

Baseline Trash Load and Short-Term Trash Load Reduction Plan

Submitted by:



CUPERTINO

City of Cupertino
10300 Torre Ave
Cupertino, CA 95014

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

January 11, 2012



**CITY OF CUPERTINO
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:

A handwritten signature in black ink, appearing to read "Glenn Goepfert", written over a horizontal line.

Glenn Goepfert
Assistant Director of Public Works, Engineering

January 11, 2012

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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 Cupertino 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 Cupertino's annual reporting process.

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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 Cupertino 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

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 2012b).

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 2012a). 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 2012a).

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 (2012a). 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 Cupertino 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 Cupertino’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.

Load Reduction Credits
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
Quantification Formulas
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 Cupertino's Municipal Separate Storm Sewer System (MS4). In compliance with Provision C.10.a.ii of the MRP, the City of Cupertino 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 (2012b) and listed below. The approach was intended to be cost-effective and 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 Cupertino. 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 Cupertino'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 1955, the City of Cupertino is located in Santa Clara County, and has a jurisdictional area of 7,239 acres. According to the 2010 Census, it has a population of 58,302, with a population density of 5,179.1 people per square mile, and average household size of 2.87. Of the 58,302 who call the City of Cupertino home, 27.6% are under the age of 18, 5.6% are between 18 and 24, 26.8% are between 25 and 44, 27.5% are between 45 and 64, and 12.5% are 65 or older.

Companies such as Apple, Hewlett-Packard, ArcSight (an HP Company), Chordiant Software, Inc., Seagate Technology, Inc., and Trend Micro Inc. are located in the City of Cupertino. The median household income was \$100,411 in 2000¹.

¹ From the 2000 Census. The median household income for the City of Cupertino from the 2010 Census is not currently available.

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.

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 Cupertino. The City of Cupertino’s jurisdictional areas includes all urban land areas within the City of Cupertino 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 Clara 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 Cupertino’s jurisdictional area was delineated, an effective trash loading area was developed by creating a 200-foot buffer on each side of the 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 Cupertino are presented in Table 2-2.

Table 2-2. Jurisdictional areas and effective loading areas in the City of Cupertino 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	521	483	10
Low Density Residential	3,233	3,112	65
Rural Residential	267	173	4
Commercial and Services/ Heavy, Light and Other Industrial	723	465	10
Retail and Wholesale	317	262	6
K-12 Schools	229	124	3
Urban Parks	372	172	4
TOTAL	5,661	4,792	100%

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 Cupertino 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 Cupertino 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 Cupertino 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 Cupertino's baseline and current street sweeping program includes sweeping streets in residential and retail areas, and arterial roads twice per month. Parking enforcement signs for street sweeping are posted in some residential areas, and parking enforcement equivalent occurs on many arterial roads. The estimated trash load reduced via baseline street sweeping is presented in Table 2-3.

Baseline Storm Drain Inlet Maintenance

Within the City of Cupertino, storm drain inlets were cleaned at a baseline level of one time every two years 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 Cupertino has an annual effectiveness rating of 2.5%. 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 Cupertino does not own stormwater pump stations with trash racks.

Baseline Trash Loading Estimate

The estimated baseline trash load from the City of Cupertino 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 Cupertino 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 Cupertino.

Category	Annual Load (gallons)
Preliminary Generation Trash Load	25,292
Load Removed via Baseline Street Sweeping	12,846
Load Removed via Baseline Storm Drain Inlet Maintenance	311
Load Removed via Baseline Stormwater Pump Station Maintenance	0
Preliminary Trash Baseline Load	12,135

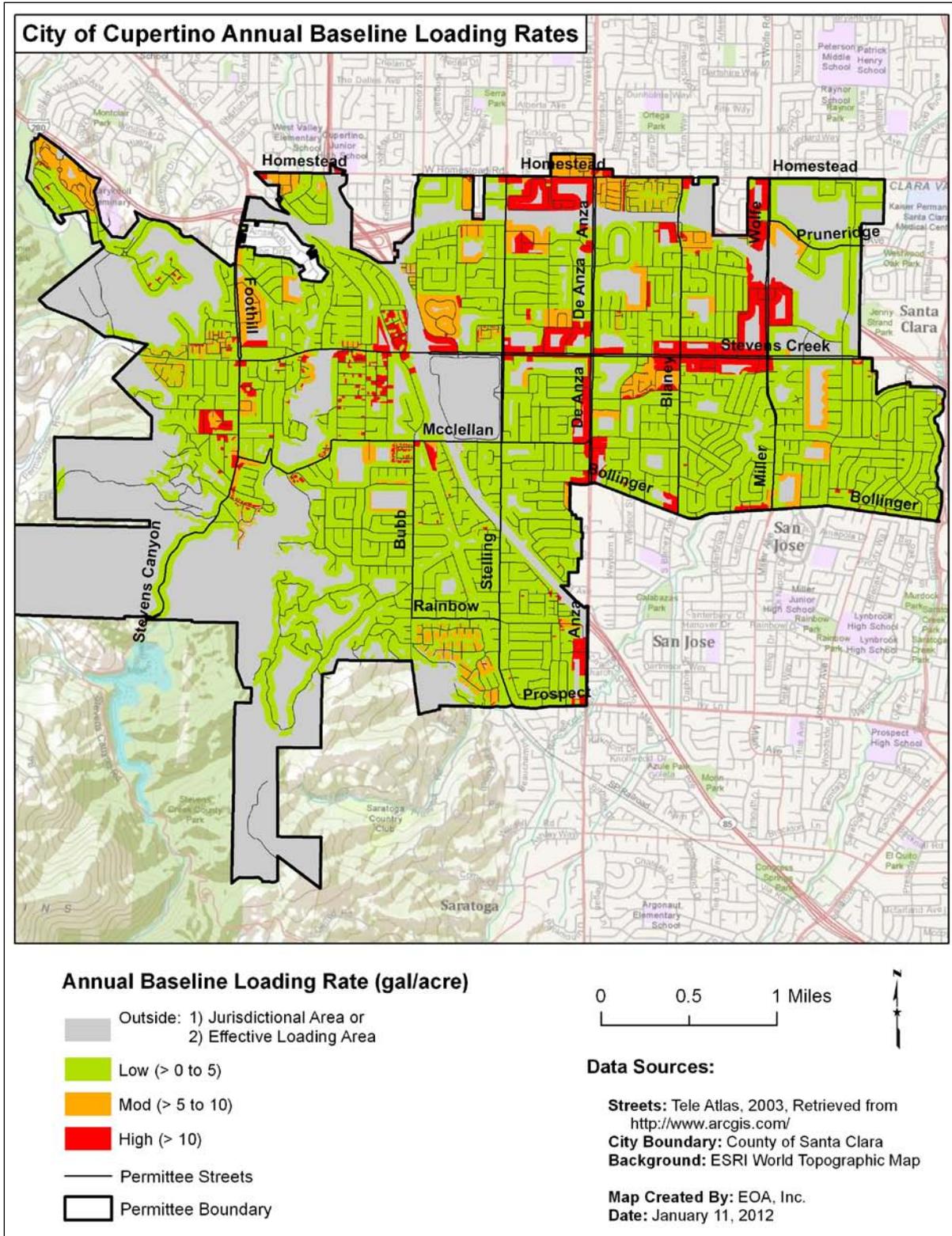


Figure 2.1. Estimated trash baseline loading rates for geographical areas in the City of Cupertino.

3.0 LOAD REDUCTION CALCULATION PROCESS

Using the guiding principles and assumptions described BASMAA (2012a), 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 2012a) and is briefly summarized in this section. The process takes into consideration 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 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.² 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 control 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).

² 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-6: 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 five 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.

$$\frac{\text{Baseline Load} - \text{Remaining Load}}{\text{Baseline Load}} \cdot 100 = \% \text{ Reduction}$$

4.0 ENHANCED TRASH CONTROL MEASURES

This section describes the new or enhanced trash control measures planned for implementation by the City of Cupertino. 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 Cupertino include those listed in Table 4.1.

Table 4.1. Trash control measures that will be implemented by City of Cupertino 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
Improved Trash Bin/Container Management (Municipally or Privately-Controlled)
On-land Trash Pickup (Volunteer and/or Municipal)
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

The City of Cupertino plans to adopt an ordinance or local policy to prohibit the distribution of single-use carryout plastic bags at large supermarkets (e.g. 99 Ranch Market, Lucky, Marina and Whole Foods Market) within the jurisdictional boundaries of the City of Cupertino. Stores will be allowed to provide paper bags at no cost to customers or charge a fee for paper bags. Public outreach to these stores through scheduled meetings and to residents via articles in the City's monthly newsletter will begin on or before November 1, 2012. The ordinance is expected to be adopted and effective by April 2014. Public education, outreach and enforcement will be conducted in parallel with the ordinance or local policy to ensure maximum compliance. The total percent trash reduced from MS4s as a result of implementing a single-use carryout plastic bag policy or ordinance will be reported in the Annual Report submitted each September to the Water Board.

Percent Reduction from Enhancements

The City of Cupertino will receive a six (6) percent reduction credit for implementing the specific enhanced control measures described in Enhanced Level of Implementation section above. The six (6) percent reduction credit will be applied to the City of Cupertino'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.

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

The City of Cupertino recently adopted a policy prohibiting food vendors from distributing polystyrene foam food and beverage ware at City-sponsored events or on City-owned property.

The policy became effective on October 1, 2011. Notices to event planners regarding the prohibition are included in the City's event planning instruction guide. The City's franchised trash and recycling hauler was consulted and the City's hauler agreed to support and reiterate the City's polystyrene foam single-use food and beverage packaging prohibition when providing trash and recycling receptacles to event coordinators. The percent trash reduction from MS4s as a result of implementing a polystyrene foam food service ware policy will be reported in the Annual Report submitted each September.

Percent Reduction from Enhancements

The City of Cupertino will receive a two (2) percent reduction credit for implementing specific enhanced control measures described in the *Enhanced Level of Implementation* section above. The two (2) percent reduction credit will be applied to the City of Cupertino'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.

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 Cupertino implemented the following public education and outreach control measures prior to the effective date of the MRP. The City provides a 3rd grade creek education program and field trip conducted by the City's Naturalist to allow students to examine aquatic life in Stevens Creek. The City pays for buses to allow all 3rd grade classes in the City of Cupertino and in the Cupertino School District to participate in this popular program. As a result, teachers have incorporated creek education into their regular curriculum. Environmental Programs staff publishes educational articles for its adult community each month in the City's newsletter. As evidenced by the response to articles, the City's newsletter has proven to be an effective way to engage the community. Residents frequently use the advertised email address (environmental@cupertino.org) to contact City staff about environmental concerns or to report potential stormwater violations. These control measures are considered baseline because they were not related to trash reduction specifically. New trash reduction activities 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 Cupertino 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 Cupertino 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.

Watershed Watch Campaign (Countywide)

In addition to the BASMAA Campaign, the City of Cupertino will continue to implement the countywide **Watershed Watch Campaign** through active participation and funding of the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). This Campaign conducts media advertising that includes anti-litter messages. Anti-litter advertisements for television, print, transit and radio have been developed and are used each year and will continue in the future. A telephone survey is conducted every five years to measure the effectiveness of outreach and increase in awareness about litter and stormwater related messaging.

Outreach to School-age Children or Youth

ZunZun (Countywide)

Through participation and funding of the SCVURPPP countywide ZunZun Program, the City of Cupertino plans to continue to implement litter reduction outreach to elementary school-age children. Up to 50 ZunZun assemblies at elementary schools are conducted in the Santa Clara Valley each year. These bilingual musical assemblies educate elementary school students and their teachers on watersheds and urban runoff pollution prevention, including litter. ZunZun performances use physical comedy, audience participation and musical instruments to educate teachers and children. Handouts, including teacher and student activity sheets, are distributed following the assembly.

The SCVURPPP Schools and Youth Education and Outreach Work Group provides a list of schools for ZunZun to contact. In addition to schools with high Hispanic populations, the list includes schools with high Asian/Pacific Islander populations.

ZunZun assemblies are evaluated using postage-paid evaluation cards that are distributed to all teachers present at the performances. Teachers mail the completed evaluation cards to SCVURPPP, and results are compiled by SCVURPPP staff. Based on the teacher feedback, changes are made to future assemblies and/or handouts.

Media Relations

BASMAA Regional Media Relations Project (Regional)

Through participation and funding of the **BASMAA Regional Media Relations Project**, the City of Cupertino 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.).

Community Outreach Events

In addition to regional efforts, the City of Cupertino will hold four (4) community outreach events per year where an anti-litter message will be presented to attendees. The City will organize and present focused outreach and education at an implementation level, listed in Table CR-3.2 of the Trash Load Reduction Tracking Method Technical Report. The City will focus its litter awareness messages on the City's highest priority areas where litter is the most prevalent. An evaluation component (e.g. survey questions) conducted at these events will be included in the City's outreach strategy. The City's events will always include a presentation using photos, an Enviroscape model, or similar mechanism to raise awareness about the impact of litter problems on local watersheds, water bodies, and wildlife. Several resolutions to the problem will be modeled or discussed, after which, attendees will be invited to take action by making a personal list of anti-litter activities that they can and will commit to doing. Cupertino's four annual community outreach events are further described below:

Cupertino Earth Day Festival (Local) - Every April on a Saturday close to Earth Day Cupertino holds an Earth Day Festival. Cupertino's Environmental Programs staff will host a table featuring the Enviroscape model, an Environmental Jeopardy game, and information on litter and other stormwater quality issues. Giveaways such as reusable bags that promote the discontinued use of single use bags are provided as resources are available.

World Water Monitoring Day (Local) - The City of Cupertino and the Stevens & Permanente Creeks Watershed Council will host a World Monitoring Day event every October at Blackberry Farm with help from a federal grant received in 2011 through a partnership with the Stevens Permanente Creek Watershed Council and other cities. Volunteers will have an opportunity to learn how to sample and monitor water quality, learn its impact on aquatic life and how to protect wildlife and creek habitat. In addition, photos and discussions on litter and other stormwater issues will be provided.

Cupertino Fall Festival (Local) - Every September the City of Cupertino participates in Cupertino Rotary Club's Fall Festival. The festival is held in Memorial Park, one of the City's priority areas of focus for litter reduction. The park is located near a community college and several restaurants and food retail businesses. Cupertino's Environmental Programs staff will convey anti-littering messages to children, older students and parents. Attendees will be invited to take action by developing a personal list of litter reduction and water pollution prevention activities. City staff will develop signage for the event, directing attendees to use the appropriate recycling, composting or trash receptacles for food waste and litter and to take individual responsibility for keeping it a litter-free festival.

Creek Cleanup Events (Local) - Every May the City will host a site on National River Cleanup Day at one of the City's most littered areas, adjacent to a creek. The location will change if over time a site no longer requires a large group of volunteers to remove litter. New locations of concern will be identified and selected for cleanup as former sites are given a lower priority on the City's list of sites of concern. Cupertino staff will begin each event by showing photos or giving a presentation to open a discussion

with volunteers about local areas that suffer from the prevalence of litter. The City will train a couple of its dedicated volunteer groups to conduct hot spot assessments. Discussions about the source of litter and activities that will reduce litter will continue throughout the event as staff participates with the volunteers in the cleanup.

Percent Reduction from Enhancements

The City of Cupertino will receive a total of eight (8) 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 eight (8) percent reduction credits will be applied against the City of Cupertino’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.

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 escapes³, 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 local law enforcement 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 Cupertino 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 Cupertino has begun to implement the following enhanced control measures to reduce trash from vehicles with uncovered loads.

Require Municipal Trash Haulers to Cover Loads – After the adoption of the MRP, the City of Cupertino proposed anti-litter management actions during negotiations with its franchised garbage and recycling hauler (Recology). In May of 2010, the City of Cupertino included language in its contract with Recology that requires Recology to cover loads when transporting trash and debris to all landfills and transfer stations. The new franchise agreement took effect on November 1, 2010.

Implement an Enhanced Enforcement Program for Vehicles with Uncovered Loads – The City of Cupertino's enhanced enforcement will include citations and fines for vehicles spotted with uncovered loads on all roads in the City's jurisdictional area. The Sheriff's Office confirmed that its motor units and regular patrol deputies are well versed in and currently enforcing vehicle sections 32114 and 23115 within the City of Cupertino. The Sheriff's Office reported that a Commercial Vehicle Enforcement Unit focuses efforts in the Foothill Boulevard/Stevens Canyon Road and Stevens Creek Blvd. area. These are heavily traveled arterials that provide access to much of the City's retail/commercial area.

Percent Reduction from Enhancements

The City of Cupertino will receive a five (5) percent reduction credit for implementing specific enhanced control measures described in Description of Enhanced Level of Implementation section above. The five (5) 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 Cupertino. 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.

³ 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 Cupertino has adopted a basic anti-littering and illegal dumping enforcement program that entails receiving and responding to complaints from citizens as resources allow.

Enhanced Level of Implementation

The City of Cupertino began to implement the following enhanced anti-littering and illegal dumping enforcement control measures through its *Illegal Discharge Detection and Elimination* (IDDE) enforcement program on April 1, 2010. Beginning in April 2012, the City will step up its enforcement of illegal dumping by using physical deterrents (i.e., identifying, cleaning up and putting litter prohibition signage at 60 to 100 percent of the sites) where illegal dumping or littering is found to be prevalent within the City of Cupertino's jurisdictional area. Enhanced enforcement will include the following activities:

- City staff (i.e. the Stormwater Inspector, Hazardous Materials Coordinator and Environmental Programs staff) will work collaboratively to conduct thorough investigations of complaints received via, 1) calls to the City's Service Center, Public Works Dept. or Environmental Programs Division, 2) reports submitted via the City's online public reporting program (*Comcate*), or 3) messages received via the Environmental Programs email address published in the City's monthly newsletter (*the Scene*);
- The City's enforcement procedures will include maintaining high priority areas, citations with fines for littering or dumping (commensurate with the severity of the violation), litter prohibition signage; and,
- The collection of evidence (e.g., names, addresses, etc.) from illegal dump sites (i.e., public and private) in an attempt to identify offenders.

Percent Reduction from Enhancements

The City of Cupertino will receive a four (4) percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The four (4) 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 Cupertino. 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-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 and bins 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 Cupertino has not implemented enhanced trash bin/container management practices prior to effective date of the MRP.

Enhanced Level of Implementation

Ensuring Adequate Private Trash Service – After the MRP was adopted the City of Cupertino began implementing a program to identify businesses and households that do not subscribe to and utilize sufficient disposal and recycling services. The City of Cupertino entered into an agreement with its franchised hauler (Recology) on November 1, 2010. Within that agreement the City chose to coordinate with its hauler and the hauler’s drivers to ensure identification of properties with insufficient service. The City’s franchise agreement requires businesses, high density residential and single family households to have an adequate number of appropriate sized containers and subscribe to a frequency of service that will prevent trash from overflowing, accumulating or being stored uncovered and uncontained. The requirement for contained trash is enforced through citizen complaints, when properties are reported by the garbage hauler, or when City stormwater inspectors make routine visits to businesses (e.g. restaurants and retail) to verify stormwater compliance. The City also requires developers, through the building permit process, to install adequately sized trash enclosures with a roof whenever a commercial property is being developed or redeveloped.

Percent Reduction from Enhancements

The City of Cupertino will receive a three (3) percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The three (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 Cupertino. 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.

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

On-land cleanups conducted by Permittees and volunteers have been successful in removing trash from identified trash hot spots and engaging local citizenry in improving their communities. Permittees have 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

The City of Cupertino implemented the following on-land cleanup activities prior to the effective date of the MRP. The City's Grounds Maintenance staff picked up litter as needed from parks and public places. These control measures are considered baseline because they were accounted for in the preliminary trash generation rates established through the BASMAA *Baseline Trash Loading Rates Project*. New or enhanced actions that began or are planned to begin after to the effective date of the MRP are described under the next section.

Enhanced Level of Implementation

Prior to July 1, 2014, the City of Cupertino will conduct or coordinate the 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.

On-land cleanups will include at least one and possibly more of the following activities per year:

- As illegal dumping or litter sites are identified by the City, site response and abatement will follow in coordination with the City's Public Works Service Center;
- Interagency cleanup of on-land checkpoint near the end of the City's MS4 and Stevens Creek will be conducted annually in coordination with the Department of Corrections;
- As litter hot spots or areas of priority focus for the City are identified, the City will organize and coordinate an annual large scale Keep America Beautiful event to remove trash and engage volunteers in the anti-litter campaign; or
- The City will organize and coordinate at least one small-scale single-day cleanup event be led by one of the known volunteer groups with which the City has partnered while piloting cleanup events since the MRP was adopted;

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.

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 cleanups is 260 gallons. This volume is a conservative estimate based on data collected from previous on-land and creek cleanups where the City regularly collects more than twenty, thirteen-gallon bags on average from events of this nature. This volume is equal to approximately a 2.1 percent reduction in the baseline trash load to urban creeks from the municipal

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separate storm sewer system (MS4) owned and operated by the City of Cupertino. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5.

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 2012a). 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 two (2) trash full-capture treatment devices will be installed in the City of Cupertino prior to July 1, 2014. A list of these full-capture devices is included in Table QF-5-1. All devices listed within this table are enhanced trash control measures. Table QF-5-1 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 2012a).

The City of Cupertino is participating in the Bay Area-wide Trash Capture Demonstration Project and has signed a purchasing agreement for two (2) approved Continuous Deflective Separator (CDS) units from Contech Construction Products. The project is currently in the design phase, and the units are tentatively scheduled for installation in July of 2012. These two CDS units will treat approximately 84.4 acres of the City's retail/wholesale land use areas that drain to the MS4s.

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 473 gallons. This volume is equal to approximately a 3.9 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 Cupertino. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5.

Table QF-5-1. Trash full-capture treatment devices within the jurisdictional boundaries of the City of Cupertino that are planned for installation by July 1, 2014.

Device ID	Public or Private	Device Name	Location (Cross Streets)	Installation Date/Anticipated Installation Date	Total Area Treated (acres)	Trash Load Reduced
Vallco CDS1	Private	Continuous Deflective Separator (Contech)	Vallco	By November 2012	59.4	331 gallons
Vallco CDS2	Private	Continuous Deflective Separator (Contech)	Vallco	By November 2012	25	142 gallons

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 Cupertino'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 Cupertino will conduct MRP-required⁴ and three annual non MRP-required creek/channel/shoreline cleanups⁵. The City will hold large-scale non required events on National River Cleanup Day, Coastal Cleanup Day and one other single-day event. 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 began piloting Creek Cleanup Events with National River Cleanup Day in May 2008. The event was successful, but the turnout of volunteers was more than City staff could manage. At least 80 volunteers signed up for the City's first cleanup event and approximately 20 volunteers who called to register prior to the event were turned away because the site and staff could not accommodate more volunteers. City staff considered finding other sites and piloted a cleanup event with a much smaller group of volunteers at Stevens Creek in fall of 2008. That site was not ideal (no restrooms and parking was limited). The City held its third piloted event at Calabazas Creek (the location of its first site) on Coastal Cleanup Day, September 2008. By 2009, City staff were looking for other sites and began to organize a cleanup at Regnart Creek, but discovered that the Creek had been adopted by Cupertino High School students and that parking was too limited for the level of turnout that was indicated by volunteers who called to register for the event. It became apparent that the community wanted and would continue to provide large-scale participation in creek cleanup events.

With the adoption of the MRP and the City's selection of two *hot spots*, City staff decided to try combining cleanup events with the MRP-required creek assessments to engage the public (especially high school students) in community-wide litter reduction. After piloting several events City staff decided to separate the creek assessments from the large-scale events and only invite volunteers who indicated a desire to make a long-term commitment to help with litter reduction to participate in the smaller-scale but more technically focused *hot spot assessments*. The City also chose to expand the area of its large-scale creek cleanups to allow volunteers more

⁴ Creek/channel/shoreline cleanups conducted in accordance with Permit Provision C.10.b.

⁵All "other" creek/channel/shoreline cleanups conducted by a municipality that are not required by Provision C.10.b.

freedom in selecting their personal cleanup spots and to allow individual groups to work at their own the pace unhindered by a the schedule of start and stop times. The City has selected the option of additional creek cleanup events because this mechanism seems to work well as a means of public education and community building in addition to the load of trash removed from the creeks. The quantity of volunteers is not lacking, but areas that need cleaning and also have safe access to a long stretch of creek are not easy to find. Finding ideal cleanup spots will be a focus of the City's enhanced creek cleanup coordination.

Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing creek/channel/shoreline cleanups is 676 gallons. This volume is equal to approximately a 5.6 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 Cupertino. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5.

5.0 SUMMARY OF TRASH CONTROL MEASURE ENHANCEMENTS

The City of Cupertino 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 described in Table 5-1 on the following page. The enhancements are intended to comply with the 40% trash load reduction goal in MRP provision C.10. The trash control measures that will be implemented by the City of Cupertino to reach the 40% trash load reduction are:

- Single-use Carryout Plastic Bag Policy/Ordinance at Large Supermarkets
- Polystyrene Foam Food Service Ware Prohibition Policy/Ordinance on City Property
- Public Education and Outreach Programs with Four Annual Community Events Focused on Littered Areas
- Enforcement to Reduce Trash from Uncovered Loads
- Anti-Littering and Illegal Dumping Enforcement Activities
- Citywide Improved Trash Bin/Container Management
- On-land Trash Pickup (Volunteer and Municipal)
- Full-Capture Treatment (Contech CDS) Devices
- Three Annual Creek Cleanup Events (Volunteer)

See Table 5-1 for more detail.

Table 5-1. Planned enhanced trash control measure implementation within the jurisdictional boundaries of the City of Cupertino and associated trash loads reduced. This table includes

Trash Control Measure	Summary Description of Control Measure	% Reduction (Credits)	Trash Load Reduced	Cumulative % Reduction (Compared to Baseline)
Existing Enhanced Street Sweeping	Load Reduction via existing enhanced street sweeping.	0.6%	67	0.6%
Single-use Carryout Plastic Bag Ordinance (CR-1)	Adopt an ordinance prohibiting the distribution of single-use carryout plastic bags by large supermarkets in the City of Cupertino by April 2014.	5.9%	724	6.5%
Polystyrene Foam Food Service Ware Ban (CR-2)	Adopted a policy prohibiting food vendors from distributing polystyrene foam food and beverage ware at City-sponsored events or on City of Cupertino-owned property. Effective October 1, 2011.	2.0%	241	8.5%
Public Education and Outreach Programs (CR-3)	Through SCVURPPP, continue to develop public outreach campaigns targeting litter/trash load reduction. By Jul 2014, City will host 4 annual public events with an anti-litter component and evaluation tool to measure public's awareness and commitment to take action	8.0%	965	16.5%
Activities to Reduce Trash from Uncovered Loads (CR-4)	1) Through municipal contract, required City's hauler to cover truck loads; 2) Through Sheriff's Dept, Enforce the CA Vehicle Code for vehicles transporting uncovered loads with fines.	5.0%	603	21.4%
Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)	Implementation of an enhanced anti-littering and illegal dumping enforcement program that includes: -Thorough investigations of complaints; -Enforcement procedures including citations with fines; -The collection of evidence to identify offenders; -Installation of or physical improvements & signage which eliminate or deter illegal dumping at high priority sites	4.0%	483	25.4%
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)	Enforcement of City agreement with waste hauler requiring sufficient frequency of service and adequate trash containment at private properties within the City	3%	362	28.4%
Enhanced On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	One City led volunteer large scale on-land cleanup event at an identified heavily littered public site per year, averaging 260 gallons of trash removal per year	NA	260	30.5%

Trash Control Measure	Summary Description of Control Measure	% Reduction (Credits)	Trash Load Reduced	Cumulative % Reduction (Compared to Baseline)
Full-capture Treatment Devices (QF-5)	By agreement with City private property owner is Installing 2 Contech CDS units draining 84.4 acres of retail commercial area. Devices to be installed on private property by November 2012	NA	473	34.4%
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6)	City will Coordinate 3 volunteer cleanup events per year. Estimates from pilot cleanup events indicate approximately 273 gallons from Calabazas Creek, 247gallons from Regnart & Calabazas Creeks and 156 gallons from Stevens Creek at Heney Creek confluence annually	NA	676	40.0%

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

Consistent with MRP Provision C.10.d (i), the City of Cupertino 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 Cupertino 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 2012a).

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 Cupertino is currently planned to occur in a timeframe consistent with MRP requirements. A preliminary implementation schedule for all planned enhancements is described in Table 6-1. This schedule provides a timeframe for reducing trash discharged from the City of Cupertino'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 Cupertino 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 Cupertino's annual reporting process.

Table 6-1. Preliminary implementation schedule for enhanced trash control measures in the City of Cupertino.

Trash Control Measure	Beginning Date of Implementation
Single-use Carryout Plastic Bag Ordinance (CR-1)	-Public Education Campaign Nov. 2012 -Adopt Ordinance by April 2014
Polystyrene Foam Food Service Ware Ban (CR-2)	October 1, 2011
Public Education and Outreach Programs (CR-3)	-Advertising Campaigns Sept. 2012 -Youth Outreach already implemented -Media Campaigns already implemented -Local Community Outreach Events November 2012
Activities to Reduce Trash from Uncovered Loads (CR-4)	February 2012
Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)	Illegal Dumping Enforcement April 2010 Begin Identifying & putting up signage February 2012
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)	November 1, 2010
On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	By March 2014
Full-capture Treatment Devices (QF-5)	By November 2012
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6)	Expansion of Piloted River Cleanup Day- May 2012 Expansion of Piloted Coastal Cleanup- Sept 2012 Single-day Volunteer Cleanup annually by November 2013

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