



# Town of Moraga

PUBLIC WORKS/ENGINEERING  
DEPARTMENT

February 3, 2014

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

Ms. Pamela Creedon, Executive Officer  
California Regional Water Quality Control Board  
Central Valley Region  
11020 Sun Center Drive, #200  
Rancho Cordova, CA 95670-6114

Dear Mr. Wolfe and Ms. Creedon:

Enclosed is the February 2014 Long-Term Trash Load Reduction Plan for the Town of Moraga, which is required by and in accordance with Provision C.10.c in National Pollutant Discharge Elimination System (NPDES) Permit Number CAS612008 issued by the San Francisco Bay Regional Water Quality Control Board and/or by Provision C.10.c in NPDES Permit Number CA0083313 issued by the Central Valley Regional Water Quality Control Board.

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 assure that qualified personnel properly gathered and evaluated 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.

Very truly yours,

Jill Keimach  
Town Manager

Enclosure



**Town of Moraga**

**Trash Management Plan**

**2014 - 2022**

Submitted to the  
California Regional Water Quality Control Board for the San Francisco Bay Region  
February 1, 2014

In compliance with Provision C.10 of the Municipal Regional Stormwater Permit

**Contents**

<b>1. Introduction by the Contra Costa Clean Water Program (CCCWP) .....</b>	<b>1</b>
A. Trash Sources, Pathways, and Loadings .....	1
B. Background for this Plan.....	1
C. Framework for Long-Term Trash Management .....	2
D. Identifying High-Trash Areas .....	2
E. Trash Management Strategy .....	3
F. Assessing Effectiveness .....	3
<b>2. Town of Moraga's Trash Management Overview .....</b>	<b>4</b>
A. Characteristics Affecting Trash Generation and Management .....	4
B. Drainage System and Water Resources Affected by Trash .....	4
C. Trash Problems and Priorities .....	4
<b>3. Town of Moraga's Trash Management Strategy.....</b>	<b>5</b>
A. Delineation of Trash Management Areas .....	5
B. Area-Specific Control Measures, Implementation Schedules, and Effectiveness Assessment .....	6
C. Creek and Shoreline Cleanups .....	6
D. Trash Reduction Policies .....	7
E. Public Education, Outreach, and Community Involvement.....	7
F. Jurisdiction-wide Progress Assessment and Continuous Improvement.....	8
<b>4. Trash Management Area Plans .....</b>	<b>8</b>
A. TMA-Specific Plans.....	8
<b>5. References.....</b>	<b>9</b>

**Figures**

1-1 Trash Sources and Transport Pathways

**Tables**

- 2-1 2010 Census Data
- 2-2 2005 Land Uses (ABAG)
- 2-3 Trash Generation Category Percentages by Land Use
- 3-1 Trash Generation Categories by Trash Management Area
- 3-2 Creek and Shoreline Hot Spot Cleanups

**Attachment**

Maps of Town of Moraga showing Trash Generation Rates and Trash Management Areas

## 1. Introduction by the Contra Costa Clean Water Program (CCCWP)

Contra Costa municipalities have prepared Long-Term Trash Reduction Plans (Plans) in compliance with Provision C.10.c. of the Municipal Regional Stormwater Permit<sup>1</sup> (MRP). Each municipal plan describes control measures and best management practices (BMPs) designed to attain a 70% trash load reduction by July 1, 2017 and a 100% reduction by July 1, 2022.

### A. Trash Sources, Pathways, and Loadings

Figure 1 illustrates sources and pathways of trash that enters the region's creeks and San Francisco Bay. Trash has multiple sources—all of which are episodic and widely dispersed.

In Figure 1, *Stormwater Conveyances* is highlighted because *only this pathway* is subject to MRP trash-reduction requirements. In reality, the other pathways are equally significant, depending on time and location. In practical terms, the pathways are intertwined. For example, on-land clean-ups reduce trash entering storm drains and also reduce wind-blown trash. When visible trash is reduced, litter and dumping from all sources tends to become less frequent and severe.

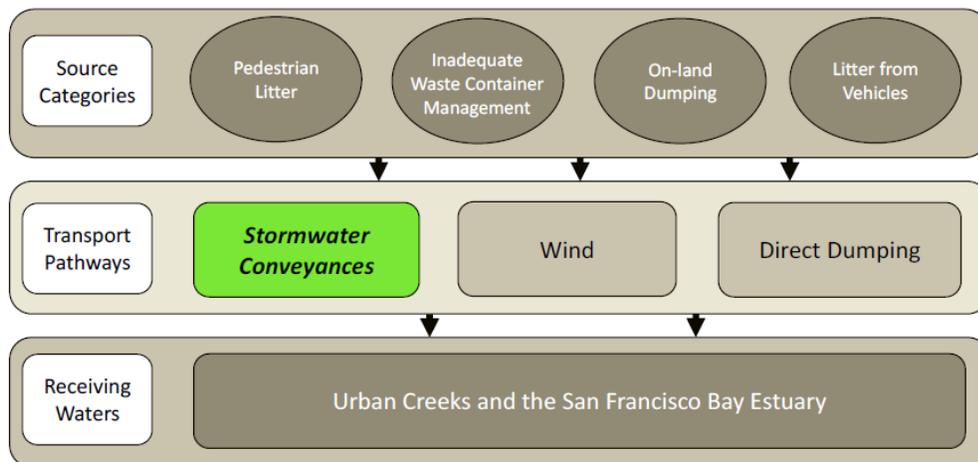


Figure 1. Trash sources and transport pathways.

The Town of Moraga (Town) must balance its commitment to MRP compliance with its commitment to preserving and enhancing local environmental quality and quality of life for its residents. That is, the Town seeks to reduce trash on local streets and roads, and to reduce the *total* amount of trash in its creeks and on its shorelines—in addition to fulfilling the Water Board's mandate to eliminate trash that flows through storm drains.

It is anticipated that some of the proposed actions may not be accommodated due to budgetary constraints.

For these reasons, the Town addresses trash holistically and comprehensively, integrating a variety of strategies, and uses a variety of methods to assess the success of those strategies.

### B. Background for this Plan

MRP Provision C.10 requires the Town to reduce trash loads from their storm drains by 40% by 2014, 70% by 2017, and 100% by 2022.

<sup>1</sup> Order R2-2009-0074, issued by the California Regional Water Quality Control Board for the San Francisco Bay Region, became effective on December 1, 2009 and applies to 76 cities, towns, counties, and flood control districts.

Provision C.10.a.ii. required the Town to determine a baseline trash load and a method for tracking reductions in trash loads. Working collectively through the Bay Area Stormwater Management Agencies Association (BASMAA)—and in close collaboration with Water Board staff—the Town developed methods, including a calculator, for tracking loads and load reductions.

The Town used these methods to develop the Short-Term Trash Load Reduction Plans by February 1, 2012, and is implementing those plans through July 1, 2014 to achieve the 40% reduction. Progress has been documented in the Town's 2012 and 2013 Annual Reports.

Following their review of the Short-Term Plans, Water Board staff requested the Town to change the methods used to evaluate trash load reductions. Working collectively through BASMAA—and again in close collaboration with Water Board staff—the Town developed the framework and planning tools to be used in the Town's Long-Term Plans.

### **C. Framework for Long-Term Trash Management**

The following 8-step framework was developed<sup>2</sup>:

1. Identify high, medium, and low trash generation areas, based on land use and other geographic data, local knowledge, and field verification.
2. Attempt to identify sources in high and medium trash generation areas to assist in focusing control measures.
3. Prioritize areas and problems/types.
4. Identify options (tools) for dealing with prioritized areas/problems.
5. Define success/goals and measurement type.
6. Select and implement tools.
7. Evaluate success.
8. Modify as needed.

Steps 5 and 7 of this framework acknowledge fundamental challenges presented by Provision C.10—how to define and evaluate success.

### **D. Identifying High-Trash Areas**

To implement the first step of the framework—to identify high, medium, and low trash-generation areas—the Town, through BASMAA, developed and calibrated a predictive model of trash generation.<sup>3</sup> Model variables are designated land use and 2010 median household income; the model was calibrated based on trash collected in full-trash-capture devices (BASMAA, 2012a, BASMAA, 2012b).

The Town applied the model as follows: The model was used to generate a preliminary map designating very high, high, moderate, and low trash generation areas. Town staff reviewed the preliminary map and identified areas that had incorrect designations based on local knowledge of actual land uses and of trash generation rates (CCCWP, 2013). Specific methods used to verify local trash generation rates are documented in Section 2 below and may include queries of municipal staff or members of the public, reviews of municipal operations data, viewing areas using Google Maps and Street View, application of BASMAA's On-Land Visual Trash Assessment Protocol (BASMAA, 2013), or other methods.

---

<sup>2</sup> The framework was developed in a November 1, 2012 meeting at Water Board staff offices and was refined in subsequent meetings with Water Board staff.

<sup>3</sup> "Generation" is understood to be the volume of trash potentially available to be transported from the urban watershed (per acre, per year) into the storm drains in the absence of any control measures and BMPs.

**E. Trash Management Strategy**

The Town delineated Trash Management Areas (TMAs) within its jurisdiction. TMA boundaries are based on land uses, drainage areas, management areas, and/or geographic considerations, and are drawn to facilitate focused and efficient efforts to reduce trash in areas with very high, high, and medium trash generation rates. The rationale for delineating TMAs in the specific municipality, an overview of the Town's trash management approach, and a description of activities that apply throughout the Town (including hot spot cleanups, jurisdiction-wide policies, and jurisdiction-wide public outreach) is in Section 3.

Section 4 consists of individual summary plans for each municipal TMA. Each TMA plan describes the key TMA characteristics, summarizes control measures, and describes methods for evaluating effectiveness of efforts within the TMA.

**F. Assessing Effectiveness**

Each TMA summary plan includes methods to evaluate effectiveness. As indicated in the framework, the primary purpose of these evaluations is to facilitate continuous improvement of control measures within the TMA. Continuous improvement requires TMA-specific interpretation of results, including consideration of factors that may have contributed to success, or lack of success, at that locale during the evaluation period. Evaluations of effectiveness and adjustments to the TMA summary plans will be included in each annual report.

A secondary purpose of the evaluation methods is to contribute evidence toward an annual general evaluation of progress toward MRP goals. Such an evaluation will be based on weight-of-evidence, using the results from TMA-level evaluations of the effectiveness of specific actions within the TMA, and of the total of TMA-level actions, during the reporting period. A jurisdiction-wide assessment of progress will be compiled by combining this TMA-level evidence with the results of hot spot cleanups, visual assessments of creeks and shorelines, and observations by local residents and cleanup participants. As additional outcome-based assessment methods are devised and pilot tested—regionally and statewide—information derived from these methods will be incorporated into annual progress assessments.

## 2. Town of Moraga's Trash Management Overview

### A. Characteristics Affecting Trash Generation and Management

Demographic data from the 2010 census is presented in Table 2-1.

**Table 2-1. 2010 Census Data**

<b>Population</b>	<b>16,016</b>
<b>Under 18</b>	<b>21.7%</b>
<b>18-24</b>	<b>14.6%</b>
<b>25-44</b>	<b>13.7%</b>
<b>45-64</b>	<b>30.9%</b>
<b>65 and older</b>	<b>19.1%</b>
<b>Median household income</b>	<b>\$98,080<sup>4</sup></b>

<sup>4</sup>From the 2000 Census. The median household income for the Town of Moraga from the 2010 Census is not currently available.

Table 2-2 presents summarizes land uses within the Town of Moraga.

**Table 2-2. 2005 Land Uses (ABAG)**

<b>Land Use Category</b>	<b>Jurisdictional Area (Acres)</b>	<b>% of Jurisdictional Area</b>
<b>Commercial and Services</b>	<b>74.2</b>	<b>1.3%</b>
<b>Industrial</b>	<b>13.6</b>	<b>0.2%</b>
<b>Residential</b>	<b>2,345.0</b>	<b>39.6%</b>
<b>Retail</b>	<b>63.9</b>	<b>1.1%</b>
<b>K-12 Schools</b>	<b>114.6</b>	<b>1.9%</b>
<b>Urban Parks</b>	<b>87.0</b>	<b>1.5%</b>
<b>Other</b>	<b>3,230.3</b>	<b>54.5%</b>

The Town is primarily comprised of two land uses, residential and open space (listed as “other” in the Table 2.2). The major retail, commercial centers, and K-12 schools or areas where people tend to congregate appear to generate the most amount of trash within the Town. Ages under 18 (21.7% of population) are within the K-12 Schools, which account for 1.9% of the jurisdictional areas and generate a medium to high trash rate and is shown within two of the Town’s TMAs. Saint Mary’s College is the only non-jurisdiction trash generator within the Town.

### B. Drainage System and Water Resources Affected by Trash

The Moraga Creek Watershed includes three major creeks within the Town: Moraga Creek, Laguna Creek, and Rimer Creek. The channels of the creeks throughout the area are relatively unmodified. Large flood control channels have not been built in the Town. Moraga Creek has been routed underground in short reaches to accommodate urbanization and infrastructure development. The Moraga Creek Watershed flows into the Upper San Leandro Reservoir. Laguna Creek is impacted by trash due to its close proximity to Campolindo High School.

### C. Trash Problems and Priorities

Refinements to the Trash Generation Maps were performed by Town staff by utilizing the BASMAA On-Land Visual Assessment Protocol, Google Maps Street View, and Town staff knowledge. The main objective of the assessment verification process was to accurately characterize trash generation rates

**Town of Moraga's Trash Management Plan 2014 - 2022**

within the Town's jurisdiction and make adjustments to areas with incorrect generation. Areas identified have been adjusted and updated as necessary.

The Town does not experience illegal dumping due to the limited ingress and egress into the Town, and due to the high standard Town residents hold. A successful program that the Town is proud of is the On-land Trash Cleanup program implemented through the Work Furlough Program. Major thoroughfares are cleaned weekly and a tracking log is maintained.

Table 2-3 summarizes trash generation by land use:

<b>Table 2-3. Trash Generation Category by Land Use</b>								
<b>Trash Generation Category</b>	<b>Jurisdictional Area (Acres)</b>	<b>Commercial and Services</b>	<b>Industrial</b>	<b>Residential</b>	<b>Retail</b>	<b>K-12 Schools</b>	<b>Urban Parks</b>	<b>Other</b>
<b>Very High</b>	<b>0.0</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>High</b>	<b>125.1</b>	<b>5.7%</b>	<b>3.9%</b>	<b>4.2%</b>	<b>46.5%</b>	<b>39.1%</b>	<b>0.0%</b>	<b>0.6%</b>
<b>Medium</b>	<b>92.2</b>	<b>21.2%</b>	<b>9.4%</b>	<b>0.0%</b>	<b>1.3%</b>	<b>68.0%</b>	<b>0.1%</b>	<b>0.0%</b>
<b>Low</b>	<b>5,711.3</b>	<b>0.8%</b>	<b>0.0%</b>	<b>41.0%</b>	<b>0.1%</b>	<b>0.1%</b>	<b>1.5%</b>	<b>56.5%</b>

**3. Town of Moraga's Trash Management Strategy**

The following trash management strategy is designed to attain a 70% trash load reduction by July 1, 2017 and a 100% reduction by July 1, 2022. The strategy may be updated and revised in response to changing conditions, including the amounts and location of trash generation, effectiveness of management actions, and available resources. Updates will be documented in Annual Reports.

The Town's trash management strategy is to continue the Town's successful trash management programs, while utilizing adaptive management techniques to allow the Town to modify and improve the initial proposed Long-Term Trash Management Plan by monitoring effectiveness of various measures. The Town plans to implement control measures specific to each TMA based on the existing trash generation category.

**A. Delineation of Trash Management Areas**

TMA's were identified based on the geographic distribution of trash generating areas, types of trash sources, land use, and Town staff knowledge. Town staff performed a ground-truth exercise using several metrics (i.e., on land visual assessment, Google Maps, Street View, and Town staff knowledge). TMA's are intended to form the management units by which trash control measure implementation can be tracked and assessed for progress towards trash reduction targets.

<b>Table 3-1. Trash Generation Category by Trash Management Area</b>					
<b>TMA</b>	<b>Jurisdictional Area (Acres)</b>	<b>Trash Generation Category</b>			
		<b>Very High</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>
<b>TMA 1</b>	<b>65.3</b>	<b>0.0%</b>	<b>51.7%</b>	<b>46.4%</b>	<b>1.9%</b>
<b>TMA 2</b>	<b>80.5</b>	<b>0.0%</b>	<b>46.2%</b>	<b>0.8%</b>	<b>53.0%</b>
<b>TMA 3</b>	<b>62.4</b>	<b>0.0%</b>	<b>86.8%</b>	<b>0.0%</b>	<b>13.2%</b>
<b>TMA 4</b>	<b>61.0</b>	<b>0.0%</b>	<b>0.0%</b>	<b>100.0%</b>	<b>0.0%</b>
<b>TMA 5</b>	<b>5,659.4</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>100.0%</b>

**B. Area-Specific Control Measures, Implementation Schedules, and Effectiveness Assessment**

Long-Term Trash Reduction Plans for each Trash Management Area, including control measures, detailed implementation plans, and methods of assessing the effectiveness of control measures are in Section 4. A description of each TMA and its control measures are shown below.

Trash Management Area 1: Moraga Center

- Moraga Center and adjacent commercial, retail, and K-12 schools.
- Control measures: Full capture treatment devices, on-land trash cleanup, street sweeping, and improved trash bins/container management.

Trash Management Area 2: Rheem Center

- Rheem Center and adjacent commercial, retail, and residential parcels.
- Control measures: Full capture treatment devices, on-land trash cleanup, street sweeping, and improved trash bins/container management.

Trash Management Area 3: Campolindo High School

- Campolindo High School and adjacent residential parcels.
- Control measures: Full capture treatment devices, on-land trash cleanup, street sweeping, improved trash bins/container management, and creek, channel, shoreline cleanups.

Trash Management Area 4: Elementary and Middle Schools

- Includes all K-8 schools within the Town.
- Control measures: On-land trash cleanups and improved trash bins/container management.

Trash Management Area 5: Jurisdiction-wide (excluding TMAs 1-4)

- Comprises of all areas within the Town not listed in TMAs 1-4 and Saint Mary's College (non-jurisdictional).
- Control measures: Full capture treatment devices (through C.3 stormwater treatment devices) and street sweeping.

**C. Creek and Shoreline Cleanups**

**Table 3-2. Creek and Shoreline Cleanups**

Location	Description	Cleanup Frequency (Annual)			
		Pre-MRP	12/2009 to 7/2014	7/2014 to 7/2017	After 7/2017
<b>Laguna Creek</b>	Across from Campolindo High School, Moraga Road		<b>Annually</b>	<b>TBD</b>	<b>TBD</b>

The current Hot Spot assessment area, as mandated under the current MRP (2009-2014), is located along Laguna Creek directly across from Campolindo High School. Trash collected from this assessment location is consistent with trash collected from full trash capture devices installed around the Campolindo High School campus on Town streets. This would indicate that it is highly probable that the trash originates from the Campolindo High School campus and the nearby bus stop on Moraga Road. Town staff performs the annual cleanup at this location. The Town's staff has observed that trash collection at the Laguna Creek clean up area is fairly minor, as it does not receive a significant amount of trash.

Trash removed from Laguna Creek has remained consistent at 0.20 cubic yards of trash removed for the past three years. Full trash capture devices were installed upstream of the creek cleanup area to intercept windblown trash. At this time, Town staff is uncertain about the effectiveness of the full trash capture devices and will require a time sensitive trash assessment.

**D. Trash Reduction Policies**

Town municipal code has a basic anti-litter ordinance that it enforces. Town receives and responds to complaints from citizens, who may report littering or dumping either to Town's Police Department or Public Works Department.

**E. Public Education, Outreach, and Community Involvement**

Through the CCCWP, the Permittees conducted a "Litter Travels, But It Can Stop with You" multi-year campaign beginning in FY 2009-2010. The multi-media campaign was designed to educate Contra Costa's citizens about the impacts of trash and litter in the County's waterways and how they can help address this problem and included TV spots, billboards, posters at BART stations, placards on transit buses, print ads and updates to the CCCWP website. Other outreach included more than 10,000 letters to County residents, contact with youth sports leagues, outreach to the 17 school districts in the County, and distribution of flyers to students in 5 of those districts. Pre and post-campaign surveys were conducted.

The Green Business Program, of which CCCWP is the largest contributing Partner in Contra Costa County, is designed to publicly recognize private businesses and public agencies that take extra steps, beyond baseline compliance with environmental regulations, to prevent pollution and save resources (e.g., conserve water and energy, reduce waste through reuse and recycling, prevent stormwater pollution through good housekeeping practices, etc.). To date, 530 businesses have been certified as Green Businesses in Contra Costa County. Currently, 334 businesses are certified including a large number of auto repair shops, landscapers, waste haulers, printers, grocery and hardware stores, solar panel installers, and home remodelers. Numerous public agencies have also been certified. Municipal stormwater and POTW inspectors assist the Green Business program by encouraging potential Green Business candidates. CCCWP staff serves on the Green Business Program's "Partners Committee" and actively engages in development of the Green Business checklist (i.e., the stormwater pollution prevention section that each business needs to complete before becoming certified as a green business). Some of the more relevant actions that businesses have undertaken to become certified or recertified that also reduce trash loads include the following: commit to reduce waste in a minimum of five ways, maintain parking areas free of litter, keep dumpsters covered when not in use, ensure tarps for covering loads are in good condition and used correctly, and purchase a minimum of three recycled-content products.

To address trash from illegal dumping, the CCCWP operates a 1-800-No-Dumping hotline. The hotline is used by both businesses and the public to report potentially illegal dumping activities. All hotline calls are referred to the appropriate municipality for follow-up and, if necessary, enforcement. Calls have been logged since FY 2004-2005. Calls to the hotline are combined with calls that come directly to municipalities and Contra Costa County Hazardous Materials (Hazmat) Division and are tracked and documented annually in the municipal annual reports.

The CCCWP will continue to identify new partners and areas of outreach for source reduction and measures to reduce trash in the environment. CCCWP is currently in contact with California Department of Transportation (Office of Stormwater Program Development) and hopes to identify trash load reduction projects in Contra Costa County that would be financially and strategically feasible for all involved parties. CCCWP has also made contact with the California Highway Patrol, Contra Costa County Solid Waste Authority, and a number of transfer stations to potentially develop additional outreach materials to reduce litter from uncovered loads.

The Town distributes anti-litter items at the annual Community Fair in May and Pear and the Wine festival in September. The Town also distributes an anti-litter message in the Town's quarterly newsletter (Town Crier) in the Town's recreation guide. Public announcements for volunteer creek cleanup efforts are set up through the Town's quarterly newsletter and website.

**F. Jurisdiction-wide Progress Assessment and Continuous Improvement**

With the initial Trash Generation Map completed and an assessment strategy planned, the Town will be able to assess quantitative relationships between trash loading to the MS4 in specific TMAs with the on-land visual assessments and the data collected from associated trash reduction actions. On-land assessments are intended to verify initial conditions and show improvements in trash generation rate to the MS4. It is the intention of the Town to use this assessment protocol to create a successful trash reduction program that has a frequency consistent with achieving the goals of this Long-Term Plan.

Specific assessment plans for trash reduction actions in the Town of Moraga are the following:

Full Trash Capture Devices: The Town plans to select specific areas where full trash capture devices are installed and annually record volumes and characterize trash removed into categories (plastic bags, plastic bottles, paper trash and other). One area with devices will be selected annually to perform an assessment.

On-Land Visual Assessment: The Town will photograph a delineated transect of street within a TMA for measuring effectiveness of this action. The transect will show pre and post cleanup conditions. The Town will collect the trash and then have Public Works staff track the amount of time it takes for the section of street to return to the original baseline level. The period of time it takes for the trash generation level to return to its original generation level will determine the frequency needed to achieve the stated goal for trash reduction.

Trash Bin/Container Management: The primary assessment for this action will be to track volumes of trash collected along with the frequency of collection to see if increased service to selected receptacles has a beneficial effect to hot spot locations. Town staff will identify one or more receptacles that are consistently full when collection is performed. Service to these receptacles will be increased by 100% to see if the enhanced service reduces trash generation on the surrounding area. Documentation will consist of the volume of trash collected per cycle.

Public Outreach Campaigns: Report goals of outreach actions and conduct pre and post campaign surveys. The Town plans to utilize any data made available to the Permittees.

The control measures mentioned above are being implemented to achieve the full trash reduction level stated in this plan. If any assessment performed shows that additional measures are needed, an adaptive management approach will be used to add or adapt trash control measures.

Public Works staff will assess the progress and address any changes to the Trash Management Strategy. Staff will determine progress and success of control measures through the on-land visual assessment protocol.

## **4. Trash Management Area Plans**

### **A. TMA-Specific Plans**

TMA-specific plans for 5 areas are attached.

## **5. References**

BASMAA 2012a. Bay Area Stormwater Management Agencies Association. Trash Generation Rates for San Francisco Bay Area MS4s (Draft Final). Presentation to the BASMAA Trash Committee, August 2012. Prepared by EOA, Inc.

BASMAA 2012b. Baseline Trash Generation Rates, Preliminary Calibration of Modeled Results, Presentation to BASMAA Trash Committee, September, 2012. Prepared by EOA, Inc.

BASMAA 2013a. Visual On-Land Trash Assessment Protocol for Stormwater, Version 1.0 (Draft). April 30, 2013. Prepared by EOA, Inc.

CCCWP, 2013. Contra Costa Clean Water Program. Long-Term Trash Load Reduction Plan Development—Trash Generation Map Refinements. Technical Memorandum, May 20, 2013. Prepared by EOA, Inc.

# Attachments

## Town of Moraga's Long-Term Trash Reduction Plan

TRASH MANAGEMENT AREA

1

TMA 1 is a commercial zone with medium and high trash generation rates. This TMA is directly adjacent to Laguna Creek. The medium trash generation rate area is due to the commercial property, retail property, and schools within the area. The high trash generation rate area is the Moraga Center Shopping Mall and receives trash along Moraga Road and Moraga Way.

### Key Characteristics of Trash Management Area 1

Total Jurisdictional Area (Acres)	Percent in Trash Generation Category				Dominant Land Uses	Dominant Types and Sources of Trash
	Very High	High	Medium	Low		
65.3	0.0%	51.7%	46.4%	1.9%	Commercial and Services	Pedestrian-generated litter, Special events

The dominant types and sources of trash are due to pedestrian-generated litter at the bus stops along Moraga Road and Moraga Way and during weekly farmers' markets hosted by the Moraga Center Shopping Mall.

### Summary of Control Measures and Implementation Schedule for Trash Management Area 1

Control Measure	Control Measure Details	Pre-MRP	12/2009 to 7/2014	7/2014 to 7/2017	After 7/2017
<b>Full Capture Treatment Devices</b>	9 REM TRITON Top Hat units to treat 65.3 acres of high generation areas (installed 2012).		X	X	X
<b>On-land Trash Cleanups</b>	Enhanced service and increase participants/volunteers.	X	X	X	X
<b>Street Sweeping</b>	Continue current sweeping frequency (semiannually), no increased frequency is proposed.	X	X	X	X
<b>Improved Trash Bins/Container Management</b>	Increased trash bins within TMA 1; Town plans to meet with property owners to install trash bins within their property.			X	X

### Evaluation of Program Effectiveness for Trash Management Area 1

Control Measure	Evaluation Method	Evaluation Method Details
<b>Full Capture</b>	Document Maintenance	Track amount of trash removed. Volumes removed will be categorized as organic leaves and debris or trash then given a percentage of amount removed. Trash collected will be characterized as: paper, plastic bags, plastic bottles and other.
<b>On-land Trash Cleanups</b>	Document Cleanup Events	Track amount of trash removed. When possible, volunteer groups will be asked to track the types of trash collected using the trash collection sheet developed by the ocean conservancy for coastal cleanup day.

		<p>Town will utilize the Work Furlough Program to collect trash, and then Public Work staff will assess the amount of time it takes the section of road to reach the baseline level. Maintain, increase, or decrease the frequency of trash pickups based on assessment data.</p>
<p><b>Improved Trash Bins/Container Management</b></p>	<p>Assessment</p>	<p>Track and report pre and post implementation conditions of trash bins. Public Works staff will evaluate the amount of trash and compare the amount of time for a specific trash bin to become full. If a specific trash bin receives a significant amount of trash during a short timeframe, the frequency of trash pickups will be adjusted so as to reduce the potential for trash to be disposed improperly or the potential for windblown trash.</p>

## Town of Moraga's Long-Term Trash Reduction Plan

TRASH MANAGEMENT AREA

2

TMA 2 is a commercial zone with low, medium, and high generation trash rates. The high trash generation rate is isolated to the Rheem Shopping Center, while the commercial and residential properties adjacent to the Rheem Center are in low and medium trash generation areas. Laguna Creek flows through this TMA through an underground conveyance.

### Key Characteristics of Trash Management Area 2

Total Jurisdictional Area (Acres)	Percent in Trash Generation Category				Dominant Land Uses	Dominant Types and Sources of Trash
	Very High	High	Medium	Low		
80.5	0.0%	46.2%	0.8%	53.0%	Commercial and Residential	Pedestrian-generated litter, Special events

The dominant types and sources of trash are due to pedestrian-generated litter at the bus stops along Rheem Boulevard and Moraga Road and special events held at the Rheem Theater.

### Summary of Control Measures and Implementation Schedule for Trash Management Area 2

Control Measure	Control Measure Details	Pre-MRP	12/2009 to 7/2014	7/2014 to 7/2017	After 7/2017
<b>Full Capture Treatment Devices</b>	10 REM TRITON Top Hat units to treat 80.5 acres of low, medium, and high generation areas (installed 2012).		X	X	X
<b>On-land Trash Cleanups</b>	Enhanced service and increase participants/volunteers.	X	X	X	X
<b>Street Sweeping</b>	Continue current sweeping frequency (semiannually), no increased frequency is proposed.	X	X	X	X
<b>Improved Trash Bins/Container Management</b>	Increased trash bins within TMA 2; Town plans to meet with property owners to install trash bins within their property.			X	X

### Evaluation of Program Effectiveness for Trash Management Area 2

Control Measure	Evaluation Method	Evaluation Method Details
<b>Full Capture</b>	Document Maintenance	Track amount of trash removed. Volumes removed will be categorized as organic leaves and debris or trash then given a percentage of amount removed. Trash collected will be characterized as: paper, plastic bags, plastic bottles and other.
<b>On-land Trash Cleanups</b>	Document Cleanup Events	Track amount of trash removed. When possible, volunteer groups will be asked to track the types of trash collected using the trash collection sheet developed by the ocean conservancy for coastal cleanup day.

		<p>Town will utilize the Work Furlough Program to collect trash, and then Public Work staff will assess the amount of time it takes the section of road to reach the baseline level. Maintain, increase, or decrease the frequency of trash pickups based on assessment data.</p>
<p><b>Improved Trash Bins/Container Management</b></p>	<p>Assessment</p>	<p>Track and report pre- and post-implementation conditions of trash bins. Public Works staff will evaluate the amount of trash and compare the amount of time for a specific trash bin to become full. If a specific trash bin receives a significant amount of trash during a short timeframe, the frequency of trash pickups will be adjusted so as to reduce the potential for trash to be disposed improperly or the potential for windblown trash.</p>

## Town of Moraga's Long-Term Trash Reduction Plan

TRASH MANAGEMENT AREA

3

TMA 3 is Campolindo High School and the surrounding low-density residential parcels. The Town's annual creek cleanup assessment area is located within this TMA. Laguna Creek passes through the TMA via open channel and the Town's MS4.

### Key Characteristics of Trash Management Area 3

Total Jurisdictional Area (Acres)	Percent in Trash Generation Category				Dominant Land Uses	Dominant Types and Sources of Trash
	Very High	High	Medium	Low		
62.4	0.0%	86.8%	0.0%	13.2%	K-12 Schools and Residential	Pedestrian-generated litter

The dominant types and sources of trash are due to pedestrian-generated litter due to its close proximity to Campolindo High School.

### Summary of Control Measures and Implementation Schedule for Trash Management Area 3

Control Measure	Control Measure Details	Pre-MRP	12/2009 to 7/2014	7/2014 to 7/2017	After 7/2017
<b>Full Capture Treatment Devices</b>	11 REM TRITON Top Hat units to treat 62.4 acres of low and high generation areas (installed 2012).		X	X	X
<b>On-land Trash Cleanups</b>	Town plans to meet with the Acalanes Union High School District to enhance the existing trash cleanup program and increase participants/volunteers.		X	X	X
<b>Street Sweeping</b>	Continue current sweeping frequency (semiannually), no increased frequency is proposed.	X	X	X	X
<b>Improved Trash Bins/Container Management</b>	Increased trash bins within TMA 3; Town plans to meet with the Acalanes Union High School District to install trash bins within their property.			X	X
<b>Creek, Channel, Shoreline Cleanups</b>	Evaluate frequency of creek cleanup and adjust as necessary.			X	X

### Evaluation of Program Effectiveness for Trash Management Area 3

Control Measure	Evaluation Method	Evaluation Method Details
<b>Full Capture</b>	Document Maintenance	Track amount of trash removed. Volumes removed will be categorized as organic leaves and debris or trash then given a percentage of amount removed. Trash collected will be characterized as: paper, plastic bags, plastic bottles and other.
<b>On-land Trash</b>	Document Cleanup	Track amount of trash removed. When possible, volunteer groups will be asked to track

<b>Cleanups</b>	Events	<p>the types of trash collected using the trash collection sheet developed by the ocean conservancy for coastal cleanup day.</p> <p>Town will utilize the Work Furlough Program to collect trash, and then Public Work staff will assess the amount of time it takes the section of road to reach the baseline level. Maintain, increase, or decrease the frequency of trash pickups based on assessment data.</p>
<b>Improved Trash Bins/Container Management</b>	Assessment	<p>Track and report pre- and post-implementation conditions of trash bins. Public Works staff will evaluate the amount of trash and compare the amount of time for a specific trash bin to become full. If a specific trash bin receives a significant amount of trash during a short timeframe, the frequency of trash pickups will be adjusted so as to reduce the potential for trash to be disposed improperly or the potential for windblown trash.</p>

## Town of Moraga's Long-Term Trash Reduction Plan

TRASH MANAGEMENT AREA

4

TMA 4 includes all of the K-8 schools within the Town's jurisdiction. All of these parcels have medium trash generation rates. The trash sources are primarily due to school children/kids. Trash management strategies specific to TMA 4 are to increase awareness through Public Education and Outreach and On-land Trash Cleanups within K-8 Schools.

### Key Characteristics of Trash Management Area 4

Total Jurisdictional Area (Acres)	Percent in Trash Generation Category				Dominant Land Uses	Dominant Types and Sources of Trash
	Very High	High	Medium	Low		
61.0	0.0%	0.0%	100.0%	0.0%	K-12 Schools	Pedestrian-generated litter

### Summary of Control Measures and Implementation Schedule for Trash Management Area 4

Control Measure	Control Measure Details	Pre-MRP	12/2009 to 7/2014	7/2014 to 7/2017	After 7/2017
<b>On-land Trash Cleanups</b>	Town plans to meet with the Moraga School District to enhance the existing trash cleanup program and increase participants/volunteers.	X	X	X	X
<b>Street Sweeping</b>	Continue current sweeping frequency (semiannually), no increased frequency is proposed.	X	X	X	X
<b>Improved Trash Bins/Container Management</b>	Increased trash bins within TMA 4; Town staff plans to meet with the Moraga School District to discuss enhanced actions to reduce trash generation.			X	X

### Evaluation of Program Effectiveness for Trash Management Area 4

Control Measure	Evaluation Method	Evaluation Method Details
<b>On-land Trash Cleanups</b>	Assessment	Track amount of trash removed. When possible, school groups will be asked to track the types of trash collected using the trash collection sheet developed by the ocean conservancy for coastal cleanup day.
<b>Improved Trash Bins/Container Management</b>	Assessment	Track and report pre- and post-implementation conditions of trash bins. Public Works staff will evaluate the amount of trash and compare the amount of time for a specific trash bin to become full. If a specific trash bin receives a significant amount of trash during a short timeframe, the frequency of trash pickups will be adjusted so as to reduce the potential for trash to be disposed improperly or the potential for windblown trash.

## Town of Moraga's Long-Term Trash Reduction Plan

TRASH MANAGEMENT AREA

5

TMA 5 is all of the remaining low generation areas other within the Town not included in TMAs 1-4. TMA 5 is: low-density residential, open space and vacant lots with a low trash generation rate.

### Key Characteristics of Trash Management Area 5

Total Jurisdictional Area (Acres)	Percent in Trash Generation Category				Dominant Land Uses	Dominant Types and Sources of Trash
	Very High	High	Medium	Low		
5,659.4	0.0%	0.0%	0.0%	100.0%	Residential	Pedestrian-generated litter

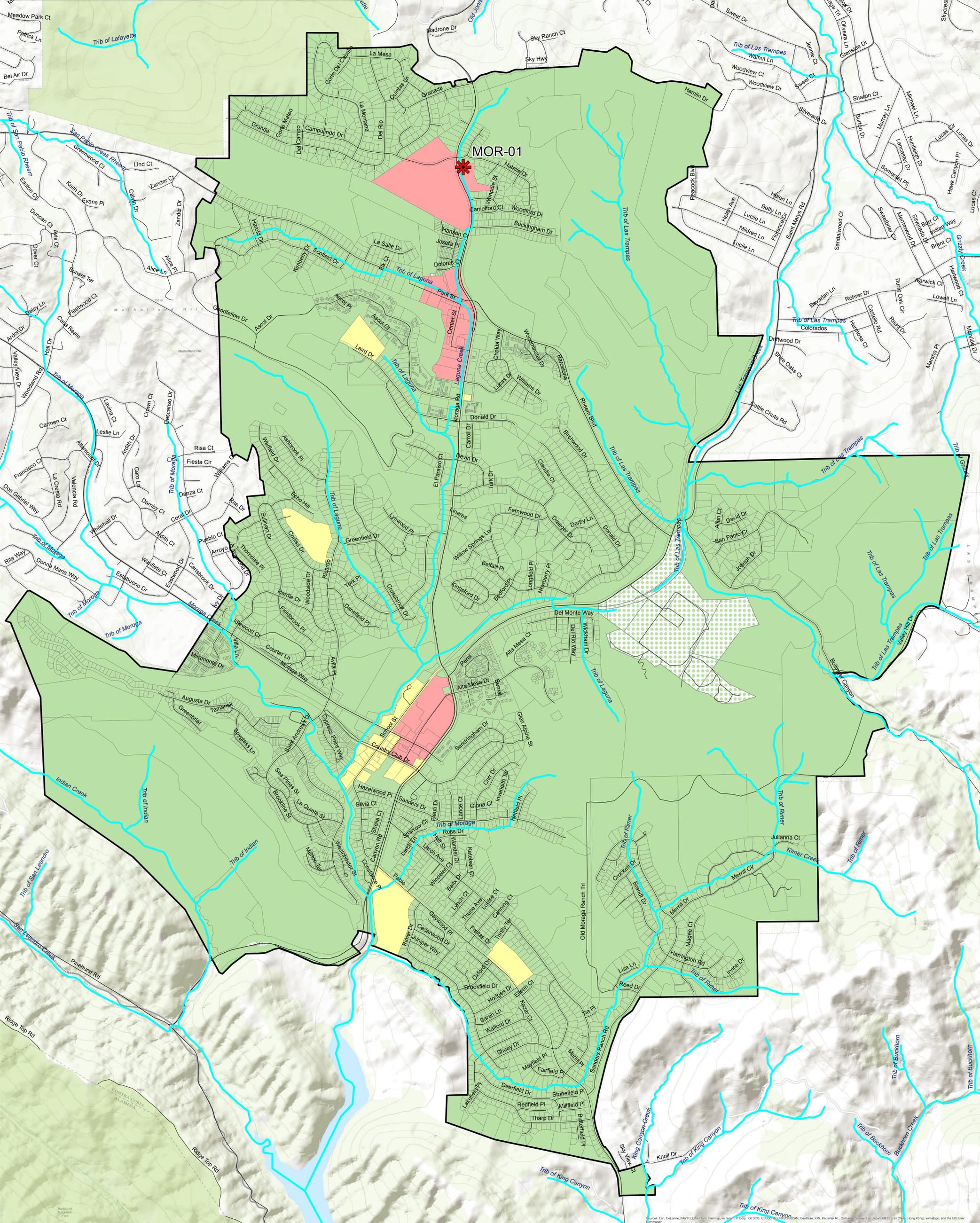
### Summary of Control Measures and Implementation Schedule for Trash Management Area 5

Control Measure	Control Measure Details	Pre-MRP	12/2009 to 7/2014	7/2014 to 7/2017	After 7/2017
<b>Full Capture Treatment Devices</b>	Various locations have stormwater treatment devices installed as part of the C.3 requirements. 1 REM TRITON Top Hat unit to treat areas adjacent to Moraga Commons Park, a low trash generation area (installed 2012).		X	X	X
<b>Street Sweeping</b>	Continue current sweeping frequency (semiannually), no increased frequency is proposed.	X	X	X	X

### Evaluation of Program Effectiveness for Trash Management Area 5

Control Measure	Evaluation Method	Evaluation Method Details
<b>Full Capture</b>	Document Maintenance	Evaluate type and amount of debris collected through stormwater treatment devices.

# Town of Moraga Trash Generation Map



**Legend**

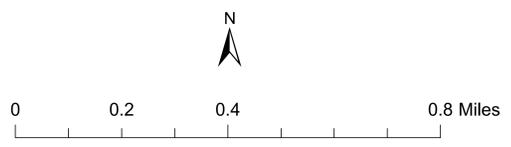
**Trash Generation Category**

- Low
- Medium
- High
- Very High

★ Creek/Shoreline Hotspot

Non-Jurisdictional (Dot color = Generation Category)

- Streets
- Agency Boundary
- Creeks
- Parcel Boundary

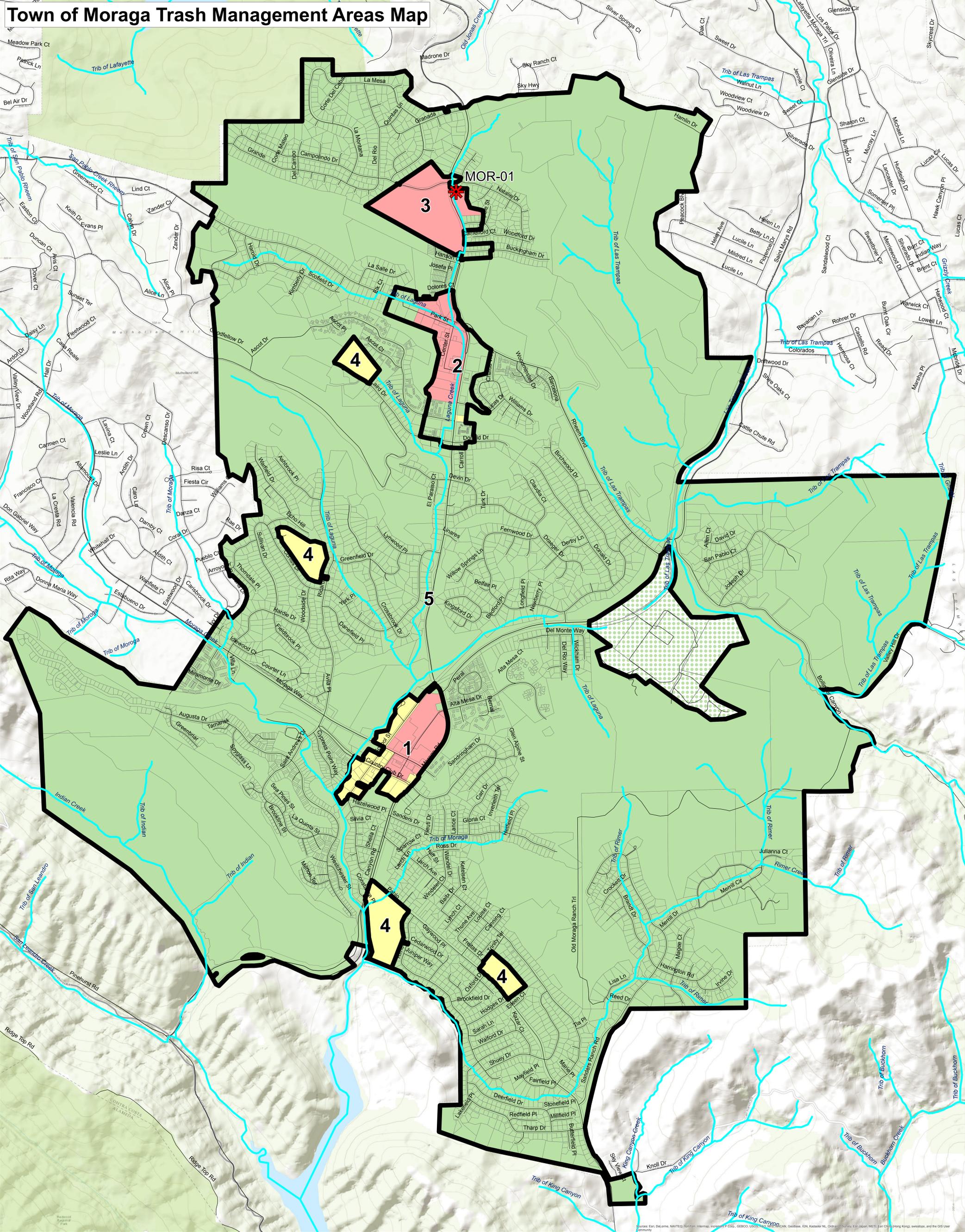


**Data Sources:**  
 Roads: Tele Atlas  
 City Boundaries: Contra Costa County  
 Background: ESRI World Topographic Map

**Map Created By:**  
 EOA, Inc.

**Date:**  
 December 2nd, 2013

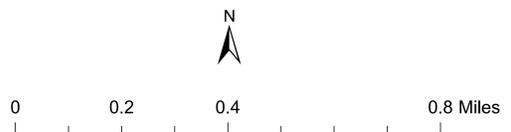
# Town of Moraga Trash Management Areas Map



**Legend**

**Trash Generation Category**

- Low
- Medium
- High
- Very High
- Creek/Shoreline Hotspot
- Trash Management Area
- Non-Jurisdictional (Dot color = Generation Category)
- Streets
- Agency Boundary
- Creeks
- Parcel Boundary



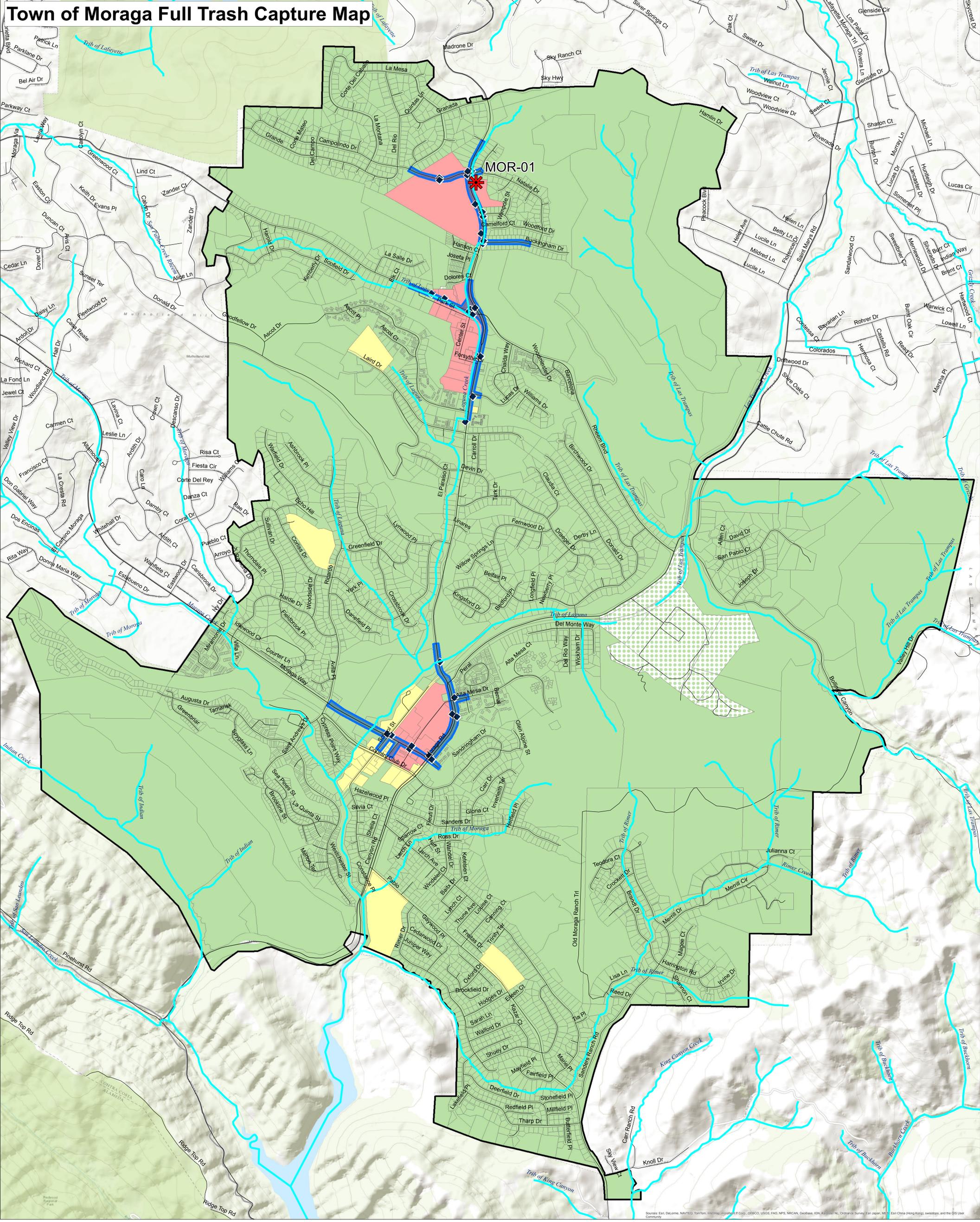
**Data Sources:**  
 Roads: Tele Atlas  
 City Boundaries: Contra Costa County  
 Background: ESRI World Topographic Map

**Map Created By:**  
 EOA, Inc.

**Date:**  
 December 2nd, 2013

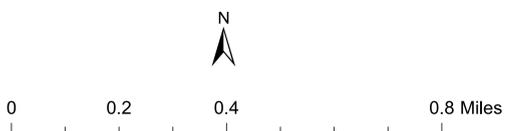
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, ikg, swisstopo, GEBCO, USGS, AeroGRID, IGN, Esri, Mapbox, Swisstopo, and the GIS User Community

# Town of Moraga Full Trash Capture Map



**Legend**

<b>Trash Generation Category</b>	Creek/Shoreline Hotspot	Streets
Low	Full-Capture Location	Agency Boundary
Medium	Full Trash Capture	Creeks
High	Non-Jurisdictional (Dot color = Generation Category)	Parcel Boundary
Very High		



**Data Sources:**  
 Roads: Tele Atlas  
 City Boundaries: Contra Costa County  
 Background: ESRI World Topographic Map

**Map Created By:**  
 EOA, Inc.

**Date:**  
 December 2nd, 2013