
Santa Ana Regional Water Quality Control Board

June 2, 2017

John Russo
City Manager
City of Riverside
3900 Main Street
Riverside, CA 92522

**WATER CODE SECTION 13383 ORDER TO SUBMIT METHOD TO COMPLY WITH
STATEWIDE TRASH PROVISIONS; REQUIREMENTS FOR PHASE I MUNICIPAL
SEPARATE STORM SEWER SYSTEM (MS4) CO-PERMITTEES WITHIN THE
JURISDICTION OF THE SANTA ANA REGIONAL WATER QUALITY CONTROL
BOARD**

Dear Mr. Russo,

The Santa Ana Regional Water Quality Control Board (Santa Ana Regional Board) is charged with the protection of beneficial uses of surface water in parts of Orange, Riverside, and San Bernardino counties. On April 7, 2015, the State Water Resources Control Board (State Water Board) adopted statewide Trash Provisions¹ to address the impacts trash has on the beneficial uses of surface waters. Throughout the state, trash is typically generated on land and transported to surface water, predominantly through municipal separate storm sewer system (MS4) discharges. Within the jurisdiction of the Santa Ana Regional Board, these discharges from Riverside County's Phase I MS4s are regulated through the Riverside County MS4 Permit (Order No. R8-2010-0033 NPDES No. CAS618033, as amended by Order No. R8-2013-0024) pursuant to section 402(p) of the Federal Clean Water Act.

The Trash Provisions establish a statewide water quality objective for trash and a prohibition of trash discharge, or deposition where it may be discharged, to surface waters of the State. For Phase I Co-permittees that have regulatory authority over Priority Land Uses,² the Trash Provisions require implementation of the prohibition through requirements incorporated into Phase I MS4 Permits and/or through monitoring and

¹ Amendment to the Water Quality Control Plan for Ocean Waters of California to Control Trash (Ocean Plan) and Part 1 Trash Provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, And Estuaries Of California (ISWEBE Plan) to be adopted by the State Water Board. Documents may be downloaded from our website at http://www.waterboards.ca.gov/water_issues/programs/trash_control/documentation.shtml.

² Defined in Enclosure, *Trash Provision Glossary*.

reporting orders, by **June 2, 2017**.³ Since the Trash Provisions have not yet been implemented through the Riverside County MS4 Permit, the Santa Ana Regional Board is implementing the initial steps of the Trash Provisions through this Order in accordance with Water Code section 13383, as specified in the Trash Provisions⁴ and as further authorized by Clean Water Act section 308(a) and 40 Code of Federal Regulations part 122.41(h). The implementation plans that are submitted in response to this Order are subject to approval by the Executive Officer.

The Trash Provisions require Phase I Co-permittees that have regulatory authority over Priority Land Uses to select either Track 1 or Track 2 as a method of compliance with the trash prohibition. Each method is summarized below. Through this Order, the Santa Ana Regional Board requires each Co-permittee to determine and report their selection:⁵

1. Track 1: Install, operate, and maintain Full Capture Systems⁶ for all storm drains that capture runoff from the Priority Land Uses in their jurisdictions; or
2. Track 2: Install, operate, and maintain any combination of Full Capture Systems, Multi-Benefit Projects⁷, other Treatment Controls⁷, and/or Institutional Controls⁷ within either the jurisdiction of the Co-permittee or within the jurisdiction of the Co-permittee and contiguous MS4 permittees. The Co-permittee may determine the locations or land uses within its jurisdiction to implement any combination of controls. The Co-permittee shall demonstrate that such combination achieves Full Capture System Equivalency⁷. The Co-permittee may determine which controls to implement to achieve compliance with the Full Capture System Equivalency. It is, however, the State Water Board's expectation that the Co-permittee will elect to install Full Capture Systems where such installation is not cost-prohibitive.

To ensure that each Co-permittee's selection is completed accurately, the Santa Ana Regional Board recommends each Co-permittee develop maps identifying Priority Land Use areas within their jurisdiction, the corresponding storm drain network and associated drainage areas, and proposed locations for certified Full Capture System installations. Co-permittees that select the Track 2 method are encouraged to identify on the maps the locations or land uses where a combination of controls, which are identified in Track 2 above, will be implemented to achieve Full Capture Systems Equivalency.

Co-permittees that select Track 1 may discover that there are locations where certified Full Capture Systems cannot be implemented, or are better implemented within another land use area. The Trash Provisions allow a Co-permittee to request substitution of one or more Priority Land Uses with alternate land uses within their jurisdiction.

³ If you believe that your agency is not subject to the Trash Provisions because your agency does not have regulatory authority over any Priority Land Use, please contact the Santa Ana Regional Board staff member identified below.

⁴ Chapter IV.A.5.a(1)B of the ISWEBE and Chapter III.L.4.a(1)B of the Ocean Plan.

⁵ Chapter IV.A.3.a of the ISWEBE Plan and Chapter III.L.2.a of the Ocean Plan.

⁶ Defined in Enclosure, *Trash Provision Glossary*.

The Trash Provisions describe two examples of assessment approaches for Co-permittees to demonstrate Full Capture System Equivalency when they select the Track 2 compliance method. Co-permittees may use alternative methods to demonstrate Full Capture System Equivalency. One alternative method currently implemented in the San Francisco Bay region relies heavily on the use of on-land visual trash assessments. A description of the Visual Trash Assessment Approach⁷ is enclosed in this Order and may be used by Co-permittees to meet the requirement for a baseline trash assessment.

Co-permittees choosing Track 2 may determine the locations or land uses within their jurisdictions to implement any combination of controls that achieve Full Capture System Equivalency. The plan to implement these controls is subject to approval by the Santa Ana Regional Board Executive Officer.⁸

This Order directs MS4 Co-permittees selecting Track 2 to first assess trash levels of Priority Land Uses. Co-permittees selecting Track 2 must, at a minimum, assess the Priority Land Use areas, even if they subsequently select other locations or land uses within their jurisdiction to implement any combination of controls that meet Full Capture System Equivalency. If proposing to select locations or land uses other than Priority Land Uses, the Co-permittees must assess trash levels at those locations or land uses and provide a justification demonstrating that the selected locations or land uses generate trash at rates that are equivalent to or greater than the Priority Land Uses.

The Trash Provisions provide the Santa Ana Regional Board with the authority to determine that specific land uses or locations generate substantial amounts of trash in addition to the priority land uses.⁹ In the event the Santa Ana Regional Board makes that determination, the Co-permittees will be required to comply with the requirements of the Trash Provisions with respect to such land uses or locations.

Although not yet incorporated into the Riverside County MS4 Permit, the Trash Provisions require that minimum Monitoring and Reporting requirements be implemented through an MS4 Permit. The Santa Ana Regional Board staff will recommend including monitoring and reporting requirements in the next iteration of the Riverside County MS4 Permit which are at least as stringent as those in the Trash Provisions below:

1. Co-permittees that elect to comply with Track 1 shall provide a report to the Santa Ana Regional Board demonstrating installation, operation, maintenance, and the Geographic Information System (GIS) mapped location and drainage area served by its Full Capture Systems on an annual basis.¹⁰
2. Co-permittees that elect to comply with Track 2 shall develop and implement monitoring plans that demonstrate the effectiveness of the Full Capture Systems,

⁷ See Enclosure, *Recommended Trash Assessment Minimum Level of Effort*.

⁸ Chapter IV.A.5.a.(1)B. of ISWEBE Plan or Chapter III.L.4.a.(1)B. of the Ocean Plan.

⁹ Chapter IV.A.3.d. of ISWEBE Plan or Chapter III.L.2.d of the Ocean Plan.

¹⁰ Chapter IV.A.6.a. of ISWEBE Plan or Chapter III.L.5.a. of the Ocean Plan.

Multi-Benefit Projects, other Treatment Controls, and/or Institutional Controls and compliance with Full Capture System Equivalency¹¹. Monitoring reports shall be provided to the Santa Ana Regional Board on an annual basis, and shall include GIS mapped locations and drainage area served for each of the Full Capture Systems, Multi-Benefit Projects, other Treatment Controls, and/or Institutional Controls installed or utilized by the Co-permittee. In developing the monitoring reports the Co-permittee should consider the following questions:

- a. What type of and how many Treatment Controls, Institutional Controls, and/or Multi-Benefit Projects have been used and in what locations?
 - b. How many Full Capture Systems have been installed (if any), in what locations have they been installed, and what is the individual and cumulative area served by them?
 - c. What is the effectiveness of the total combination of Treatment Controls, Institutional Controls, and Multi-Benefit Projects employed by the Co-permittee?
 - d. Has the amount of Trash discharged from the MS4 decreased from the previous year? If so, by how much? If not, explain why.
 - e. Has the amount of Trash in the MS4's receiving water(s) decreased from the previous year? If so, by how much? If not, explain why.
3. Co-permittees will be required to demonstrate achievement of interim milestones such as average load reductions of 10% per year or other progress to full implementation. Full compliance with the Trash Provisions shall occur within ten (10) years of the effective date of the first implementing permit except as specified in Chapter III.L.4.a.5 of Ocean Plan and Chapter IV.A.5.a.5 of the ISWEBE Plan.¹² In no case may the final compliance date be later than fifteen (15) years from the effective date of the Trash Provisions (i.e. December 2, 2030).¹³

This Order is issued to implement federal law. The water quality objective established by the Trash Provisions serves as a water quality standard federally mandated under Clean Water Act section 303(c) and the federal regulations. (33 U.S.C. § 1312, 40 C.F.R. § 131.) This water quality standard was specifically approved by U.S. EPA following adoption by the State Water Board and approval by the Office of Administrative Law. This Order requests information necessary for municipal permittees to plan for implementation

¹¹ Chapter IV.A.6.b. of ISWEBE Plan or Chapter III.L.5.b. of the Ocean Plan.

¹² The exception provides that, where the permitting agency, such as the Santa Ana Regional Board, makes a determination that a specific land use generates a substantial amount of Trash, the permitting agency has discretion to determine the time schedule for full compliance. In no case may the final compliance date be later than ten (10) years from the determination.

¹³ Chapter IV.A.5.a.(2) and (3) of ISWEBE Plan or Chapter III.L.4.a.(2) and (3) of the Ocean Plan.

of actions to achieve the water quality standard for trash. Further, the water quality standard expected to be achieved pursuant to the Trash Provisions may allow each water body impaired by trash and already on the Clean Water Act section 303(d) list to be removed from the list, or each water body subsequently determined to be impaired by trash to not be placed on the list, obviating the need for the development of a total maximum daily load (TMDL) for trash for each of those water bodies. (33 U.S.C. § 1313(d); 40 C.F.R. § 130.7.) In those cases, the specific actions that will be proposed by the municipal permittees in response to this Order substitute for some or all of the actions that would otherwise be required consistent with any waste load allocations in a trash TMDL. (40 C.F.R. § 122.44, subd. (d)(1)(vii)(B).) This Order nevertheless allows municipal permittees to select specific proposed actions to meet the federal requirements.

The implementation plan required by this Order in clause 2 below is subject to approval by the Santa Ana Regional Board's Executive Officer. A request for an equivalent alternative land use must be approved by the Santa Ana Regional Board's Executive Officer prior to installation and implementation of certified Full Capture Systems or Full Capture System Equivalency trash controls.

California Water Code Section 13383(a) states the following:

"The state board or a regional board may establish monitoring, inspection, entry, reporting, and recordkeeping requirements, as authorized by Section 13160, 13376, or 13377 or by subdivisions (b) and (c) of this section, for any person who discharges, or proposes to discharge, to navigable waters, any person who introduces pollutants into a publicly owned treatment works, any person who owns or operates, or proposes to own or operate, a publicly owned treatment works or other treatment works treating domestic sewage, or any person who uses or disposes, or proposes to use or dispose, of sewage sludge."

The reporting requirements of this Order are necessary to comply with the Trash Provisions in the ISWEBE Plan and the Ocean Plan. Pursuant to California Water Code section 13383, **it is hereby ordered** that the Co-permittee shall submit electronically the following items:

1. By **August 31, 2017**, submit electronically a letter to the Santa Ana Regional Board identifying the Co-permittee's selected method of compliance, (Track 1 or Track 2) as defined previously in this Order.
2. By **August 31, 2017**, submit electronically a letter to the Santa Ana Regional Board identifying the Co-permittee's selected method of compliance, (Track 1 or Track 2) as defined previously in this Order.

3. **Track 2 Permittees Only:** By **November 30, 2018** submit electronically to the Santa Ana Regional Board an implementation plan, subject to approval by the Executive Officer, that describes the following:
 - a. The combination of controls selected and the rationale for the selection;
 - b. How the combination of controls is designed to achieve Full Capture System Equivalency;
 - c. How Full Capture System Equivalency will be demonstrated;
 - d. If using a methodology other than the attached recommended Visual Trash Assessment Approach to determine trash levels, a description of the methodology used; and,
 - e. If proposing to select locations or land uses other than Priority Land Uses, a justification demonstrating that the alternative land uses generate trash at rates that are equivalent to or greater than the Priority Land Uses.
4. Sign, certify, and submit all letters and the implementation plan with supporting documentation required by this Order electronically to santaana@waterboards.ca.gov.
5. Ensure that any person signing a letter, implementation plan and supporting documentation required by this Order makes the following certification:

"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 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."

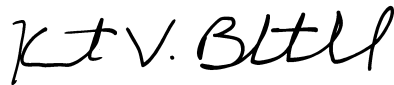
The issuance of this Order is statutorily exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to section 15262, Chapter 3, Title 14 of the California Code of Regulations because this Order only requires feasibility or planning studies for possible future actions which the Santa Ana Regional Board has not approved, adopted, or funded. The Santa Ana Regional Board did consider environmental factors associated with this Order and finds that the actions required in this Order will ensure future protection of water quality and those associated beneficial uses the Santa Ana Regional Board is charged to protect.

Any person aggrieved by this action of the Santa Ana Regional Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found at the following webpage or will be provided upon request: http://www.waterboards.ca.gov/public_notices/petitions/water_quality/index.shtml

Failure to comply with this Order, or falsifying any information provided therein, may result in enforcement action including civil liabilities for late or inadequate reports, consistent with Water Code section 13385.

Questions regarding this Order or any requests for assistance should be directed to Keith L. Elliott at (951) 782-4925 or keith.elliott@waterboards.ca.gov.

Sincerely,



Kurt V. Berchtold
Executive Officer
Santa Ana Regional Water Quality Control Board

Enclosures (2): 1. Trash Provisions Glossary
2. State Water Resources Control Board Recommended Trash Assessment
Minimum Level of Effort

cc: Co-permittee NPDES Coordinators by e-mail



Trash Provisions Glossary

This glossary is an excerpt of the Trash Provisions of the [Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California](#), and the [California Ocean Plan](#).

Full Capture System: A treatment control*, or series of treatment controls, including but not limited to, a multi-benefit project* or a low-impact development control* that traps all particles that are 5 mm or greater, and has a design treatment capacity that is either:

- a) of not less than the peak flow rate, Q , resulting from a one-year, one-hour, storm in the subdrainage area, or
- b) appropriately sized to, and designed to carry at least the same flows as, the corresponding storm drain.

[Rational equation is used to compute the peak flow rate: $Q = C \times I \times A$, where Q = design flow rate (cubic feet per second, cfs); C = runoff coefficient (dimensionless); I = design rainfall intensity (inches per hour, as determined per the rainfall isohyetal map specific to each region, and A = subdrainage area (acres).]

Prior to installation, full capture systems* must be certified by the Executive Director, or designee, of the State Water Board. Uncertified full capture systems will not satisfy the requirements of these Trash Provisions*. To request certification, a permittee shall submit a certification request letter that includes all relevant supporting documentation to the State Water Board's Executive Director. The Executive Director, or designee, shall issue a written determination approving or denying the certification of the proposed full capture system or conditions of approval, including a schedule to review and reconsider the certification. Full capture systems certified by the Los Angeles Regional Water Board prior to the effective date of these Trash Provisions and full capture systems listed in Appendix I of the Bay Area-wide Trash Capture Demonstration Project, Final Project Report (May 8, 2014) will satisfy the requirements of these Trash Provisions, unless the Executive Director, or designee, of the State Water Board determines otherwise.

Full Capture System Equivalency: The trash* load that would be reduced if full capture systems were installed, operated, and maintained for all storm drains that capture runoff from the relevant areas of land (priority land uses*, significant trash generating areas*, facilities or sites regulated by NPDES permits for discharges of storm water* associated with industrial activity, or specific land uses or areas that generate substantial amounts of trash, as applicable). The full capture system equivalency* is a trash load reduction target that the permittee quantifies by using an approach, and technically acceptable and defensible assumptions and methods for applying the approach, subject to the approval of permitting authority*. Examples of such approaches include, but are not limited to, the following:

- (1) Trash Capture Rate Approach. Directly measure or otherwise determine the amount of trash captured by full capture systems for representative samples of all similar types of land uses, facilities, or areas within the relevant areas of land over time to identify specific

trash capture rates. Apply each specific trash capture rate across all similar types of land uses, facilities, or areas to determine full capture system equivalency. Trash capture rates may be determined either through a pilot study or literature review. Full capture systems selected to evaluate trash capture rates may cover entire types of land uses, facilities, or areas, or a representative subset of types of land uses, facilities, or areas.

With this approach, full capture system equivalency is the sum of the products of each type of land use, facility, or area multiplied by trash capture rates for that type of land use, facility, or area.

- (2) **Reference Approach.** Determine the amount of trash in a reference receiving water in a reference watershed where full capture systems have been installed for all storm drains that capture runoff from all relevant areas of land. The reference watershed must be comprised of similar types and extent of sources of trash and land uses (including priority land uses and all other land uses), facilities, or areas as the permittee's watershed. With this approach, full capture system equivalency would be demonstrated when the amount of trash in the receiving water is equivalent to the amount of trash in the reference receiving water.

Institutional Controls: Non-structural best management practices (i.e., no structures are involved) that may include, but not be limited to, street sweeping, sidewalk trash* bins, collection of the trash, anti-litter educational and outreach programs, producer take-back for packaging, and ordinances.

Low-Impact Development Controls: Treatment controls that employ natural and constructed features that reduce the rate of storm water runoff, filter out pollutants, facilitate storm water storage onsite, infiltrate storm water into the ground to replenish groundwater supplies, or improve the quality of receiving groundwater and surface water. (See Water Code § 10564.)

Multi-Benefit Project: a treatment control* project designed to achieve any of the benefits set forth in section 10562, subdivision (d) of the Water Code. Examples include projects designed to: infiltrate, recharge, or store storm water for beneficial reuse; develop or enhance habitat and open space through storm water and non-storm water management; and/or reduce storm water and non-storm water runoff volume.

Municipal Separate Storm Sewer System (MS4): Same meaning set forth in 40 Code of Federal Regulations section 122.26(b)(8).

Preproduction Plastic: Same meaning set forth in section 13367(a) of the Water Code.

Priority Land Uses: Those developed sites, facilities, or land uses (i.e., not simply zoned land uses) within the MS4 permittee's jurisdiction from which discharges of trash* are regulated by these Trash Provisions* as follows:

- (1) High-density residential: all land uses with at least ten (10) developed dwelling units/acre.
- (2) Industrial: land uses where the primary activities on the developed parcels involve product manufacture, storage, or distribution (e.g., manufacturing businesses, warehouses, equipment storage lots, junkyards, wholesale businesses, distribution centers, or building material sales yards).
- (3) Commercial: land uses where the primary activities on the developed parcels involve the sale or transfer of goods or services to consumers (e.g., business or professional buildings, shops, restaurants, theaters, vehicle repair shops, etc.)
- (4) Mixed urban: land uses where high-density residential, industrial, and/or commercial land uses predominate collectively (i.e., are intermixed).
- (5) Public transportation stations: facilities or sites where public transit agencies' vehicles load or unload passengers or goods (e.g., bus stations and stops).

Equivalent alternate land uses: An MS4 permittee with regulatory authority over priority land uses may issue a request to the applicable permitting authority* that the MS4 permittee be allowed to substitute one or more land uses identified above with alternate land uses within the MS4 permittee's jurisdiction that generates rates of trash that is equivalent to or greater than the priority land use(s) being substituted. The land use area requested to substitute for a priority land use need not be an acre-for-acre substitution but may involve one or more priority land uses, or a fraction of a priority land use, or both, provided the total trash generated in the equivalent alternative land use is equivalent to or greater than the total trash generated from the priority land use(s) for which substitution is requested. Comparative trash generation rates shall be established through the reporting of quantification measures such as street sweeping and catch basin cleanup records; mapping; visual trash presence surveys, such as the "Keep America Beautiful Visible Litter Survey"; or other information as required by the permitting authority.

Permitting Authority: The State Water Board or Regional Water Board, whichever issues the permit.

Significant Trash Generating Areas: All locations or facilities within the Department's jurisdiction where trash* accumulates in substantial amounts, such as:

- (1) Highway on- and off-ramps in high density residential, commercial, and industrial land uses (as such land uses are defined under priority land uses* herein).
- (2) Rest areas and park-and-rides.
- (3) State highways in commercial and industrial land uses (as such land uses are defined under priority land uses herein).
- (4) Mainline highway segments to be identified by the Department through pilot studies and/or surveys.

Storm Water: Same meaning set forth in 40 Code of Federal Regulations section 122.26(b)(13) (Nov. 16, 1990).

Treatment Controls: Structural best management practices to either (a) remove pollutants and/or solids from storm water* runoff, wastewater, or effluent, or (b) capture, infiltrate or reuse storm water runoff, wastewater, or effluent treatment controls* include full capture systems* and low impact development controls*.

Trash: All improperly discarded solid material from any production, manufacturing, or processing operation including, but not limited to, products, product packaging, or containers constructed of plastic, steel, aluminum, glass, paper, or other synthetic or natural materials.

Trash Provisions: The water quality objective for trash*, as well as the prohibition of discharge and implementation requirements set forth in Implementation of Water Quality Objectives of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California Plan.



Recommended Trash Assessment Minimum Level of Effort for Establishing Baseline Trash Generation Levels

The following trash assessment minimum level of effort (TAMLE) is recommended by the State Water Resources Control Board (State Water Board) for establishing baseline trash generation levels in Priority Land Uses and/or other land uses and locations. The TAMLE is based on the findings of a recent Proposition 84 study (Tracking California's Trash) completed in 2016 that was funded by the State Water Board. The recommended TAMLE utilizes Tracking California's Trash On-land Visual Trash Assessment protocols to establish qualitative estimates of the amount of trash generated on street segments, sidewalks and adjacent land areas, and transported into the MS4. The complete protocol can be found here:

<http://basmaa.org/Announcements/tracking-cas-trash-on-land-visual-assessments>

The protocol has been extensively and successfully used by San Francisco Bay Area Phase I municipalities to establish baseline trash generation maps that serve as the starting point for demonstrating trash reductions into the MS4. Trash generation categories (A-Low, B-Moderate, C-High, and D-Very High) based on the levels of trash observed during assessments are assigned to adjacent land areas (e.g., priority land use areas), which are then illustrated on baseline trash generation maps. Each trash generation category has a corresponding trash generation rate that was established during the Bay Area Trash Generation Rate Study (BASMAA 2014) and confirmed during the recent Tracking California's Trash project (BASMAA 2016).

Equipment and Methods

The TAMLE methodology is relatively simple and inexpensive to use, but provides a level of precision needed to accurately depict baseline trash generation. The protocol requires a minimum of two field crew members, both for objectivity and safety, each trained in the use of the TAMLE protocol. Very limited equipment is needed (i.e., clipboard, pencils/pens, digital camera preferably with GPS capabilities, and field forms and maps). Bright clothing or safety vests are also recommended for field crew members.

MS4 permittees employ the following steps to establish baseline trash generation levels via TAMLEs:

Recommended Trash Assessment Minimum Level of Effort
For Establishing Baseline Trash Generation Levels

1. Assemble equipment needed to conduct the assessment including the field form delineating the assessment area and review trash assessment category definitions presented in the protocol.¹
2. Once at the Priority Land Use area and other selected land use or locations to be assessed (hereinafter referred to as Assessment Area), safely walk at a normal pace on the sidewalk adjacent to the Assessment Area observing the levels of trash present on the street, sidewalk, and adjacent land areas that could be transported to the MS4. In areas where no sidewalk is present, assessments may be conducted by slowly driving adjacent to the Assessment Area and observing trash on the street and sidewalk.²
3. Collectively agree on the appropriate trash generation category to assign the Assessment Area and document the category observed on field data sheets and/or maps. Crew members should take at least one photograph per Assessment Area to document that the site was visited and to document the level of trash present.
4. Assessment results should be transferred to trash generation maps to illustrate baseline trash generation levels in the Assessment Areas. Color-coding maps based on the trash levels observed (Green=Low, Yellow=Moderate, Red=High, and Purple=Very High) during TAMLEs.

Frequency and Timing of Assessments

To accurately establish baseline trash generation levels for the Assessment Area, a minimum of two TAMLEs should be conducted on streets and sidewalks associated with each Assessment Area (BASMAA 2016). To the extent possible, assessments should be conducted during both the dry (April-September) and wet (October- March) seasons. So that baseline trash generation levels are not under-predicted, assessments should be conducted at timeframes when the greatest level of trash has accumulated on streets and sidewalks (e.g. directly before street-sweeping events). Additionally, in order to reduce the influence of recent rainfall-runoff events that may have washed street trash into storm drains, TAMLEs should only be conducted if less than 0.5 inches of rainfall has occurred in a 24 hour period, 48 hours prior to the assessment.

¹ Trash generation rates are: Low (0 – 5 gallons/acre/year); Moderate (5-10 gallons/acre/year); High (10-15 gallons/acre/year); and Very High (50-150 gallons/acre/year).

² This technique should only be used when automobiles are not parked on the street, which can obstruct the view of trash.

Recommended Trash Assessment Minimum Level of Effort
For Establishing Baseline Trash Generation Levels

Estimated Resources Needed to Establish Baseline Generation Levels via TAMLEs

The extent of the Assessment Areas within each MS4 permittee's jurisdiction will govern the level of effort needed to establish the baseline trash generation levels using TAMLEs. The more Assessment Areas within a city/county, the more time and resources will be needed to conduct assessments and map the results. The following examples are based on the experience of MS4s in the San Francisco Bay Area and are given to provide rough estimates of the time that an MS4 permittee (small or moderate sized city) would need to expend to establish baseline trash generation levels in Assessment Areas using the TAMLE approach.

Task	Example #1 <i>Small-Sized Town/City (Pop = 12,500)</i>	Example #2 <i>Moderate-Sized City (Pop = 50,000)</i>
Assumptions		
<i>PLU Area (acres)</i>	150	1500
<i>Assessment Length per PLU Area (feet per acre)</i>	75	75
<i>Hrs for two staff to conduct 1,000 ft assessment (including travel time)</i>	0.5	0.5
<i>Frequency of Assessment in each PLU Area</i>	2	2
Tasks	Staff Hours	Staff Hours
Preparation for Assessments	5	20
Conducting OVTAs (Two Staff Members)	11	113
Data Compilation/Management	3	20
Mapping Assessment Results	24	40
Total Estimated Staff Hours	43	193

Citations

Bay Area Stormwater Management Agencies Association (BASMAA). 2014. *San Francisco Bay Area Stormwater Trash Generation Rates*. Prepared by EOA, Inc. May.

Bay Area Stormwater Management Agencies Association (BASMAA). 2016. Evaluation of the On-land Visual Assessment Protocol as a Method to Establish Baseline Levels of Trash and Detect Improvements in Stormwater Quality.

Tracking California's Trash Project. State Water Resources Control Board Grant Agreement No. 12-420-550. Prepared by EOA, Inc. December.