers introductory information regarding the new contract as well as the truck video contamination and overage surcharge program and included information about rates with the March bill. In addition, WMAC sent mailers to customers regarding the cart exchange procedures and sent two robo-phone messages to customers regarding the cart exchange process. Staff also spoke at the Hayward Chamber of Commerce Green Team meeting in April regarding the new solid waste and recycling franchise agreement.

NEXT STEPS

Staff will continue to work with WMAC to implement the new franchise agreement, including installing new litter cans, exchanging trash and recycling carts, and conducting outreach to residents and businesses about the contamination and overage program.

Prepared by: Jeff Krump, Solid Waste Program Manager
Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Public Works

Approved by:

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Kelly McAdoo, City Manager

File #: ACT 23-036

DATE: May 8, 2023

TO: Council Sustainability Committee

FROM: Director of Public Works

SUBJECT

Proposed 2023 Agenda Planning Calendar: Review and Comment

RECOMMENDATION

That the Council Sustainability Committee (CSC) reviews and comments on this report.

SUMMARY

The proposed 2023 agenda planning calendar contains planned agenda topics for the CSC meetings for the Committee's consideration. This agenda item is included in every CSC agenda and reflects any modifications to the planning calendar, including additions, rescheduled items, and/or cancelled items.

ATTACHMENTS

Attachment I Staff Report

DATE: May 8, 2023

TO: Council Sustainability Committee

FROM: Director of Public Works

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RECOMMENDATION

That the Council Sustainability Committee (CSC) reviews and comments on this report.

SUMMARY

The proposed 2023 agenda planning calendar contains planned agenda topics for the CSC meetings for the Committee's consideration. This agenda item is included in every CSC agenda and reflects any modifications to the planning calendar, including additions, rescheduled items, and/or cancelled items.

DISCUSSION

For the Committee's consideration, staff suggests the following tentative agenda topics for 2023.

Underlined – Staff recommends item to be added to Approved Agenda Planning Calendar.

June 26, 2023
East Bay Community Energy Update - Information and Discussion
Hayward Area Shoreline Planning Agency – Information and Discussion
September 11, 2023
Draft Climate Action Plan – Discussion and Recommendation to Council
City Fleet Electrification & Electric Vehicle Charging – Information and Discussion
Energy Resilient Public Facility Program - Discussion and Recommendation to Council

November 13, 2023
Disposable Food Service Ware Reduction and Reuse – StopWaste Model Ordinance – Information and Discussion
Compost Hub at Hayward Community Garden – Information and Discussion
Unscheduled Items
Pilot Program for Reusable Dishware
EV Charging Requirements for Existing Multifamily Properties
Recycled Water Phase 2 Project
City Compliance with MRP Trash Reduction Requirements

NEXT STEPS

Upon direction from the Committee, staff will revise the above list as necessary and schedule items accordingly for upcoming meetings.

Prepared by: Erik Pearson, Environmental Services Manager

Recommended by: Alex Ameri, Director of Public Works

Approved by:

_____

Kelly McAdoo, City Manager