

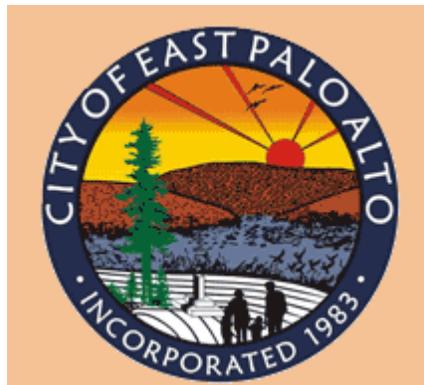
# Baseline Trash Load and Short-Term Trash Load Reduction Plan

## Template & Guidance

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**The City of East Palo Alto**

*In compliance with Provisions C.10.a(i) and C.10.a(ii) of Order R2-2009-0074*



February 1, 2012

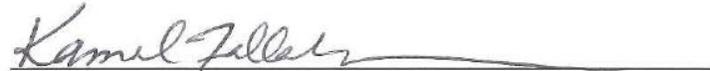
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## SHORT-TERM TRASH LOAD REDUCTION PLAN

### 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:**

 January 26, 2012  
Kamal Fallaha  
City Engineer, City of East Palo Alto

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## ABBREVIATIONS

BASMAA	Bay Area Stormwater Management Agencies Association
BID	Business Improvement District
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CDS	Continuous Deflection Separator
CEQA	California Environmental Quality Act
CY	Cubic Yards
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GIS	Geographic Information System
MRP	Municipal Regional Stormwater NPDES Permit
MS4	Municipal Separate Storm Sewer System
NGO	Non-Governmental Organization
NPDES	National Pollutant Discharge Elimination System
Q	Flow
SFRWQCB	San Francisco Regional Water Quality Control Board
SWRCB	State Water Resource Control Board
TMDL	Total Maximum Daily Load
USEPA	United States Environmental Protection Agency
Water Board	San Francisco Regional Water Quality Control Board
WDR	Waste Discharge Requirements

## PREFACE

This Baseline Trash Load and Short-Term Trash Load Reduction Plan (Plan) is submitted in compliance with provision C.10.a(i) and C.10.a(ii) of the Municipal Regional Stormwater NPDES Permit (MRP) for Phase I communities in the San Francisco Bay (Order R2-2009-0074). This Plan was developed using a regionally consistent format developed by the Bay Area Stormwater Management Agencies Association (BASMAA). Based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of East Palo Alto may choose to amend or revise this Plan. If revisions or amendments are necessary, a revised Short-Term Plan will be submitted to the Water Board via the City of East Palo Alto's annual reporting process.



## 1.0 INTRODUCTION

The Municipal Regional Stormwater NPDES Permit for Phase I communities in the San Francisco Bay (Order R2-2009-0074), also known as the Municipal Regional Permit (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 of the MRP (Trash Load Reduction) requires Permittees to reduce trash from their Municipal Separate Storm Sewer Systems (MS4s) by 40 percent before July 1, 2014.

Required submittals to the San Francisco Bay Regional Water Quality Control Board (Water Board) by February 1, 2012 under MRP provision C.10.a (Short-Term Trash Loading Reduction Plan) include:

1. (a) Baseline trash load estimate, and (b) description of the methodology used to determine the load level.
2. A description of the 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 levels.
3. A **Short-Term Trash Loading Reduction Plan** that describes control measures and best management practices that will be implemented to attain a 40 percent trash load reduction from its MS4 by July 1, 2014;

This Short-Term Trash Load Reduction Plan (Short-Term Plan) is submitted by the City of East Palo Alto in compliance with the portions of MRP provision C.10.a.i listed as 1a and 3 above. In compliance with 1b, BASMAA submitted a progress report on behalf of Permittees that briefly describes the methodologies used to develop trash baseline loads (BASMAA 2011a). These methods are more fully described in BASMAA (2011b, 2011c). Lastly, the *Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011d) was submitted by BASMAA on behalf of Permittees in compliance with submittal 2 described above. The Baseline Loading Rates and Tracking Method projects are briefly described below.

### Baseline Trash Generation Rates Project

Through approval of a BASMAA regional project, Permittees agreed to work collaboratively to develop a regionally consistent method to establish baseline trash loads from their MS4s. The project, also known as the *BASMAA Baseline Trash Generation Rates Project* assists Permittees in establishing a baseline to demonstrate progress towards MRP trash load reduction goals (i.e., 40 percent). The intent of the project was to provide a scientifically-sound method for developing (default) baseline trash generation rates that can be adjusted, based on Permittee/site specific conditions; and used to develop baseline loading rates and loads. Baseline loads form the reference point for comparing trash load reductions achieved through control measure implementation.

Baseline trash loading rates are quantified on a volume per unit area basis and based on factors that significantly affect trash generation (e.g., land use, population density, and economic profile). The method used to establish baseline trash loads 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 off a conceptual model developed as an outgrowth of these studies (BASMAA 2011b). Baseline trash loading rates were developed through the quantification and characterization of trash captured in Water Board recognized

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full-capture treatment devices installed in the San Francisco Bay area. Methods used to develop trash baseline loading rates are more fully described in BASMAA (2011b, 2011c, and 2012).

## Trash Load Reduction Tracking Method Summary

The trash load reduction tracking method, described in the *Trash Load Reduction Tracking Method Technical Report*, assists Permittees in demonstrating progress towards reaching trash load reduction goals defined in the MRP (e.g., 40 percent). The tracking method is based on information gained through an extensive literature review and Permittee experiences in implementing stormwater control measures in the San Francisco Bay Area. The literature review was conducted to evaluate quantification methods used by other agencies to assess control measure effectiveness or progress towards quantitative goals. Results are documented in the *Trash Load Reduction Tracking Method: Technical Memorandum # 1 – Literature Review* (BASMAA 2011d).

Methods attributable to specific trash control measures fall into two categories: 1) trash load reduction quantification formulas; and 2) load reduction credits (BASMAA 2011e). Quantification formulas were developed for those trash control measures that were deemed feasible and practical to quantify load reductions at this time. Load reduction credits were developed for all other control measures included in the methodology development. Both categories of methods assume that as new or enhanced trash control measures are implemented by Permittees, a commensurate trash load reduction will occur. Progress towards load reduction goals will be demonstrated through comparisons to established trash baseline load estimates developed through the BASMAA *Baseline Generation Rates Project*.

## Short-Term Trash Load Reduction Plan

The purpose of this Short-Term Plan is to describe the current level of implementation of control measures and best management practices, and identify the type and extent to which new or enhanced control measures and best management practices will be implemented to attain a 40 percent trash load reduction from their MS4 by July 1, 2014. The Short-Term Plan was developed using a template created by BASMAA through a regional project. New and enhanced trash control measures (i.e., Best Management Practices) that Permittees may implement to demonstrate trash load reduction goals are included in Table 1.1. This list was developed collaboratively through the BASMAA Trash Committee, which included participation from Permittee, stormwater program, Water Board and non-governmental organization (NGO) staff. The list of control measures is based on: 1) the potential for Permittees to implement; 2) the availability of information required to populate formulas and develop credits; and 3) the expected benefit of implementation. Load reductions associated with each control measure are demonstrated either through a quantification formula (QF) or credits (CR) described in the *Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011e).

In efforts to reduce trash discharged from MS4s, Permittees may choose to implement control measures that are not included in Table 1.1 or described more fully in BASMAA (2011e). If a Permittee chooses to do so, methods specific to calculating trash load reductions for that control measure would need to be developed. Additionally, at that point, consideration should be given to updating this Short-Term Plan.

Additionally, based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of East Palo Alto may amend or revise this Plan. If revisions or amendments are

necessary, a revised Short-Term Plan will be submitted to the Water Board via the City of East Palo Alto’s annual reporting process.

**Table 1.1.** Trash control measures for which load reduction quantification credits or formulas were developed to track progress towards trash load reduction goals.

<b>Load Reduction Credits</b>
Single-use Carryout Plastic Bag Ordinances
Polystyrene Foam Food Service Ware Ordinances
Public Education and Outreach Programs
Activities to Reduce Trash from Uncovered Loads
Anti-Littering and Illegal Dumping Enforcement Activities
Improved Trash Bin/Container Management Activities
Single-Use Food and Beverage Ware Ordinances
<b>Quantification Formulas</b>
On-land Trash Pickup (Volunteer and/or Municipal)
Enhanced Street Sweeping
Partial-Capture Treatment Devices
Enhanced Storm Drain Inlet Maintenance
Full-Capture Treatment Devices
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal)

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

- Introduction;
- Trash Baseline Load Estimate;
- Load Reduction Calculation Process
- Planned Implementation of New or Enhanced Control Measures;
- Implementation Schedule; and
- References

## **2.0 BASELINE TRASH LOADING ESTIMATE**

**Note:** *Tables and information presented in this section are subject to change based on the results of a third monitoring event of the BASMAA Baseline Trash Generation Rates Project. Therefore, this section of the Short-Term Plan may be updated with revised trash generation rates, baseline loading rates, and baseline loads.*

This section provides the estimated annual trash baseline load from the City of East Palo Alto’s Municipal Separate Storm Sewer System (MS4). In compliance with Provision C.10.a.ii of the MRP, the City of East Palo Alto worked collaboratively with other MRP Permittees through BASMAA to develop data and the process necessary to establish baseline trash loading estimate from our MS4. The collaborative project was managed through the BASMAA Trash Committee and included a series of steps described in BASMAA (2012) and listed below. The approach was intended to be cost-effective and

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consistent, but still provide an adequate level of confidence in trash loads from MS4s, while acknowledging that uncertainty in trash loads still exists. The approach entailed the following steps:

1. Conduct literature review;
2. Develop conceptual model;
3. Develop and implement sampling and analysis plan;
4. Test conceptual model;
5. Develop and apply default trash **generation rates** to Permittee effective loading areas;
6. Adjust default trash generation rates based on baseline levels of control measure implementation by the Permittee to develop trash **baseline loading rates**; and,
7. Calculate Permittee-specific annual trash **baseline load**.

Through the collaborative BASMAA project, default baseline trash generation rates (volume per area) were developed for a finite set of categories, based on factors that significantly affect trash loads (e.g., land use). These trash generation rates were then applied to effective loading areas in applicable jurisdictional areas within the City of East Palo Alto. Trash generation rates were then adjusted based on baseline street sweeping, storm drain inlet maintenance, and stormwater pump station maintenance conducted in each applicable area. The sum of the trash loads (i.e., rate multiplied by area) from each effective loading area represents the City of East Palo Alto's baseline trash load from its MS4. A full description of the methods by which trash baseline loads were developed is included in BASMAA (2012a) and is summarized below.

### Permittee Characteristics

Incorporated in 1983, the City of East Palo Alto covers 1,641 acres in Santa Mateo County, and has a jurisdictional area of 1,214 acres. According to the 2010 Census, it has a population of 28,155, with a population density of 10,777.1 people per square mile, and average household size of 4.03. Of the 28,155 who call the City of East Palo Alto home, 31.9% are under the age of 18, 12.4% are between 18 and 24, 31.6% are between 25 and 44, 18.2% are between 45 and 65, and 5.9% are 65 or older. The median household income was \$45,006 in 2000<sup>1</sup>.

### Default Trash Generation Rates (Regional Approach)

A set of default trash generation rates was developed via the BASMAA regional collaborative project (BASMAA 2012a). Default generation rates were developed based on a comparison between trash characterization monitoring results, land uses, economic profiles, and other factors that were believed to possibly affect trash generation. Three trash characterization monitoring events were scheduled via the *Trash Generation Rates Project*. Due to the compliance timeline in the MRP, only two of three trash characterization monitoring events were used to develop trash generation rates described in BASMAA (2012a) and presented in this section. Following the completion of the third characterization event (Winter 2011/12), this section of the Short-Term Plan may be updated to reflect the most up-to-date trash generation and loading rates available. Trash generation rates based on the results of two of the three characterization events are shown in Table 2-1 for each trash loading category.

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<sup>1</sup> From the 2000 Census. The median household income for the City of East Palo Alto from the 2010 Census is not currently available.

**Table 2-1: Regional Default Annual Trash Generation Rates by Land Use Category.**

Land Use Category	Generation Rates (Gallons/Acre)
Retail and Wholesale	29.99
High Density Residential	17.04
K-12 Schools	13.14
Commercial and Services/ Heavy, Light and Other Industrial	7.08
Urban Parks	2.14
Low Density Residential	1.25
Rural Residential	0.17

### Jurisdictional and Effective Loading Areas

Default trash baseline generation rates presented in Table 2-1 were applied to effective loading areas with **jurisdictional areas** within the City of East Palo Alto. The City of East Palo Alto’s jurisdictional areas includes all urban land areas within the City of East Palo Alto boundaries that are subject to the requirements in the MRP. Land use areas identified by a combination of the ABAG 2005 land use dataset and Permittee knowledge that were not included within the City’s jurisdictional areas include:

- Federal and State of California Facilities and Roads (e.g., Interstates, State Highways, Military Bases, Prisons);
- Roads Owned and Maintained by Santa Mateo County;
- Colleges and Universities (Private or Public);
- Non-urban Land Uses (e.g., agriculture, forest, rangeland, open space, wetlands, water);
- Communication or Power Facilities (e.g., PG & E Substations);
- Water and Wastewater Treatment Facilities; and
- Other Transportation Facilities (e.g., airports, railroads, and maritime shipping ports).

Once the City of East Palo Alto’s jurisdictional area was delineated, an effective trash loading area was developed by creating a 200-foot buffer around all streets within the City’s jurisdictional area. The purpose of the effective loading area is to eliminate land areas not directly contributing trash to the City’s MS4 (e.g., large backyards and rooftops). Both the jurisdictional and the effective loading areas for the City of East Palo Alto are presented in Table 2-2.

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**Table 2-2: Jurisdictional areas and effective loading areas in the City of East Palo Alto by land use classes identified by ABAG (2005).**

Land Use Category	Jurisdictional Area (Acres)	Effective Loading Area (Acres)	% of Effective Loading Area
High Density Residential	400	386	35
Low Density Residential	494	475	43
Rural Residential	5	3	0
Commercial and Services/ Heavy, Light and Other Industrial	171	132	12
Retail and Wholesale	56	45	4
K-12 Schools	77	46	4
Urban Parks	11	7	1
<b>TOTAL</b>	<b>1,214</b>	<b>1,096</b>	<b>100%</b>

## Permittee-Specific Baseline Trash Loading Rates

Regional default trash generation rates developed through the BASMAA regional collaborative project were applied to effective loading areas within the City of East Palo Alto based on identified land uses. These generation rates were then adjusted based on the calculated effectiveness of baseline street sweeping, storm drain inlet maintenance and pump station maintenance implemented by the City. These adjustments were conducted in GIS due to the site specificity of baseline generation rates and baseline control measure implementation. The following sections describe the baseline level of implementation for these three control measures. A summary of trash baseline generation and loading rates for the City of East Palo Alto are provided in Table 2-3 and areas associated with these rates are illustrated in Figure 2-1.

### **Baseline Street Sweeping**

A "baseline" street sweeping program is defined as the sweeping frequency and parking enforcement implemented by the City of East Palo Alto prior to effective date of the MRP. Baseline street sweeping differs from "enhanced" street sweeping, which includes increased parking enforcement and/or sweeping conducted at a frequency greater than baseline ceiling (i.e., once per week for retail land uses and twice per month for all other land uses). The baseline ceiling was created to not penalize implementers of enhanced street sweeping programs prior to the effective date of the MRP. For those Permittees that sweep less frequent than the baseline ceiling, their current sweeping frequency serves as their baseline.

The City of East Palo Alto's baseline street sweeping program includes sweeping most streets in residential areas twice per month, most streets in the retail areas once per week, and sweeping most arterials roads twice per month. The City of East Palo Alto's current street sweeping program includes sweeping most streets in residential areas once every two weeks, and sweeping arterial roads and streets in retail areas two to three times a week.

Parking enforcement signs for street sweeping are posted on some City streets. Parking enforcement equivalent is distributed throughout the City on major arterial roads and streets in commercial, industrial, and residential areas. The estimated trash load reduced via baseline street sweeping is presented in Table 2-3.

***Baseline Storm Drain Inlet Maintenance***

Within the City, storm drain inlets were cleaned at a baseline level of one time per year prior to the effective date of the MRP. Based on this baseline frequency and the effectiveness rating developed in BASMAA (2012b), the baseline storm drain maintenance program in the City of East Palo Alto has an annual effectiveness rating of 5%. The estimated trash load reduced via baseline storm drain inlet maintenance is presented in Table 2-3.

***Baseline Stormwater Pump Station Maintenance***

The City of East Palo Alto owns and maintains one stormwater pump station with trash racks that captures trash and allow for removal during maintenance. The estimated volume of trash removed annually from this pump station prior to the effective date of the MRP is considered the baseline level of implementation. To determine the baseline volume of trash removed from the pump station, an effectiveness rating of 25% removal of the baseline trash load attributable to the area draining to the pump station is assumed. This effectiveness rating is based on methods developed in BASMAA (2012b). The estimated trash load reduced via baseline pump station maintenance is presented in Table 2-3.

**Baseline Trash Loading Estimate**

The estimated baseline trash load from the City of East Palo Alto was calculated as the sum of the loads from the City’s effective loading area, adjusted for baseline implementation of street sweeping, storm drain inlet maintenance, and pump station maintenance. The preliminary annual trash baseline load for the City of East Palo Alto is presented in Table 2-3. Preliminary baseline trash loading rates are presented in Figure 2-1 to provide a geographical illustration of areas with estimated low, moderate, high and very high trash loading rates.

**Table 2-3: Preliminary annual trash baseline load for the City of East Palo Alto.**

<b>Category</b>	<b>Annual Load (gallons)</b>
Preliminary Generation Trash Load	10,081
Load Removed via Baseline Street Sweeping	4,418
Load Removed via Baseline Storm Drain Inlet Maintenance	283
Load Removed via Baseline Stormwater Pump Station Maintenance	462
<b>Preliminary Trash Baseline Load</b>	<b>4,918</b>

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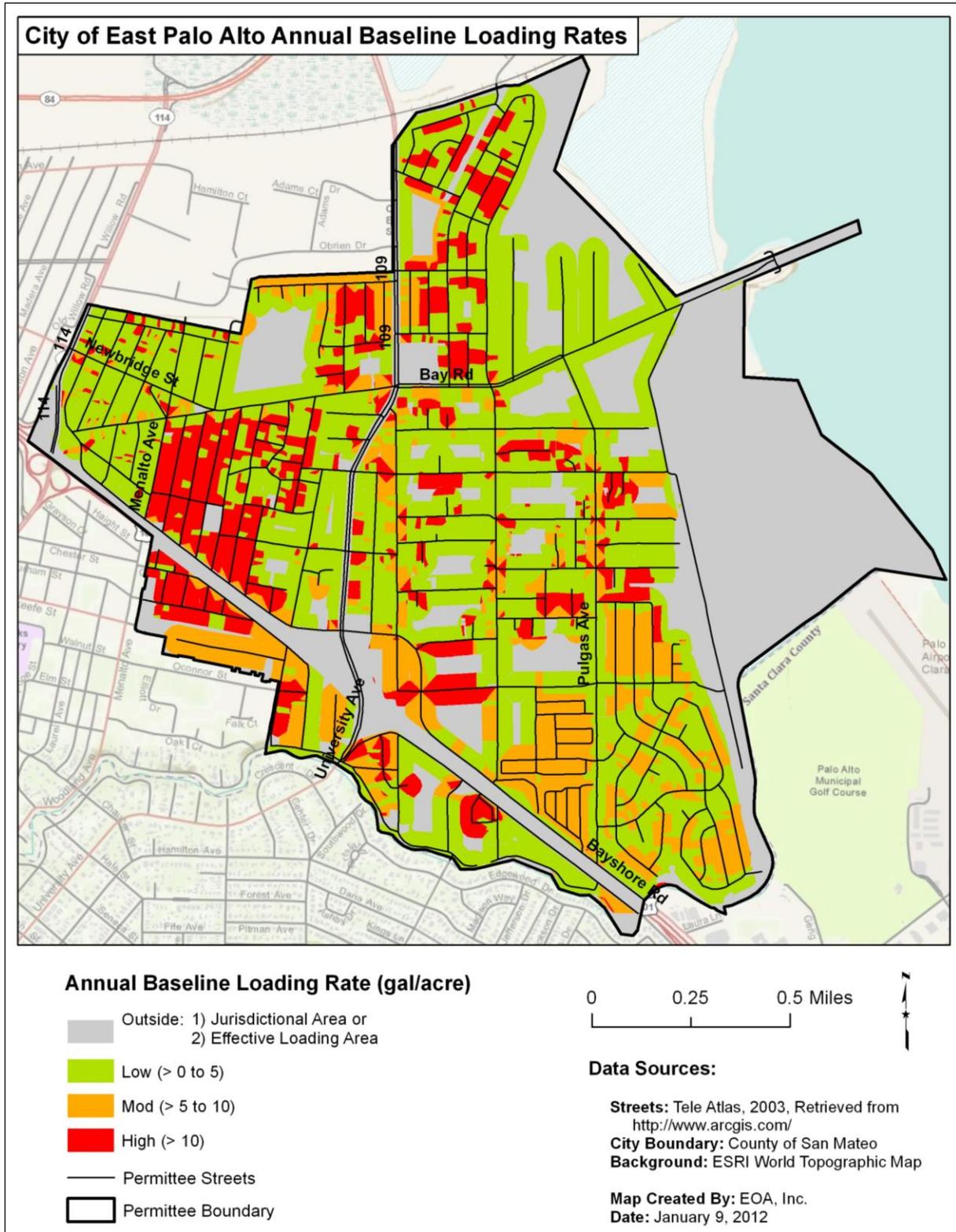


Figure 2-1: Estimated trash baseline loading rates for geographical areas in the City of East Palo Alto.

### 3.0 LOAD REDUCTION CALCULATION PROCESS

Using the guiding principles and assumptions described BASMAA (2011e), a stepwise process for calculating trash load reductions was developed collaboratively through BASMAA. This process is fully described in Trash Load Reduction Tracking Method Technical Report (BASMAA 2011e) and is briefly summarized in this section. The process takes into at what point in the trash generation and transport process a trash control measure: 1) prevents trash generation, 2) intercepts trash in the environment prior to reaching a water body, or 3) removes trash that has reached a water body. In doing so, it avoids double-counting of trash load reductions associated with specific control measures.

To demonstrate trash load reductions, baseline trash loading rates will be adjusted using the following process:

- Step #1:** Existing Enhanced Street Sweeping
- Step#2:** Trash Generation Reduction
- Step #3:** On-land Interception
- Step #4:** Trash Interception in the Stormwater Conveyance System
- Step #5:** Trash Interception in Waterways
- Step #6:** Comparison to Baseline Trash Load

Reductions calculated in Steps 2 and 5 are assumed to be implemented at a constant rate on an “area-wide” basis. For example, if a new region-wide public education strategy is implemented within the San Francisco Bay area, all Permittees can apply load reduction credits associated with this control measure. In contrast, Steps 1, 3 and 4 are “area-specific” reductions that only apply to specific areas within a Permittee’s jurisdiction. Area-specific control measures include full-capture treatment devices and enhanced street sweeping. Area-specific reductions may require the use of a Geographic Information System (GIS) to calculate.

Reductions are generally applied in the sequence as presented in Figure 2-1 and described below, although some reductions may be applied “in-parallel” and calculated during the same sub-step in the process.

#### **Step #1: Existing Enhanced Street Sweeping**

Trash load reductions due to existing enhanced street sweeping implemented prior to the effective date of the MRP and conducted at levels above baseline levels are not incorporated into each Permittee’s trash baseline load. Therefore, load reductions associated with existing enhanced are accounted for first in the trash load reduction calculation process. Existing enhanced street sweeping includes street sweeping conducted at a frequency greater than **1x/week** for streets within retail land use areas or greater than **2x/month** for streets in all other land use areas. The result of adjustments made to trash baseline loads due to the implementation of existing enhanced street sweeping is a set of **current baseline loading rates** and a **current baseline load**.

## Step #2: Trash Generation Reduction Control Measures

Trash generation reduction control measures prevent or greatly reduce the likelihood of trash from being deposited onto the urban landscape. They include the following area-wide control measures:

- CR-1: Single-Use Carryout Plastic Bag Ordinances
- CR-2: Polystyrene Foam Food Service Ware Ordinances
- CR-3: Public Education and Outreach Programs
- CR-4: Reduction of Trash from Uncovered Loads
- CR-5: Anti-Littering and Illegal Dumping Enforcement
- CR-6: Improved Trash Bin/Container Management
- CR-7: Single-Use Food and Beverage Ware Ordinances

Load reductions associated with trash generation reduction control measures are applied on an area-wide basis.<sup>2</sup> Therefore, reductions in current baseline loading rates are adjusted uniformly based on the implementation of the control measure and the associated credit claimed.

Baseline loading rate adjustments for all generation reduction controls measures implemented may be applied in-parallel, but should be applied prior to calculating on-land interception measures discussed in Step #3. The result of adjustments to trash baseline loading rates due to the implementation of these enhanced control measures will be a set of **street loading rates**. The **street load** is the volume of trash estimated to enter the environment and available for transport to the MS4 if not intercepted via on-land control measures described in Step #2.

## Step #3: On-land Interception Control Measures

Once trash enters the environment, it may be intercepted and removed through the following control measures prior to reaching the stormwater conveyance system:

- QF-1: On-land Trash Cleanups (Volunteer and/or Municipal) (Area-wide)
- QF-2: Enhanced Street Sweeping (Area-specific)

Since on-land trash cleanups can affect the amount of trash available to street sweepers, load reductions associated with their implementation will be quantified first, followed by street sweeping enhancements. On-land trash cleanups will be applied as an area-wide reduction and all effective loading rates will be adjusted equally. Enhanced street sweeping, however, is an area-specific control measure and only those effective loading rates associated with areas receiving enhancements will be adjusted. Due to the spatial nature of enhanced street sweeping, GIS may be needed to conduct this step.

The result of adjustments to effective loading rates due to the implementation of these enhanced control measures will be a set of **conveyance system loading rates**. The **conveyance load** is the volume of trash estimated to enter the stormwater conveyance system (e.g., storm drains).

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<sup>2</sup> The only exception to this statement are load reductions associated with the establishment of Business Improvement Districts (BIDs) or equivalent, which are specific to geographic areas and considered "area-specific".

## Step #4: Control Measures that Intercept Trash in the MS4

Control measures that intercept trash in the stormwater conveyance system are area-specific. Therefore, they only apply to land areas and associated trash loads reduced. Conveyance system loading rates developed as a result of Step #3 should be adjusted in-parallel for the following control measures:

- QF-3a: Partial-capture Treatment Device: Curb Inlet Screens (Area-specific)
- QF-3b: Partial-capture Treatment Device: Stormwater Pump Station Trash Racks Enhancements (Area-specific)
- QF-4: Enhanced Storm Drain Inlet Maintenance (Area-specific)
- QF-5: Full-Capture Treatment Devices (Area-specific)

Load reductions for these control measures are calculated in-parallel because they are applied to independent geographical areas. Reductions from all control measures described in this step are area-specific and may require the use of GIS to calculate a set of **waterway loading rates**. Once waterway loading rates have been determined, a **waterway load** will be developed and used as a starting point for calculating load reductions associated with trash interception in waterways discussed in Step #5.

## Step #5: Control Measures that Intercept Trash in Waterways

The load of trash that passes through the stormwater conveyance system without being intercepted may still be removed through interception in waterways. There are two control measures associated with interception in waterways:

- QF-3c: Partial-capture Treatment Device: Litter Booms/Curtains (Area-wide)
- QF-7: Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (Area-wide)

As these control measures are implemented, load reduction estimates can be calculated in-parallel for these two measures.

## Step #6: Comparison to Baseline Trash Load

Applying the four steps described in the processes above will provide an estimated trash load (volume) remaining after trash control measures are implemented. As depicted in the following equation, the relative percent difference between the baseline load and the load remaining after control measures are implemented is the percent reduction that will be used to assess progress towards MRP trash load reduction goals.

$$\frac{\text{Baseline Load} - \text{Remaining Load}}{\text{Baseline Load}} = \% \text{ Reduction}$$

## 4.0 ENHANCED TRASH CONTROL MEASURES

This section describes the new or enhanced trash control measures planned for implementation by the City of East Palo Alto. The enhanced control measures described are designed to reach a 40% reduction by July 1, 2014. New and enhanced control measures that will be implemented by City of East Palo Alto include those listed in Table 4.1.

**Table 4.1. Trash control measures that will be implemented by City of East Palo Alto to reach the 40% trash load reduction.**

Control Measure
Single-use Carryout Plastic Bag Ordinances
Polystyrene Foam Food Service Ware Ordinances
Public Education and Outreach Programs
Activities to Reduce Trash from Uncovered Loads
Anti-Littering and Illegal Dumping Enforcement Activities
On-land Trash Pickup (Volunteer and/or Municipal)
Enhanced Street Sweeping
Partial-Capture Treatment Devices
Enhanced Storm Drain Inlet Maintenance
Full-Capture Treatment Devices
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal)

### CR-1: Single-use Carryout Plastic Bag Policy

Single-use plastic carryout bags have been found to contribute substantially to the litter stream and to have adverse effects on marine wildlife (United Nations 2009, CIWMB 2007, County of Los Angeles 2007). The prevalence of litter from plastic bags in the urban environment also compromises the efficiency of systems designed to channel storm water runoff. Furthermore, plastic bag litter leads to increased clean-up costs for the Permittees and other public agencies.

Based on recent experiences of municipalities throughout the State, the process Permittees must go through to enact a single-use carryout plastic bag policy/ordinance is difficult due to intense scrutiny and opposition from not only public interest groups and lobbyists, but also merchants and community members. In most cases, most opposition groups are pressing for the development of Environmental Impact Reports (EIRs) in accordance with the California Environmental Quality Act (CEQA).

#### Baseline Level of Implementation

Prior to adoption of the MRP, Permittees within the Bay area have enacted policies or ordinances on Single-use Carryout Plastic Bags. To avoid penalizing these early implementers, an applicable control measure implemented by a Permittee prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is not applicable for this control measure.

## Enhanced Level of Implementation

City of East Palo Alto plans to phase-out the distribution of single-use carryout plastic bags. The ordinance/policy is expected to become effective on or before June 1, 2014, but may be implemented at a later date pending surrounding municipalities' adoption of such ordinances as to not create a disadvantage for businesses in the City of East Palo Alto versus neighboring communities. The total percent of trash reduced from MS4s as a result of implementing a single-use carryout plastic bag ordinance/policy will be reported in the Annual Report submitted each September to the Water Board. Planned phase-out components are likely to include the following components:

**Tier 1 – Prohibit Distribution at Large Supermarkets** – Adoption of a local policy or ordinance or implementation of a statewide or countywide action that prohibits large supermarkets from distributing single-use carryout plastic bags within their jurisdictional boundaries.

**Tier 2 – Prohibit Distribution at Retail Establishments that Sell Packaged Foods** – Adoption of a local policy or ordinance or implementation of a statewide or countywide action that prohibits retail establishments that sell packaged foods from distributing single-use carryout plastic bags within their jurisdictional boundaries.

**Tier 3 – Prohibit Distribution at All Retail Establishments (with the Exception of Restaurants)** – Adoption of a local policy or ordinance or implementation of a statewide or countywide action that prohibits **ALL** retail establishments (with the exception of restaurants) from distributing single-use carryout plastic bags .

**Additional Activities** – In addition to the adoption of a policy or ordinance described in Tiers 1-3, the City of East Palo Alto is likely to implement a **public education and outreach campaign** that is designed to significantly reduce the overall usage of ALL types of single-use carryout bags (plastic et al.) while encouraging the sale or distribution of reusable bags as a substitute through partnerships with community-based non-profit groups. The phases are expected to be as follows:

1. Prior to implementation, a survey of retail customers shall be conducted to garner support for or against single use bags
2. Public education and outreach will be conducted at local schools and retail establishments
3. Reusable bags will be made available to residents through partnership with local non-profit groups
4. Work with large affected retailers to conduct a raffle for customers who bring their own bag, to reward the positive behavior
5. After one year of program implementation, a survey at local retail establishments will be conducted to garner support for or against single use bags. These surveys will be analyzed and compared to determine whether a significant percentage of local residents understand the issue and support the removal of plastic bags from the City of East Palo Alto
6. Adoption of City ordinance as indicated above in Tiers 1-3

Through a phased-in program, the aim will be to provide options for consumers beyond single use bags, while promoting and rewarding customers who choose to refuse single use bags. Through a phase-out program, actions may include banning the distribution of or charging a fee for, single use paper bags in retail establishments.

**Once implemented, it is expected that this single-use bag phase-out program will receive widespread positive feedback from residents and instigate permanent behavior change which will ultimately warrant a 15% reduction in the City of East Palo Alto's baseline trash load.**

While the City has not taken a 15% credit for these efforts, it is anticipated that the request will be made upon program implementation, depending on the success of the program.

### **Reduction from Implementing Control Measure**

The City of East Palo Alto will receive a **10 percent** reduction credit for implementing specific enhanced control measures described in Enhanced Level of Implementation section above. The **10 percent** reduction credit will be applied to the City of East Palo Alto's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 5.0. Additionally, should the program prove successful in widespread behavior change (which would be reflected by a 75% or higher positive response via survey of the community and customers at local retail centers), the City of East Palo Alto will request an additional **3% credit** to be applied to the City of East Palo Alto's baseline trash load.

## **CR-2: Polystyrene Foam Food Service Ware Policy**

Polystyrene foam is used as food ware in the food service industry. According to the USEPA, floatable debris in waterways, such as products made of polystyrene, is persistent in the environment and has physical properties that can have serious impacts on human health, wildlife, the aquatic environment and the economy (USEPA 2002). Due to its properties, polystyrene foam used as food ware is typically not recycled. Since 1990, over 100 government agencies within the United States, including over twenty within the Bay area have enacted full or partial bans on polystyrene foam food service ware.

### **Baseline Level of Implementation**

Prior to adoption of the MRP, over twenty agencies within the Bay area enacted full or partial bans on polystyrene foam food service ware. To avoid penalizing these early implementers, an applicable control measure implemented by a Permittee prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is not applicable for this control measure.

### **Enhanced Level of Implementation**

Prior to the end of this Plan phase (July 2014), the City of Palo Alto is likely to adopt a policy or ordinance modeled after the expected San Mateo County ordinance (which is presently being developed); phasing out polystyrene foam food service ware at the point-of-sale incorporating any or all of the following:

- **Prohibiting the Distribution at Permittee-sponsored Events or Permittee-owned Property** through the adoption of a local ordinance or implementation of statewide or countywide actions that prohibit food vendors from distributing polystyrene foam food

ware at Permittee-sponsored events or on Permittee-owned property, and **Prohibiting the Distribution by Food Service Vendors** through adoption of a local policy or ordinance which shall include where bags cannot be distributed, exemptions, etc. The policy or ordinance is likely to become effective by June 1, 2014. The percent trash reduction from MS4s as a result of implementing a polystyrene foam food service ware policy or ordinance will be reported in the Annual Report submitted each September.

The following is a list of potential sample language, portions of which are which is likely to be adopted for this enhanced level of implementation:

**Tier 1a – Prohibit the distribution of polystyrene foam single-use food and beverage ware at Permittee-sponsored events or on Permittee-owned property** – Adoption of a local ordinance or implementation of a statewide, countywide, or regional action that prohibits food vendors from distributing polystyrene foam food and beverage ware at Permittee-sponsored events or on Permittee-owned property.

**Tier 1b – Prohibit the distribution of polystyrene foam single-use food and beverage ware at all food service vendors** - Adoption of a local ordinance or implementation of a statewide, countywide, or regional action that prohibits all food vendors from distributing polystyrene foam food and beverage ware.

**Tier 2a – Require all food service vendors to: 1) provide consumers a discount for “bringing their own” reusable beverage ware, or 2) charge consumers a fee for using single use beverage containers :**

-Adoption of a local ordinance or implementation of a statewide or countywide action that requires ALL food service establishments within their jurisdictional boundaries that sell take-out beverages to provide a discount to consumers on the sale of beverages when a re-usable container is used.

- Adoption of a local ordinance or implementation of a statewide or countywide action that requires ALL food service establishments within their jurisdictional boundaries that serve take-out beverages to charge the consumer a fee for each take-out beverage container used.

**Tier 2b – Mandatory Fee for single use disposable food and/or beverage containers:**

-Adoption of a local ordinance or implementation of a statewide or countywide action that requires ALL food service establishments within their jurisdictional boundaries that sell take-out beverages and/or food to provide a discount to consumers on the sale of food and beverages when a re-usable container is use.

-Adoption of a local ordinance or implementation of a statewide or countywide action that requires ALL food service establishments within their jurisdictional boundaries that serve take-out food and/or beverages to charge the consumer a fee for each take-out food or beverage container used.

## **Percent Reduction from Enhancements**

The City of East Palo Alto will receive an **8** percent reduction credit for implementing specific enhanced control measures described in *Enhanced Level of Implementation* section above. The **8** percent reduction credit will be applied to the City of East Palo Alto’s baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A

summary of all load reductions anticipated through the implementation of this plan are included in Section 5.0.

### **CR-3: Public Education and Outreach Programs**

Permittees in the San Francisco Bay Area have implemented public education and outreach programs to inform residents about stormwater issues relating to pollutants of concern, watershed awareness and pollution prevention. Public education and outreach efforts include developing and distributing brochures and other print media; posting messages on websites and social networking media (Facebook, Twitter etc.), attending community outreach events, and conducting media advertising. In recent years, some municipal agencies have implemented anti-litter campaigns to increase public awareness about the impacts of litter on their communities and water quality; and to encourage the public to stop littering.

#### **Baseline Level of Implementation**

The City of East Palo Alto implemented the following public education and outreach control measures prior to the effective date of the MRP:

- ***Elementary and high school outreach for watershed awareness and protection.***

These control measures are considered baseline because they were either not related to trash reduction specifically, or they are not planned to be continued during the term of the MRP. New actions or actions started prior to the effective date of the MRP and continued into the future are described under the next section.

#### **Enhanced Level of Implementation**

The City of East Palo Alto will implement the following public education and outreach control measures prior to July 1, 2014.

##### **Litter Reduction Advertising Campaign(s)**

##### ***BASMAA Youth Outreach Campaign (Regional)***

Through participation and funding of the regional **BASMAA Youth Outreach Campaign** the City of East Palo Alto will implement an outreach campaign designed to reduce littering from the target audience in the Bay Area. The Youth Outreach Campaign was launched in September 2011 (post-MRP effective date) 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 from FY 11-12 through FY 13-14. A brief description of the Campaign activities is provided below:

- **Raising Awareness:** The Campaign will begin by raising awareness of the target audience on litter and stormwater pollution issues. Partnerships with youth commissions, high schools, and other youth focused organizations will be developed to reach the target audience. Messages targeted to youth will be created and distributed via paid advertising, email marketing, Campaign website and social networking sites (e.g., Facebook and twitter).
- **Engage the Youth** - The advertisements will 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 will be launched to get Bay Area youth further involved in the Campaign. An online voting system will be used to select the winning entry. Media advertising will be conducted to promote the winning entry.

- Change Behaviors: To move the audience along the behavior change continuum, the Campaign will use electronic platforms such as email marketing and social networking sites to encourage participants to engage in increasingly more difficult behavior changes, such as participating in a clean-up, organizing a clean-up, etc.
- Maintain Engagement: The Campaign will continue to interact with the target audience through email marketing and social media websites.

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

The City of East Palo Alto will post the Youth Campaign program information in a variety of free media including Facebook, the City of East Palo Alto's website, and local newspapers to encourage community involvement. The City of East Palo Alto shall also inquire with local non-profit groups to encourage participation.

#### **Outreach to School-age Children or Youth** ***Trash Load Reduction Outreach***

The City of East Palo Alto is establishing an educational outreach program which will encourage local youth to participate in the plastic bag and polystyrene phase-out the City plans to undertake. Through on-campus outreach, working with local non-profits such as Youth Community Services, Youth United for Community Action (YUCA) and Girl Scouts of America, in partnership with local school districts, the City aims to provide uniform outreach to the youth in the community of East Palo Alto with a goal of increasing the level of understanding of trash-related issues and encouraging support of local program implementation and participation in local work days in the community.

#### ***Countywide Programs***

Through participation and funding of the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), The City of East Palo Alto plans to continue to implement litter reduction outreach to school-age children and youth. SMCWPPP currently oversees two contracts to provide direct outreach to grades K-12 in a school setting on behalf of all permittees. The contract for grades K-5 is currently held by the Banana Slug String Band, which performs a presentation called "We All Live Downstream." Through songs and interactive exercises, the message of not putting anything in the stormdrains (including trash) is delivered, along with basic concepts of the water cycle and the impact of pollution on aquatic life. The City of East Palo Alto will work with the Banana Slug String Band to request the integration of a stronger message of the impact of trash in the waterways.

The second contract is held by Rock Steady Science, which presents "Water Pollution Prevention and Your Car" to high school students. A portion of this presentation is dedicated to watershed and stormdrain education, and the impact of litter on local creeks and waterways. Both contracts are managed to ensure that schools in each community in the County are reached. For communities without High Schools, the feeder schools in neighboring communities are specifically targeted for presentations. In addition to outreach at the school sites, a number of student activity guides and coloring books related to watershed health and littering are provided

to children who attend outreach events. Schools are also directly targeted in promotion of Coastal Cleanup Day. The City of East Palo Alto will make a concerted effort to encourage local high school student participation in Coastal Cleanup Day and National Rivers Cleanup day by providing an opportunity for community service hour credit for volunteer participation. The goal is to grow local participation in these events significantly.

In addition to the programs described above, *Recycleworks*, a branch of San Mateo County Public Works dedicated to promotion of recycling solid waste, plans to continue to conduct litter reduction activities. These include participating in the green schools program in which a school gets certified by achieving goals set from a menu of categories, one of which is litter reduction. In addition, *Recycleworks* conducts school assemblies and field trips focusing on litter reduction and recycling. They also conduct waste audits at schools to encourage waste reduction, and staff outreach events at schools. PIP is exploring the possibility of teaming up with *Recycleworks* to continue outreach to junior high and high school students after June 2012, when the current contract with Rock Steady Science expires. The City of East Palo Alto will cooperate and encourage these campaigns by providing local staff support to local principals to encourage participation.

### **Media Relations**

#### ***BASMAA Regional Media Relations Project (Regional)***

Through participation and funding of the **BASMAA Regional Media Relations Project**, The City of East Palo Alto plans to continue to implement a media relations project partially designed to reduce littering from target audiences in the Bay Area. The goal of the BASMAA 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 PSAs focus on litter issues each year (e.g., creek clean-up activities, preventing litter by using reusable containers, etc.).

#### ***Proposed San Francisco Bay Protection & Behavior Change Campaign***

The City of East Palo Alto is participating in the SF Bay Protection & Behavior Change Campaign, a regional collaborative formed to build a regional ad campaign which will address the needs of San Francisco Bay through the creation of a recognizable region-wide brand for the protection of the San Francisco Bay. The City will participate in the steering committee for the formation of this ad campaign as well as promote events associated with this project.

#### ***Coastal Cleanup Day Promotion (Countywide)***

On the countywide level, SMCWPPP also conducts annual press releases for Coastal Cleanup Day, and uses Twitter to promote cleanup events. These releases are intended to gain support and assistance for cleanup events conducted each September in local water bodies. The City of East Palo Alto will assist in local effort by providing contacts to SMCWPPP for promoting these events.

#### ***Media Relations (Local)***

The city of East Palo Alto will utilize local media relations to promote Coastal Cleanup Day, National Rivers Cleanup Day, and programs listed herein through a variety of local media including Facebook, the City's website, the City's local television channel, and local newspaper press releases.

### **Community Outreach Events**

SMCWPPP, through its Public Information and Participation (PIP) program, plans to continue to conduct community outreach events on behalf of Permittees who request support. Outreach materials related to litter that are distributed include, in addition to the children's materials listed above under Outreach to School-age Children or Youth, a promotional sign for cigarette smokers to discourage cigarette litter, and pocket ashtrays are given out. A general stormwater pollution prevention flyer in English and Spanish that includes litter reduction in its messaging is distributed. In addition to table outreach events conducted for specific permittees, PIP also conducts a Countywide Event aimed to reach residents from throughout the county. PIP manages an online calendar which promotes cleanup events by non-profit organizations throughout the county. In FY 2011, PIP completed its 6<sup>th</sup> year acting as the county coordinator for Coastal Cleanup Day, increasing volunteer participation by 400% in that time, and trash removal increased by 300%.

During the term of the MRP, new outreach materials are also being considered for dissemination to the public, including reusable shopping bags to encourage reduction in use of plastic carryout bags. In addition, spring cleanups taking place in individual jurisdictions are planned to be promoted under one theme by PIP, who will assist directing volunteers to cleanup events in their communities. SMCWPPP is planning to conduct a total of 10-12 outreach events on behalf of various jurisdictions within the county in the 2011-12 fiscal year. SMCWPPP will also continue maintaining an online calendar of cleanups on a monthly basis. The city of East Palo Alto will promote these campaigns while working within the Countywide program to develop and enhance programs to incorporate City of East Palo Alto specific needs.

### **Single Use Bag Phase-Out Community Outreach Program (Local)**

The City of East Palo Alto is planning a single-use bag phase-out program which will involve the following components:

1. Surveying the community regarding their perceptions about single use bags
2. Provide educational outreach regarding single-use bags and litter issues
3. Engage local non-profits in providing reusable shopping bags at local retailers
4. Survey local customers at retail establishments in the City of East Palo Alto to determine the effectiveness of the outreach campaign
5. Adopt a single-use bag phase-out, or ban, to solidify the community's behavior change towards the elimination of single use bags.

### **Percent Reduction from Enhancements**

The City of East Palo Alto will receive a total of 8 (eight) percent reduction credit for implementing specific enhanced control measures described in *Enhanced Level of Implementation* section above. This percent reduction is comprised of the following credits, consistent with the *Load Reduction Tracking Method*:

- Litter Reduction Advertising Campaigns – 3%
- Outreach to School-age Children or Youth – 2%
- Media Relations – 1%
- Community Outreach Events - 2%

These **8 (eight)** percent reduction credits will be applied against the City of East Palo Alto's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2012a). A summary of all load reductions anticipated through the implementation of this plan are included in Section 5.0.

## CR-4: Reduction of Trash from Uncovered Loads

Although it is currently illegal to operate a vehicle that is improperly covered and which its' contents escapes<sup>3</sup>, vehicles remain an important trash source to MS4s and local waterways. Specifically, vehicles that do not secure or cover their loads when transporting trash and debris have a high risk of contributing trash to MS4s. Land areas that generate trash from vehicles include roads, highways (on/off ramps, shoulders or median strips) and parking lots. To help address the dispersion of trash from unsecured or uncovered vehicles destined for landfills and transfer stations, Permittees may require municipally-contracted trash haulers to cover or secure loads or work with municipal or private landfill and transfer station operators to educate waste haulers on securing loads and/or to enhance enforcement of existing regulations.

### Baseline Level of Implementation

The baseline trash load described in Section 2.0, assumes that prior to adoption of the MRP the City of East Palo Alto has not adopted control measures to reduce trash from vehicles with uncovered loads. Therefore, implementation of any of the control measures described in this section is considered to be enhanced implementation.

### Enhanced Level of Implementation

The City of East Palo Alto plans to implement the following enhanced control measures to reduce trash from vehicles with uncovered loads prior to July 1, 2014:

- ***Require Municipal Trash Haulers to Cover Loads*** – Development and inclusion of language in a Permittee's hauling service contract(s) that requires contracted trash and construction debris haulers to cover loads when transporting trash and debris to municipally or privately-owned landfills and transfer stations.

### Percent Reduction from Enhancements

The City of East Palo Alto will receive a **1%** percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The **1%** percent reduction credit will be applied to the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a) and is presented in the Trash Load Reduction Summary Table included in Section 5.

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<sup>3</sup> In accordance with the California Vehicle Code Sections 23114 and 23115, it is against the law to operate a vehicle on the highway which is improperly covered, constructed, or loaded so that any part of its contents or loads spills, drops, leaks, blows, or otherwise escapes from the vehicle. Exempted materials include hay and straw, clear water and feathers from live birds. Additionally, any vehicle transporting garbage, trash, or rubbish, used cans or bottles, waste papers, waste cardboard, etc. must have the load covered to prevent any part of the load from spilling on the highway (CVC 2011). Significant fines are possible for non-compliance.

## CR-5: Anti-Littering and Illegal Dumping Enforcement Activities

Successful anti-littering and illegal dumping enforcement activities include laws or ordinances that make littering or dumping of trash illegal. Laws are enforced by various municipal agency staff (e.g., police, sheriff and public works department staff) who issue citations in response to citizen complaints or other enforcement methods (e.g., surveillance cameras, signage and/or physical barriers installed at illegal dumping hot spots). In some California jurisdictions, the minimum fine for littering is \$500 and the maximum penalty for highway littering is \$1000 (City of San Francisco 2001). However, it is difficult to enforce small littering events unless they are witnessed or solid proof exists linking the offender to the litter. As a result, enforcement tends to focus on larger scale illegal dumping activities.

### Baseline Level of Implementation

The baseline trash load described in Section 2.0, assumes that the City of East Palo Alto has adopted a basic anti-littering and illegal dumping enforcement program that entails receiving and responding to complaints from citizens as resources allow. The City of East Palo Alto has participated by:

- Annual Creek Clean Up of trash hot spot
- Annual Storm Drain Outlet Cleanup
- Facilitating with trash service provider to clean up areas of illegal dumping
- Clean up of areas of illegal dumping through maintenance staff and police surveillance

### Enhanced Level of Implementation

The City of East Palo Alto plans to implement the following enhanced anti-littering and illegal dumping enforcement control measures prior to July 1, 2014. Successful implementation of an active anti-littering and illegal dumping enforcement program in the year of interest shall include:

- ***Thorough investigations of complaints received*** and tracking and follow up actions of such complaints from an illegal dumping hotline;
- ***The use of surveillance cameras or other deterrents in 20-49% of hot spots;*** with the intention of installing signage regarding “No-Dumping “as well as cameras in several locations throughout the City.

### Percent Reduction from Enhancements

The City of East Palo Alto will receive a **3 percent** reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The **3 percent** reduction credit will be applied to the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a) and is presented in the Trash Load Reduction Summary Table included in Section 5.0.

## CR-6: Improved Trash Bin/Container Management

Receptacles used to place/store trash or recyclables prior to collection by a public agency or private waste hauler reduce the potential for littering and trash loading to stormwater conveyance systems and receiving waters (City of Los Angeles 2004). For the purposes of assigning trash load reduction credits, receptacles fall into the following two categories:

- **Private Trash/Recycling Bins:** A receptacle for placing trash or recyclables generated from a household, business, or other location that is serviced by a trash hauler. Bins are specifically-designed, heavy-duty plastic wheeled containers with hinged lids; or large multi-yard metal or plastic containers rectangular in shape.
- **Public Area Trash Containers:** A receptacle for placing incidental trash generated in public spaces that provides people with a convenient and appropriate place to dispose of trash. The design and size of public area trash containers vary widely, depending on their setting and use.

The effectiveness of bins/containers in reducing trash in the environment is likely dependent upon: the location and density of the receptacles, size of the bin/container in relationship to the size needed to service users, frequency of maintenance, and the ability of the bin/container to capture and contain the trash deposited.

### Baseline Level of Implementation

The baseline trash load described in Section 2.0, assumes that the City of East Palo Alto has not implemented enhanced trash bin/container management practices prior to effective date of the MRP. The City of East Palo Alto's trash/bin container management practices are described in the Enhanced Level of Implementation.

### Enhanced Level of Implementation

The City of East Palo Alto has implemented the following improved trash bin/container management practices prior to the effective date of the MRP following enhanced control measures listed below.

#### Ensuring Adequate Private Trash Service

- The City of East Palo Alto has an ordinance which requires trash service for private properties.

### Percent Reduction from Enhancements

The City of East Palo Alto will receive a **1%** percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The **1%** percent reduction credit will be applied to the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a) and is presented in the Trash Load Reduction Summary Table included in Section 5.

## **CR-7: Single-Use Food and Beverage Ware Ordinance(s)**

Single-use food and beverage ware have been found to contribute substantially to the litter stream (City of Oxnard 2004, City of San Francisco 2008, City of San Jose 2009, Clean Water Action 2011) and can cause adverse environmental impacts throughout their lifecycles (Ackerman 1997, Alliance for Environmental Innovation 2000, EPA 2009). Due to the magnitude of food and beverage packaging litter emanating from commercial business districts, many California municipalities have taken action to eliminate the distribution of certain types of single-use beverage and food ware (e.g., polystyrene foam) and this control expands these actions to all single-use food and/or beverage ware.

### **Baseline Level of Implementation**

Prior to adoption of the MRP, no agencies within the Bay area have enacted ordinances related to all types of single-use food and beverage ware. Therefore, the baseline level of implementation is not applicable for this control measure.

### **Enhanced Level of Implementation**

City of East Palo Alto does not intend to adopt an ordinance that entails Single-Use Food and Beverage Ware Ordinances in the Short Term Plan for trash load reduction but anticipates utilizing this method of trash load reduction in the Long Term Trash Load Reduction Plan, should the surrounding communities choose to adopt such a policy.

## **QF-1: Enhanced On-Land Trash Cleanups (Volunteers and/or Municipal)**

On-land cleanups conducted by the City of East Palo Alto, Recology (the City's waste hauler) and volunteers have been successful in removing trash from identified trash hot spots and engaging local citizenry in improving their communities. The City of East Palo Alto has several programs in place to address on-land trash. Municipal efforts relate to ongoing beautification of impacted areas and coordination of cleanup events. Volunteer on-land cleanups involve the meeting of individuals, creek and watershed groups, civic organizations, businesses and others at designated or adopted on-land sites to remove trash. On-land trash cleanups are conducted as single-day or throughout the year.

### **Baseline Level of Implementation**

Due to the varied methods utilized for on-land trash clean-ups and the variability of the effectiveness, these methods of trash control are not accounted for in the preliminary trash generation rates established through the BASMAA *Baseline Trash Loading Rates Project*. In order to obtain accurate account, on-land trash clean-ups are to be included as new or enhanced actions that began or are planned to begin after to the effective date of the MRP, as described under the next section. The City of East Palo Alto implemented the following on-land cleanup activities prior to the effective date of the MRP.

## Enhanced Level of Implementation

Prior to July 1, 2014, the City of East Palo Alto will be conducting or coordinating the following new or enhanced on-land trash cleanup activities listed below. These on-land cleanups will be conducted or coordinated each year and the volume of trash removed will be tracked to demonstrate trash loads reduced.

Please note that **only trash that has the potential of entering the MS4 will be tracked**. As a result, large items (e.g., appliances, shopping carts, furniture, mattresses, televisions, tires, lumber, etc.) that will be removed during on-land trash cleanups are not part of the volume determination since they do not have the potential of entering the MS4. **Permittee-led On-land Cleanups**

### New or Enhanced Permittee-led On-land Cleanups:

- Routine or Regularly Scheduled Litter Pickup and Removal coordinated by Municipal Staff and removed by the local waste hauler
- Removal of Homeless Encampments
- Illegal Dump Site Response and Abatement
- Interagency Cleanup Coordination and Cleanup<sup>4</sup>
- Litter Pickup Event Coordination and Cleanup<sup>5</sup>
- Business Improvement District Cleanups
- Routine Cleanups of Selected Hot Spots

## Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced beginning July 1, 2014 as a result of implementing on-land trash cleanup has been given a **conservative** estimate of 1% of the **11,658 gallons** of illegally dumped trash that were collected over the course of the last quarter of FY 11-12, from September through December, or **116 gallons**. Due to the conservative estimate, it is expected that during the Short Term Plan implementation and prior to July 2014, the amount of trash removed from streets will be significantly higher than the number indicated here. Working with the local waste hauler, an agreement has already been made to track the volume of stormwater potential trash (identified as household trash that is bagged and small enough to enter storm drains) that is being picked up at illegal dumping sites. Presently, the estimated volume is equal to approximately a **2 percent** reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5. Again, it is anticipated that the volume of stormwater potential trash removed from on-land program enhancements will be significantly higher during FY 2012-13 and beyond as tracking mechanisms are put into place, but offset through other abatement practices utilized herein.

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<sup>4</sup> **Interagency Cleanup Coordination and Cleanup** - On-land cleanups coordinated with other departments or programs within a municipality or countywide agency. Other department, programs or agencies include roads, streets and highways department, Department of Transportation, Anti-litter and graffiti programs, Department of Corrections and others that may conduct on-land trash cleanups.

<sup>5</sup> **Litter Pickup Event Coordination and Cleanup** - On-land cleanups coordinated and publicized by the municipality but conducted by volunteers and/or adult/juvenile offenders. The municipality provides trash bags and disposes of collected trash. Examples include the annual Great American Pickup Event and other one-day or on-going cleanup events.

## QF-2: Enhanced Street Sweeping

Street sweeping is conducted by most, if not all, Bay Area municipalities to remove trash and debris that collect in the gutters at the edge of streets. Parked cars and large storms that produce significant runoff can impact the effectiveness of street sweepers. However, increasing parking enforcement or more frequent street sweeping (as compared to the frequency of storm events) may increase the trash load reduced to MS4s. Permittees who choose to enhance street sweeping may do so to demonstrate trash load reductions to their MS4s and progress towards trash load reduction goals required by the MRP.

### Baseline Level of Implementation

The baseline trash load described in Section 2.0 incorporates the trash load reductions due to baseline street sweeping. The City of East Palo Alto's baseline street sweeping program includes sweeping at a frequency of one time per week in retail and one time per month in all other land uses. While the City's pre-MRP street sweeping program has been beyond this, it is reported in the Enhanced Street Sweeping program components.

### Enhanced Level of Implementation

Enhancements to street sweeping frequencies and parking enforcement (or equivalent measures) control measures will be used to calculate loads reduced from enhanced street sweeping, consistent with the trash load reduction tracking method (BASMAA 2011e). A list of planned enhancements is included in Table QF-3-1 and illustrated in Figure QF-2-1.

Enhancements include:

The City of East Palo Alto presently sweeps streets **three (3) times per week on average on arterials** which includes a majority of the City's major retail areas; **two times per week in retail and high density residential areas**; and **two times per month on average in all other areas**, including single family residential, multifamily residential, major arterials, commercial/office, industrial and park areas. This sweeping program is enhanced through parking enforcement with posted signage in a variety of land uses throughout the City as well as partial trash capture devices on about 50% of the City storm drains, or around 185 devices (quantified in partial capture section QF-3 not included in the trash capture already included in the Pump Station trash removal), which ensures a majority of the trash and leaf litter remain on the street for the sweeper to pick up rather than being pushed through to the storm drain system.

The City intends to install parking enforcement signage throughout the City for **fully enhanced** street sweeping prior to July 2014 to ensure full enforcement potential.

### Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of enhanced street sweeping is **739** gallons of trash removed. As described in Trash Load Reduction Summary Table included in Section 5, this volume is equal to approximately a **15 percent** reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. Table QF3-1 indicates the various routes served by the City Street Sweeping program and the approximate length of curb miles swept as well as a comparison of baseline versus enhanced sweeping programs. With further enhancing the program by providing 100% signage throughout City streets, the final amount of removal expected is **971** gallons or **19.8** percent removal of baseline loads.

FIGURE QF2-1 CITY OF EAST PALO ALTO CURRENT STREET SWEEPING FREQUENCY

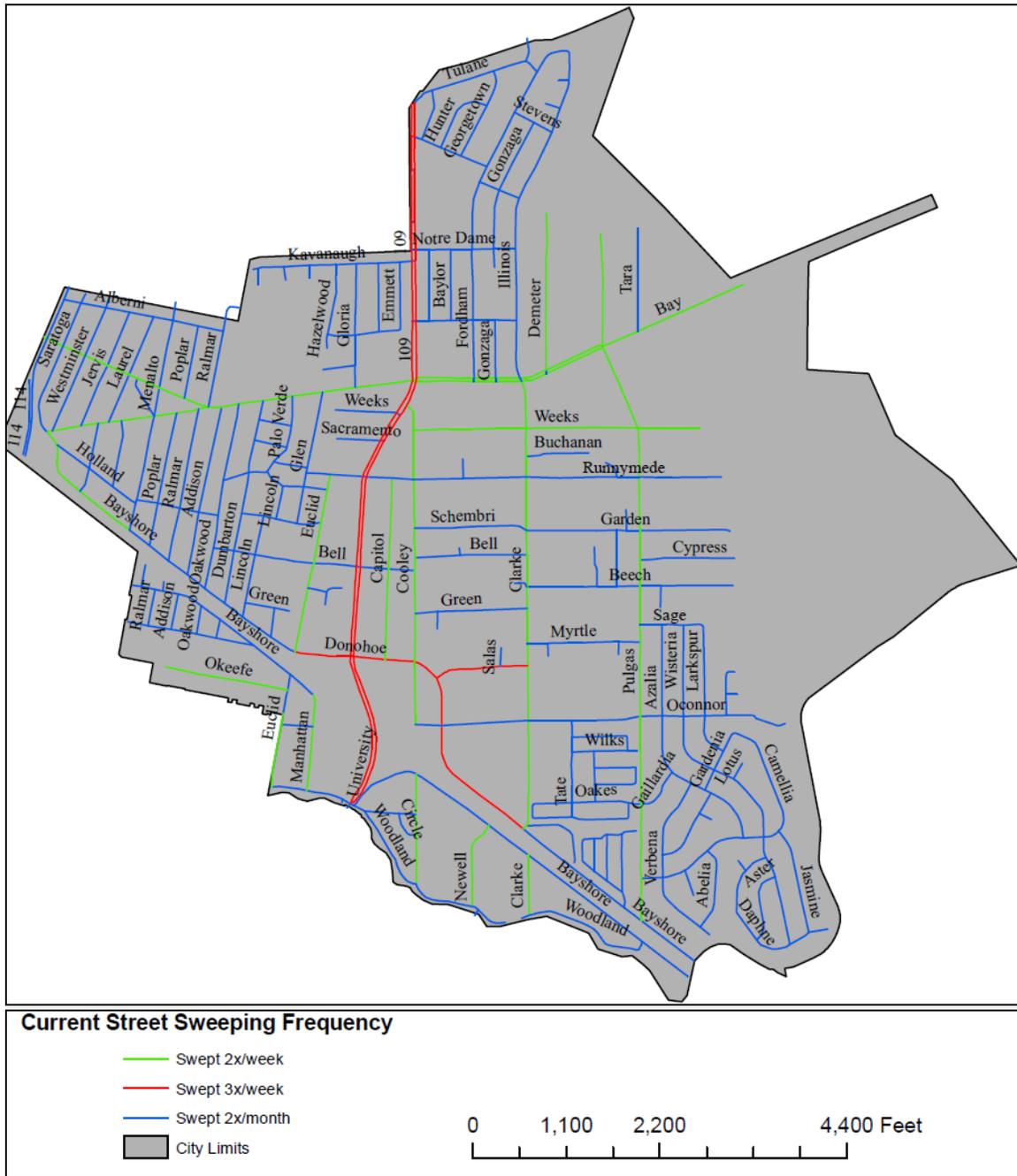
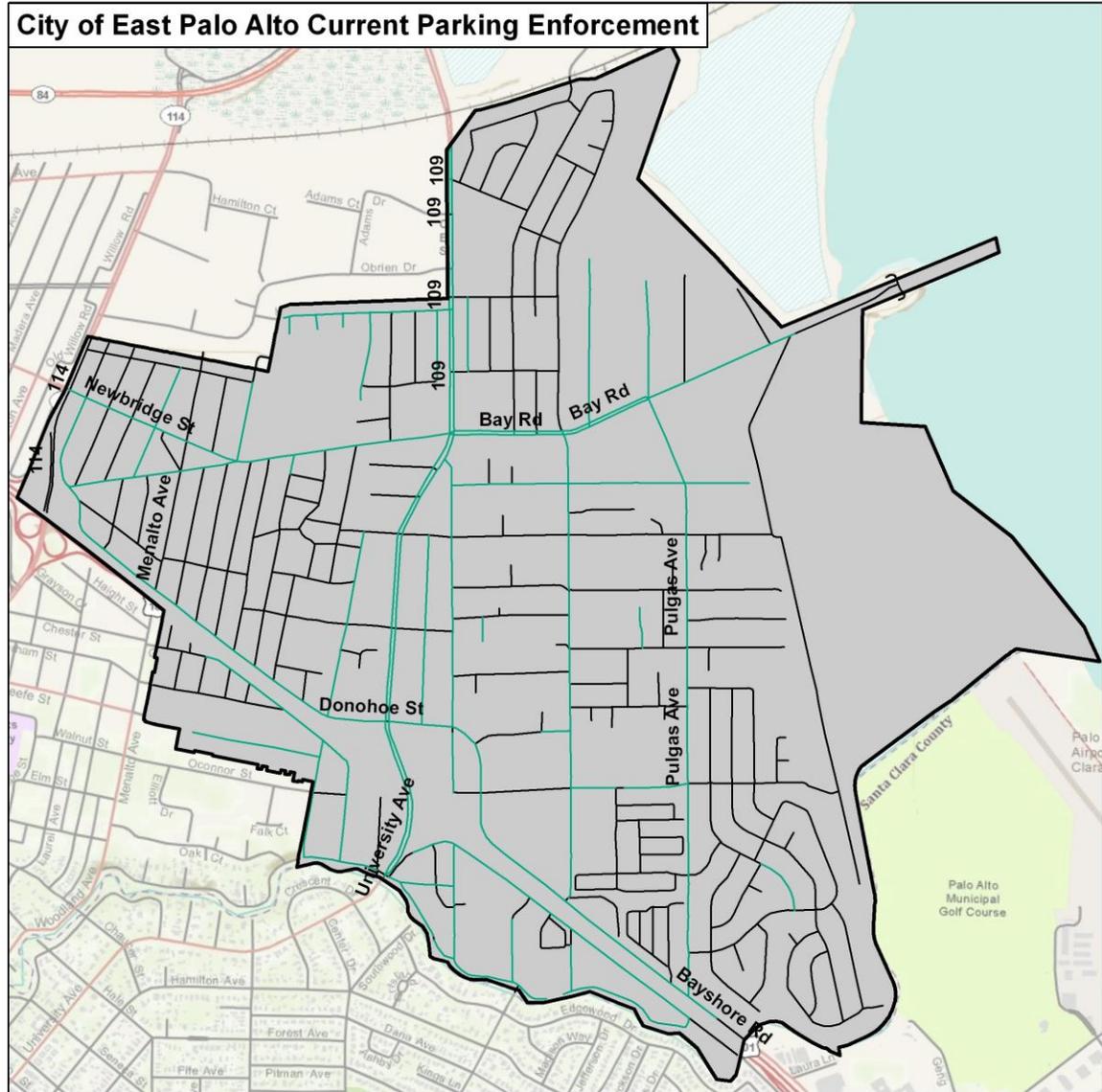
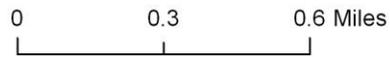


FIGURE QF2-2 CITY OF EAST PALO ALTO CURRENT PARKING ENFORCEMENT



**Current Parking Enforcement**

- Not Enforced
- Street Sweeping Signs Posted
- Parking Enforcement Equivalent



**Data Sources:**

**Streets:** Tele Atlas, 2003, Retrieved from <http://www.arcgis.com/>  
**City Boundary:** County of San Mateo  
**Background:** ESRI World Topographic Map

**Map Created By:** EOA, Inc.  
**Date:** December 12, 2011

**Table QF-2-1. Planned enhanced street sweeping program in the City of East Palo Alto.**

Route ID	Approximate Length Swept (curb miles)	Baseline		Enhanced	
		Frequency	Parking Enforcement	Frequency	Parking Enforcement
1. Major Thoroughfares, Main retail	3.15	1X/ month	No	Monday, Wednesday, Friday, early mornings (12) twelve times a month; (3) Three times per week	Yes
2. Major Arterials	11.25	1X/ month	No	Thursday & Friday 8-12am (8) eight times a month; (2) Two times per week	Yes
3. Garden Area; 50% SFR, 50% HDR	4.57	1X/ month	No	1 <sup>st</sup> and 3 <sup>rd</sup> Thursdays 12-4 (2) Two times per month	Yes
4. Village Area: 40% HDR; 60% SFR	4.00	1X/ month	No	2 <sup>nd</sup> and 4 <sup>th</sup> Thursdays 12-4pm; (2) Two times per month	Yes
5. Central EPA	4.50	1X/ month	No	1 <sup>st</sup> and 3 <sup>rd</sup> Wednesdays; (2) Two times per month	Yes
6. West Central EPA	1.75	1X/ month	No	2 <sup>nd</sup> & 4 <sup>th</sup> Wednesdays; (2) Two times per month	Yes
7. West Side 1: HDR, Retail	6.38	1X/ month	No	1 <sup>st</sup> and 3 <sup>rd</sup> Monday 8-12; (2) Two times per month	Yes
8. West Side 2: 50% SFR, 25% Park, 15% HDR, 10% School	3.30	1X/ month	No	2 <sup>nd</sup> & 4 <sup>th</sup> Mondays 8-12; (2) Two times per month	Yes
9. University Square 80% HDR & 12% SFR, 8% Park	1.72	1X/ month	No	1 <sup>st</sup> & 3 <sup>rd</sup> Thursdays 8-12; (2) Two times per month	Yes
<b>Total Street Sweeping</b>	<b>40.62 of 41.83</b>	<b>Once a month</b>	<b>No</b>	<b>Varies as indicated above</b>	<b>Yes</b>

## QF-3: Partial-Capture Treatment Devices

Partial-capture devices are treatment devices that have not been approved as full-capture by the San Francisco Bay Regional Water Quality Control Board, but capture trash at a known effectiveness value. Partial-capture devices may be similar to full-capture devices, but do not meet the full capture definition due to engineering challenges; or they may be completely different types of devices. Partial-capture devices include curb inlet screens (e.g., automated retractable screens), litter booms/curtains and stormwater pump station track racks. Trash loads reduced via partial-capture devices within a Permittee's jurisdictional boundaries may be used to demonstrate attainment of trash load reduction goals.

### Baseline Level of Implementation

#### *Curb Inlet Screens and Litter Booms/Curtains*

Prior to effective date of the MRP, some Permittees within the Bay area have installed and maintained curb inlet screens and litter booms/curtains. To avoid penalizing these early implementers, the applicable control measure implemented by a Permittee prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Furthermore, the trash load removed via these devices installed prior to the MRP is not accounted for in baseline trash loads. Therefore, the baseline level of implementation is not applicable for this control measure, as devices installed prior to the effective date of the MRP and associated loads reduced will be grandfathered in as enhanced measures.

#### *Stormwater Pump Station Racks*

Similar to the devices described above, some Permittees within the Bay area have installed and maintained trash racks on their stormwater pump stations. Existing pump station trash racks are assumed to remove roughly 25% of the trash that enters the pump station (BASMAA 2012a). The baseline trash load removed via these devices is accounted for in baseline trash loads.

The City of East Palo Alto has a single pump station, the O'Connor Pump Station, which directs stormwater through a levy system to the San Francisquito Creek, which in turn flows directly to the San Francisco Bay. The inlet to the Pump Station contains a trash rack which separates-out large objects from stormwater through a grid-rack with openings spaced at about 2-3 inches of separation. Cleaned on an annual basis, the Pump Station diverts approximately **510** gallons of trash annually directly from stormwater from the City of East Palo Alto which translates to **5.1** percent of the baseline trash load removal.

### Enhanced Level of Implementation

A total of **183** partial-capture treatment devices have been or will be installed in the City of East Palo Alto prior to July 1, 2014. A list of these partial-capture devices is included in Table QF-3-1. All devices listed within the table are enhanced trash control measures and include vertical metal bars in the storm drain inlet openings at approximately 2-3 inch separation. Calculation of loads reduced from partial-capture devices will be consistent with the approach described in the *Trash Load Reduction Tracking Method Report* (BASMAA 2012a), or approximately 25% effectiveness.

### **Percent Reduction from Enhancements**

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing partial-capture treatment devices listed in Table QF-3-1 is **327 gallons**. This volume is equal to approximately a **4.3 percent** reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5.

Table QF-3-1. Full capture treatment devices installed within the City prior to July 1, 2014.

East Palo Alto Partial Capture Treatment Devices						
Device ID	Public or Private	Device Name	Approximate Locations (Cross Streets)	Installation Date	Total Area Treated (acres)	Trash Load Reduced
1-22 <b>22</b>	Public	Storm Drain Inlet Bars	University Ave, Notre Dame, Bay to the East & North Boundaries	11/28/2011	3.37 each or 74.4 total	0.76 gallons/year each or <b>16.7 gallons/year</b>
23-44 <b>21</b>	Public	Storm Drain Inlet Bars	Garden Ave, Clark Ave, Bay Road, East Boundaries	11/28/2011	3.37 each or 70.77 total	0.76 gallons/year each or <b>16.0 gallons/year</b>
45-68 <b>23</b>	Public	Storm Drain Inlet Bars	University Ave, Clarke Ave, Bay Road and Schembri St. Boundaries	11/28/2011	3.37 each or 77.51 total	0.76 gallons/year each or <b>17.6 gallons/year</b>
69-94 <b>25</b>	Public	Storm Drain Inlet Bars	University Avenue, Clarke Avenue, Schembri St. and Donohue St. Boundaries	11/28/2011	3.37 each or 84.25 total	0.76 gallons/year each or <b>19.1 gallons/year</b>
95-120 <b>25</b>	Public	Storm Drain Inlet Bars	Donahue St., East Bayshore Road, and Clarke Avenue Boundaries	11/28/2011	3.37 each or 84.25 total	0.76 gallons/year each or <b>19.1 gallons/year</b>
170-192 <b>22</b>	Public	Storm Drain Inlet Bars	University, Clarke, Donahue and Eastern Boundaries	11/28/2011	3.37 each or 74.14 total	0.76 gallons/year each or <b>16.7 gallons/year</b>
211-232 <b>21</b>	Public	Storm Drain Inlet Bars	Clarke Rd, Bay Road, Garden St, Eastern Boundary	11/28/2011	3.37 each or 70.77 total	0.76 gallons/year each or <b>16.0 gallons/year</b>
232-258 <b>26</b>	Public	Storm Drain Inlet Bars	University Ave, Notre Dame, Bay Road and Eastern Boundary	11/28/2011	3.37 each or 87.62	0.76 gallons/year each or <b>19.8 gallons/year</b>
<b>185 Total</b>	Public	<b>Storm Drain Inlet Partial Capture Summary</b>	<b>SDI's From University Ave East, Bay to San Francisquito Creek (north to South)</b>	<b>11/28/2011</b>	<b>~3.37 acres each</b>	<b>141 Gallons per year trash removal</b>

## **QF-4: Enhanced Storm Drain Inlet Maintenance**

In accordance with countywide Stormwater Conveyance System Operation and Maintenance Performance Standards, storm drain inlets are maintained at least once per year by Permittees. Permittees who have enhanced storm drain inlet maintenance by increasing the frequency of cleanouts may use the load of trash reduced to MS4s to demonstrate attainment of trash load reduction goals required by the MRP.

### **Baseline Level of Implementation**

The baseline trash load described in Section 2.0 assumes that the City of East Palo Alto currently maintains and removes material from storm drain inlets at least once per year. This baseline frequency is consistent with the frequency of storm drain inlet maintenance in the City of East Palo Alto prior to the effective date of the MRP.

### **Enhanced Level of Implementation**

The City of East Palo Alto will continue to clean stormdrain inlets at the present enhanced level of implementation due to staffing limitations. The City of East Palo Alto will inspect and clean the stormdrain inlets which contain full trash capture devices more frequently as inspections reveal is necessary. This is captured in the Full Trash Capture Devices section QF-5. The enhanced frequency of maintenance and associated effectiveness ratings will be used to calculate loads reduced from enhanced maintenance. This load reduction calculation method is consistent with the trash load reduction tracking method (BASMAA 2012a).

### **Percent Reduction from Enhancements**

Due to the increased inlet maintenance being attributed to full trash capture devices, there is no additional trash removal credit to be taken for section QF-4. The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing enhanced storm drain inlet maintenance is 0 cubic feet. This volume is equal to approximately a 0 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.

## **QF-5: Full-Capture Treatment Devices**

As defined by the Municipal Regional Stormwater Permit (MRP), a full-capture system or device is any single device or series of devices that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate (Q) resulting from a one-year, one-hour, storm in the sub-drainage area. A list of the full-capture systems and devices recognized by the San Francisco Bay Regional Water Quality Control Board (Water Board) is included in *Trash Load Reduction Tracking Method Report* (BASMAA 2011e). Trash loads reduced via publically or privately owned and operated devices within a Permittee's jurisdictional area that have been recognized by the Water Board as full-capture may be used to demonstrate attainment of trash load reduction goals.

### **Baseline Level of Implementation**

Prior to adoption of the MRP, some Permittees installed and maintained full capture devices. To avoid penalizing these early implementers, an applicable control measure implemented within a Permittee's jurisdictional area prior to the effective date of the MRP will be credited equally to a control measure implemented after the effective date. Therefore, the baseline level of implementation is no trash full-capture devices have been installed.

### **Enhanced Level of Implementation**

A total of **39** trash full-capture treatment devices have been installed in the City of East Palo Alto prior to July 1, 2014. A list of these full-capture devices is included in Table QF-6-1. All devices listed within this table are enhanced trash control measures. Table QF-6-1 also includes the area treated and the calculated trash load reduced from each full-capture treatment device. These calculations are consistent with the approach described in the *Trash Load Reduction Tracking Method Report* (BASMAA 2011e).

### **Percent Reduction from Enhancements**

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing full capture devices is **171 gallons**. This volume is equal to approximately a **3.5** percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5.

**Table QF-5-1. Full capture treatment devices installed within the City of East Palo Alto prior to July 1, 2014.**

East Palo Alto Full capture treatment devices						
Device ID	Public or Private	Device Name	Location (Cross Streets)	Installation Date	Total Area Treated (acres)	Trash Load Reduced
1	Public	BioClean Trash Guard BC-4b	1905 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
2	Public	BioClean Trash Guard BC-4b	2160 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
3	Public	BioClean Trash Guard BC-4b	2201 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
4	Public	BioClean Trash Guard BC-4b	1099 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
5	Public	BioClean Trash Guard BC-4b	1070 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
6	Public	BioClean Trash Guard BC-4b	1095 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
7	Public	BioClean Trash Guard BC-4b	1981 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
8	Public	BioClean Trash Guard BC-4b	1125 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
9	Public	BioClean Trash Guard BC-4b	560 Bell Street, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
10	Public	BioClean Trash Guard BC-4b	2411 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
11	Public	BioClean Trash Guard BC-4b	1935 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
12	Public	BioClean Trash Guard BC-4b	1927 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year

City of East Palo Alto Baseline Trash Load and Short-Term Trash Load Reduction Plan

East Palo Alto Full capture treatment devices (Cont'd)						
Device ID	Public or Private	Device Name	Location (Cross Streets)	Installation Date	Total Area Treated (acres)	Trash Load Reduced
13	Public	BioClean Trash Guard BC-4b	2450 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
14	Public	BioClean Trash Guard BC-4b	2277 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
15	Public	BioClean Trash Guard BC-4b	2380 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
16	Public	BioClean Trash Guard BC-4b	2361 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
16	Public	BioClean Trash Guard BC-4b	2101 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
18	Public	BioClean Trash Guard BC-4b	2133 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
19	Public	BioClean Trash Guard BC-4b	1974 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
20	Public	BioClean Trash Guard BC-4b	578 Sacramento St, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
21	Public	BioClean Trash Guard BC-4b	2272 University Ave , East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
22	Public	BioClean Trash Guard BC-4b	2170 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
23	Public	BioClean Trash Guard BC-4b	2176 Cooley Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
24	Public	BioClean Trash Guard BC-4b	2157 Cooley Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
25	Public	BioClean Trash Guard BC-4b	2280 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
26	Public	BioClean Trash Guard BC-4b	2269 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year

East Palo Alto Full capture treatment devices (Cont'd)						
Device ID	Public Or Private	Device Name	Location (Cross Streets)	Installation Date	Approx. Total Area Treated (acres)	Average Trash Load Reduced
27	Public	BioClean Trash Guard BC-4b	2274 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
28	Public	BioClean Trash Guard-4b	2234 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
29	Public	BioClean Trash Guard-4b	2221 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
30	Public	BioClean Trash Guard-4b	1974 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
31	Public	BioClean Trash Guard BC-4b	2305 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
32	Public	BioClean Trash Guard BC-4b	2195 Cooley Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
33	Public	BioClean Trash Guard BC-4b	2020 Pulgas Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
34	Public	BioClean Trash Guard BC-4b	2215 Cooley Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
35	Public	BioClean Trash Guard BC-4b	1103 Weeks St, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
36	Public	BioClean Trash Guard BC-4b	2358 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
37	Public	BioClean Trash Guard BC-4b	2354 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
38	Public	BioClean Trash Guard BC-4b	2300 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year
39	Public	BioClean Trash Guard BC-4b	2242 University Ave, East Palo Alto, CA 94303	11/28/2011	3.37	~7.4 gallons/year

## QF-6: Creek/Channel/Shoreline Cleanups

Creek/channel/shoreline cleanups have been successful in removing large amounts of trash from San Francisco Bay area creeks and waterways; and increasing citizen's awareness of trash issues within their communities. Creek/channel/shoreline cleanups are conducted as single-day events or throughout the year by volunteers and municipal agencies. Since volunteers and municipal agencies have the common goal of clean creeks and waterways, their efforts sometimes overlap. This is apparent with some municipal agencies using volunteers to help assess and clean designated trash hot spots during single-day volunteer events.

### Baseline Level of Implementation

Trash reduced via creek/channel/shoreline cleanups was not accounted for in the City of East Palo Alto's baseline trash load described in Section 2.0. Therefore, implementation of any of the control measures described in this section is considered to be an enhancement and can be used to demonstrate progress towards load reduction goals.

### Enhanced Level of Implementation

Prior to July 1, 2014, the City of East Palo Alto will conduct MRP-required<sup>6</sup> creek cleanups and the following non MRP-required creek/channel/shoreline cleanups<sup>7</sup> listed below. Both types of cleanups will be conducted each year and the volume of trash removed will be tracked to demonstrate trash loads reduced. The City of East Palo Alto will coordinate with local schools to encourage local participation in cleanup events both on-land and off land to encourage trash load reduction through an educational outreach campaign.

#### Permittee & Volunteer Collaborative Activities

##### **Single-day Efforts**

- *National River Cleanup Day (third Saturday in May)*
- *Coastal Cleanup Day (third Saturday in September)*
- *Other Organized Single-day Events*

#### Permittee-led Cleanup Activities

##### **On-going Efforts**

- *Removal of Homeless Encampments*
- *Removal of trash volumes from outfalls entering waterways*

### Percent Reduction from Enhancements

The City presently removes trash from outfalls within wetland areas, trash and debris directly from creeks at Coastal Cleanup Day and National Rivers Cleanup Day. The volume of trash that is being removed is a significant asset to the Bay and could be a significant reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the City of East Palo Alto. At this time, the City expects this volume to be significantly reduced by permittees upstream of our City and as –such does not anticipate an on-going reduction from this wetland outfall and creek cleanup effort. For the time being, the City will continue these efforts and shall track the volume reduced, without accounting for this

<sup>6</sup> Creek/channel/shoreline cleanups conducted in accordance with Permit Provision C.10.b.

<sup>7</sup>All "other" creek/channel/shoreline cleanups conducted by a municipality that are not required by Provision C.10.b.

material in our baseline load removal so as to not penalize ourselves at such a time when the volume of trash being removed is diminished. A value of zero is provided within this section and included in Trash Load Reduction Summary Table included in Section 5.

## **5.0 SUMMARY OF TRASH CONTROL MEASURE ENHANCEMENTS**

The City of East Palo Alto is committed to reducing the potential for trash impacts in local water bodies in the San Francisco Bay Area. The planned enhanced trash control measures described in Section 4.0 are also summarized in Table 5-1. The enhancements are intended to exceed the 40% trash load reduction goal in MRP provision C.10. The efforts indicated herein represent the City's significant progress towards trash load reduction goals. With present (enhanced) program components, the City of East Palo Alto has reduced the baseline load by an estimated **36 percent**. While this number may appear elevated, it is reflective of numerous early implementation efforts made by the City to curb illegal dumping, keep the City's stormdrains flowing, and increase City pride in the surroundings through effective trash removal, thereby reducing the general perception of a blighted community. However, even at this level of reduction, the City is falling short on load reduction of trash into receiving waterbodies, as indicated in the load removed on an annual basis from outfalls and creeks. In addition, the impact of trash exacerbates an already serious issue pertaining to flood control, as debris in the stormdrains reduces the potential of rainwater to move through the City, resulting in a higher flood potential for residents and businesses. With all of these concerns, it has been the stance of the City of East Palo Alto to enhance trash removal, early on, which continues to move beyond the requirements of the MRP. These actions are deemed essential to the health and safety of the City of East Palo Alto. The City intends to implement an aggressive Trash Load Reduction Plan in the short term, to remedy the impacts that have been identified. In summary, the trash load removal resultant from this Short Term Trash Load Reduction Plan is expected to exceed **70 percent**.

**Table 5-1. Planned enhanced trash control measure implementation within the jurisdictional boundaries and associated trash loads reduced.**

Trash Control Measure	Summary Description of Control Measure	% Reduction (Credits)	Trash Load Reduced	Cumulative % Reduction (Compared to Baseline)
Existing Enhanced Street Sweeping (QF-2) – (Existing)	Sweep major roadways and retail areas three times per week, sweep high density areas twice per week and all other areas twice per month	n/a	739	15.0
<b>Single-use Carryout Plastic Bag Ordinance (CR-1)</b>	Large retailers, retailers that sell packaged food and all retail shall phase out the use of single use bags	<b>12</b>	<b>418</b>	<b>23.5</b>
<b>Polystyrene Foam Food Service Ware Ban (CR-2)</b>	Phase out of all polystyrene food service ware from City sponsored events and all food service vendors with active compliance programs	<b>8</b>	<b>334</b>	<b>30.3</b>
<b>Public Education and Outreach Programs (CR-3)</b>	Advertising campaigns, outreach to school-aged children and youth, media relations and community outreach events to educate the public on stormwater pollution prevention and trash reduction	<b>8</b>	<b>334</b>	<b>37.1</b>
<b>Activities to Reduce Trash from Uncovered Loads (CR-4)</b>	Prepare prescriptive language in municipal contracts for trash and debris haulers and implement and enhanced enforcement program for vehicles with uncovered loads	<b>1</b>	<b>42</b>	<b>38</b>
<b>Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)</b>	Establish an anti-littering and illegal dumping investigation and enforcement program	<b>3</b>	<b>84</b>	<b>39.7</b>
<b>Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)</b>	Develop an ordinance for appropriate trash service for private properties; identify and enforce inadequate trash service for private trash and recycling bins; implement a strategic plan for public area trash container management	<b>1</b>	<b>42</b>	<b>52.5</b>
Enhanced On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	Coordinate the Implementation of an illegal dumping cleanup plan with Recology for the removal of storm-drain prone litter and debris; utilize the use of cameras at 20+% of trash hotspots	n/a	<b>116</b>	<b>55.3</b>
Enhanced Street Sweeping (QF-2)	Install signage in all streets within the City to ensure no parking is allowed during street sweeping times	n/a	<b>986</b>	<b>62.9</b>
Curb Inlet Screens (Partial-capture Treatment Device) (QF-3a)	Installation of 185 partial capture inlet screens/bars to reduce trash load potential to stormdrain lines and restrict trash to be picked up by street sweeper to increase efficiency	n/a	<b>177</b>	<b>66.5</b>
Full-capture Treatment Devices (QF-5)	Installation of 39 full capture stormdrain inlet devices: BioClean Trash Guard BC-4b units	n/a	<b>173</b>	<b>70.1</b>

## 5.1 Annual Reporting and Progress Towards Trash Load Reduction Goal(s)

Consistent with MRP Provision C.10.d (i), the City of East Palo Alto intends to report on progress towards MRP trash load reduction goals on an annual basis beginning with the Fiscal Year 2011-2012 Annual Report. Annual reports will include:

1. A brief summary of all enhanced trash load reduction control measures implemented to-date;
2. The dominant types of trash likely removed via these control measures;
3. Total trash loads removed (credits and quantifications) via each control measure implementation; and
4. A summary and quantification of progress towards trash load reduction goals.

Similar to other MRP provision, annual reporting formats will be consistent region-wide. Annual reports are intended to provide a summary of control measure implementation and demonstrate progress toward MRP trash reduction goals. For more detailed information on specific control measures, the City of East Palo Alto will retain supporting documentation on trash load reduction control measure implementation. These records should have a level of specificity consistent with the trash load reduction tracking methods described in the *BASMAA Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011e).

## 5.2 Considerations of Uncertainties

Baseline trash loading and load reduction estimates are based on the best available information at the time this Short-Term Plan was developed. As with any stormwater loading and reduction estimate, a number of assumptions were used during calculations and therefore uncertainty is inherent in the baseline trash load estimate presented in Section 2.0 and the load reduction estimate presented in this section. For these reasons, the baseline loading estimates presented in this plan should be considered first-order estimates. During the implementation of this Short-Term Plan and subsequent plans, additional information may become available to allow the calculation of a more robust baseline load.

## **6.0 IMPLEMENTATION SCHEDULE**

Implementation of enhanced trash control measures by the City of East Palo Alto is currently planned to occur in a timeframe consistent with MRP requirements. A preliminary implementation schedule for all planned enhancements is described in Table 5-1. This schedule provides a timeframe for reducing trash discharged from the City of East Palo Alto's MS4 by 40%.

Based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the City of East Palo Alto may choose to amend or revise this Plan and/or the associated implementation schedule. If revisions or amendments occur, a revised Short-Term Plan and implementation schedule will be submitted to the Water Board via the City of East Palo Alto's annual reporting process.

**Table 6-1. Preliminary implementation schedule for enhanced trash control measures in the City of East Palo Alto.**

Trash Control Measure	Beginning Date of Implementation
Existing Enhanced Street Sweeping (QF-2)	02/01/2012
Existing Curb Inlet Screens (Partial-capture Treatment Device) (QF-3a)	02/01/2012
Public Education and Outreach Programs (CR-3)	02/01/2012
Activities to Reduce Trash from Uncovered Loads (CR-4)	02/01/2012
Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)	02/01/2012
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)	02/01/2012
Full-capture Treatment Devices (QF-5)	02/01/2012
<b>Enhanced On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)</b>	<b>03/21/2012</b>
<b>Enhanced Street Sweeping (signage) (QF-2)</b>	<b>02/01/2013</b>
<b>Single-use Carryout Plastic Bag Ordinance (CR-1)</b>	<b>02/01/2014</b>
<b>Polystyrene Foam Food Service Ware Ban (CR-2)</b>	<b>02/01/2014</b>

## 7.0 REFERENCES

- Allison R.A. and F.H.S. Chiew 1995. Monitoring stormwater pollution from various land uses in an urban catchment. Proceedings from the 2<sup>nd</sup> International Symposium on Urban Stormwater Management, Melbourne, 551-516.
- Allison, R.A., T.A. Walker, F.H.S. Chiew, I.C. O’Neill and T.A McMahon 1998. From Roads to rivers: Gross pollutant removal from urban waterways. Report 98/6. Cooperative Research Centre for Catchment Hydrology. Victoria, Australia. May 1998.
- Armitage, N. 2001. The removal of Urban Litter from Stormwater Drainage Systems. Ch. 19 in Stormwater Collection Systems Design Handbook. L. W. Mays, Ed., McGraw-Hill Companies, Inc. ISBN 0-07-135471-9, New York, USA, 2001, 35 pp.
- Armitage, N. 2003. The removal of urban solid waste from stormwater drains. Prepared for the International Workshop on Global Developments in Urban Drainage Management, Indian Institute of Technology, Bombay, Mumbai India. 5-7 February 2003.
- Armitage, N. 2007. The reduction of urban litter in the stormwater drains of South Africa. Urban Water Journal Vol. 4, No. 3: 151-172. September 2007.
- Armitage N., A. Rooseboom, C. Nel, and P. Townshend 1998. “The removal of Urban Litter from Stormwater Conduits and Streams. *Water Research Commission (South Africa) Report No. TT 95/98*, Pretoria.
- Armitage, N. and A. Rooseboom 2000. The removal of urban litter from stormwater conduits and streams: Paper 1 – The quantities involved and catchment litter management options. *Water S.A. Vol. 26. No. 2: 181-187.*
- BASMAA (Bay Area Stormwater Management Agencies Association). 2011a. Progress Report on Methods to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems and Track Loads Reduced. February 2011.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2011b. Method to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems: Technical Memorandum #1. Prepared by EOA, Inc. April 2011.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2011c. Sampling and Analysis Plan. Prepared by EOA, Inc. April 2011.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2011d. Trash Load Reduction Tracking Method: Technical Memorandum #1 – Literature Review. Prepared by EOA, Inc. May 2011.
- BASMAA (Bay Area Stormwater Management Agencies Association). 2012a. Trash Baseline Generation
- BASMAA (Bay Area Stormwater Management Agencies Association). 2012b. Trash Load Reduction Tracking Method: Technical Report. Prepared by EOA, Inc. February.
- Rates: Technical Report. Prepared by EOA, Inc. February.
- County of Los Angeles. 2002. Los Angeles County Litter Monitoring Plan for the Los Angeles River and Ballona Creek Trash Total Maximum Daily Load. May 30, 2002.

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County of Los Angeles. 2004a. Trash Baseline Monitoring Results Los Angeles River and Ballona Creek Watershed. Los Angeles County Department of Public Works. February 17, 2004.

County of Los Angeles 2004b. Trash Baseline Monitoring for Los Angeles River and Ballona Creek Watersheds. Los Angeles County Department of Public Works. May 6, 2004.

County of Los Angeles, Department of Public Works, Environmental Programs Division. 2007. *An Overview of Carryout Bags in Los Angeles County: A Staff Report to the Los Angeles County Board of Supervisors*. Alhambra, CA. [http://dpw.lacounty.gov/epd/PlasticBags/PDF/PlasticBagReport\\_08-2007.pdf](http://dpw.lacounty.gov/epd/PlasticBags/PDF/PlasticBagReport_08-2007.pdf). August 2007.

Kim, L.H, M. Kayhanian, M.K. Stenstrom 2004. Event mean concentration and loading of litter from highways during storms. *Science of the Total Environment* Vol 330: 101-113.