CITY OF UNION CITY, CALIFORNIA

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January 30, 2012

Mr. Bruce Wolfe
Executive Officer
California Regional Water Quality Control Board
1515 Clay Street, Suite 1400,
Oakland, California 94612

Subject: Baseline Trash Load and Short –Term Trash Load Reduction Plan for the City of Union City

Dear Mr. Wolfe,

In compliance with Provisions C.10a (i) and C.10a (ii) of Order R2-2009-0074, attached for your review, please find a copy of the subject Baseline Trash Load and Short-Term Trash Load Reduction Plan for the City of Union City.

I certify under penalty of law, that this document and all attachments were prepared either under my direction or supervision, or were prepared by our consultants or consultants of the Alameda Countywide Clean Water Program in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed 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.

If you have any questions or need further information regarding this submittal, please contact me at (510) 675-5306 or Thomas Ruark, City Engineer at (510) 675-5301.

Sincerely,

Mintze Cheng, PE
Public Works Director

Baseline Trash Load and Short-Term Trash Load Reduction Plan

Submitted By:

City of Union City of Union City
34009 Alvarado – Niles Road
Union City, CA 94587

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

January 30, 2012

City of Union City
SHORT-TERM TRASH LOAD REDUCTION PLAN

CERTIFICATION STATEMENT

"I certify, under penalty of law, that this document and all attachments were prepared either under my direction or supervision, or were prepared by our consultants or consultants of the Alameda Countywide Clean Water Program 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:

Signature _____ Dated: January 30, 2012

Mintze Cheng
Director of Public Works

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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, etc.) or if circumstances arise during implementation that were not anticipated at the time of submission, the City of Union City 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 Union City'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 Union City 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 (2011b2011c). 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 the 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,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, etc.) or if circumstances arise during implementation of the plan that were not anticipated at the time of submission , the City of Union City 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 Union City'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: *Based on the results of a third monitoring event for the BASMAA Baseline Trash Generation Rates Project and provided to the Permittees, this section will be updated with default trash generation rates, baseline loading rates. Table ad sections are therefore subject to change.,*

In compliance with Provision C.10.a.ii of the MRP, the City of Union City 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 default trash generation rates;
6. Develop trash baseline loading rates by adjusting trash generation rates based on existing levels of control measures implementation; and,
7. Apply trash baseline loading rates and calculate baseline load.

Through the collaborative BASMAA project, default baseline trash generation rates (volume per area)for wet and dry seasons 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 applicable jurisdictional areas within the City of Union City. Trash generation rates were then adjusted based on baseline street sweeping and storm drain inlet maintenance conducted in each applicable area. The sum of the trash loads (i.e., rate multiplied by area) from jurisdictional area represents the City of Union City'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 1959, the City of Union City covers 12,309 acres in Alameda County, and has a jurisdictional area of 5,583 acres. According to the 2010 Census, it has a population of 69,516, with a population density of 3,903.6 people per square mile. Of the 69,516 who call the City of Union City home, 24.2% are under the age of 18, 9.3% are between 18 and 24, 29.3% are between 25 and 44, 26.1% are between 45 and 65, and 11.1% are 65 or older.

Top employers in the City of Union City include New Haven Unified School District, Southern Wine and Spirits, Wal-Mart, and the City of Union City. It is also home to the Union Landing Shopping Center, a 105-acre shopping center with shops, restaurants and a movie theater. The median household income was $87,205 in 2009[1].

Default Trash Generation Rates (Regional Approach)

A set of default trash generation rates for wet and dry seasons were 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.

[1]. The median household income for the City of Union City 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)
High Density Residential	17.04
Low Density Residential	1.25
Rural Residential	0.17
Commercial and Services/ Heavy, Light and Other Industrial	7.08
Retail and Wholesale	29.99
K-12 Schools	13.14
Urban Parks	2.14

JURISDICTIONAL AND EFFECTIVE LOADING AREAS

Default trash baseline generation rates presented in Table 2-1 was applied to effective loading areas with jurisdictional areas within the City of Union City. The City of Union City's jurisdictional areas includes all urban land areas within the City of Union City 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 Alameda 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 Union City'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 Union City are presented in Table 2-2.

Table 2-2: Jurisdictional areas and effective loading areas in the City of Union City 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	1,094	1,064	25
Low Density Residential	2,190	2,093	49
Rural Residential	152	124	3
Commercial and Services/ Heavy, Light and Other Industrial	1,526	654	15
Retail and Wholesale	212	124	3
K-12 Schools	181	106	3
Urban Parks	227	142	3
TOTAL	5,583	4,308	**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 Union City 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 Union City 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 Union City 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 Union City's baseline street sweeping program includes sweeping most streets in residential and industrial areas twice per month. The retail areas of Alvarado Niles Road and Dyer Street are swept once per week. The City's current street sweeping program includes sweeping most streets in residential areas twice per month, industrial areas every other week, and Alvarado Niles Road and Dyer Streets once per week.

Posting of parking enforcement signs for street sweeping occurs within some residential neighborhoods within the City. There are no streets that have parking enforcement equivalent. 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 Union City 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

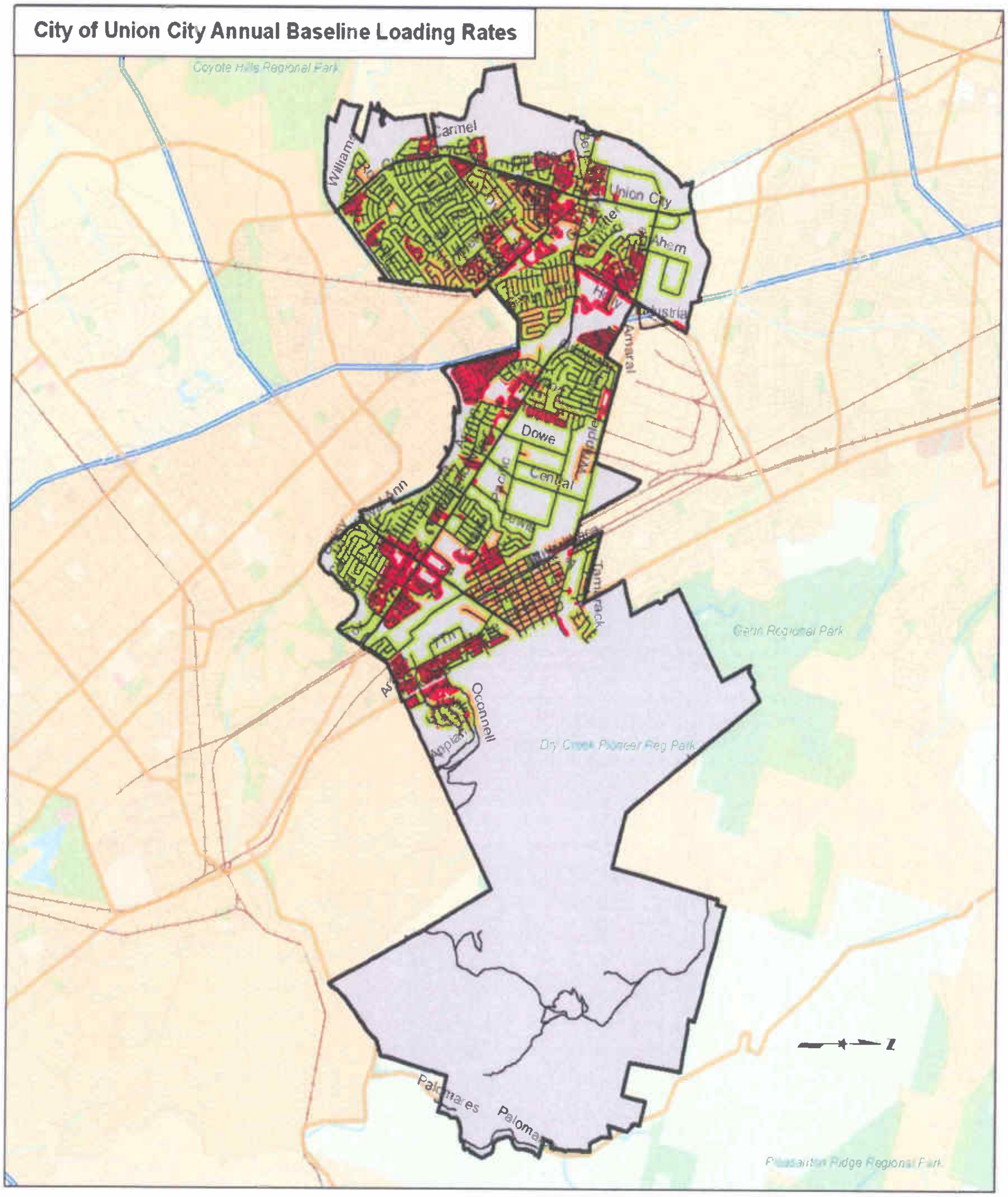
The City of Union City does not own any stormwater pump stations with trash racks. There are four stormwater pump stations to which portions of the City of Union City's storm drain systems drain. These pump stations are owned and operated by Alameda County.

BASELINE TRASH LOADING ESTIMATE

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

Category	Annual Load (gallons)
Preliminary Generation Trash Load	30,824
Load Removed via Baseline Street Sweeping	9,387
Load Removed via Baseline Storm Drain Inlet Maintenance	1,072
Load Removed via Baseline Stormwater Pump Station Maintenance	1,415
Preliminary Trash Baseline Load	**18,950**



Annual Baseline Loading Rate (gal/acre)

- Outside: 1) Jurisdictional Area or 2) Effective Loading Area
- Low (> 0 to 5)
- Mod (> 5 to 10)
- High (> 10)
- Permittee Streets
- Permittee Boundary

0 1 2 3 Miles

Data Sources:

Streets: Tele Atlas, 2003. Retrieved from http://www.arcgis.com/
City Boundary: County of Alameda
Background: ESRI StreetMap USA

Map Created By: EOA, Inc.
Date: December 15, 2011

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 2011c) 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 will 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**. In additional to sweeping all of our streets twice a month, the City of Union City uses a vacuum in the fall months to collect leaves and debris for the gutters just prior to sweeping the streets to reduce the amount of debris that could possible enter into the storm drain system. It is estimated that this enhanced street sweeping collects 47 gallons per year or a 0.2% reduction.

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:

1) CR-1 Single-Use Carryout Plastic Bag Ordinances

2) CR-2 Polystyrene Foam Food Service Ware Ordinances

3) CR-3 Public Education and Outreach Programs

4) CR-4 Reduction of Trash from Uncovered Loads

5) CR-5 Anti-Littering and Illegal Dumping Enforcement

6) CR-6 Improved Trash Bin/Container Management

7) 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 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 3.

[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 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).

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 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.

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

4.0 ENHANCED TRASH CONTROL MEASURES

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

Table4.1. Trash control measures that will be implemented by *the City of Union City* to reach the 40% trash load reduction.

Control Measure
Single-use Carryout Plastic Bag Ordinances
Public Education and Outreach Programs
Activities to Reduce Trash from Uncovered Loads
Improved Trash Bin/Container Management (Municipally or Privately Controlled)
On-land Trash Pickup (Volunteer and/or Municipal)
Partial-Capture Treatment Devices
Enhanced Storm Drain Inlet Maintenance
Full-Capture Treatment Devices

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

As part of the Alameda County wide ordinance adopted on January 25, 2012, the City of Union City *plans to adopt* an ordinance prohibiting the distribution of single-use carryout plastic bags. The ordinance will ban single-use plastic carryout bags at as of Jan 1, 2013. It would affect stores with sales of packaged food, including drug stores, pharmacies, supermarkets, grocery stores, convenience food stores, and liquor stores. Restaurants and department stores are not included. Recycled content paper bags and reusable bags may be provided but only if the retailer charges a minimum price of $0.10 for each bag.. The $0.10 price could increase to $0.25 per single use bag on January 1, 2015.

In addition to the adoption of an ordinance, the City will launch a campaign to educate and outreach to the public to significantly reduce the overall usage of all types of single use bags.

The ordinance *will become effective* on January 2013. The total percent trash reduced from MS4s as a result of implementing a single-use carryout plastic bag ordinance will be reported in the Annual Report submitted each September to the Water Board.

Reduction from Implementing Control Measure

The City of Union City *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 t*he City of Union City's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2012b). 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 Union City implemented the following public education and outreach control measures prior to the effective date of the MRP. The City of Union City provides public outreach and education through the following programs: Make a Difference, Public Works Week, National Night Out, and Earth Day. 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.

Enhanced Level of Implementation

The City of Union City ***plans to 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 Union City***, 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.

Advertising campaign(s) (Countywide Program)

Outreach to Alameda County youth may be limited by scope and budget of the BASMAA Regional Youth Campaign. Therefore the Clean Water Program will supplement the Regional Youth Outreach campaign in order to increase the number of participants in Alameda County.

Advertising Campaign (Local)

As part of the program, the City of Union City will utilize their web site, local Community Cable channel and provide advertisement on the Union City Transit Buses to reach the public .

Outreach to School-age Children or Youth

The Countywide Program is currently conducting stormwater pollution prevention and anti-littering outreach to school-age children through contracts with five environmental education organizations. The current contracts expire in 2014. The Program intends to initiate new contracts for outreach to school-age children in 2014. The outreach programs will have an increased focus on anti-littering messages and will be revised to fulfill the required number of events as described in BASMAA (2011e). The City of Union City plans to implement this control measure through participation in the Countywide Program. In addition the City of Union City will work with the New Haven School District, and the private schools to present educational material regarding the clean water program to students in kindergarten through 12th grade.

Media Relations

BASMAA Regional Media Relations Project (Regional)

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

Media Relations (Countywide Program)

Clean Water Program has already developed a media and community relations plan and contact list. The Program will regularly release articles and information to the appropriate publications, blogs and community publications on litter issues. Articles will be timed with regular events, such as Coastal Cleanup in September and the beginning of the rainy season, as well as other current events, if applicable. The media and community outreach list contains many smaller publications and online sites as well as larger newspapers, which will increase the chances the articles are published and read. This effort goes beyond the scope of the Regional Media Relations plan by going deeper into the community through highly localized media channels.

Media Relations (Local)

As part of the program, the City of Union City will utilize their website, local Community Cable channel and provide advertisement on the Union City Transit Buses to reach the public.

Community Outreach Events

The Countywide Program will develop a "Litter Outreach" kit for community events. Going beyond the usual table with literature, the kit will include such interactive activities as pledge posters to foster commitment to behavior change, and directly relevant promotional items such as reusable bags. This kit will be provided to all Program member agencies for use at their local events. The City of Union City plans to use the Litter Outreach kit at 4 events per year (Make a Difference, Public Works Week, National Night Out, and Earth Day). The City of Union City will set up informational booths at two key hot spot locations in the City (Union Landing Shopping Center and Union City BART Station).

Percent Reduction from Enhancements

The City of Union City will receive a total of 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 8 percent reduction credits will be applied against the City of Union City's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2012b). 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[3], 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 Union City 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 Union City ***will implement*** the following enhanced control measures to reduce trash from vehicles with uncovered loads prior to July 1, 2014

The City of Union City currently has language in their contracts that require all contracted trash and construction debris haulers to cover their loads. The City of union City will review this language with the City attorney to modify and strength the language if necessary to ensure that all Union City's contracts that require contracted trash and construction debris haulers to cover loads when transporting trash and debris to municipally or private –owned landfills and transfer stations. In addition the City of Union City will require that this note be part the City's standard construction notes to be included on all private developments projects that require City approval.

[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.

Percent Reduction from Enhancements

The City of Union City 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 Union City. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012b) 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 Union City has not implemented enhanced trash bin/container management practices prior to effective date of the MRP. Per the City of Union City's Municipal Code:

- Weekly collection of garbage and recyclables is mandatory in Union City.
- Residential Solid Waste Containers. Occupants of each residential premise shall use a container of a standard size that is supplied by the solid waste franchisee. The combined weight of the container and contents shall not exceed the weight limit specified in the City approved program.
- Commercial Containers. Filling of Containers. No occupant shall so fill any container with solid waste, organic waste, or recyclable material above the top of the container to such an extent as to permit the contents of any container to be blown or otherwise strewn about.
- Collection/Spillage. The solid waste and recycling franchisees shall exercise all reasonable care and diligence in collecting solid waste, organic waste and recyclable material so as to prevent spilling, scattering or dropping such waste and materials and shall immediately, at the time of occurrence, clean up any spillage

Enhanced Level of Implementation

The ***City of Union City plans to work with the local waste hauler to implement*** the following improved trash bin/container management practices prior to July 1, 2014:

- A program that identifies businesses and households that have inadequate trash service and through municipal code enforcement; require businesses/households to sufficiently remedy this issue.
- Implement a strategic plan that identifies whether public trash containers are sufficiently located in high trash generating areas and are adequately designed to manage trash type that are typically generated from the activities occurring at these areas and are located where people dispose of these items (near parks, schools shopping centers, quick marts, Union Landing Shopping Center and the BART Station). The plan will include locating specialty trash bin/containers in key hot spot locations to reduce certain types of trash such as cigarette butts. The plan will address the need to install new technologies to reduce trash in the stormwater and reduce the cost of adding public area trash containers. The plan will also provide recommendations on how the system of public trash containers can be enhanced to reduce the amount of trash in the streets.
- The City of Union City plans to establish a Business Improvement District with Trash Reduction control measures for the 105 acres union landing Shopping Center. His area will be subject to sidewalk sweeping, litter pickup and maintenance of public area trash containers at least once per week.

Percent Reduction from Enhancements

The City of Union City will receive a 11.1% percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The 11.1 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 Union City. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2012b) 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 baseline trash load described in Section 2.0, assumes that on-land trash cleanups were not accounted for in the BASMAA *Baseline Trash Loading Rates Project*. Therefore, baseline implementation is accounted for in the Trash Load Reduction Tracking Method quantification formula presented in the *Trash Load Reduction Tracking Method Report* (BASMAA 2012b). Thus, on-land trash cleanups that began prior to the adoption of the MRP and continued after MRP implementation may be used to demonstrate progress towards load reduction goals.

Enhanced Level of Implementation

Prior to July 1, 2014, the City of Union City will be conducting or coordinating the following new or enhanced on-land trash cleanups 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.) removed during on-land trash cleanups is not part of the volume determination since they do not have the potential of entering the MS4.

- Premittee led On land Cleanups
    - Routinely and regularly scheduled litter pickup and removal utilizing the work furlough program
    - Illegal Dump Site response and Abatement
    - Interagency Cleanup coordination and Cleanup
    - Liter pickup event coordination and Cleanup
- Volunteer –led On-land Cleanups:
    - Single –day efforts
        - Organized Single Day Cleanup events
        - Ongoing Events
            - Keep America Beautiful Day
            - Adopt a spot, Adopt a Highway, Adopt a trail and other "Adoption' programs
            - Arbor Day
            - Earth Day
            - Boy Scouts Eagle Projects
            - Other Organized Cleanup Events
            - Business Improvement District Cleanups – Union Landing Shopping Center and other Shopping Centers
            - Routine Cleanups of the BART Station

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 195 gallons/year. This volume is equal to approximately a 1 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 Union City. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5.

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 2011e). The baseline trash load removed via these devices is accounted for in baseline trash loads.

The City Of Union City does not own or operate any storm drain pump stations. The four existing pump stations that exist within the City limits are owned and operated by the County of Alameda.

Enhanced Level of Implementation

A total of 99 partial-capture treatment devices have been or will be installed in the City of Union City prior to July 1, 2014. 53 of these devices will be installed in our retail areas and the remaining 46 will be installed in our high density residential areas. 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.

Calculation of loads reduced from partial-capture devices will be consistent with the approach described in the *Trash Load Reduction Tracking Method Report* (BASMAA 2012b).

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 1952 gallons/year. This volume is equal to approximately a 10.3 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 Union City. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 5.

Table QF-3-1. Partial capture treatment devices installed or planned to be installed within the City of Union City prior to July 1, 2014.

Device Id	Public or Private	Device Name	Location (Cross Street)	Installation Date/Anticipated Installation Date	Total Area Treated (arces)	Trash Load Reduced
Inlet Screens	*Public*	Inlet screens	53 will be installed in CB in the Retail wholesale area of the City	Summer 2013	122.93 acres	1307 gallons/year
Inlet screens	*Public*	Inlet screens	46 will be installed in our high density residential areas	Summer 2013	106.7 acres	645 gallons/year

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 Union City 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 Union City prior to the effective date of the MRP.

Enhanced Level of Implementation

The entire city system of 1858 storm drain inlets will be maintained in the City of Union City at higher frequencies prior to July 1, 2014. The inlets will be maintained and removal of material will occur at least twice a year. 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 2012b).

Percent Reduction from Enhancements

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 143 gallons per year. This volume is equal to approximately a 0.8 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 Union City. 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 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 Pemittees 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 16 trash full-capture treatment devices have been installed in the City of Union City prior to July 1, 2014. A list of these full-capture devices is included in Table QF-56-1. All devices listed within this table are enhanced trash control measures. We have installed 10 CDS units at various locations in the City. These CDS units treat a total of 102 acres. We have also installed 6 Cleanscreens at the Corporation Yard in October 2011 . These devises treat an area of 18 acres. 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 2012b).

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 120 gallons/year. This volume is equal to approximately a 0.6 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 Union City. 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 Union City that are planned for installation by July 1, 2014.

Device Id	Public or Private	Device Name	Location (Cross Street)	Installation Date/Anticipated Installation Date	Total Area Treated (acres)	Trash Load Reduced
CDs	Public	CDS 3030	1169 Platinum (residential)	2009	20.0	8
CDS	Public	CDS 303	11th and Aquamarine (residential)	2009	15.5	6
CDS	Public	CDS 2020	32108 Condor (residential)	2009	3.0	1
CDS	Public	Stormceptor 450i	31224 Union City Blvd (commercial)	2009	2.8	6
CDS	Public	CDS 4040	32811 Orick St (residential)	2009	34.4	14
CDS	Public	CDS 2020	34199 Governo Dr. (residential)	2009	17.5	8
CDS	Public	CDS MFS Model 72MH	33942 – 7th St (commercial)	2009	0.8	2
CDS	Private	3 CDS	1424 Union Square (Avalon Bay Apart) (High density residential)	2009	6.0	33
Cleanscreens	Public	6 Cleanscreens	The City's Corp Yard	10/2011	18.0	42

5.0 SUMMARY OF TRASH CONTROL MEASURE ENHANCEMENTS

The City of Union City 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 listed in Table 5-1. The enhancements are intended to comply with the 40% trash load reduction goal in MRP provision C.10.

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

Trash Control Measure	Summary Descripition Control Measure Action	% Reduction (credits)	% Reduction (quantifications)	Trash Load Reduced	Cummulative % Reduction (compared to Baseline)
Existing Enhanced Street Sweeping	Vacuum gutters prior to sweeping streets in fall	0.2	NA	47	0.2
Single-use Carryout Plastic Bag Ordinance (CR-1)	Adopt County wide Ordinance	10	NA	1,895	10.2
Public Education & Outreach Programs (CR-3)	Adopt all measures	8	NA	1,516	18.2
Activities to Reduce Trash from Uncovered Loads (CR-4)	Add language to all City Contracts	1	NA	189	19.2
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)	Adopt all measures including a BID for 105 acre Union Landing Shopping Center	11.1	NA	2100	30.3
On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	Use Work Furlough and Volunteer Groups	NA	1	195	31.3
Curb Inlet Screens (Partial-capture Treatment Device) (QF-3a)	Install 99 units in Summer 2013	NA	10.3	1565	41.6
Enhanced Storm Drain Inlet Maintenance (QF-4)	Increase maintenance to twice a year on all 1858 inlets	NA	0.8	143	42.4
Full-capture Treatment Devices (QF-5)	Installed 10 CDS units & 6 cleanscreens	NA	0.6	120	43.0

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

Consistent with MRP Provision C.10.d (i), the City of Union City 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) 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 assess progress toward MRP trash reduction goals. For more detailed information on specific control measures, the City of Union City 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 2012b).

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 Union City 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 Union City'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, etc.) or if circumstances arise during implementation of the Plan that were not anticipated at the time of submission, the City of Union City 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 Union City's annual reporting process.

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

Trash Control Measure	Beginning Date of Implementation
Single-use Carryout Plastic Bag Ordinance (CR – 1)	January 2013
Public Education and Outreach Programs (CR – 3)	Ongoing
Activities to Reduce Trash from Uncovered Loads (CR – 4)	Summer 2012
Improved Trash Bin/Containers Management (Municipally or Privately-Controlled) (CR – 6)	Summer 2012
ON-land Trash Cleanups (Volunteer and/or Municipal) (QF – 1)	On going
Curb Inlet Screens (Partial-capture Treatment Device) (QF -3a)	Summer 2013
Enhanced Storm Drain Inlet Maintenance (QF – 4)	Summer 2012
Full-capture Treatment Devices (QF – 5)	October 2011

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