

Long-Term Trash Load Reduction Plan and Assessment Strategy



Submitted by:
City of Palo Alto
250 Hamilton Avenue
Palo Alto, CA 94301
February 1, 2014

In compliance with Provisions C.10.c of Order R2-2009-0074

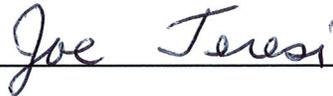
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**CITY OF PALO ALTO
LONG-TERM TRASH LOAD REDUCTION PLAN AND
ASSESSMENT STRATEGY**

CERTIFICATION STATEMENT

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature by Duly Authorized Representative:

A handwritten signature in cursive script that reads "Joe Teresi". The signature is written in black ink and is positioned above a solid horizontal line.

Joe Teresi
Senior Engineer

February 1, 2014

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ABBREVIATIONS

BASMAA	Bay Area Stormwater Management Agencies Association
BID	Business Improvement District
Caltrans	California Department of Transportation
CDS	Continuous Deflection Separator
CY	Cubic Yards
EIR	Environmental Impact Report
EPS	Expanded Polystyrene
FOG	Fats, Oil, and Grease
FSE	Food Service Establishment
MRP	Municipal Regional Stormwater NPDES Permit
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
Q	Flow
RWQCB	San Francisco Regional Water Quality Control Board
RWQCP	Palo Alto Regional Water Quality Control Plant
SCVURPPP	Santa Clara Valley Urban Runoff Pollution Prevention Program
SWRCB	State Water Resource Control Board
TMA	Trash Management Area
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
VTA	Santa Clara Valley Transportation Authority

PREFACE

This Long-Term Trash Load Reduction Plan and Assessment Strategy (the “Long-Term Plan”) is submitted in compliance with provision C.10.c of the Municipal Regional Stormwater NPDES Permit (the “MRP”) for Phase I communities in the San Francisco Bay (Order R2-2009-0074). The Long-Term Plan was developed using a regionally consistent outline and guidance developed by the Bay Area Stormwater Management Agencies Association (the “BASMAA”) and reviewed by San Francisco Bay Regional Water Quality Control Board (the “RWQCB”) staff. The Long-Term Plan is consistent with the Long-Term Trash Load Reduction Framework developed in collaboration with RWQCB staff. Its content is based on the City of Palo Alto’s (the “City”) current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with Municipal Separate Storm Sewer System (the “MS4”) discharges. This Long-Term Plan is intended to be iterative and may be modified in the future based on information gained through the implementation of trash control measures. The City therefore, reserves the right to revise or amend this Long-Term Plan at its discretion. If significant revisions or amendments are made by the City, a revised Long-Term Plan will be submitted to the RWQCB through the City’s annual reporting process.

1.0 INTRODUCTION

1.1 Purpose of Long-Term Trash Reduction Plan

The Municipal Regional Stormwater National Pollutant Discharge Elimination System (“NPDES”) Permit for Phase I communities in the San Francisco Bay (Order R2-2009-0074), also known as the MRP, became effective on December 1, 2009. The MRP applies to 76 large, medium and small municipalities (cities, towns and counties) and flood control agencies in the San Francisco Bay Region, collectively referred to as Permittees. Provision C.10.c of the MRP requires Permittees to submit a *Long-Term Trash Load Reduction Plan* (Long-Term Plan) by February 1, 2014. Long-Term Plans must describe control measures that are currently being implemented, including the level of implementation, and additional control measures that will be implemented and/or increased level of implementation designed to attain a 70% trash load reduction by July 1, 2017, and 100% (i.e., “No Visual Impact”) by July 1, 2022.

This Long-Term Plan is submitted by the City in compliance with the MRP provision C.10.c. Consistent with provision C.10 requirements, the goal of the Long-Term Plan is to solve trash problems in receiving waters by reducing the impacts associated with trash in discharges from the City’s MS4 that are regulated by NPDES Permit requirements. The Long-Term Plan includes:

1. Descriptions of the current level of implementation of trash control measures, and the type and extent to which new or enhanced control measures will be implemented to achieve a target of 100% (i.e. full) trash reduction from MS4s by July 1, 2022, with an interim milestone of 70% reduction by July 1, 2017;
2. A description of the *Trash Assessment Strategy* that will be used to assess progress towards trash reduction targets achieved as a result of control measure implementation; and,
3. Time schedules for implementing control measures and the assessment strategy.

The Long-Term Plan was developed using a regionally consistent outline and guidance developed by the BASMAA and reviewed by the RWQCB staff. The Long-Term Plan is consistent with the Long-Term Trash Load Reduction Framework (see section 1.2.1) developed in collaboration with RWQCB staff. Its content is based on the City of Palo Alto’s current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with Municipal Separate Storm Sewer (MS4) discharges. The Long-Term Plan builds upon trash control measures implemented by the City prior to the adoption of the MRP and during the implementation of the Short-Term Trash Load Reduction Plan submitted to the RWQCB on February 1, 2012.

The Long-Term Plan was reviewed and approved for submittal by the Palo Alto City Council (the “Council”) on January 13, 2014. The City’s Staff Report is attached as Appendix A.

1.2 Background

1.2.1 Long-Term Trash Load Reduction Plan Framework

A workgroup of MRP Permittee, Bay Area countywide stormwater program staff and RWQCB staff met between October 2012 and March 2013 to better define the process for developing and implementing Long-Term Plans, methods for assessing progress toward reduction goals, and tracking and reporting requirements associated with provision C.10. Through these discussions, an eight-step framework for developing and implementing Long-Term Plans was created by the workgroup (Figure 1).

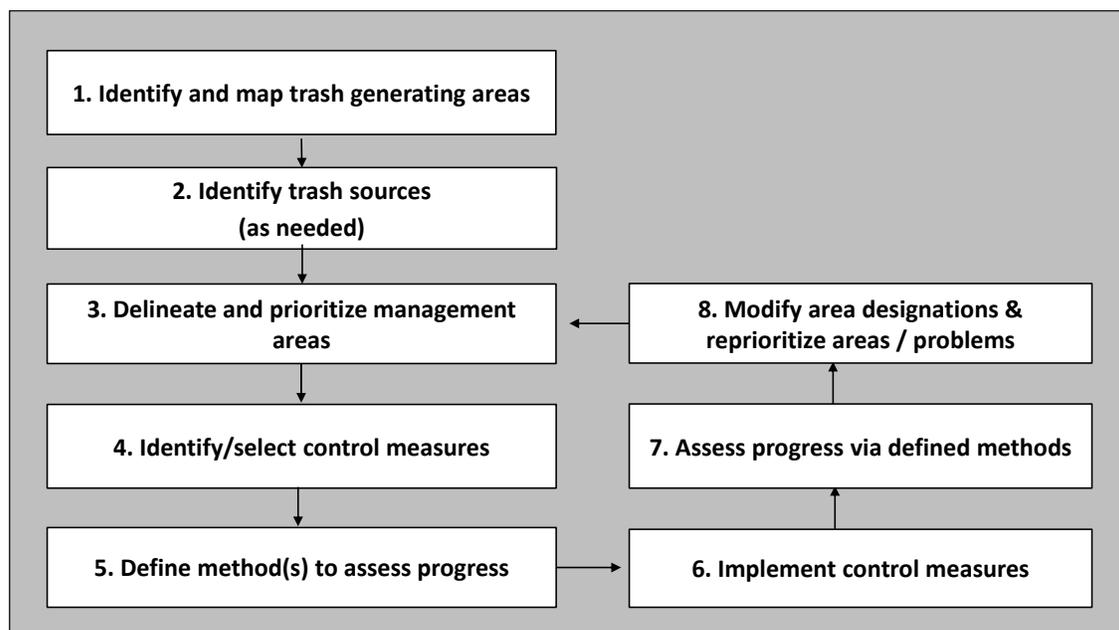


Figure 1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

The workgroup agreed that as the first step in the framework, Permittees would identify very high, high, moderate, and low trash generating areas in their jurisdictional areas. Trash generation rates developed through the *BASMAA Baseline Trash Generation Rates Project* (as

discussed below) were used as a starting point for differentiating and delineating land areas with varying levels of trash generation. Permittees would then use local knowledge and field and/or desktop assessments to confirm or refine the level of trash generation for specific areas within their jurisdiction. Each Permittee would then develop a map depicting trash generation categories within their jurisdiction.

As a next step, Permittees would then delineate and prioritize Trash Management Areas (“TMAs”) where specific control measures exist or are planned for implementation. TMAs delineated by Permittees are intended to serve as reporting units in the future. Reporting at the management area level provides the level of detail necessary to demonstrate implementation and progress towards trash reduction targets.

Once control measures are selected and implemented, Permittees will evaluate progress toward trash reduction targets using outcome-based assessment methods. As the results of the progress assessments are available, Permittees may choose to reprioritize trash management areas and associated control measures designed to improve trash reduction within their jurisdictions.

1.2.2 BASMAA Generation Rates Project

Through approval of a BASMAA regional project in 2010, Permittees agreed to work collaboratively to develop a regionally consistent method to establish trash generation rates within their jurisdictions. The project, also known as the *BASMAA Trash Generation Rates Project* (the “Generation Rates Project”) assisted Permittees in establishing the rates of trash generation and identifying very high, high, moderate and low trash generating areas.

The term “trash generation” refers to the rate at which trash is produced or generated onto the surface of the watershed and is potentially available for transport via MS4s to receiving waters. Generation rates do not explicitly take into account existing control measures that intercept trash prior to transport. Generation rates are expressed as trash volume/acre/year and were established via the Generation Rates Project.

In contrast to trash generation, the term “trash loading” refers to the rate at which trash from MS4s enters receiving waters. Trash loading rates are also expressed as trash volume/acre/year and are equal to or less than trash generation rates because they account for the effects of control measures that intercept trash generated in an area before it is discharged to a receiving water. Trash loading rates are specific to particular areas because they are dependent upon the effectiveness of control measures implemented within an area. Figure 2 illustrates the difference between trash generation and loading.

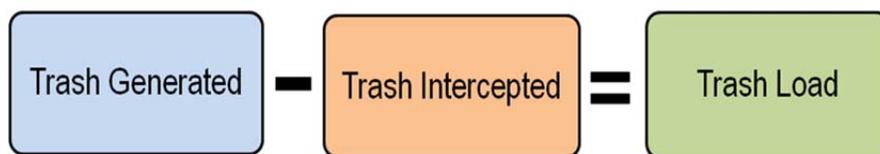


Figure 2. Conceptual model of trash generation, interception and load.

Trash generation rates were estimated based on factors that significantly affect trash generation (i.e., land use and income). The method used to establish trash generation rates for each

Permittee builds off “lessons learned” from previous trash loading studies conducted in urban areas (Allison and Chiew 1995; Allison et al. 1998; Armitage et al. 1998; Armitage and Rooseboom 2000; Lippner et al. 2001; Armitage 2003; Kim et al. 2004; County of Los Angeles 2002, 2004a, 2004b; Armitage 2007). The method is based on a conceptual model developed as an outgrowth of these studies (BASMAA 2011b).

Trash generation rates were developed through the quantification and characterization of trash captured in RWQCB-recognized full-capture treatment devices installed in the San Francisco Bay area. Trash generation rates estimated from this study are listed for each land use type in

Methods used to develop trash generation rates are more fully described by BASMAA (2011b, 2011c, and 2012).

Table 1. San Francisco Bay Area trash generation rates by land use (gallons/acre/year).

Land Use	Low ^b	Best ^b	High ^b
Commercial & Services	0.7	6.2	17.3
Industrial	2.8	8.4	17.8
Residential ^a	0.3 - 30.2	0.5 - 87.1	1.0 - 257.0
Retail ^a	0.7 - 109.7	1.8 - 150.0	4.6 - 389.1
K-12 Schools	3	6.2	11.5
Urban Parks	0.5	5.0	11.4

^a For residential and retail land uses, trash generation rates are provided as a range that takes into account the correlation between rates and household median income.

^b For residential and retail land uses: Low = 5% confidence interval; Best = best fit regression line between generation rates and household median income; and, High = 95% confidence interval. For all other land use categories: High = 90th percentile; Best = mean generation rate; and, Low = 10th percentile.

1.2.3 Short-Term Trash Load Reduction Plan

In February 2012, the City developed a Short-Term Trash Management Plan (the “Short-Term Plan”) that described the current level of control measures implementation and identified the type and extent to which new or enhanced control measures would be implemented to attain a 40% trash load reduction from its MS4 by July 1, 2014. Since that time, the City has begun to implement its short-term plan. Control measures implemented to date via the short-term trash reduction plan are:

- **Street Sweeping:** High priority areas are swept three times per week, other areas once a week with some areas having parking enforcement. The City is conducting a pilot to better direct sweeping resources and is considering lowering frequency in single-family residential areas during the non-leaf season.
- **On-Land Clean Up:** The City performs extensive on-land clean ups. The Downtown Streets Team was founded in Palo Alto in 2005 to address homelessness and litter downtown. This program has created new opportunities for the local homeless population to develop skills and has been instrumental in reducing litter downtown. In addition to the Streets Team, the City’s staff cleans tree wells, medians, parks, school fields and other areas at a high frequency. Finally, restaurants seeking encroachment permits to place tables and chairs on sidewalks are required to keep their encroachment area free of debris, which has resulted in less trash in the public right-of-way.

- **Partial Trash Capture:** In 2009, the City piloted the use of a trash boom in Matadero Creek. This project proved to be extremely successful in removing floatable trash materials from the creek. In December 2012, the City executed a new agreement with the Santa Clara Valley Water District (the “Water District”) for trash booms in both Matadero and Adobe Creeks, extending the program to 2022.
- **Full Trash Capture:** The City installed two Continuous Deflective Separator (“CDS”) units that have a combined tributary area of 167 acres, exceeding the requirements in the MRP and capturing a portion of El Camino Real and adjoining high trash generation area as a cost share with the San Francisco Estuary Partnership grant and City matching funds.
- **Single Use Plastic Bag Ordinance:** The City banned single use plastic bags at grocery stores in September 2009 and expanded the ordinance to cover all retail and food service establishments in 2013.
- **Expanded Polystyrene (EPS) Ordinance:** The City’s ordinance prohibiting the use of EPS and other plastics that are not recyclable or compostable in the City’s recycling program at food service establishments commenced in April 2010. In 2014, the City’s staff will ask the Council to amend this ordinance to prohibit the sale of EPS foodware and ice chests at retail establishments.
- **Outreach:** In addition to participating in regional outreach campaigns related to litter, the City continues its School Program for 2nd, 3rd, 4th and 7th graders. All classroom visits include pollution prevention messages on wastewater and stormwater. One of the second grade programs is about plastic bags and promoting reusable bags. One of the 3rd grade programs is “who dirtied the Bay”, where litter is collected from the school grounds and discussed during the lesson. In addition, the “wheel of trash” game is used at outreach events.

Control measures described in this Long-Term Plan build upon actions taken to-date via the City’s Short-Term Plan. A full description of control measures implemented via short and long-term plans is included in section 3.2. Outcomes associated with short-term plan implementation will be reported in the City’s Fiscal Year 2013-14 Annual Report, scheduled for submittal to the RWQCB by September 15, 2014.

1.3 Organization of Long-Term Plan

This Long-Term Plan is organized into the following sections:

- 1.0 Introduction;
- 2.0 Scope of the Trash Problem;
- 3.0 Trash Management Areas and Control Measures;
- 4.0 Progress Assessment Strategies; and
- 5.0 References

Section 2.0 is intended to provide a description of the extent and magnitude of the trash problem in the City. Control measures that will be implemented by the City as a result of this Long-Term Plan are described in section 3.0. Section 4.0 describes the methods that will be used to assess progress toward trash reduction targets.

2.0 SCOPE OF THE TRASH PROBLEM

2.1 Permittee Characteristics

Incorporated in 1894, the City of Palo Alto is located in the County of Santa Clara (the “County”), and has a jurisdictional area of 15,569 acres. According to the 2010 Census, it has a population of 64,403, with a population density of 2,497.5 people per square mile and average household size of 2.41. Of the 64,403 who call Palo Alto home, 23.4% are under the age of 18, 4.9% are between 18 and 24, 26.6% are between 25 and 44, 28.0% are between 45 and 64, and 17.1% are 65 or older. The median household income was \$119,046 in 2010. Palo Alto is home to many high tech companies. Large employers include Hewlett-Packard, VM Ware, and Space Systems Loral. About one-third of Palo Alto’s land area is open space. Palo Alto is served by two major freeways, Highway 101, and Interstate 280, and is traversed by the Peninsula’s main north-south boulevard, El Camino Real (SR 82) as well as by Caltrain. A census conducted in 2013 by the County estimates the number of homeless individuals in Palo Alto at 157.

Land uses within Palo Alto depicted in Association of Bay Area Governments (“ABAG”) (2005) are provided in Table 2. The City is primarily comprised of three land uses. These include residential, commercial and services, and open space (included under “other” in the table below).

Table 2. Percentages of the City of Palo Alto’s jurisdictional area¹ within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (acres)	% of Jurisdictional Area
Commercial and Services	1,203.1	8.5%
Industrial	400.3	2.8%
Residential	4,416.5	31.1%
Retail	286.5	2.0%
K-12 Schools	272.3	1.9%
Urban Parks	213.0	1.5%
Other	7,391.9	52.1%

2.2 Trash Sources and Pathways

Trash in San Francisco Bay Area creeks and shorelines originates from a variety of sources and is transported to receiving waters by a number of pathways (Figure 3). Of the four source categories, pedestrian litter includes trash sources from high traffic areas near businesses and

¹ A Permittee’s jurisdictional area is defined as the urban land area within a Permittee’s boundary that is not subject to stormwater NPDES Permit requirements for traditional and non-traditional small MS4s (i.e. Phase II MS4s) or the California Department of Transportation, or owned and maintained by the State of California, the U.S. federal government or other municipal agency or special district (e.g., flood control district).

schools, transitional areas where food/drinks are not permitted (e.g., bus stops), and from public or private special events with high volumes of people. Trash from vehicles occurs due to littering from automobiles and uncovered loads. Inadequate waste container management includes sources such as overflowing or uncovered containers and dumpsters as well as the dispersion of household and business-related trash and recycling materials before, during, and after collection. The on-land illegal dumping of trash is the final source category.

Trash is transported to receiving waters through three main pathways: 1) Stormwater Conveyances; 2) Wind; and 3) Direct Dumping. Stormwater or urban runoff conveyance systems (e.g., MS4s) consist of curbs/gutters, and pipes and channels that discharge to urban creeks and the San Francisco Bay shorelines. Wind can also blow trash directly into creeks and the Bay. Lastly, trash in receiving waters can also originate from direct dumping into urban creeks and shorelines.

This Long-term Plan and associated trash control measures described in Section 3.0 are focused on reducing trash from one of the transport pathways illustrated in Figure 3– **stormwater conveyances**. Specifically, the Long-term Plan is focused on reducing the impacts of discharges from MS4s to the San Francisco Area receiving waters and the protection of associated beneficial uses.

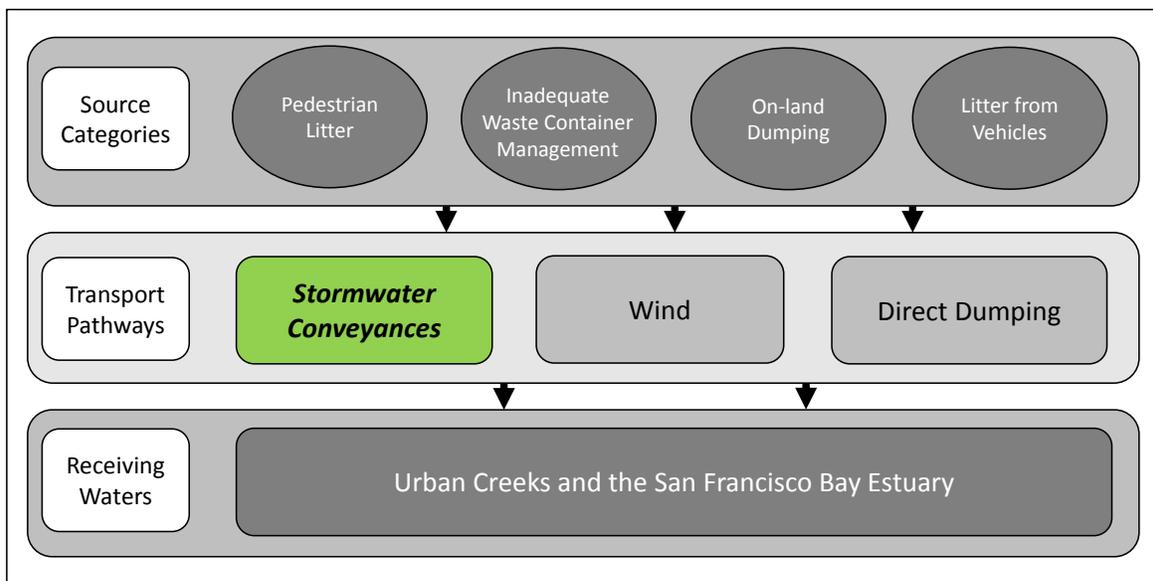


Figure 3. Trash sources categories and transport pathways to urban creeks.

The City has taken the following actions to address the Wind and Direct Dumping transport pathways, which are planned to be continued:

- Trash Booms: Trash Booms in both Matadero and Adobe Creeks collect floatable material that is dumped directly, wind-blown or transported through the MS4 (see Section 3.2.13 for additional detail)
- Weekly clean-up by City staff of Baylands areas that experience litter and illegal dumping and public litter cans in the Baylands.
- Participation in National River Clean Up and Coastal Clean Up day events at designated hot-spot (and surrounding area), exceeding requirements in the MRP.

- No Fishing Signage: Due to high levels of dumping of trash associated with fishing activities, Matadero Creek was posted for “No Fishing” due to trash dumping in 2013. A phone number is provided for complaints and questions.
- Coordination with the California Department of Transportation (“Caltrans”): In 2013, the City’s staff ensured Caltrans’ staff was aware of public complaints related to trash and debris at the off and on ramps at Highway 101. Clean-up has occurred and further coordination is planned as needed.
- Graffiti: Graffiti-cleaning crews pick up spray cans in creeks whenever possible.

Additional planned actions include outreach to tennis clubs and areas with tennis courts that are located adjacent to creeks to address the large number of tennis balls captured by the boom and found in creek clean ups.

2.3 Trash Generating Areas

2.3.1 Generation Categories and Designation of Areas

The process and methods used to identify the level of trash generation within the City are described in this section and illustrated in Figure 4.

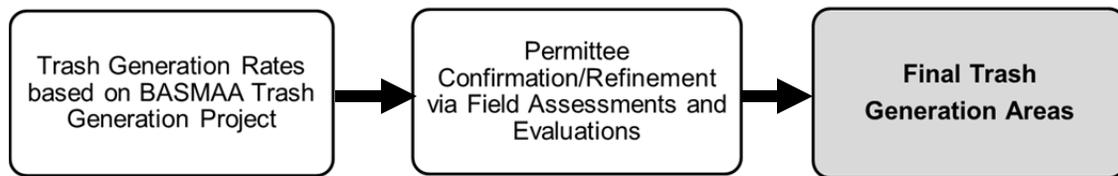


Figure 4. Process to develop Trash Generation Areas.

As a first step, trash generation rates developed through *the BASMAA Trash Generation Rates Project* were applied to parcels within the City based on current land uses and 2010 household median incomes. A Draft Trash Generation Map was created as a result of this application. The draft map served as a starting point for the City to identify trash generating levels. Levels of trash generation are depicted on the map using four trash generation rate (gallons/acre/year) categories that are symbolized by four different colors illustrated in Table 3.

Table 3. Trash generation categories and associated generation rates (gallons/acre/year).

Category	Very High	High	Moderate	Low
Generation Rate (gallons/acre/year)	> 50	10-50	5-10	< 5

The City then reviewed and refined the draft trash generation map to ensure that trash generation categories were correctly assigned to parcels or groups of parcels. City staff refined maps using the following process:

1. Based upon its knowledge of trash generation and problem areas within Palo Alto, the City’s staff identified areas noted on the draft map that potentially had incorrect trash generation category designations.
2. Trash generation category designations initially assigned to areas identified in step #1 were then assessed and confirmed/refined by the City using the methods listed below.

a. On-Land Visual Assessments

To assist Permittees with developing their trash generation maps, BASMAA developed a *Draft On-land Visual Trash Assessment Protocol (the “Draft Protocol”)*. The Draft Protocol entails walking a street segment and visually observing the level of trash present on the roadway, curb and gutter, sidewalk, and other areas adjacent to the street that could potentially contribute trash to the MS4. Based on the level of trash observed, each segment (i.e., assessment area) was placed into one of four on-land assessment condition categories that are summarized in Table 4. In using the Draft Protocol, the City assessed a total of 58 areas to assist in conducting/refining trash generating area designations in May and October 2013. Eight locations were assessed twice to account for the street sweeping pilot (see Section 3.2.13).

Table 4. Definitions of on-land trash assessment condition categories.

On-land Assessment Condition Category	Summary Definition
A (Low)	Effectively no trash is observed in the assessment area.
B (Moderate)	Predominantly free of trash except for a few pieces that are easily observed.
C (High)	Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
D (Very High)	Trash is continuously seen throughout the assessment area, with large piles and a strong impression of lack of concern for litter in the area.

b. Querying Municipal Staff or Members of the Public

Prior to performing the on-land visual assessments, the City’s staff from various groups within the Public Works Department as well as the Open Space, Parks and Golf Division (the “Parks Division”) met to discuss the draft map to choose areas for assessment and develop an assessment plan that was coordinated with street sweeping days and focused on the areas where staff knowledge believed the map might need changes or confirmation. During the visual on-land assessment, the City’s staff interviewed members of the public as well as staff from shopping centers, as opportunities arose, to confirm trash generation. The visual assessment results were shared with municipal staff for additional confirmation.

c. Reviewing Municipal Operations Data

Municipal Operations Data, such as catch basin clean out and Palo Alto311 database, were used to confirm areas for assessment.

d. Viewing Areas via Goggle Maps – Street View

Due to staff constraints, 14 locations, which were small in size, were reviewed using Google maps rather than using on-land visual assessment.

3. Based on assessments conducted to confirm/refine trash generation category designations, the City created a final trash generation map that depicts the most current understanding of trash generation within the City. The City documented this process by tracking the information collected through the assessments and subsequent refinements to the Draft Trash Generation Map. The City of Palo Alto’s Final Trash Generation Map is included as Figure 5.

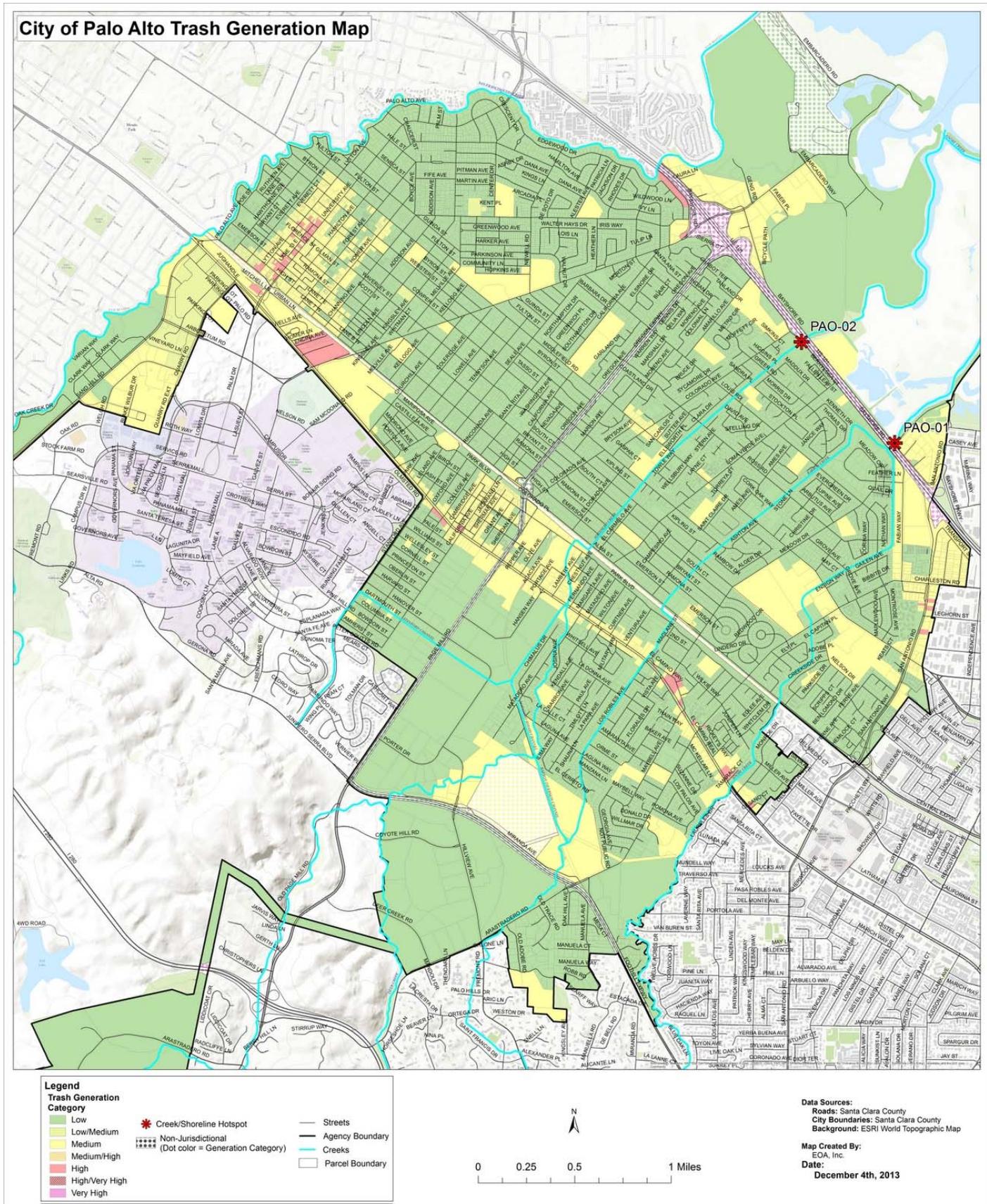
2.3.2 Summary of Trash Generating Areas and Sources

Summary statistics for land use and trash generation categories generated through the mapping and assessment process are presented in Table 5.

Table 5. Percentage of jurisdictional area within the City of Palo Alto assigned to each trash generation category.

Trash Generation Category	Jurisdictional Area (Acres)	Commercial and Services	Industrial	Residential	Retail	K-12 Schools	Urban Parks	Other
Very High	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High	52.8	9.9%	2.0%	11.3%	76.5%	0.0%	0.0%	0.4%
Medium	1,441.7	45.0%	8.9%	2.5%	10.7%	18.3%	14.5%	0.1%
Low / Medium	97.5	11.6%	0.8%	0.5%	87.1%	0.0%	0.0%	0.0%
Low	12,591.7	4.3%	2.1%	34.7%	0.1%	0.1%	0.0%	58.7%

Figure 5. Final Trash Generation Map for the City of Palo Alto



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3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES

This section describes the control measures that the City has or plans to implement to solve trash problems and achieve a target of 100% (i.e. full) trash reduction from its MS4 by July 1, 2022. The selection of control measures described in this section is based on the City's current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with MS4 discharges. Information on the effectiveness of some trash control measures is currently lacking and therefore in the absence of this information, the City based its selection of control measures on existing effectiveness information, their experience in implementing trash controls and knowledge of trash problems, and costs of implementation. As knowledge is gained through the implementation of these control measures, the City may choose to refine their trash control strategy described in this section. If significant revisions or amendments are made, a revised Long-Term Plan will be submitted to the RWQCB through the City's annual reporting process.

3.1 Management Area Delineation and Prioritization

Consistent with the Long-Term Plan framework, the City delineated and prioritized TMAs based on the geographical distribution of trash generating areas, types of trash sources, and current or planned control measure locations. TMAs are intended to form the management units by which trash control measure implementation can be tracked and assessed for progress towards trash reduction targets. Once they were delineated, TMAs were also prioritized for control measure implementation. The City's primary management areas were selected based on the spatial distribution of trash generating areas and the location of specific existing or planned management actions within City's jurisdiction. The City's staff used the following procedure to designate TMAs:

- Areas that were designated high trash generation areas received highest priority, followed by medium high trash generation areas.
- Any retail areas that included high trash generation areas and that attract a high level of pedestrian traffic were designated at the top of the priority list, including downtown, California Avenue, and Town and Country.
- The areas captured by the existing CDS units include high trash generation areas and along with the entire stretch of El Camino Real were the next highest priority due to the numbers of customers these businesses attract.
- Some TMAs are groupings of similar types of facilities, such as neighborhood shopping centers, schools, parks/community centers, and commercial/industrial areas that would all receive similar trash management measures.

A map depicting the City's TMAs is included as Figure 6. All jurisdictional areas within the City are included within a TMA. The amount of jurisdictional land area and associated trash condition categories for each TMA are included in Table 6.

Table 6. Jurisdictional area and percentage of each Trash Management Area (TMA) comprised of trash generation categories

TMA	Jurisdictional Area (Acres)	Trash Generation Rate				
		Very High	High	Medium	Low / Medium	Low
1*	84.7	0.0%	0.0%	68.2%	0.0%	31.8%
1A	88.5	0.0%	12.6%	82.5%	0.0%	4.9%
1B	10.5	0.0%	0.0%	89.6%	0.0%	10.4%
2	153.3	0.0%	0.4%	77.1%	0.0%	22.5%
3	21.2	0.0%	91.7%	8.3%	0.0%	0.0%
4A	40.7	0.0%	0.0%	22.8%	0.0%	77.2%
4B	123.2	0.0%	6.7%	13.7%	0.0%	79.5%
5	168.8	0.0%	2.3%	82.9%	8.5%	6.3%
6	67.6	0.0%	0.0%	36.4%	63.6%	0.0%
6D	4.1	0.0%	0.0%	65.4%	34.6%	0.0%
7A	7.0	0.0%	10.9%	89.1%	0.0%	0.0%
7B	12.4	0.0%	0.0%	100.0%	0.0%	0.0%
7C	5.6	0.0%	0.0%	100.0%	0.0%	0.0%
7D	5.8	0.0%	0.0%	100.0%	0.0%	0.0%
7E	2.3	0.0%	0.0%	100.0%	0.0%	0.0%
8A	6.9	0.0%	0.0%	100.0%	0.0%	0.0%
8B	25.3	0.0%	0.0%	100.0%	0.0%	0.0%
8C	50.7	0.0%	0.0%	100.0%	0.0%	0.0%
8D	7.5	0.0%	0.0%	100.0%	0.0%	0.0%
8E	6.0	0.0%	0.0%	100.0%	0.0%	0.0%
8F	6.9	0.0%	0.0%	100.0%	0.0%	0.0%
8G	6.5	0.0%	0.0%	100.0%	0.0%	0.0%
8H	6.0	0.0%	0.0%	100.0%	0.0%	0.0%
8I	37.1	0.0%	0.0%	100.0%	0.0%	0.0%
8J	7.4	0.0%	0.0%	100.0%	0.0%	0.0%
8K	5.1	0.0%	0.0%	100.0%	0.0%	0.0%
8L	16.7	0.0%	0.0%	100.0%	0.0%	0.0%
8M	60.4	0.0%	0.0%	98.6%	0.0%	1.4%
8N	1.6	0.0%	0.0%	100.0%	0.0%	0.0%
8O	1.9	0.0%	0.0%	100.0%	0.0%	0.0%
8P	2.7	0.0%	0.0%	100.0%	0.0%	0.0%
8Q	5.1	0.0%	0.0%	100.0%	0.0%	0.0%
8R	3.0	0.0%	0.0%	100.0%	0.0%	0.0%
8S	7.8	0.0%	0.0%	100.0%	0.0%	0.0%
8T	2.8	0.0%	0.0%	100.0%	0.0%	0.0%
8U	7.7	0.0%	0.0%	100.0%	0.0%	0.0%
8V	10.5	0.0%	0.0%	100.0%	0.0%	0.0%

Long-Term Trash Load Reduction Plan

8W	4.7	0.0%	0.0%	0.0%	100.0%	0.0%
8X	3.7	0.0%	0.0%	33.0%	0.0%	67.0%
9A	36.9	0.0%	0.0%	100.0%	0.0%	0.0%
9B	25.1	0.0%	0.0%	100.0%	0.0%	0.0%
9C	23.2	0.0%	0.0%	100.0%	0.0%	0.0%
9D	40.9	0.0%	0.0%	100.0%	0.0%	0.0%
9E	7.4	0.0%	0.0%	100.0%	0.0%	0.0%
9F	4.6	0.0%	0.0%	100.0%	0.0%	0.0%
9G	5.5	0.0%	0.0%	100.0%	0.0%	0.0%
9H	3.9	0.0%	0.0%	100.0%	0.0%	0.0%
9I	2.3	0.0%	0.0%	100.0%	0.0%	0.0%
9J	10.7	0.0%	0.0%	100.0%	0.0%	0.0%
9K	12.3	0.0%	0.0%	100.0%	0.0%	0.0%
9L	22.0	0.0%	0.0%	100.0%	0.0%	0.0%
9M	5.6	0.0%	0.0%	100.0%	0.0%	0.0%
9N	11.6	0.0%	0.0%	100.0%	0.0%	0.0%
9O	4.5	0.0%	0.0%	100.0%	0.0%	0.0%
9P	4.8	0.0%	0.0%	100.0%	0.0%	0.0%
9Q	3.4	0.0%	0.0%	100.0%	0.0%	0.0%
10A	122.8	0.0%	2.0%	98.0%	0.0%	0.0%
10B	55.0	0.0%	0.0%	98.9%	0.0%	1.1%
10C	108.9	0.0%	0.0%	99.8%	0.0%	0.2%
10D	116.5	0.0%	0.0%	73.4%	21.7%	4.9%
10E	41.8	0.0%	1.7%	88.6%	0.0%	9.7%
10F	16.0	0.0%	0.0%	72.5%	0.0%	27.5%
10G	6.2	0.0%	4.5%	2.5%	93.0%	0.0%
11	20.3	0.0%	0.0%	100.0%	0.0%	0.0%
12	5.2	0.0%	100.0%	0.0%	0.0%	0.0%
13	12,376.2	0.0%	0.0%	0.1%	0.0%	99.9%

(* Area is for the portion of TMA 1 excluding 1A and 1B)

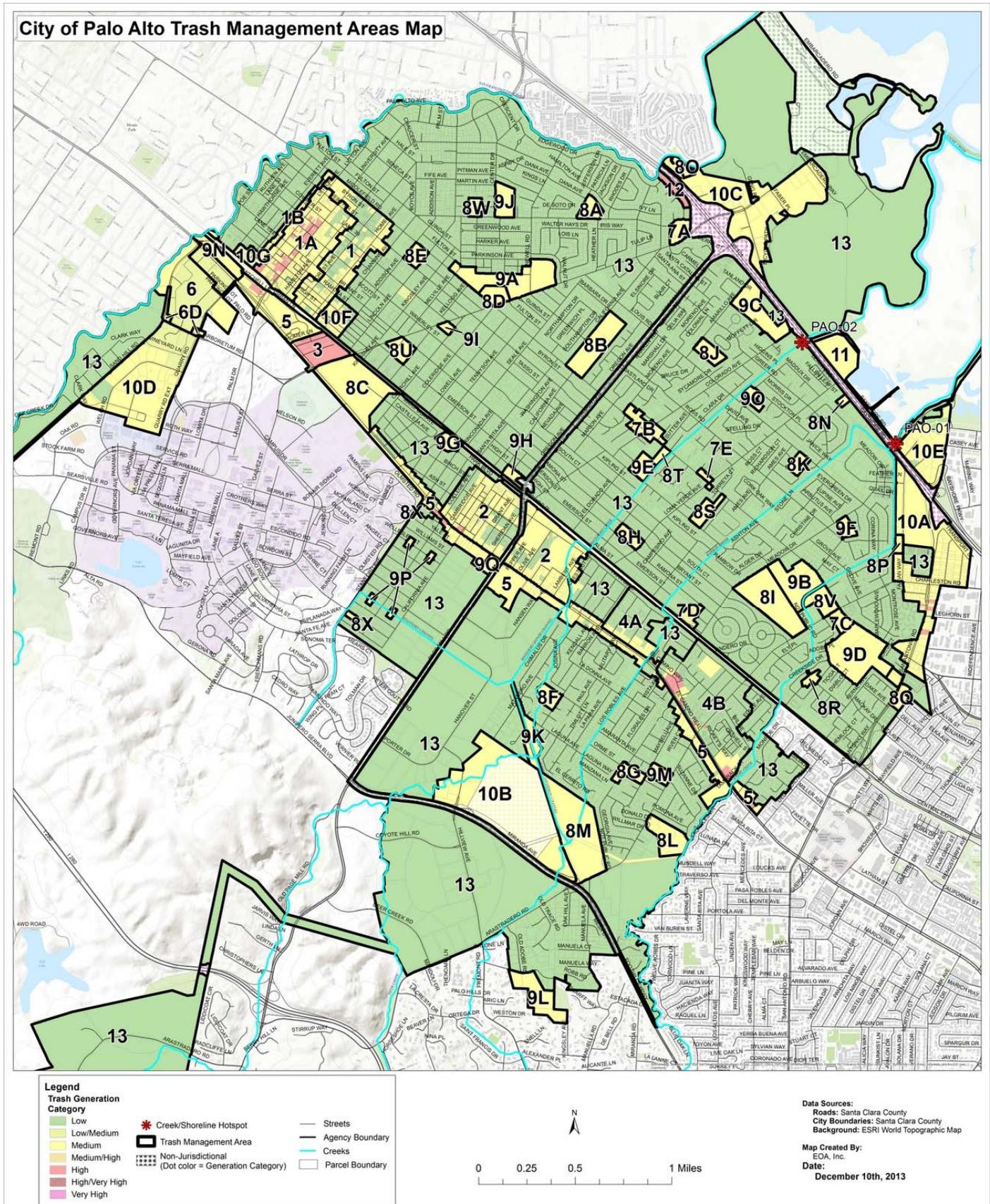


Figure 6. Trash Management Area Map for the City of Palo Alto

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3.2 Current and Planned Trash Control Measures

The City of Palo Alto has been a leader in implementing successful programs to control litter prior to the MRP's adoption because litter management has been a priority for many years and resources have been dedicated, particularly in high priority areas. The City's focus has been on streetsweeping, on-land clean up, product bans, and education. The City has also implemented full trash capture, exceeding the requirement in the MRP. Unique approaches include the agreement with the Water District for litter booms in two creeks, as well as the formation of the Downtown Streets Team to address homelessness and litter in the downtown area. The City's focus is on programs that provide multiple benefits, such as the Downtown Streets Team, which provides benefits for the economic vitality and aesthetics of downtown, addressing homelessness, and litter. Likewise, street sweeping provides multiple benefits by addressing both litter and leaves; and product bans contribute to the City's zero waste and sustainability policies while addressing litter.

3.2.1 Trash Management Area #1

Trash Management Area #1 comprises the City's downtown area spanning from Alma to Middlefield and Everett to Homer Street. There are two subareas: Subarea 1.a. is the Downtown Business Improvement District (the "BID") spanning from Alma to Webster and Lytton to Hamilton; Subarea 1.b. is the residential area north of the downtown area between Lytton and Everett. The downtown area has a high concentration of retail and restaurants, including many with outdoor seating; parks and plazas, office buildings, and multifamily dwellings. The downtown area attracts many visitors, making it a high priority trash management area. Trash sources are primarily pedestrian litter. The City has implemented extensive litter management programs in this area for many years. Based on trash assessments conducted, these litter control and prevention activities are successful and are planned to be continued.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

The downtown area streets from Alma to Middlefield and Lytton to Homer are swept three times per week. In Subarea 1.b., sweeping is performed once a week with parking enforcement. In Subarea 1.a, dedicated City staff use blowers to push trash and debris from the BID sidewalks and from behind parking stops and tree wells into the street on street sweeping days in order to allow the sweepers to pick up sidewalk-based debris as well as street-based debris. In addition, the City's parking lots are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the routes in the City so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors. The City plans to continue sweeping at the same frequency in this area. In addition, the City may explore additional parking enforcement to enhance street sweeping outside of Subarea 1.a.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

The Downtown Streets Team has been cleaning the downtown area since 2005. The Downtown Streets Team is a model developed in Palo Alto by the BID to reduce panhandling and trash accumulation. In exchange for housing and meal vouchers, homeless people hand-sweep the sidewalks, empty overflowing public trash receptacles in the downtown area on Sundays (when not emptied by the City's waste hauler), and clean two downtown area parks and the garages in the downtown area. The Streets Team is funded by City contracts, grants, family foundation, and the Downtown Business Association. In a typical week (including weekends), about 400 person hours are spent cleaning up debris in the BID.

The City's staff and contractors pick up litter and debris in landscaping areas twice per week and in two additional downtown area parks every weekday. Subarea 1.a. sidewalks are mechanically swept and vacuumed by the City's staff on a daily basis using a small-scale sweeper known as the Green Machine and steam cleaned monthly by a BASMAA certified steam cleaner.

Restaurants applying for outdoor seating areas in the public right-of-way are required as part of their encroachment permit to ensure the cleanliness of the outdoor seating areas, including sweeping and steam cleaning. In addition, special events hosted downtown are required to ensure cleanliness of the area after the event.

Actions initiated after the MRP effective date:

An additional Downtown Streets Team refuse bin was provided to enhance debris and trash collection.

Actions planned for future implementation:

The City plans to revise the encroachment permit language for restaurants with tables and chairs to clarify the cleanliness requirements and will pursue additional enforcement as needed.

Full-Capture Treatment Devices

Actions Initiated Prior to and continued after the MRP effective date:

The Santa Clara Valley Transportation Authority (the "VTA") maintains full trash capture devices at the Caltrain station. The maintenance agreement for these devices was executed in March 2006 as part of the C.3 requirements. City staff inspects the full trash capture units annually as part of the C.3 maintenance inspections. In addition, several new developments have installed full trash capture devices to meet C.3 requirements. Please refer to Figure 7 – Trash Full Capture Treatment Device Map.

Actions planned for future implementation:

Runoff from most of the downtown area flows to the San Francisquito Creek pump station near Highway 101. The City will study the feasibility of full trash capture at the pump station (e.g. placing netting devices on low-flow pumps) if trash assessments determine that the downtown area remains a significant source of trash during FY 2017-18.

Partial-Capture Treatment Devices

Actions initiated prior to and continued after the MRP effective date:

A diversion structure to the sanitary sewer, which also serves as the required C.12 (PCB controls) diversion structure for Santa Clara County, covers a portion of TMA #1. In 1993 the City constructed a structure in its stormwater system that directs up to 0.5 million gallons of dry or wet weather flows per day to the Palo Alto Regional Water Quality Control Plant (the "RWQCP"). The structure traps sediment and trash in a vault where it can be removed. The area draining to the diversion structure is roughly 50 acres and is bound by Hamilton Avenue, Bryant Street, Channing Avenue and Alma Street. The structure is currently under evaluation for full capture designation.

In addition, a wet well at the University underpass at Alma provides partial capture where trash can be removed.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City's contracted hauler GreenWaste of Palo Alto ("GreenWaste"); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract requires GreenWaste's staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste's office and outreach staff for investigation and resolution. GreenWaste's staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Public Litter Cans are placed in the downtown area to reduce public littering. Most containers are serviced Monday through Saturday by GreenWaste. The containers in the main arteries downtown are also serviced by the Downtown Streets Team on Sundays.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180, requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water run and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires food service establishments ("FSEs") to include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste cooking fats, oils and grease (FOG) or tallow, with the area designed to prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

Watershed Protection's staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures and downtown alleys. The City's active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement actions documented in the enforcement database when applicable.

Smoking Ordinance

Actions planned for future implementation:

In November 2013, the Council directed staff to develop an ordinance banning smoking in the downtown area, in part, to address litter issues caused by cigarette butts. This ordinance will be an opportunity for outreach related to the harmful effects of cigarette butt litter.

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Outreach – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

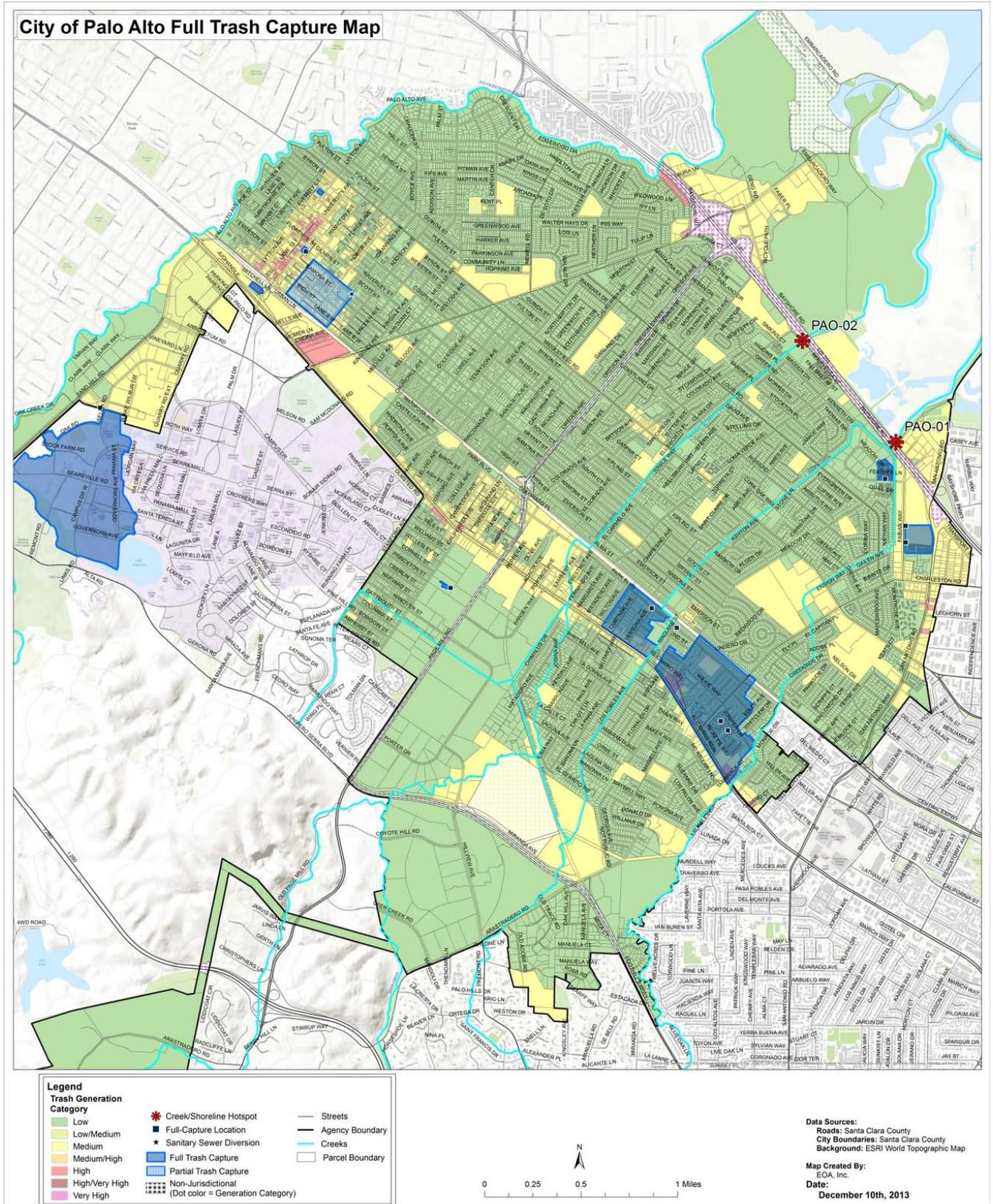


Figure 7. Trash Full Capture Device Map for the City of Palo Alto.

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3.2.2 Trash Management Area #2

Trash Management Area #2 comprises the California Avenue Business Area spanning from El Camino Real to Alma and College to Lambert Street. The California Avenue area has a high concentration of retail and restaurants, including many with outdoor seating; parks and plazas, office buildings, other commercial businesses, and multifamily dwellings. The California Avenue area attracts many visitors, making it a high priority trash management area. Trash sources are primarily pedestrian litter. The City has implemented litter management programs in this area for many years. Based on trash assessments conducted, these litter control and prevention activities are successful and are planned to be continued.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

The California Avenue Area streets from El Camino Real to Park Avenue and College to Lambert are swept three times per week, except for Sherman to Sheridan Avenue and El Camino Real to Ash, which are residential areas that are swept weekly and have parking enforcement if needed to better remove leaves and litter. City parking lots are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes, so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors. The City plans to continue sweeping at the same frequency in this area. In addition, the City may explore additional parking enforcement to enhance street sweeping.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

The City's staff and contractors pick up litter and debris in landscaping areas twice per week, medians at California Avenue daily, tree wells weekly, and the Caltrain Station round-about weekly. Sarah Wallis Park, located within this area, has daily litter pick up.

Restaurants applying for outdoor seating areas in the public right-of-way are required as part of their encroachment permit to ensure the cleanliness of the outdoor seating areas, including sweeping and steam cleaning. In addition, special events hosted downtown must ensure cleanliness of the area.

Actions planned for future implementation:

The City plans to revise the encroachment permit language for restaurants with tables and chairs to clarify the cleanliness requirements and will pursue additional enforcement as needed.

The California Avenue Streetscape Project is in the planning phase to be implemented in 2014 and includes improvements between El Camino Real and the Caltrain Station at Park Avenue. The purpose of this project is to help revitalize the street by providing modern street design and amenities that will support the creation of a vibrant pedestrian- and bike -oriented commercial and residential district that builds upon existing public art amenities. The project will identify additional opportunities for trash management, both structurally and maintenance-related following the project, such as on-land clean-up activities, including considering using the downtown model at California Avenue, which would include consideration of contracting with the Downtown Streets Team, additional City resources, and sidewalk sweeping.

Full-Capture Treatment Devices

Actions planned for future implementation:

The City will study the feasibility of full trash capture of the California Avenue Area if trash assessments determine that the California Avenue Business district remains a significant source of trash during FY 2017-18.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City's contracted hauler GreenWaste of Palo Alto ("GreenWaste"); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract requires GreenWaste's staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste's office and outreach staff for investigation and resolution. GreenWaste's staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Public Litter Cans are placed in the California Avenue and El Camino areas to reduce littering. Most containers are serviced Monday through Saturday by GreenWaste.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180 requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires FSEs to include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste FOG or tallow, with the area designed to prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

Watershed Protection's staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures and alleys. The City's active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement actions are documented in the enforcement database when applicable.

Litter issues are addressed immediately, for example, a public litter can consistently overflowing on Sundays, when no pick up by GreenWaste occurs, was addressed by adding a second public litter can.

Smoking Ordinance

Actions planned for future implementation:

In November 2013, the Council directed staff to develop an ordinance banning smoking in the California Avenue area, in part to address litter issues. This ordinance will be an opportunity for outreach related to the harmful effects of cigarette butt litter.

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Outreach – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.3 Trash Management Area #3

Trash Management Area #3 comprises the Town & Country Shopping Center (“Town & Country”) spanning from El Camino Real to Alma and Embarcadero to Encina. The Town & Country Shopping Center has a high concentration of retail and restaurants, including many with outdoor seating; and is located across Embarcadero Road from Palo Alto High School, which has an “open” campus, resulting in heavy foot traffic between the school and the shopping center, especially on school days. Trash sources are primarily pedestrian litter.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

City streets around the Town & Country area are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors. The City plans to continue sweeping at the same frequency in this area.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

The City’s staff and contractors pick up litter and debris in landscaping areas along Embarcadero Road once per week.

Actions initiated after the MRP effective date:

Town & Country staff picks up litter within the shopping center and along the perimeter at Encina, El Camino Real and Embarcadero daily. The City’s staff interviewed facility staff at the shopping center and received their input related to litter sources. The City’s staff also met with the principal of the high school to discuss ways to reduce litter and conducted two clean-ups in front of the school.

Actions planned for future implementation:

Further monitoring of this site is planned to determine if additional on-land clean-up is needed, including engaging student clubs to “adopt” the area in front of the school.

Full-Capture Treatment Devices

Actions planned for future implementation:

This area flows to the San Francisquito Creek pump station near Highway 101. The City will study the feasibility of full trash capture at the pump station (e.g. netting devices at low-flow pumps) if trash assessments determine that the area remains a significant source of trash during FY 2017-18.

Partial-Capture Treatment Devices

Actions initiated prior to and continued after the MRP effective date:

A wet well at the Embarcadero underpass under Alma provides partial capture and is cleaned of trash as needed.

The Town and Country installed stormwater treatment (C.3) devices as part of a remodel in 2007 which provide partial capture and are inspected annually as part of the City’s maintenance inspection program.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City’s contracted hauler GreenWaste of Palo Alto (“GreenWaste”); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City’s municipal contract requires GreenWaste’s staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste’s office and outreach staff for investigation and resolution. GreenWaste’s staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Litter Cans are placed in the shopping center to reduce littering and are serviced by Town & Country staff.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180 requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water run-on and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires FSEs to include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste FOG or tallow, with the area designed prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

Watershed Protection’s staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures. The City’s active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement documented in the enforcement database when applicable.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide) and Trash Management Area 8 (Schools).

Actions Planned for Future Implementation:

In addition to ongoing outreach, the City’s staff will work with Town and Country and the Palo Alto High School to address litter issues along Embarcadero, for example, creation of a banner and involving school clubs in addressing litter issues.

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.4 Trash Management Area #4

Trash Management Area #4 comprises a portion of El Camino Real and El Camino Way and adjoining multi-family and single family residential area. This area has a concentration of retail and restaurants, including a Goodwill Store, as well as a park. Trash sources are primarily pedestrian and vehicular litter. The two subareas are:

- 4.a El Camino to Park Blvd between Wilton and El Camino Way
- 4.b. El Camino to Park Blvd between El Camino Way and Dinah's Court.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

The streets are swept weekly. The City has an agreement with Caltrans for maintenance of El Camino Real, which specifies that Caltrans reimburses the City for streetsweeping services.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the routes so each City route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

With the City’s potential change in its sweeping program, discussions with Caltrans will occur to ensure continued weekly sweeping of El Camino. The residential area may be swept less frequently during the non-leaf season as described in section 3.2.13.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

City staff and contractors pick up litter and debris in landscaping areas weekly along El Camino as well as at Robles Park, which is within this Trash Management Area.

Full-Capture Treatment Devices

Actions Initiated after the MRP effective date:

The City's staff selected the Continuous Deflective Separator (CDS) unit manufactured by Contech Construction Products, Inc. In order to determine the optimum locations for trash capture devices in Palo Alto, staff reviewed the layout of the City's storm drain system in search of locations with the following characteristics:

- Not connected to a storm water pump station (pump stations have trash racks that currently capture a significant portion of incoming trash and debris).
- Tributary to commercially-zoned land use areas (where there is a higher likelihood of trash, as compared to residential areas).
- Easily accessible for maintenance using simple traffic control measures.
- Junction points where multiple storm drain pipelines converge.

Using these criteria, staff decided to install trash capture devices at the two locations listed below (see Figure 7):

Park Boulevard at Ventura Avenue

- Tributary area of 40 acres
- Includes runoff from El Camino Real between Wilton Avenue and Los Robles Avenue,
- Flows to Barron Creek

4040 Park Boulevard (east of Maclane Avenue)

- Tributary area of 127 acres, which includes medium trash generating areas along El Camino and multi-family residential
- Includes runoff from El Camino Real between Los Robles Avenue and Dinah's Court, which includes high and medium trash generating land uses as well as Robles Park and residential areas
- Flows to Barron Creek

The devices were installed in July 2012 using grant funding from the San Francisco Estuary Partnership and matching funds from the City. The two devices cover an area that is 200% of the 84 acres of trash capture specified in the MRP for the City. They are maintained at least annually.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City's contracted hauler GreenWaste of Palo Alto ("GreenWaste"); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract

requires GreenWaste’s staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste’s office and outreach staff for investigation and resolution. GreenWaste’s staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

GreenWaste services some of the Public Litter Cans on El Camino. Public Litter Cans at bus stops and bus shelters are maintained by VTA.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180, requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires FSEs to include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste FOG or tallow, with the area designed to prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

Watershed Protection’s staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures. The City’s active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement documented in the enforcement database when applicable.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.5 Trash Management Area #5

Trash Management Area #5 comprises the City’s portion of El Camino Real, an area that experiences significant vehicular traffic and has many retail businesses and restaurants along its stretch. The City of Palo Alto has an agreement with Caltrans for maintenance of El Camino Real trash sources are primarily vehicular and pedestrian litter and illegal dumping in one area.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

El Camino Real is swept weekly. The City has an agreement with Caltrans for maintenance of El Camino Real, which specifies that Caltrans reimburses the City for streetsweeping services.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

With the City's potential change in its sweeping program, discussions with Caltrans will occur to ensure continued weekly sweeping of El Camino Real.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

City staff and contractors pick up litter and debris in landscaping areas weekly along El Camino.

Actions Initiated after the MRP effective date:

An area along El Camino Real that is vacant and once had a railway line was found to be heavily littered from illegal dumping. The area was cleaned by the City's staff as part of the Great American Litter Pickup in 2013. Staff will monitor the area, pick up litter as needed, and engage nearby fast-food businesses to see whether they could assist in keeping the area clean.

Full Trash Capture Treatment Devices

Actions planned for future implementation:

The City will seek to collaborate with Caltrans on full trash capture treatment devices that capture additional portions of El Camino (in addition to TMA #4) if needed during FY 2017-18.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City's contracted hauler GreenWaste of Palo Alto ("GreenWaste"); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract requires GreenWaste's staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste's office and outreach staff for investigation and resolution. GreenWaste's staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Bus stop litter cans along El Camino Real are maintained by VTA.

The City initiated a Clean Bay Business Program focusing on vehicle service facilities in 1992 and provided positive incentives and recognition to reduce pollutants such as heavy metals from entering our creeks and Bay from these facilities. The auto facilities along El Camino Real are inspected at least annually to determine whether they meet Clean Bay Business Program requirements, which includes checking for litter.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180, requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires FSEs to include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste cooking FOG or tallow, with the area designed prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

Watershed Protection’s staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures. The City’s active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement documented in the enforcement database when applicable.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.6 Trash Management Area #6

Trash Management Area #6 comprises the Stanford Shopping Center. This Mall has a high concentration of retail and restaurants, including many with outdoor seating. During trash assessments in May 2013, no trash was found along Sand Hill, Quarry and Vineyard Lane, which bound the shopping center in addition to El Camino.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

City streets in the Stanford Shopping Center area are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

While the City is considering changes in the sweeping program, including potential use of contractors, the City plans to continue sweeping at the same frequency in this area.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

Stanford Shopping Center staff/contractors pick up litter in the shopping center. Parks contractors maintain the City's electrical substation area off Quarry, including litter pick up, across from the Shopping Center.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City's contracted hauler GreenWaste of Palo Alto ("GreenWaste"); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract requires GreenWaste's staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste's office and outreach staff for investigation and resolution. GreenWaste's staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Litter Cans are placed in the shopping center to reduce littering and are serviced by Stanford Shopping Center staff.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180, requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires FSEs to include a covered area for all dumpsters, bins, carts or containers used for the collection of trash, recycling, food scraps and waste cooking fats, oils and grease (FOG) or tallow, with the area designed prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

If needed, Watershed Protection's staff works closely with solid waste staff on addressing overflowing bins and littered trash enclosures. The City's active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement documented in the enforcement database when applicable.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.7 Trash Management Area #7

Trash Management Area #7 is comprised of Palo Alto’s five neighborhood shopping centers:

- Subarea 7.a: Edgewood Plaza at Embarcadero and St. Francis
- Subarea 7.b: Midtown Shopping Area at Middlefield and Colorado
- Subarea 7.c: Charleston Plaza at Middlefield and Charleston
- Subarea 7.d: Alma Plaza at Alma and East Meadow
- Subarea 7.e: neighborhood shops at Loma Verde and Middlefield

These areas were grouped in one trash management area because trash sources and trash management actions are similar for these areas. Trash sources are primarily pedestrian litter.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

The streets around the shopping centers are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

The shopping center property managers are responsible for maintaining the shopping centers.

For Subarea 7.b: Parks contractors maintain landscaping and collect litter in an alley weekly.

For Subarea 7.d: Parks contractors maintain landscaping and collect litter across from the shopping center about 100ft along train tracks on the East side of the tracks at East Meadow and Alma.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City’s contracted hauler GreenWaste of Palo Alto (“GreenWaste”); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the

trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract requires GreenWaste's staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste's office and outreach staff for investigation and resolution. GreenWaste's staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Litter Cans are placed in the shopping centers to reduce littering and are serviced by each shopping center's staff or contractors.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180, requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires FSEs to include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste FOG or tallow, with the area designed to prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

Watershed Protection's staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures. The City's active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement documented in the enforcement database when applicable.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.8 Trash Management Area #8

Trash Management Area #8 is comprised of the private and public schools in Palo Alto:

- Subarea 8.a: Duveneck Elementary (public)
- Subarea 8.b: Jordan Middle (public) and Stratford School (private)
- Subarea 8.c: Palo Alto High School (public)
- Subarea 8.d: Walter Hays Elementary (public)
- Subarea 8.e: Addison Elementary (public)
- Subarea 8.f: Barron Park Elementary (public)
- Subarea 8.g: Juana Briones Elementary (public)
- Subarea 8.h: El Carmelo Elementary (public)
- Subarea 8.i: JLS Middle, Fairmeadow and Hoover Elementary (public)
- Subarea 8.j: Ohlone Elementary (public)
- Subarea 8.k: Palo Verde Elementary (public)
- Subarea 8.l: Terman Middle (public)
- Subarea 8.m: Gunn High School (public)
- Subarea 8.n: Girls Middle School (private)
- Subarea 8.o: International School (private)
- Subarea 8.p: Kehillah Jewish High School (private)
- Subarea 8.q: Gideon Hausner (private)
- Subarea 8.r: Montessori School of Los Altos (private)
- Subarea 8.s: International School Peninsula (private)
- Subarea 8.t: Keys School (private)
- Subarea 8.u: Castilleja (private)
- Subarea 8.v: Challenger School (private)
- Subarea 8.w: Saint Elizabeth Seton (private)
- Subarea 8.x: University Church Afterschool Care (private)

These areas were grouped in one trash management area because trash sources and trash management actions are similar for these areas. Trash sources are primarily pedestrian litter.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

The streets around the schools are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

Janitorial staff picks up litter at schools, in addition to various methods including using lunch detention students to clean up after lunch, giving points during “spirit week” to clean up litter, etc.

For all public middle and elementary schools: the Parks Division’s staff maintains landscaping and collects litter on the athletic fields twice per week.

Partial-Capture Treatment Devices

Actions initiated after the MRP effective date:

Keys School has installed a vortex separator as part of stormwater treatment (C.3) compliance. Gideon Hausner is in the process of remodeling and will be installing stormwater treatment as part of C.3 requirements.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City's contracted hauler GreenWaste of Palo Alto ("GreenWaste"); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract requires GreenWaste's staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste's office and outreach staff for investigation and resolution. GreenWaste's staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Litter Cans are placed at the schools to reduce littering and are serviced by school staff.

Actions initiated after the MRP effective date:

Watershed Protection staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures. The Sustainable Schools Committee, among other things, works on improving recycling at the schools. GreenWaste has worked with schools on improving waste collection and recycling.

Actions Planned for future implementation:

Watershed Protection's staff is piloting an inspection program for wastewater and stormwater issues for all middle and high schools. The inspection program will include inspecting trash areas, as well as automotive, pool, science, and art areas.

Outreach

Actions Initiated prior to and continued after the MRP Effective date:

The City has allowed citizen volunteers to stencil storm drains since 1992, when the San Francisco Estuary Project (now Partnership) began its Paint the Drain Campaign. The City has maintained white backgrounds near storm drains around schools.

Outreach to School-age Children or Youth ZunZun (Countywide)

Through participation and funding of the SCVURPPP countywide ZunZun Program, the City of Palo Alto is continuing to implement litter reduction outreach to elementary school-age children. Up to 50 ZunZun assemblies at elementary schools are conducted in the Santa Clara Valley each year. These bilingual musical assemblies educate elementary school students and their teachers on watersheds and urban

runoff pollution prevention, including litter. ZunZun performances use physical comedy, audience participation and musical instruments to educate teachers and children. Handouts, including teacher and student activity sheets, are distributed following the assembly.

In addition to participating in regional outreach campaigns, the City has run an effective school outreach program since prior to the MRP effective date.

Actions initiated after the MRP effective date:

The school program was expanded in 2010 and includes programs for 2nd, 3rd, 4th and 7th graders. All classroom visits include pollution prevention messages on wastewater and stormwater. Examples of programs relevant to trash/litter education are:

<p>What's Up with the Bags? (second grade)</p>	<p>In this program students practice their reading and comprehension skills by reading a story out loud as they learn about the impact of plastic bags when they enter the watershed through human use and misuse. Plastic bag alternatives are discussed. Students are given a re-usable bag, encouraged to decorate it with a message about water pollution or something else they learned from the lesson, and then take the bag home to be reused. Students also learn: the difference between waste water and storm water (where it comes from, where it goes); the water cycle; the definition and function of a watershed; and "reduce/reuse/recycle/rot/respect."</p>
<p>Watershed Warriors!</p>	<p>In this program students utilize a hands-on, simulated model called The Enviroscape. This model represents various environments such as a farm and a neighborhood. Students learn the sources of pollution & solutions to reduce or eliminate pollution. Students also learn: the difference between waste water and storm water (where it comes from, where it goes); the water cycle; the definition and function of a watershed; and "reduce/reuse/recycle/rot/respect."</p>
<p>Who Dirtied the Bay? (third grade)</p>	<p>Moving through time from past to present the focus of this program is on storm water and how pollutants impact the Baylands and H2O environment. Pollution prevention solutions are discussed with an emphasis on what the students can do right now, at their age, to impact water pollution. Students also learn: the difference between waste water and storm water (where it comes from, where it goes); the water cycle; the definition and function of a watershed; and "reduce/reuse/recycle/rot/respect." Litter is collected from the school grounds and discussed during the lesson.</p>

Following the May 2013 trash assessments, the City's staff met with the principal of Palo Alto High School to discuss litter outreach strategies. In addition, the City's staff has attended a special session for all 100 7th graders at JLS middle school to discuss how litter impacts water quality in creeks and participated in a "litter walk" around the campus.

Actions Planned for future implementation:

Additional litter outreach to schools is planned as opportunities arise. Staff is currently working with Jordan Middle School on an anti-litter program which is planned to be implemented in the future. In addition, participation at science fairs to discuss water quality issues including litter is being considered, as is working with student clubs in designing one or more banners to be placed near schools related to litter. Also see discussion for Trash Management Area 3 related to litter outreach to Palo Alto High school.

Please also refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.9 Trash Management Area #9

Trash Management Area #9 is comprised of the City's parks:

- Subarea 9.a: Rinconada/Lucie Stern/Main Library/Art Center complex
- Subarea 9.b: Mitchell Park and Community Center
- Subarea 9.c: Greer Park
- Subarea 9.d: Cubberley Community Center and playing fields
- Subarea 9.e: Hoover Park Ball fields
- Subarea 9.f: Ramos Park
- Subarea 9.g: Peers Park
- Subarea 9.h: Jerry Bowden
- Subarea 9.i: Lawn Bowling Green
- Subarea 9.j: Eleanor Pardee
- Subarea 9.k: Bol Park
- Subarea 9.l: Esther Clark
- Subarea 9.m: Briones Park
- Subarea 9.n: El Camino Park and El Palo Alto Park
- Subarea 9.o: Seale Park
- Subarea 9.p: four neighborhood parks in College Terrace
- Subarea 9.q: Mayfield Soccer Fields

These areas were grouped in one trash management area because trash sources and trash management actions are similar for these areas. Trash sources are primarily pedestrian litter.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

The streets around the parks are swept weekly. Parking lots at the following parks are swept weekly: Mayfield Soccer fields, El Camino Park, Mitchell Park and Community Center, Rinconada/Lucie Stern/Main Library/Art Center Complex and Greer Park.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

Parks are maintained daily (weekday) or three times per week, depending on usage of the parks by Parks staff/contractors. For example, Cubberley maintenance occurs twice per week. Mitchell Park/library/community center has daily litter pick up. Mayfield Soccer Fields are cleaned by the Downtown Streets Team as well as City staff.

Partial-Capture Treatment Devices

Actions initiated after the MRP effective date:

The Main and Mitchell Park libraries as well as El Camino Park are in the process of being remodeled and will install stormwater treatment devices as part of the stormwater treatment (C.3) requirements. Mayfield Soccer fields have installed stormwater treatment devices as part of C.3 requirements.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

Public Litter Cans are placed in the parks to reduce littering and are serviced by Parks staff or contractors and are emptied either daily or three times per week depending on the park’s usage. Rinconada and Mitchell Park also have weekend litter can pick up by City staff or contractors.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular Palo Alto Municipal Code section 16.09.180, requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster, which is also applied to park construction projects. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area.

Actions planned for future implementation:

The City’s Zero Waste Group and the Open Space, Parks and Golf Division are considering improving the design of trash receptacles in parks to increase material diversion, and to prevent wind and animals from causing litter to escape the receptacles.

Smoking Ordinance

Actions initiated after the MRP effective date:

On August 12, 2013, the Council approved a ban on smoking in all public parks and open space nature preserves, including the City’s golf course, effective October 9, 2013.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.10 Trash Management Area #10

Trash Management Area #10 is comprised of the commercial/industrial areas within the City outside of the two main business areas (TMA #1 and #2):

- Subarea 10.a: Charleston at San Antonio (high tech industry, plating shops, automobile, various commercial)
- Subarea 10.b: Page Mill Corridor/El Camino (primarily high tech industry)
- Subarea 10.c: East Bayshore and Embarcadero (office buildings, some auto facilities, airport/golf course, athletic center, Main Post Office, GreenWaste Facility)
- Subarea 10.d: Vineyard to Pasteur and Quarry to Sand Hill (primarily Stanford Hospitals and Clinics and Children's hospital as well as medical office buildings)
- Subarea 10.e: San Antonio to Adobe Creek (Various Commercial/office buildings)
- Subarea 10.f: Alma between Addison and Homer: automobile, hardware store, and miscellaneous commercial
- Subarea 10.g: Alma between Lytton and Palo Alto Ave: primarily retail and offices, one park

These areas were grouped in one trash management area because trash sources and trash management actions are similar for these areas. Trash sources include pedestrian litter, homeless encampment and vehicular litter.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

The streets are swept weekly. For area 10.c, the golf course parking lot is swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes. In addition, the City may explore additional parking enforcement to enhance street sweeping in some areas.

On-Land Trash Cleanup

Actions Initiated prior to and continued after the MRP Effective date:

For areas 10 a. and b., Parks staff/contractors maintain landscaping and pick up litter weekly in the median. For area 10.g, Parks staff/contractors pick up litter weekly at Watertower Park (Alma Tower). Public Works' staff cleans the embankment of Caltrain as needed.

Actions planned for future implementation:

For area 10.d, Parks staff/contractors will begin maintaining Welch Road medians and sides for litter and landscaping weekly.

Full-Capture Treatment Devices

Actions planned for future implementation:

The City will study the feasibility of full trash capture at the Adobe Pump Station, if it is determined that the tributary area is a significant source of trash, during FY 2017-18.

Partial-Capture Treatment Devices

Actions initiated prior to and continued after the MRP effective date:

A diversion structure to the sanitary sewer, which also serves as the required C.12 (PCB controls) diversion structure for Santa Clara County, covers a portion of TMA #10 Subarea 10.f. In 1993 the City constructed a structure in its stormwater system that diverts up to 0.5 million gallons of dry or wet weather flows per day to the RWQCP. The structure traps sediment and trash in a vault where it can be removed. The area draining to the diversion structure is roughly 50 acres and is bound by Hamilton Avenue, Bryant Street, Channing Avenue and Alma Street. The structure is currently under evaluation for full capture designation.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City’s contracted hauler GreenWaste of Palo Alto (“GreenWaste”); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City’s municipal contract requires GreenWaste’s staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste’s office and outreach staff for investigation and resolution. GreenWaste’s staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

The City initiated a Clean Bay Business Program focusing on vehicle service facilities in 1992 and provided positive incentives and recognition to reduce pollutants such as heavy metals from entering creeks and the Bay from these facilities. The auto facilities are inspected at least annually to determine whether they meet Clean Bay Business Program requirements, which includes checking for litter.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180 requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area. In addition, Palo Alto Municipal Code section 16.09.075 requires FSEs to include a covered area for all dumpsters, bins, carts or container used for the collection of trash, recycling, food scraps and waste FOG or tallow, with the area designed to prevent water run-on to the area and runoff from the area. Drains that are installed within the enclosure for recycle and waste bins, dumpsters and tallow bins serving FSEs are optional. Any such drain installed shall be connected to a grease control device. If tallow is to be stored outside then an adequately sized, segregated space for a tallow bin shall be included in the covered area.

Watershed Protection’s staff is working closely with solid waste staff on addressing overflowing bins and littered trash enclosures. The City’s active inspection program for commercial and industrial facilities includes inspecting trash areas and enforcement documented in the enforcement database when applicable.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.11 Trash Management Area #11

Trash Management Area #11 comprises East Bayshore Road between Adobe and San Francisquito Creeks. The Municipal Service Center (MSC) is located in this TMA. Trash sources are primarily vehicular especially from the adjacent Highway 101.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:
East Bayshore is swept weekly. Parking lots at MSC are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

While the City is considering changes in the sweeping program, including potential use of contractors, the City plans to continue sweeping at the same frequency in this area.

On-Land Trash Cleanup

Actions Initiated after the MRP effective date:

City-owned areas near the on/off ramps to highway 101 at Embarcadero and San Antonio Roads are cleaned as needed. In addition, the two MRP required hot spots for Palo Alto are in this TMA, which are cleaned twice per year.

Actions planned for future implementation:

The City will seek additional coordination/collaboration with Caltrans for this TMA to ensure clean ups of the nearby Caltrans right-of-way occur to prevent trash from being transported from the highway areas to this TMA.

Partial-Capture Treatment Devices

Actions initiated prior to and continued after the MRP effective date:

Trash booms are located in this area at Adobe and Matadero Creeks. (See TMA #13 for additional description)

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The MSC has a Stormwater Pollution Prevention Plan and is inspected at least annually. Staff training and outreach is conducted to ensure that dumpsters are closed and litter prevented.

The City initiated a Clean Bay Business Program focusing on vehicle service facilities in 1992 and provided positive incentives and recognition to reduce pollutants such as heavy metals from entering our creeks and Bay from these facilities. The Vehicle service facility at the MSC is inspected twice annually to determine whether they meet Clean Bay Business Program requirements, which includes checking for litter.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.12 Trash Management Area #12

Trash Management Area #12 comprises West Bayshore Road between San Francisquito Creek and Channing Avenue adjacent to Highway 101 sound wall. This area is primarily residential back yards facing the frontage road. However, it has recently become an area where significant illegal dumping occurs. Additional trash sources are pedestrian and litter from parked cars.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

West Bayshore is swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the routes so each City route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes.

On-Land Trash Cleanup

Actions Initiated after the MRP effective date:

Parks staff/contractors maintain an area near the sound wall monthly for litter and landscaping. Public Works' staff cleans the area as needed. In addition, the area is near San Francisquito Creek and, when possible, part of the City of East Palo Alto's creek clean up area.

Outreach

Please refer to description in Trash Management Area 13 (Jurisdiction-wide).

Enhanced Storm Drain Inlet Maintenance – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Activities to Reduce Trash from Uncovered Loads – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Anti-littering and Illegal Dumping Enforcement Activities – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

Actions planned for future implementation: The City's staff will coordinate with the City of East Palo Alto on illegal dumping initiatives for this area. In addition, a sidewalk has been requested by some residents to better access the new Edgewood Shopping Center. If this sidewalk project occurs, bringing additional light and beautification to this area may deter dumping.

Product Bans – Please refer to description in Trash Management Area 13 (Jurisdiction-wide)

3.2.13 Jurisdiction-wide Control Measures and Trash Management Area #13

This TMA consists primarily of open space and residential as well as high tech company campus areas, which are land uses with a low trash generation rate. Palo Alto has been a leader in a number of trash management activities, including implementing product bans as well as partial capture using trash booms, with some actions occurring prior to the effective date of the MRP. This TMA is the lowest priority area due to the level of trash generation. The control measures described here pertain to TMA #13, but also to all other TMAs because they are jurisdictional-wide.

Street Sweeping

Actions Initiated prior to and continued after the MRP Effective date:

Residential streets are swept weekly.

Actions Initiated after the MRP effective date:

A new Broom Sweeper was added to the Fleet to help make sure the heavier debris is picked up. The new Broom sweeper is rotated throughout all the City routes so each route receives sweeping by this new Broom sweeper at least every five weeks.

Actions planned for future implementation:

The City conducted a pilot project in primarily residential areas to test every-other-week street sweeping service during the non-leaf season months of March through September. The pilot evaluated whether the City can save costs by reducing sweeping frequency without significantly impacting residents or the environment. Recommendations for efficiency and cost savings for the street sweeping program, including the reduced frequency during the summer as well as contracting out portions of the street sweeping program, were discussed with the Finance Committee on December 2, 2013. The Finance Committee directed City staff to bring a recommendation for issuance of a Request for Proposal (RFP) to Council. Weekly street sweeping service will continue during the leaf season months (October through February). The RFP process will be an opportunity to further evaluate the efficiency and effectiveness of the streetsweeping program and make changes to routes and procedures if needed.

On-Land Trash Cleanup

Actions Initiated after the MRP effective date:

Small areas with medians and public right-of-way planting areas are maintained for landscaping and litter removal by the Parks Division's staff/contractors. In addition, the City has a maintenance agreement with the County to maintain landscaping and remove litter from the median and side area landscaping at Oregon Expressway/Page Mill Road.

Partial-Capture Treatment Devices

Actions initiated prior to and continued after the MRP effective date:

The City entered into an agreement with the Water District in April 2009 to install a trash boom across Matadero Creek during the dry season. The trash boom prevents any floating trash from entering the Palo Alto Flood Basin and natural areas of the creek.

Four of the eight pump stations have trash racks. Matadero Pump Station was retrofitted with additional trash racks. Pump Stations are cleaned of debris annually each September. Debris (including organic debris and trash) is collected, dried and then weighed, with weights recorded on an excel spread sheet

for tracking purposes. Emergency cleanings may be required due to increased storm influx and maintenance requirements.

Actions Initiated after the MRP effective date:

Based on the successful pilot at Matadero Creek, the City and the Water District developed a new agreement to annually deploy trash booms at both Matadero and Adobe Creeks. The new agreement was approved by the City Council on December 10, 2012. The Water District completed permitting in July 2013. The City purchased a second boom in April 2013. Booms were deployed in July and August in Adobe and Matadero creeks. In accordance with the permit, the boom must be removed each year prior to the start of the rainy season so as not to cause potential flow blockages during storm events. The boom floats on the surface of the water and has a suspended curtain that captures near-surface debris. The amount of debris trapped by the boom will be monitored periodically by City staff, and the debris will be photographed, removed and measured on an as-needed basis, at least twice per year. The City's staff has been providing technical assistance to the Water District for other trash boom locations in the county.

Improved Trash Bins/Container Management and Commercial Inspection Program

Actions initiated prior to and continued after the MRP effective date:

The City has a number of municipal ordinances regulating the maintenance of trash/recyclables containers by residents and businesses. Palo Alto Municipal Code Sections 5.20.040, 5.20.080, 5.20.130, 5.20.140, and 5.20.180 require residents and businesses to 1) utilize the trash/recyclables collection services of the City's contracted hauler GreenWaste of Palo Alto ("GreenWaste"); 2) procure a sufficient number of containers to hold all solid waste created, produced or accumulated on the premises during a one-week period, unless a more frequent collection schedule has been arranged; 3) maintain the trash/recyclables bins, boxes, and containers on their premises, and the area in which they are located, in a good, usable, clean and sanitary condition, and ensure that the lid or cover on the bin, box, or container is kept fully closed in a manner that prevents leakage, spillage and the escape of odors, and that no solid waste or recyclable materials are placed outside of the bin, box, or container; and 4) keep their premises in a clean and sanitary condition and not cause, suffer or permit any solid waste to accumulate in, on or about such premises for a period in excess of one calendar week, respectively. In order to ensure that trash/recyclables containers for residents and businesses are properly sized, GreenWaste works with customers during the establishment of new refuse collection services to recommend a suitably-sized container based on the occupant load and use of the premises. Language in the City's municipal contract requires GreenWaste's staff to take corrective actions in response to overflowing trash and recyclables bins. Problem locations identified by collection vehicle drivers in the field are tagged by the drivers and referred to GreenWaste's office and outreach staff for investigation and resolution. GreenWaste's staff works with customers to ensure that missing containers are replaced and/or that undersized containers are replaced with larger units in order to accommodate the customer needs and prevent future overflow conditions.

Actions initiated after the MRP effective date:

The Sewer Use Ordinance updated in 2010, in particular, Palo Alto Municipal Code section 16.09.180 requires new buildings and residential developments providing centralized solid waste collection, except for single-family and duplex residences, to provide a covered area for a dumpster. The area shall be adequately sized for all waste streams and designed with grading or a berm system to prevent water runoff and runoff from the area.

Actions planned for future implementation:

The City may consider including additional ordinance language relating to littering prohibitions.

Enhanced Storm Drain Inlet Maintenance

Actions initiated prior to and continued after the MRP effective date:

Storm inlets are cleaned annually in October and during pipeline cleaning year round. All work is recorded daily and marked on a map. Data is collected monthly and recorded on an Excel spreadsheet. Debris (both organic material and trash) collected is weighed, dried and recorded for tracking purposes.

Activities to Reduce Trash from Uncovered Loads

Actions initiated prior to and continued after the MRP effective date:

Since 1997, the City has implemented the following control measures to reduce trash from vehicles with uncovered loads:

- 1) The City's contract with GreenWaste contains language requiring covered loads when GreenWaste is transporting trash and debris to the transfer station.
- 2) Palo Alto Municipal Code Section section 5.20.160 requires that all solid waste and recyclable materials hauled by any person over public streets in the City shall be securely tied and covered during hauling thereof so as to prevent leakage, spillage, or blowing and prohibits any person from allowing any solid waste or recyclable materials of any kind whatsoever to leak, spill, blow or drop from any vehicle on any public street. This Code section is enforced by the Palo Alto Police Department. Violators are subject to an administrative penalty of \$250.
- 3) The City is a partner agency in the Sunnyvale Materials Recovery and Transfer ("SMaRT") Station. The SMaRT Station has a tarp distribution program which requires vehicles that arrive with uncovered loads to purchase a tarp at a cost of \$15.00. Each subsequent visit to the transfer station with an uncovered load will result in an additional fee for a tarp, prompting haulers to change their behavior by covering their loads in order to avoid additional tarp fees.

Actions initiated after the MRP effective date:

With the closure of the City's landfill, the tarp distribution program is implemented by the SMaRT station in Sunnyvale. The average compliance rate between July 2012 and June 2013 was 99.4% based on 26,955 transactions.

Anti-littering and Illegal Dumping Enforcement Activities

Actions initiated after the MRP effective date:

The City has implemented PaloAlto311, a multi-platform solution to report issues, including illegal dumping. With this new Smartphone app, service requests are easily submitted by completing a short description of the request. A picture of the issue can be included in order to provide additional details. The app will automatically know the issue location; and the chosen request type will ensure that the issue is sent to the appropriate department at the City. The submitter and subsequent "followers" will be able to track the request all the way through to its resolution right from the phone. In addition to the 311 tracking, illegal dumping service requests are also tracked in a database and hardcopy format.

In addition, an illegal dumping phone number 650-329-2413 and web service request entry form are provided.

Product Bans

Single-Use Carryout Bag Policies

Actions initiated prior to and continued after the MRP effective date:

The City banned single-use plastic bags at grocery stores prior to the MRP, with the ordinance going into effect September 2009. 100% of grocery stores were compliant with the ordinance.

Actions initiated after the MRP effective date:

The City expanded its bag ordinance to include all retail services, including FSEs, and to implement a mandatory 10 cent charge for purchasing paper and reusable bags (as well as paper and reusable bag requirements such as recycled content, etc.). The expanded ordinance was approved in May 2013 and went into effect for all retail on July 1 and FSEs on November 1, 2013. The Ordinance will reduce 20 million single-use plastic and paper bags after the first year of implementation (Palo Alto Disposable Checkout Bag Ordinance Environmental Impact Report, January 2013). Extensive outreach was conducted to both stores and residents, and compliance verification was performed in fall 2013 for retail and is ongoing for food service establishments. For more information, including the ordinance text, see <http://www.cityofpaloalto.org/bags>

Polystyrene Foam Food Service Ware Policies

Actions initiated prior to and continued after the MRP effective date:

The Council approved an Expanded Polystyrene (“EPS”) Restriction Ordinance in May 2009. The City’s ordinance number 5039 (Palo Alto Municipal Code Chapter 5.30) bans food vendors from providing prepared food in disposable food service containers made from expanded polystyrene or non-recyclable plastic. The ordinance also prohibits all City facilities, City-managed concessions, City-sponsored events, and City-permitted events from using disposable food service containers made from EPS or non-recyclable plastic. The ordinance became effective on April 22, 2010. Complaints and routine restaurant inspections include checking for compliance and any enforcement is documented in the stormwater database. Additional information and the ordinance text can be found at <http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=1277&TargetID=286>

Plastic Packaging Materials Policy

Actions initiated after the MRP effective date:

In an effort to reduce pollution associated with plastic packaging materials, the Cities of Palo Alto, Sunnyvale, and San Jose are collaborating on an effort to disallow goods to be shipped to them in expanded foam packaging. The main goals of the Supply Chain Plastics Reduction Project are to ensure that public agencies minimize the amount of expanded foam packaging they receive with their shipments of goods and to send a market signal to vendors that packaging of all types is to be minimized (while ensuring products are safely shipped) and that plastics packaging is unwanted because of associated water pollution and Zero Waste impacts.

Plastics Policy for City of Palo Alto Operations and Events

Actions initiated prior to and continued after the MRP effective date:

In April 2009, the City of Palo Alto began implementation of a policy to restrict use of single-use plastic products for City facilities, City-managed concessions, and City sponsored events. In addition to phasing out plastic bags and polystyrene food containers, this policy phased out the use of single-use plastic water containers. The City purchased a water station to fill reusable bottles that is used at City sponsored events. <http://www.cityofpaloalto.org/civicax/filebank/documents/17489>

Public Education and Outreach Programs

Please also refer to description in Trash Management Area 8 for School Outreach.

Actions initiated prior to and continued after the MRP effective date:

The City implemented the following public education and outreach control measures prior to the effective date of the MRP and has continued to implement these measures since MRP adoption.

Watershed Watch Campaign (Countywide)

In addition to the BASMAA Campaign, the City continues to implement the countywide Watershed Watch Campaign through active participation and funding of SCVURPPP. This Campaign conducts media advertising that includes anti-litter messages. Anti-litter advertisements for television, print, transit and radio have been developed and are used each year and will continue in the future. A telephone survey is conducted every five years to measure the effectiveness of outreach and increase in awareness about litter and stormwater related messaging. The FY 12-13 Watershed Watch media advertising included 312 anti-littering advertisements on TV, radio and online media. The Campaign also conducted outreach at a community event to promote the BASMAA “Be the Street” anti-littering campaign.

Media Relations

BASMAA Regional Media Relations Project (Regional)

Through participation and funding of the BASMAA Regional Media Relations Project, the City is continuing to implement a media relations project partially designed to reduce littering from target audiences in the Bay Area. The goal of the BASMAA Regional Media Relations Project is to generate media coverage that encourages individuals to adopt behavior changes to prevent water pollution, including littering. At least two press releases or Public Service Announcements (PSAs) focus on litter issues each year (e.g., creek clean-up activities, preventing litter by using reusable containers, etc.). In FY 12-13, the Media Relations Project developed a press release about new and recent bag bans in

cities around the region. The pitch included information on the litter caused by plastic bags. Information ran on KBAY, KCBS and on eight Bay Area Patch.com sites.

Stenciling Program

The City has allowed citizen volunteers to stencil storm drains since 1992, when the San Francisco Estuary Project began its Paint the Drain Campaign. The storm drain stencil was redesigned in 2010. In 2009, the City awarded a contract to the California Conservation Corps to install storm drain stainless steel markers (creek specific) at all City storm drains, except those around schools, where a white background was painted on 862 storm drains. The white background is repainted about every 4 years at a subset of storm drains to allow citizen volunteers, such as school groups, to stencil the drains.

Actions initiated after the MRP effective date:

BASMAA Youth Outreach Campaign (Regional)

Through participation and funding of the regional **BASMAA Youth Outreach Campaign**, the City is implementing an outreach campaign designed to reduce littering from the target audience in the Bay Area. The Youth Outreach Campaign was launched in September 2011 and aims to increase the awareness of Bay Area Youth (ages 16-24) on litter and stormwater pollution issues, and eventually change their littering behaviors. Combining the ideas of Community Based Social Marketing with traditional advertising, the Youth Campaign aims to engage youth to enable the peer-to-peer distribution of Campaign messages. The Campaign will at least run through FY 13-14. A brief description of the Campaign activities is provided below:

- Raising Awareness: The Campaign is raising awareness of the target audience on litter and stormwater pollution issues. Partnerships with youth commissions, high schools, and other youth focused organizations have been developed to reach the target audience. Messages targeted to youth have been created and distributed via paid advertising, email marketing, Campaign website and social networking sites (e.g., Facebook and Twitter).
- Engage the Youth - The advertisements encourage the audience to participate in the Youth Campaign by joining a Facebook page, entering a contest, taking an online quiz, etc., and providing their contact information. At the beginning of FY 12-13, a video contest was launched to get Bay Area youth further involved in the Campaign. An online voting system was used to select the winning entry. Media advertising was conducted to promote the winning entry.
- Change Behaviors: To move the audience along the behavior change continuum, the Campaign is using electronic platforms such as email marketing and social networking sites to encourage participants to engage in increasingly more substantive behavior changes, such as participating in a clean-up, organizing a clean-up, etc.
- Maintain Engagement: The Campaign continues to interact with the target audience through email marketing and social media websites.

The Youth Campaign includes a pre- and post-campaign survey to evaluate the effectiveness of outreach. The pre-campaign survey was conducted in FY 11-12 and the post campaign survey will begin in FY 13-14. Other evaluation mechanisms, such as website hits, number of youth engaged in the Campaign's social networking website, etc. are also being used to evaluate its effectiveness in increasing awareness and changing behavior.

Activities in FY 12-13 included maintaining the website www.BetheStreet.org, Facebook page, and Instagram account. A video contest asking participants to submit their best anti-litter video was also conducted. The Be the Street campaign received 52 entries in response to the contest. The winning video was promoted on television, Pandora (online music site), YouTube, Google, and Facebook. The Watershed Watch Campaign promoted the winning video on KNTV.

The City purchased a "Be the Street" banner for use at events.

Awareness through Art

The City joined with Bay Area artist Judith Selby Lang to raise awareness about plastics pollution through two outdoor art installations: Lawn Bowls (created out of 10,000 plastic bags) and Water Lilies (created out of empty single use plastic bottles).

Wheel of Trash

This game is used at outreach events; staff educated residents about trash by playing a game where they must answer questions about litter. Some of the categories in the game are “creek geek” and “how did it get there”

Zero Litter Initiative

The City’s staff provides leadership to the Zero Litter Initiative (“ZLI”) as part of the Santa Clara Basin Watershed Management Initiative (the “SCBWMI”). ZLI brings together multiple cities and agencies with a common interest in preventing litter and its impacts on our local streets and transportation corridors, creeks, and neighborhoods. Key players currently include staff from the cities of Sunnyvale, Palo Alto, San Jose, and West Valley Clean Water Program; the Water District, Caltrans, and SCVURPP. ZLI is implementing its strategic plan for eliminating trash throughout Santa Clara County. The initiatives identified in the strategic plan include engagement with the business community, legislative advocacy, managing the impacts of trash from homeless encampments, and actions to reduce highway litter. In 2012, a workshop was held to focus on litter reduction from activities related to solid waste activities related to customer bins, collection, transfer, and disposal. A follow up workshop in early 2013 began development of workplans to reduce litter from these activities, with several active workgroups pursuing technology solutions, model waste contract language, outreach to shared-bin situations such as multi-family and residential areas, etc.

Right-sizing Outreach

GreenWaste has included “right-sizing” and litter messages in their field visits and outreach pieces to multi-family dwellings, residents, and businesses.

Citations have not been issued for incidents of overflowing containers or litter incidents. Resolutions to incidents are resolved through education and communication with customers and changes to their collection services. Information collected by the City is kept on a database and GreenWaste tracks the number of tags they leave with customers for bins that are overflowing.

Actions Planned for future implementation:

Expanded EPS Ordinance

In 2014, staff will ask City Council to expand the EPS ordinance to prohibit the sale of EPS foodware and ice chests at retail establishments.

Zero Litter Initiative

The Zero Litter Initiative is focusing on developing outreach materials for shared-bin situations such as multi-family dwellings and commercial areas. The City’s staff actively participates in the outreach committee and plan to use materials created in future outreach.

Cigarette Butt Outreach

Since cigarette butts are one of the items most commonly found in on-land and creek clean ups, additional outreach on cigarette butt litter are planned.

Volunteer Monitoring Support

The City supports Acterra volunteer monitoring, which will include documentation of trash at monitoring locations, and will also assist in trash assessments.

3.2.14 Creek and Shoreline Hot Spot Cleanups

The City of Palo Alto has two designated hot spots (see Figure 5 for locations):

- PA – 02 is located along Matadero Creek where Highway 101 crosses over the creek, approximately 50 feet upstream and 600 feet downstream of W. Bayshore Rd. Trash sources include: windblown litter from nearby Highway and road, illegal dumping (fishermen, construction debris, homeless), litter/trash from upstream sources. Trash items found primarily are cigarette butts, convenience/fast food items, sports balls, aluminum cans, plastic products, bottles (plastic or glass), and construction debris.
- PA – 01 is located along Adobe Creek at East Bayshore pedestrian bridge to 470 feet downstream. Trash sources include: windblown litter from nearby Highway and road, litter/trash from upstream sources. Trash items found primarily are convenience/fast food items, sports balls, paper and cardboard, bottles (plastic or glass), spray cans, and aluminum cans

Both hot spots are cleaned using volunteers twice per year on National River Cleanup day in May and Coastal Cleanup day in September. The City's staff has observed that trash collected at these trash hot spots is highly variable and that no trends can be observed. For PA – 02 (Matadero), trash removed has ranged from 1.196 to 2.988 cubic yards of trash removed over the past three years. For PA – 01 (Adobe), trash removed has ranged from 0.679 to 2.040 cubic yards of trash removed over the past three years.

Prior to the MRP effective date, the City's staff led clean-up efforts at San Francisquito Creek and Adobe Creek, at least once per year, however, the designation of hot spots resulted in Matadero beginning to be a clean-up site. Since the MRP effective date, Matadero and Adobe creek hot spots have been cleaned up twice annually. In addition, trash booms (see Section 3.2.13) have been deployed upstream of the hot spot areas. Please also see Section 2.2 for measures taken to address trash from illegal dumping by fishermen.

3.2.15 Summary of Trash Control Measures

Trash Management Area 1: Downtown

- Three times per week street sweeping with blowing out of materials from tree wells and hard to reach areas ahead of sweeper. Parking enforcement in a portion of the TMA. Weekly Parking Lot sweeping. Explore additional parking enforcement if needed (planned)
- Extensive on-land clean-up: Daily on-land clean-up by Downtown Streets Team, weekly sidewalk cleaning using GreenMachine sweeper, monthly steam cleaning using a BASMAA certified surface cleaner, litter and landscaping twice per week, and encroachment permit language for restaurants with tables and chairs on sidewalk to maintain cleanliness
- Full Trash Capture existing in limited areas downtown. The City will determine feasibility of full trash capture at pump stations if downtown is determined to be a significant source of trash
- Partial Capture: Portions of TMA drain to POTW diversion structure. Wet well serves as partial capture
- Container management, litter cans, and commercial enforcement activities
- Planned smoking ordinance

Trash Management Area 2: California Avenue Business District

- Three times per week street sweeping. Parking enforcement in a portion of the TMA. Weekly Parking Lot sweeping. Explore additional parking enforcement if needed (planned)
- On-land clean up in landscaping areas twice per week, medians at California Avenue daily, tree wells weekly, Sarah Wallis Park daily, and Caltrain round-about weekly. Additional on-land clean-up efforts are being considered following completion of the streetscape project.
- Full Trash Capture: The City will study the feasibility of full trash capture of the California Avenue area if trash assessments determine that the California Avenue Business district remains a significant source of trash.

- Container management, litter cans, and commercial enforcement activities
- Planned smoking ordinance

Trash Management Area 3: Town and Country Shopping Center

- Weekly Street Sweeping
- On-land Clean Up: daily
- Full Trash Capture: The City will determine feasibility of full trash capture at pump stations if area determined to be a significant source of trash
- Partial Capture: Wet well and stormwater treatment areas
- Container management, litter cans, and commercial enforcement activities
- Additional outreach planned

Trash Management Area 4: El Camino Way/portions of El Camino Real

- Weekly Street Sweeping
- On-land Clean Up: daily at El Camino medians and park
- Full Trash Capture: Implemented for all of TMA
- Container management, litter cans, and commercial enforcement activities

Trash Management Area 5: El Camino Real

- Weekly Street Sweeping
- On-land Clean Up: daily
- Full Trash Capture: The City will seek to collaborate with Caltrans on full trash capture treatment devices
- Container management, litter cans, and commercial enforcement activities

Trash Management Area 6: Stanford Mall

- Weekly Street Sweeping
- On-land Clean Up: daily
- Container management, litter cans, and commercial enforcement activities

Trash Management Area 7: Neighborhood Shopping Centers

- Weekly Street Sweeping: the City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes.
- On-land Clean Up (private and City contractors)
- Container management, litter cans, and commercial enforcement activities

Trash Management Area 8: schools

- Weekly Street Sweeping: the City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes.
- On-land Clean Up
- Container management, litter cans, sustainable schools committee
- Partial Capture at some schools
- Extensive school outreach with additional outreach planned
- School inspection program (planned)

Trash Management Area 9: Parks

- Weekly Street Sweeping: the City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes. Weekly parking lot sweeping
- On-land Clean Up either daily or three times per week depending on park usage
- Partial capture at some parks (and planned for remodels)
- Container management and litter cans. Additional planned activities on trash receptacles.

- Smoking ban

Trash Management Area 10: Commercial/Industrial Areas

- Weekly Street Sweeping: the City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes. Explore additional parking enforcement (planned)
- On-land Clean Up (private and City contractors)
- Full Trash Capture: The City will study the feasibility of full trash capture at the Adobe Pump Station (e.g. netting devices on low flow pumps), if it is determined that the tributary area is a significant source of trash.
- Partial capture: Portions of TMA drain to POTW diversion structure. Wet well serves as partial capture
- Container management, litter cans, and commercial enforcement activities

Trash Management Area 11: East Bayshore

- Weekly Street Sweeping, including weekly sweeping at municipal corporation yard
- Creek Clean Up events
- Container management, litter cans, and commercial enforcement activities
- Coordination with Caltrans (planned)

Trash Management Area 12: West Bayshore

- Weekly Street Sweeping: the City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes.
- On-land Clean up
- Coordination with East Palo Alto (planned)
- Possible beautification may help to address illegal dumping

Trash Management Area 13: Residential and Jurisdiction-wide

- Weekly Street Sweeping: the City is considering changes in the sweeping program, including potential use of contractors, and will review sweeping frequency needs for these areas as part of these changes. Weekly parking lot sweeping
- On-land Clean
- Partial capture: litter booms
- Container management
- Litter ordinance language (planned for consideration)
- Enhanced storm drain inlet maintenance
- Activities to Reduce Trash from Uncovered Loads
- Anti-littering and Illegal Dumping Enforcement Activities
- Product bans:
 - Single-Use Carryout Bag Policies
 - Polystyrene Foam Food Service Ware Policies
 - Plastic Packaging Materials Policy
 - Single-use Water Bottles at City of Palo Alto events
- Public Education and Outreach
- Zero Litter Initiative
- Volunteer Monitoring support

The control measures described above are believed to achieve the full trash reduction level required in each management area. If assessment shows that additional measures are needed, an adaptive management process will be used to add or adapt trash control measures.

3.3 Control Measure Implementation Schedule

The City implemented control measures for trash prior to the effective date of the MRP to address trash in local creeks. This included many unique programs, such as the Downtown Streets Team on-land clean up, and litter booms deployed in creeks, which have been continued or enhanced during the time of the MRP. Section 3 describes when enhancements have been made to trash management actions, which are not detailed in the following Table 7, which only notes the beginning of the original implementation of the measure. New programs will focus on remaining areas where trash was found during trash assessments.

Table 7. City of Palo Alto trash control measure implementation schedule.

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
TMA #1														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	x
On-land Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Full Trash Capture (as part of C.3)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Full Trash Capture Feasibility Study										x				
Partial Capture	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Smoking Ordinance							x	x	x	x	x	x	x	X
TMA #2														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	X
On-land Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Full Trash Capture Feasibility Study										x				
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Smoking Ordinance							x	x	x	x	x	x	x	x
TMA #3														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	X
On-land Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Full Trash Capture Feasibility Study										x				
Partial Capture	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
Additional Outreach							X	X	X	X	X	X	X	X
TMA #4														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-land Clean up	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Full Trash Capture				X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #5														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-land Clean up	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Full Trash Capture (seek to collaborate with Caltrans)										X	X	X	X	X
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #6														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-land Clean up	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #7														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-land Clean up	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #8														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-land Clean up	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
Improved Trash Bin/Container Mgt	x	x	x	x	x	x	x	x	x	x	x	x	x	x
School Inspection Program						x	x	x						
Outreach	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TMA #9														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	x
On-land Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Partial capture (as part of C.3)					x	x	x	x	x	x	x	x	x	x
Improved Trash Bin/Container Mgt, Public Litter Cans, and Commercial Inspections	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Smoking Ordinance						x	x	x	x	x	x	x	x	x
TMA #10														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	x
On-land Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Full Trash Capture Feasibility Study										x				
Partial Capture	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Improved Trash Bin/Container Mgt, and Commercial Inspections	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TMA #11														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Creek Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Partial Capture (litter booms)	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Improved Trash Bin/Container Mgt, and Municipal Service Center Inspections	x	x	x	x	x	x	x	x	x	x	x	x	x	X
TMA #12														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014 ^a	FY 2014-2015	FY 2015-2016	FY 2016-2017 ^b	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022 ^c
On-land Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Illegal Dumping Prevention						x	x	x	x	x	x	x	x	x
Jurisdiction-wide Control Measures														
Street Sweeping	x	x	x	x	x	x	x	x	x	x	x	x	x	x
On-land Clean up	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Improved Trash Bin/Container Mgt,	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Partial Capture (litter booms)	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Enhanced Storm Drain Inlet Cleaning	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Activities to Reduce Trash from Uncovered Loads	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Anti-littering and Illegal Dumping Enforcement Activities		x	x	x	x	x	x	x	x	x	x	x	x	x
Single-Use Carryout Bag Policies	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Polystyrene Foam Food Service Ware Policies	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Plastic Packaging Materials Policy			x	x	x	x	x	x	x	x	x	x	x	X
Public Education and Outreach Programs	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Creek and Shoreline Hot Spot Cleanups														
National River Clean Up	x	x	x	x	x	x	x	x	x	x	x	x	x	X
Coastal Clean Up	x	x	x	x	x	x	x	x	x	x	x	x	x	x

^aJuly 1, 2014 40% trash reduction target

^bJuly 1, 2014 70% trash reduction target

^cJuly 1, 2022 100% trash reduction target

4 PROGRESS ASSESSMENT STRATEGY

Provision C.10.a.ii of the MRP requires Permittees to develop and implement a trash load reduction tracking method that will be used to account for trash load reduction actions and to demonstrate progress and attainment of trash load reduction targets. Early into the MRP, Permittees decided to work collaboratively to develop a trash load reduction tracking method through BASMAA. Permittees, RWQCB staff and other stakeholders assisted in developing Version 1.0 of the tracking method. On behalf of all MRP Permittees, BASMAA submitted Version 1.0 to the RWQCB on February 1, 2012.

The Trash Assessment Strategy (the “Strategy”) described in this section is intended to serve as Version 2.0 of the trash tracking method and replace version 1.0 previously submitted to the RWQCB. The Strategy is specific to Permittees participating in SCVURPPP, including the City of Palo Alto. The City intends to implement the Strategy in phases and at multiple geographical scales (i.e., jurisdiction-wide and trash management area) in collaboration with SCVURPPP. Pilot implementation is scheduled for the near-term; and as assessment methods are tested and refined, the Strategy will be adapted into a longer-term approach.

The Strategy selected by the City is described in the following sections.

4.1 SCVURPPP Pilot Assessment Strategy

The following SCVURPPP Pilot Trash Assessment Strategy (the “SCVURPPP Pilot Strategy”) was developed by SCVURPPP on behalf of the City and other Santa Clara Valley Permittees. The SCVURPPP Pilot Strategy will be implemented at a pilot scale on a countywide basis and includes measurements and observations in the City of Palo Alto.

4.1.1 Management Questions

The SCVURPPP Pilot Strategy is intended to answer the following core management questions over time as trash control measures outlined in section 3.0 are implemented and refined:

- Are the MS4 trash load reduction targets (i.e., 40%, 70%, and No Adverse Impacts) being achieved?
- Are there trash problems in receiving waters (e.g., creeks and rivers)?
- If trash problems in receiving waters exist, what are the important sources and transport pathways?

The SCVURPPP Pilot Strategy, including indicators and methods, is summarized in this section and fully described in the SCVURPPP Pilot Trash Assessment Strategy, a compendium document submitted to the RWQCB on February 1, 2014, on behalf of all SCVURPPP Permittees (SCVURPPP 2014).

4.1.2 Indicators of Progress and Success

The management questions listed in the previous section will be addressed by tracking information and collecting data needed to report on a set of key environmental indicators. Environmental indicators are simple measures that communicate what is happening in the environment. Since trash in the environment is very complex, indicators provide a more practical

and economical way to track the state of the environment than if we attempted to record every possible variable.

With regard to municipal stormwater trash management, indicators are intended to detect progress towards trash load reduction targets and solving trash problems. Ideally, indicators should be robust and able to detect progress that is attributable to multiple types of trash control measure implementation scenarios. Assessment results should also provide Permittees with an adequate level of confidence that trash load reductions from MS4s have occurred, while also assessing whether trash problems in receiving waters have been resolved. Indicators must also be cost effective, relatively easy to generate, and understandable to stakeholders.

Primary and secondary indicators that SCVURPPP Permittees will use to answer core management questions include:

Primary Indicators:

- 1-A Reduction in the level of trash present on-land and available to MS4s
- 1-B Effective full capture device operation and maintenance

Secondary Indicators:

- 2-A Successful levels of trash control measures implementation
- 2-B Reductions in the amount of trash in receiving waters

In selecting the indicators above, the City of Palo Alto in collaboration with SCVURPPP and other SCVURPPP Permittees recognize that no one environmental indicator will provide the information necessary to effectively determine progress made in reducing trash discharged from MS4s and improvements in the level of trash in receiving waters. Multiple indicators were therefore selected.

The ultimate goal of municipal stormwater trash reduction strategies is to reduce the impacts of trash associated with MS4s on receiving waters. Indicators selected to assess progress towards this goal should ideally measure outcomes (e.g., reductions in trash discharged). The primary indicators selected by SCVURPPP are outcome-based and include those that are directly related to MS4 discharges. Secondary indicators are outcome or output-based and are intended to provide additional perspective on and evidence of successful trash control measure implementation and improvements in receiving water condition with regard to trash.

As described in Section 2.2, trash is transported to receiving waters from pathways other than MS4s, which may confound our ability to observe MS4-associated reductions in creeks and shorelines. Due to this challenge of linking MS4 control measure implementation to receiving water conditions, the receiving water based indicator is currently considered a secondary indicator. Evaluations of data on the amount of trash in receiving waters that are conducted over time through the Pilot Assessment Strategy will assist the City in further determinations of the important sources and pathways causing problems in local creeks, rivers and shorelines.

4.1.3 Pilot Assessment Methods

This section briefly summarizes the preliminary assessment methods that the City of Palo Alto will implement through the SCVURPPP Pilot Strategy to generate indicator information described in the previous section. Additional information on each method can be found in the

SCVURPPP Pilot Trash Assessment Strategy submitted to the RWQCB by SCVURPPP on behalf of the City.

1-A. On-land Visual Assessments

As part of the Trash Generation Map assessment and refinement process (see Section 2.3.1), a draft on-land visual assessment method was developed to assist Permittees in confirming and refining trash generating area designations (i.e., very high, high, moderate and low trash generating categories). The draft on-land visual assessment method is intended to be a cost-effective tool and provide Permittees with a viable alternative to quantifying the level of trash discharged from MS4s. As part of BASMAA's *Tracking California's Trash* grant received from the State Water Resources Control Board (see Section 4.2), quantitative relationships between trash loading from MS4s and on-land visual assessment condition categories will be established. Condition categories defined in the draft on-land assessment protocol are listed in Table 8

Table 8. Trash condition categories used in the draft on-land visual assessment protocol.

Trash Condition Category	Summary Definition
A (Low)	Effectively no trash is observed in the assessment area.
B (Moderate)	Predominantly free of trash except for a few pieces that are easily observed.
C (High)	Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
D (Very High)	Trash is continuously seen throughout the assessment area, with large piles and a strong impression of lack of concern for litter in the area.

On-land visual assessments will be conducted in trash management areas within the City of Palo Alto as part of the SCVURPPP Pilot Trash Assessment Strategy. On-land assessments are intended to establish initial conditions and detect improvements in the level of trash available to MS4s over time. More specifically, on-land visual assessment methods will be conducted in areas not treated by trash full capture devices in an attempt to evaluate reductions associated with other types of control measures. Assessment methods for areas treated by full capture devices are described in the next section.

Given that the on-land assessment method and associated protocol have not been fully tested and refined, initial assessments will occur at a pilot scale in the City and in parallel to the *Tracking California's Trash* project. The frequency of assessments and number of sites where assessments will occur during the pilot stage are more fully described in the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014).

1-B. Full Capture Operation and Maintenance Verification

Consistent with the MRP, adequate inspection and maintenance of trash full capture devices is required to maintain full capture designation by the RWQCB. The City of Palo Alto is currently developing an operation and maintenance verification program (Trash O&M Verification Program), via SCVURPPP, to ensure that devices are inspected and maintained at a level that maintains this designation.

The SCVURPPP Trash O&M Verification Program will be modeled on the current O&M verification program for stormwater treatment controls implemented consistent with the Permit new and redevelopment requirements. Additional details regarding the Trash O&M Verification Program can be found in the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014).

2-A. Control Measure Effectiveness Evaluations

In addition to on-land trash assessments and full capture operation and maintenance verification, the City will also conduct assessments of trash control measures implemented within their jurisdictional area. Assessment methods will be selected based on trash sources and the type of control measure being implemented. Control measure effectiveness evaluations are more fully described in the SCVURPPP Pilot Trash Assessment Strategy. The following are example assessment methods that may be used to demonstrate successful control measure implementation and progress towards trash reduction targets:

- Product-related Ordinances – Descriptions of outreach efforts, tracking and reporting business compliance rates, or other metrics of control measure performance.
- Street Sweeping- Identification sweeping frequency and the ability to sweep to the curb by primary TMA, including any enhancements that have been implemented; and any other metrics demonstrating the enhanced performance of street sweeping.
- Public/Private Trash Container Management - Descriptions of control measures implemented to prevent overflowing trash containers or promoting the more effective use of public/private bins, including any new or enhancements to existing actions; and any other metrics demonstrating the performance of the control measure.
- Public Outreach and Education – Descriptions of outreach and education actions specific to trash deduction, including the number of events conducted within the municipality; descriptions of effectiveness measurements, including the results of pre- and post-implementation surveys or other metrics.
- On-land Cleanups and Enforcement – Descriptions of on-land cleanup actions, including any enhancements that have been implemented; identification of whether on-land cleanup are Permittee or volunteer-led; or other metrics of control measure performance.
- Storm Drain Inlet Maintenance – Descriptions of the level of maintenance, including any enhancement to maintenance frequency; the numbers of inlets where enhanced maintenance is being implemented; and any other metrics demonstrating the performance of inlet maintenance.
- Anti-littering and Illegal Dumping Prevention/Enforcement - Descriptions of control measures implemented to prevent littering and illegal dumping, including any new or

enhancements to existing actions; descriptions and results of enhanced enforcement actions; and any other metrics demonstrating the performance of the control measure.

- Prevention of Uncovered Loads - Descriptions of control measures implemented to prevent trash dispersion from uncovered loads, including any new or enhancements to existing actions; descriptions and results of enhanced enforcement actions; and any other metrics demonstrating the performance of the control measure.
- Partial Capture Devices – Descriptions, numbers and types of devices implemented; maintenance frequencies by device or groups of devices; and any other metrics demonstrating the partial capture device performance.
- Other Control Measures - Descriptions of control measures implemented to prevent or intercept trash before discharge to receiving waters, and any other metrics demonstrating the performance of the control measure.

2-C. Receiving Water Condition Assessments

The ultimate goal of stormwater trash management in the Bay Area is to significantly reduce the amount of trash found in receiving waters. In the last decade, Santa Clara Valley Permittees and volunteers have collected data on the amounts of trash removed during cleanup events. More recently, Permittees have conducted trash assessments in creek and shoreline hotspots using standardized assessment methods. In an effort to answer the core management question *Have trash problems in receiving waters been resolved?*, the City of Palo Alto plans to continue conducting receiving water condition assessments at trash hot spots a minimum of one time per year. Assessment will be conducted consistent with Permit hot spot cleanup and assessment requirements. Additional information on receiving water assessment methods can be found in the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014).

4.2 BASMAA “Tracking California’s Trash” Project

The SCVURPPP Pilot Assessment Strategy described in the previous section recognizes that outcome-based trash assessment methods needed to assess progress toward trash reduction targets are not well established by the scientific community. In an effort to address these information gaps associated with trash assessment methods, BASMAA, in collaboration with SCVURPPP, the 5 Gyres Institute, San Francisco Estuary Partnership, the City of Los Angeles, and other stormwater programs in the Bay Area, developed the *Tracking California’s Trash* Project. The Project is funded through a Proposition 84 grant awarded to BASMAA by the State Water Resources Control Board (SWRCB) which recognized the need for standardized trash assessment methods that are robust and cost-effective.

The Project is intended to assist BASMAA member agencies in testing trash assessment and monitoring methods needed to evaluate trash levels in receiving waters, establish control measures that have an equivalent performance to trash full capture devices, and assess progress in trash reduction over time. The following sections provide brief descriptions of tasks that BASMAA will conduct via the three-year Project. Full descriptions of project scopes, deliverables, and outcomes will be developed as part of the task-specific Sampling and Analysis Plans required by the SWRCB during the beginning of the Project. The Project is currently underway and will continue through 2016.

4.2.1 Testing of Trash Monitoring Methods

BASMAA and the 5 Gyres Institute will evaluate the following two types of assessment methods as part of the Project:

- **Trash Flux Monitoring** – Trash flux monitoring is intended to quantify the amount of trash flowing in receiving waters under varying hydrological conditions. Flux monitoring will be tested in up to four receiving water bodies in San Francisco Bay and/or the Los Angeles areas. Methods selected for evaluation and monitoring will be based on a literature review conducted during this task and through input from technical advisors and stakeholders. Monitoring is scheduled to begin in 2014 and will be completed in 2016.
- **On-land Visual Assessments** – As part of the Project, BASMAA will also conduct an evaluation of on-land visual assessment methods that are included in the SCVURPPP Pilot Assessment Strategy. The methods are designed to determine the level of trash on streets and public right-of-ways that may be transported to receiving waters via MS4s. BASMAA plans to conduct field work associated with the evaluation of on-land visual assessment at a number of sites throughout the region. To the extent practical, sites where the on-land methods evaluations take place will be coordinated with trash flux monitoring in receiving waters. On-land assessments will occur in areas that drain to trash full capture devices, and all sites will be assessed during wet and dry weather seasons in order to evaluate on-land methods during varying hydrologic conditions. Monitoring is scheduled to begin in 2014 and will be completed in 2016.

4.2.2 Full Capture Equivalent Studies

Through the implementation of BASMAA's *Tracking California's Trash* grant-funded project, a small set of "Full Capture Equivalent" projects will also be conducted in an attempt to demonstrate that specific combinations of control measures will reduce trash to a level equivalent to full capture devices. Initial Best Management Practices ("BMPs") combinations include high-frequency street sweeping, and enhanced street sweeping with auto-retractable curb inlet screens. Other combinations will also be considered. Studies are scheduled to begin in 2014 and will be completed in 2016.

4.3 Additional Progress Assessments

The City contracts with Acterra, an environmental nonprofit, to conduct volunteer monitoring, which includes documenting trash found at creek monitoring locations.

The City will conduct on-land visual assessments of high trash generation areas at least once per year to verify that control measures continue to be effective.

In addition, the City's staff monitors litter booms weekly when in place and will sort any litter removed from litter booms to determine what materials are being found and where they may have originated to pursue programs to address such materials.

4.4 Long-Term Assessment Strategy

The City is committed to implementing standardized assessment methods post-2016 based on the lessons learned from pilot assessments and studies that will occur between 2014 and 2016. Assessment activities described in the previous sections will evaluate the utility of different

assessment methods to demonstrate progress towards trash reduction targets and provide recommended approaches for long-term implementation. Lessons learned will be submitted to the RWQCB with the FY 2015-2016 Annual Report and a revised Strategy will be developed and submitted, if necessary. The revised Strategy will include agreed upon assessment methods that will be used to demonstrate progress during the remaining term of trash reduction requirements. Reporting using the new/revised methods will begin with the FY 2016-17 Annual Report.

4.5 Implementation Schedule

The implementation schedule for the SCVURPPP Pilot Implementation Strategy, BASMAA’s Tracking California’s Trash project, and the Long-Term Assessment Strategy are included in Table 9. Load reduction reporting milestones are also denoted in the table. The schedule is consistent with the need for near-term pilot assessment results to demonstrate progress toward short-term targets, while acknowledging the need for testing and evaluation of assessment methods and protocols prior to long-term implementation. For more detailed information on implementation timelines, refer to the SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014) and monitoring plans developed as part of BASMAA’s Tracking California’s Trash project.

Table 9. City of Palo Alto trash progress assessment implementation schedule.

Trash Assessment Programs and Methods	Prior to FY 2013-14	Fiscal Year								
		2013-14 ^a	2014-15	2015-16	2016-17 ^b	2017-18	2018-19	2019-20	2020-21	2021-22 ^c
Pilot Trash Assessment Strategy (SCVURPPP)										
On-land Visual Assessments										
Initial (Baseline) Assessments	X									
Pilot Progress Assessments		X	X	X	X					
Full Capture Operation and Maintenance Verification			X	X	X					
Control Measure Effectiveness Evaluations	X	X	X	X	X					
Receiving Water Condition Assessments	X	X	X	X	X					
Tracking California’s Trash Project (BASMAA)										
Testing of Trash Monitoring Methods										
Trash Flux Monitoring Protocol Testing			X	X	X					
On-land Visual Assessment Evaluations			X	X	X					
Full Capture Equivalent Studies			X	X	X					
Additional Assessments (City of Palo Alto)										
Volunteer Monitoring	x	x	x							
Trash Boom Monitoring and Material Sorting	x	x	x	x	x	x	x	x	x	x

Annual On-land visual assessment of high-trash generating areas		x	x	x	x	x	x	x	x	x
Long-Term Trash Assessment Strategy (SCVURPPP)						X	X	X	X	X

^aJuly 1, 2014 40% trash reduction target
^bJuly 1, 2014 70% trash reduction target
^cJuly 1, 2022 100% trash reduction target

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Appendix A

City of Palo Alto Staff Report for
January 13, 2014 Council Approval of Long-
Term Trash Management Plan



City of Palo Alto

City Council Staff Report

(ID # 4313)

Report Type: Consent Calendar

Meeting Date: 1/13/2014

Summary Title: Long-Term Trash Management Plan

Title: Approval of the Long-Term Trash Management Plan required by the Municipal Regional Stormwater NPDES Permit

From: City Manager

Lead Department: Public Works

Recommendation

Staff recommends that Council approve the attached Draft Long-Term Trash Management Plan required by the City's stormwater discharge permit (Attachment A). The Long-Term Trash Management Plan will be finalized and submitted to the Regional Water Quality Control Board by February 1, 2014.

Background

In October 2009, the San Francisco Bay Regional Water Quality Control Board (Water Board) issued a new regional National Pollutant Discharge Elimination System (NPDES) storm water permit to the City of Palo Alto (the City) and 76 other Bay Area entities for discharge of municipal storm water to local creeks and San Francisco Bay. The Municipal Regional Permit (MRP) specifies programs and measures to be conducted by local agencies to minimize storm water pollution through the year 2014. One of the areas of focus in the MRP is control of trash in local waterways. The MRP requires each Permittee to reduce trash loading to its storm drain system by 40 percent by 2014, 70 percent by 2017, and to no adverse impact by 2022. Each Permittee was required to submit a Short-Term Trash Load Reduction Plan by February 1, 2012 in order to document how the 2014 trash reduction goal would be met. Additionally, a Long-Term Trash Load Reduction Plan, documenting how the City intends to meet the more challenging 2017 and

2022 trash reduction goals, must be submitted to the Water Board by February 1, 2014.

Several local creeks have been formally designated as "impaired by trash" under the Federal Clean Water Act, including San Francisquito and Matadero Creeks. To comply with the trash load reduction requirements, Permittees are required to determine how much trash is conveyed through the storm drain system to creeks and waterways; implement actions to reduce that trash; and document trash reductions achieved. This is challenging, because trash can be wind-blown or dumped directly into creeks in addition to traveling through the storm drain system.

Baseline trash levels were determined through a regional effort coordinated by the Bay Area Stormwater Management Agencies Association (BASMAA). In 2011, a BASMAA consultant sorted and measured trash and debris from more than 160 storm drain inlets that had been outfitted with full trash capture devices from a cross-sampling of land uses across the Bay Area. This data was used to determine each Permittee's Baseline Trash Load (using a Base Year of 2009) and to quantify trash load reductions that would result from specific trash reduction measures such as street sweeping, structural trash controls, and product bans. Staff used the BASMAA-recommended methodology to compile the City's Short-Term Trash Reduction Plan, which indicated that the City's trash management actions produced a cumulative trash load reduction of 51%. Palo Alto was able to exceed the short-term 40% trash load reduction goal without having to implement many new measures and programs because the trash load reduction credit strategy devised by BASMAA gave credit for early adoption of effective measures like enhanced frequency street sweeping in commercial areas, where trash is more prevalent, and plastic bag and expanded polystyrene product bans. The most significant new control measure in Palo Alto's Short-Term Plan was the installation of trash capture devices in the municipal storm drain system. An informational report was provided to the Council regarding installation of the trash capture devices and the Short-Term Trash Load Reduction Plan on July 23, 2012 (#2919).

The methodology used for the Short-Term Trash Load Reduction Plans was rejected by the Water Board in June 2012. In addition, Water Board staff has indicated that trash control actions implemented before the October 2009 Stormwater Permit effective date may not be considered in measuring compliance with the requirements of the permit, resulting in regulatory uncertainty for the City, where as a result of the City's leadership in implementing trash reduction efforts, many successful programs were implemented prior to the adoption of the MRP. As a result, continued assessment of the success of Palo Alto's ongoing programs, combined with targeted new actions for areas that were found to have litter issues, form the basis of the City's Long-Term Trash Load Reduction Plan.

Discussion

The Long-Term Trash Reduction Plan framework was developed regionally by Permittees, the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), and other Bay Area-wide stormwater program staff, in collaboration with Water Board staff. Palo Alto's Long-Term Trash Management Plan contains the following elements:

- Identification of 13 Trash Management Areas based on in-field litter assessments
- Identification of appropriate trash control measures for each Trash Management Area
- Implementation plan for new trash control measures in targeted areas
- Assessment of trash control measures
- Ongoing adaptive management of trash control measures

The first step in the Long-Term Trash Load Reduction Plan framework requires Permittees to identify very high, high, moderate, and low trash-generating areas within their jurisdictions. Trash generation rates, developed through the BASMAA regional study, were used as a starting point; then Permittees used local knowledge and field and/or desktop assessments to confirm and refine the level of trash generation for specific areas. For the City, 13 Trash Management Areas

were identified as both high and moderate trash-generation areas. The resulting maps are included in the attached Long-Term Trash Load Reduction Plan. Water Board staff and regional stormwater managers have agreed that trash reduction efforts should be targeted at areas with high and moderate levels of trash generation.

Trash control measures implemented to date include the following highlights:

- **Street Sweeping:** High-priority areas are swept three times per week, other areas once a week with some areas having parking prohibitions on sweep days. This frequency is higher than most other cities, particularly in residential areas. Staff is recommending reducing the frequency of sweeping in residential areas during the non-leaf season, which is consistent with the Long-Term Trash Management Plan. Any potential future changes to the street sweeping program will be coordinated to ensure continued compliance with the trash management requirements of the stormwater permit.
- **On-Land Clean Up (litter removal):** The City performs extensive on-land clean ups. The Downtown Streets Team was founded in Palo Alto in 2005 to address homelessness and litter problems and has been instrumental in reducing litter downtown. In addition to the Downtown Streets Team, City staff clean tree wells, medians, parks, school fields and other areas at a high frequency.
- **Partial Trash Capture:** The City piloted the use of a trash boom in Matadero Creek in 2009 and executed a new agreement with the Santa Clara Valley Water District for trash booms in both Matadero and Adobe Creeks in December 2012. The booms prevent floating trash from entering the Baylands area.
- **Full Trash Capture:** The City installed two Continuous Deflective Separator (CDS) units to filter out trash from a portion of the storm drain system. These units capture trash from a combined tributary area of 167 acres, exceeding the requirements in the MRP and capturing a portion of El Camino and adjoining high trash generation area. The units were funded through a combination of a San Francisco Estuary Project (SFEP) grant and City matching funds.

- Single-Use Plastic Bag Ordinance: The City banned single-use plastic bags at grocery stores in September 2009 and expanded the ordinance to cover all retail and food service establishments in 2013.
- Expanded Polystyrene (EPS) Ordinance: The City's ordinance prohibiting use of EPS in food service establishments went into effect in April 2010.
- Public Outreach and Education: In addition to participating in regional outreach campaigns related to litter, the City continues its School Outreach Program, which includes education on stormwater issues, including litter

The Long-Term Trash Load Reduction Plan proposes continuing the City's successful trash management programs. In addition, the following additional actions are proposed as part of the Long-Term Trash Load Reduction Plan. Any actions that are recommended for implementation and that have budget implications will be brought back to the Council for approval:

- Consideration of expanding the trash control measures used downtown (e.g. Downtown Streets Team, designated staff) to the California Avenue business district
- Additional school outreach and a new school inspection program related to litter
- Performing a study of the feasibility of installing additional full trash capture devices at the City's stormwater pump stations, if needed, based on trash assessments of the areas draining to the pump stations
- Consideration of ordinances banning smoking downtown and in the California Avenue business district
- Consideration of expanding the Expanded Polystyrene Ordinance to include sale of items made of expanded polystyrene
- Consideration of changing public litter can design for parks and other areas in order to prevent spillage and overflows
- Review of the parking enforcement program to enhance the effectiveness of street sweeping in areas posted for no parking on sweep day
- Additional outreach/inspection for businesses related to litter issues
- Consideration of additional ordinance language related to litter
- Seeking coordination with Caltrans related to trash along El Camino Real and other highway areas

The City staff will work closely with SCVURPPP co-permittees and Water Board staff to develop a new alternate tracking method to account for trash load reductions and track progress toward trash load reduction targets. A regional pilot strategy will be used to test the effectiveness of proposed trash assessment and monitoring methods. In addition to implementing assessment strategies once developed regionally, the City is also partnering with Acterra, a local environmental nonprofit organization, on including observations of trash in creeks with their ongoing volunteer monitoring efforts.

Use of adaptive management techniques will allow the City to modify and improve the trash management strategy initially proposed in the Long-Term Trash Load Reduction Plan based on monitoring of the effectiveness of various measures. In addition, the trash management requirements are one of the key issues being discussed by Water Board staff and regional stormwater managers as the next stormwater NPDES permit will be negotiated in 2014, because the current permit will expire at the end of 2014. Any changes to the trash requirements included in the next NPDES permit would likely result in amendments and changes to the City's Long-Term Trash Load Reduction Plan as part of the adaptive management process.

Timeline

The Long-Term Trash Load Reduction Plan must be submitted to the Water Board on February 1, 2014 as part of the requirements of the stormwater discharge permit. Implementation of the plan is intended to meet the requirements for trash load reduction of 70% by 2017 and no adverse impact by 2022.

Resource Impact

The Long-Term Trash Load Reduction Plan states that the Council maintains discretion over the level of expenditures for trash control measures and service level implementation in accordance with the City's annual budget process and the Municipal Code. Inclusion of a proposed action in the Long-Term Trash Load Reduction Plan does not obligate the City to implement it. Changes to the plan

will be submitted to the Water Board annually as part of the Stormwater Permit annual reporting process.

The costs related to implementation of this plan will be developed following additional analysis, with separate approvals by the Council, as required. It is anticipated that many of the proposed actions can be accommodated within existing budgets. The full trash capture feasibility study, if needed, will require additional funding as will additional trash assessment efforts. The primary source of any additional funding that may be needed will be the Storm Drainage Fund. Street sweeping is funded by the Refuse Fund; however, no changes resulting in budget impacts are anticipated due to the Long-Term Trash Load Reduction Plan. There will be minimal or no impact to the General Fund.

Should full trash capture capital projects be needed to comply with trash management requirements, staff will pursue grant funding as was done for the existing trash capture devices.

Policy Implications

The Long-Term Trash Load Reduction Plan is consistent with all City and stormwater management policies.

Environmental Review

The Long-Term Trash Load Reduction Plan is not a project under the California Environmental Quality Act (CEQA).

Attachments:

- Attachment A: Draft Final Long Term Trash Plan Palo Alto (PDF)