Long-Term Trash Load Reduction Plan and Assessment Strategy

Submitted by:

City of Cupertino
10300 Torre Avenue
Cupertino, CA 95014

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

January 21, 2014

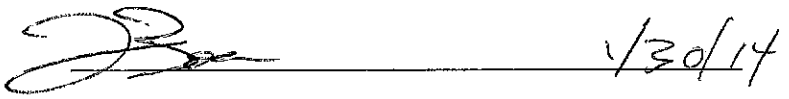
Page Intentionally Left Blank

CITY OF CUPERTINO
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:



Timm Borden
Public Works Director

1-30-2014

TABLE OF CONTENTS

LIST OF TABLES

LIST FIGURES

LIST APPENDICES

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
EPS	Expanded Polystyrene
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 Cupertino'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 Cupertino 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 Cupertino 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 Cupertino'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(pre-MRP activities conducted by the City are described in Section 1.2.3).
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 Cupertino'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 Cupertino City Council on January 21, 2014. The Public Works 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).

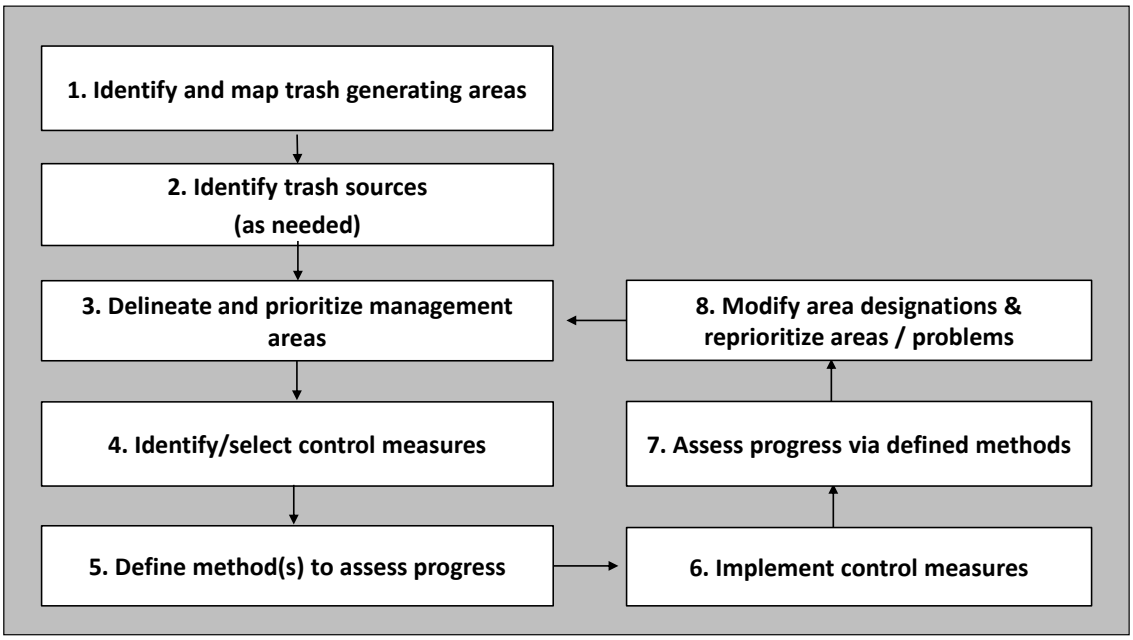


Figure 1. Eight-step framework for developing, implementing and refining Long-Term Trash Reduction Plans.

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.

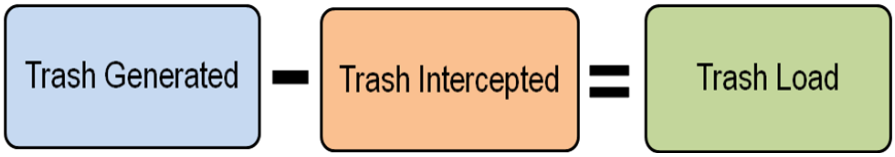


Figure 2. Conceptual model of trash generation, interception and load.

Trash generation rates were estimated based on factors that significantly affect trash generation (i.e., land use and income). The method used to 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. 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 Pre-MRP Control Measures

- **Storm drain inlet maintenance -** Half of the City's MS4 was cleaned annually;
- **Street sweeping –** All of the City's roads and streets were swept weekly, although the effectiveness of the contracted service and equipment was only satisfactory;
- **Community creek cleanup events** – The City held events on National River Cleanup Day and Coastal River Cleanup Day at Calabazas Creek starting in September 2008.
- **IND inspections** - The City's inspectors included enforcement for litter violations;
- **Public education programs** – The City provided environmental activities for schools upon request (including litter messages); articles on litter prevention were published in the City's monthly newsletter (*Cupertino Scene*) and occasionally in the Silicon Valley community newspaper (*Cupertino Courier*). A substantial third-grade creek education program was developed and incorporated into Cupertino school district curriculum prior to 2002 whereby the City provided buses for each third grade class in the district to visit McClellan Ranch at Stevens Creek for a field trip and an interactive lesson from the City's naturalist. Cupertino staff hosted tables at City events, but prior to the MRP the events did not include a litter survey.

1.2.4 Short-Term Trash Load Reduction Plan

In February 2012, the City of Cupertino 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 Cupertino has begun to implement its short-term plan. Control measures implemented to date via the short-term trash reduction plan are:

- **Control Measure #1 - Product-related Ordinances**
  1. **The City adopted a reusable bag ordinance, effective October 1, 2013,** at all retail stores, prohibiting the distribution of thin single-use plastic bags. Staff informed the Sheriff of the City's new ordinance and requested support in enforce;

2. **The City adopted an internal no-foam food ware policy** in November 2010, banning expanded polystyrene (EPS) food packaging and service ware on City property.

3. **On January 21, 2013 City Council approved the first reading of a citywide EPS ordinance** (effective July 2014) banning the distribution of foam food ware at restaurants.

- **Control Measure #2 - Anti-littering and Illegal Dumping Enforcement Activities**

1. **Adopted Anti-Litter Ordinance in 2013** which allows Code Enforcement to cite for littering and require business, restaurant and grocery store managers and owners to maintain parking lots, sidewalks around the businesses' perimeter, and outdoor receptacles free from loose litter and overflowing bins;

2. **Anti-litter ordinance requires outdoor public waste/ recycling/ organics "trio" bins** to be provided by the developer at all new and re-developed commercial property (2013);

- **Control Measure #3 – Activities to Reduce Trash from Uncovered Loads**

In 2010 the City entered into a new 5-year garbage franchise agreement wherein the hauler is required to ensure that all truck loads are covered to prevent any litter or debris from coming out of the truck while it is being driven.

- **Control Measure #4 - Full-Capture Treatment Devices**

1. **The City installed fifty-two (52) full trash capture treatment devices** in high litter generation areas in October 2012 while participating in the Bay Area-wide Trash Capture Demonstration Project (ABAG). The City cleaned the inlets and devices once or more before the end of 2013. In FY 13-14, the City also inherited two full-capture devices from the City of Sunnyvale, giving Cupertino a total of 54 full-capture treatment devices. Sunnyvale had installed the Stormtek full capture treatment devices in two of the City of Cupertino's drain inlets during a pre-MRP pilot project. The two inlets are on the Cupertino/Sunnyvale border. Prior to FY 2013-2014, the City of Sunnyvale maintained the devices. Now the City of Cupertino will maintain and assess the effectiveness of the devices. Both inlets were also fitted with curb inlet screens pre-MRP.

2. **Full-capture treatment devices on new and re-developed private property** - The City's stormwater ordinance (CMC 9.18), adopted in 2011, requires new and re-developing (C.3 regulated) commercial projects to install and maintain full trash capture devices in all storm drain inlets on private property;

- **Control Measure #5 - Partial-Capture Treatment Devices**

The City installed sixty-five (65) retractable curb screens in high and medium litter generation areas in October 2012, while participating in the Bay Area-wide Trash Capture Demonstration Project (ABAG). The City also inherited two curb inlet screens on the drain inlets where the City of Sunnyvale had installed the two (2) full-capture devices. Cupertino now has a total of 67 partial capture devices. Sunnyvale had installed

them on Cupertino inlets during a 2008 (pre-MRP) full-capture pilot study. The two inlets are at the Sunnyvale border;

- **Control Measure #6 - Enhanced Storm Drain Inlet Maintenance**

  Increased drain inlet cleaning frequency from biennial to annual. In November 2013 the City entered into a multi-jurisdictional equipment sharing agreement (with the Town of Los Gatos and the City of Campbell). The vacuum truck owned by the Town, enables Cupertino's public works staff to clean out underground stormwater structures throughout the city in approximately three months. Additional drain inlet and new full trash capture device cleaning would not have been feasible without this equipment sharing agreement;

- **Control Measure #7 - Street Sweeping**

  The City Increased street sweeping frequency to weekly in 2013 in all commercial/retail (high and medium litter generating) areas to ensure effectiveness of the City's retractable curb screen installations (October 2012);

  1. **Switched to regenerative air street sweeping equipment;** In July 2011 the City entered into a new five year agreement for contract street sweeping. Performance of the agreement is the responsibility of the Street Supervisor. Agreement provisions are prescriptive; performance based and provides monetary damages for poor performance. Provisions include:

     - PM-10 certified sweeping equipment that is in conformance with all State, Federal and Bay Area Air Quality Management requirements.
     - Sweeping equipment must be maintained in excellent operating condition and may not be more than seven years of age for duration of agreement.
     - Sweeping equipment must be equipped with automatic vehicle location device (GPS) and management device that reports all street sweeping activity to the City in real time.
     - Contractor must submit weekly sweeping log for each area swept detailing starting/ending odometer and cubic yards collected.
     - Contractor is required to coordinate with City of Cupertino Code Enforcement regarding the illegal parking of vehicles on posted streets.
     - Median island curbing is included with curb miles swept.

- **Control Measure #8 - Anti-littering and Illegal Dumping Enforcement Activities**

  1. City Council voted to provide dual service for safe disposal of household and apartment hazardous waste (HHW). Through its garbage hauler, the City implemented a weekly (by appointment) door-to-door collection program in 2011. In 2013 Council voted to continue paying for residential participation in the countywide hazardous waste drop-off program. The dual HHW program is provided to steer people away from illegal dumping and toward safe and convenient options for disposal.

2. Through the Countywide program and the City's membership in the California Product Stewardship Council (CPSC) the City supports legislation that requires manufacturers to take back difficult-to-dispose-of products at the end of the product's life, such as paint, carpet, mattresses, appliances, televisions and pharmaceuticals. These extended producer responsibility (EPR) laws are expected to reduce the number of illegal dumping incidents;

- **Control Measure #9** - **Improved Trash Bins/Container Management**

1. The City's environmental, planning and public works engineering staff collaboratively review commercial/retail development plans and place conditions on trash and dumpster areas to address past (or recent) stormwater and trash area violations. Examples of conditions of approval include, but are not limited to, trash enclosure areas are required to have a roof and sufficient capacity to house separate garbage, recycling and food waste (organics) containers with room for grease/tallow bins in secondary containment. Right-sized bin service is required to prevent bin overflow and businesses are required to provide and maintain installed outdoor public recycling-organics-trash receptacles to encourage public participation in anti-litter activities (a.k.a. the *Cleaner Cupertino* campaign). (See Public Education and Outreach Programs, *Cleaner Cupertino Campaign* description under Jurisdiction-wide Control Measures 3.2.10.)

2. Included litter reduction measures in City's garbage hauling agreement (Nov 2010), requiring all garbage/recycling customers (commercial and residential) to subscribe to right-sized service to prevent over-filling and over-flowing bins. The requirement of property owners to keep bin lids closed is restated in the City's Anti-litter ordinance (CMC 9.18.215 – Litter Prevention and Enforcement)

- **Control Measure #10 - Public Education and events**:

1. The City has held an opening night cinema event at Cupertino's AMC theatre to promote BASMAA's regional anti-litter campaign (*Be the Street*) for teens and young adults. In 2012, a regional campaign manager and city staff attended a Cupertino Teen Commission meeting to introduce *Be the Street's* social media strategy and anti-littering video contest.

2. Since 2011, Cupertino staff have hosted a table at the City's annual Earth Day, National River Cleanup Day, Fall Festival, Coastal Cleanup Day and World Water Monitoring Day events wherein students, parents and visitors complete litter quizzes to earn a reusable "Chico" shopping bag. City staff are currently launching a citywide "Bag Art" contest in collaboration with Cupertino school districts (K-12) and the City's Chamber of Commerce. Winning environmentally-themed (e.g. water pollution prevention, waste prevention and litter prevention) artwork will be re-produced on reusable shopping bags for sale to Cupertino retailers and donated to participating schools for fundraisers.

3. City Council held a Litter Reduction Plan Study Session in August 2012 which was televised on the City Channel. Prior to the City Council's consideration of the bag ordinance, city staff held two workshops (one for businesses and one for residents) on the City's litter reduction strategy and the proposed bag ordinance. Following adoption of the bag ordinance city staff partnered with the Chamber to give presentations and answer questions at three more workshops to assist businesses

with compliance and help managers and property owners understand the City's litter reduction requirements and plans to implement control measures that will affect businesses.

- **Control Measure #11 - Reduced litter and waste discharges from local grocery stores:**

  In 2011 the City joined EPA's Food Recovery Challenge to recognize stores for separating food waste for composting and motivate them to maintain clean, litter-free, outdoor disposal areas. In collaboration with its garbage hauler and EPA, the City of Cupertino held a food waste recovery workshop for managers of grocery stores and produce markets. City staff and its assisting partners subsequently visited the stores to promote composting, as well as right-sized bins and correct frequency of garbage service to prevent outdoor stock-piling and loose litter dispersion. Cupertino was singled out to receive EPA's national Innovation Award in December 2013 for engaging its hauler and local store managers and owners in addressing the challenge.

  Control measures described in this Long-Term Plan build upon actions taken to-date per Cupertino'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 Cupertino'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 Cupertino. Control measures that will be implemented by the City of Cupertino 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

Incorporated in 1955, the City of Cupertino, located in Santa Clara County, has a jurisdictional area of 7,239 acres. According to the 2010 Census, it has a population of 58,565, with a population density of 5,201 people per square mile and an average household occupancy of 2.84. Of the 58,565 residents who call Cupertino home, 22.1% are under the age of 18, 11.3% are between 18 and 24, 26.8% are between 25 and 44, 27.4% are between 45 and 64, and 12.4% are 65 or older.

The median household income was $120,201 (2012) and the median price of a home in Cupertino is $1.3 million (2013). In large part, home buyers are attracted to the City by its reputation for the excellent quality of education offered by its school districts. Forbes ranked it in the top 20 of the nation's most educated small towns (2009). The City of Cupertino is home to De Anza Community College and more than 170 culturally diverse restaurants. Cupertino's ethnic breakdown (per the 2010 Census) is: 63% Asian, 29% (non-Hispanic) White, 3.6% Hispanic, 3% Mixed, 0.6% Black and 0.5% other.

The City of Cupertino is best known as the home of Apple Inc.'s corporate headquarters and the site of the new 176-acre Apple Campus 2 (currently under construction). Apple currently has 15,000 employees based in Cupertino and expects to add 7,400 employees with completion of its Apple Campus 2 by 2016. Other companies headquartered in Cupertino include Amazon Lab126, and Seagate Technology. Over 60 high-tech companies have offices there, including IBM, Infogain, Red Oak Technologies and Systems Integration Solutions (SIS). Though Cupertino is home to the headquarters of many high-tech companies, very little manufacturing actually takes place in the city. The city's large office parks are primarily dedicated to management and design functions.

Two state highways traverse Cupertino. The City is linked to the cities of San Francisco and San José by Interstate Freeway 280 which runs along most of the its northern border. State Route 85, which runs from Mountain View to South San José, cuts diagonally across the City at its northwest boundary to its southeast boundary. *All state highways (and freeways) are owned and maintained by the California Department of Transportation (Caltrans).*

The City of Cupertino has three main arterials that include Stevens Creek Boulevard (SCB), De Anza Boulevard (DAB), and Foothill Boulevard (FHB). SCB runs east and west through the middle of the City on its east end and separates the northern third of the City from its southern two-thirds at its west end. DAB runs north and south through the middle of the City. Foothill Boulevard (1.3 miles) is in west Cupertino, becoming Stevens Canyon Road to the south and Foothill Expressway to the north. While the City has control of and has prioritized the SCB and DAB arterials for trash management control measures, its ability to manage litter dispersed from the State Highway system's access ramps on both of these arterials (i.e. access to Freeways 85 and 280) is strictly limited by Caltrans. The City has planned management control measures for its high and medium trash generating areas along the City's two significant collector streets, Homestead Road which runs east and west on the northerly limit of the City, and Bollinger Road which runs east and west on the southerly limit of the City. Portions of Homestead Road are shared with the City of Sunnyvale and the City of Los Altos, and Bollinger Road is shared with the City of San José.

Information collected during the City's recent annual storm drain inlet maintenance and full-capture device cleaning, suggests that most of the trash in Cupertino creeks is from sources other than the City's MS4. While the information gathered is not complete because it does not include the effects of significant storm events which usually mobilize trash into inlets, it has been documented. As additional information is collected through the assessment process described in Section 4.0, these initial conclusions will be refined or verified. Of the City's 54 inlets that have been treated with full-capture devices (in the highest trash-generating retail areas), 51 of the inlets have also been fitted with retractable curb inlet screens. The curb screens keep litter at the street level where it can be removed with street sweeping. Along the 139 centerline miles of City streets and in the 19 City parks and open spaces, the City of Cupertino appears to be relatively litter-free. On the first day of maintenance (December 2013), in which a City maintenance crew cleaned 9 of the full-capture devices, they found primarily leaves and dirt. Several devices did not contain trash and those that did yielded three pieces at most. It suggests that where there are retractable screens, with weekly sweeping, parking prohibition, and landscaped park strips that help detain pedestrian and vehicular litter, trash is captured and removed before it reaches the MS4. In addition to sweeping, the City maintains its park strips regularly, removing the detained trash before it enters a drain inlet.

Land uses within the City of Cupertino depicted in ABAG (2005) are provided in Table 2. The City of Cupertino is primarily comprised of five (5) land uses. These include residential, commercial services (primarily restaurants with very few "drive-thru" establishments), retail, urban parks and schools (K-12). A State community college (De Anza) is also located within the City's boundary on the City's main arterial Stevens Creek Blvd.

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

Land Use Category	Jurisdictional Area (Acres)	% of Jurisdictional Area
Commercial and Services	483.2	7.0%
Industrial	278.1	4.0%
Residential	3,938.2	57.2%
Retail	303.6	4.4%
K-12 Schools	243.7	3.6%
Urban Parks	101.9	1.5%
Other[2]	1,531.8	22.3%

[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] "Other" includes open space and vacant land

2.2 Trash Sources and Pathways

The City of Cupertino has begun to address pathways of trash that City field and maintenance staff suggest are the most predominant sources of trash in the City. These pathways and the management activities discussed below pertain, for the most part, to sources other than the City's MS4 (e.g. vehicular litter from highway access ramps, a creek hot spot site where there is graffiti and evidence of social gatherings).

The 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. The City of Cupertino has a janitorial contract that provides twice weekly service for trash receptacles at forty four (44) bus stops. Service includes emptying of the trash receptacles, and pickup of any trash in the immediate area. Any illegal dumping that may occasionally occur near bus stops is cleaned up immediately by City crews as soon as the incident is observed or reported.

Trash from vehicles occurs due to littering from automobiles and uncovered loads. The City has 35 mph speed limits on vehicles in most of the arterial streets. Less litter blows out of uncovered truck beds when the truck is traveling and slower speeds. Part of a main arterial (Foothill Expressway), which is a busy truck route, is maintained by the City where it cuts through the westerly end of Cupertino. The City sweeps this arterial three times per week.

Inadequate waste container management includes sources such 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. The City is addressing this through jurisdiction-wide measures, including its IND inspection program and enforcement of its new anti-litter ordinance.

On-land illegal dumping of trash is the final source category. The City of Cupertino investigates and follows up on each illegal dumping incident

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.

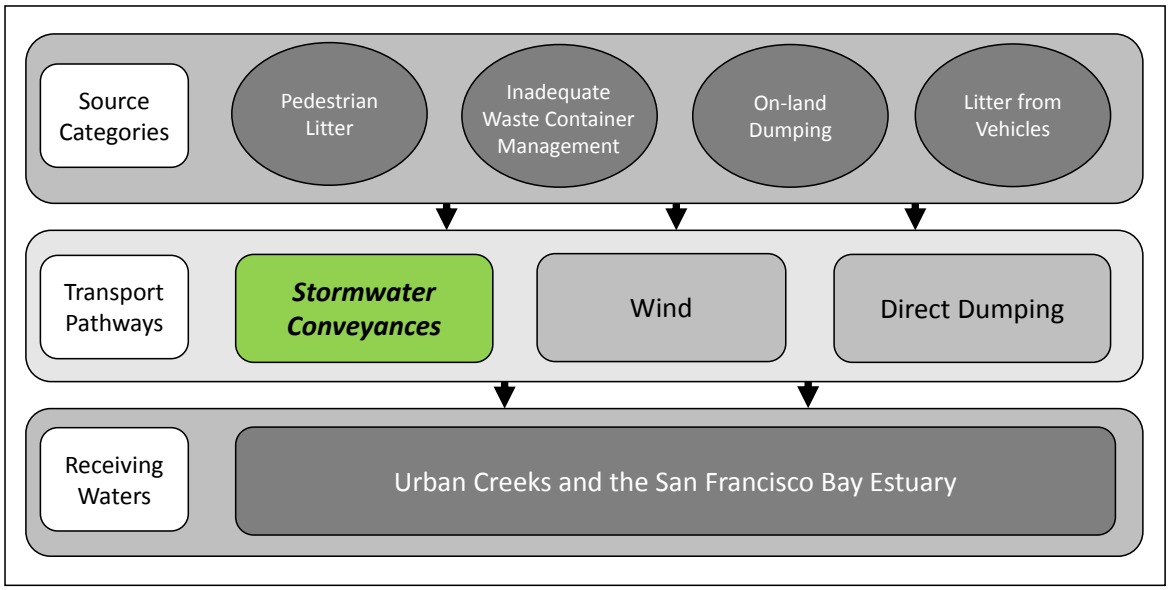


Figure 3. Trash sources categories and transport pathways to urban creeks.

City staff have identified the following trash problem areas worth investigating to determine the management actions and resources needed to eradicate litter in the City's creeks.

1. **The City has started to address direct deposit (illegal dumping) of trash at a creek hot spot.** In January 2013, after the first winter rainstorms, City staff conducted a creek assessment and on-land cleanup at the City's trash hot spot at Stevens Creek near the Heney Creek confluence. On the first afternoon of the effort, staff found the banks of the creek littered with polystyrene foam pieces and empty spray paint cans (buoyant trash) and other non-prevalent types of trash. The amount of litter discovered was more than two staff could clean up in two hours. A cleanup event was scheduled for a few days later with about four Los Altos staff and six Cupertino staff (10 staff total). Los Altos and Cupertino have adjacent hot spots at this site. About ten 13-gallon bags of trash were collected, sorted and photographed. City staff came back to the site a third time to further investigate the source of the debris. Food and beverage packaging and spray paint cans were located upstream near a graffiti site adjacent to the tunnel under Freeway 280 at Stevens Creek. The tunnel may also be the site of a homeless encampment.

   This hot spot is on Santa Clara Valley Water District's (SCVWD) property and is gated and locked. The cities of Cupertino and Los Altos have a five-year permit from the SCVWD to access the creek and conduct trash assessments on the creek banks. City staff will begin monthly on land cleanups in FY 14-15 to investigate the trash sources and to better assess the effectiveness of the City's control measures at this hot spot. Control measures will include frequent cleaning, City signage, requesting Sheriff's help with graffiti and trespassing enforcement, engaging students from nearby Homestead High in volunteer cleanups (the communication is already underway) and adding a heavy trash and recycling bin that will be maintained by Environmental Programs staff (contents will be sorted and quantified).

2. **The City is communicating with Caltrans and supporting a resident volunteer in his efforts to cleanup vehicular litter on Caltrans jurisdictional property at the City's access points to freeways.** An enthusiastic, mature, hard-working resident came to City Hall in 2013 to ask what could be done about blight of litter and debris at the Caltrans access ramps to Highway 85 on Stevens Creek Blvd. City staff contacted Caltrans since the area is in Caltrans' jurisdiction and requires a permit for access. A Caltrans supervisor had crews come out to clean the site within a week. The freeway access points did not remain clean for long. At the City staff and resident's request, the Caltrans supervisor met with city staff and trained and authorized the resident (as a volunteer) to work on Caltrans property in Cupertino. The resident continues to work on the City's litter problem and communicates regularly with City staff to report findings, progress and ideas for new trash control measures. As resources are available City staff will assist volunteers and investigate ways to work with Caltrans on the vehicular litter problem at the City's freeway access points. City staff is continuing to communicate with Caltrans and will meet with their staff in January to discuss what can be done to clean up the freeway access points.

3. **Windblown trash is being addressed by the City** with bans like the City's reusable bag ordinance to prevent the distribution of lightweight, thin, single-use plastic shopping bags by retailers; and the City's EPS food service ware ordinance (effective July 2014) which will prevent restaurants, mobile food trucks, caterers and delis from distributing lightweight, prone-to-crumble, foam food and beverage service ware. Along its major arterials, the City of Cupertino maintains landscaped park strips and medians which assist in detaining windblown trash (and are maintained regularly to remove trash before it reaches the MS4) as well as providing an aesthetically pleasing "pervious" alternative to urban hardscape. The City's new anti-litter ordinance (March 2013) requires Cupertino businesses to keep private parking lots and property perimeters maintained and free from loose litter. The requirements, which support the City's "A Cleaner Cupertino" campaign are enforced during Industrial and commercial stormwater inspections (the City's IND program); and all maintenance, building and construction inspection staff receive annual training on reporting litter and stormwater violations to the City's stormwater inspector(s) for immediate follow-up.

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 Cupertino are described in this section and illustrated in Figure 4.

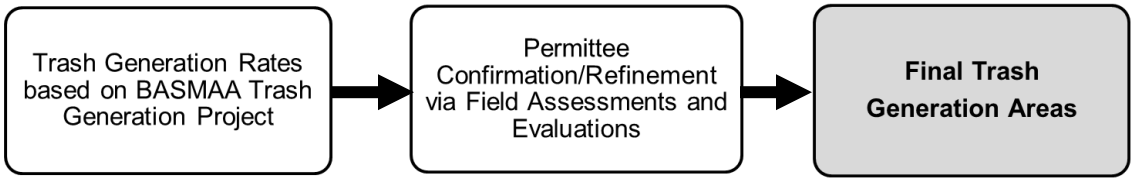


Figure 4. Process used to identify trash generating areas.

As a first step, trash generation rates developed through *the BASMAA Trash Generation Rates Project* were applied to parcels within the City of Cupertino 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 Cupertino 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 Cupertino 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 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 Protocol the City assessed a total of 13 areas to assist in conducting/refining trash generating area designations. Combining areas that had similar characteristics and/or level of litter generation to be addressed with the same litter control measures in a similar time frame, staff merged these areas and delineated nine (9) trash management areas (TMAs), with the 9th TMA representing all of the City's "green" or very low trash generating area (primarily comprised of single-family residential homes and un-littered open space).

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

Public works grounds and street maintenance supervisors provided feedback on the level of maintenance required throughout the City, noting any high trash (litter) generating areas.

c. Reviewing Municipal Operations Data

Staff reviewed the City inspectors' databases for tracking illegal dumping detection and elimination (IDDE) incidents and commercial (or light industrial) IND stormwater inspections. Areas with a history of violations were visited; adjacent streets and storm drain inlets were spot-checked and photographed to determine the actual level of trash generation.

3. Based on assessments conducted to confirm and 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 Cupertino. 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 Cupertino's 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 Cupertino assigned to each trash generation category.

Trash Generation Category	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%
High	273.5	10.1%	0.6%	2.0%	78.6%	0.0%	0.2%
Medium	1,161.0	38.1%	23.8%	3.7%	7.6%	20.1%	6.7%
Low	5,446.1	0.2%	0.0%	71.4%	0.0%	0.2%	0.4%

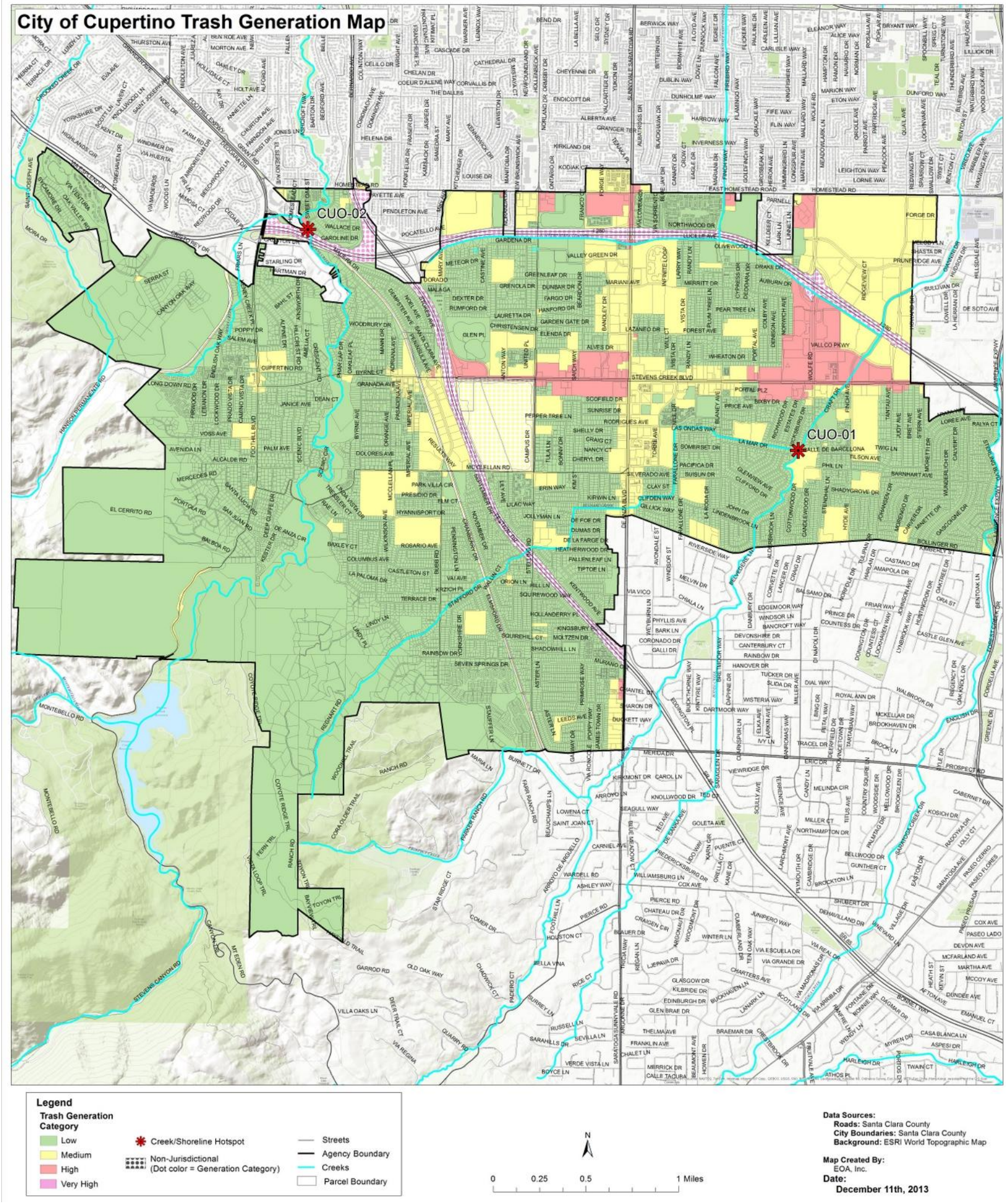


Figure 5. Trash Generation Map for the City of **City of Cupertino**

Page Intentionally Left Blank

3.0 TRASH MANAGEMENT AREAS AND CONTROL MEASURES

This section describes the control measures that the City of Cupertino has or plans to implement to solve trash problems and achieve a target of "no adverse visual impact" (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 Cupertino'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.

However, the City of Cupertino has to date installed 52 full capture devices with 49 retractable curb screens. Based on results of the maintenance of these devices in December 2013 after the first full year following installation, the curb screens complimented with frequent street sweeping appear to be effective in preventing trash from entering the MS4 (limited amounts of trash, ranging from zero to 3 pieces per full-capture device, were detained). As knowledge is gained through the implementation and monitoring of these control measures, the City may choose to refine the 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 Cupertino's annual reporting process.

3.1 Management Area Delineation and Prioritization

Consistent with the long-term plan framework, the City of Cupertino 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 Cupertino'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's jurisdiction. City staff used the following procedure to designate TMAs:

Cupertino's public works engineering, environmental and maintenance staff provided input for the selection of nine (9) trash management areas prioritized in order of trash generation and timeline in which the City will address the problems.

TMA 1 was prioritized for the following reasons: 1) it is the City's most heavily traveled retail and commercial area along the City's main arterial, Stevens Creek Blvd; 2) It includes the City's only major shopping mall at the corner of Stevens Creek Blvd and Wolfe Rd; 3) it is the future site of the City's new *Main Street* development, a pedestrian, shopping and dining complex; 4) several businesses in this area have a history of stormwater and trash area violations (tracked in the City's IND inspection database). Therefore, most of the area is high-litter generating (coded "red" on the City's trash management area map).

TMA 2, also a heavy retail and commercial area along Stevens Creek Blvd, is a high litter generating area ("red" area) that provides pedestrian access to eating establishments from the

Community College. It has a history of businesses with trash area violations.
TMA 3, along Homestead Rd, is another major retail and commercial area that serves as a pedestrian pathway from a local high school. It is a mixture of high and medium litter generating areas. Businesses in this area have a history of stormwater and trash area violations.

TMA 4, along De Anza Blvd, another major arterial, is a retail and commercial area that is primarily a medium litter-generating area having fewer businesses with a history of trash area violations.

TMA 5 is a high litter generating area that includes one of the City's two assigned trash "hot spots," requiring an annual assessment and cleanup. Unlike the City's other hot spot, the trash in this area is not on the decline, but continues to be heavily littered with empty spray paint cans and Styrofoam™ pieces. It may not be resolved with trash capture devices and will require further investigation.

TMA 6 is the De Anza Community College campus. While not under the City's jurisdiction, City staff have partnered with faculty on projects that benefit the community and support the college curriculum. This presents an opportunity to work with the faculty and students on solving litter issues as well.

TMA 7 is comprised of three types of commercial and public sites (K-12 schools, city parks and churches) which have the potential to generate high levels of litter, but are all very well maintained. TMA #7 is broken down into 5 geographical subsections so that public outreach programs can be prioritized (a through e). Area 7a is in the highest litter generation area (north of Stevens Creek Blvd.)

TMA 8 is the future site of Apple Campus 2. The former industrial area is being re-developed with extremely high environmental standards. Full trash capture is required on all drain inlets and will be maintained by Apple.

TMA 9 is well-maintained residential and open space area with extremely low litter generation. It represents the City's "green" area. 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	239.0	0.0%	65.8%	27.8%	6.5%
2	81.2	0.0%	95.9%	0.1%	4.0%
3	133.9	0.0%	23.7%	34.2%	42.0%
4	351.2	0.0%	1.0%	96.3%	2.7%
5	174.3	0.0%	1.5%	53.6%	44.8%
7a	18.1	0.0%	0.0%	99.8%	0.2%
7b	126.2	0.0%	0.3%	79.9%	19.8%
7c	134.0	0.0%	0.0%	85.1%	14.9%
7d	46.5	0.0%	0.0%	95.2%	4.8%
7e	110.8	0.0%	0.0%	98.9%	1.1%
8	233.1	0.0%	0.0%	98.8%	1.2%
9	5,232.2	0.0%	0.0%	0.0%	100.0%

*TMA 0 and TMA 6 contain non-jurisdictional areas only

Page Intentionally Left Blank

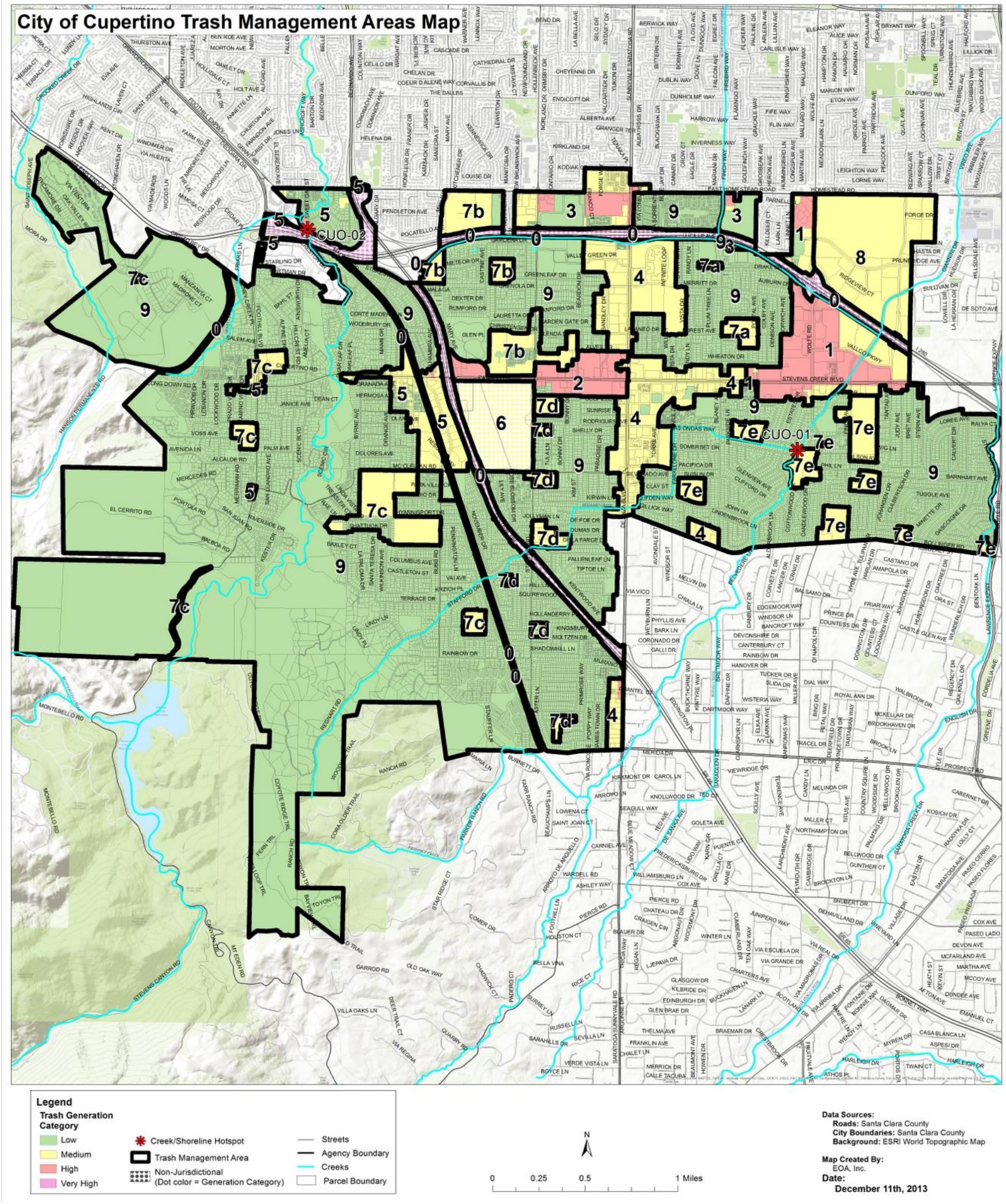


Figure 6. Trash Management Area Map for the City of Cupertino.

Page Intentionally Left Blank

3.2 Current and Planned Trash Control Measures

The City of Cupertino has implemented the following trash control measures: 1) installed full trash capture devices; 2) increased drain inlet cleaning; 3) installed retractable curb inlet screens; 4) enhanced and increased street sweeping; 5) installed public outdoor waste bins; 6) provided litter education during commercial/industrial stormwater inspections; 7) educated the community at City events; 8) made site visits to engage and educate stores; 8) adopted a reusable bag ordinance; 9) adopted an anti-littering ordinance; 10) amended the Municipal Code to require developers to install full trash capture devices on private property; 11) increased code enforcement (by adding staff and a re-inspection fee); 12) held creek cleanup events; 13) supported and assisted with on-land cleanups; and 14) included litter control requirements in the City's garbage franchise agreement.

In addition to expanding and building on the above control measures, future implementations include an EPS (Styrofoam™) ordinance (to be in effect July 2014), installing anti-litter ordinance signage, working with Caltrans to facilitate adoption of freeway on/off ramps to Cupertino through the Adopt-a-Highway program, and engaging the Sheriff's support in enforcement.

3.2.1 Jurisdiction-wide Control Measures

The City of Cupertino is implementing several citywide control measures that are effective and uniquely address the specific litter and trash problems in the City.

Single-Use Carryout Bag Policy
Plastic bags and foam pieces are prevalent and difficult-to-clean-up at creek cleanup events and were therefore considered for citywide bans. The City's reusable bag ordinance became effective on October 1, 2013. Chapter 9.17, Regulation of Single-Use Carryout Bags, prohibits the distribution of thin plastic single-use shopping bags by all retailers within the City of Cupertino. The link to the Municipal Code is http://www.amlegal.com/nxt/gateway.dll/California/cupertino/cityofcupertinocaliforniamunicipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:cupertino_ca

Polystyrene Foam Food Service Ware Policy & Ordinance
The City adopted a no-foam food ware policy for City property in November 2010. In 2013, the City participated in San José's regional environmental study for a Polystyrene Foam Disposable Food Service Ware Ordinance. Cupertino's City Council unanimously approved a Citywide EPS food service ware ordinance on January 21, 2014 which will go into effect on July 1, 2014. The ordinance prohibits the distribution of EPS food service ware by restaurants, mobile food trucks and caterers doing business within the City of Cupertino.

Activities to Reduce Trash from Uncovered Loads (Enforced by Sheriff): In 2010 the City entered into a new 5-year garbage franchise agreement wherein the hauler is required to ensure that all truck loads are covered to prevent any litter or debris from coming out of the truck while it is being driven. The City's new ordinance, municipal code 9.18.215.A.6 "Litter Prevention and Enforcement" makes it unlawful for any open vehicle or trailer to be driven or moved unless the contents or the material is constructed and loaded to ensure that litter is prevented from being blown from the vehicle. City staff has contacted the Sheriff's Department to notify them of the ordinance and ask for support in enforcing it.

Enhanced Storm Drain Inlet Maintenance
Pre-MRP, half of the City's MS4 was cleaned each year. In 2013, the City entered into an equipment sharing agreement with the Town of Los Gatos. Having access to a new vacuum truck and the efficiency it provides, has enabled the City's maintenance crews to double the maintenance frequency and clean all of the City's MS4 annually. This is a control measure that the City had been trying to adopt, but was delayed due to the cost of the equipment required to accomplish the task.

Anti-littering and Illegal Dumping Enforcement Activities
Between 2012 and 2014 the City implemented the following new control measures: 1) adopted an anti-littering ordinance (CMC 9.18.215) requiring businesses to maintain litter-free premises, beyond the store, loading dock and trash area property. Maintenance requirements now include entire parking lots, the perimeter of the stores property to the streets and sidewalks etc. Additionally business managers/owners are required to ensure their outdoor waste bin lids are closed and loose debris is not overflowing from the bins; 2) hired a senior code enforcement officer, part-time, to investigate and enforce illegal dumping and littering incidents; 3) added a re-inspection fee for businesses with trash area and litter violations (re-inspection is required to correct a violation); 4) incorporated municipal code litter education and enforcement in IND stormwater inspections; and 5) provided dual HHW disposal programs to residents to reduce illegal dumping.

New and Re-development Permit Approval Conditions
The City's environmental, planning and public works engineering staff collaboratively review commercial/retail plans for re-development and place conditions on waste management areas to address past (or recent) stormwater and trash area violations. Examples of conditions of approval include, but are not limited to, trash enclosure areas with roofs, sufficient capacity to house separate garbage, recycling and food waste (organics) containers with room for grease/tallow bins in secondary containment. Right-sized bin service is required to prevent bin overflow and businesses are required to provide and maintain installed outdoor public recycling-organics-trash receptacles to encourage public participation in the *Cleaner Cupertino* campaign.

Public Education and Outreach Programs

Public education about litter is conducted to the full extent that staff time and resources allow through events, business inspections, courtesy visits and educational programs for K-12 students. The City's residents, students, business owners and business managers are readily engaged in health, welfare and environmental education. The City enjoys a high level of participation at community and educational events (e.g. Earth Day, World Water Monitoring Day, National River Cleanup Day, Fall Festival, Coastal Cleanup Day, the Wildlife Fair and the Mayor's Symposium(s) etc.).

Third Grade Creek Education incorporated into Cupertino School District Curriculum
Prior to the MRP the City provided and continues to provide a third-grade creek education program in conjunction with the Cupertino School District whereby the City pays to bus each third grade class in the District to McClellan Ranch for a creek field trip and lesson with the City's naturalist. A litter prevention component was introduced in 2013.

Annual Public Events
Prior to the MRP, Cupertino staff hosted a table at the City's annual Earth Day and Fall Festival events. In 2013 staff also hosted tables at National River Cleanup Day, Coastal Cleanup Day

and World Water Monitoring Day events wherein students, parents and visitors complete litter quizzes to learn about the City's anti-littering ordinance and earn a reusable shopping bag.

Cupertino Youth Reusable Bag Art Contest
In 2013 and 2014 staff developed and launched a citywide "Bag Art" contest in collaboration with the City's Chamber of Commerce and Cupertino school districts (K-12). Students will design environmentally-themed (water pollution, litter and waste prevention) artwork to be re-produced on durable shopping bags for Cupertino retailers to purchase and sell.

Outreach to Food Establishments
Effective anti-litter outreach to stores and restaurants began when the City joined the federal EPA's Food Recovery Challenge (FRC) and staff began visiting stores to support and encourage separating food waste for composting and keeping trash and dumpster areas clean and free of loose litter and stockpiled waste. Based on its success, staff plans to continue to grow the FRC program. As demonstrated in an article in the January 2014 edition of BioCycle magazine, the Cupertino stores that participated showed a significant improvement in trash area cleanliness and trash containment. The article can be found at http://www.biocycle.net/2014/01/20/california-city-advances-commercial-organics-recycling/?utm_content=lori.topley%40mountainview.gov&utm_source=VerticalResponse&utm_medium=Email&utm_term=City%20of%20Cupertino%20%28California%29%20receives%20U%2ES%2E%20EPA%20Innovation%20Award&utm_campaign=%40BioCycle%E2%80%94January%2023%2C%202014content

Hired Additional Staff
With the addition of one of the City's senior code enforcement officers (with a bachelor's degree in Communication) allocated half-time to Public Works, the City was able to enhance and strengthen its outreach to businesses and tighten up its controls on commercial and industrial stormwater compliance. The new staff person helped considerably with the City's outreach to the business community and the Cupertino Chamber of Commerce prior to the City's bag ordinance implementation and in preparation for City Council's adoption of the EPS food service ware ban which will be effective on July 1, 2014

Cleaner Cupertino Campaign
Prior to implementing the bag ordinance, the City hired a graphic designer to create signage and store kits with an anti-litter and reusable bag message. The outcome was the City's *Cleaner Cupertino* campaign, launched in August 2013. Staff will build on the campaigns anti-litter message at all five of the City's annual community participation events.

Regional *Be the Street* Campaign
The City held an opening night cinema event at Cupertino's AMC theatre to promote BASMAA's regional anti-litter campaign (*Be the Street*) for teens and young adults. In 2012, a regional campaign manager and city staff attended a Cupertino Teen Commission meeting to introduce *Be the Street's* social media strategy and anti-littering video contest to local teens.

3.2.2 Trash Management Area #1

TMA 1 was prioritized for installation of full trash capture devices because it is the City's most heavily traveled retail and commercial area along the City's main arterial, Stevens Creek Blvd. and it includes the City's only major shopping mall at the corner of Stevens Creek Blvd and Wolfe Rd. It is also the future site of the new *Main Street* development, a pedestrian, shopping, hotel and dining complex. Several businesses in this area have a history of stormwater and

trash area violations (tracked in the City's IND inspection database). Therefore, most of the area is high-litter generating (coded "red" on the City's Trash Management Area Map).

Full Capture Treatment Devices
In October 2012 the City installed full-capture pipe connector screens in 52 drain inlets along Stevens Creek Blvd. south of 280 on Wolfe Rd. and on Vallco Parkway. All but 3 of the drain inlets were also fitted with retractable curb inlet screens. (Reference Figure 7, Trash Full Capture Treatment Device Map.) Four (4) additional full capture devices will be installed on private property prior to July 2014 by the developer/owner of the Main Street project. The City will install four (4) additional full capture devices at the east end of Stevens Creek Blvd. by July 2020 and potentially three(3) more full capture devices along Wolfe Rd north of Fwy 280 by July 2017. In December 2013 all of the 1-year-old full capture devices in TMA 1 were cleaned. Very few pieces of trash were found in the drain inlets due to the added protection of curb inlet screens.

Partial Capture Treatment Devices
In October 2012 the City installed 47 retractable curb inlet screens in TMA 1, overlapping drain inlets with full capture devices. Maintenance is accomplished with street sweeping. Seven drain inlets, north of 280 to Homestead Rd. on Wolfe Rd., will be considered for installation of retractable curb screens and/or full capture devices after the redevelopment in that area has been completed and the City has assessed the resulting trash generation level and compared the effectiveness and maintenance of full-capture devices with that of retractable curb screens. Determinations will be based on the results of assessments described in Section 4 and additional City assessments.

Street Sweeping
Frequency - Prior to the MRP, street sweeping was conducted weekly and parking was prohibited along all main arterials. In July 2011, the City entered into a new prescriptive street sweeping agreement that increases sweeping efficiency / trash collection. Considering the PM-10 certified sweeping equipment and reduced sweeper speed required and verified under the new contract, the frequency of sweeping in commercial areas was reduced to twice-monthly. After retractable curb screens were installed, weekly sweeping was added (parking still prohibited) in commercial/retail areas to maximize the effectiveness of the curb screens installed in 2012, and those planned to be installed in 2014 - 2017. (Note: curb screens captured most all of the trash at the street level.) Beginning in FY 14-15, City staff will conduct spot checks twice annually to assess the estimated quantity of trash in the gutters before and after weekly sweeping to determine if additional sweeping is warranted. If additional sweeping is needed, the City will sweep at a frequency to maintain effectiveness of the curb screens. Additional sweeping in commercial areas is a bid item in the sweeping agreement and when implemented, requires the contractor to respond within 48 hours. If it is observed that a street is not swept properly, the contractor must respond within 24 hours.

Sweeping Enhancement - The City entered into a new street sweeping agreement in July 2011 to improve sweep quality. New requirements include PM-10 certified sweepers, GPS tracking of curb mileage and slow sweeping speed to ensure the efficacy of litter and debris removal. Public works and parking enforcement staff also check sweeping effectiveness by considering public comments and reports and, in the course of their field work, with post-sweeping spot inspections.

Jurisdiction-wide control measures that affect TMA 1 are described in section 3.2.1, including:

- Enhanced Storm Drain Inlet Maintenance
- Anti-littering and Illegal Dumping Enforcement Activities
- New and Re-development Permit Approval Conditions

3.2.3 Trash Management Area #2

TMA 2 is prioritized for installation of full and partial-capture devices to cover the main arterials in the TMA. It is the City's second most heavily traveled retail and commercial area, along Stevens Creek Boulevard (SCB). TMA 2 also includes a pedestrian pathway to eating establishments used by students from De Anza College on SCB. Several businesses in this area have a history of stormwater and trash area violations (tracked in the City's IND inspection database). Therefore, TMA 2 has a high-litter generating potential (coded "red" on the City's Trash Management Area Map).

Full-Capture Treatment Devices
Two full-capture devices will be installed east of Freeway 85 on Stevens Creek Blvd in FY 16-17 to insure that litter from Caltrans' jurisdiction does not enter and is not transported by the City's MS4.

Partial-Capture Treatment Devices
In October 2012 the City installed 17 retractable curb inlet screens on drain inlets in TMA 2. Maintenance is accomplished increased frequency of street sweeping starting in November 2013. In FY 14-15 approximately 41 retractable curb screens will be installed in TMA 2 (west of De Anza Blvd.), thereby protecting the drain inlets along the pathway to food establishments along Stevens Creek Blvd.

Enhanced Street Sweeping
See Street Sweeping control measure description for TMA #1, 3.2.2.

Jurisdiction-wide control measures that affect TMA 2 are described in section 3.2.1, including:

- Enhanced Storm Drain Inlet Maintenance
- Anti-littering and Illegal Dumping Enforcement Activities
- New and Re-development Permit Approval Conditions

3.2.4 Trash Management Area #3

The City prioritized TMA 3 to focus on another major arterial, Homestead Road. Homestead Road forms the City's northern border adjacent to Sunnyvale and provides Homestead High students with pedestrian access to a concentration of retail and food establishments. Several businesses along Homestead in Cupertino have a history of stormwater and trash area violations.

Installed Capture Treatment Devices
Pre-MRP the City of Sunnyvale installed pipe connector screens in 2 drain inlets on Homestead Road, immediately adjacent to a fast food restaurant with a drive-thru window. Both drain inlets were also fitted with retractable curb inlet screens. These were turned over to Cupertino, and are maintained by Cupertino. (Reference Figure 7, Trash Full Capture Treatment Device Map.) They were cleaned in December 2013. Very few pieces of trash were found in the drain inlets due to the added protection of curb inlet screens.

Planned Trash Capture Treatment Device Installations
Installation of two additional full-capture devices is planned for FY 15-16 on De Anza Blvd north of Freeway 280 to insure that litter from Caltrans' jurisdiction does not enter and is not transported by the City's MS4. An additional 25 retractable curb inlet screens are planned to be installed in TMA 3 in FY15-16. This will complete coverage of drain inlets along the heavily-traveled sections of Homestead Road in Cupertino.

Enhanced Street Sweeping
See Street Sweeping control measure description for TMA #1, 3.2.2.

Jurisdiction-wide control measures that affect TMA 3 are described in section 3.2.1, including:

- Enhanced Storm Drain Inlet Maintenance
- Anti-littering and Illegal Dumping Enforcement Activities
- New and Re-development Permit Approval Conditions

3.2.5 Trash Management Area #4

TMA 4, although it covers another major arterial (De Anza Boulevard), is primarily a medium litter-generating area (coded "yellow" on the City's Trash Management Area map). Fewer businesses with a history of uncontained litter and debris violations are located along this arterial than in TMAs 1-3 and pedestrian travel is less since there are no high schools or community colleges in TMA 4.

Full Capture Treatment Devices
Installation of two full-capture devices is planned in FY 14-15 on De Anza Blvd south of Freeway 280 to ensure that litter from Caltrans' jurisdiction does not enter and is not transported by the City's MS4. Two additional full-capture devices are planned near a shopping center on Bollinger Rd. and Blaney Ave. in FY 16-17 (Reference Figure 7, Trash Full Capture Treatment Device Map).

Partial-Capture Treatment Devices
The City has not yet installed retractable curb inlet screens on drain inlets in TMA 4, but it plans to do so for the full length of De Anza Boulevard (DAB) in FY 16-17. DAB runs north and south through the area referred to as the "Heart of the City." Maintenance of the curb screens will be accomplished with street sweeping. An approximate 39 inlets will be fitted with retractable curb screens. This will complete coverage of the drain inlets along the heavily-traveled section of commercial and retail area in the City.

Enhanced Street Sweeping
See Street Sweeping control measure description for TMA #1, 3.2.2.

Jurisdiction-wide control measures that affect TMA 4 are described in section 3.2.1, including:

- Enhanced Storm Drain Inlet Maintenance
- Anti-littering and Illegal Dumping Enforcement Activities
- New and Re-development Permit Approval Condition

3.2.6 Trash Management Area #5

TMA 5 is an area that includes one of the City's two assigned trash "hot spots" which require annual assessments and cleanups. TMA 5 also includes Stevens Creek Blvd at the west end of

the City, closest to Stevens Creek. Unlike the City's trash hot spot on Calabazas Creek, litter at the Stevens Creek hot spot is not on the decline, but continues to be a problem and a priority for mitigation because the litter includes empty spray paint cans and Styrofoam™ pieces. This hot spot mitigation cannot be resolved with trash capture devices and will require further investigation.

Full Capture Treatment Devices
The City will install two full-capture devices along Stevens Creek Blvd. (west of the freeway access point) by in FY 16-17. (Reference Figure 7, Trash Full Capture Treatment Device Map).

Partial-Capture Treatment Devices
The City will install 39 curb inlet screens along Stevens Creek Boulevard in TMA 5 in FY 18-19. Maintenance of the curb screens will be accomplished with street sweeping at a frequency that maintains the effectiveness of the screens.

Street Sweeping
TMA 5 is included in the area where sweeping frequency was increased to weekly. The 39 curb-inlet screens, which will be installed in FY 18-19, will be monitored before, during and after rain events. The sweeping frequency will be increased, if warranted, to maintain the effectiveness of the screens.

Creek Cleanups
In FY 14-15 monthly cleanups and assessments will be conducted at this hotspot site. City staff have recently communicated with a group of Homestead High students that volunteered to help clean the site and monitor the progress toward eradicating illegal dumping and littering. The Water District's access point to cleanup this site is on Barranca Drive and Peninsular Avenue, less than one mile from Homestead High (0.9 mile). City of Cupertino and City of Sunnyvale staff met in 2013 to discuss, plan and collaborate on an outreach and participation program for Homestead High students involving on-land cleanups along Homestead Road. The program being developed by City of Sunnyvale staff is the subject of a Water District public education and volunteer cleanup grant application submitted by Sunnyvale staff. Cupertino staff committed to participate in and support the program throughout the duration of the grant.

Hotspot Creek Cleanups and Assessments
Since 2010, the City has held annual creek cleanups and assessments at its hotspot at Stevens Creek near the Heney Creek Confluence in TMA 5. Annual creek hotspot cleanups will continue to be evaluated to determine reduction in illegal dumping and trash levels. Hotspot assessments conducted since the MRP adoption led staff to prioritize TMA 5 as a site for enhanced illegal dumping and litter control measures.

Improved Trash Bin/Container Management
To accompany the anti-litter and illegal dumping signage that will be posted next to the City's hotspot (CU02) in TMA 5, one heavy trash and recycling bin will be placed at this graffiti site as a pilot in FY 14-15. Environmental Programs staff will maintain the two bins as often as needed (at least monthly) to evaluate their effectiveness and audit any contents to track the trash sources.

Jurisdiction-wide control measures that affect TMA 5 are described in section 3.2.1, including:

- Anti-littering and Illegal Dumping Enforcement Activities
- Enhanced Storm Drain Inlet Maintenance

3.2.7 Trash Management Area #6

TMA 6 is De Anza College Campus. In addition to the curb inlet screens planned for Stevens Creek Boulevard (in TMA 2) which fronts the community college campus, the City will address any litter discharge from campus by placing solar compactor trash and recycling bins around the perimeter of the campus on Stevens Creek Boulevard, Stelling Road, and McClellan Road.

While the City does not have jurisdiction over the campus property, it will purchase and install "recycling and trash solar compactor sets" at the perimeter of the campus. At the same time, City staff will continue to work with the Environmental Studies Department faculty to develop anti-litter and recycling outreach and education for the college students with a specific goal of reducing campus parking lot litter. Results of annual assessment(s) and adjustment(s), and using the described control measures, will help the City achieve "no adverse visual impact" in this TMA July 2022.

Street Sweeping

TMA 6 is included in the area where sweeping frequency was increased to weekly. The curb inlet screens installed along Stevens Creek Boulevard (which borders the college campus) will be monitored before, during and after rain events. By July 2017 sweeping frequency will be increased, if warranted, to ensure curb screen effectiveness.

Improved Trash Bins/Container Management

The City will address the litter discharge from this community college campus by placing solar compactor trash and recycling bin sets around the perimeter of the campus. The City will purchase the sets with funding from the City's participation in CalRecycle's beverage container recycling grant program. The City will continue to purchase as many sets each year as the grant funding provides, with an anticipated total of 8 sets to be installed from FY 14-15 through FY 17-18.

Jurisdiction-wide control measures that affect TMA 6 are described in section 3.2.1, including:

- Enhanced Storm Drain Inlet Maintenance

3.2.8 Trash Management Area #7

The City's parks, churches and schools which comprise TMA 7 are well maintained. They received a medium-low trash generation rating due to the potential for public and commercial areas to be a source of litter. Parks are cleaned daily by City maintenance staff and several of the elementary and middle school sports fields are maintained by City staff.

Improved Trash Bins/Container Management

Recycling-trash bin sets will be purchased for City parks starting in FY 18-19 and the City will continue to purchase as many sets each year, through FY 21-22, as CalRecycle beverage container grant funding provides. Currently the City receives grant funding annually from CalRecycle for beverage container recycling equipment and programs.

Jurisdiction-wide control measures that affect TMA 7 are described in section 3.2.1, including:

- Enhanced Storm Drain Inlet Maintenance
- Public Education and Outreach Programs
- Anti-littering and Illegal Dumping Enforcement Activities

3.2.9 Trash Management Area #8

TMA 8 is the site of the future Apple Campus 2. The site is being re-developed to uncommonly high environmental standards. Construction of the site is expected to be completed in 2016. One heavily traveled Cupertino road, Pruneridge Avenue, will be permanently closed between Wolfe Road and Tantau Avenue and absorbed into Apple Campus 2, in effect, converting Pruneridge Ave. into a green street equivalent.

Full Capture Treatment Devices
By City ordinance (Section 9.18.115), the Apple Campus 2 project is required to install full trash capture devices in every drain inlet on the property. The City's engineering construction inspector will check the site upon installation of the devices and again one year later to verify maintenance.

Street Sweeping
TMA 8 borders two of the City's arterials along commercial and retail property (Wolfe Road and Homestead Road) where street sweeping frequency has been increased to weekly and will be considered for additional sweeping to a frequency that maintains the effectiveness of the curb inlet screens.

Jurisdiction-wide control measures that affect TMA 8 are described in section 3.2.1, including:

- Enhanced Storm Drain Inlet Maintenance

3.2.10 Trash Management Area #9

TMA 9 is the City's extremely low litter-generating area (coded green on the trash generation map). It is comprised primarily of single-family homes in affluent neighborhoods. Jurisdiction-wide management actions such as enhanced storm drain inlet maintenance, the City's reusable bag ordinance (CMC 9.18.215), the newly adopted EPS food ware ban, the K-12 reusable bag art contest for Cupertino residents, the third-grade creek education field trip program at Blackberry Farm (held in conjunction with Cupertino school districts), and public education and participation at City events are expected to help maintain "no adverse visual impact" status in TMA 9 permanently. A description of jurisdiction-wide Control Measures is in Section 3.2.1.

3.2.11 Creek and Shoreline Hot Spot Cleanups

The City's two trash hot spots are shown on the City's Trash Management Area Map (Figure 6). CU001 is located in TMA 7e along Calabazas Creek near the conflux of Regnart Creek and Calabazas Creek. It was chosen as the site of the City's first community creek cleanup in Fall 2008 (Pre-MRP) because of its safe access for volunteers proximity to park restrooms. CU002, selected for cleanup in FY 10-11 at the SCV Water District's suggestion, is in TMA 5 along Stevens Creek at the conflux of Heney Creek. The sites are assessed, cleaned and photographed at least annually. Hot spot CU002, at Stevens Creek, has become an area of interest due to a nearby graffiti site. The City will test several management actions to address the litter problem starting in FY 14-15. On the other hand, the City's hot spot site in Calabazas Creek has become cleaner each year and will be evaluated by staff to determine the most effective cleanup frequency in the future.

Staff and volunteers have collected consistently less trash each year at Calabazas Creek (CUO01). Yet, at Stevens Creek, even though access is blocked by a gated Water District fence, more debris was found after the first rainstorm in 2013 than in previous years. The site is downstream from a tunnel under the 280 freeway through which Stevens Creek flows. An

adjacent tunnel, also under the freeway was painted with graffiti and strewn with empty spray paint cans. It appears to be a gathering spot where trash (i.e., spray paint cans, food packaging (predominantly expanded polystyrene foam pieces, cigarettes, glass bottles and broken glass) are left behind. The buoyant empty cans, sports balls and polystyrene foam pieces are transported downstream during rainstorms where they are caught in vegetation at a sharp bend in the creek. Staff from the Cities of Cupertino and Los Altos cleaned up the heavily-littered east bank of the creek, and the upstream tunnel in January 2013.

Table 6.1 Trash Hot Spot Tracking

Trash Hot Spot	**Cleanup Date**	**FY 2012-13 Volume of Trash Removed (cubic yards)**	**FY 2011-12 Volume of Trash Removed (cubic yards)**	**FY 2010-11 Volume of Trash Removed (cubic yards)**	**Dominant Type(s) of Trash**	**Trash Sources** (where possible)
CU001 Calabazas Creek near Regnart Creek Conflux	2/28/2013	0.166	0.623	0.786	Plastic bags, Styrofoam™, Cigarette butts, Convenience/ Fast food items, Aluminum cans, Sports balls	Litter, trash accumulation, Illegal dumping
CUO02 Stevens Creek near Heney Creek Conflux	1/29/2013 6/30/2013	0.980	0.810	0.487	Glass pieces, Convenience/Fast food items, Spray paint cans, Cigarette butts, Sports balls, Toxic substances	Litter, Illegal dumping, Homeless encampments
Totals		1.146	1.434	1.273		

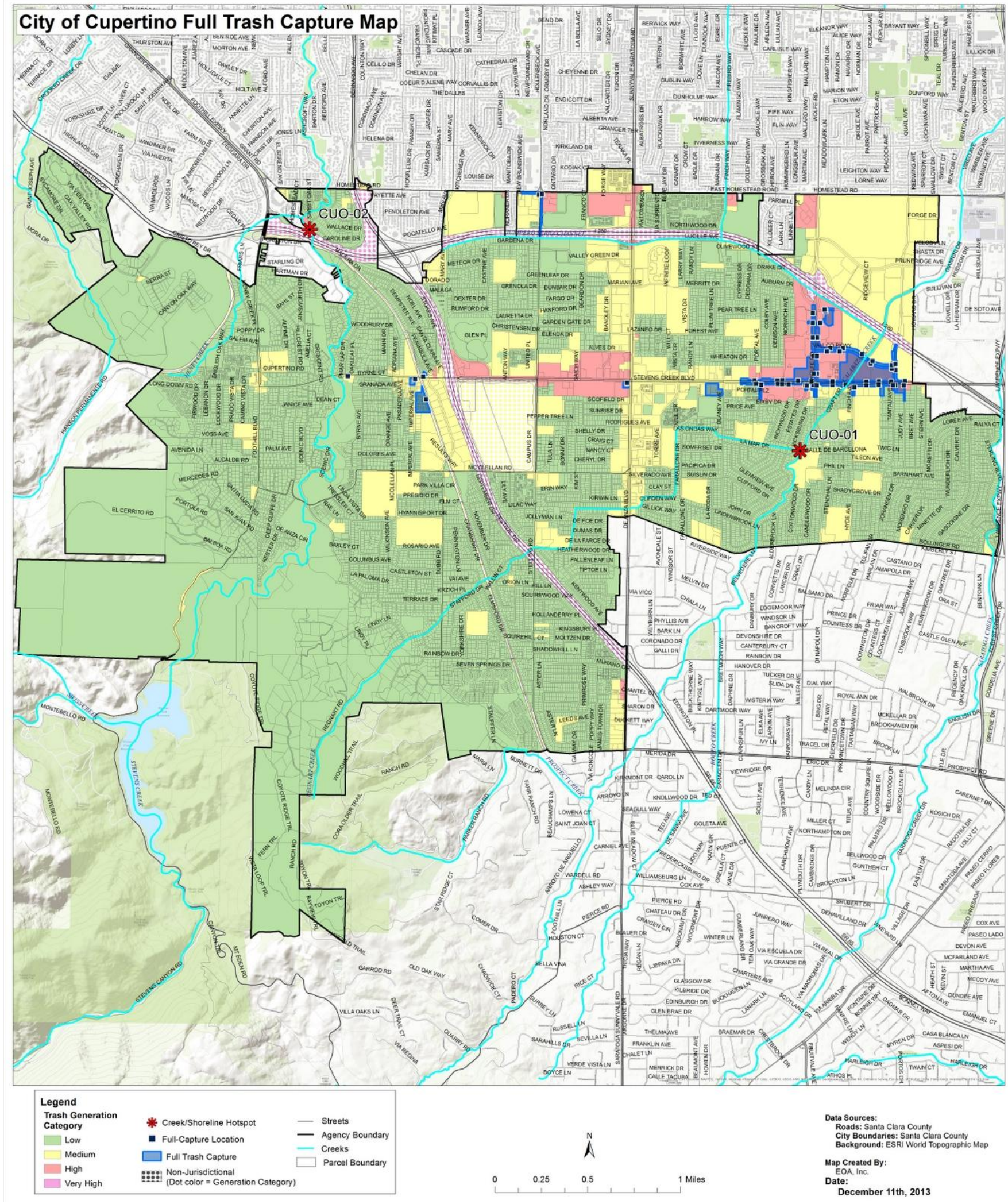


Figure 7. Trash Full Capture Device Map for the City of Cupertino

Page Intentionally Left Blank

3.2.12 Summary of Trash Control Measures

Trash Management Area 1

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Street Sweeping
- Jurisdiction-wide Control Measures (Section 3.2.1)

As of 2013, most of TMA 1 is covered by full trash capture devices. Four (4) full-capture devices will be installed in FY 19-20 at the east end of Stevens Creek Boulevard. Three (3) more full-capture devices are being considered for FY 16-17 after the redevelopment of Cupertino Village and Apple Campus 2 are complete. Partial-capture devices will be installed on Wolfe Rd south of Homestead in FY 14-15. It is believed that the equivalent of full trash capture in TMA 1 will be achieved with the addition of retractable curb inlet screens and City conditions on the Cupertino Village redevelopment project at Homestead and Wolfe Roads by July 2017. With annual assessment(s) and adjustment(s), the City plans to reach "no adverse visual trash impact" in this TMA by July 2022.

Trash Management Area 2

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Street Sweeping
- Jurisdiction-wide Control Measures (Section 3.2.1)

Two (2) full-capture devices will be installed at the freeway access points east of Fwy 85 on Stevens Creek Boulevard in FY 16-17. Thirty-four (34) partial-capture devices to be installed in FY 14-15, enhanced street sweeping (no parking, slower sweeper speed and new equipment), and increased inspections and enforcement at retail and commercial sites are expected to achieve the equivalent of full trash capture in TMA 2 by July 2017 With annual assessment(s) and adjustment(s), the City plans to achieve "no adverse visual impact" in this TMA by July 2022.

Trash Management Area 3

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Street Sweeping
- Jurisdiction-wide Control Measures (Section 3.2.1)

Two (2) existing full-capture devices coupled with curb screens on Homestead Road at Stelling Road, two (2) additional full-capture devices installed north of Fwy 280 on De Anza Blvd in FY 15-16, twenty (20) partial-capture devices to be installed in FY 15-16 along Homestead Rd between Wolfe Rd. and Barranca Dr., enhanced street sweeping (no parking, slower sweeper speed and new equipment), and increased inspections and enforcement at retail and commercial sites are expected to achieve the equivalent of full trash capture in TMA 3 by July 2016. With annual assessment(s) and adjustment(s), the City plans to achieve "no adverse visual trash impact" in this TMA by July 2022.

Trash Management Area 4

- Full-Capture Treatment Devices
- Partial-Capture Treatment Devices
- Street Sweeping
- Jurisdiction-wide Control Measures (Section 3.2.1)

Two (2) full-capture devices installed south of Fwy 280 on De Anza Blvd in FY 14-15, two (2) additional full-capture devices installed, one each on Bollinger Road and Blaney Avenue, between 40 and 48 partial-capture devices along De Anza Blvd scheduled to be installed in FY 16-17, enhanced street sweeping (no parking, slower sweeper speed and new equipment), and increased inspections and enforcement at retail and commercial sites are expected to achieve the equivalent of full trash capture in TMA 4 by July 2017. With annual assessment(s) and adjustment(s), the City plans to achieve "no adverse visual trash impact" in this TMA by July 2022.

Trash Management Area 5

- Full-Capture Treatment Devices
- On-land Trash Cleanups
- Creek Cleanups
- Signage
- Improved Trash Bin/Container Management
- Partial-Capture Treatment Devices
- Street Sweeping
- Jurisdiction-wide Control Measures (Section 3.2.1)

Two full-capture devices (west of Fwy 85 near the freeway access point) will be installed along Stevens Creek Blvd. By July 2018, twenty-five (25) partial-capture retractable curb inlet screens will be installed along Steven Creek Boulevard west of Fwy 85 with weekly street sweeping. The sweeping frequency will be considered and increased, if needed, to maintain curb screen capture-effectiveness. Signage, monthly on-land cleanups, and one heavy trash and recycling bin at the City's creek hot spot site will be implemented by July 2015. An agreement with the Sheriff will be pursued to help with graffiti and trespassing enforcement in FY 16-17. This suite of control measures is expected to achieve the equivalent of full trash capture in TMA 5 by July 2018. With annual assessment(s) and adjustment(s), the City plans to achieve "no adverse visual trash impact" in this TMA by July 2022.

Trash Management Area 6

- Improved Trash Bin/Container Management
- Targeted Public Education and Outreach Programs
- Jurisdiction-wide Control Measures (Section 3.2.1)

The City will address the litter being discharged from this community college campus by placing solar compactor trash and recycling bins around the perimeter of the campus on Stevens Creek Blvd, Stelling Rd, and McClellan Rd. Beginning in FY 14-15, the City will purchase "installed recycling/trash solar compactor sets" as funding is received through the City's participation in CalRecycle's beverage container grant program. The City will purchase as many sets each year, through FY 17-18, as the grant funding provides, with an anticipated total of 8 sets to be installed by July 2018. Staff will work with faculty of the Environmental Studies Department to develop anti-litter and recycling projects and

education for the college students. This suite of control measures is expected to achieve the equivalent of full trash capture in TMA 6 by July 2018. With annual assessment(s) and adjustment(s), the City plans to observe "no adverse visual trash impact" in this TMA by July 2022.

Trash Management Area 7

- Improved Trash Bin/Container Management
- No Smoking Ordinance in Parks adopted in 2011 (CMC 10.90.020 Smoking Prohibited)
- Jurisdiction-wide Control Measures (Section 3.2.1)

The City's parks, churches and schools are generally well maintained. They received a medium-low trash generation rating due to the potential for public and commercial areas to generate litter. Parks are cleaned daily by City maintenance staff. The City recently (2011) adopted an anti-smoking ordinance in all public recreational areas (including parks). Recycling-trash bin sets will be purchased for City parks starting in FY 18-19 and the City will continue to purchase as many sets each year, through FY 21-22, as CalRecycle beverage container grant funding provides.

Staff will work with faculty at K-12 schools beginning in FY 16-17 to develop anti-litter and recycling outreach and education to engage students in campus litter prevention, recycling, composting and volunteer cleanups at their schools.

Most churches in Cupertino are very well maintained. Staff will conduct outdoor inspections at churches and schools to ensure litter-free grounds and compliance with the City's anti-littering law. Annual outdoor inspections will begin by geographical location in FY 15-16 for TMA 7a and will continue for TMA 7b in FY 16-17 and so on through FY 19-20 for TMA 7e.

With annual assessment(s) and adjustment(s), the City plans to achieve the equivalent of full trash capture in TMA 7a-7e by July 2022.

Trash Management Area 8

- Full-Capture Treatment Devices
- Jurisdiction-wide Control Measures (Section 3.2.1)

TMA 8 is the site of the future Apple Campus 2. The site is being re-developed to very high environmental standards. By City ordinance, the project will be required to install full trash capture devices in every drain inlet on the property. A City stormwater inspector will check the site upon installation of the full capture devices and again one year later to verify maintenance. Construction of the site is expected to be completed in 2016. With initial assessment(s) and inspections conducted on a complaint basis and once every NPDES permit term, the City plans to observe "no adverse visual trash impact" from Apple Campus 2 by July 2017.

Trash Management Area 9

- Jurisdiction-wide Control Measures (Section 3.2.1)

This is the City's primarily single-family home, extremely low-trash-generating area (coded green on its trash generation map). Jurisdiction-wide management actions such as the reusable bag ordinance, the newly approved EPS food ware ban, the reusable bag art contest for Cupertino K-12 residents, the third-grade creek education field trip program at Blackberry Farm held in conjunction with Cupertino schools, and public education and

participation at City events are expected to help maintain “no adverse visual trash impact” in this TMA permanently.

3.3 Control Measure Implementation Schedule

The City of Cupertino will implement the following control measure implementation schedule in FY 2013-2014 through FY 2021-2022. Updates to this schedule, if any, will be based on assessment results that indicate a potential for greater efficiency and/or cost savings without compromising progress toward the City’s plan to reduce trash and litter discharges by 70% before July 2017 and 0% visual impact by July 2022. The table clearly demonstrates:

1) actions initiated prior to and continued after the MRP effective date (December 2009);

2) actions initiated after the MRP effective date and implemented prior to July 1, 2014; and

3) actions planned for future implementation between July 2014 and July 2022.

Table 7. City of Cupertino's 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 Devices					52	X	4				3	4		
Full-Capture Treatment Devices – (Main Street Developer)							4							
Partial-Capture Treatment Devices					49				7					
Enhanced Street Sweeping	X	X	X			X	X	X	X	X	X	X	X	X
Anti-littering & Illegal Dumping Enforcement					X	X	X	X	X	X	X	X	X	X
TMA #2														
Full-Capture Treatment Devices (east of Fwy 85 on SCB)									2					
Partial-Capture Treatment Devices					17		41							
Enhanced Street Sweeping	X	X	X			X	X	X	X	X	X	X	X	X
Anti-littering & Illegal Dumping Enforcement					X	X	X	X	X	X	X	X	X	X
TMA #3														
Full-Capture Treatment Devices (Sunnyvale installed for 2008 Pilot)					2			2						
Partial-Capture Treatment Devices along Homestead (Sunnyvale installed in 2008 for pilot)	X	X	X	X	2			25						
Enhanced Street Sweeping	X	X	X			X	X	X	X	X	X	X	X	X
Anti-littering & Illegal Dumping Enforcement					X	X	X	X	X	X	X	X	X	X
TMA #4														
Full-Capture Treatment Devices (2 @ 280 and DAB & 2 @ Blaney & Bollinger)							2			2				
Partial-Capture Treatment Devices - on all the City's curb inlets along De Anza Blvd										39				
Enhanced Street Sweeping	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]
Improved Trash Bin/Container Management (City Hall, Community Hall, Library)						7 sets								
Anti-littering & Illegal Dumping Enforcement					X	X	X	X	X	X	X	X	X	X
TMA #5														
On-land trash cleanups - annual	X	X	X	X	X	X	X	X	X	X	X	X	X	X
On-land trash cleanups – monthly (frequency reduced as need declines due to other control measures)							X	X	X					
Creek cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Management							2 bins							
Anti-littering & Illegal Dumping Enforcement – Municipal Code Signage						X	X	X	X	X	X	X	X	X
Partial-Capture Treatment Devices (SCB from 85 to BB Farm Golf Course)											39			
Full-Capture Treatment Devices (west of Fwy 85 on SCB)									2					
Enhanced Street Sweeping	X	X	X			X	X	X	X	X	X	X	X	X
Public Education & Outreach to High School						X	X	X	X	X	X	X	X	X
TMA #6														
Improved Trash Bin/Container Management							X	X	X	X				
Public Education and Outreach Programs							X	X	X	X	X	X	X	X
TMA #7														
Improved Trash Bin/Container Management											X	X	X	X
Public Education and Outreach Programs	X	X	X	X	X	X	X	X 7a	X 7b	X 7c	X 7d	X 7e	X	X
Existing No Smoking Ordinance in Parks adopted in 2011 (CMC 10.90.020 Smoking Prohibited)				X	X	X	X	X	X	X	X	X	X	X
TMA #8														

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]
Full-Capture Treatment Devices (Apple Campus 2 and City Inspections)								X	X					
TMA #9														
Single Use Carryout Bag Policy						X	X	X	X	X	X	X	X	X
Improved Trash Bin/Container Management (Blackberry Farm)			15 sets											
Polystyrene Foam Food Service Ware Policy							X	X	X	X	X	X	X	X
Public Education and Outreach Programs	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jurisdiction-wide Control Measures														
Single Use Carryout Bag Policy						X	X	X	X	X	X	X	X	X
Polystyrene Foam Food Service Ware Policy							X	X	X	X	X	X	X	X
Public Education and Outreach Programs	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Enhance Storm Drain Inlet Maintenance (increased from biennially to annually)						X	X	X	X	X	X	X	X	X
Anti-littering & Illegal Dumping Enforcement						X	X	X	X	X	X	X	X	X
Creek and Shoreline Hot Spot Cleanups														
On-land trash cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Creek cleanups	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Install Signage							X							
Improved Trash Bin/Container Management (see TMA #5 – install 2 bins)					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

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 Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP), including the City of Cupertino*.* 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 SCVURPPP. 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 SCVURPPP Pilot Assessment Strategy

The following SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP Pilot Strategy) was developed by SCVURPPP on behalf of the City and other Santa Clara Valley Permittees. The SCVURPPP Pilot Strategy will be implemented at a pilot scale on a countywide basis and includes measurements and observations in the City of Cupertino*.*

4.1.1 Management Questions

The SCVURPPP 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 (i.e., 40%, 70%, and No Adverse Impacts) being achieved?
- Are there trash problems in receiving waters (e.g., creeks and rivers)?
- If trash problems in receiving waters exist, what are the important sources and transport pathways?

The SCVURPPP Pilot Strategy, including indicators and methods, is summarized in this section and fully described in the SCVURPPP Pilot Trash Assessment Strategy, a compendium document submitted to the Water Board on February 1, 2014 on behalf of all SCVURPPP Permittees (SCVURPPP 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 SCVURPPP 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 Cupertino in collaboration with SCVURPPP and other SCVURPPP 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 SCVURPPP 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 Cupertino will implement through the SCVURPPP Pilot Strategy to generate indicator information described in the previous section. Additional information on each method can be found in the SCVURPPP Pilot Trash Assessment Strategy submitted to the Water Board by SCVURPPP 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 Cupertino as part of the SCVURPPP 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 SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 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 Cupertino is

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

The SCVURPPP 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 SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 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 SCVURPPP 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 – Descriptions of outreach efforts, tracking and reporting business compliance rates, or other metrics of control measure performance.
- Street Sweeping- Identification sweeping frequency and the ability to sweep to the curb by primary TMA, including any enhancements that have been implemented; and any other metrics demonstrating the enhanced performance of street sweeping.
- Public/Private Trash Container Management - Descriptions of control measures implemented to prevent overflowing trash containers or promoting the more effective use of public/private bins, including any new or enhancements to existing actions; and any other metrics demonstrating the performance of the control measure.
- Public Outreach and Education – Descriptions of outreach and education actions specific to trash deduction, including the number of events conducted within the municipality; descriptions of effectiveness measurements, including the results of pre- and post-implementation surveys or other metrics.
- On-land Cleanups and Enforcement – Descriptions of on-land cleanup actions, including any enhancements that have been implemented; identification of whether on-land cleanup are Permittee or volunteer–led; or other metrics of control measure performance.
- Storm Drain Inlet Maintenance – Descriptions of the level of maintenance, including any enhancement to maintenance frequency; the numbers of inlets where enhanced maintenance is being implemented; and any other metrics demonstrating the performance of inlet maintenance.
- Anti-littering and Illegal Dumping Prevention/Enforcement - Descriptions of control measures implemented to prevent littering and illegal dumping, including any new or enhancements to existing actions; descriptions and results of enhanced enforcement actions; and any other metrics demonstrating the performance of the control measure.
- Prevention of Uncovered Loads - Descriptions of control measures implemented to prevent trash dispersion from uncovered loads, including any new or enhancements

to existing actions; descriptions and results of enhanced enforcement actions; and any other metrics demonstrating the performance of the control measure.

- Partial Capture Devices – Descriptions, numbers and types of devices implemented; maintenance frequencies by device or groups of devices; and any other metrics demonstrating the partial capture device performance.
- Other Control Measures - Descriptions of control measures implemented to prevent or intercept trash before discharge to receiving waters, and any other metrics demonstrating the performance of the control measure.

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, Santa Clara Valley 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 Cupertino 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 SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014).

4.2 BASMAA "Tracking California's Trash" Project

The SCVURPPP 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 SCVURPPP, 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 SCVURPPP 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 will evaluate its progress toward its litter reduction goals by conducting and testing individual assessments specific to the City of Cupertino. These include:

Additional assessment #1 - Measure the volume of litter removed from receiving waters (i.e., creeks) including on the banks and in the general area around the creeks, at annual creek cleanup events and after monthly cleanups at the City's number 2 hot spot on Stevens Creek at the confluence of Heney Creek. Budget for additional staff time and begin assessments and evaluation in FY 14-15.

Additional assessment #2 - Staff will photo document a sample of the trash and debris recovered while conducting maintenance of full trash capture devices (FTCs) in the City's retail areas, this assessment method was first used on December 18, 2013. Beginning in FY 2014-2015, staff will compare the amount of trash from FTCs that were installed in drain inlets which were also fitted with curb inlet screens with the amount of trash from FTCs not protected by the curb inlet screens to determine whether curb screens and enhanced sweeping in retail areas is as effective as full-capture devices installed along major arterials in commercial and retail areas.

Note: The City's visual verification for assigning trash generation levels in June 2013 and the first storm drain and full-capture treatment device cleaning and evaluation (photo-documented) on 12/18/13 showed that inlets protected by curb inlet screens contained, at most 0-3 pieces of small litter items per drain inlet. Beginning in FY 14-15, the City will conduct these drain inlet assessments at least twice per year and quarterly as a standard practice (as weather dictates) to gather wet and dry season assessment data and conduct evaluations. The City will make adjustments to curb screens or sweeping to improve the effectiveness of the curb screens and eliminate the need for full-capture devices.

Additional assessment #3 – Beginning in FY 13 – 14, City staff will use IND and IDDE inspection program tracking data (collected as a requirement of provisions C4 and C5 in the MRP) to evaluate effectiveness of educational outreach and enforcement control measures, such as demonstrating a decline in "litter and uncontained debris" violations discovered during the City's IND (industrial/commercial) inspections and the number of calls related to litter and illegal dumping received by the City's IDDE (Illicit discharge detection and elimination) inspector.

Additional assessment #4 - In 2011, City staff examined the types and volume of litter collected from street sweeping in the City's retail/commercial areas, at two events, one examining material swept up from retail areas after 2 weeks of debris accumulation and another after one week of accumulation. Staff and a small group of volunteers separated the dirt, leaves and litter by trash type and photographed the results. Information from the two dumps of street sweeping debris (one week apart) helped the City evaluate the effectiveness of its sweeping frequency in high-litter-generating commercial and retail areas and the effectiveness of its educational outreach and enforcement efforts. Beginning in FY 14-15, material collected by the street sweeper in retail/commercial area will be dumped and sorted at least once annually to estimate the quantity of trash found in Cupertino's commercial and retail streets and identify the prominent litter types.

The sweeper material audit events revealed that the most common litter types found in Cupertino's streets are cigarette butts and cigarette packaging followed closely by single-use beverage cups, then lids and straws. Plastic bags were also swept up in notable quantities. Awareness of trash types helps staff plan and add or adjust educational outreach efforts and enforcement control measures. In FY 13-14, to maximize the efficiency of the curb inlet screens installed in October 2012, sweeping was increased to weekly in high-litter generating commercial-retail areas.

City staff will continue to participate in SCVURPPP's Trash Ad Hoc meetings and in Water Board trash steering meetings and workshops to determine which assessment methods and evaluations are acceptable to demonstrate compliance with litter reduction targets for 2014, 2017 and 2022.

4.4 Long-Term Assessment Strategy

The City of Cupertino 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.

4.5 Implementation Schedule

The implementation schedule for the SCVURPPP 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 SCVURPPP Pilot Trash Assessment Strategy (SCVURPPP 2014) and monitoring plans developed as part of BASMAA's Tracking California's Trash project.

Table 9. City of Cupertino 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 (SCVURPPP)										
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					
Additional Assessments (City of Cupertino)										
Assessment Method #1 – Measure volume of litter and identify prominent types of litter collected during quarterly to monthly on –land clean-ups in TMA 5 at the City's number 2 creek hotspot (Stevens Creek).			X	X	X	X	X	X	X	X
Assessment Method #2 - Photo-document samples of full capture debris with curb screens and those without curb screens to compare and determine the effectiveness of curb screens and frequent street sweeping			X	X	X	X	X	X	X	X

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]
Assessment Method #3 – Use IND and IDDE inspection data to evaluate the effectiveness of site visits and educational outreach to businesses as well as enforcement effectiveness		X	X	X	X	X	X	X	X	X
Assessment Method #4 – Sort debris collected by the street sweeper in commercial retail area to estimate the quantity of litter found in streets and identify prominent litter types			X	X	X	X	X	X	X	X
Long-Term Trash Assessment Strategy (SCVURPPP)						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). 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.

SCVURPPP (Santa Clara Valley Urban Runoff Pollution Prevention Program). 2014. Pilot Trash Assessment Strategy. Prepared by EOA. February 1.

APPENDIX A

Appendix A

PUBLIC WORKS DEPARTMENT
CITY HALL
10300 TORRE AVENUE • CUPERTINO, CA 95014-3255
TELEPHONE: (408) 777-3354 www.cupertino.org

CITY COUNCIL STAFF REPORT

Meeting: January 21, 2014

Subject

Long-Term Litter Reduction Plan for the City of Cupertino.

Recommended Action

Approve and direct staff to budget for implementation of the City's long-term trash plan to achieve 70% reduction by July 2017, and "no visual impact equivalent" (formerly 100% reduction) by July 2022.

Discussion

Over 70 municipalities that discharge rainwater to the San Francisco Bay were required to submit a short-term trash load reduction plan to the San Francisco Bay Regional Water Quality Control Board (Water Board) by February 1, 2012. The short-term plan has been implemented and is discussed in section 2.0 of the Long-Term Trash Reduction Plan currently proposed for submittal to the Water Board by February 1, 2014.

Provision C.10.a.i of the Municipal Regional Stormwater NPDES Permit (MRP) requires permittees to demonstrate implementation of control measures and other jurisdiction-wide activities that reduce trash loads from the municipal separate storm drain system by 40% by 2014 (short term), 70% by 2017 and 100% by 2022 (long term).

Staff has prepared a long-term plan, which responds to the required trash load reductions over the next eight years. The Water Board has decided not to give percentage reduction "credit" for adopting control measures. Rather, progress toward success will be evaluated based on a jurisdiction's ability to address specific problems in its "high" and "medium" trash-generating areas, in conjunction with assessments and refinement of control measures as needed to ensure success. Control measures need not be implemented in a city's low litter-generating area. Jurisdiction-wide efforts, such as public education and adopting ordinances that limit the broad distribution of materials

that are particularly harmful to water quality will be sufficient to address a city's low litter-generating areas.

The attached plan (Attachment A) outlines actions in the City's nine (9) trash management areas (TMAs). TMAs were delineated to combine areas with similar trash source problems, management actions and time required for implementation. The City's budget will be impacted gradually over the next eight years and then continuously into the future to pay for control measures, educational outreach and annual assessments and evaluations.

It is important to note that the City's Long-Term Trash Load Reduction Plan and Assessment Strategy, which will be submitted to the San Francisco Bay Regional Water Board by February 1, 2014, is expected to undergo revisions as annual assessments, staff observations and normal development within the City provides indications of what is and is not working efficiently to accomplish trash reduction goals. What City Council would approve today may be changed annually and detailed in the City's annual report to the Water Board, as long as the City demonstrates that the progress toward litter reduction is proceeding according to the intended timeline for achievement.

Water Board members and staff have conveyed that innovative and realistic efforts to solve litter problems by a municipality will be recognized as good-faith efforts. This would be the case even if the "pilot" effort does not produce the intended results, as long as the outcomes are evaluated and a new plan of action takes effect to incorporate "lessons learned." That being acknowledged, the City of Cupertino has primarily selected proven litter control measures such as installing curb inlet screens and increasing street sweeping. Other management actions, which will be needed to implement the long-term plan by 2022, do not have outcomes that are certain (e.g. engaging the Sheriff on the City's anti-litter enforcement, working with Caltrans on vehicular litter control and clean-up, and conducting public education).

The attached City of Cupertino Long-Term Trash Load Reduction Plan and Assessment Strategy includes in broad outline the following planned activities to ensure the City meets the State's litter reduction requirements:

- Installation of 17 full trash capture baskets inside drain inlets along high-litter-generating retail and commercial arterials (coded red and yellow on the City's Trash Generation Map included in the Plan);
- Installation of 151 above-ground curb inlet screens to keep trash along high-litter-generating arterials in the City out of drain inlets and available for pick-up with a street sweeper;
- Additional street sweeping (as needed) with no-parking requirements to maximize curb screen efficiency and prevent flooding;

- A component for staff to investigate options for enforcement of the City's anti-litter ordinance (CMC 9.18.215) in collaboration with the Sheriff and the City's Code Enforcement staff;
- Allocation of City staff time for enforcement and educational outreach projects in collaboration with the Chamber of Commerce, local schools and potentially with the Cupertino Rotary;
- Allocation of staff time for the City to partner with other governmental agencies (e.g. Caltrans, neighboring cities, and school districts) especially on grant-funded projects. One regional grant program has been awarded and two separate grant proposals have been submitted by the City of Sunnyvale and Clean Water Action;
- Allocation of staff time to conduct local outreach and participate in Bay Area Stormwater Management Agency Association's (BASMAA's) regional anti-litter campaign.

The City's Long-Term Trash Load Reduction Plan, which will be submitted by February 1st, is meant to be a dynamic document that details a city's good-faith strategy to attain the initial trash load reduction targets by July 2017 and July 2022. The Water Board will be reviewing each city's progress through its Annual Reports to evaluate implementation and compliance by the deadlines. The Long-Term Plan is attached to provide details of control measures implemented to date and planned for the future (subject to future assessments).

If the City Council chooses to change the measures included in the Long-Term Plan, based on information provided by staff regarding observations, assessments, final costs, and feasibility, staff will submit the modified plan in the City's Annual Report to the Water Board (due by September 15th).

The City will not be able to accomplish compliance with the Regional Water Board's mandate for litter reduction over the next eight years without increased public awareness of the mandates and support from Cupertino's residential, business and school communities. The Cupertino City Council took two steps toward increasing public awareness in FY 2012-2013. The first action was amending the Municipal Code (Chapter 9.18 Water Resource Protection and adding Chapter 9.17 Regulation of Single Use Carryout Bags) to include anti-litter requirements associated with the MRP and the second was adopting the City of Cupertino's reusable bag ordinance. Staff will continue to explore options based on cost-effectiveness, feasibility of implementation by staff and benefit toward achieving the maximum litter reduction for the City, and will report any recommendations to City Council through the City's budget approval process.

<u>Sustainability Impact</u>

All options for litter reduction are intended to improve water quality.

Fiscal Impact

Fiscal impact will depend on the litter control and management actions selected by the City. Staff has provided estimates for the different options, but actual costs are yet to be determined.

Prepared by: Cheri Donnelly, Environmental Programs Manager
Reviewed by: Timm Borden, Director of Public Works
Approved for Submission by: David Brandt, City Manager
Attachments:
A - City of Cupertino Long-Term Trash Load Reduction Plan and Assessment Strategy