



# Town of Moraga

## TOWN MANAGER'S DEPARTMENT

February 1, 2012

Bruce H. Wolfe, Executive Officer  
California Regional Water Quality Control Board  
San Francisco Bay Region  
1515 Clay Street, Suite 1400  
Oakland, CA 94612

Ms. Pamela Creedon, Executive Officer  
California Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive, #200  
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Dear Mr. Wolfe and Ms. Creedon:

Enclosed is the Town of Moraga's Short-Term Trash Reduction Plan submitted in accordance with Provision C.10.a. in NPDES Permit No. CAS612008 issued by the San Francisco Bay Regional Water Quality Control Board, and/or NPDES Permit No. CA0083313 issued by the Central Valley Regional Water Quality Control Board.

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather 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."

Sincerely,

Jim Keimach  
Town of Moraga

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

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**Submitted by:**



**Town of Moraga**

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

**February 1, 2012**

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**Town of Moraga  
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 'Jill', is written over a horizontal line. The signature is stylized and somewhat cursive.

Jill Keimach  
Town Manager

Date 1/25/12

# TABLE OF CONTENTS

<b>LIST OF TABLES</b> .....	<b>V</b>
<b>LIST FIGURES</b> .....	<b>V</b>
<b>ABBREVIATIONS</b> .....	<b>VII</b>
<b>PREFACE</b> .....	<b>VIII</b>
<b>1.0 INTRODUCTION</b> .....	<b>2</b>
BASELINE TRASH GENERATION RATES PROJECT .....	2
TRASH LOAD REDUCTION TRACKING METHOD SUMMARY .....	3
SHORT-TERM TRASH LOAD REDUCTION PLAN .....	3
<b>2.0 BASELINE TRASH LOADING ESTIMATE</b> .....	<b>5</b>
DEFAULT TRASH GENERATION RATES (REGIONAL APPROACH) .....	6
PERMITTEE-SPECIFIC BASELINE TRASH LOADING RATES .....	7
BASELINE TRASH LOADING ESTIMATES .....	8
<b>3.0 LOAD REDUCTION CALCULATION PROCESS</b> .....	<b>11</b>
STEP #1: EXISTING ENHANCED STREET-SWEEPING .....	11
STEP #2: TRASH GENERATION REDUCTION CONTROL MEASURES .....	12
STEP #3: ON-LAND INTERCEPTION CONTROL MEASURES .....	13
STEP #4: CONTROL MEASURES THAT INTERCEPT TRASH IN THE MS4 .....	13
STEP #5: CONTROL MEASURES THAT INTERCEPT TRASH IN WATERWAYS .....	13
STEP #6: COMPARISON TO BASELINE TRASH LOAD .....	13
<b>4.0 ENHANCED TRASH CONTROL MEASURES</b> .....	<b>14</b>
CR-1: SINGLE-USE CARRYOUT PLASTIC BAG ORDINANCE .....	15
CR-2: POLYSTYRENE FOAM FOOD SERVICE WARE ORDINANCE .....	16
CR-3: PUBLIC EDUCATION AND OUTREACH PROGRAMS .....	17
CR-4: REDUCTION OF TRASH FROM UNCOVERED LOADS .....	19
CR-5: ANTI-LITTERING AND ILLEGAL DUMPING ENFORCEMENT ACTIVITIES .....	21
CR-6: IMPROVED TRASH BIN/CONTAINER MANAGEMENT .....	22
CR-7: SINGLE-USE FOOD AND BEVERAGE WARE ORDINANCE(S) .....	23
QF-1: ON-LAND TRASH CLEANUPS (VOLUNTEERS AND/OR MUNICIPAL) .....	24
QF-2: ENHANCED STREET SWEEPING .....	26
QF-3: PARTIAL-CAPTURE TREATMENT DEVICES .....	28
QF-4: ENHANCED STORM DRAIN INLET MAINTENANCE .....	31
QF-5: FULL-CAPTURE TREATMENT DEVICES .....	32
QF-6: CREEK/CHANNEL/ShORELINE CLEANUPS .....	34
<b>5.0 SUMMARY OF TRASH CONTROL MEASURE ENHANCEMENTS</b> .....	<b>35</b>
5.1 ANNUAL REPORTING AND PROGRESS TOWARDS TRASH LOAD REDUCTION GOAL(S) .....	37
5.2 CONSIDERATIONS OF UNCERTAINTIES .....	37
<b>6.0 IMPLEMENTATION SCHEDULE</b> .....	<b>38</b>
<b>7.0 REFERENCES</b> .....	<b>40</b>

## LIST OF TABLES

TABLE 1.1	TRASH CONTROL MEASURES.....	4
TABLE 2.1	REGIONAL DEFAULT ANNUAL TRASH GENERATION RATES.....	6
TABLE 2.2	JURISDICTIONAL AREAS AND EFFECTIVE LOADING AREAS.....	7
TABLE 2.3	PRELIMINARY ANNUAL TRASH BASELINE LOAD.....	8
TABLE 4.1	TRASH CONTROL MEASURES IN MORAGA.....	14
TABLE QF-3.1	PLANNED ENHANCED STREET-SWEEPING.....	27
TABLE QF-4.1	PARTIAL CAPTURE TREATMENT DEVICES.....	29
TABLE QF-6.1	FULL CAPTURE TREATMENT DEVICES.....	31
TABLE 5.1	PLANNED ENHANCED TRASH CONTROL MEASURES.....	36
TABLE 6.1	PRELIMINARY IMPLEMENTATION SCHEDULE.....	39

## LIST FIGURES

FIGURE 2.1	TOWN OF MORAGA ANNUAL BASELINE LOADING RATE.....	9
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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 Town of Moraga 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 Town of Moraga'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 Town of Moraga 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 2012).

## Trash Load Reduction Tracking Method Summary

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

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

## Short-Term Trash Load Reduction Plan

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

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

Additionally, based on new information that becomes available during the implementation of this Short-Term Plan (e.g., revisions to baseline loading estimates or load reduction credits of quantification formulas), the Town of Moraga 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 Town of Moraga’s annual reporting process.

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

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

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

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

## 2.0 BASELINE TRASH LOADING ESTIMATE

*Note: Tables and information presented in this section are subject to change based on the results of a third monitoring event of the BASMAA Baseline Trash Loading 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 Town of Moraga's Municipal Separate Storm Sewer System (MS4). In compliance with Provision C.10.a.ii of the MRP, the Town of Moraga worked collaboratively with other MRP Permittees through BASMAA to develop data and the process necessary to establish baseline trash loading estimate from our MS4. The collaborative project was managed through the BASMAA Trash Committee and included a series of steps described in BASMAA (2012) and listed below. The approach was intended to be cost-effective and 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 Town of Moraga. 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 Town of Moraga'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 1974, the Town of Moraga covers 6,056 acres in Contra Costa County, and has a jurisdictional area of 2,755 acres. According to the 2010 Census, it has a population of 16,016, with a population density of 1,696.3 people per square mile, and average household size of 2.57. Of the 16,016 who call the Town of Moraga home, 21.7% are under the age of 18, 14.6% are between 18 and 24, 13.7% are between 25 and 44, 30.9% are between 45 and 65, and 19.1% are 65 or older.

The Town of Moraga is mostly residential, but it is home to Saint Mary's College, a small private college. The median household income was \$98,080 in 2000<sup>1</sup>.

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<sup>1</sup> From the 2000 Census. The median household income for the Town of Moraga 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 Loading 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 Town of Moraga. The Town of Moraga’s jurisdictional areas includes all urban land areas within the Town of Moraga 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 Town’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 Contra Costa 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 Town of Moraga’s jurisdictional area was delineated, an effective trash loading area was developed by creating a 200-foot buffer around all streets within the Town’s jurisdictional area. The purpose of the effective loading area is to eliminate land areas not directly contributing trash to the Town’s MS4 (e.g., large backyards and rooftops). Both the jurisdictional and the effective loading areas for the Town of Moraga are presented in Table 2-2.

**Table 2-2: Jurisdictional areas and effective loading areas in the Town of Moraga 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	107	96	5
Low Density Residential	1,905	1,700	80
Rural Residential	271	114	5
Commercial and Services/ Heavy, Light and Other Industrial	101	80	4
Retail and Wholesale	63	54	3
K-12 Schools	112	44	2
Urban Parks	44	26	1
<b>TOTAL</b>	<b>2,603</b>	<b>2,116</b>	<b>100%</b>

### Permittee-Specific Baseline Trash Loading Rates

Regional default trash generation rates developed through the BASMAA regional collaborative project were applied to effective loading areas within the Town of Moraga based on identified land uses. These generation rates were then adjusted based on the calculated effectiveness of baseline street sweeping and storm drain inlet maintenance implemented by the Town. 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 control measures. A summary of trash baseline generation and loading rates for the Town of Moraga 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 Town of Moraga 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 frequently than the baseline ceiling (such as Moraga), their current sweeping frequency serves as their baseline.

The Town of Moraga's baseline and current street sweeping program includes sweeping most streets in residential, retail, and arterial streets twice per year. Parking enforcement signs for street sweeping are not posted in the Town, and parking enforcement equivalent does not exist. The estimated trash load reduced via baseline street sweeping is presented in Table 2-3.

**Baseline Storm Drain Inlet Maintenance**

Within the Town, storm drain inlets were cleaned at a baseline level of two times 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 Town of Moraga 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 Town of Moraga does not own stormwater pump stations with trash racks.

**Baseline Trash Loading Estimate**

The estimated baseline trash load from the Town of Moraga was calculated as the sum of the loads from the Town'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 Town of Moraga 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 Town of Moraga.**

Category	Annual Load (gallons)
Preliminary Generation Trash Load	6,628
Load Removed via Baseline Street Sweeping	1,554
Load Removed via Baseline Storm Drain Inlet Maintenance	254
Load Removed via Baseline Stormwater Pump Station Maintenance	0
<b>Preliminary Trash Baseline Load</b>	<b>4,821</b>

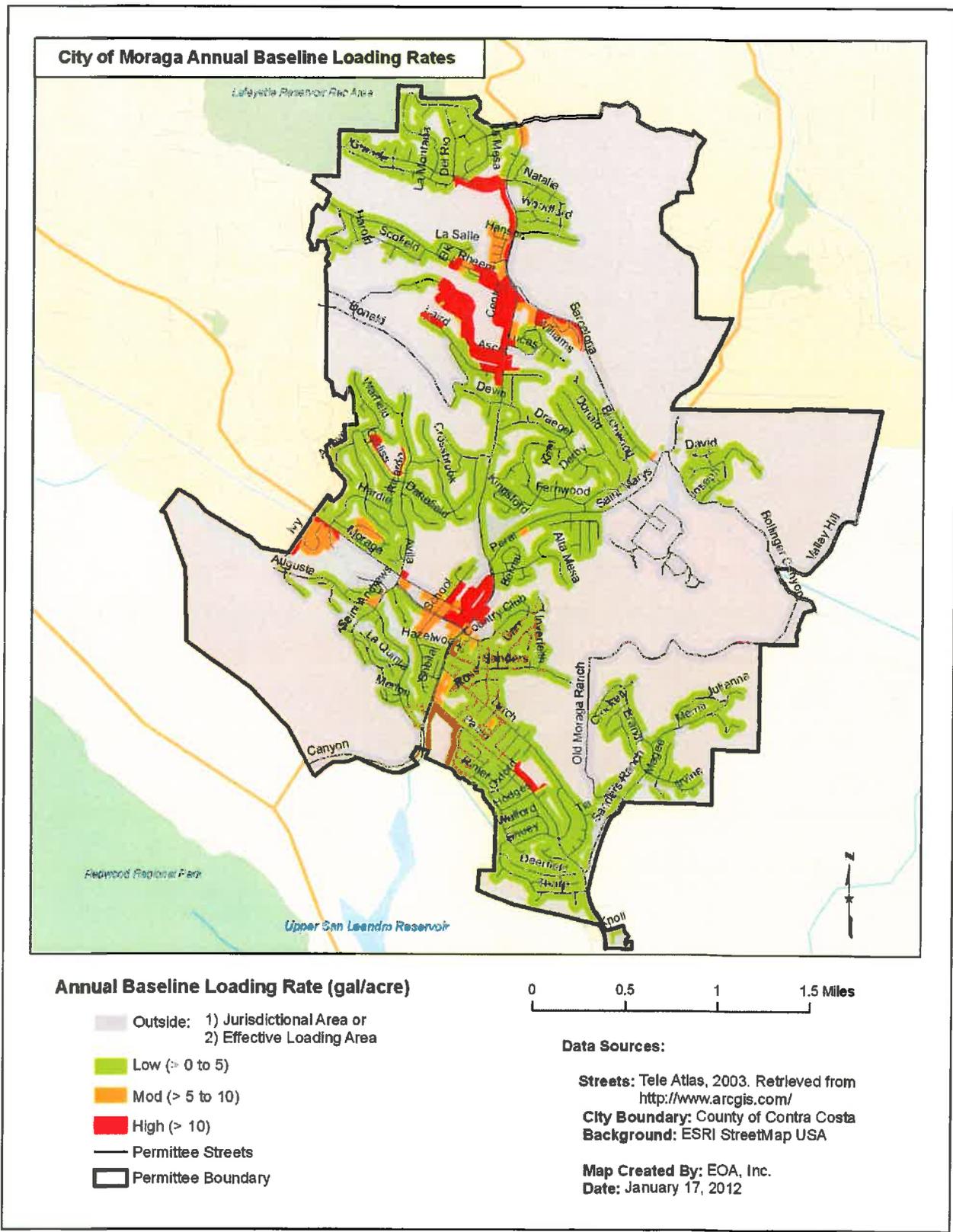


Figure 2-1: Estimated trash baseline loading rates for geographical areas in the Town of Moraga

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### 3.0 LOAD REDUCTION CALCULATION PROCESS

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

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

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

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

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

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

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

## Step #2: Trash Generation Reduction Control Measures

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Step #6: Comparison to Baseline Trash Load

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

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

## 4.0 ENHANCED TRASH CONTROL MEASURES

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

**Table 4.1. Trash control measures that will be implemented by *Town of Moraga* to reach the 40% trash load reduction.**

Control Measure
Public Education and Outreach Programs
Activities to Reduce Trash from Uncovered Loads
On-land Trash Pickup (Volunteer and/or Municipal)
Enhanced Storm Drain Inlet Maintenance
Full-Capture Treatment Devices
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal)

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

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

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

### Baseline Level of Implementation

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

### Enhanced Level of Implementation

The Town of Moraga *does not plan to adopt ordinance*] prohibiting the distribution of single-use carryout plastic bags.

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

*The Town of Moraga will receive a 0 percent reduction credit for implementing specific enhanced control measures described in Enhanced Level of Implementation section above. The 0 percent reduction credit will be applied to the Town of Moraga's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 4.0.*

## 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 Town of Moraga *does not plan to adopt an ordinance* banning polystyrene foam food service ware at the point-of-sale.

### Percent Reduction from Enhancements

The Town of Moraga will receive a 0 percent reduction credit for implementing specific enhanced control measures described in *Enhanced Level of Implementation* section above. The 0 percent reduction credit will be applied to the Town of Moraga's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 4.0.

## 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 Town of Moraga implemented the following public education and outreach control measures prior to the effective date of the MRP:

- Distribution of anti-litter promotional items (tee-shirts, "chico-bags" and pamphlets) at an open house at the Town's new Corporation yard in May, 2009;
- Participation and support of an anti-litter campaign held at the Walnut Creek BART station in October 2009;
- Placement of anti-litter promotional material at the Moraga Library in 2009.

### Enhanced Level of Implementation

The Town of Moraga has implemented and plans to continue supporting the following public education and outreach measures:

- Distribution of anti-litter promotional items (tee-shirts, "chico-bags" and pamphlets) at Moraga's annual Pear and Wine festival in September and at the annual Community faire in May;
- Distribution of anti-litter message in the Town's quarterly newsletter (Town Crier);
- Support of the County's Cleanwater Program anti-litter media campaigns;
- Support of the Cleanwater Program efforts aimed at school children such as the Kids for the Bay program;
- Continued support for the BASMAA media campaigns targeting litter, public announcement of volunteer creek clean-up efforts via the Town's quarterly newsletter, the Town's web-site and local area newspapers (Lamorinda Weekly or Contra Costa Sun).

### Percent Reduction from Enhancements

The Town of Moraga will receive an 8 percent reduction credit for implementing specific enhanced control measures described in *Enhanced Level of Implementation* section above. The 8 percent reduction credit will be applied to the Town of Moraga's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 4.0.

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

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

### Baseline Level of Implementation

The baseline trash load described in Section 2.0, assumes that prior to adoption of the MRP the Town of Moraga 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 Town of Moraga has implemented the following enhanced control measures to reduce trash from vehicles with uncovered loads:

- Inclusion in service contracts with municipal trash collection and hauling agencies clauses requiring use of covers when transporting trash and construction debris;
- Local Town of Moraga enforcement of County ordinance prohibiting transporting uncovered loads through the Town.

### Percent Reduction from Enhancements

The Town of Moraga will receive a 5 percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The 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 Town of Moraga. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2011e) and is presented in the Trash Load Reduction Summary Table included in Section 4.

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



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

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

### Baseline Level of Implementation

The baseline trash load described in Section 2.0, assumes that the Town of Moraga has adopted a basic anti-littering and illegal dumping enforcement program that entails receiving and responding to complaints from citizens as resources allow. Citizens may report littering and/or dumping either to the Town's police department or to the Public Works department. Public Works crews will address the complaint as rapidly as possible.

### Enhanced Level of Implementation

The Town of Moraga ***does not currently plan to implement enhanced anti-littering and illegal dumping enforcement measures.***

### Percent Reduction from Enhancements

The Town of Moraga will receive a 0 percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The 0 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 Town of Moraga. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2011e) and is presented in the Trash Load Reduction Summary Table included in Section 4.

## 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 Town of Moraga has not implemented enhanced trash bin/container management practices prior to effective date of the MRP. The Town has installed a number of public trash containers that our Public Works staff monitors and empties on a regular basis. The Town also encourages private property owners (shopping centers, retail outlets, etc., to make trash containers available to their customers and to empty their trash receptacles regularly

### Enhanced Level of Implementation

The Town of Moraga does not plan to implement enhanced measures for trash container management at this time.

### Percent Reduction from Enhancements

The Town of Moraga will receive a 0 percent reduction credit for implementing specific enhanced control measures described in *Description of Enhanced Level of Implementation* section above. The 0 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 Town of Moraga. This percent reduction credit was obtained from the *Trash Load Reduction Tracking Method Report* (BASMAA 2011e) and is presented in the Trash Load Reduction Summary Table included in Section 4.

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

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

### Baseline Level of Implementation

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

### Enhanced Level of Implementation

Town of Moraga *does not currently plan to adopt* an ordinance limiting the use and/or distribution of single-use food and beverage containers

### Percent Reduction from Enhancements

The Town of Moraga will receive a 0 percent reduction credit for implementing specific enhanced control measures described in *Enhanced Level of Implementation* section above. The 0 percent reduction credit will be applied to the Town of Moraga's baseline trash load. This percent reduction credit is consistent with methods presented in the BASMAA (2011e). A summary of all load reductions anticipated through the implementation of this plan are included in Section 4.0.

## 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 Town of Moraga implemented the following on-land cleanup activities prior to the effective date of the MRP:

- Public Works staff periodically (generally 2 times a year) assist and oversee use of unpaid workers picking up trash along the Town's main streets.

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 Town of Moraga will be conducting or coordinating the following 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.

Enhanced Permittee-led On-land Cleanups:

- The Town will increase the number of Town organized roadside and street trash cleanup days from 2 times/year to a minimum of 15 times/year.

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 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 1200 cubic feet. This volume is equal to approximately a 38 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the Town of Moraga. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.



## QF-2: Enhanced Street Sweeping

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

### Baseline Level of Implementation

The baseline trash load described in Section 2.0 incorporates the trash load reductions due to baseline street sweeping. The Town of Moraga's baseline street sweeping program includes sweeping at a frequency of twice per year on average in retail areas and twice per year on average in all other areas.

*The Town does not have a parking enforcement effort for either residential or retail/commercial. However, much of the parking at the curb in residential areas is during the evening and night hours and cleared by the time the street-sweeper comes along. Most of the Town's retail and commercial areas are concentrated in two shopping centers. The streets around the shopping centers are predominantly "no-parking" zones allowing the street-sweeper access to the curb.*

### Enhanced Level of Implementation

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

- The Town does not plan to enhance its street-sweeping at this time.

### Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of enhanced street sweeping is 0 cubic feet. As described in Trash Load Reduction Summary Table included in Section 4, this volume is equal to approximately a 0 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the Town of Moraga.



### **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 Town of Moraga does not have any pump stations for stormwater and has not installed any curb-inlet screens or litter booms.***

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

A total of 0 partial-capture treatment devices have been or will be installed in the Town of Moraga prior to July 1, 2014. Calculation of loads reduced from partial-capture devices will be consistent with the approach described in the *Trash Load Reduction Tracking Method Report* (BASMAA 2011e).

#### **Percent Reduction from Enhancements**





## 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 Town of Moraga 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 Town of Moraga prior to the effective date of the MRP.

### Enhanced Level of Implementation

A total of 28 storm drain inlets will be maintained in the Town of Moraga at higher frequencies prior to July 1, 2014. ***These 28 storm drains will be cleaned at least 4 times/year to remove collected trash and to ensure no overflow during storms . The selected stormdrains surround retail/commercial areas where trash generation is believed to be highest.*** 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 2011e).

### Percent Reduction from Enhancements

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing enhanced storm drain inlet maintenance is 14 cubic feet. This volume is equal to approximately a 0.3 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the Town of Moraga. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.

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

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

### **Baseline Level of Implementation**

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

### **Enhanced Level of Implementation**

A total of 28 trash full-capture treatment devices will be installed in the Town of Moraga prior to July 1, 2014. A list of these full-capture devices is included in Table QF-6-1. All devices listed within this table are enhanced trash control measures. Table QF-6-1 also includes the area treated and the calculated trash load reduced from each full-capture treatment device. These calculations are consistent with the approach described in the *Trash Load Reduction Tracking Method Report (BASMAA 2011e)*.

### **Percent Reduction from Enhancements**

The total estimated annual volume of trash that will be reduced by July 1, 2014 as a result of implementing full capture devices is 2 cubic feet. This volume is equal to approximately a 11.7 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the Town of Moraga. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.



## 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 Town of Moraga'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 Town of Moraga will conduct MRP-required<sup>4</sup> and the following non MRP-required creek/channel/shoreline cleanups<sup>5</sup> listed below. Both types of cleanups will be conducted each year and the volume of trash removed will be tracked to demonstrate trash loads reduced.

#### MRP-required clean-up (single-day event):

The Town will clean up the section of creek along Moraga Rd. opposite Campolindo High School which is designated as our trash "hot-spot" twice annually as an agency event and report the results of our clean-up efforts in our "hot-spot clean-up report".

#### Non-MRP required cleanup (single-day event):

The Town collaborates with resident organizations to facilitate organized creek-bank clean-up such as last year's Girl-Scout effort in April and tracks and reports the amount of trash removed in our annual report.

The Town has not had any homeless encampment or illegal dumping reported in recent years.

### 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 2 cubic feet. This volume is equal to approximately a 0.2 percent reduction in the baseline trash load to urban creeks from the municipal separate storm sewer system (MS4) owned and operated by the Town of Moraga. Both values provided within this section are included in Trash Load Reduction Summary Table included in Section 4.

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

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

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

The Town of Moraga 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 3.0 are also listed in Table 4-1. 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 Town of Moraga and associated trash loads reduced.**

Trash Control Measure	Summary Description of Control Measure	% Reduction (Credits)	Trash Load Reduced	Cumulative % Reduction (Compared to Baseline)
Single-use Carryout Plastic Bag Ordinance (CR-1)	Not implemented	0	0	0
Polystyrene Foam Food Service Ware Ban (CR-2)	Not implemented	0	0	0
Public Education and Outreach Programs (CR-3)	Advertising, School outreach, Free media, & community outreach	8	386	8
Activities to Reduce Trash from Uncovered Loads (CR-4)	Contract clauses & uncovered load enforcement	5	241	13
Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)	Not implemented	0	0	13
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)	Not implemented	0	0	13
Single-Use Food and Beverage Ware Ordinance (CR-7)	Not implemented	0	0	13
Enhanced On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	Semi-annual hot spot and increased municipal clean-up efforts	NA	1206	38
Enhanced Street Sweeping (QF-2) – (Existing and Future Enhanced)	Not implemented	NA	0	38
Curb Inlet Screens (Partial-capture Treatment Device) (QF-3a)	Not implemented	NA	0	38
Enhanced Storm Drain Inlet Maintenance (QF-4)	Increased frequency of storm drain maintenance	NA	14	38.3
Full-capture Treatment Devices (QF-5)	Installation of 28 full-capture Drain-inlet devices	NA	561	50
Enhanced Pump Station Trash Rack Cleaning (Partial-capture Treatment Device) (QF-3b)	NA	NA	0	50
Litter Booms (Partial-capture Treatment Device) (QF-3c)	NA	NA	0	50
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6)	Increase hot spot clean-ups, Maintain volunteer efforts	NA	12	50.3

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

Consistent with MRP Provision C.10.d (i), the Town of Moraga 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 Town of Moraga will retain supporting documentation on trash load reduction control measure implementation. These records should have a level of specificity consistent with the trash load reduction tracking methods described in the *BASMAA Trash Load Reduction Tracking Method Technical Report* (BASMAA 2011e).

## 5.2 Considerations of Uncertainties

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

## **6.0 IMPLEMENTATION SCHEDULE**

Implementation of enhanced trash control measures by the Town of Moraga is currently planned to occur in a timeframe consistent with MRP requirements. A preliminary implementation schedule for all planned enhancements is described in Table 5-1. This schedule provides a timeframe for reducing trash discharged from the Town of Moraga'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 Town of Moraga 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 Town of Moraga's annual reporting process.

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

Trash Control Measure	Beginning Date of Implementation
Single-use Carryout Plastic Bag Ordinance (CR-1)	NA
Polystyrene Foam Food Service Ware Ban (CR-2)	NA
Public Education and Outreach Programs (CR-3)	May 2012
Activities to Reduce Trash from Uncovered Loads (CR-4)	Feb 2012
Anti-Littering and Illegal Dumping Enforcement Activities (CR-5)	NA
Improved Trash Bin/Container Management (Municipally or Privately-Controlled) (CR-6)	NA
Single-Use Food and Beverage Ware Ordinance (CR-7)	NA
On-land Trash Cleanups (Volunteer and/or Municipal) (QF-1)	April 2012
Enhanced Street Sweeping (QF-2)	NA
Curb Inlet Screens (Partial-capture Treatment Device) (QF-3a)	NA
Enhanced Storm Drain Inlet Maintenance (QF-4)	November 2012
Full-capture Treatment Devices (QF-5)	July 2012
Enhanced Pump Station Trash Rack Cleaning (Partial-capture Treatment Device) (QF-3b)	NA
Litter Booms (Partial-capture Treatment Device) (QF-3c)	NA
Creek/Channel/Shoreline Cleanups (Volunteer and/or Municipal) (QF-6)	June 2012

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