

Long-Term Trash Load Reduction Plan and Assessment Strategy

Submitted by:
City of San Carlos
600 Elm Street
San Carlos CA 94070



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

January 14, 2014

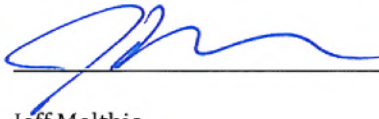
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**CITY OF SAN CARLOS
LONG-TERM TRASH LOAD REDUCTION PLAN AND
ASSESSMENT STRATEGY**

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:



Jeff Maltbie
City Manager

January 14, 2014

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ABBREVIATIONS

BASMAA	Bay Area Stormwater Management Agencies Association
BID	Business Improvement District
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CASQA	California Stormwater Quality Association
CDS	Continuous Deflection Separator
CEQA	California Environmental Quality Act
CY	Cubic Yards
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GIS	Geographic Information System
MRP	Municipal Regional Stormwater NPDES Permit
MS4	Municipal Separate Storm Sewer System
NGO	Non-Governmental Organization
NPDES	National Pollutant Discharge Elimination System
Q	Flow
SFRWQCB	San Francisco Regional Water Quality Control Board
SWRCB	State Water Resource Control Board
TCD	Trash Capture Device
TMA	Trash Management Area
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 San Carlos'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 of San Carlos therefore reserves the right to revise or amend this Long-Term Plan at its discretion. If significant revisions or amendments are made by the City, a revised Long-Term Plan will be submitted to the Water Board through the City's annual reporting process.

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. 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 San Carlos 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 San Carlos’s municipal separate storm sewer system (MS4) that are regulated by NPDES Permit requirements. The Long-Term Plan includes:

1. Descriptions 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 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 San Carlos’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.

The Long-Term Plan was reviewed and approved for submittal by the City of San Carlos’s City Council on January 13, 2014. The City of San Carlos’s Staff Report is attached as Appendix A.

1.2 Background

1.2.1 Long-Term Trash Load Reduction Plan Framework

A workgroup of MRP Permittee, Bay Area countywide stormwater program staff 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).

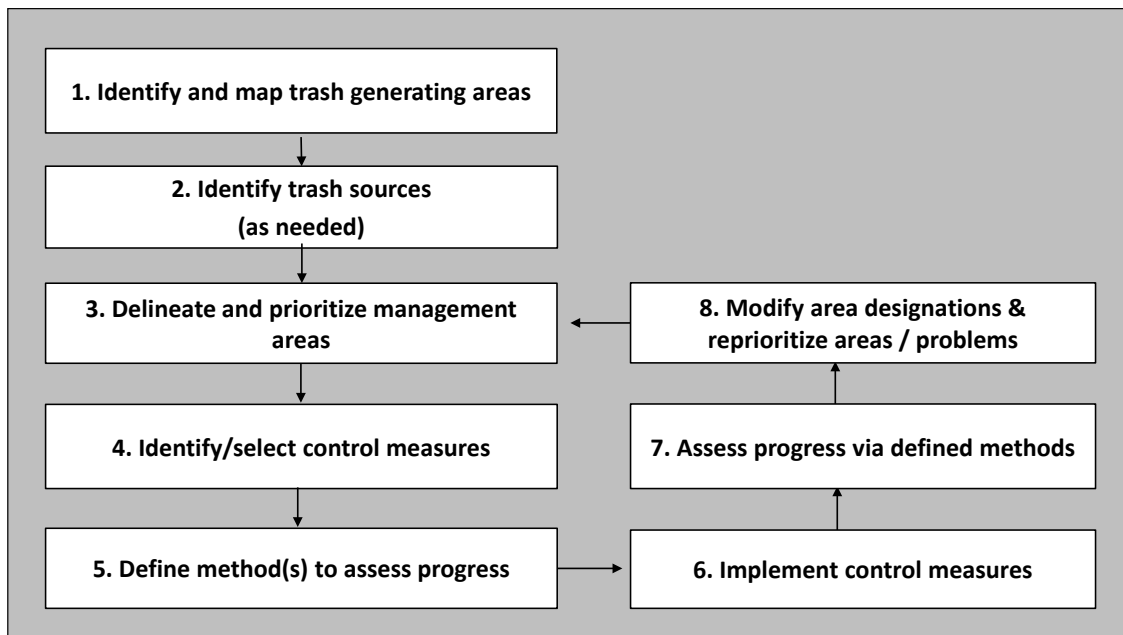


Figure 1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

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 2 illustrates the difference between trash generation and loading.

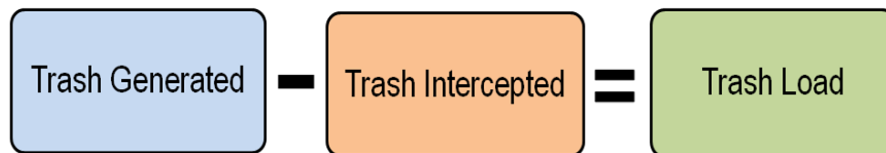


Figure 2. Conceptual model of trash generation, interception and load.

Trash generation rates were estimated based on factors that significantly affect trash generation (i.e., land use and income). The method used to 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. Methods used to develop trash generation rates are more fully described in BASMAA (2011b, 2011c, and 2012).

Table 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.

1.2.3 Short-Term Trash Load Reduction Plan

In February 2012, the City of San Carlos developed a Short-Term Plan that described the current level of control measures implementation and identified the type and extent to which new or enhanced control measures would be implemented to attain a 40% trash load reduction from its MS4 by July 1, 2014. Since that time, the City of San Carlos has begun to implement its short-term plan. Control measures implemented to date via the short-term trash reduction plan are:

- Full-Capture Treatment devices -56 new trash capture devices were installed with maintenance performed 3 to 4 times a year.
- Single-use Carryout Bag Policy – adopted single-use carryout bag ordinance.
- Polystyrene Foam Food Service Ware Policy – adopted foam food service ware ordinance.

Control measures described in this Long-Term Plan build upon actions taken to-date via City of San Carlos's Short-Term Plan. A full description of control measures implemented via short and long-term plans is included in section 3.2. Outcomes associated with short-term plan implementation will be reported in the City of San Carlos's Fiscal Year 2013-14 Annual Report, scheduled for submittal to the Water Board by September 15, 2014.

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 San Carlos.

Section 3.0 provides a description of control measures that will be implemented by the City of San Carlos as a result of this Long-Term Plan.

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

Incorporated in 1925, the City of San Carlos is located in San Mateo County, and has a jurisdictional area of 2879 acres. According to the 2010 Census, it has a population of 28,406, with a population density of 5,126.5 people per square mile and average household size of 2.46. Of the 28,406 residents who call San Carlos home, 23.6% are under the age of 18, 4.1% are between 18 and 24, 27% are between 25 and 44, 31.1% are between 45 and 64, and 14.2% are 65 or older. The median household income was \$110,929 in 2010. The City of San Carlos is home to Sam Trans, L-3 Electron Devices, Recology, Pacific Gas and Electric, and Kelly Moore Paints. San Carlos has a very popular downtown retail restaurant corridor which attracts a large number of visitors. This corridor will be a major focus in controlling trash within San Carlos.

Land uses within the City of San Carlos depicted in ABAG (2005) are provided in Table 2. The City of San Carlos is primarily comprised of 6 land uses. These include Commercial, Industrial, Residential, Retail, K-12 Schools, and Urban parks.

Table 2. Percentages of the City of San Carlos's jurisdictional area¹ within land use classes identified by ABAG (2005)

Land Use Category	Jurisdictional Area (Acres)	% of Jurisdictional Area
Commercial and Services	104.6	3.2%
Industrial	412.5	12.6%
Residential	2,116.7	64.8%
Retail	125.8	3.9%
K-12 Schools	72.1	2.2%
Urban Parks	44.5	1.4%
Other	388.9	11.9%

2.2 Trash Sources and Pathways

Trash in San Francisco Bay Area creeks and shorelines originates from a variety of sources and is transported to receiving waters by a number of pathways (Figure 3). Of the four source categories, pedestrian litter includes trash sources from high traffic areas near businesses and schools, transitional areas where food/drinks are not permitted (e.g. bus stops), and from public or private special events with high volumes of people. Trash from vehicles occurs due to littering from automobiles and uncovered loads. Inadequate waste container management includes sources such

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).

as overflowing or uncovered containers and dumpsters as well as the dispersion of household and business-related trash and recycling materials before, during, and after collection. On-land illegal dumping of trash is the final source category.

Trash is transported to receiving waters through three main pathways: 1) Stormwater Conveyances; 2) Wind; and, 3) Direct Dumping. Stormwater or urban runoff conveyance systems (e.g., MS4s) consist of curbs/gutters, and pipes and channels that discharge to urban creeks and the San Francisco Bay shorelines. Wind can also blow trash directly into creeks or the Bay. Lastly, trash in receiving waters can also originate from direct dumping into urban creeks and shorelines.

This Long-term Plan and associated trash control measures described in Section 3.0 are focused on reducing trash from one of the transport pathways illustrated in Figure 3– **stormwater conveyances**. Specifically, the Long-term Plan is focused on reducing the impacts of discharges from MS4s to San Francisco Area receiving waters and the protection of associated beneficial uses.

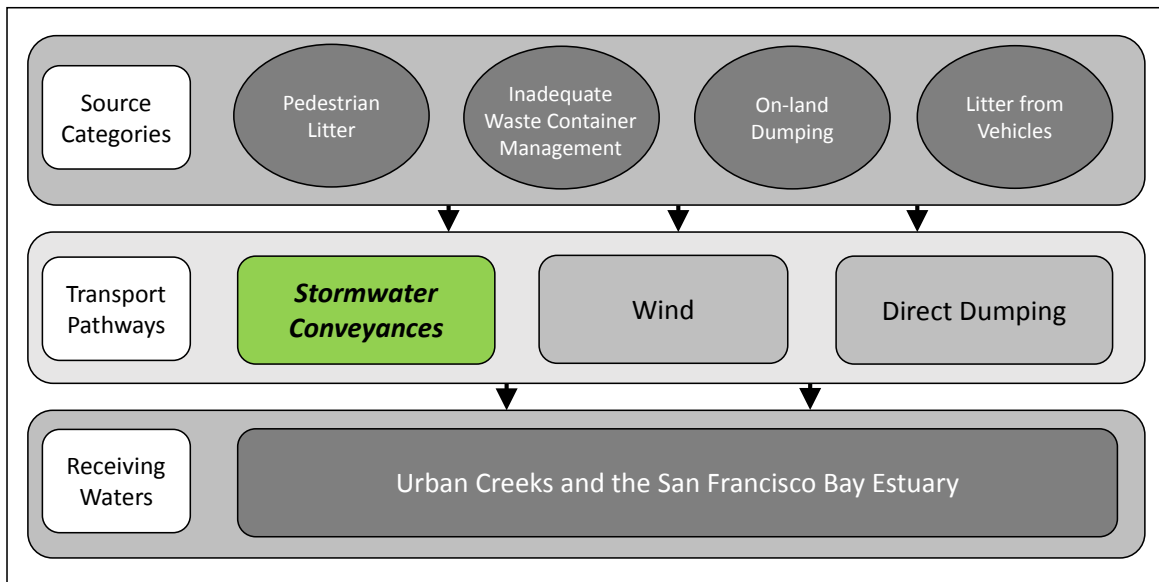


Figure 3. Trash sources categories and transport pathways to urban creeks.

San Carlos has not experienced direct dumping problems, but does occasionally experience homeless encampments adjacent to creeks. In coordination with the San Mateo County Sheriff's office homeless encampments are cleared as soon as they are discovered.

2.3 Trash Generating Areas

2.3.1 Generation Categories and Designation of Areas

The process and methods used to identify the level of trash generation within the City of San Carlos are described in this section and illustrated in Figure 4.

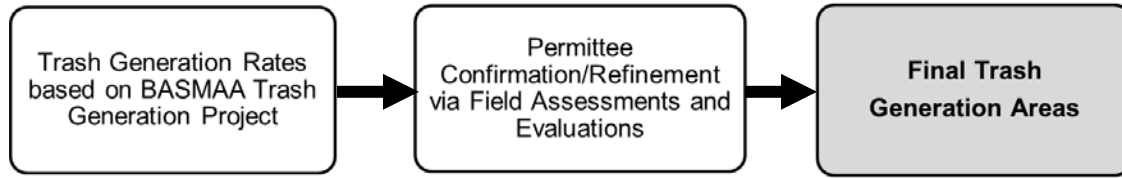


Figure 4. Trash sources categories and transport pathways to urban creeks.

As a first step, trash generation rates developed through the *BASMAA Trash Generation Rates Project* were applied to parcels within the City of San Carlos 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 San Carlos 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 3.

Table 3. 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 San Carlos 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. The Public Works Superintendent and Senior Maintenance Workers met to review the map and based upon our knowledge of 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. Based on the level of trash observed, each segment (i.e., assessment area) was placed into one of four on-land assessment condition categories that are summarized in Table 4.

Using the draft trash assessment protocol the city assessed a total of 27 areas to assist in conducting/refining trash generating area designations.

Table 4. 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, with large piles and a strong impression of lack of concern for litter in the area.

b. Querying Municipal Staff or Members of the Public

Long time city employees provided valuable institutional knowledge into verifying the accuracy of the trash generation areas and utilizing this knowledge helped in narrowing the number of on-land visual assessments.

- 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 San Carlos. 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 San Carlos's Final Trash Generation Map is included as Figure 5.

2.3.2 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 5.

Table 5. Percentage of jurisdictional area within the City of San Carlos 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	0.0	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
High	77.5	2.0%	1.9%	0.0%	96.1%	0.0%	0.0%	0.0%
Medium	603.5	15.5%	68.0%	8.0%	7.9%	0.1%	0.5%	0.0%
Low	2,584.0	0.4%	0.0%	80.1%	0.2%	2.8%	1.6%	15.1%

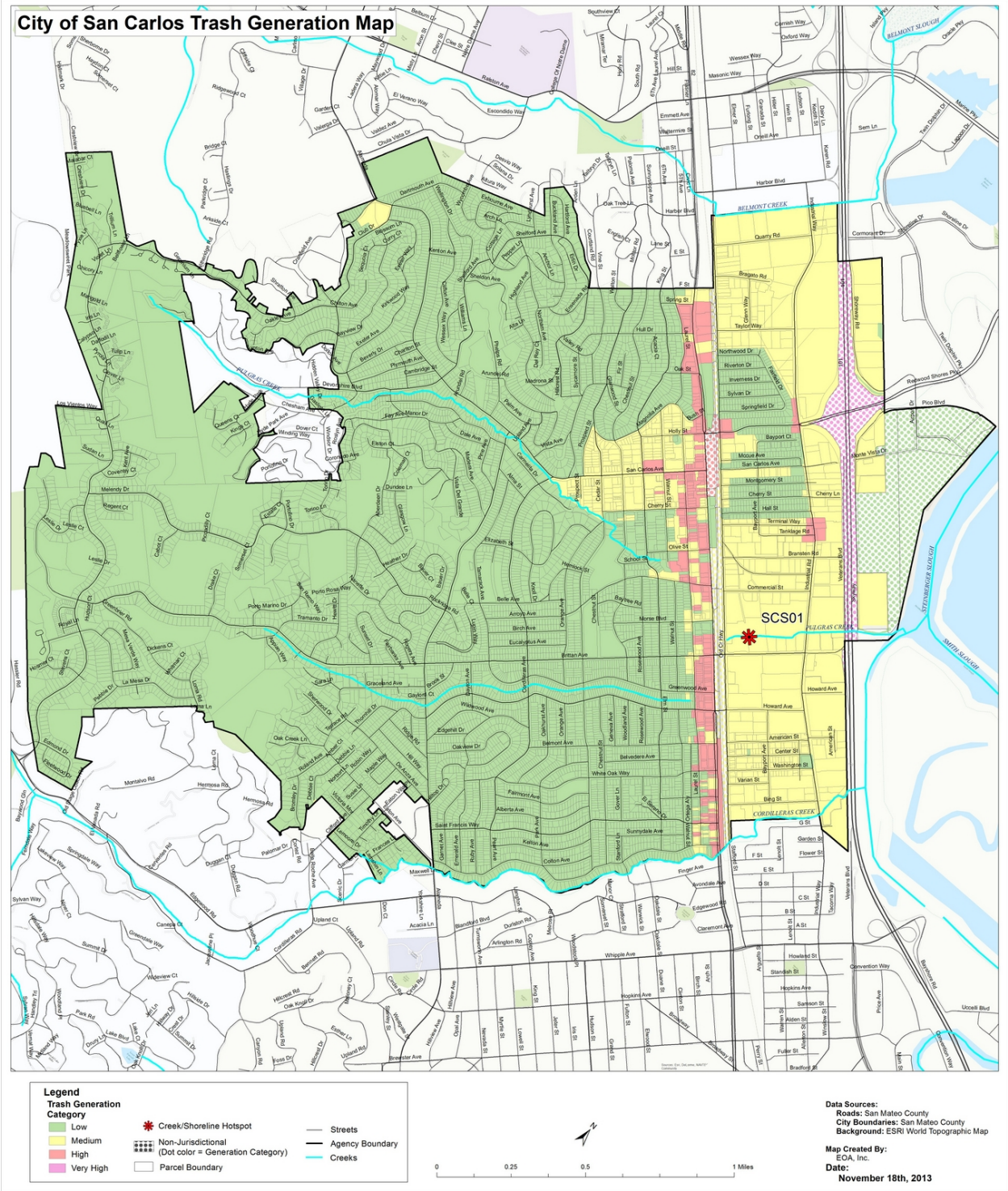


Figure 5. Final Trash Generation Map for the City of San Carlos

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3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES

This section describes the control measures that the City of San Carlos 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 San Carlos'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 lacking and therefore in the absence of this information, the City based its selection of control measures on existing effectiveness information, their experience in implementing trash controls and knowledge of trash problems, and costs of implementation. As knowledge is gained through the implementation of these control measures, the City may choose to refine their trash control strategy described in this section. If significant revisions or amendments are made, a revised Long-Term Plan will be submitted to the Water Board through the City of San Carlos's annual reporting process.

3.1 Management Area Delineation and Prioritization

Consistent with the long-term plan framework, the City of San Carlos delineated and prioritized trash management areas (TMAs) based on the geographical distribution of trash generating areas, 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. The City of San Carlos's primary management areas were selected based on the spatial distribution of trash generating areas and the location of specific existing or planned management actions within City jurisdiction. City staff used the following procedure to designate TMAs:

Staff used geography, commercial areas and planned trash control measures to delineate our TMA's, focusing first on the highest three trash generation categories. TMA 1 is our retail corridor which includes most of our high generation areas with some medium and low areas mixed in. The city has already begun to install full trash capture devices in this area. TMA 2 consists of several small blocks of retail high generation rate areas. TMA 3 is the bulk of our commercial and light industrial areas and is all medium generation rate. TMA's 4-6 are all medium generation areas and were based on specific planned control measures. TMA 7 is primarily residential and is the balance of the low trash generation areas.

A map depicting the City's TMAs is included as Figure 6. 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 6.

Table 6. Jurisdictional area and percentage of each Trash Management Area (TMA) comprised of trash generation categories

TMA	Jurisdictional Area (Acres)	Trash Generation Category			
		Very High	High	Moderate	Low
1	172.6	0.0%	40.6%	29.5%	29.8%
2	7.3	0.0%	100%	0.0%	0.0%
3	451.2	0.0%	0.0%	99.6%	0.3%
4	56.5	0.0%	0.0%	97.2%	2.8%
5	42.7	0.0%	0.0%	99.4%	0.6%
6	4.9	0.0%	0.0%	100%	0.0%
7	2,530.0	0.0%	0.0%	0.0%	100%

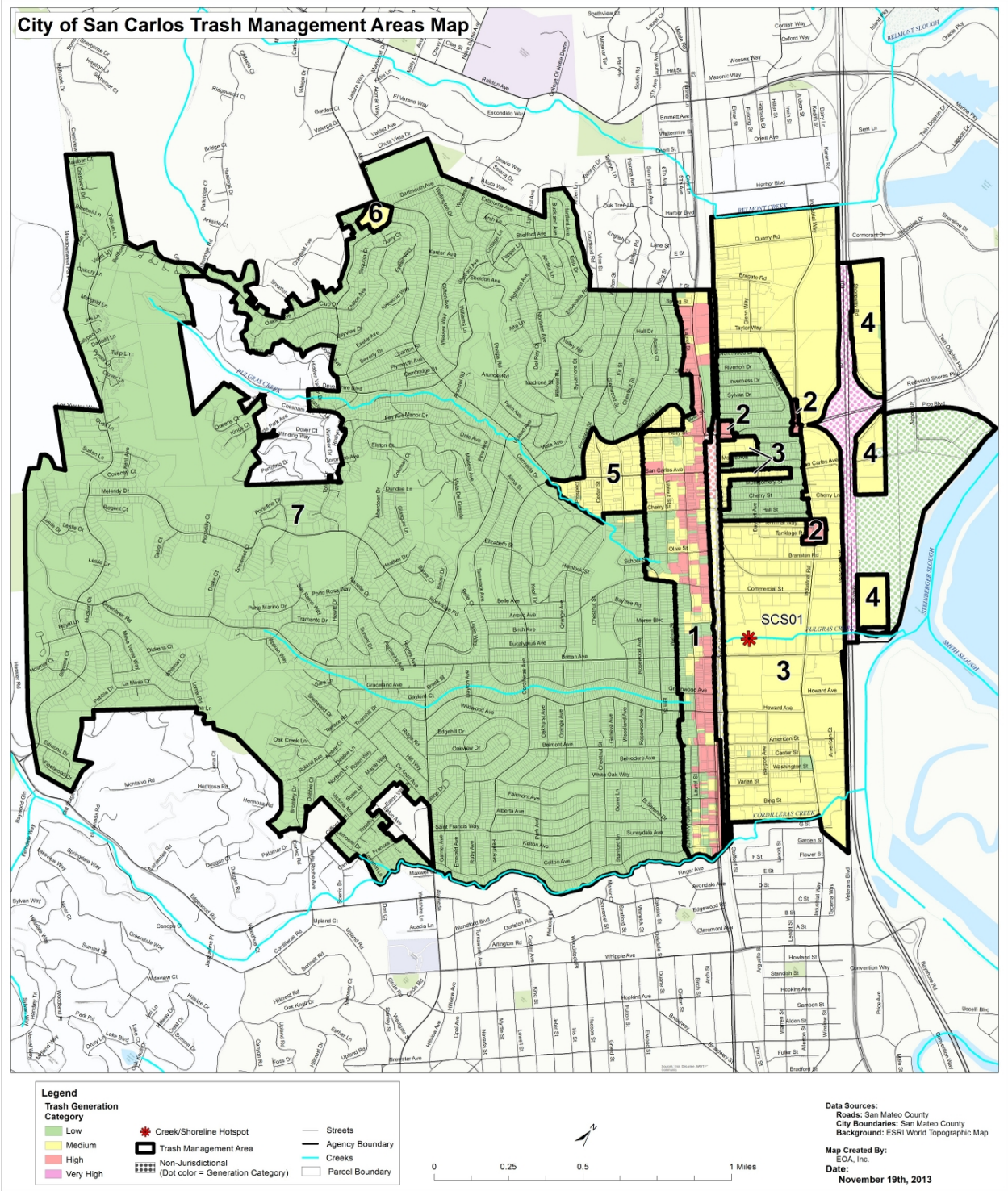


Figure 6. Trash Management Area Map for the City of San Carlos.

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3.2 Current and Planned Trash Control Measures

The City of San Carlos is committed to reducing the potential for trash impacts in local water bodies in the San Francisco Bay. Trash control measures existed pre-MRP and have increased substantially post-MRP. Current trash control measures include full trash capture devices, enhanced street sweeping, on-land cleanups, single-use plastic bag ordinance, polystyrene foam food ware ordinance, public education, and improved trash bin management. Planned future trash control measures will include additional full trash capture devices (TCD's), increased street sweeping, and additional on-land trash cleanups as well as enhanced storm drain inlet maintenance.

3.2.1 Trash Management Area #1

Trash management area one is our retail corridor that experiences trash from litter. The largest source of trash is from litter and discarded cigarettes from vehicles and pedestrians. This TMA is our highest priority and will be our first priority in addressing trash issues. Our top three choices for trash control measures will be full-capture devices, on-land cleanups, and trash bin container management.

Full-Capture Treatment Device

See Figure 7 – Trash Full Capture Treatment Device Map below for location and treatment areas of all full trash capture devices within San Carlos. 42 new full trash capture devices were installed in this TMA during the last two years. These small Connector Pipe Screen devices manufactured by West Coast Storm were installed along our downtown corridor on Laurel Street. The city plans to install an additional 15 full TCD's each year for a projected total of 71, until all high category areas within TMA 1 are reduced to a low category. These new small TCD devices will be manufactured and installed by United Storm Water Inc. Since it will be necessary to treat the catch basins on El Camino, which is a State highway, we will be working with Caltrans for permission to perform these installations. This should be completed in 2021. Maintenance cleaning of the full TCD's has been performed a minimum of three times a year with no problems or performance issues experienced. The full trash capture devices appear to be working as designed and are very effective at collecting trash. Cleaning of the full TCD's are performed utilizing our combination vacuum truck so the screens can be washed and vacuumed to remove debris. Maintenance records are maintained in our CMMS system.

Street Sweeping

Street sweeping is performed twice a week in this TMA. Areas in the downtown corridor with bulb-out curbs are hand swept or blown ahead of the sweeper to ensure all trash is collected from the curb. Parking enforcement signs for street sweeping are not posted in the city. Parking enforcement equivalent occurs on all major arterial roads near commercial areas adjacent to State Route 82 (El Camino Real) due to no parking allowed, which allows sweeping to the curb. This level of sweeping was performed pre-MRP, continues post-MRP, and will continue into the future. Sweeping frequency may be increased after July 2014 based on implementation of other trash control measures. The main streets to be considered for increased frequency would include El Camino Real and Laurel Street. The goal is to evaluate the increased frequency by 12-31-14.

On-land Trash Cleanups

In addition to full trash capture devices, on-land trash cleanups have been our newest and most effective trash control measure for this TMA. No on-land cleanups were held pre-MRP. In the last year we have increased our permittee-led on-land cleanups to bi-weekly events, focusing on the high traffic areas and city parking lots. The city parking lots include Clark Plaza, Williams Plaza, Wheeler Plaza and South Plaza and the high traffic areas are Laurel Street, Cowgill Alley and El Camino Real. We will continue to perform cleanups, evaluate this effort and increase the frequency or the size of the area within the TMA as needed to work in conjunction with the other implemented trash control measures, or until full trash capture devices are installed. Volunteer-led on-land cleanups occur several times a year, and will be reported on annually.

Enhanced Storm Drain Inlet Maintenance

All catch basins are inspected and cleaned a minimum of once per year. This level of cleaning was performed pre-MRP, continues post-MRP, and will continue into the future. The goal is to evaluate the current frequency by 12-31-14, and the frequency may be increased on the 71 TCD-equipped catch basins in this TMA by an additional 10% per year after 2014 based on implementation of other implemented trash control measures. Once full trash capture devices are installed in this TMA maintenance would be performed at a minimum of three times per year.

Trash bin Container Management

Trash bin management has been increased dramatically post-MRP. In the last two years 21 of the 30 city owned downtown trash bins in this TMA have been replaced with a dual can model with separate bins for trash and recycling. Trash pickup times have also been increased from 3 days a week to 5-7 days a week based on extent of use. Future implementation in 2014-15 to include replacing the balance of the single cans with dual cans. Additionally, in the last year, in an effort to address the specific issue of cigarettes butts entering the storm system the city installed 6 ash urns at specific areas adjacent to downtown trash bins. Final results are still to be determined, but initial observations indicate people are utilizing the ash urns. The major sources of cigarette butts appear to be from pedestrians and restaurant patrons. Final evaluation in July of 2014 could lead to additional ash urn installations in 2014-15.

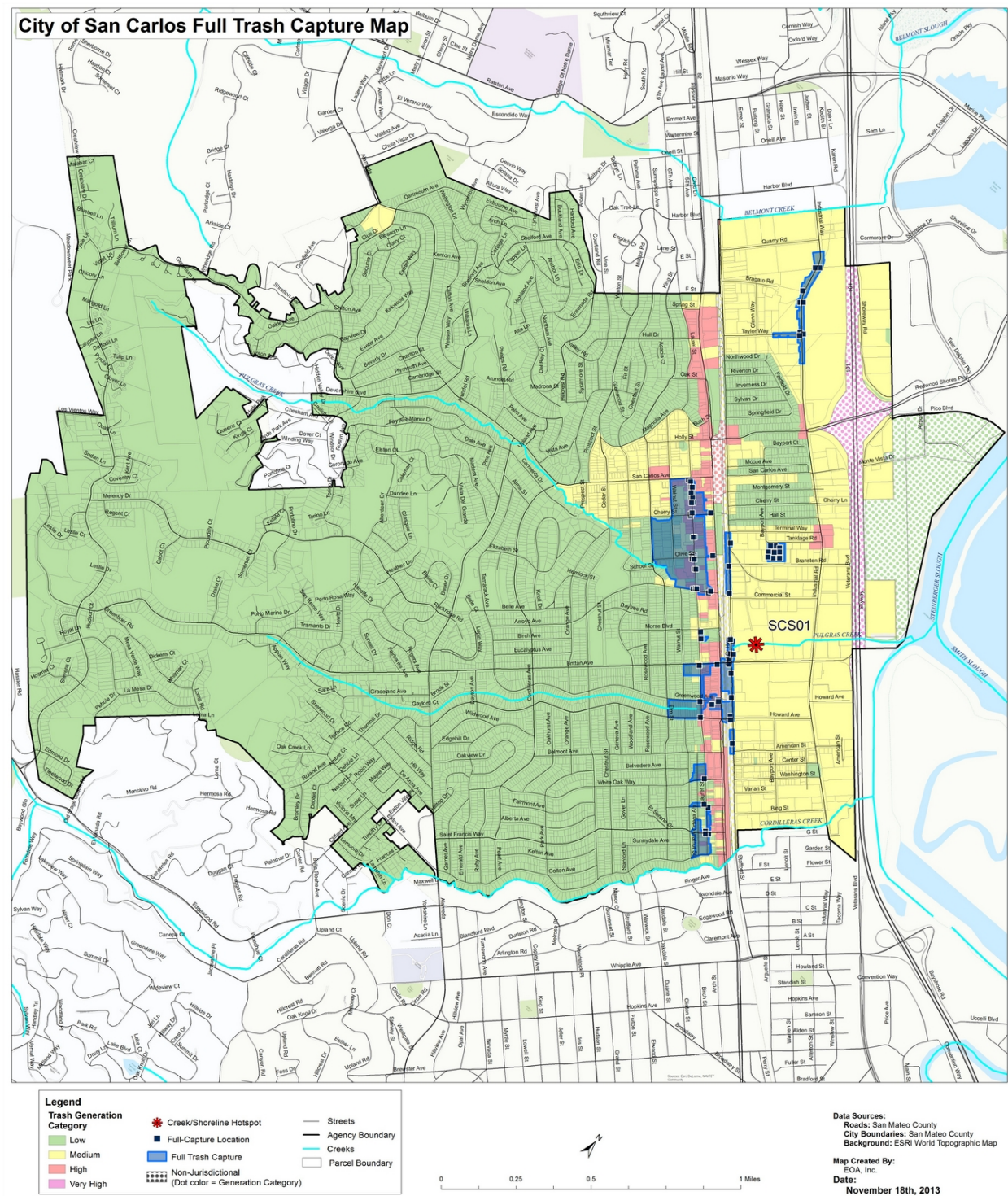


Figure 7. Trash Full Capture Device Map for the City of San Carlos.

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3.2.2 Trash Management Area #2

Trash management area two is a collection of three small high traffic retail areas within a mixed residential and light industrial area within TMA three that experiences trash from litter. The largest source of trash is from litter and discarded cigarettes from vehicles and pedestrians. TMA two is our second highest priority and will be a high priority in addressing trash issues. Our choices for trash control measures will be full-capture devices, and on-land cleanups.

Full-Capture Treatment Device

The city plans to install 5 additional full TCD's each year beginning in 2016 for a projected total of 21 until all high category areas within TMA two are reduced to a low category. These new small CPS devices will be manufactured and installed by United Storm Water Inc. This should be completed in 2021. Once installed, maintenance cleaning on the full TCD's will be performed a minimum of three times a year. Maintenance records will be maintained in our CMMS system.

On-land trash Cleanups

This will be a new trash control measure for these three small retail areas as no on-land cleanups were held pre-MRP or so far post MRP. We will begin monthly permittee-led on-land clean ups in 2014 and continue to evaluate this effort until full trash capture devices are installed. Volunteer-led on-land cleanups will be encouraged for this TMA, and will be reported on annually.

Street Sweeping

Street sweeping is performed once a week in this TMA. Parking enforcement equivalent occurs in these commercial areas due to no parking allowed. This level of sweeping was performed pre-MRP, continues post-MRP, and will continue into the future. Sweeping frequency may be increased after July 2014 based on implementation of other trash control measures. The main streets to be considered for increased frequency would include Industrial Road, Holly Street and Tanklage Road. The goal is to evaluate the increased frequency by 12-31-14.

3.2.3 Trash Management Area #3

Trash management area three is our commercial/light industrial area that experiences trash from litter. The largest source of trash is from litter and discarded cigarettes from vehicles and pedestrians. This TMA is our third highest priority but will remain a high priority in addressing trash issues. Our top three choices for trash control measures will be full-capture devices, on-land cleanups, and enhanced storm drain inlet maintenance. Due to the size of this TMA it will take some time to address the entire area with full-capture treatment devices so the focus for the next few years will be on on-land cleanups and storm drain inlet maintenance to reduce the area to a low category. TMA three also contains our trash hot spot location which is cleaned at least twice a year.

Full-Capture Treatment Device

The city installed 18 small full TCD's pre-MRP, which are the Flogard Plus manufactured and installed by Kristar. We also installed 14 small full TCD's in the last two years manufactured and installed by West Coast Storm. The plan is to install an additional 20 full TCD's each year beginning in 2015 over several year for a total of 117 new full TCD's in selected areas of TMA 3 to help permanently reduce the area to a low category. These new small TCD devices will be manufactured and installed by United Storm Water Inc. This should be completed by 2021. Maintenance cleaning on the TCD's has been performed a minimum of three times a year with no problems or performance issues experienced. The existing full trash capture devices appear to be working as

designed and are very effective at collecting trash. Maintenance records are maintained in our CMMS system.

On-land trash Cleanups

This will be a new trash control measure for this TMA as no on-land cleanups were held pre-MRP or so far post MRP. We will begin monthly permittee-led on-land clean ups in 2014 and continue to evaluate this effort until full trash capture devices are installed. Volunteer-led on-land cleanups will be encouraged for this TMA, and will be reported on annually.

Enhanced Storm Drain Inlet Maintenance

All catch basins are inspected and cleaned a minimum of once per year. This level of cleaning was performed pre-MRP, continues post-MRP, and will continue into the future. The goal is to evaluate the current frequency by 12-31-14, and the frequency may be increased on the 117 catch basins in this TMA by an additional 10% per year after 2014 based on implementation of other implemented trash control measures. Once full trash capture devices are installed in this TMA, maintenance would be performed at least three times per year.

Street Sweeping

Street sweeping is performed once a week in this TMA. Parking enforcement signs for street sweeping are not posted in the city. Parking enforcement equivalent occurs on all major arterial roads near commercial areas due to no parking allowed, which does include this TMA and allows sweeping to the curb. This level of sweeping was performed pre-MRP, continues post-MRP, and will continue into the future. Sweeping frequency may be increased after July 2014 based on implementation of other trash control measures. The main streets to be considered for increased frequency would include Howard Avenue, Brittan Avenue, Old County Road and Holly Street. The goal is to evaluate the increased frequency by 12-31-14.

3.2.4 Trash Management Area #4

Trash management area four is a commercial area east of highway 101 fronting Shoreway and Skyway roads that experiences trash from litter. The largest source of trash is from litter and discarded cigarettes from vehicles and pedestrians. This TMA is our fourth highest priority but will remain a high priority in addressing trash issues. Our choices for trash control measures will be on-land cleanups and enhanced storm drain inlet maintenance. Full-capture devices may be considered after 2015 based on implementation results of the above two trash control measures. The goal is to evaluate the need for full TCD's by July 2015.

On-land trash Cleanups

This will be a relatively new trash control measure for this TMA as no on-land cleanups were held pre-MRP and only a couple held post MRP during the last year. We will begin monthly permittee-led on-land clean ups in 2014 and continue to evaluate this effort along with the enhanced storm drain maintenance. Volunteer-led on-land cleanups will be encouraged for this TMA, and will be reported on annually.

Enhanced Storm Drain Inlet Maintenance

All catch basins are inspected and cleaned a minimum of once per year. This level of cleaning was performed pre-MRP, continues post-MRP, and will continue into the future. The goal is to evaluate the current frequency by 12-31-14, and the frequency may be increased on the 26 catch basins in this TMA to two or three times a year as needed to maintain a low category.

Street Sweeping

Street sweeping is performed once a week in this TMA. Parking enforcement equivalent occurs on all major arterial roads near commercial areas due to no parking allowed which does include this entire TMA and allows sweeping to the curb. This level of sweeping was performed pre-MRP, continues post-MRP, and will continue into the future. Sweeping frequency may be increased after July 2014 based on implementation of other trash control measures. The main streets to be considered for increased frequency would include Shoreway Road and Skyway Road. The goal is to evaluate the increased frequency by 12-31-14.

3.2.5 Trash Management Area #5

Trash management area five is a multi-residential area just west of the downtown corridor that experiences trash from litter. The largest source of trash is from litter and discarded cigarettes from vehicles and pedestrians. This TMA is our fifth highest priority but will remain a high priority in addressing trash issues. Our choices for trash control measures will be on-land cleanups and enhanced storm drain inlet maintenance. Full-capture devices may be considered after 2015 based on implementation results of the above two trash control measures. The goal is to evaluate the need for full TCD's by July 2015.

On-land trash Cleanups

This will be a new trash control measure for this TMA as no on-land cleanups were held pre-MRP or so far post MRP. We will begin monthly permittee-led on-land clean ups in 2014 and continue to evaluate this effort along with the enhanced storm drain maintenance. Volunteer-led on-land cleanups will be encouraged for this TMA, and will be reported on annually.

Enhanced Storm Drain Inlet Maintenance

All catch basins are inspected and cleaned a minimum of once per year. This level of cleaning was performed pre-MRP, continues post-MRP, and will continue into the future. The goal is to evaluate the current frequency by 12-31-14, and the frequency may be increased on the 17 catch basins in this TMA to two or three times a year as needed to maintain a low category.

Street Sweeping

Street sweeping is performed twice a month in this TMA. Parking enforcement signs for street sweeping are not posted in the city. This level of sweeping was performed pre-MRP, continues post-MRP, and will continue into the future. Sweeping frequency may be increased after July 2014 based on implementation of other trash control measures. The main streets to be considered for increased frequency would include Cedar Street, Chestnut Street and San Carlos Avenue. The goal is to evaluate the increased frequency by 12-31-14.

3.2.6 Trash Management Area #6

Trash management area six is a small commercial/residential area that experiences trash from litter. The largest source of trash is from litter and discarded cigarettes from vehicles and pedestrians, mostly from students passing through to a high school in Belmont. This TMA is our sixth highest priority but will remain a high priority in addressing trash issues. Our choices for trash control measures will be on-land cleanups and enhanced storm drain inlet maintenance. Full-capture devices may be considered after 2015 based on implementation results of the above two trash control measures. The goal is to evaluate the need for full TCD's by July 2015.

On-land trash Cleanups

This will be a new trash control measure for this TMA as no on-land cleanups were held pre-MRP or so far post MRP. We will begin monthly permittee-led on-land clean ups in 2014 and continue to evaluate this effort along with the enhanced storm drain maintenance. Volunteer-led on-land cleanups will be encouraged for this TMA, and will be reported on annually.

Enhanced Storm Drain Inlet Maintenance

All catch basins are inspected and cleaned a minimum of once per year. This level of cleaning was performed pre-MRP, continues post-MRP, and will continue into the future. The goal is to evaluate the current frequency by 12-31-14, and the frequency may be increased on the 11 catch basins in this TMA to two or three times a year as needed to maintain a low category.

Street Sweeping

Street sweeping is performed once a month in this TMA. This level of sweeping was performed pre-MRP, continues post-MRP, and will continue into the future. Parking enforcement equivalent occurs on all major arterial roads near commercial areas due to no parking allowed, which does include this TMA and allows sweeping to the curb. Sweeping frequency may be increased after July 2014 based on implementation of other trash control measures. The main streets to be considered for increased frequency would include Club Drive and San Carlos Avenue. The goal is to evaluate the increased frequency by 12-31-14.

3.2.7 Trash Management Area #7

Trash management area seven is the residential portion of our city experiencing minimal or no trash from litter. This TMA is our lowest priority but will not be overlooked in addressing any new or emerging trash issues to maintain its low trash category. Even with schools, churches and parks included within this TMA, our field assessments show a very low trash category. It is obvious the citizens take great pride in the cleanliness of their city.

Street Sweeping

Street sweeping is performed once or twice a month in this TMA. The hill areas in the western portion are swept monthly. The flat areas between the downtown corridor and the hills are swept twice a month. This level of sweeping was performed pre-MRP, continues post-MRP, and will continue into the future. Parking enforcement signs for street sweeping are not posted in the city.

On-land trash Cleanups

No on-land cleanups were held pre-MRP. Volunteer-led on-land cleanups occur several times a year, and will be reported on annually.

Enhanced Storm Drain Inlet Maintenance

All catch basins are inspected and cleaned a minimum of once per year. This level of cleaning was performed pre-MRP, continues post-MRP, and will continue into the future. The goal is to evaluate the current frequency by 12-31-14, and the frequency may be increased on the 1208 catch basins in this TMA by an additional 10% per year after 2014 based on future field assessments.

3.2.8 Jurisdiction-wide Control Measures

The City of San Carlos is committed to reducing the potential for trash impacts in local water bodies in the San Francisco Bay. The main source of trash in all of our TMA's is from litter, so jurisdictional-wide control measures will play a key role in reducing trash. Public Education and Outreach Programs existed pre-MRP and have increased substantially post-MRP. Current trash control measures include single-use plastic bag ordinance, polystyrene foam food ware ordinance, and public education. Planned future trash control measures will include continued participation in public education.

Single-Use Carryout Bag Policies

On March 11, 2013 the San Carlos city council adopted Ordinance 1455 which adopts the San Mateo County ordinance 4.114 that prohibits the use of single use bags and encourages the use of reusable bags. The ordinance went into effect July 1, 2013. Ordinance is located at the following web link under Title 8, Chapter 8.28 - <http://www.codepublishing.com/CA/sancarlos/>. Compliance with this ordinance is overseen by San Mateo County Environmental Health. The city has provided outreach including a "Bring Your Own Bag" website posting and provided 2000 reusable cloth shopping bags at several locations including the youth center, city hall, adult community center and the corporation yard.

Polystyrene Foam Food Service Ware Policies

On March 12, 2012 the San Carlos city council adopted Ordinance 1442 which adopts the San Mateo County model ordinance that bans Polystyrene Foodware by food vendors. The ordinance went into effect July 1, 2012. Food vendors have been notified in writing and were provided information on alternative products. Ordinance is located at the following web link under Title 8, Chapter 8.27 - <http://www.codepublishing.com/CA/sancarlos/>. Compliance with this ordinance is overseen by San Mateo County Environmental Health.

Public Education and Outreach Programs

The City of San Carlos implemented the following public education and outreach control measures prior to the effective date of the MRP and has continued to implement these measures since MRP adoption.

SMCWPPP Public Information and Participation Program (Countywide)

Through participation and funding of the San Mateo Countywide Water Pollution Prevention Program's (SMCWPPP) Public Information and Participation program (PIP), the City of San Carlos plans to continue implementing litter reduction outreach to school-age children and youth. SMCWPPP currently oversees a contract to provide direct outreach to grades K-5 in a school setting on behalf of all permittees. The contract is currently held by the Banana Slug String Band, which performs a presentation called "We All Live Downstream." Through songs and interactive exercises, the message of not putting anything in the stormdrains (including trash) is delivered, along with basic concepts of the water cycle and the impact of pollution on aquatic life.

In addition, SMCWPPP has developed a presentation entitled "Water Pollution Prevention: Problems and Solutions" that is delivered to high school students. This presentation is dedicated to watershed and storm drain education, and the impact of litter on local creeks and waterways. Both efforts are managed to ensure that schools in each community in the County are reached. For communities without High Schools, the feeder schools in neighboring communities are specifically targeted for presentations. In addition to outreach at the school sites, a number of student activity

guides and coloring books related to watershed health and littering are provided to children who attend outreach events. Schools are also directly targeted in promotion of Coastal Cleanup Day.

PIP also participates in a regional anti-littering campaign developed by BASMAA targeted at youth ages 14 to 24. As acting chair of the BASMAA PIP committee, SMCWPPP PIP has participated in the development and dissemination of campaign materials, and has conducted local events on behalf of all jurisdictions to promote the campaign. The campaign, entitled “Be The Street You Want to See”, will soon transition from building a community of youth dedicated to not littering to engaging that community in action SMCWPPP, through its PIP program, plans to continue to conduct community outreach events on behalf of Permittees who request support. Outreach materials related to litter that are distributed include, in addition to the children’s materials listed above under Outreach to School-age Children or Youth, a promotional sign for cigarette smokers to discourage cigarette litter, and pocket ashtrays are given out. A general stormwater pollution prevention flyer in English and Spanish that includes litter reduction in its messaging is distributed. In addition to table outreach events conducted for specific Permittees, PIP also conducts a Countywide Event aimed to reach residents from throughout the County. PIP manages an online calendar which promotes cleanup events by non-profit organizations throughout the County. In FY 2012, PIP completed its 7th year acting as the county coordinator for Coastal Cleanup Day, increasing volunteer participation by 400% in that time, and trash removal increased by 300%.

During the term of the MRP, new outreach materials have been disseminated to the public, including reusable shopping bags to encourage reduction in use of plastic carryout bags PIP has supported a countywide ban on carryout bags that began implementation on April 22, 2013 In addition, spring cleanups taking place in individual jurisdictions are promoted under one theme by PIP, entitled Spring Cleaning SMC. PIP assists in directing volunteers to cleanup events in their communities. SMCWPPP conducted a total of 11 outreach events on behalf of various jurisdictions within the County in the 2012-13 fiscal year. SMCWPPP will also continue maintaining an online calendar of cleanups on a monthly basis. In addition to using the SMCWPPP website, flowstobay.org, to promote cleanups, PIP is actively involved in social media platforms such as Facebook, Twitter, You Tube, and Instagram to deliver anti-littering and cleanup messages.

Coastal Cleanup Day Promotion (Countywide)

On the countywide level, SMCWPPP also conducts annual press releases for Coastal Cleanup Day, and uses Twitter to promote cleanup events. These releases are intended to gain support and assistance for cleanup events conducted each September in local water bodies

BASMAA Regional Media Relations Project (Regional)

Through participation and funding of the BASMAA Regional Media Relations Project, the City of San Carlos is continuing to implement a media relations project partially designed to reduce littering from target audiences in the Bay Area. The goal of the BASMAA Media Relations Project is to generate media coverage that encourages individuals to adopt behavior changes to prevent water pollution, including littering. At least two press releases or PSAs focus on litter issues each year (e.g., creek clean-up activities, preventing litter by using reusable containers, etc.). In FY 12-13, the Media Relations project developed a press release new and recent bag bans in cities around the region. The pitch included information on the litter caused by plastic bags. Information ran on KBAY, KCBS and on eight Bay Area Patch.com sites.

New/Enhanced Post-MRP Actions Initiated/Planned:

In addition to the control measures continued post-MRP adoption, the City of San Carlos is currently implementing or planning to implement the following public education and outreach control measures that were initiated after the MRP was adopted.

BASMAA Youth Outreach Campaign (Regional)

Through participation and funding of the regional BASMAA Youth Outreach Campaign, the City of San Carlos is implementing an outreach campaign designed to reduce littering from the target audience in the Bay Area. The Youth Outreach Campaign was launched in September 2011 and aims to increase the awareness of Bay Area Youth (ages 16-24) on litter and stormwater pollution issues, and eventually change their littering behaviors. Combining the ideas of Community Based Social Marketing with traditional advertising, the Youth Campaign aims to engage youth to enable the peer-to-peer distribution of Campaign messages. The Campaign will at least run through FY 13-14. A brief description of the Campaign activities is provided below:

- **Raising Awareness:** The Campaign is raising awareness of the target audience on litter and stormwater pollution issues. Partnerships with youth commissions, high schools, and other youth focused organizations have been developed to reach the target audience. Messages targeted to youth have been created and distributed via paid advertising, email marketing, Campaign website and social networking sites (e.g., Facebook and Twitter).
- **Engage the Youth -** The advertisements encourage the audience to participate in the Youth Campaign by joining a Facebook page, entering a contest, taking an online quiz, etc., and providing their contact information. At the beginning of FY 12-13, a video contest was launched to get Bay Area youth further involved in the Campaign. An online voting system was used to select the winning entry. Media advertising was conducted to promote the winning entry.
- **Change Behaviors:** To move the audience along the behavior change continuum, the Campaign is using electronic platforms such as email marketing and social networking sites to encourage participants to engage in increasingly more difficult behavior changes, such as participating in a clean-up, organizing a clean-up, etc.
- **Maintain Engagement:** The Campaign continues to interact with the target audience through email marketing and social media websites.

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

Activities in FY 12-13 included maintaining the website www.BetheStreet.org, Facebook page, and Instagram account. A video contest asking participants to submit their best anti-litter video was also conducted. The Be the Street campaign received 52 entries in response to the contest. The winning video was promoted on television, Pandora (online music site), YouTube, Google, and Facebook.

3.2.9 Creek and Shoreline Hot Spot Cleanups

The City of San Carlos has one selected trash hot spot. The hot spot is located on Pulgas Creek just East of Old County Road and has a Site ID of SCS01. The hot spot is also indicated on both our full trash capture and trash generation maps included in this plan. The site is cleaned at least once per year with less than one bag of trash collected at each cleaning. The main sources of trash are from trash accumulation from upstream and litter. The most common trash types are plastic bags, paper, Styrofoam, and convenience food wrappers.

3.2.10 Summary of Trash Control Measures

Trash Management Area 1

- Full Capture Treatment Devices
- Street Sweeping
- On-land Trash Cleanups
- Enhanced Storm Drain Inlet Maintenance
- Trash Bin Container Management
- It is our belief the above control measures will achieve our goal of a “full” trash reduction level.

Trash Management Area 2

- Full Capture Treatment Devices
- Street Sweeping
- On-land Trash Cleanups
- It is our belief the above control measures will achieve our goal of a “full” trash reduction level.

Trash Management Area 3

- Full Capture Treatment Devices
- Street Sweeping
- On-land Trash Cleanups
- Enhanced Storm Drain Inlet Maintenance
- It is our belief the above control measures will achieve our goal of a “full” trash reduction level.

Trash Management Area 4

- Street Sweeping
- On-land Trash Cleanups
- Enhanced Storm Drain Inlet Maintenance
- It is our belief the above control measures will achieve our goal of a “full” trash reduction level.

Trash Management Area 5

- Street Sweeping
- On-land Trash Cleanups
- Enhanced Storm Drain Inlet Maintenance
- It is our belief the above control measures will achieve our goal of a “full” trash reduction level.

Trash Management Area 6

- Street Sweeping
- On-land Trash Cleanups
- Enhanced Storm Drain Inlet Maintenance

- It is our belief the above control measures will achieve our goal of a “full” trash reduction level.

Trash Management Area 7

- Street Sweeping
- On-land Trash Cleanups
- Enhanced Storm Drain Inlet Maintenance
- It is our belief the above control measures will achieve our goal of a “full” trash reduction level.

3.3 Control Measure Implementation Schedule

Following is the City of San Carlos trash control measure implementation schedule. The schedule indicates control actions initiated prior to MRP effective date, actions undertaken in the short term and new actions planned for implementations after July 2014.

Table 7. City of San Carlos 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														
Full-capture Treatment Device	X			X				X	X		X		X	X
Street Sweeping	X													
On-land Trash Cleanups					X	X	X	X	X	X	X			
Enhanced Storm Drain Inlet Maintenance							X	X	X	X	X			
Trash Bin Container Management				X			X	X	X	X	X	X	X	X
TMA #2														
Full-capture Treatment Device									X		X	X		X
On-land Trash Cleanups							X	X	X	X				
Street Sweeping	X													
TMA #3														
Full-capture Treatment Device	X			X			X	X		X		X	X	
On-land Trash Cleanups							X	X	X	X	X	X	X	
Enhanced Storm Drain Inlet Maintenance							X	X	X	X	X	X	X	
Street Sweeping	X													
TMA #4														
On-land Trash Cleanups						X	X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance							X	X	X	X	X	X	X	X
Street Sweeping	X													
TMA #5														
On-land Trash Cleanups							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
Enhanced Storm Drain Inlet Maintenance							X	X	X	X	X	X	X	X
Street Sweeping	X													
TMA #6														
On-land Trash Cleanups							X	X	X	X	X	X	X	X
Enhanced Storm Drain Inlet Maintenance							X	X	X	X	X	X	X	X
Street Sweeping	X													
TMA #7														
On-land Trash Cleanups			X											
Enhanced Storm Drain Inlet Maintenance							X	X	X	X	X	X	X	X
Street Sweeping	X													
Jurisdiction-wide Control Measures														
Single-Use Carryout Bag Policies						X								
Polystyrene Foam Food Service Ware Policies					X									
Public Education and Outreach Programs	X			X										
Creek and Shoreline Hot Spot Cleanups														
Trash Hot Spot Cleanup		X												

^aJuly 1, 2014 - 40% trash reduction target^bJuly 1, 2017 - 70% trash reduction target^cJuly 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 San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), including the City of San Carlos. 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 SMCWPPP. 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 SMCWPPP Pilot Assessment Strategy

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

4.1.1 Management Questions

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

- Are the MS4 trash load reduction targets being achieved?
- Have trash problems in receiving waters been resolved?
- If trash problems in receiving waters exist, what are the important sources and transport pathways?

The SMCWPPP Pilot Strategy, including indicators and methods, is summarized in this section and fully described in the SMCWPPP Pilot Trash Assessment Strategy, a compendium document submitted to the Water Board on February 1, 2014 on behalf of all SMCWPPP Permittees (SMCWPPP 2014).

4.1.2 Indicators of Progress and Success

The management questions listed in the previous section will be addressed by tracking information and collecting data needed to report on a set of key environmental indicators. Environmental indicators are simple measures that communicate what is happening in the environment. Since trash in the environment is very complex, indicators provide a more practical and economical way to track the state of the environment than if we attempted to record every possible variable.

With regard to municipal stormwater trash management, indicators are intended to detect progress towards trash load reduction targets and solving trash problems. Ideally, indicators should be robust and able to detect progress that is attributable to multiple types of trash control measure implementation scenarios. Assessment results should also provide Permittees with an adequate level of confidence that trash load reductions from MS4s have occurred, while also assessing whether trash problems in receiving waters have been resolved. Indicators must also be cost effective, relatively easy to generate, and understandable to stakeholders.

Primary and secondary indicators that SMCWPPP Permittees will use to answer core management questions include:

Primary Indicators:

- 1-A Reduction in the level of trash present on-land and available to MS4s
- 1-B Effective full capture device operation and maintenance

Secondary Indicators:

- 2-A Successful levels of trash control measures implementation
- 2-B Reductions in the amount of trash in receiving waters

In selecting the indicators above, the City of San Carlos in collaboration with SMCWPPP and other SMCWPPP 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.

The ultimate goal of municipal stormwater trash reduction strategies is to reduce the impacts of trash associated with MS4s on receiving waters. Indicators selected to assess progress towards this goal should ideally measure outcomes (e.g., reductions in trash discharged). The primary indicators selected by SMCWPPP are outcome-based and include those that are directly related to MS4 discharges. Secondary indicators are outcome or output-based and are intended to provide additional perspective on and evidence of, successful trash control measure implementation and improvements in receiving water condition with regard to trash.

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. Due to this challenge of linking MS4 control measure implementation to receiving water conditions, the receiving water based indicator is currently considered a secondary indicator. 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 in further determinations of the important sources and pathways causing problems in local creeks, rivers and shorelines.

4.1.3 Pilot Assessment Methods

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

1-A. On-land Visual Assessments

As part of the Trash Generation Map assessment and refinement process (see Section 2.3.1), a draft on-land visual assessment method was developed to assist Permittees in confirming and refining trash generating area designations (i.e., very high, high, moderate and low trash generating categories). The draft on-land visual assessment method is intended to be a cost-effective tool and provide Permittees with a viable alternative to quantifying the level of trash discharged from MS4s. As part of BASMAA's *Tracking California's Trash* grant received from the State Water Resources Control Board (see Section 4.2), quantitative relationships between trash loading from MS4s and on-land visual assessment condition categories will be established. Condition categories defined in the draft on-land assessment protocol are listed in Table 8

Table 8. Trash condition categories used in the draft on-land visual assessment protocol.

Trash 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, with large piles and a strong impression of lack of concern for litter in the area.

On-land visual assessments will be conducted in trash management areas within the City of San Carlos as part of the SMCWPPP Pilot Trash Assessment Strategy. On-land assessments are intended to establish initial conditions and detect improvements in the level of trash available to MS4s over time. More specifically, on-land visual assessment methods will be conducted in areas not treated by trash full capture devices in an attempt to evaluate reductions associated with other types of control measures. Assessment methods for areas treated by full capture devices are described in this next section.

Given that the on-land assessment method and associated protocol have not been fully tested and refined, initial assessments will occur at a pilot scale in the City and in parallel to the *Tracking California's Trash* project. The frequency of assessments and number of sites where assessments will occur during the pilot stage are more fully described in the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014).

1-B. Full Capture Operation and Maintenance Verification

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 San Carlos is currently developing an operation and maintenance verification program (Trash O&M Verification Program), via SMCWPPP, to ensure that devices are inspected and maintained at a level that maintains this designation.

The SMCWPPP 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. Additional details regarding the Trash O&M Verification Program can be found in the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014).

2-A. Control Measure Effectiveness Evaluations

In addition to on-land trash assessments and full capture operation and maintenance verification, the City will also conduct assessments of trash control measures implemented within their jurisdictional area. Assessment methods will be selected based on trash sources and the type of control measure being implemented. Control measure effectiveness evaluations are more fully described in the SMCWPPP Pilot Trash Assessment Strategy. The following are example assessment methods that may be used to demonstrate successful control measure implementation and progress towards trash reduction targets:

- Product-related Ordinances – Annually tracking and reporting the % of businesses in compliance with the ordinance and the percentage requiring a response.
- Street Sweeping – Reporting the frequency of sweeping and ability to sweep to the curb in specific areas where enhanced sweeping is implemented; and/or documenting the level of trash on streets directly after street sweeping during wet and dry weather seasons.
- Public/Private Trash Container Management – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and documenting conditions around public trash containers before and after implementing enhanced control measures.
- Targeted Outreach and Enforcement – Reporting the magnitude and extent of enhanced actions; tracking and reporting the % increase in enforcement actions; and/or visually assessing and documenting the conditions in targeted areas before and after implementing control measures.
- Public Outreach Campaigns – Reporting the magnitude and extent of enhanced actions, and/or conducting pre and post campaign surveys.
- On-land Cleanups and Enforcement – Reporting the magnitude and extent of enhanced actions; visually assessing and documenting the conditions in targeted areas before and after control measure implementation; and/or tracking the volumes of trash removed.
- Illegal Dumping Prevention – Reporting the magnitude and extent of enhanced actions; and/or tracking and reporting improvements in the number of incidents.
- Business Improvement Districts – Reporting the magnitude and extent of enhanced actions; and/or visually assessing and documenting the conditions in BID areas before and after implementing control measures.

- Prevention of Uncovered Loads - Reporting the magnitude and extent of enhanced actions; tracking and reporting the decreases in the number of incidents; and/or visually assessing and documenting the conditions in targeted areas before and after implementing control measures.
- Partial Capture Devices - Reporting the magnitude and extent of enhanced actions; and/or visually assessing and the amount of trash in storm drains or downstream of partial capture devices.

2-C. Receiving Water Condition Assessments

The ultimate goal of stormwater trash management in the Bay Area is to significantly reduce the amount of trash found in receiving waters. In the last decade, San Mateo County Permittees and volunteers have collected data on the amounts of trash removed during cleanup events. More recently, Permittees have conducted trash assessments in creek and shoreline hotspots using standardized assessment methods. In an effort to answer the core management question, *Have trash problems in receiving waters been resolved?*, the City of San Carlos plans to continue conducting receiving water condition assessments at trash hot spots a minimum of one time per year. Assessment will be conducted consistent with Permit hot spot cleanup and assessment requirements. Additional information on receiving water assessment methods can be found in the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014).

4.2 BASMAA “Tracking California’s Trash” Project

The SMCWPPP 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 by the scientific community. In an effort to address these information gaps associated with trash assessment methods, the Bay Area Stormwater Management Agencies Association (BASMAA), in collaboration with SMCWPPP, 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 SMCWPPP 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 Long-Term Assessment Strategy

The City of San Carlos is committed to implementing standardized assessment methods post-2016 based on the lessons learned from pilot assessments and studies that will occur between 2014 and 2016. 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 agreed upon assessment methods that will be used to demonstrate progress during the remaining term of trash reduction requirements. Reporting using the new/revised methods will begin with the FY 2016-17 Annual Report.

4.4 Implementation Schedule

The implementation schedule for the SMCWPPP Pilot Implementation Strategy, BASMAA's *Tracking California's Trash* project, and the Long-Term Assessment Strategy are included in Table 9. 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. For more detailed information on implementation timelines, refer to the SMCWPPP Pilot Trash Assessment Strategy (SMCWPPP 2014) and monitoring plans developed as part of BASMAA's Tracking California's Trash project.

Table 9. City of San Carlos 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 (SMCWPPP)										
On-land Visual Assessments										
Initial (Baseline) Assessments	X									
Pilot Progress Assessments		X	X	X	X					
Full Capture Operation and Maintenance Verification			X	X	X					
Control Measure Effectiveness Evaluations	X	X	X	X	X					
Receiving Water Condition Assessments	X	X	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					
Long-Term Trash Assessment Strategy (SMCWPPP)						X	X	X	X	X

^aJuly 1, 2014 - 40% trash reduction target

^bJuly 1, 2017 - 70% trash reduction target

^cJuly 1, 2022 - 100% trash reduction target

5.0 REFERENCES

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APPENDIX A



CITY OF SAN CARLOS

AGENDA CATEGORY:

BUSINESS SESSION: _____

CONSENT CALENDAR: _____

PUBLIC HEARING: _____

STUDY SESSION: _____

CITY COUNCIL MEETING DATE: January 13, 2014

ITEM TITLE: Adopt a Resolution Authorizing the City Manager to Sign the Long-Term Trash Load Reduction Plan to be Submitted to the San Francisco Bay Regional Water Quality Control Board.

RECOMMENDATION:

It is recommended that City Council adopt a resolution to authorize the City Manager to sign the Long-Term Trash Load Reduction Plan as part of the City's continuing efforts to reduce storm water pollution.

FISCAL IMPLICATIONS:

According to how the Long Term Trash Load Reduction Plan (Attachment 2) is currently written, there are no additional fiscal implications for the 2014-15 fiscal year. Staff and project efforts for the additional requirements can be absorbed within the current operating budget in Fund 15 Stormwater and the annual Measure M grant funds. However, if additional compliance requirements are established by the San Francisco Bay Regional Water Quality Control Board or if revisions to the proposed plan require additional efforts to meet the 100% trash reduction goal, additional funds may be needed. If that were to occur, staff would look at options such as revisiting the annual City Stormwater Assessment, or requesting additional appropriations from the General Fund.

BACKGROUND:

The Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit for Phase I communities in the San Francisco Bay Region (Order R2-2009-0074), also known as the Municipal Regional Permit (MRP), became effective on December 1, 2009. The permit applies to 76 large, medium and small municipalities and flood control agencies in the San Francisco Bay Region. Provision C.10.c of the permit requires agencies to submit a Long-Term Trash Load Reduction Plan by February 1, 2014. The long-term plans must describe trash reduction control measures that are currently being implemented, including the level of implementation, and additional trash reduction control measures that will be implemented. The efforts within the plan must be designed to attain a 70% trash load reduction by July 1, 2017, and 100% trash load reduction by July 1, 2022.

The goal of the long-term plan is to reduce and/or eliminate trash problems in receiving waters by reducing the trash in discharges from the City of San Carlos's storm drain system 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% trash load reduction by July 1, 2022, with an interim milestone of 70% trash load reduction by July 1, 2017;
2. A description of the Trash Assessment Strategy that will be used to assess progress towards trash load reduction targets achieved as a result of control measure implementation;

3. Time schedules for implementing additional 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 (Figure 1 below) developed in collaboration with Water Board staff. Its content is based on the City of San Carlos' current understanding of trash problems within our city and the effectiveness of current control measures designed to reduce trash impacts associated with storm drain discharges. The long-term plan builds upon trash control measures implemented by the City prior to the adoption of the permit and during the implementation of the Short-Term Trash Load Reduction Plan submitted to the Water Board on February 1, 2012.

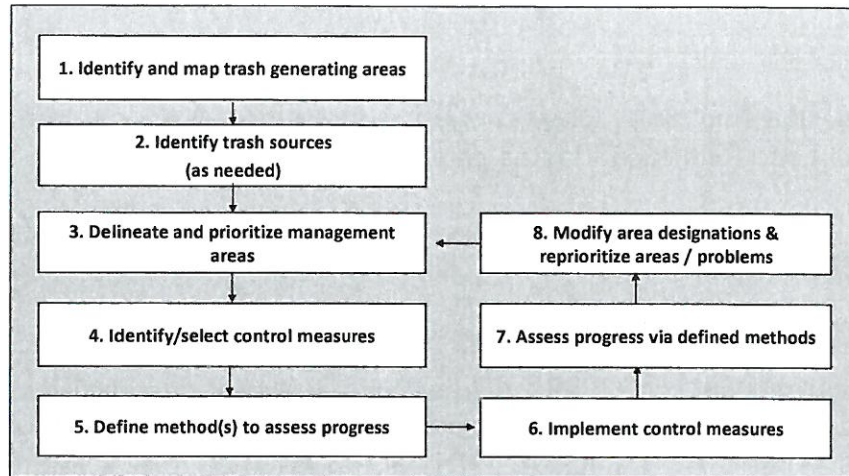


Figure 1.

ANALYSIS:

Although San Carlos was able to achieve compliance under the current permit requirements, future trash reductions will be required to maintain compliance. The city is required to reduce trash loads to the San Francisco Bay receiving waters by 70% in 2017 and 100% in 2022. Due to the constantly changing compliance requirements and a framework that allows for modification of the Long-Term Trash Load Reduction Plan, there may be a need for additional resources to comply with the permit. This should be considered an unfunded mandate.

If the City does not comply with the provisions of the permit that require the submittal of a Long-Term Trash Load Reduction Plan, the City would be issued a Notice of Violation. The City would need to respond to the Notice, with an explanation of the reasons for non-compliance and a schedule to achieve compliance. Continued violation could lead to the Regional Board issuing an order establishing a time schedule for compliance and prescribing a civil penalty which would be due if compliance is not achieved in accordance with that time schedule. The amount of the civil penalty would be based upon the amount reasonably necessary to achieve compliance, but could be as high as ten thousand dollars (\$10,000) for each day in which the violation occurs.

ALTERNATIVES:

1. Adopt a resolution authorizing the City Manager to sign the Long-Term Trash Load Reduction Plan;
2. Do not adopt a resolution authorizing the City Manager to sign the Long-Term Trash Load Reduction Plan;
3. Provide different direction to staff.

Respectfully submitted,

Jay Walter, Public Works Director

Approved for submission by:

Jeff Maltbie, City Manager

Attachments:

1. Resolution
2. Long-Term Trash Reduction Plan

RESOLUTION NO. 2014-002

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SAN CARLOS AUTHORIZING
THE CITY MANAGER TO SIGN THE LONG-TERM TRASH LOAD REDUCTION PLAN AND
SUBMIT IT TO THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL
BOARD AS PART OF THE NPDES PERMIT REQUIREMENTS**

WHEREAS, The Municipal Regional Stormwater NPDES Permit became effective on December 1, 2009. The permit applies to 76 large, medium and small municipalities and flood control agencies in the San Francisco Bay Region. Provision C.10 of the Permit requires the City of San Carlos to reduce trash from the municipal storm drain system by 40% before July 1, 2014; and

WHEREAS, In order to achieve the required trash load reductions, staff submitted the Short-Term Trash Load Reduction Plan to the San Francisco Bay Regional Water Quality Control Board by February 1, 2012; and

WHEREAS, Provision C.10 of the Permit also requires the City of San Carlos to reduce trash from its municipal storm drain system by 70% in 2017 and 100% in 2022. The corresponding Long-Term Trash Load Reduction Plan must be submitted to the San Francisco Bay Regional Water Quality Control Board by February 1, 2014; and

WHEREAS, The goal of the Long-Term Trash Load Reduction Plan is to reduce and/or eliminate trash in receiving waters by reducing the trash in discharges from the City of San Carlos's municipal storm drain system that is regulated under NPDES Permit requirements; and

WHEREAS, The long-term plan is consistent with the Long-Term Trash Load Reduction Framework developed in collaboration with Water Board staff; and its content is based on the City of San Carlos's current understanding of trash problems within the city and the effectiveness of control measures designed to reduce trash impacts associated with municipal storm drain discharges; and

WHEREAS, The Long-Term Trash Load Reduction Plan builds upon trash control measures implemented by the City prior to the adoption of the Permit, and during the implementation period of the Short-Term Trash Load Reduction Plan submitted to the Water Board on February 1, 2012.

NOW, THEREFORE, BE IT RESOLVED that the City Manager of the City of San Carlos is hereby authorized to sign for and on behalf of the City of San Carlos the Long-Term Trash Load Reduction Plan, which will then be submitted to the San Francisco Bay Regional Water Quality Control Board by February 1, 2014.

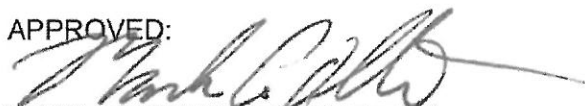
I, Crystal Mui, hereby certify that this Resolution was passed and adopted by the City Council of the City of San Carlos at a regular meeting held on the 13th day of January 2014, by the following vote:

AYES, COUNCILMEMBERS: COLLINS, GRASSILLI, JOHNSON, OLBERT


NOES, COUNCILMEMBERS: NONE

ABSENT, COUNCILMEMBERS: GROCOTT

APPROVED:



MAYOR of the City of San Carlos


City Clerk of the City of San Carlos