Trash Long-Term Reduction Plan and Progress Assessment Strategy

January 31, 2014

Submitted by:
City of Alameda
2263 Santa Clara Avenue
Alameda, CA 94501

Prepared by:
City of Alameda Public Works Department
950 West Mall Square, Room 110
Alameda, CA 94501

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

Page Intentionally Left Blank

LONG-TERM TRASH LOAD REDUCTION PLAN AND ASSESSMENT STRATEGY

CERTIFICATION STATEMENT

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

Signature by Duly Authorized Representative:

Robert G. Haun — January 31, 2014
Public Works Director

TABLE OF CONTENTS

CERTIFICATION STATEMENT ..... **III**

TABLE OF CONTENTS ..... **IV**

LIST OF TABLES ..... **V**

LIST FIGURES ..... **V**

ABBREVIATIONS ..... **VI**

PREFACE **1**

1.0 INTRODUCTION **2**

1.1 PURPOSE OF LONG-TERM TRASH REDUCTION PLAN 2
1.2 BACKGROUND 2
1.2.1 Long-Term Trash Load Reduction Plan Framework 2
1.2.2 BASMAA Generation Rates Project 3
1.3 ORGANIZATION OF LONG-TERM PLAN 5

2.0 SCOPE OF THE TRASH PROBLEM **6**

2.1 PERMITTEE CHARACTERISTICS 6
2.2 TRASH GENERATING AREAS 7
2.2.1 Generation Categories and Designation of Areas 7
2.2.2 Summary of Trash Generating Areas and Sources 7

3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES **11**

3.1 MANAGEMENT AREA DELINEATION AND PRIORITIZATION 11
3.2 CURRENT AND PLANNED TRASH CONTROL MEASURES 15
3.2.1 Trash Management Area #1 16
3.2.2 Trash Management Area #2 17
3.2.3 Trash Management Area #3 23
3.2.4 Trash Management Area #4 25
3.2.5 Trash Management Area #5 27
3.2.6 Trash Management Area #6 28
3.2.7 Trash Management Area #7 29
3.2.8 Trash Management Area #8 30
3.2.9 Trash Management Area #9 31
3.2.10 Trash Management Area #10 32
3.2.11 Trash Management Area #11 33
3.2.12 Trash Management Area #12 34
3.2.13 Jurisdiction-Wide Control Measures 35
3.2.14 Shoreline Hot Spot Cleanups 39
3.2.15 Summary of Trash Control Measures 40
3.3 CONTROL MEASURE IMPLEMENTATION SCHEDULE 42

4.0 PROGRESS ASSESSMENT STRATEGY **47**

4.1 ACCWP PILOT ASSESSMENT STRATEGY 47
4.1.1 Indicators of Progress and Success 47
4.1.2 Pilot Assessment Methods 45
4.2 BASMAA "TRACKING CALIFORNIA'S TRASH" PROJECT 51
4.2.1 Testing of Trash Monitoring Methods 52
4.2.2 Full Capture Equivalent Studies 52
4.3 ADDITIONAL PROGRESS ASSESSMENTS 52
4.4 LONG-TERM ASSESSMENT STRATEGY 49
4.5 IMPLEMENTATION SCHEDULE 49

5.0 REFERENCES **55**

LIST OF TABLES

TABLE 1-1. SAN FRANCISCO BAY AREA TRASH GENERATION RATES BY LAND USE (GALLONS/ACRE/YEAR).
TABLE 2-1. PERCENTAGES OF THE CITY OF ALAMEDA'S JURISDICTIONAL AREA WITHIN LAND USE CLASSES IDENTIFIED BY ABAG (2005)
TABLE 2-2. TRASH GENERATION CATEGORIES AND ASSOCIATED GENERATION RATES (GALLONS/ACRE/YEAR).
TABLE 2-3. DEFINITIONS OF ON-LAND TRASH ASSESSMENT CONDITION CATEGORIES.
TABLE 2-4. PERCENTAGE OF JURISDICTIONAL AREA WITHIN THE CITY OF ALAMEDA ASSIGNED TO EACH TRASH GENERATION CATEGORY.
TABLE 3-1. JURISDICTIONAL AREA AND PERCENTAGE OF EACH TRASH MANAGEMENT AREA (TMA) COMPRISED OF TRASH GENERATION CATEGORIES
TABLE 3-2. CITY OF ALAMEDA TRASH HOT SPOTS SUMMARY
TABLE 3-3. CITY OF ALAMEDA TRASH CONTROL MEASURE IMPLEMENTATION SCHEDULE.
TABLE 4-1. CITY OF ALAMEDEA TRASH PROGRESS ASSESSMENT IMPLEMENTATION SCHEDULE.

LIST FIGURES

FIGURE 1-1. EIGHT-STEP FRAMEWORK FOR DEVELOPING, IMPLEMENTING AND REFINING LONG-TERM TRASH REDUCTION PLANS.
FIGURE 1-2. CONCEPTUAL MODEL OF TRASH GENERATION, INTERCEPTION AND LOAD.
FIGURE 2-1. DEVELOPMENT OF TRASH GENERATION AREAS
FIGURE 2-2. FINAL TRASH GENERATION MAP FOR THE CITY OF ALAMEDA
FIGURE 3-1. TRASH MANAGEMENT AREA MAP FOR THE CITY OF ALAMEDA.
FIGURE 3-2. TRASH FULL CAPTURE DEVICE MAP FOR THE CITY OF ALAMEDA.

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

1.0 Introduction

1.1 Purpose of Long-Term Trash Reduction Plan

The Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit for Phase I communities in the San Francisco Bay (Order R2-2009-0074), also known as the 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. The City of Alameda is a Permittee. Provision C.10.c of the MRP requires Permittees to submit a *Long-Term Trash Load Reduction Plan* (Long-Term Plan) by February 1, 2014. Long-Term Plans must describe control measures that are currently being implemented, including the level of implementation, and additional control measures that will be implemented and/or increased level of implementation designed to attain a 70% trash load reduction by July 1, 2017, and 100% (i.e., "No Visual Impact") by July 1, 2022.

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

1. Descriptions of the current level of implementation of trash control measures, and the type and extent to which new or enhanced control measures will be implemented to achieve a target of 100% (i.e. full) trash reduction from MS4s by July 1, 2022, with an interim milestone of 70% reduction by July 1, 2017;

2. A description of the *Trash Assessment Strategy* that will be used to assess progress towards trash reduction targets achieved as a result of control measure implementation; and,

3. Time schedules for implementing control measures and the assessment strategy.

The Long-Term Plan was developed using a regionally consistent outline and guidance developed by the Bay Area Stormwater Management Agencies Association (BASMAA) and reviewed by the San Francisco Bay Regional Water Quality Control Board (Water Board) staff. The Long-Term Plan is consistent with the Long-Term Trash Load Reduction Framework (see section 1.2.1) developed in collaboration with Water Board staff. Its content is based on the City of Alameda's current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with Municipal Separate Storm Sewer (MS4) discharges. The Long-Term Plan builds upon trash control measures implemented by the City prior to the adoption of the MRP and during the implementation of the Short-Term Trash Load Reduction Plan submitted to the Water Board on February 1, 2012.

1.2 Background

1.2.1 Long-Term Trash Load Reduction Plan Framework

A workgroup of MRP Permittee representatives and Water Board staff met between October 2012 and March 2013 to better define the process for developing and implementing Long-Term Plans, methods for

assessing progress toward reduction goals, and tracking and reporting requirements associated with provision C.10. Through these discussions, an eight-step framework for developing and implementing Long-Term Plans was created by the workgroup (Figure 1).

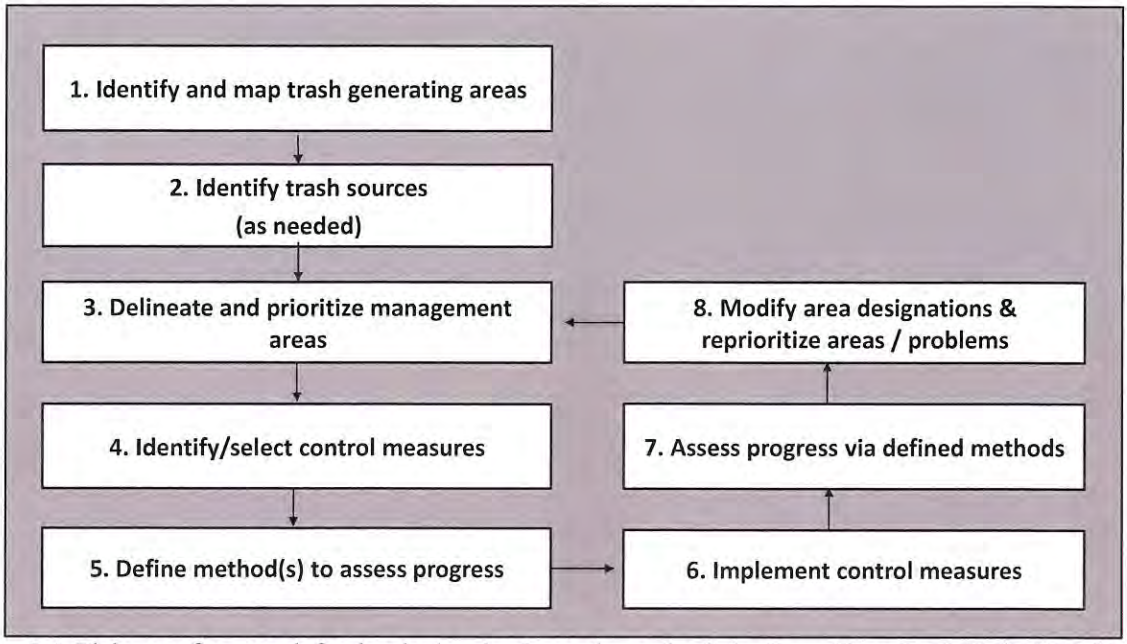

Figure 1-1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

The workgroup agreed that as the first step in the framework, Permittees would identify very high, high, moderate, and low trash generating areas in their jurisdictional areas. Trash generation rates developed through the BASMAA Baseline Trash Generation Rates Project (as discussed below) were used as a starting point for differentiating and delineating land areas with varying levels of trash generation. Permittees would then use local knowledge and field and/or desktop assessments to confirm or refine the level of trash generation for specific areas within their jurisdiction. Each Permittee would then develop a map depicting trash generation categories within their jurisdiction.

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

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

1.2.2 BASMAA Generation Rates Project

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

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

In contrast to trash generation, the term "trash loading" refers to the rate at which trash from MS4s enters receiving waters. Trash loading rates are also expressed as trash volume/acre/year and are equal to or less than trash generation rates because they account for the effects of control measures that intercept trash generated in an area before it is discharged to a receiving water. Trash loading rates are specific to particular areas because they are dependent upon the effectiveness of control measures implemented within an area. Figure 1-2 illustrates the difference between trash generation and loading.

Figure 1-2. Conceptual model of trash generation, interception and load.

Trash generation rates were estimated based on factors that significantly affect trash generation (i.e., land use and income). The method used to the establish trash generation rates for each Permittee builds off "lessons learned" from previous trash loading studies conducted in urban areas (Allison and Chiew 1995; Allison et al. 1998; Armitage et al. 1998; Armitage and Rooseboom 2000; Lippner et al. 2001; Armitage 2003; Kim et al. 2004; County of Los Angeles 2002, 2004a, 2004b; Armitage 2007). The method is based on a conceptual model developed as an outgrowth of these studies (BASMAA 2011b).

Trash generation rates were developed through the quantification and characterization of trash captured in Water Board-recognized full-capture treatment devices installed in the San Francisco Bay area. Trash generation rates estimated from this study are listed for each land use type in Table 1-1. Methods used to develop trash generation rates are more fully described in BASMAA (2011b, 2011c, and 2012).

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

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

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

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

1.3 Organization of Long-Term Plan

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

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

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

2.0 Scope of the Trash Problem

2.1 Permittee Characteristics

The City of Alameda, initially founded in the mid-19th century, adopted a Council-Manager form of government in 1917 that it still uses to this day. The City of Alameda is located in Alameda County, and has a jurisdictional area of 5,498 acres. According to the 2010 Census, it has a population of 73,812, with a population density of 6,956.2 people per square mile and average household size of 2.47 people. Of the approximately 74,000 residents who call the City of Alameda home, 20.7% are under the age of 18, 65.8% are between 18 and 64, and 13.5% are 65 or older. The median household income was $77,249. The largest private employers in the City of Alameda include Abbott Diabetes Care, Alameda Hospital, Bay Ship & Yacht, Safeway Stores, VF Outdoors and Wind River Systems. The largest public employers within the City include the Alameda Unified School District, the City of Alameda, the College of Alameda and the U.S. Coast Guard.

Land uses within the City of Alameda depicted in ABAG (2005) are provided in

Table 2-1. The City of Alameda is primarily comprised of these seven listed land uses: Commercial and Services, Industrial, Residential, Retail, K-12 Schools, Urban Parks and Other.

Table 2-1. Percentages of the City of Alameda's jurisdictional area[1] within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (Acres)	% of Jurisdictional Area
Commercial and Services	535.4	9.7%
Industrial	615.6	11.2%
Residential	3,023.6	55.0 %
Retail	226.2	4.1%
K-12 Schools	147.9	2.7%
Urban Parks	257.3	4.7%
Other (open space, golf courses, urban vacant lands, and former military)	692.0	12.6%

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

2.2 Trash Generating Areas

2.2.1 Generation Categories and Designation of Areas

The process and methods used to identify the level of trash generation within the City of Alameda are described in this section and illustrated in Figure 2-1.

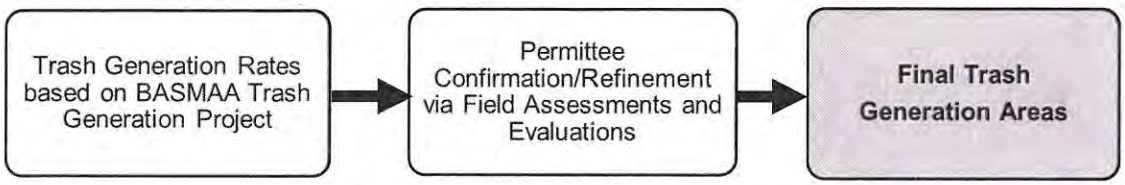

Figure 2-1. Development of Trash Generation Areas

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

Table 2-2. Trash generation categories and associated generation rates (gallons/acre/year).

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

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

1. Based upon staff knowledge of and familiarity with trash generation and problem areas within the City, staff identified areas on the draft map that potentially had incorrect trash generation category designations.

2. Trash generation category designations initially assigned to areas identified in step #1 were then assessed and confirmed/refined by the City using the methods listed below.

a. On-Land Visual Assessments

To assist Permittees with developing their trash generation maps, BASMAA developed a Draft On-land Visual Trash Assessment Protocol (Draft Protocol). The Draft Protocol entails walking a street segment and visually observing the level of trash present on the roadway, curb and gutter, sidewalk, and other areas adjacent to the street that could potentially contribute trash to the MS4. City of Alameda staff used the Draft Protocol to assist in confirming and refining the initial trash generation rate designations in areas throughout the City. City of Alameda staff assessed a total of seventy-two (72) distinct areas in this trash generation rate designation assessment-refinement process. Consistent with the Draft Protocol, staff made observations on the level of trash present in each assessment area and placed the area into one of four on-land assessment condition categories that are summarized in Table 2-3.

Table 2-3. Definitions of on-land trash assessment condition categories.

On-land Assessment Condition Category	Summary Definition
A (Low)	Effectively no trash is observed in the assessment area.
B (Moderate)	Predominantly free of trash except for a few pieces that are easily observed.
C (High)	Trash is widely/evenly distributed and/or small accumulations are visible on the street, sidewalks, or inlets.
D (Very High)	Trash is continuously seen throughout the assessment area. There is often significant litter along the roadway edges or within other publicly accessible areas.

b. Querying Municipal Staff or Members of the Public

City Clean Water Program staff obtained feedback from Public Works Maintenance staff to confirm trash problem areas and refine trash generation category designations. Additionally, to refine trash generation category designation at City of Alameda park facilities, Clean Water Program staff met with Alameda Parks & Recreation (ARPD) staff to discuss current and planned trash control efforts and effectiveness at all areas managed by ARPD staff.

c. Reviewing Municipal Operations Data

City Municipal Operations staff record data as a part of routine municipal maintenance activities on volumes of trash gathered at stormwater pump stations, storm drain inlets and other municipal stormwater drainage infrastructure. This data has also been reviewed in support of the City's trash generation analysis.

3. Based on assessments conducted to confirm/refine trash generation category designations, the City created a final trash generation map that depicts the most current understanding of trash generation within the City of Alameda. The City documented this process by tracking the information collected through the assessments and subsequent refinements to the Draft Trash Generation Map. The City of Alameda's Final Trash Generation Map is included as Figure 2-2.

2.2.2 Summary of Trash Generating Areas and Sources

Summary statistics for land use and trash generation categories generated through the mapping and assessment process are presented in Table 2-4 below.

Table 2-4. Percentage of jurisdictional area within the City of Alameda assigned to each trash generation category.

Trash Generation Category	Jurisdictional Area (Acres)	Commercial and Services	Industrial	Residential	Retail	K-12 Schools	Urban Parks	Other
Very High	10.2	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
High	262.9	0.0%	0.0%	25.6%	74.4%	0.0%	0.0%	0.0%
Medium	1,495.9	18.1%	33.8%	19.3%	0.7%	9.8%	11.3%	7.0%
Low	3,729.0	7.1%	3.0%	71.5%	0.5%	0.0%	2.1%	15.7%

Figure 2-2. Final Trash Generation Map for the City of Alameda

Page Intentionally Left Blank

3.0 Trash management areas and control measures

This section describes the control measures that the City of Alameda has or plans to implement to solve trash problems and achieve a target of 100% (i.e. full) trash reduction from their MS4 by July 1, 2022. The selection of control measures described in this section is based on the City of Alameda's current understanding of trash problems within its jurisdiction and the effectiveness of control measures designed to reduce trash impacts associated with MS4 discharges. Information on the effectiveness of some trash control measures is currently unavailable to local public agencies. In the absence of this information, the City has based its selection of control measures on existing effectiveness information, our experience to-date in implementing these trash control efforts, our knowledge of local trash problems, and the logistics and costs of implementation efforts. As knowledge and experience continues to be gained through the implementation of these control measures and the assessment strategies described in Section 4, the City anticipates the possibility of refining our trash control strategies described in this section for future implementation. The City of Alameda's annual stormwater reporting process and the anticipated, future Provision C.10 benchmark reporting efforts will present opportunities to update and refine our implementation efforts.

3.1 Management Area Delineation and Prioritization

Consistent with the long-term plan framework described in Section 1.2, the City of Alameda delineated and prioritized trash management areas (TMAs) based on the geographical distribution of trash generating areas, the associated land-use patterns, types of trash sources, and current or planned control measure locations. TMAs are intended to form the management units by which trash control measure implementation can be tracked and assessed for progress towards trash reduction targets. Once delineated, TMAs were also prioritized for control measure implementation within the City's jurisdiction. The approach and procedures that City staff used to delineate and prioritize TMAs within the City of Alameda are discussed below.

City staff efforts to delineate and prioritize TMAs were based directly upon the results of the trash generation rate designation process, complemented with staff knowledge and familiarity with the land/parcel uses throughout town. The trash generation rate category mapping effort resulted in distinct geographic boundaries for localized areas with the same trash generation rate category. In general, the geographical limits of TMAs have been established over areas with the same trash generation rate category and a consistent land-use pattern. In several cases, identified and discussed further below, distinct geographical areas of concentrated retail and pedestrian activity were identified as distinct TMAs (i.e., see TMAs 2-5, below). In other cases, staff knowledge and familiarity of land uses, honed with field verification during the trash generation verification process, allowed for an accurate linking of multiple, distinct geographical areas with the same land use, same maintenance schemes and same trash generation rates, into single TMAs (i.e., see TMAs 6-11 below). A total of twelve TMAs have been designated for the City of Alameda. See Table 3-1 and Figure 3-1 below.

The prioritization of TMAs was determined by the trash generation rate category of the area within the TMA; higher trash generation rate areas are in trash management areas that have a higher priority than all lower trash generation rates. Thus, the TMA with highest trash generation rate is also the trash management area with the highest priority, and the TMA with the lowest trash generation rate has the lowest trash management priority. In addition, the numbering of TMAs directly reflects this prioritization. For example, the trash generation areas designation process resulted in the determination of only one Very High trash generation category area within the jurisdictional area of the City of Alameda. This is a geographically distinct public open space area along the shoreline that is directly

accessible for vehicle parking and pedestrian shoreline activity that has been designated the highest priority TMA 1.

The City's TMA delineation, prioritization and numbering scheme continues in a consistent manner with an identification of the TMAs for the High and Medium trash generation category areas. And, at the low end of the trash-generation spectrum in Alameda, all the Low trash generation rate areas are collectively considered as TMA 12, the lowest trash management priority. Though, as discussed below, even TMA 12, as the lowest priority trash management area, remains subject to active trash management strategies.

A map depicting the City's TMAs is included as Figure 3-1. All jurisdictional areas within the City are included within a TMA. The amount of jurisdictional land area and associated trash condition categories for each TMA are included in Table 3-1.

Table 3-1. Jurisdictional area and percentage of each Trash Management Area (TMA) comprised of trash generation categories

TMA	TMA Name	Jurisdictional Area (Acres)	Trash Generation Rate			
			Very High	High	Medium	Low
1	Main Street Shoreline Parking Lot/Overlook	10.2	100.0%	0.0%	0.0%	0.0%
2	Park Street Business and Retail District	148.1	0.0%	47.0%	43.7%	9.4%
3	Webster Street Business and Retail District	53.4	0.0%	75.3%	21.6%	3.1%
4A	South Shore Shopping Center	58.7	0.0%	97.4%	2.6%	0.0%
4B	Marina Village Shopping Center	13.0	0.0%	100.0%	0.0%	0.0%
4C	Bridgeside Shopping Center	9.4	0.0%	100.0%	0.0%	0.0%
4D	Harbor Landing Shopping Center	13.5	0.0%	100.0%	0.0%	0.0%
5	Residential High Trash Areas	32.6	0.0%	98.2%	1.8%	0.0%
6	Neighborhood Retail Districts	36.7	0.0%	58.8%	35.5%	5.7%
7	Residential Medium Trash Areas	254.5	0.0%	0.0%	100.0%	0.0%
8	Commercial/Industrial Areas	416.3	0.0%	0.0%	97.3%	2.7%
9	Neighborhood Schools and Religious Facilities	143.0	0.0%	0.2%	99.8%	0.0%
10	Alameda Point, non-residential	489.9	0.0%	0.0%	86.5%	13.5%
11	Parks, recreation and open spaces	162.2	0.0%	0.0%	99.6%	0.4%
12	Low Trash Areas	3,656.5	0.0%	0.2%	0.4%	99.5%

Figure 3-1. **Trash Management Area Map for the City of Alameda**

Page Intentionally Left Blank

3.2 Current and Planned Trash Control Measures

Specific trash control measures that are being implemented or that have been identified for implementation by the City of Alameda within the prioritized TMAs in the City include:

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Enhanced Storm Drain Inlet Maintenance
- Street Sweeping
- On-land Cleanups
- Shoreline Cleanups
- Improved Trash Bins/Container Management
- Anti-Littering and Illegal Dumping Enforcement Activities

Full-Capture Treatment Devices meet the full trash capture definition of MRP Provision C.10.a.iii and are installed within the stormwater conveyance system. The StormTek-ST3G devices installed within City of Alameda municipal stormwater catch basins are one example. All storm drain catch basins within and immediately peripheral to all Very High and High Trash Generation Category Areas will be assessed during this Long-term Plan period for the feasibility of installation and maintenance of full-capture treatment devices.

The City is currently evaluating all of the gravity storm drain outfalls that discharge into the SF Bay, the estuary, the tidal canal, and various lagoon systems. Of these, approximately 70 have been identified for replacement due to damage or insufficient capacity. The City is in the preliminary design and environmental phase with these outfalls. The intent is to acquire necessary shoreline-related permits, and replace the outfalls up to a control structure (manhole) above the shoreline. Later, the City will replace undersized pipes upstream of the control structures as funds become available. These storm drain systems are being evaluated for full-capture and partial-capture treatment both at the inlets and at the proposed control structure.

Partial-capture Treatment Devices (PCTD) also capture trash for removal from the stormwater conveyance system but do not meet the full trash capture definition of MRP Provision C.10.a.iii. An automatic trash rack installed in a municipal stormwater pump station is an example. Concerning the City's set of stormwater pump stations, the City's Public Works Department Capital Improvement Projects (CIP) Division reviewed most of the storm drain pump stations in 2011 and made recommendations for CIP improvements. Trash racks for larger trash were evaluated and recommendations were made for the installation of automated trash racks to replace existing manual hard-to-service trash racks at the two remaining pump stations that discharge directly to the Bay and that do not currently have the modernized automated trash racks. In addition, the City CIP Division will consider the installation of other appropriate partial-capture treatment devices for any future pump station upgrades.

In addition, City staff has identified, in the course of the development of this Plan, catch basin locations for the assessment and installation of a storm drain inlet guard device. Storm drain inlet guards prevent the discharge of curbline trash from discharging into the catch basin proper and provide for the trash pickup via routine street sweeper operations. The installation of storm drain inlet guards is another example of PCTD implementation in the City.

Enhanced Storm Drain Inlet Maintenance activities are municipal maintenance activities that have been implemented after the effective date of the MRP and have either improved municipal maintenance of the municipal storm drainage system and/or are an entirely new maintenance activity. A post-MRP increase in the frequency of municipal storm drain inlet cleaning is an example.

Street Sweeping includes three regenerative air street sweepers, model TYMCO 600, on paved surfaces within the public right-of-way or in public spaces. All three of the regenerative air street sweepers were purchased after the effective date of the MRP; two have been in operation since early 2011and the third since 2013. Specific street sweeping routines are discussed in a number of the TMA sections below. Street sweeping is effectively a jurisdiction-wide trash control measure since municipal street sweepers operate on all City streets on an at-least weekly basis, with higher frequencies in target priority areas.

On-Land Cleanups are any organized and active effort to remove trash, litter or debris from the public right-of-way or public spaces prior to its discharge to the municipal storm drainage system.

Shoreline Cleanups are any organized and active effort to remove trash, litter and debris from public shorelines and the inter-tidal zone and thus from the subject waterbody where the trash/ debris had previously been discharged.

Improved Trash Bins/Container Management are any actions taken or directed by the City to prevent the dispersal of trash or litter to paved surfaces or the public right-of-way from trash receptacles, regardless of whether the trash receptacle is in a static/receiving mode or while it is being serviced/emptied.

Anti-Littering and Illegal Dumping Enforcement Activities include any municipal outreach or enforcement actions taken to enforce the municipal code and prevent the discharge of any solid wastes to any paved surfaces or the municipal stormwater conveyance system. The implementation of the City's annual stormwater business inspection workplan and inspection list contributes to this trash control action.

Sub-sections 3.2.1 through 3.2.12 detail the current and planned trash control measures for each TMA within the City of Alameda. Sub-section 3.2.13 describes jurisdiction-wide trash control measures being implemented within the City of Alameda either by the City directly or in conjunction with other countywide or regional efforts. Sub-section 3.2.14 describes the City of Alameda's Shoreline Trash Hot Spot cleanup program

3.2.1 Trash Management Area #1 – Main Street Shoreline Parking Lot/Overlook

The Main Street Shoreline Parking Lot/Overlook area is on the northern shoreline of Alameda overlooking the Oakland Inner Harbor, between the Main Street Ferry Terminal and the Navy Way Main entrance to the former Alameda Naval Air Station (now Alameda Point). There is a large, publicly accessible parking lot immediately adjacent to the shoreline, an informal fishing pier and a public dog park along with a large unpaved area immediately adjacent to the paved parking lot. The entire area is a popular, drive-up shoreline open space that attracts a lot of vehicle activity, fishing activity, Port of Oakland on-lookers, picnicking, impromptu gatherings, and abandoned wastes. Despite the presence of multiple public street trash cans, significant levels of litter and trash are left behind on the parking lot pavement, unpaved area and shoreline berm. This is the single Very High Trash Generation Category Area within the City of Alameda and is the priority number one TMA.

Full-Capture Treatment Devices
As a result of the City of Alameda's Trash Long-Term Reduction Plan development, all six of the public right-of-way storm drain inlets in this area have been identified for the assessment of the feasibility of installing a full-capture treatment device. Currently, the storm drain inlet closest to the fishing pier at the western end of this area is being reviewed for the feasibility of a trial installation of an FCTD this fiscal

year. As of January 1, 2014, zero FCTDs have been installed in this area. FCTD installations in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Street Sweeping
Municipal street sweepers sweep the public right-of-way of Main Street and the paved parking lot one time per week; this level of activity has been occurring since prior to the effective date of the MRP. As indicated above, the City has upgraded to regenerative air street sweepers since the effective date of the MRP. Presently, municipal maintenance staff is assessing the feasibility of increasing the frequency of street sweeping in the paved areas of this trash management area as an enhanced trash control measure. Changes in street sweeping frequency in this TMA will be accounted for in future annual reports and Provision C10 benchmark updates.

Shoreline Cleanups
City staff has initiated an annual shoreline trash/litter/debris cleanup in this area subject to the constraints discussed below. This entire stretch of shoreline is armored with large boulder rip-rap that is subject to the daily tidal fluctuations and wave exposure and is generally not conducive to either trash/litter accumulation or safe tidal zone access for manual trash pickup. However, the twenty-meter longitudinal stretch at the western end this shoreline area forms a small pocket that allows for the chronic trash/litter/debris accumulation within the tidal zone and concentrates large volumes of waste materials. City staff has initiated an annual shoreline cleanup in this area that has been completed twice to-date (in 2012 and 2013), averaging more than a cubic yard of trash/litter per yearly effort. This cleanup effort initiated since the effective date of the MRP will continue to be implemented as necessary into the future.

On-land Trash Cleanups
In conjunction with the tidal zone and shoreline berm Shoreline Cleanups discussed above, the cleanup crews have also performed on-land trash cleanups of the western end of the paved parking lot area. This western area of the parking lot is adjacent to the shoreline "pocket" and the fishing pier where tidal deposition trash accumulates and tends to be the area of the parking lot with the highest litter accumulation. These efforts will continue on an at-least annual basis with the shoreline cleanups. In addition, after the effective date of the MRP, the City has initiated annual trash/litter/debris cleanup efforts of the Main Street Wetland Flood Control Channel extending southeast from the parking lot. The City is assessing the option to increase the frequency of these current cleanups and to expand the trash/litter/debris cleanup efforts to include the unpaved areas adjacent to the parking lot, and along the fence and grassy areas across the street from the parking lot. Actual on-land cleanups of this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Improved Trash Bin/Container Management
The paved parking lot area in TMA 1 has been identified as an area targeted for the installation of additional street litter cans to be serviced on an at-least weekly basis by the City's franchise hauler. The final determination of the installation and servicing plan for these additional street litter cans will be made this fiscal year.

3.2.2 Trash Management Area #2 – Park Street Business and Retail District

This is the City's largest retail district and encompasses the civic core and much of the "downtown" of the City of Alameda. High pedestrian traffic, curbside parking with passenger exiting and entering, bus stops, retail shopping, corner markets, restaurants and carryout food facilities all generate the conditions for potential urban litter. TMA 2 is a High Trash Generation Category area, the second highest trash control priority area and a focal point for extensive and redundant trash control measures.

Full-Capture Treatment Devices

A total of nine (9) storm drain insert full-capture treatment devices have been installed to-date in storm drain catch basins receiving runoff from the paved surfaces of TMA 2. See Figure 3-2, Trash Full Capture Device Map for the City of Alameda. These installations were completed as a part of the implementation of Provision C.10.a.iii requirements for minimum full trash capture. All of these were installed after the effective date of the MRP and were previously accounted for in the City's FY 2012-13 Annual Report on clean water program activities. Four of these devices are the StormTek brand and five are the Wavy Grate brand. City Public Works staff are monitoring the comparative performance and maintenance requirements of these two types of devices. In addition, the balance of the storm drain catch basin locations within TMA 2 have been identified for the assessment of the feasibility of installing a full-capture treatment device. Of those, five specific catch basin locations within TMA 2 are being targeted for an assessment of suitability and installation of a storm drain insert full-capture treatment device this fiscal year. The on-going status of FCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Page Intentionally Left Blank

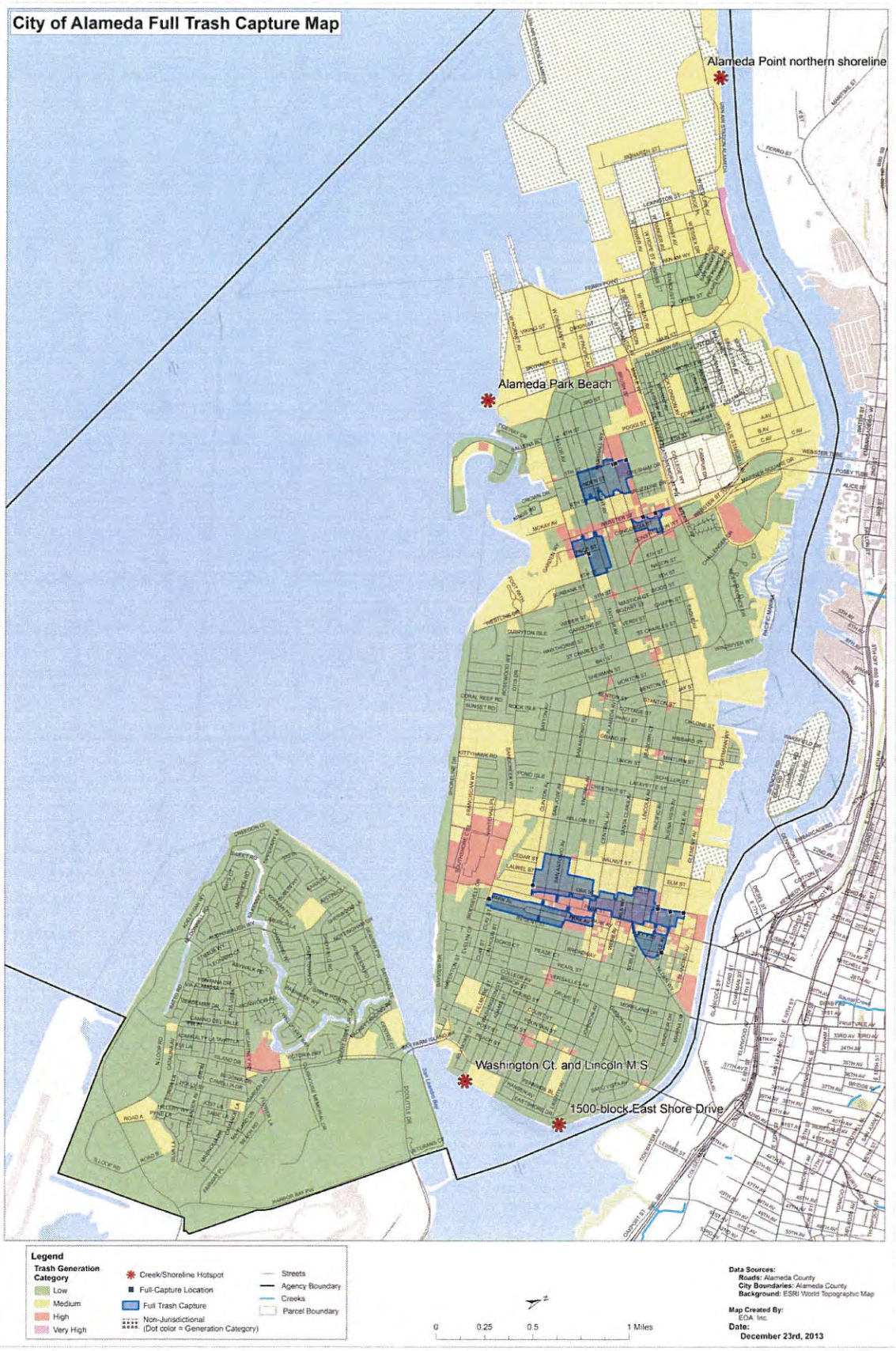

Figure 3-2. Full Trash Capture Device Map for the City of Alameda

Page Intentionally Left Blank

Partial-Capture Treatment Devices
City staff has identified, in the course of the development of this Plan, 15 catch basin locations within TMA 2 for the assessment and installation of a storm drain inlet guard device this fiscal year. This is part of a task covering multiple TMAs to install, monitor and assess the performance and maintenance needs of approximately 60 such devices citywide. Public Works staff is currently pursuing contracting efforts to complete this effort. All of the storm drain inlet/catch basin locations within TMA 2 that have been determined, to-date, to be infeasible for the installation of an FCTD (due to infrastructural, maintenance access or potential flooding constraints) have been included within this inlet guard trial. The on-going status of the storm drain inlet guard device installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Enhanced Storm Drain Inlet Maintenance
In November 2011, after a 2-year evaluation of the municipal storm drainage infrastructure maintenance program by Maintenance, Engineering and CWP staff, City Maintenance staff modified their maintenance program to prioritize the inspection and cleaning of storm drain inlets and arch-culverts in high-profile areas, including the Civic Core and Business District of TMA 2. Additionally, all of the storm water catch basins currently retrofitted with full trash capture devices also are receiving enhanced maintenance. According to the inspection and maintenance procedures established as part of the City's Full Trash Capture Device Pilot program, the catch basins retrofitted with full trash capture devices are inspected and cleaned as needed and as follows:

- Prior to the rainy season (prior to October 1 or the first rain event, whichever occurs first).
- Prior to any significant storm event
- After any significant storm event.

Maintenance staff records all maintenance efforts including the estimated amount of debris/trash removed and any other observations made (if any) onto a maintenance log. A copy of the completed maintenance log is submitted to city Clean Water Program staff throughout the rainy season and then compiled into fiscal year summaries.

Street Sweeping
Municipal street sweepers operate along all of the core retail streets of TMA 2 on a daily basis. This effectively covers the entirety of TMA 2 with the exception of a few short residential stretches interspersed within or at the periphery of this trash management area. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweeper operating in TMA 2 was initiated after the MRP effective date.

On-Land Trash Cleanups
The City's Maintenance Assessment District Administration Program administers the maintenance agreement for TMA 2 and includes the following services aimed at reducing litter/trash:

1. Daily (weekends included) litter and trash removal from the public right-of-way including sidewalks.
2. Weekly or as needed cleaning of bus stops, corners, steps, and drains not accessible by street sweepers, amenity plazas and a parking lot at 2336 Central Avenue.
3. Weekly litter removal from parking lot adjacent to 2308 Encinal Avenue.

Activities described under item 1 and 2 pre-dates the effective date of the MRP. However, the weekly litter removal from the parking lot adjacent to 2308 Encinal Avenue was initiated after the MRP effective date due to observed on-going litter issues.

Improved Trash Bin/Container Management
Prior to the effective date of the MRP, is the City's Integrated Solid Waste Management Program (ISWMP) staff established locations and service frequencies of public area trash containers within TMA 2. The City's ISWMP staff continues to collaborate with the City's franchised waste hauler to improve public trash container management in TMA 2. As a result, the following actions have been implemented post MRP issuance:

- Increased volume of a public trash container at one particularly high-volume trash spot in front of a popular retail/carryout coffee/food establishment at a busy downtown location.
- Placed additional public trash containers at several problem locations also within the popular downtown retail core area.

Three-Stream Container Pilot Program (initiated post MRP effective date)
As also described in section 3.2.11 (TMA 11) of this Plan, the City's staff is implementing a three (3)-stream waste container pilot program in the City park system. The purpose of the 3-stream container program is to divert recyclable and compostable items from the land fill while at the same time improving capacity of public space trash receptacles by providing additional public containers. City staff is working to assess the pilot program by evaluating the contamination rate and amounts of trash and recyclable/compostable items collected. The City has received a $ 78,000 grant from CalRecycle to purchase recycling containers and is planning a phase-one installation of the 3-stream containers in the City parks system. Phase-two installations of this program are anticipated to occur in the heavily traveled areas within TMAs 2 and 3. The on-going status of 3-stream container installations in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Anti-Littering and Illegal Dumping Enforcement
All of the restaurants, corner markets, retail food facilities, automotive shops and gas stations in TMA 2 are subject to the City's routine business stormwater inspection program. This inspection program implements the elements of the City's annual stormwater business inspection workplan and inspection list and includes municipal outreach and/or enforcement actions, as necessary, taken to enforce the municipal code and prevent the discharge of any solid wastes to any paved surfaces or the municipal stormwater conveyance system. The implementation of this program contributes to this trash control action. The business stormwater inspection program pre-dates the effective date of the MRP, though details of the workplan enforcement efforts and inspection frequencies were strengthened in response to current MRP requirements. A heightened focus on trash and litter control during all business inspections has been implemented since the effective date of the MRP.

3.2.3 Trash Management Area #3 – Webster Street Business and Retail District

The Webster Street Business and Retail District is the large, linear retail shopping district aligning with Webster Street on the west side of town, linked directly to downtown Oakland by the Webster Street and Posey Tubes. Similar to the Park Street District (TMA 2), pedestrian traffic, curbside parking with the associated concentration of passenger exiting and entering activity, bus stops, retail shopping, corner markets, restaurants and carryout food facilities all create the conditions for potential urban litter generation. TMA 3 is a High Trash Generation Category area, the third highest trash control priority area in the City of Alameda, and a focal point for extensive and redundant trash control measures.

Full-Capture Treatment Device
A total of three (3) storm drain insert full-capture treatment devices have been installed to-date in storm drain catch basins receiving runoff from the paved surfaces of TMA 3. See Figure 3-2, Trash Full Capture Device Map for the City of Alameda. These installations were completed as a part of the implementation of Provision C.10.a.iii requirements for minimum full trash capture. Both of these

devices were installed after the effective date of the MRP and were previously accounted for in the City's FY 2012-13 Annual Report on clean water program activities. All of these FCTDs are the Wavy Grate brand. City Public Works staff are monitoring the performance and maintenance requirements of these devices. In addition, the balance of the storm drain catch basin locations within TMA 3 have been identified for the assessment of the feasibility of installing a full-capture treatment device. Of those, two more specific catch basin locations within TMA 3 are being targeted for an assessment of suitability and installation of a storm drain insert full-capture treatment device this fiscal year. The on-going status of FCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Partial Capture Treatment Devices (PCTDs)
A partial-capture automated trash rack operates at a shoreline, stormwater pump stations downgradient of and serving the drainage basin of the Webster Street Business and Retail District, TMA 3. This automated trash rack was installed prior to the effective date of the MRP, though this pump station received significant operational upgrades that were completed in FY 2011-12.

In addition, City staff has identified, in the course of the development of this Plan, 16 catch basin locations within TMA 3 for the assessment and installation of a storm drain inlet guard device this fiscal year. This is part of a task covering multiple TMAs to install, monitor and assess the performance and maintenance needs of approximately 60 such devices citywide. Public Works staff is currently pursuing contracting efforts to complete this effort. Most of the storm drain inlet/catch basin locations within TMA 3 that have been determined, to-date, to be infeasible for the installation of an FCTD (due to infrastructural, maintenance access or potential flooding constraints) have been included within this inlet guard trial. During this PCTD installation, maintenance and assessment effort, storm drain inlets/catch basins equipped with and without corresponding FCTDs will be equipped with the PCTDs to assess the performance and maintenance needs of these various device combinations. The on-going status of the storm drain inlet guard device installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Enhanced Storm Drain Inlet Maintenance
In November 2011, after a 2-year evaluation of the municipal storm drainage infrastructure maintenance program by Maintenance, Engineering and CWP staff, City Maintenance staff modified their maintenance program to prioritize the inspection and cleaning of storm drain inlets and arch-culverts in high-profile areas, including the Business District of TMA 3. Additionally, all of the storm water catch basins currently retrofitted with full trash capture devices also are receiving enhanced maintenance. According to the inspection and maintenance procedures established as part of the City's Full Trash Capture Device Pilot program, the catch basins retrofitted with full trash capture devices are inspected and cleaned as needed and as follows:

- Prior to the rainy season (prior to October 1 or the first rain event, whichever occurs first).
- Prior to any significant storm event
- After any significant storm event.

Maintenance staff records all maintenance efforts including the estimated amount of debris/trash removed and any other observations made (if any) onto a maintenance log. A copy of the completed maintenance log is submitted to city Clean Water Program staff throughout the rainy season and then compiled into fiscal year summaries.

Street Sweeping
Municipal street sweepers operate on a daily basis along the entire public right-of-way of TMA 3, the retail stretch of Webster Street. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweeper operating in TMA 3 was initiated after the MRP effective date.

On-Land Trash Cleanups
The City's Maintenance Assessment District Administration Program administers the maintenance agreement for TMA 3 and includes the following services aimed at reducing litter/trash:

1. Daily (except Sundays) litter and trash removal from the public right-of-way including sidewalks.
2. Weekly or as needed cleaning of bus stops, corners, steps, drains not accessible by street sweepers and amenity plazas.

All activities described under point 1 and 2 pre-date the effective date of the MRP.

Improved Trash Bin/Container Management

Three-Stream Container Pilot Program (initiated post MRP effective date)
As also described in section 3.2.11 (TMA 11) of this Plan, the City's staff is implementing a three (3)-stream waste container pilot program in the City park system. The purpose of the 3-stream container program is to divert recyclable and compostable items from the land fill while at the same time improving capacity of public space trash receptacles by providing additional public containers. City staff is working to assess the pilot program by evaluating the contamination rate and amounts of trash and recyclable/compostable items collected. The City has received a $ 78,000 grant from CalRecycle to purchase recycling containers and is planning a phase-one installation of the 3-stream containers in the City parks system. Phase-two installations of this program are anticipated to occur in the heavily traveled areas within TMAs 2 and 3. The on-going status of 3-stream container installations in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Anti-littering and Illegal Dumping Enforcement
All of the restaurants, corner markets, retail food facilities, automotive shops and gas stations in TMA 3 are subject to the City's routine business stormwater inspection program. This inspection program implements the elements of the City's annual stormwater business inspection workplan and inspection list and includes municipal outreach and/or enforcement actions, as necessary, taken to enforce the municipal code and prevent the discharge of any solid wastes to any paved surfaces or the municipal stormwater conveyance system. The implementation of this program contributes to this trash control action. The business stormwater inspection program pre-dates the effective date of the MRP, though details of the workplan enforcement efforts and inspection frequencies were strengthened in response to current MRP requirements. A heightened focus on trash and litter control during all business inspections has enhanced these efforts and has been implemented since after the effective date of the MRP.

3.2.4 Trash Management Area # 4 – Commercial/Retail Shopping Centers

TMA 4, the fourth highest priority trash control management area within the City of Alameda, is comprised of the four private commercial/retail shopping centers currently active and open within the City. The four shopping centers are the South Shore Center (Area 4A), Marina Village Shopping Center (Area 4B), the Bridgeside Shopping Center (Area 4C), and the Harbor Bay Landing Shopping Center (Area 4D). As expected, potential trash generation from these areas is due to the concentrated retail

shopping locations and the high levels of pedestrian and vehicle-exiting activities. These private shopping centers have professional management and/or ownership oversight (including for trash/litter issues) and the municipal trash control measures discussed below complement those management activities.

Full-Capture Treatment Devices
During private redevelopment activities conducted at the Bridgeside Shopping Center (4C) prior to the issuance of the MRP, City conditions of approval resulted in two FCTDs (CDS systems with sump units and separator screens) being installed in the storm drain lines immediately upgradient from the shopping center's storm outfall to the Alameda-Oakland Tidal Canal. The City receives an annual maintenance report from the shopping center's property management firm concerning these FCTDs and the parking lot storm drain insert devices (see the PCTD section below). These reports indicate, in the four-year period since the effective date of the MRP, an annual average of almost 5 cubic yards of total debris (including trash, litter, organics and sediments) being captured and removed for proper disposal. All storm drain catch basin locations on the public periphery of all of these private shopping centers within TMA 4 will be assessed for the feasibility of installing and maintaining small, full-capture treatment devices (FCTDs) during the term of this Plan implementation, though none have been installed at present. Presently, a total of ten specific catch basin locations along the peripheries of the TMA 4 shopping center sub-Areas are being targeted for an assessment of suitability and installation of a storm drain insert full-capture treatment device this fiscal year, as follows: five at 4A, one at 4B, 3 at 4C and one at 4D. The on-going status of FCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Partial-Capture Treatment Devices
During redevelopment activities conducted at both the South Shore Center (4A) and the Bridgeside Shopping Center (4C) prior to the issuance of the MRP, City conditions of approval resulted in the installation of parking lot inlet drain inserts (coincidentally twenty drain inserts at each shopping center) that serve a partial-capture treatment function in all parking lot field inlets subject to the redevelopment review. In addition, all storm drain catch basin locations on the public periphery of all of these private shopping centers will be assessed for the feasibility of installing and maintaining small, inlet-face partial-capture treatment devices during the term of this Long-term Trash Plan. Presently, a total of eleven specific storm drain inlet locations along the peripheries of the TMA 4 shopping center sub-Areas are being targeted for an assessment of the suitability and installation of a storm drain inlet guard device this fiscal year, as follows: four at 4A, two at 4B, three at 4C and two at 4D. A partial-capture automated trash rack operates at a shoreline, stormwater pump stations downgradient of and serving the drainage basin of the Marina Village Shopping Center (4B). This automated trash rack was installed prior to the effective date of the MRP, though this pump station received significant operational upgrades that were completed in FY 2011-12. The on-going status of PCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Enhanced Storm Drain Inlet Maintenance
In November 2011, after a 2-year evaluation of the municipal storm drainage infrastructure maintenance program by Maintenance, Engineering and CWP staff, City Maintenance staff modified their maintenance program to prioritize the inspection and cleaning of storm drain inlets and arch-culverts in high-profile areas, including the four private commercial/retail shopping centers of TMA 4.

Anti-Littering and Illegal Dumping Enforcement Activities
All of the restaurants, markets, retail food facilities, automotive shops and gas stations in the TMA 4 shopping centers are subject to the City's routine business stormwater inspection program. This inspection program implements the elements of the City's annual stormwater business inspection workplan and inspection list and includes municipal outreach and/or enforcement actions, as necessary,

taken to enforce the municipal code and prevent the discharge of any solid wastes to any paved surfaces or the municipal stormwater conveyance system. The implementation of this program contributes to this trash control action. The business stormwater inspection program pre-dates the effective date of the MRP, though details of the workplan enforcement efforts and inspection frequencies were strengthened in response to current MRP requirements. A heightened focus on trash and litter control during all business inspections has enhanced these efforts and has been implemented since after the effective date of the MRP.

3.2.5 Trash Management Area # 5 – Residential High Trash Areas

There are two westside neighborhood residential areas delineated as High Trash Generation Category areas that are collectively considered TMA 5. They are both areas with a high concentration of multi-family dwellings in proximity to both retail districts and school facilities where the high volumes of pedestrian traffic and the high turnover of curbside parking and passenger-exiting activities results in high-level litter generation. This is the highest priority TMA that is a residential area in the City of Alameda.

Full-Capture Treatment Devices
As of January 1, 2014, three FCTDs have been installed in three residential area catch basins in TMA 5. See Figure 3-2, Trash Full Capture Device Map for the City of Alameda. These installations were completed as a part of the implementation of Provision C.10.a.iii requirements for minimum full trash capture. These three devices were installed after the effective date of the MRP and were previously accounted for in the City's FY 2012-13 Annual Report on clean water program activities. All of these devices are the Wavy Grate brand. As a result of the City of Alameda's Trash Long-Term Reduction Plan development, all of the public right-of-way storm drain inlets in TMA 5 have been identified for the assessment of the feasibility of installing a full-capture treatment device. Currently, five additional storm drain inlet/catch basin locations in this TMA are being reviewed for the feasibility of installation and maintenance of an FCTD this fiscal year. The on-going status of FCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Partial-Capture Treatment Devices
A partial-capture automated trash rack operates at a shoreline, stormwater pump stations downgradient of and serving the drainage basin of the residential high trash areas of TMA 5. This automated trash rack was installed prior to the effective date of the MRP, though this pump station received significant operational upgrades that were completed in FY 2011-12.

City staff has identified, in the course of the development of this Plan, six catch basin locations within TMA 5 for the assessment and installation of a storm drain inlet guard device this fiscal year. This is part of a task covering multiple TMAs to install, monitor and assess the performance and maintenance needs of approximately 60 such devices citywide. Public Works staff are currently pursuing contracting efforts to complete this effort. During this effort storm drain inlets/catch basins will be equipped with and without corresponding FCTDs to assess the performance and maintenance needs of these various device combinations. The on-going status of PCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Enhanced Storm Drain Inlet Maintenance
In November 2011, after a 2-year evaluation of the municipal storm drainage infrastructure maintenance program by Maintenance, Engineering and CWP staff, City Maintenance staff modified their maintenance program to prioritize the inspection and cleaning of storm drain inlets and arch-culverts in high-profile areas. All of the storm water catch basins currently retrofitted with full trash capture devices are

receiving enhanced maintenance. According to the inspection and maintenance procedures established as part of the City's Full Trash Capture Device Pilot program, the catch basins retrofitted with full trash capture devices are inspected and cleaned as needed and as follows:

- Prior to the rainy season (prior to October 1 or the first rain event, whichever occurs first).
- Prior to any significant storm event
- After any significant storm event.

Maintenance staff records all maintenance efforts including the estimated amount of debris/trash removed and any other observations made (if any) onto a maintenance log. A copy of the completed maintenance log is submitted to city Clean Water Program staff throughout the rainy season and then compiled into fiscal year summaries.

Street Sweeping
Municipal street sweepers operate on a weekly basis along all of the public right-of-ways of TMA 5. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweeper operating in TMA 5 was initiated after the MRP effective date.

3.2.6 Trash Management Area # 6 – Neighborhood Retail Districts

Scattered throughout town are small neighborhood retail districts that are clusters of a limited number of small-business retail facilities including but not limited to corner markets, restaurants, and take-out food facilities. These locations are associated with historical train stops and now often host bus stops and are foci of pedestrian activity. These spot retail/transportation hub areas are consistently High Trash Generation Category areas, though of a lower priority due to their smaller sizes, and are collectively TMA 6.

Full-Capture Treatment Devices
As of January 1, 2014, no FCTDs have yet been installed in any of the neighborhood retail district area catch basins of TMA 6. However, as a result of the City of Alameda's Trash Long-Term Reduction Plan development, all of the public right-of-way storm drain inlets in TMA 6 have been identified for the assessment of the feasibility of installing a full-capture treatment device. Currently, four storm drain inlet/catch basin locations in this TMA are being reviewed for the feasibility of installation and maintenance of an FCTD this fiscal year. The on-going status of FCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Partial-Capture Treatment Devices
As a result of the City of Alameda's Trash Long-Term Reduction Plan development, all of the public right-of-way storm drain inlets in TMA 6 have been identified for the assessment of the feasibility of installing a storm drain inlet guard partial-capture treatment device. Currently, seven storm drain inlet locations in this TMA are being reviewed for the feasibility of installation and maintenance of a storm drain inlet guard PCTD this fiscal year. The on-going status of PCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Enhanced Storm Drain Inlet Maintenance
In November 2011, after a 2-year evaluation of the municipal storm drainage infrastructure maintenance program by Maintenance, Engineering and CWP staff, City Maintenance staff modified their maintenance program to prioritize the inspection and cleaning of storm drain inlets and arch-culverts in high-profile areas, including the neighborhood retail districts of TMA 6.

Street Sweeping
Municipal street sweepers operate on a weekly basis along all of the public right-of-ways of TMA 6. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweepers operating in TMA 6 was initiated after the MRP effective date. Changes in street sweeping frequency in this TMA will be accounted for in future annual reports and Provision C10 benchmark updates.

Anti-Littering and Illegal Dumping Enforcement Activities
All of the restaurants, corner markets, retail food facilities, automotive shops and/or gas stations in the TMA 6 neighborhood retail districts are subject to the City's routine business stormwater inspection program. This inspection program implements the elements of the City's annual stormwater business inspection workplan and inspection list and includes municipal outreach and/or enforcement actions, as necessary, taken to enforce the municipal code and prevent the discharge of any solid wastes to any paved surfaces or the municipal stormwater conveyance system. The implementation of this program contributes to this trash control action. The business stormwater inspection program pre-dates the effective date of the MRP, though details of the workplan enforcement efforts and inspection frequencies were strengthened in response to current MRP requirements. A heightened focus on trash and litter control during all business inspections has enhanced these efforts and has been implemented since after the effective date of the MRP

3.2.7 Trash Management Area #7 – Residential Medium Trash Areas

All single-family Residential areas in proximity to the retail business districts and areas with a higher density of multi-family residences and significant on-street parking turnover that were also delineated as Medium Trash Generation Category areas are grouped together as TMA 7. These medium trash generation residential areas are the highest priority Medium Trash Category area in town, a priority-modification (increase from the eleventh priority) of this trash management area that has occurred since the submittal of the interim trash plan update in the City's FY 2012-13 annual stormwater program report. These residential areas more consistently have dispersed trash accumulations within the public right-of-way and in the municipal stormwater conveyance system than the other Medium Trash Generation areas.

Full-Capture Treatment Devices
As of January 1, 2014, three FCTDs have been installed in storm drain catch basins in TMA 7. See Figure 3-2, Trash Full Capture Device Map for the City of Alameda. These FCTD sites are all immediately peripheral to and/or receive runoff from retail areas and other high trash generation areas, as well as runoff from the immediate medium-trash generation areas in which they are situated. These installations were completed as a part of the implementation of Provision C.10.a.iii requirements for minimum full trash capture. These three devices were installed after the effective date of the MRP and were previously accounted for in the City's FY 2012-13 Annual Report on clean water program activities. Two of these devices are the StormTek brand and one is the Wavy Grate brand. No additional storm drain inlet/catch basin locations in this TMA are being reviewed for the feasibility of installation and maintenance of a FCTD this fiscal year; these assessment efforts have been prioritized to high trash generation areas exclusively. The on-going status of FCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Enhanced Storm Drain Inlet Maintenance
In November 2011, after a 2-year evaluation of the municipal storm drainage infrastructure maintenance program by Maintenance, Engineering and CWP staff, City Maintenance staff modified their maintenance program to prioritize the inspection and cleaning of storm drain inlets and arch-culverts in high-profile areas. All of the storm water catch basins currently retrofitted with full trash capture devices are receiving enhanced maintenance. According to the inspection and maintenance procedures established as part of the City's Full Trash Capture Device Pilot program, the catch basins retrofitted with full trash capture devices are inspected and cleaned as needed and as follows:

- Prior to the rainy season (prior to October 1 or the first rain event, whichever occurs first).
- Prior to any significant storm event
- After any significant storm event.

Maintenance staff records all maintenance efforts including the estimated amount of debris/trash removed and any other observations made (if any) onto a maintenance log. A copy of the completed maintenance log is submitted to city Clean Water Program staff throughout the rainy season and then compiled into fiscal year summaries.

Street Sweeping
Municipal street sweepers operate on a weekly basis along all of the public right-of-ways of TMA 7. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweepers operating in TMA 7 was initiated after the MRP effective date.

3.2.8 Trash Management Area # 8 – Commercial/Industrial Areas

The commercial and industrial areas throughout the City of Alameda that are not also within one of the primary retail districts or associated with a private shopping center are consistently medium trash generation areas. Trash sources from these private properties may include the activities from the business or businesses on the site, the parking lots and customer traffic associated with these businesses, and the trash and recycling containers associated with these business operations. Property owner and/or business manager oversight exists at these locations. These commercial/industrial areas made up of one or more businesses at a particular site have been grouped together as TMA 8. The municipal trash control strategies described below complement the private, on-site trash control responsibilities of the owner/manager operations.

Partial-Capture Treatment Devices
Two shoreline storm drain pump stations with partial-capture trash racks receive storm drainage from areas that include some of the commercial/industrial TMA 8 areas on the northern shoreline of Alameda. One of these pump station trash racks was installed after the effective date of the MRP.

The remaining storm water pump station that exists in and receives drainage from TMA 8 along the northern shoreline has been identified as a priority for complete replacement in the near future. Though design-for-construction is not yet underway, City engineering has already recommended this pump station for an automatic trash rack, and during the formal design process will be further considered for the installation of an appropriate full-capture or other partial-capture treatment device. The on-going status of PCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Street Sweeping
Municipal street sweepers operate on a weekly basis along all of the public right-of-ways peripheral to the active business areas of TMA 8. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweepers operating in TMA 8 was initiated after the MRP effective date.

On-Land Trash Cleanups
The City's Maintenance Assessment District Administration Program administers the landscape maintenance agreement for the Marina Village Commercial District, which is one of the commercial areas included in TMA 8. The agreement includes weekly litter/trash in turfed areas, planter strips, and street medians. The landscape maintenance pre-dates the effective date of the MRP.

Anti-Littering and Illegal Dumping Enforcement Activities
All of the restaurants, corner markets, retail food facilities, automotive shops and/or gas stations in the TMA 8 commercial/industrial business areas are subject to the City's routine business stormwater inspection program. This inspection program implements the elements of the City's annual stormwater business inspection workplan and inspection list and includes municipal outreach and/or enforcement actions, as necessary, taken to enforce the municipal code and prevent the discharge of any solid wastes to any paved surfaces or the municipal stormwater conveyance system. The implementation of this program contributes to this trash control action. The business stormwater inspection program pre-dates the effective date of the MRP, though details of the workplan enforcement efforts and inspection frequencies were strengthened in response to current MRP requirements. A heightened focus on trash and litter control during all business inspections has enhanced these efforts and was initiated since the effective date of the MRP.

3.2.9 Trash Management Area #9 – Neighborhood Schools and Religious Facilities

All local, neighborhood schools (both public and private) and religious churches/temples/centers (some of which also host school operations) are collectively being considered TMA 9. Trash generation conditions on these campuses and/or along their public periphery can reflect a medium trash generation level due to pulses of concentrated human activity, site events and functions, and the volumes of pedestrian activity and vehicle parking/passenger exiting turnover. These sites have operational personnel with at-least on-site oversight responsibilities that extend to trash/litter pickup. The municipal trash control measures listed below complement those on-site trash/litter control efforts.

Street Sweeping
Municipal street sweepers operate on a weekly basis along all of the public right-of-ways peripheral to the campuses and parcels identified as TMA 9. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweepers operating in TMA 9 was initiated after the MRP effective date.

Shoreline Cleanups
One of the City's Provision C.10.b Trash Hot Spot locations is a public-domain shoreline stretch at the rear perimeter of a public middle school facility. The school campus and student body are not considered the source of trash along this shoreline; rather the primary trash source is certainly tidal accumulation. Nonetheless, public littering unassociated with the school is a secondary contributor to trash along this stretch of shoreline and the annual Hot Spot cleanup efforts contribute to a cleaner public space less susceptible to chronic littering.

City staff also participates and support the planning of the annual Coastal Cleanup Day which encourages and welcomes involvement by school groups and/or independent group focus on school shoreline cleanup spots.

Outreach to School-Age Children
As of May 1, 2013, the Public Works Department initiated a contract with the Kids for the Bay to implement the Watershed Ranger Program among K-6 students in Alameda schools. The Watershed Ranger Program is a hands-on school outreach program that promotes anti-litter behavior trough watershed awareness and through the use of re-usable items as well as proper disposal/recycling. In the class-room students learn how litter on streets gets into San Francisco Bay through storm drains and ends up as marine debris in the Pacific Ocean. Then, students will go on a walk around their school neighborhood and pick up litter; thus, preventing it from getting into the storm drains and the Bay. Back in the classroom, students will examine their packed lunches and discuss the best choices for packaging lunch items to prevent pollution getting into landfills, storm drains and the bay watershed. Additionally, Kids for the Bay will work with each class of students and their teachers to implement an Action Project. Project choices include:

- Organizing a watershed clean-up
- Storm drain stenciling
- Create a display poster or make a presentation to educate peer students and others about how to prevent littering and stormwater pollution as well as to reduce, reuse and recycle.
- Organize a no-waste lunch event.

Operation Green Sweep
The Alameda Recreation & Parks Departments runs the Operation Green Sweep Program, which recruits and is available for Teenagers in grades 6 to 12. This program engages students on various park projects including trash/litter pick-ups. The program has been in existence prior to the effective date of the MRP. However, as of spring 2014, the program will start tracking date, location, and number of students that participate in the trash/litter pick-up.

3.2.10 Trash Management Area # 10 – Alameda Point, non-residential areas

Alameda Point occupies the western end of Alameda, at the site of the former Alameda Naval Air Station and includes the lands that the Federal Government has begun to convey to the City of Alameda. The limits of the non-jurisdictional areas west of Main Street indicted in Figure 2-2 and Figure 3-1 are consistent with the 2013 Phase One conveyance from the Department of Defense (Navy) to the City. These City-operated and new City lands include industrial, commercial, municipal, residential and open space uses and are under contracted property management for the City where not under direct municipal operations control. With the exception of the Alameda Point residential areas which are low trash generation areas and are discussed below (in TMA 12), all of the Alameda Point areas under jurisdictional authority of the City of Alameda are considered TMA 10, also a medium trash generation area. Potential trash sources at Alameda Point include public littering associated with public open space uses, inadvertent windblown materials from commercial and industrial activities and/or trash/recycling containers, abandoned waste dumping, and litter from vehicle passenger exiting/entering activities. Trash/litter cleanup efforts include those under the efforts of tenants and the property management firm. Despite the potential for trash generation in these areas, this is a lower priority medium trash generation area due to the active oversight presence of the City's property management firm and contracted service providers providing security, code enforcement and litter/trash and abandoned waste dumping cleanup efforts. The municipal trash control efforts listed below complement or overlap those other efforts of the active tenants, contract service providers and site management.

Partial-Capture Treatment Devices
One shoreline storm drain pump station with a partial-capture trash rack receives storm drainage from the northeastern areas of Alameda Point. In addition, future municipal planning for the infrastructural development of Alameda Point will include the consideration for the installation of an appropriate trash rack partial-capture treatment device for any storm water pump station project that advances into a planning and design phase.

Street Sweeping
Municipal street sweepers operate on a weekly basis along all of the public right-of-ways of TMA 10. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweepers operating in TMA 10 was initiated after the MRP effective date.

Anti-Littering and Illegal Dumping Enforcement Activities
All of the industrial, light manufacturing and vehicle repair shops in the TMA 10 commercial/industrial business areas of Alameda Point are subject to the City's routine business stormwater inspection program. This inspection program implements the elements of the City's annual stormwater business inspection workplan and inspection list and includes municipal outreach and/or enforcement actions, as necessary, taken to enforce the municipal code and prevent the discharge of any solid wastes to any paved surfaces or the municipal stormwater conveyance system. The implementation of this program contributes to this trash control action. The business stormwater inspection program pre-dates the effective date of the MRP, though details of the workplan enforcement efforts and inspection frequencies were strengthened in response to current MRP requirements. A heightened focus on trash and litter control during all business inspections has enhanced these efforts and was initiated since the effective date of the MRP.

3.2.11 Trash Management Area # 11 – Parks, recreation and open spaces

All of the City parks and recreation centers on the main island of Alameda are considered TMA 11. Despite the potential for public littering from picnicking and outdoor recreational activities, these areas are the lowest priority Medium trash generation category due to the implementation of on-going and routine responsibilities for trash/litter control oversight by the City's Recreation and Parks Department, complemented by the municipal public right-of way maintenance that also occurs along the periphery of the park areas. The trash control measures being implemented at City parks and recreational areas and along the public periphery of these sites are discussed below.

Street Sweeping
Municipal street sweepers operate on a weekly basis along all of the public right-of-ways peripheral to the public parks, recreation centers and open spaces of TMA 11. This street sweeping coverage and frequency pre-dates the effective date of the MRP, though as discussed above, the current use of the regenerative air sweepers operating in TMA 11 was initiated after the MRP effective date.

On-Land Trash Cleanups
City Recreation and Parks Department (RPD) staff implement long-standing routine trash and litter control efforts at all public park facilities including daily (weekday) inspection, general maintenance oversight of trash containers and necessary trash/litter pickup. Since the effective date of the MRP, RPD staff have also initiated three additional programs that serve to improve the trash/litter control efforts at City recreation and park facilities. Two of these programs, the Park Monitor Program and Operation Green Sweep, described below, are on-land cleanup efforts. The third program, the Three-Stream Container Pilot Program, is discussed as an improved trash bin/container management control strategy, also below.

Park Monitor Program

As indicated above and as a part of long-standing standard practice, the Alameda Recreation and Park Department's maintenance staff keeps litter/trash in City Parks under control through regular maintenance of public litter cans throughout the work week. However, to improve litter/trash control effectiveness during weekends, the Alameda Recreation and Park Department initiated a new Park Monitor program in the fall of 2013, as identified in the FY 13-15 budget. The Park Monitors will be a consistent presence at the parks on weekends, which will create better communication with the community, a safer atmosphere, and better management of the parks. The primary duties of the Park Monitors are to:

- Monitor park and athletic facility rentals and ensure users have permits when required.
- Assist park users as needed.
- Open and close all park restrooms. Check stock and cleanliness of restrooms.
- Manage trash and recycling.
- Contact Alameda PD to report issues.
- Provide a staff presence at all parks on the weekends for better overall security.
- Working year-round though staffing levels are lower during the off-season winter months

Operation Green Sweep

The Alameda Recreation & Parks Departments runs the Operation Green Sweep Program, which is available for Teenagers in grades 6 to 12. This program engages students on various park projects including trash/litter pick-ups. The program has been in existence prior to the effective date of the MRP. However, as of spring 2014, the program will start tracking date, location, and number of students that participate in the trash/litter pick-up efforts.

Improved Trash Bin/Container Management

Three-Stream Container Pilot Program

City staff has initiated a three (3)-stream waste container pilot program at Lincoln Park. The purpose of the 3-stream container program is to divert recyclable and compostable items from the landfill while at the same time improving capacity of public space trash receptacles by providing additional public containers. City staff is working to assess the pilot program by evaluating the contamination rate and amounts of trash and recyclable/compostable items collected. The City has received a $ 78,000 grant from CalRecycle to purchase recycling containers and is planning a phase-one installation of the 3-stream containers in most City parks and then in heavily traveled areas within TMA 3. The on-going status of 3-stream container installations in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

3.2.12 Trash Management Area # 12 – Low Trash Areas

All of the low trash generation areas within the City of Alameda are included in TMA 12. These low trash generation areas include a majority of the single-family residential area in town, the residential areas at Alameda Point, most of the office park properties on Bay Farm Island, and the City parks, golf courses and open space facilities also on Bay Farm Island. Bay Farm Island is that section of Alameda immediately adjacent to the Oakland Airport. Though all these areas are low trash generation category areas, the routine municipal trash control activities described below are implemented.

Full-Capture Treatment Devices

Though City efforts to site full-capture treatment devices has focused on locations associated with retail areas and other high trash generation areas, runoff from some low trash generation residential areas

proximal to high areas does drain to FCTDs. FCTDs have been, and will continue to be, sited throughout town so some residential area runoff will contribute to those devices' drainage areas.

Partial-Capture Treatment Devices
All four of the City's storm drain pump stations with partial-capture automated trash racks receive storm drainage from low trash areas in TMA 12 of Alameda.

An additional storm water pump station that exists along the eastern shoreline and that receives drainage from TMA 8 along the northern shoreline has been identified as a priority for complete replacement in the near future. Though design-for-construction is not yet underway, City engineering has already recommended this pump station for an automatic trash rack, and during the formal design process will be further considered for the installation of an appropriate full-capture or other partial-capture treatment device. The on-going status of PCTD installations and maintenance in this TMA will be accounted for in future annual reports and Provision C.10 benchmark updates.

Street Sweeping
Municipal street sweepers operate on all lower-priority trash control residential City streets on a weekly basis. Autumn leaves and other related landscape residues contribute the lion's share of the volume of materials removed from these streets via the street sweeping program though there is also a trash fraction in the materials swept and thus a contribution to the trash control effort.

3.2.13 Jurisdiction-wide Control Measures

Certain trash control measures are more effectively implemented at the jurisdiction-wide level and/or intended for broad constituencies rather than land users in a particular geographic locale within the urban context. The following describes those jurisdiction-wide control measures implemented within the City of Alameda.

Polystyrene Foam Food Ware Ban
The City of Alameda adopted an ordinance in late 2007 banning polystyrene foam food service ware at the point-of-sale, at City sponsored events, and on City-owned facilities/properties. The ordinance banning polystyrene foam food service ware became effective and enforceable on July 1, 2008. It prohibits food vendors as well as contractors and vendors doing business with the City from distributing polystyrene foam food service ware. It also bans the use of polystyrene foam food service ware on all City-owned facilities, at City sponsored events, and on City projects. Additionally, the ordinance requires the use of biodegradable or compostable food services ware.

The following exemptions to the polystyrene foam food service ban apply:

- Prepared foods packaged outside the City of Alameda.
- Polystyrene foam coolers and ice chests that are intended for reuse.
- If the City Manager or his/her designee finds that an undue hardship exists.
- No acceptable alternative is available at commercially reasonable price.
- In a situation deemed by the City Manager to be an emergency.

Even after the issuance of the MRP, the City's Integrated Solid Waste Management Program staff continues to conduct enforcement in support of this ordinance. The enforcement is conducted with assistance of the general public and the City's routine business inspection program staff, which report the use of polystyrene within food establishments.

Activities to Reduce Trash Dispersal During Waste/Recycling Service
The City requires and ensures that the City's franchised waste/recycling hauler implements industry-recognized standards to prevent and control the dispersal of litter and wastes associated with container-servicing and hauling. The City's franchise hauler is compliant with the State law that requires trucks to be fully contained. The hauler's modern trucks are also equipped with litter prevention devices. In addition, the City's Franchise agreement explicitly stipulates that any open debris box shall be covered at the pickup location prior to transport. In the event of any spillage or dispersal during the collection service, the hauler is equipped with cleanup equipment and supplies and promptly performs the cleanup of all spilled materials. These standards are implemented in the collection services in all of the commercial, industrial and residential areas in town. The City's verification and oversight of these efforts is complaint-driven and the residential and business customers (the service recipients) have proven themselves to be vigilant. Issues of spilled materials are dealt with on a case-by-case basis and the City's experience is that the hauler is responsive. Though the City has the contractual ability to collect damages over non-compliance, a cooperative relationship and timely cleanup by the hauler is the norm.

City Litter Can Program
There are approximately 200 public/streetside litter cans and park recycling containers distributed throughout the City that are serviced 1-3 times per week by the City's franchised waste hauler. They have been placed in high pedestrian areas and other locations where experience has shown that litter accumulates. The litter receptacles have litter prevention design features/devices that serve to minimize wind-blown dispersal or litter-escape during servicing. All of these cans/containers are subject to the same rules to reduce trash dispersal during service efforts, as discussed above. For example, each collection driver is required to be mindful of any spillage that may occur during collection. If any spillage occurs, the individual driver is required to get out of their truck and clean up any and all material spilled. The franchise agreement also requires that the hauler/driver shall clean-up litter in the immediate vicinity of any of these receptacles, whether or not the hauler has caused the litter dispersal.

City of Alameda Public Education and Outreach Programs
As mentioned above under TMA 3.2.9, as of May 1, 2013, the Public Works Department initiated a contract with the Kids for the Bay to implement the Watershed Ranger Program among K-6 students in Alameda schools. The Watershed Ranger Program is a hands-on school outreach program that promotes anti-litter behavior trough watershed awareness and through the use of re-usable items as well as proper disposal/recycling.

Additionally, as of Fiscal Year 2010/2011, the City's Clean Water Program staff has started to conduct outreach encouraging anti-litter behavior at community events. To achieve target behavior, the outreach focuses on creating public awareness on the environmental impacts of litter and promoting the use of re-usable items. To create public awareness, staff engages booth visitors with short surveys and interactive games that focus on how trash/litter found on city streets gets into the Bay and can end up as marine debris including what they can do to prevent it. To promote the use of re-usable items, participants received re-usable bags and were asked to sign a pledge to make "reusable items" as part of their daily routines.

Street Sweeping
This is a jurisdiction-wide activity in the City of Alameda. The City owns and operates three regenerative air street sweepers that were all purchased after the effective date of the MRP; two have been in operation since early 2011and the third since 2013. Details of the municipal street sweeper activities are discussed in the specific TMA sections above. Municipal street sweepers operate on all City streets on an at-least weekly basis, with higher frequencies in target priority areas as discussed above.

Alameda County Waste Management Authority Single-Use Bag Ban Ordinance
Single-Use plastic bags were a significant component of the litter found in storm drains and water bodies throughout Alameda County. To address this issue, the Alameda County Waste Management Authority has adopted a single-use bag ban. As of January 1, 2013, all grocery stores, supermarkets, mini-marts, convenience stores, liquor stores, pharmacies, drug stores or other entities that sell milk, bread, soda and snack foods (all four items) and/or alcohol (Type 20 or 21 license) in Alameda County must comply with the Single-Use Bag Ban Ordinance.

Single-Use Bag Requirement: Affected stores may no longer provide customers with single-use bags at check-out.

Bag Sales Requirements:

- Affected stores that distribute recycled paper or reusable bags must charge 10 cents or more per bag. These bags must meet the specifications in the Ordinance.
- All proceeds from the sale of recycled paper bags and reusable bags are retained by the retailer without any restrictions on their use

A copy of the Ordinance is available on the Alameda County Waste Management Authority's website: http://reusablebagsac.org/ordinancetext.html

The City of Alameda is a member of ACCWP. The jurisdiction-wide control measures described below will be conducted through participation in ACCWP.

Litter Outreach to K-12 Schools
K-12 schools are often high litter generation areas. ACCWP has developed a request for proposal for a four-year litter reduction education/outreach grant directed at K-12 schools throughout Alameda County. ACCWP intends to award a total of up to $125,000 per year to up to 4 successful applicants. The goals of the project are to clearly reduce the amount of litter at the participating schools and incorporate institutional changes at the schools so that litter will continue to be reduced in the future. Implementation is scheduled to begin in the 2014/15 school year. The request for proposal will include a requirement to evaluate the level of litter reduction achieved. A description of the successful proposals will be included in the ACCWP Fiscal Year 2013/14 Annual Report.

"Be the Street" Youth Anti-Litter Advertising Campaign
Intentional litter by youth has been found to be a significant contributor to litter problems. To address this issue, ACCWP has participated in the development and implementation of the Be the Street campaign. Be the Street is a Bay Area wide outreach effort that takes a Community Based Social Marketing approach to encourage youth to keep their community clean (http://www.bethestreet.org/). The intent of the campaign is to make "no-littering" the norm among the target audience (youth between the ages of 14 and 24). The campaign is a three-year effort that began in fiscal year 2011-12 and will run through 2013-14. ACCWP has been participating in and providing financial support to the Be the Street campaign since its inception. The campaign will be evaluated in the spring of 2014. Depending upon the results of the evaluation, ACCWP may continue to participate in this or similar efforts in future years.

Multi-Family Dwelling Litter Outreach
Multi-family dwellings (i.e., apartment buildings and condominium complexes) are often areas of high trash generation. ACCWP is working with the City of Livermore to develop a litter reduction pilot targeting multi-family complexes known to be sites with significant litter issues. The pilot includes the following apartment building and condominium complexes: Livermore Garden Apartments (5720 East Avenue), La Castilleja (975 Murrieta Boulevard), and Castilleja Del Arroyo (1001 and 1009 Murrieta Boulevard).

- December 2013: Pre-campaign Measurement – ACCWP and the City will take baseline measurements of all three sites. Methods of measurement will include taking photos of on-site litter, as well as collecting, characterizing and counting the litter using the Ocean Conservancy's Volunteer Trash Data Form. (Adopt A Creek Spot volunteers use this Data Form to characterize and count the trash collected from the Trash Hot Spot located behind the condominium complexes on Coastal Clean-up Day.) Areas to be measured include landscaped and other common areas, the sidewalk, gutter and streets located in front of the sites. All three property managers/volunteers will collect one week's worth of on-site litter.

- November – December 2013: Research – All three property managers will be interviewed by City staff using twenty-five questions developed by the ACCWP. The interview results will help define the target audience(s) (i.e., age groups, income level, ethnic groups, etc.) and determine outreach tactics (i.e., face-to-face, signage, printed materials, etc.) This information will also assist the City and ACCWP in developing appropriate messaging.

- November 2013 – January 2014: Plan – One of the three sites will be chosen as the "Control" site. In addition, outreach strategies and tactics will be selected for the "Active" sites.

- February 2014: Concept/Design/Content Production – Selected outreach tactics will be designed and produced for the Active sites.

- February 2014: Multi-cultural Advising, Translation – Consultant will advise on outreach tactics and messaging, and will provide translation as needed.

- March 2014 – May 16, 2014: Outreach – Outreach tactics will be rolled out at Active sites.

- May 17, 2014 – May 31, 2014: Post-campaign Measurement — City staff and ACCWP will duplicate the pre-campaign measurement methodologies at all three sites, including the Control. All three property managers/volunteers will collect one week's worth of on-site litter. On-site and off-site litter will be characterized and counted by City staff using the Ocean Conservancy's Volunteer Trash Data Form. All three property managers will be interviewed by City staff to help determine residents' attitudes/change in behavior, etc.

- June 1, 2014 – June 30, 2014: Reporting – Final Pilot Report will be presented to ACCWP member agencies.

Depending on the success of the pilot, it may be replicated at other multi-family complexes throughout the County.

The Public Information and Participation Subcommittee of ACCWP also is in the process of identifying other litter-related areas and activities that affect jurisdictions throughout the County, and will implement pilot projects to address the high priority issues over the next several years. One issue being considered is cigarette butt litter.

Community Stewardship Grants
Through its Community Stewardship Grants program ACCWP provides up to $20,000 per year to individuals and community groups to implement stormwater and watershed enhancement and education projects. The grants range from $1,000 to $5,000. Starting in fiscal year 2014/15 ACCWP will specifically encourage and support litter reduction grant applications. The projects of the Fiscal Year 2014/15 grant recipients will be described in the ACCWP Fiscal Year 2013/14 Annual Report.

Anti-Litter Outreach to Residents
Through its Public Information and Participation program ACCWP encourages residents to adopt less polluting behaviors. One targeted behavior is littering, both intentional and unintentional. ACCWP uses a variety of mechanisms to influence residents including public service announcements, online and movie theater advertising, and participating in outreach events. The ACCWP Public Information and Participation Subcommittee is in the process of developing a three-year budget/strategic plan for fiscal years 2014/15 through 2016/17. One of the strategic objectives of the plan will be to reduce litter. This plan will be described in the ACCWP Fiscal Year 2013/14 Annual Report.

3.2.14 Shoreline Hot Spot Cleanups

The City of Alameda has identified four Trash Hot Spot Cleanup locations in compliance with MRP Provision C.10.b. The Trash Hot Spot locations are indicated on both Figures 2-2 and 3-1. Consistent with the requirements of Provision C.10.b, the City of Alameda has completed cleanups on an annual basis at all of these Trash Hot Spot from 2010 until the present.

These four Provision C.10.b. Trash Hot Spots are:
Site #1, Alameda Point northern shoreline
Site #2, 1500-block East Shore Drive
Site #3, Washington Court and Lincoln Middle School
Site #4, Alameda Park Beach

The City of Alameda's Trash Hot Spots are located along the shorelines of the Oakland Inner Harbor, San Leandro Bay and San Francisco Bay. The principle, known trash source at all locations is from tidal accumulation along the shoreline. Littering and illegal dumping activities also contribute some wastes to the trash loads encountered at these locations. Persistent, floatable plastics and foams of all types and sizes are the predominant items removed from these sites on a recurring annual basis. Table 3.2, City of Alameda Trash Hot Spot Summary, below, provides an overview of the City's Trash Hot Spot locations, adjacent waterbodies, the three-year average (Fiscal Year (FY) 2010-11 through FY 2012-13) of the volume of trash removed, the dominant types of trash and the trash sources (as known).

Table 3-2. City of Alameda Trash Hot Spots Summary

Site #	Location	Adjacent Waterbody	Volume of trash removed, annually, 3-year average	Dominant Types of Trash	Trash Sources (as known)
1	Alameda Point northern shoreline	Oakland Inner Harbor	15.1 cubic yards	Bottle caps/lids, floatable foam, pieces of hard plastic, plastic bags, plastic bottles, plastic wrappers, Styrofoam, waste lumber	Tidal Accumulation
2	1500-block East Shore Drive	San Leandro Bay	10.0 cubic yards	Floatable foam, pieces of hard plastic, plastic bags, plastic sheeting/film, plastic wrappers, Styrofoam, waste concrete, waste lumber	Tidal accumulation, some illegal dumping
3	Washington	San	6.2 cubic yards	Glass bottles, pieces of	Tidal

	Court and Lincoln Middle School	Leandro Bay		hard plastic, plastic wrappers, straws/stirrers, Styrofoam, waste lumber	accumulation, littering
4	Alameda Park Beach	San Francisco Bay	24.6 cubic yards	Bottle caps/lids, fishing line, floatable foam, pieces of hard plastic, plastic bags, plastic bottles, plastic wrappers, Styrofoam, waste lumber	Tidal accumulation

All City of Alameda Provision C.10.b Trash Hot Spot Cleanup efforts were initiated after the effective date of the MRP.

3.2.15 Summary of Trash Control Measures

Below is a bulleted summary of the current and planned trash control measures for each TMA within the City of Alameda. As discussed above, these TMAs were delineated and prioritized for control measure implementation within the City's jurisdiction based on the geographical distribution of trash generating areas, the associated land-use patterns, types of trash sources, and these current or planned control measures. The cumulative effect and results of the combined control measures are believed to achieve the "full" trash reduction level in each management area. The efforts to assess the effectiveness of these trash control measures to attain the full trash reduction level are discussed in Section 4 below. The implementation status and the on-going results of all these trash control measures will be accounted for in the City's future annual reports and Provision C.10 benchmark updates.

Trash Management Area 1

- Full-Capture Treatment Devices
- Street Sweeping
- Shoreline Cleanups
- On-land Trash Cleanups
- Improved Trash Bin/Container Management

Trash Management Area 2

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Enhanced Storm Drain Inlet Maintenance
- Street Sweeping
- On-Land Trash Cleanups
- Improved Trash Bin/Container Management
- Anti-Littering and Illegal Dumping Enforcement Activities

Trash Management Area 3

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Enhanced Storm Drain Inlet Maintenance
- Street Sweeping
- On-Land Trash Cleanups
- Improved Trash Bin/Container Management
- Anti-Littering and Illegal Dumping Enforcement Activities

Trash Management Area 4
- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Enhanced Storm Drain Inlet Maintenance
- Anti-Littering and Illegal Dumping Enforcement Activities

Trash Management Area 5
- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Enhanced Storm Drain Inlet Maintenance
- Street Sweeping

Trash Management Area 6
- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Enhanced Storm Drain Inlet Maintenance
- Anti-Littering and Illegal Dumping Enforcement Activities
- Street Sweeping

Trash Management Area 7
- Full-Capture Treatment Devices
- Enhanced Storm Drain Inlet Maintenance
- Street Sweeping

Trash Management Area 8
- Partial-Capture Treatment Devices
- Street Sweeping
- On-Land Trash Cleanups
- Anti-Littering and Illegal Dumping Enforcement Activities

Trash Management Area 9
- Street Sweeping
- Shoreline Cleanups
- Outreach to School-Age Children

Trash Management Area 10
- Partial-Capture Treatment Devices
- Street Sweeping
- Anti-Littering and Illegal Dumping Enforcement Activities

Trash Management Area 11
- Street Sweeping
- On-Land Trash Cleanups
- Improved Trash Bin/Container Management

Trash Management Area 12
- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Street Sweeping

3.3 Control Measure Implementation Schedule

Table 3-3, below, summarizes the implementation schedule for all of the jurisdiction-wide and trash management area trash control measures. The schedule indicates the fiscal years that specific trash control measures have and/or will be implemented. Table 3-3 indicates actions that:

- Were initiated prior to and continued after the MRP effective date of December 2009
- Were initiated after the MRP effective date and implemented prior to July 1, 2014
- Are planned for future implementation between July 2014 and July 2022

Table 3-3. City of Alameda completed and planned trash control measure implementation schedule.

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
TMA #1 – Main St Shoreline Parking Lot/Overlook														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shoreline Cleanups		X	X	X	X	X	X	X						
On-Land Trash Cleanups					X	X	X	X	X					
Improved Trash Bin/Container Management	X					X								
TMA #2 – Park Street Business and Retail District														
Full-Capture Treatment Devices				X	X	X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices						X	X	X	X					
Enhanced Storm Drain Inlet Maintenance				X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Management	X					X	X							
Anti-Littering and Illegal Dumping Enforcement Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #3 – Webster Street Business and Retail District														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance						X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Management	X						X							

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Anti-Littering and Illegal Dumping Enforcement Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #4 – Commercial/Retail Shopping Centers														
Full-Capture Treatment Devices	X					X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices	X					X	X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance							X	X	X	X	X	X	X	X
Anti-Littering and Illegal Dumping Enforcement Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #5 – Residential High Trash Areas														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance						X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #6 – Neighborhood Retail Districts														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance						X	X	X	X	X	X	X	X	X
Anti-Littering and Illegal Dumping Enforcement Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #7 – Residential Medium Trash Areas														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance						X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #8 – Commercial/Industrial Areas														
Partial-Capture Treatment Devices				X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anti-Littering and Illegal Dumping Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #9 – Neighborhood Schools and Religious Facilities														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shoreline Cleanups		X	X	X	X	X	X	X	X	X	X	X	X	X
Outreach to School-Age Children	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #10 – Alameda Point, non-residential areas														
Partial-Capture Treatment Devices				X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Anti-Littering and Illegal Dumping Enforcement Activities	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TMA #11 – Parks, recreation and open spaces														
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-Land Trash Cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Management						X	X	X	X	X	X	X	X	X
TMA #12 – Low Trash Areas														
Full-Capture Treatment Devices						X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jurisdiction-wide Control Measures														
Polystyrene Foam Food Ware Ban	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Activities to Reduce Trash Dispersal During Waste/Recycling Service	X	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Alameda Public Education and Outreach Programs			X	X	X	X	X	X	X	X	X	X	X	X
Street Sweeping	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Trash Management Area and Control Measures	Pre-MRP	Short-Term					Long-Term							
		FY 2009-2010	FY 2010-2011	FY 2011-2012	FY 2012-2013	FY 2013-2014[a]	FY 2014-2015	FY 2015-2016	FY 2016-2017[b]	FY 2017-2018	FY 2018-2019	FY 2019-2020	FY 2020-2021	FY 2021-2022[c]
Single-Use Bag Ban					X	X	X	X	X	X	X	X	X	X
K-12 School Outreach						X	X	X	X	Activities to be determined				
Be the Street campaign				X	X	X	Activities to be determined							
Multi-Family Dwelling Outreach						X	Activities to be determined							
Community Stewardship Grants (litter)							X	Activities to be determined						
Litter related outreach to residents	X	X	X	X	X	X	X	X	Activities to be determined					
Shoreline Hot Spot Cleanups		X	X	X	X	X	X	X	Activities to be determined					

[a]July 1, 2014 - 40% trash reduction target
[b]July 1, 2017 - 70% trash reduction target
[c]July 1, 2022 - 100% trash reduction target

4.0 Progress Assessment strategy

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

The Trash Assessment Strategy (Strategy) described in this section is intended to serve as Version 2.0 of the trash tracking method and replace version 1.0 previously submitted to the Water Board. The Strategy is specific to Permittees participating in the Alameda Countywide Clean Water Program (ACCWP), including the City of Alameda. The City intends to implement the Strategy in phases and at multiple geographical scales (i.e., jurisdiction-wide and trash management area) in collaboration with ACCWP. Pilot implementation is scheduled for the near-term and as assessment methods are tested and refined, the Strategy will be adapted into a longer-term approach. The Strategy selected by the City is described in the following sections.

4.1 ACCWP Pilot Assessment Strategy

The following ACCWP Pilot Trash Assessment Strategy (ACCWP Pilot Strategy) was developed by ACCWP on behalf of the City of Alameda and other Permittees in Alameda County. The ACCWP Pilot Strategy will be implemented at a pilot scale on a countywide basis and includes measurements and observations in the City of Alameda.

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

- Are specific control measures effective?
- Is the amount of trash in and along local waterways declining?
- Are control measures being implemented appropriately?

The ACCWP Pilot Strategy, including indicators and methods, is summarized in this section. These indicators are intended to detect progress towards trash load reduction targets and solving trash problems.

4.1.1 Indicators of Progress and Success

To track progress, both outcome and output indicators will be assessed. Outcome-based indicators are those that measure the result of litter reduction efforts. This type of indicator could include measurements of litter in and around the storm drain system or local water bodies. Output-based indicators are those that assess the implementation of control measures. This type of indicator could include assessing the maintenance of trash capture devices or compliance with product bans. Indicators that ACCWP Permittees will use to answer the management questions include:

Outcome-Based Indicators:

1-A Amount of single-use plastic bags entering storm drains
1-B Amount of polystyrene food ware entering storm drains
1-C Amount of litter removed from Trash Hot Spots and other creek/shoreline cleanup events
1-D Amount of litter at schools participating in the litter outreach program
1-E Amount of litter at multi-family dwellings participating in the targeted outreach program
1-F Self-reported litter related attitude and behavior of residents

Output-Based Indicators:

2-A Full capture device operation and maintenance
2-B Compliance with the Single-Use Bag Ban
2-C Implementation of an effective street sweeping program
2-D Commercial Trash Container Management
2-E Residential Trash Container Management

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

As described in Section 2.2, trash is transported to receiving waters from pathways other than MS4s, which may confound our ability to observe MS4-associated reductions in creeks and shorelines. Evaluations of data on the amount of trash in receiving waters that are conducted over time through the Pilot Assessment Strategy will assist the City of Alameda in further determinations of the important sources and pathways causing problems in local creeks, rivers and shorelines.

4.1.2 Pilot Assessment Methods

This section briefly summarizes the preliminary assessment methods that the City of Alameda will implement through the ACCWP Pilot Strategy to generate indicator information described in the previous section. Additional information on each method can be found in the ACCWP Pilot Trash Assessment Strategy submitted to the Water Board by ACCWP on behalf of the City of Alameda.

OUTCOME-BASED INDICATORS

1-A Amount of Single-Use Plastic Bags Entering Storm Drains

ACCWP participated in the development of the BASMAA baseline trash generation rate study. A total of 47 drop inlet full trash capture devices located throughout Alameda County were included in the study. The study included an assessment of the volume and number of single-use plastic bags found in these 47 inlets as well as over 100 other inlets from throughout the Bay Area. Since the conclusion of the study, the Alameda County Waste Management Authority has adopted a single-use bag ban. As of January 1, 2013, all grocery stores, supermarkets, mini-marts, convenience stores, liquor stores, pharmacies, drug stores or other entities that sell milk, bread, soda and snack foods (all four items) and/or alcohol (Type 20 or21 license) in Alameda County must comply with the Single-Use Bag Ban Ordinance.

ACCWP will conduct a follow-up study to assess the number and volume of single-use plastic bags in storm drain inlets throughout the County following the implementation of the bag ban. The study will consist of re-sampling most or all devices sampled during the previous study and comparing the number of single-use bags found before versus after the implementation of the bag ban. ACCWP will also sample up to 50 additional full trash capture inlet devices from high and medium trash generating areas throughout the County and compare the number of single-use bags found in all of the sampled inlets in Alameda County after the adoption of the bag ban versus the number of bags found in inlets throughout the Bay Area during the baseline trash generation rate study. ACCWP is planning to assess the level of single-use and other trash in all of the approximately 100 inlets again after several years to assess the overall decline in trash over time. A detailed study design is included in the ACCWP Pilot Assessment Strategy to be submitted separately.

1-B Amount of Polystyrene Food Ware Entering the Storm Drain System

As noted above, ACCWP participated in the development of the BASMAA baseline trash generation rate study. A total of 47 drop inlet full trash capture devices located throughout Alameda County were included in the study. The study included an assessment of the volume and number of expanded polystyrene (EPS) food ware items found in these 47 inlets as well as over 100 other inlets from throughout the Bay Area. A majority of the fourteen cities within Alameda County have adopted expanded polystyrene food ware bans. San Leandro and Pleasanton adopted their expanded polystyrene bans after the completion of the BASMAA baseline trash generation rate study.

ACCWP will conduct a follow-up study to assess the effectiveness of the EPS food ware bans at reducing the amount of EPS entering the storm drain system. As San Leandro and Pleasanton have adopted their ban since the completion of the baseline study, the follow-up study will compare the volume and number of EPS food ware items in the full trash capture devices in those two cities before and after the implementation of the bans. ACCWP will also sample a total of up to 100 full trash capture inlet devices from throughout the County and compare the number and volume of EPS food ware items in areas with versus without EPS bans. A detailed study design is included in the ACCWP Pilot Assessment Strategy to be submitted separately.

1-C Amount of Litter Removed from Trash Hot Spots and Other Creek/Shoreline Cleanup Events

ACCWP member agencies annually collect trash from a total of 47 Hot Spots as well as numerous additional creek and shoreline cleanup events. Each member agency will gather data from these events that will allow for long term tracking of trends. The data to be collected include the volume and or weight of trash removed, the number of people and or the total number of person hours for each event, the length of creek or shoreline cleaned, and the dominant types of trash at each location. ACCWP will compile the data from these events and track the long term trends in trash along these water bodies throughout the County. Member agencies will also track trends at their specific cleanup locations.

1-D Amount of Litter at Schools Participating in the Litter Outreach Program

ACCWP has developed a request for proposal for a four-year litter reduction education/outreach grant directed at K-12 schools throughout Alameda County. ACCWP intends to award a total of up to $125,000 per year to the successful applicant(s). The goals of the project are to clearly reduce the amount of litter at the participating schools and incorporate institutional changes at the schools so that litter will continue to be reduced in the future. Implementation is scheduled to begin in the 2014/15 school year. The request for proposal will include a requirement to evaluate the level of litter reduction achieved. A copy of the request for proposals is included in the ACCWP Pilot Assessment Strategy. A description of the

assessment mechanism(s) of the successful proposal(s) will be included in the ACCWP Fiscal Year 2013/14 Annual Report.

1-E Amount of Litter at Multi-Family Dwellings Participating in the Targeted Outreach Program

Multi-family dwellings (i.e., apartment buildings and condominium complexes) are often areas of high trash generation. ACCWP is working with the City of Livermore to develop a litter reduction pilot targeting multi-family complexes known to be sites with significant litter issues. The pilot includes the following apartment building and condominium complexes: Livermore Garden Apartments (5720 East Avenue), La Castilleja (975 Murrieta Boulevard), and Castilleja Del Arroyo (1001 and 1009 Murrieta Boulevard). The planned assessment mechanisms include:

- December 2013: Pre-campaign Measurement – ACCWP and the City will take baseline measurements of all three sites. Methods of measurement will include taking photos of on-site litter, as well as collecting, characterizing and counting the litter using the Ocean Conservancy's Volunteer Trash Data Form. (Adopt A Creek Spot volunteers use this Data Form to characterize and count the trash collected from the Trash Hot Spot located behind the condominium complexes on Coastal Clean-up Day.) Areas to be measured include landscaped and other common areas, the sidewalk, gutter and streets located in front of the sites. All three property managers/volunteers will collect one week's worth of on-site litter.

- November – December 2013: Research – All three property managers will be interviewed by City staff using twenty-five questions developed by the ACCWP. The interview results will help define the target audience(s) (i.e., age groups, income level, ethnic groups, etc.) and determine outreach tactics (i.e., face-to-face, signage, printed materials, etc.) This information will also assist the City and ACCWP in developing appropriate messaging.

- November 2013 – January 2014: Plan – One of the three sites will be chosen as the "Control" site. In addition, outreach strategies and tactics will be selected for the "Active" sites.

- May 17, 2014 – May 31, 2014: Post-campaign Measurement — City staff and ACCWP will duplicate the pre-campaign measurement methodologies at all three sites, including the Control. All three property managers/volunteers will collect one week's worth of on-site litter. On-site and off-site litter will be characterized and counted by City staff using the Ocean Conservancy's Volunteer Trash Data Form. All three property managers will be interviewed by City staff to help determine residents' attitudes/change in behavior, etc.

- June 1, 2014 – June 30, 2014: Reporting – Final Pilot Report will be presented to ACCWP member agencies.

1-F Self-Reported Litter Related Attitude and Behavior of Residents

Through its Public Information and Participation program ACCWP encourages residents to adopt less polluting behaviors. One targeted behavior is littering. ACCWP uses a variety of mechanisms to influence residents including public service announcements, online and movie theater advertising, outreach to K-12 schools, and participating in outreach events. ACCWP conducts telephone surveys of residents every several years to gauge Alameda County residents' awareness and attitude regarding stormwater related issues. These surveys include questions regarding respondents' reported behavior and attitudes regarding litter and littering. Future surveys will continue to track the long term trends in residents' awareness and attitudes regarding litter and littering.

OUTPUT-BASED INDICATORS

2-A Full capture device operation and maintenance

Consistent with the MRP, adequate inspection and maintenance of trash full capture devices is required to maintain full capture designation by the Water Board. The City of Alameda is currently developing an operation and maintenance verification program (Trash O&M Verification Program), via ACCWP, to ensure that devices are inspected and maintained at a level that maintains this designation. The ACCWP Trash O&M Verification Program will be modeled on the current O&M verification program for stormwater treatment controls implemented consistent with the Permit new and redevelopment requirements.

2-B Compliance with the Single-Use Bag Ban

The Alameda County Waste Management Authority is taking the lead on inspection and enforcement of the Single-Use Bag Ban. ACCWP will coordinate with the Waste Management Authority and report on the results of their inspection and enforcement program.

2-C Implementation of an effective street sweeping program

Street sweeping can be very effective in reducing the amount of trash entering the storm drain system. However, its effectiveness is dependent upon the frequency of sweeping and the ability of the sweeper to sweep along the edge of the curb. Parked cars can significantly reduce the effectiveness of a street sweeping program. The City of Alameda will coordinate with ACCWP to develop and implement an assessment of its street sweeping program.

2-D Commercial Trash Container Management

Improper trash container management at commercial facilities can be a significant source of trash to the storm drain system. The City of Alameda will coordinate with ACCWP to develop and implement an assessment of its commercial trash container management program.

2-E Residential Trash Container Management

Fugitive trash from residential trash collection can be a significant source of trash to the storm drain system. The City of Alameda will coordinate with ACCWP to develop and implement an assessment of its residential trash collection program.

4.2 BASMAA "Tracking California's Trash" Project

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

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

4.2.1 Testing of Trash Monitoring Methods

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

- **Trash Flux Monitoring** – Trash flux monitoring is intended quantify the amount of trash flowing in receiving waters under varying hydrological conditions. Flux monitoring will be tested in up to four receiving water bodies in San Francisco Bay and/or the Los Angeles areas. Methods selected for evaluation and monitoring will be based on a literature review conducted during this task and through input from technical advisors and stakeholders. Monitoring is scheduled to begin in 2014 and will be completed in 2016.

- **On-land Visual Assessments** – As part of the Project, BASMAA will also conduct an evaluation of on-land visual assessment methods that are included in the ACCWP Pilot Assessment Strategy. The methods are designed to determine the level of trash on streets and public right-of-ways that may be transported to receiving waters via MS4s. BASMAA plans to conduct field work associated with the evaluation of on-land visual assessment at a number of sites throughout the region. To the extent practical, sites where the on-land methods evaluations take place will be coordinated with trash flux monitoring in receiving waters. On-land assessments will occur in areas that drain to trash full capture devices, and all sites will be assessed during wet and dry weather seasons in order to evaluate on-land methods during varying hydrologic conditions. Monitoring is scheduled to begin in 2014 and will be completed in 2016.

4.2.2 Full Capture Equivalent Studies

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

4.3 Additional Progress Assessments

The City of Alameda will perform one additional assessment program to gauge and evaluate the effectiveness of the City's trash control efforts in the highest priority trash management area, TMA 1, the Main Street Shoreline Parking Lot/Overlook.

TMA 1 Trash Control Visual Assessment

City of Alameda staff will perform semi-annual visual assessments of the Main Street parking lot and shoreline berm to document and gauge the on-going effectiveness of trash control measures in this trash management area. The visual assessments will include photo documentation of the site, performed in a manner consistent with the procedures of the shoreline hot spot cleanup assessments in compliance with Provision C.10.b of the MRP.

4.4 Long-Term Assessment Strategy

The City of Alameda is committed to implementing standardized assessment methods post-FY 2016/17 based on the lessons learned from pilot assessments. Assessment activities described in the previous sections will evaluate the utility of different assessment methods to demonstrate progress towards trash reduction targets and provide recommended approaches for long-term implementation. Lessons learned will be submitted to the Water Board with the FY 2015-2016 Annual Report and a revised Strategy will be developed and submitted, if necessary. The revised Strategy will include assessment methods that will be used to demonstrate progress during the remaining term of trash reduction requirements.

4.5 Implementation Schedule

The implementation schedule for the ACCWP Pilot Implementation Strategy, BASMAA's Tracking California's Trash project, and the Long-Term Assessment Strategy are included in Table 4-1. Load reduction reporting milestones are also denoted in the table. The schedule is consistent with the need for near-term pilot assessment results to demonstrate progress toward short-term targets, while acknowledging the need for testing and evaluation of assessment methods and protocols prior to long-term implementation.

Table 4-1. City of Alameda planned trash progress assessment implementation schedule.

Trash Assessment Programs and Methods	Prior to FY 2013-14	Fiscal Year								
		2013-14[a]	2014-15	2015-16	2016-17[b]	2017-18	2018-19	2019-20	2020-21	2021-22[c]
Pilot Trash Assessment Strategy (ACCWP)										
Single-Use Plastic Bag Assessment	X	X				X				
Expanded Polystyrene Assessment	X	X								
Trash Hot Spot Cleanup Assessment	X	X	X	X	X					
K-12 School Litter Reduction Outreach Program						X				
Multi-Family Dwelling Litter Outreach Program	X									
Residents' Self-Reported Litter-Related Behavior	X					X				
Full Capture Operation and Maintenance Verification			X	X	X					
Single-Use Bag Ban Compliance		X	X	X	X					
Street Sweeping Effectiveness Evaluation			X	X	X					

Commercial Trash Container Management Assessment			X	X	X					
Residential Trash Container Management Assessment			X	X	X					
Tracking California's Trash Project (BASMAA)										
Testing of Trash Monitoring Methods										
Trash Flux Monitoring Protocol Testing			X	X	X					
On-land Visual Assessment Evaluations			X	X	X					
Full Capture Equivalent Studies			X	X	X					
Additional Assessment (City of Alameda)										
Assessment Method #1			X	X	X					
Long-Term Trash Assessment Strategy (ACCWP)						X	X	X	X	X

[a]July 1, 2014 - 40% trash reduction target
[b]July 1, 2017 - 70% trash reduction target
[c]July 1, 2022 - 100% trash reduction target

5.0 REFERENCES

Allison R.A. and F.H.S. Chiew 1995. Monitoring stormwater pollution from various land uses in an urban catchment. Proceedings from the 2nd International Symposium on Urban Stormwater Management, Melbourne, 551-516.

Allison, R.A., T.A. Walker, F.H.S. Chiew, I.C. O'Neill and T.A McMahon 1998. From Roads to rivers: Gross pollutant removal from urban waterways. Report 98/6. Cooperative Research Centre for Catchment Hydrology. Victoria, Australia. May 1998.

Armitage, N. 2003. The removal of urban solid waste from stormwater drains. Prepared for the International Workshop on Global Developments in Urban Drainage Management, Indian Institute of Technology, Bombay, Mumbai India. 5-7 February 2003.

Armitage, N. 2007. The reduction of urban litter in the stormwater drains of South Africa. Urban Water Journal Vol. 4, No. 3: 151-172. September 2007.

Armitage N., A. Rooseboom, C. Nel, and P. Townshend 1998. "The removal of Urban Litter from Stormwater Conduits and Streams. Water Research Commission (South Africa) Report No. TT 95/98, Prestoria.

Armitage, N. and A. Rooseboom 2000. The removal of urban litter from stormwater conduits and streams: Paper 1 – The quantities involved and catchment litter management options. Water S.A. Vol. 26. No. 2: 181-187.

ABAG (Association of Bay Area Governments). 2005. Bay Area Land Use Geographical Information Systems Datalayer.

BASMAA (Bay Area Stormwater Management Agencies Association). 2011a. Progress Report on Methods to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems and Track Loads Reduced. February 2011.

BASMAA (Bay Area Stormwater Management Agencies Association). 2011b. Method to Estimate Baseline Trash Loads from Bay Area Municipal Stormwater Systems: Technical Memorandum #1. Prepared by EOA, Inc. April 2011.

BASMAA (Bay Area Stormwater Management Agencies Association). 2011c. Sampling and Analysis Plan. Prepared by EOA, Inc. April 2011.

BASMAA (Bay Area Stormwater Management Agencies Association). 2012. Trash Baseline Generation Rates: Technical Report. Prepared by EOA, Inc. February 1, 2012.

County of Los Angeles. 2002. Los Angeles County Litter Monitoring Plan for the Los Angeles River and Ballona Creek Trash Total Maximum Daily Load. May 30, 2002.

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

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

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

Lippner, G., R. Churchwell, R. Allison, G. Moeller, and J. Johnston 2001. A Scientific Approach to Evaluating Storm Water Best Management Practices for Litter. Transportation Research Record. TTR 1743, 10-15.