WATER RESOURCES MANAGEMENT
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July 29, 2014

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Subject: Comment Letter – Trash Amendments

Dear Ms. Townsend,

Following are my comments on the proposed Trash Amendments to the water quality control plans and the Draft Staff Report including the Draft Substitute Environmental Documentation. The State Board is urged to amend these documents based on technical comments and recommendations it receives because they will become the basis for decisions by many California's municipalities in selecting the most cost effective trash control measures. The final documents will also become a key reference for other states as they began to address their trash problem. It is important that the "lessons learned" in California be factual and technically correct. My comments are to clarify and provide factual corrections to the draft staff report and recommendations to strengthen the proposed Trash Amendments.

Comment #1 – Application of Amendments (page 1), TMDLs (section 1.3, page 5) and Trash Amendments (page 10)
The proposed Trash Amendments would apply to waters within the jurisdiction of the Los Angeles RWQCB with trash TMDLs because the Ocean Plan amendments L.1.b.(2) and ISWEBE amendments B.1.b.(2) direct the RWQCB to force MS4 permittees to focus trash control efforts on high trash generation areas (HTGA) rather than all land uses. This would constitute a backsliding from the TMDL and NPDES permit requirements.

> Recommendation: That that the land uses not included as HTGA be given additional time in the Time Schedule in Table 1 page 11 to comply with water quality objectives rather than eliminating them from consideration as sources of trash.

Comment #2 – Studies Conducted to Determine Sources of Trash and Generation Rates (section 1.5, page 6)
The referenced studies did not determine trash generation rates from the various land uses as discussed in Comment #16. The following additional references should be added:

- EOA, Inc. 2014, San Francisco Bay Area Stormwater Trash Generation Rates, Final Technical Report, June 20,2014 (Note that reference EOA, Inc 2012a can be deleted in this section since the 2014 report supersedes the 2012 report)
- Los Angeles County Department of Public Works, 2002, Los Angeles County 2001-2002 Storm Water Quality Monitoring Report, August 15, 2002
- Los Angeles County Department of Public Works, Watershed Management Division, 2004, Trash Baseline Monitoring Results, Los Angeles River and Ballona Creek Watersheds, May 3, 2004

- Los Angeles County Department of Public Works, Watershed Management Division, Los Angeles County 2005-2006 Stormwater Quality Monitoring Report
- Los Angeles County Department of Public Works, Watershed Management Division, Trash Baseline Monitoring Results, Los Angeles River and Ballona Creek Watersheds, February 17, 2004

There is little value of including the City of Cupertino as a reference because the City along with the City of San Jose is only one of over 70 municipalities that were required to submit similar reports.

Recommendation: Delete City of Cupertino as a reference.

Comment #3 – Municipalities Responsibility to Install, Operate and Maintain Full Capture Systems on Private Property in Plan of Implementation (Table 1. Page 11)

The Plan of Implementation under Track 1 would require municipalities to install, operate and maintain full capture systems on private property. Track 1 and 2 should also allow municipalities to require and oversee the installation, operation and maintenance of full capture systems, other treatment controls and institutional controls on private property. Many land uses such as shopping centers, business and industrial parks, apartment complexes, sports complexes, large parking lots, schools, etc have extensive internal storm drainage systems with multiple storm drain inlets that are connected to the municipality's storm drain at manholes located in public streets. A municipality may decide to treat the storm water runoff using large capacity full capture systems offsite at a more central location, require that full capture systems be installed at the connection with its storm drain system or require that private property owners design, install, operate and maintain full capture devices and/or oversee implementation of Track 2 on the private property. Municipalities must be required to identify all private storm drain systems within their jurisdiction and submit a plan for addressing trash in storm water runoff.

Recommendation: Add a footnote to Table 1 and the Policy Amendments stating that municipalities may require and oversee the installation, operation and maintenance of full capture systems, other treatment controls and institutional controls on private property.

Comment #4 – Focus on High Trash Generating Areas (secion 2.1, page 10 and Table 1 page 11)

The focus can be on high trash generation areas as long as the definition includes low density residential land uses. See Comments #13 and #15.

Comment #5 – Trash Water Quality Objective (section 2.2, page 11)

The objective must also include "or cause a contamination or hazard to public health". The following objects have been found in storm water runoff that are threats to public health: hypodermic needles and syringes, loaded diapers, condoms, broken glass, broken fluorescent bulbs and sharp metal objects.

Recommendation: Add to Physical Characteristics in Trash Amendments "or cause a contamination or hazard to public health".

Comment #6 – Goal of "ZERO TRASH" as the Water Quality Objective (section 2.2, page 11,section 4.2,page 66)

The discussion on page 66 must include a legal analysis explaining why the numeric objective of "Zero Trash" should not be established as the water quality objective. The Goal or Target of "Zero Trash" established in the Trash TMDL and affirmed by Fourth Appellate District Court Decision is supported by the National Research Council's recommendation for the adoption of a goal of zero discharge of waste

into the marine environment including land-based marine debris, derelict fishing gear, ship borne waste and abandoned vessels.[1] The Fourth Appellate District Court Decision further acknowledged that the target of "Zero Trash" would ultimately be reviewed to establish threshold levels needed to protect beneficial uses. The legal analysis should also summarize the position that the SWRCB and USEPA have taken regarding this issue when they considered the Trash TMDL.

The Trash TMDL and the SFBRWQCB Municipal Regional NPDES Permit (MRP) have both indicated that the levels of trash other than the "Zero Goal" may be established after there has been a significant reduction in trash loadings. An objective of "Zero Trash" in receiving waters is probably not achievable and there may be levels of trash that do not adversely affect beneficial waters uses, create a nuisance or cause a contamination or hazard to public health. As an example – small amounts of inert trash in creeks flowing through private property in a remote area with limited public access would not constitute a nuisance; however, those same amounts of trash in a creek adjacent to a heavily used walking trail or on a beach could be considered a nuisance.

The proposed objective would be reasonable if the Trash Amendments establish a process and procedure that would provide guidance to the regional boards for determining "acceptable" levels of trash in creeks, flood control drainage systems, wetlands, estuaries and the ocean that do not constitute a nuisance, adversely affect beneficial water uses and/or cause a contamination. The science based studies to establish "acceptable" levels of trash must be conducted by an independent scientific organization such as the San Francisco Estuary Institute and funded by the SWRCB. A SWRCB adopted process and procedure would provide for the statewide consistency which is a key objective of the Trash Amendments.

> Recommendation: Add a footnote to the water quality objective in the Trash Amendments stating that: To achieve statewide consistency in the application of this objective the State Board intends to develop guidance to the regional boards for determining "acceptable" levels of trash in creeks, flood control drainage systems, wetlands, estuaries and the ocean that do not constitute a nuisance, adversely affect beneficial water uses and/or cause a contamination.

<u>Comment #7 – Some Full Capture Devices Provide Multiple Benefits (page 13)</u>
The staff report needs to recognize that some of the Full Capture Devices and institutional controls ie street sweeping provide multiple water quality benefits in addition to controlling trash. Gross solids in storm water runoff are composed of vegetation, sediment and trash. Monitoring studies conducted in Los Angeles have found that trash is only about 10% of the mass and 25% of the volume of the gross solids and those conducted in the Bay Area found that trash is about 4% of the mass and 17% of the volume. Capture of vegetation would reduce the nutrient load and capture of sediments would reduce the load of pollutants associated with sediments. Capture of gross solids would reduce the accumulation of sediments at outlets to receiving waters (Figure 1).

> Recommendation: Add the above to the staff report on page 13

<u>Comment #8 – Definition of Full Capture System – "A Regulatory Dilemma" (footnote 5, page 13, section 5 page 83)</u>
The LARWQCB's definition of a Full Capture System and the LARWQCB and SFBRWQCB's certification of multiple structural trash capture devices have created a regulatory dilemma that needs to be addressed

[1] National Research Council, 2009, *Tackling Marine Debris in the 21st Century*

as recommended in Comment # 12. At a minimum the definition of Full Capture Systems must be significantly amended and strengthened and all existing certified systems must be reviewed to determine whether they comply with the definition and criteria.

There are a number of issues regarding Full Capture Systems that need to be addressed in the staff report and policy amendments including:

- Certification process is inconsistent with Section 13360(a) of the California Water Code (see Comment #42)
- Certification limits the ability to implement the State Board's Decision and EPA Guidance on use of the iterative process for achieving compliance with water quality standards and discharge prohibitions (see Comment #42)
- Design flow criteria significantly underestimates the peak flows for small catchments (see Comment #18)
- Required minimal level maintenance must be specified and documented (see comment #11)
- Effectiveness of "full and partial capture systems" was based on incomplete or incorrect information (see Comment #12)
- Loss of certification of a device only addresses future installation and does not address devices already installed that were recognized as achieving compliance with NPDES permits (see comment #42)

Comment #9 - Time Schedule (Table 1, page 11, section 2.5, page 15, Consideration 4, page 78)
Municipalities that select institutional controls such as street sweeping, storm drain cleaning, enforcement, etc under Track 2 should be given a time schedule of two budget cycles or three years from the date of the proposed Trash Amendments to implement these control measures. Two budget cycles would allow sufficient time for contracting these services or obtaining equipment and staff to perform the operation. Other institutional controls such as ordinances should require 5 years at the most to be fully implemented. The 10-year compliance time frame in Track 1 and 2 must be limited to installation of large capacity Full Capture Devices serving large areas and providing the most cost effective life cycle benefits and trash removal efficiencies. Planning, design and obtaining funding for these larger more efficient systems requires more time than installation of devices in individual storm drain inlets.

Recommendation: Amend the Time Schedule in the Trash Amendments

Comment #10 – Priority Land Uses (section 2.4.1, page 12, Consideration 4.page 74))
The following land uses should be added as "priority land uses" in MS4 Phase I and II Permits: business parks, sport complexes, amusement parks, regional transit parking lots and flea markets. Low density residential land uses must also be included as a priority land use – see Comments #13 and 15.

Comment #11 – Installation, Inspection, Operation, Maintenance and Reporting Requirements (section 2.7, page 16, Consideration 2, page 74, Consideration 3, page 81)
The SWRCB must provide clear and definitive guidance on what constitutes a minimal level inspection, operation and maintenance program including the elements of the annual monitoring program. The following elements of the installation, inspection, operation and maintenance programs are recommended where full or partial capture devices are installed:

- Installation Program

    - Inlet owner and inlet ID number, whether catch basin or inlet, location with cross streets and/or coordinates, outfall number if device is installed at point of discharge, tributary land uses, catchment size
    - Device type, date installed, manufacturer, model and hydraulic capacity, storage capacity volume (cubic feet)
    - Map showing location of inlets with number, storm drains and points of discharge with outfall number, connections to storm drain system from private property and sources not regulated by the municipality (ie public schools, military bases, Caltrans, etc)
- Inspection Program
    - Require inspections after each storm event >0.25-inch until a lessor frequency can be documented when bypassing does not occur due to blockage of screening mechanism or insufficient hydraulic capacity and once during dry weather during the month of September
    - Report date of inspections, percent of devices screening module blocked by trash, sediment and vegetation, estimated remaining capacity of the device, evidence whether trash had bypassed the device documented by photographs, presence of standing water and mosquitoes
    - Report for each storm event - total rainfall, duration, storm event intensity, maximum 5-minute intensity and maximum intensity for the catchment size
- Operation and Maintenance Program
    - Require cleanout of inlets with inserts or connector pipe screens that have inline storage of trash and debris when they are 25% full
    - Require cleaning of devices with a screen or filter module when 25% blocked to include capture of residual wash water to prevent discharge to the storm drain system.
    - Require cleanout of devices with offline storage of trash when 75% full
    - Report Manufacturer's recommendations on maintenance frequency and procedures for the device.
    - Report maintenance performed by, dates of and frequency of maintenance, amount of trash and amount of sediment/vegetation removed during maintenance from each inlet during each cleanout and other O&M comments.
    - Report method and procedure to clean screening module of trash capture device
    - Report method and equipment used for capture and disposal of solid and liquid material removed during maintenance or from cleaning of screening module (power wash, steam cleaning, etc).

Municipalities must also be required to submit for Regional Board approval their detailed inspection and maintenance program and budget required to implement the programs for each type of device. Annual reports submitted under penalty perjury must certify that the inspection and maintenance programs have been implemented pursuant to their program or describe any shortfalls. This recommended program should allow RWQCB staff to make "in the field" spot checks to determine whether devices are being maintained pursuant to the municipality's commitments without a great deal of staff effort.

The SWRCB must require those municipalities choosing to implement institutional controls under Track 2 to provide documentation of trash reductions discharged from MS4s by measuring the mass and volume of trash actually removed by the control measure and/or discharged from the MS4. This should be in the form of a 3 to 5-year moving average because of the wide variation in annual trash loadings and storm events.

Recommendation: That the Installation, Inspection and Operation and Maintenance Programs be adopted as minimum level of effort under Monitoring and Reporting and be included as Appendices to the Trash Amendments. That the demonstration of the reduction in trash discharged from previous years be determined by measuring the mass and volume of trash actually removed by the control measure and/or discharged from the MS4.

If you aren't willing to establish the institutional framework needed to assure that storm water BMPs are properly designed, constructed, inspected, maintained, and operated, DON'T REQUIRE THE USE OF BMPs.

Eric Livingston, Florida DEP - 2000

Comment #12- Full Capture Certifcation (Section 2.8, page 17)

The Los Angeles RWQCB has certified/recognized 8 devices[2] and the San Francisco Bay RWQCB staff certified 35 devices[3] as Trash Full Capture Systems. A number of vendors have developed devices that are similar to those that have been certified by the LARWQCB and it is not clear from the LARWQCB's web site whether these additional devices have been reviewed to determine compliance with the Regional Board's August 2004 Procedures and Requirements for Certification of BMPs for Trash Control[4]. A number of studies have been conducted in Los Angeles, San Diego and Bay Areas and by Caltans that raise significant questions on whether many of the devices certified by the Los Angeles and San Francisco Bay RWQCBs actually meet the full capture system definition and whether the definition is actually achieving significant reductions in trash discharged.

Los Angeles Area Studies and Monitoring

The City of Los Angeles in its October 19, 2006 application[5] for certification of horizontal and vertical screen catch basin outlet devices indicates that there has been an evolution in the types and design of catch basins ranging from hanging baskets to horizontal screens to vertical screens. The City of Los Angeles in its application[6] for certification of catch basin inserts tested both horizontal and vertical screen inserts (Practical Technology, Inc.) by installing the devices coupled with catch basin opening screen covers (trash extruders) with CDS units downstream (base of catchment) of the inserts. The City incorrectly concluded that the devices retain 99% of the trash that enters the catch basin over the course of the year when it failed to account for all of trash that had been trapped in the CDS units. The

[2] Fresh Creek Technologies, Inc.'s Trash Nets; Cities of Burbank, Glendale, La Canada Flintridge Inlet Brush Material and Horizontal Aluminum Screen; Contech Stormwater Solution's Continuous Deflective Separation Device; City of Los Angeles Horizontal and Vertical Insert Screens; County of Los Angeles Connector Pipe Screen; Coanda Screens; Caltrans linear Radial Gross Solids Removal Device (GSRD) and Inclined Screen GSRD

[3] May 2014, San Francisco Estuary Partnership, Bay Area-wide Trash Capture Demonstration Project, Final Project Report, May 8, 2104

[4] August 3, 2004 Memorandum form Michael Yang, PE to Johnathan Bishop, Interim Executive Officer, Procedures and Requirements for Certification of a Best Management Practice for Trash Control as a Full Capture System

[5] Office of Mayor Antonio R. Villaraigosa, Letter dated October 19, 2006, Request for Full Certification of a Catch Basin Insert, http.//www.waterboards.ca.gov/losangeles/water_issues/programs/tmdl/full_capture_certification.shtml

[6] City of Los Angeles, Department of Public Works, June 2006, Catch Basin Inserts: Method to Determine CB Inserts Act as Full Capture Devices, Technical Report: Assessment of Catch Basin Inserts, Technical Report: Assessment of Catch Basin Opening Screen Covers, http://www.lastormwater.org/Siteorg/download/pdfs/general_info/Request-Certification-10-06.pdf

efficiencies of the horizontal and vertical inserts and trash excluders were likely much less than 50%. It should be noted that the City in deciding to deploy catch basin opening screen covers that leave trash in the street pending street sweeping has apparently selected to ignore its earlier concern that accumulation of trash in public areas leads to the "broken window theory" contributing to neglect and apathy taking root in neighborhoods fueling further deterioration and often leading to other societal ills.

The City of Glendale's 2008-09 Annual Report indicates that it recently experienced flooding problems with some of installed BMPs (brush material and aluminum mesh extruders and horizontal screens) and is modifying or replacing these devices. The City did not explain the extent of this problem or what modifications were made. This combined with pictures of trash impacted extruders and clogged horizontal screens installed in the City of Los Angeles suggests that these devices even combined with frequent street sweeping may not achieve the Full Capture System definitions trapping standard.

Caltrans Studies

Several studies conducted to determine the effectiveness of the Caltrans Gross Solids Removal Devices (GSRD) subsequent to the LA RWQCB's October 7, 2004 certification indicate that they are not meeting the trapping standard. The UC Davis study[7] on pages 85 and 168 concludes that:

- The volume of gross solids that escaped through the surface louvers and captured downstream in the 5-mm screen was relatively small and consisted of leaves, other vegetation and flat wooden (popsicle) sticks that floated in the GSRD and were ejected by force of the backward directed flow leaving the louvers.
- The device generally met the requirement that litter items with dimensions larger than 0.25-inch (5-mm) are retained within the device.
- Conveyance through the lovers was reduced by accumulation of wet gross solids such as paper and cardboard.
- Loss of conveyance through the louvers occurred at high litter loading and was caused by cigarette filters becoming lodged in the openings and sheets of plastic covering significant number of them.
- Removal of gross solids from the Linear-Radial device is expected to pose significant operational problems in matters related to maintenance and litter removal.
  Note that the report did not include data of the amount of material captured by the downstream screen or photos of the exterior of the device.

The Phase IV report[8] of the GSRD Pilot Study on page 4-5 shows considerable trash protruding and escaping the louvered screen (Figure 9). The report in section 6.3.2 on page 6-2 indicates "The GRSD screen did not experience clogging. However, as discussed in Section 4.3.1, the bypass screen (4.75-mm) became clogged on several occasions with gross solids that had escaped the GSRD screen. Since the bypass screen would not be a feature of a permanent GSRD installation, the LR3 US-101 meets the criterion for clogging." This indicates that while the GRSD may meet the 5-mm design threshold, but it is not achieving the trapping standard.

San Francisco Bay Area

[7] Bassam A. Younis, Department of Civil and Environmental Engineering, University of California Davis, May 2005, Laboratory Testing of Gross Solids Removal Devices, CTSW-RT-05-73-18.1

[8] Caltrans, Final Report December 2005, Phase IV Gross Solids Removal Devices Pilot Study: 2004-2005, CTSW-TR-05-130-03.2

The San Francisco Estuary Partnership's Bay Area-wide Trash Capture Demonstration Project (ref 3) identified a major problem with the devices that have been certified by the Los Angeles RWQCB. While they may capture trash >5-mm, they do not retain or trap the trash. The Project correctly pointed out that trash must be retained until the devices are cleaned out during routine maintenance and not allowed to bypass trash during flows that exceed the peak flow from the design storm. The contracts between the SWRCB and ABAG /SFEP added specifications and requirements that required:

> "The device must have sufficient operability to safely to safely trap and ***hold*** trash and litter captured for removal during scheduled maintenance; and must have provision for overflow bypass to prevent flooding when the device contains captured trash."

Sixty-four (64) Bay Area municipalities participating in the San Francisco Estuary Partnership's Bay Area-wide Trash Capture Demonstration Project were required in the contract with the SWRCB to collect and report on the maintenance including clogging and bypass of trash at over 4,000 devices installed. This information was not included in the Project's final report and ABAG staff refused to provide the information even though the contract with the SWRCB required that the Projects records are also public records. Unfortunately valuable information on the performance and maintenance requirements of trash capture devices has not been reported.

The Bay Area Stormwater Management Agencies Association (BASMAA) relied on the devices installed by the Project to collect samples and determine baseline trash generation rates[9]. The devices used during the study included Stormtek™ Catchbasin Connector Pipe Screens (Advanced Solutions, Inc.); Connector Pipe Screens (West Coast Storm Inc.); and, Triton Bioflex Drop Inlet Trash Guard (Revel Environmental Manufacturing, Inc.). Municipalities and issues associated with the devices (e.g. damaged screens, observations of flows bypassing devices) were recorded, but results not included in the Final Report. Unfortunately valuable information on the performance of trash capture devices has not been reported. The reluctance of the municipalities to report on performance and inadequate maintenance is recognized because of concerns that additional requirements could be placed on them at a time of budget constraints.

An April 2012 inspection of 26 sites (Cities of Richmond, Berkeley, Fremont, San Jose and San Leandro) used by the BASMAA study found storm drain inlets with inserts and connector pipe screens that many of the screens were blocked and evidence that trash had been bypassed. Two thirds of the inlets that had screens 25-50% blocked with "Scmutzdecke", vegetation, sediment and trash had bypassed trash and all eight of the connector pipe screens that were 50% blocked had bypassed trash. In October 2012 34 inlets (Cities of Orinda, Pleasant Hill, Oakland, San Leandro, San Mateo) were inspected and no maintenance/cleanout had occurred even with the approaching wet weather season. Many of the inserts with screens/filter material were blocked with evidence that trash had bypassed the connector pipe screens during the previous wet weather season.

<u>City if San Diego Study</u>

The City of San Diego conducted a storm drain inlet study[10] to evaluate the performance and maintenance requirements of storm drain inserts and performed both dry and weather monitoring in 2011. The inserts evaluated were:

- Bio Clean's Round Curb Inlet Basket with Media Filter and Grate Inlet Skimmer Box

[9] EOA, Inc., Prepared for BASMAA San Francisco Bay Area Stormwater Trash Generation Rates, Final Technical Report, June 20, 2014

[10] URS Corporation, Storm Drain Insert Pilot Study Final Report, DOC ID# CSD-RT-12-URS43-03,May 25, 2012

- Downstream Services FloGard Plus Curb Inlet Filter Insert
- Revel Environmental Manufacturing Triton Curb Inlet Filter Insert
- United Storm Water Drain Pac Curb Inlet Basket and Connector Pipe Screen
- United Storm Water ARS, Drain Pac Curb Inlet Basket and Connector Pipe Screen
  Note: All of these devices were certified by the San Francisco Bay RWQCB as Trash Full Capture Devices.

The City's study found:

- Many of the inserts demonstrated appreciable levels of flow bypass during the monitored storm event with five bypassing below the water quality flow event.
- Six of the eight exhibited flow bypass greater than 50% of the total flow entering the curb inlet for more than 40% of the monitoring period.
- Re-suspension of accumulated gross solids was observed at all sites.
- Clogging of filter material/fabric/screens was prevalent and likely a contributing factor for bypasses.
- The frequency of required maintenance was determined to be more than quarterly for all devices.
- Confined space entry procedures are required for maintenance of 7 of the 8 devices.

The wet weather monitoring was conducted during the second storm event of the season with the first small event occurring on October 5, 2011.

Note: A CD copy of the San Diego report is enclosed and State Board members are urged to review the many pictures revealing the clogging of screens, bypassing of trash and maintenance requiring confined space entry into the storm drain inlets.

The LARWQCB staff will likely receive a number of applications for and pressured to issue full capture certifications during this intervening period until the SWRCB assumes the responsibility for the certification process. Certifications issued during this intervening period must meet the new updated criteria established by the SWRCB.

Recommendations:

1. The Staff Report should identify the devices that have been certified/recognized by the LARWQCB. The devices certified by the San Francisco Bay RWQCB should not be listed or recognized in the Policy Amendments as meeting the definition of a full capture device.
2. The process and definition/criteria for certification of a device must be updated in the Trash Amendments (see comment #19).
3. The devices that have been certified/recognized by the Regional Boards should be critically reviewed to determine whether they meet the updated criteria and a revised list must be published.
4. The SWRCB should convene a panel of experts with experience in the selection, design, construction, operation, monitoring and maintenance of trash capture devices to assist in updating the definition/criteria for certification of a device and determination whether existing devices comply with the updated criteria. Suggestions for this panel include: Lesley Estes –City of Oakland, Dr. Gary Minton - consultant, Ed Othmer – URS Corp, Dr. Bob Pitt-consultant, Gary Lippner – DWR and formerly with Caltrans, representatives from City of Sunnyvale or San Jose that have actually performed maintenance of devices.

5. The SWRCB needs to develop a strategy to address those areas that are now served by devices that were once considered to be Trash Full Capture Devices, but no longer comply with the revised definition see Comment #42.

Comment #13 – Definition of Low, Medium and High Intensity Residential Land Use – (section 3.2, page 23, Consideration 3, page 71)

The Los Angeles and Bay Area baseline trash loading studies determined loadings for Low and High density residential areas; however, the BASMAA final report (ref 9) only reported residential area loadings as a single category. Neither study reported on the actual land use densities used to differentiate between Low and High density residential use. The studies in the Ballona Creek watershed found than low density single family land uses had slightly higher trash generation rates than high density single family residential land uses and in the Los Angeles River watershed only slightly lower generation rates. Consideration 3 on page 71 incorrectly excludes low density residential land use from high trash generation.

Litter Generation Rates

Land Use	Ballona Creek Watershed[11]		Los Angeles River Watershed[12]	
	LGR, gals/acre	LGR, lbs/acre	LGR, gals/acre	LGR, lbs/acre
High Density SFR	-	3.98	5.57	10.82
Low Density SFR	-	4.05	3.03	9.47

Baseline trash monitoring in the Bay Area (ref 15) found that trash loadings from low density residential land uses were significantly less than the high density residential land uses. The actual densities used by the Regional Boards to differentiate between the Low and High densities should be determined before Low or Medium density residential land uses are considered for exclusion from implementation of trash control measures.

ABAG has reported the acreage for multiple categories of land use with residential as 1 unit/1-5 acre lot, 1-3 units/acre, 3-8 units/acre, >8 units/acre and mobile home parks. The 1 unit/1-5 acres is 9.3% of the total urban acres in the 5 counties covered by the MURP, the 1-3 and 3-8 units/acre 27.7% of the total urban acres and >8 units/acre and mobile home parks represents 8.9%. Lacking a better understanding of the actual densities used by the Regional Boards the Low Density should be defined as <8 units/acre and High Density as >8 units/acre and mobile home developments:

Recommendations:

1. Correct Consideration 3. On page 71 to reflect actually was found in the Los Angeles area.
2. Define Low Density residential as <8 units/acre and High Density Residential as >8 units/acre and mobile home developments.

Comment #14 – Definition of Trash – (section 4.1.2, page 65, Appendix A.1, page A-1, Appendix A.II, page A-11)

The items of trash that have actually been found in storm water runoff should be listed and include: toys, soccer, basket and foot balls, *antiquus pila tenisiae*, plastic and glass bottles, tin and aluminum cans, cigarette butts, "loaded" diapers, syringes, condoms, Styrofoam peanuts, beach "whistles", Styrofoam, paper and plastic cups, plastic spoons, knives and forks, paper and plastic bags, newspapers,

[11] Ballona Creek Watershed Trash Baseline Monitoring, 2002-2003 Storm Season
[12] Los Angeles River Watershed Trash TMDL, Appendix III, August 9, 2007

paper flyers, bottle caps, six-pack holders, cigarette lighters, pull-tabs, mattresses, appliances, fluorescent bulbs, tires, clothing, furniture, lead wheel weights, construction materials and debris, preproduction resin plastic pellets, straws and stirrers, biological bottles, plastic and Styrofoam clamshells, cellophane wrappers, aluminum foil, balloons, batteries, cigar tips, road "alligators", snakes, dead animals and rodents, shopping carts.

> Recommendation: List the items of trash in section 4.1.2, page 65, Appendix A.1, page A-1, Appendix A.II, page A-11.

Comment #15 – Highest Trash Generating Land Uses and Priority Land Uses– (section 4.5, page 71, Consideration 4, page 74)

The studies in the Ballona Creek watershed found than low density single family land uses had slightly higher trash generation rates than high density single family residential land uses and in the Los Angeles River watershed only slightly lower generation rates.

Litter Generation Rates

Land Use	Ballona Creek Watershed[13]		Los Angeles River Watershed[14]	
	LGR, gals/acre	LGR, lbs/acre	LGR, gals/acre	LGR, lbs/acre
High Density SFR	-	3.98	5.57	10.82
Low Density SFR	-	4.05	3.03	9.47

Baseline trash monitoring in the Bay Area[15] found that low density residential land uses trash generation rates were significantly less than the high density residential land uses with 1.25 gal/acre/year versus 17.04 gal/acre/year for the high density residential land use. Low density land use (<8 units/acre) in the area covered by the MURP is approximately 244,000-acres or approximately 37% of the total urban area and high density land use (> units/acre and mobile home developments) is 59,000-acres or approximately 9% of the total urban area. Applying the trash generation rates to the area for each land use, the low density use generates a loading of 305,000 gallons per year and high density produces slightly over 1 million gallons of trash annually.

> Recommendation: Low density residential land uses contribute significant trash loadings on an annual basis and should not be excluded from implementation of trash control measures and should be considered as a "priority land use".

Comment #16 – BASMAA Project and Los Angeles Monitoring Failed to Establish Baseline Trash Generation Rates (section 4.5, page 71 and Land-Based Generation rates – page A-16)

The BASMAA project (ref 9) and the baseline monitoring conducted in Los Angeles (references listed in Comment #2) both had a fundamental flaw in that the trash samples were collected in storm drain inlets located in public streets adjacent to the land uses and did not collect samples of the storm water runoff from the actual land use. Many land uses such as shopping centers, sport complexes, apartment complexes, schools and business and industrial parks have extensive internal drainage systems that are connected to MS4s at manholes rather than in public street storm drain inlets.

[13] Ballona Creek Watershed Trash Baseline Monitoring, 2002-2003 Storm Season

[14] Los Angeles River Watershed Trash TMDL, Appendix III, August 9, 2007

[15] EOA, Inc. Preliminary Baseline Trash Generation Rates for San Francisco Bay Area MS4s, Technical Memorandum, February 1, 2012

Entering the latitude and longitude for individual monitoring sites in Google Earth – Street View allowed the determination and observation of the exact location of an individual site where runoff samples were collected. Twenty-five (25) sites involving retail and wholesale, K-12 schools, commercial and services, high density residential and industrial were randomly selected to determine the actual location and observe the land uses where monitoring occurred.

In every case the monitoring site was located in the street adjacent to the land use and not on the land use where the trash is generated. The trash loadings from the land uses were not monitored and monitoring data only represents incidental loadings from the pass-through traffic and not activities on the actual land use. At BASMAA site ID SL 25 the storm drain inlet insert is located in Lewelling Boulevard in San Leandro adjacent to a large shopping center. Google traversed the shopping center parking lot and many of the parking lot aisles and trash at storm drain inlets can be readily observed using Street View. At BASMAA site SJ 38 the sampled storm drain inlet insert is located on East Capitol Expressway in San Jose a four lane divided highway and not on the school property it was to monitor. The inlet in East Capitol Expressway is separated from the school by a fence and wide vegetated buffer so the trash loads for this site do not reflect what originated on the K-12 school property. BASMAA has not monitored the trash loads generated on the designated land uses and did not generate baseline trash loading rates. Observations in April and October 2012 of the inserts and connector pipe screens used to sample storm water runoff found evidence that the bypasses had bypassed so the actual percent of trash sampled is unknown. In addition the sampling protocols resulted in prolong periods between cleanouts – as long as 355 days and multiple storm events - as many as 24 wet weather days. The weights and volumes of trash that was actually sampled would be compromised by compaction and absorption of moisture.

Abtech and Drain Pac™ hanging basket inserts were used in the Los Angeles baseline trash loading study to collect samples of trash, vegetation and sediment at five different land uses – commercial, industrial, high density residential, low density residential and open space/parks. Samples were collected from each of the devices within 72-hoursof each storm event >0.25-inch. The efficiency of the devices was determined by placing a CDS device in the catchments downstream of Abtech and Drain Pac™ devices and measuring the mass and volume of trash and sediment/vegetation captured in each device. The Abtech and Drain Pac™ devices were found to be only 35% effective for capturing litter in HDSF areas and 57% effective in capturing trash in commercial areas even when cleaned after each event >0.25-inch. The baseline loadings and Los Angeles River Trash TMDL apparently were not adjusted to reflect the devices low trash capture efficiencies.

> Recommendation: That the staff report qualify the statements on page 71 and A-16 by indicating that there are concerns regarding the value of trash generation rates developed by BASMAA because of the sample collection locations were not representative of actual land uses, questionable effectiveness of the sampling devices to capture representative samples of trash in storm water runoff and sample collection protocols.

<u>Comment #17 – Reasonably Foreseeable Methods of Compliance (page 83-96)</u>
This section does not correctly describe storm drainage systems and their design, the devices that are being used to control the discharge of trash and institutional controls. Individuals that are directly involved in the design, operation and maintenance of storm drain systems and treatment devices and implementation of institutional controls should be consulted. The Santa Clara Valley Urban Runoff

Pollution Prevention Program's Trash BMP Tool Box[16] has a good discussion of structural and institutional trash control measures that would be useful in rewriting this section.

The description of the storm drainage system should include: Description of storm drain inlets and various types of openings - grates at street surface, curb openings, combination of grates and curb opening, slotted (normally used on driveways and loading docks)(suggest that you refer to Caltrans design manuals) . Include a description of catch basins and storm drain inlets and explain the difference between catch basins and storm drain inlets[17] , description of connector pipe between inlet and storm drain and the main storm drain. Suggest that you also refer to Caltrans design manuals for drainage systems.

> Recommendation: That this section be completely rewritten to provide a correct description of storm drainage systems and the structural devices and institutional controls used to control the discharges of trash.

Comment #18 - Treatment Controls – Storm Drainage Systems (Section 5.1, page 83)
Short-duration storms are often the controlling storm type for sizing conveyance structures in urban areas. CALTRANS in its Highway Design Manual Section 816.6 recommends that for all paved areas a minimum time of concentration (Tc) of 5-minutes be used in design of drainage facilities. The Los Angeles and San Francisco Bay RWQCBs adopted a definition of a Trash Full Capture System requiring that the device have a design treatment capacity of not less than the ***peak flow rate*** resulting from a one-year, one-hour storm in the sub-drainage area. The San Diego RWQCB developed the 0.2-inch/hour criteria contained in the CASQA BMP Handbooks and used by many California municipalities in sizing storm water treatment devices and design of BMPs. It is based on 51 years of hourly rainfall data collected at the San Diego municipal airport. They found that 85% of the storm events had an intensity that is less or equal to 0.1-inch/hour. This intensity was multiplied by two to provide a margin of safety to allow for the possibility that some rain which falls during an hour could have fallen in bursts greater than 0.1-inch/hour.

The flow criteria in the Los Angeles RWQCB's trash "full capture system" definition (ref 4) applies the Rational Method Equation using rainfall intensities from a 30-minute isohyetal map to compute the ***peak flow rates***. Using a 30-minute intensity may be appropriate for large capacity devices serving catchments that have a 30-minute time of concentration (Tc), but significantly underestimates the ***peak flows*** for devices like storm drain inlet inserts and connector pipe screens with very small (<3-acres) catchments that have a Tc less than 5-minutes. Use of hourly intensities underestimates the ***peak flow rate*** by a factor of 3-6 at most locations in California.

NOAA's National Weather Service has published Point Precipitation Frequency Estimates for almost 1000 California rainfall stations which include peak 5,10,15,30 and 60-minute rainfall depths for the one-year storm (http://hdsc.nws.noaa.gov). These rainfall depths can be easily converted to rainfall intensities to allow calculation of short-duration peak flows using the Rational Method. As an

[16] EOA, Inc. Trash BMP Tool Box, Treatment and Institutional Controls, September 2007

[17] Many programs incorrectly refer to storm drain inlets as catch basins. Catch basins are inlets with sumps below the outlet connector pipe to the storm drain. The use of catch basins declined after the use of DDT was prohibited because catch basin sumps retained water and organic material that was a habitat for mosquito breeding. A number of municipalities have filled catch basin sumps to eliminate the standing water. Inlets now in common use are designed without sumps and are flow through and do not retain solids in storm water runoff.

example, for the Oakland Museum station the one year peak 60-minute intensity is 0.434 inch/hour and 5-minute intensity is 0.128-inch or 1.536 inch/hour. The 5-minute ***peak flow rate*** for a 3-acre catchment using a runoff coefficient of 0.9 would be Q = 0.9 x 1.536 x 3 = 4.1 cfs while the ***peak flow rate*** using the hourly intensity would be Q = 0.9 x 0.434 x 3 = 1.2 cfs.

Recommendations:

1. The above discussion be incorporated in section 5.1 page 83
2. The flow criteria included in the definition of terms in the Trash Amendments specify that storm intensities shall be determined based on the NOAA's National Weather Service Point Precipitation Frequency Estimates (http://hdsc.nws.noaa.gov); that a 5-minute intensity shall be used for devices that are installed in storm drain inlets; and, that the intensity determined using the actual calculated Tc be used for sizing large capacity devices serving large catchments.

Comment #19 - Reasonable Foreseeable Methods of Compliance: Design and Installation of Devices for Trash Removal (Section 5.1.1, Page 84)

The definition of a full capture system, the design and operation characteristics and inspection and maintenance requirements (ref 4)need to be updated from the now 10-year old procedures and requirements developed by the Los Angeles RWQCB based on experience that has been gained with the devices that have been certified. The following additional minimum criteria are recommended:

- Require that all devices installed in storm drain inlets be sized based on the peak 5-minute rainfall intensity determined by NOAA's Point Precipitation Frequency Estimates and that large capacity full capture devices be sized using the catchments Tc and NOAA's Point Precipitation Frequency Estimates.
- Prohibit the use of on-line trash control devices that allow peak flows to circulate or low through the trash storage area unless they are cleaned out after each storm event; or specify that trash control devices shall retain trash in an "off line" configuration where peak flows are bypassed upstream of the devices trash storage area
- Label storm drain inlets that require confined space entry for maintenance or replacement "Danger Permit Required - Confine Space Entry Do Not Enter" and provide confined space entry training and certification for installation and maintenance personnel
- Capture residual solids and water used to power wash screens and the inlet and dispose in sanitary sewer or regulated disposal site
- Coordination of inspections and mosquito abatement with mosquito abatement agencies

Recommendation: That the above criteria be added to the Trash Amendments Definition of Terms

Comment #20 – Catch Basins (section 5.1.2, page 85)

This section should be limited to a discussion of catch basins. The reference to hooded outlets should be deleted since it has not been cited by either Regional Board to be effective. Hooded or elbowed catch basins are used in San Francisco in their combined sewer system to control odors, but are not considered to be effective trash capture devices. San Francisco has placed oil in their catch basins to control mosquitoes. New York has reported high levels of replacement of hoods when damaged during vacuum truck cleaning operations.

Recommendation: Delete reference to hooded catch basins.

Comment #21 – Curb Inlet Screens – Trash Excluders (section 5.1.2, apge 85)

A section should be added that describes curb inlet screens/trash excluders as partial capture devices when combined with more frequent street sweeping and as full capture device system when combined with catch basin inserts or connector pipe screens. Reference 16 has a description of these devices. Inspection of curb inlet screens in Los Angles found 50% stuck in an open position (Figures 7 and 8), accumulated gross solids on the screen face and some in a closed position with gaps at the end of the screen; the City of Glendale reported removal and replacement of curb screens due to flooding; and, the City of Alameda did a trial use, but subsequently removed them due to concerns of flooding caused by clogged screens. The City of San Diego Storm Drain Inlet Pilot Study (ref 10) reported that the United Storm Water, Inc. automatic retractable screens remained in a closed position for the duration of the monitoring period; that there was minimal clogging of the ARS; and, that street flooding was apparent. In November 2011 twenty-two Long Beach residents sued the City and United Storm Water, Inc. for $16.5 million for flooding damages due to defective inlet debris screens. The City of Oakland has initiated a pilot study of ARS to determine whether the ARS prevent trash from entering storm drains during dry weather and storm water runoff to reduce the frequency of cleaning inlet baskets. The City of San Jose in its 2012-2013 annual report indicated that it was going to conduct a pilot test of ARS in 2013-2014. The City of Sunnyvale in its 2012-2013 annual report indicated that it had installed retractable screens on 40 of the 79 Storm Tek, AS-2 inlet screens and that its ARS can become fouled by leaves and debris and fail to close requiring additional attention to ensure proper operation.

> Recommendation: Add a new subsection specific to curb inlet screens and include the above experiences with use of curb inlet screens.

Comment #22 – Catch Basin Inserts and Connector Pipe Screens (section 5.1.2, page 85)
See Comment #17 and the recommendation. A new section should describe the various types of drop inlet devices and outlet connector pipe screen.

Comment #23 – Vortex Separator (section 5.1.3, page 86)

> Recommendation: The following addition at the end of the first paragraph – The City of San Jose analyzed the relative capital and operation/maintenance cost of small devices (connector pipe screens and automatic retractable screens at the curb) and the hydrodynamic separator capturing trash from an area of 1000 acres, over 10 and 20-year time frames, accounting for repair and replacement of small units and increases in labor costs. The City found that small devices were more economical in the first decade, but the cost advantage disappears in the second decade. (Ref 3)

Comment #24 – Trash Nets (section 5.1.4, page 87)
Fresh Creek Technologies, Inc.'s End of Pipe Netting Trash Trap® was installed at Hamilton Bowl and the Regional Board's April 29, 2004 letter certified the device as a full capture system. It is not clear if that certification also applies to the two other models listed in this section.

> Recommendation: That this section list only those models that have been certified by the LA RWQCB.

Comment #25 – Street Sweeping (Section 5.2.2, page 90)
Street sweeping has been widely referenced in the Staff Report as an effective control measure to reduce trash in storm water runoff and reduce the need for structural control measures. There have been multiple studies conducted in an attempt to demonstrate that street sweeping is effective in reducing street-dirt and runoff pollutant loadings and improve water quality of storm water runoff

dating back to the NURP; however, there are a dearth of studies on the effectiveness of street sweeping practices that address trash management. Street sweeping could be one of the better potential institutional source control measure for reducing the discharge of trash from MS4s, but it requires additional study including determining actual amount of trash removed using sweepers, evaluation of equipment modification and testing of newer sweeping equipment.

Only three studies have been found that specifically address the frequency of street sweeping and removal of trash. The Caltrans Litter Management Pilot Study[18] and studies conducted in Australia and South Africa. The Caltrans study found increasing the frequency of street sweeping from monthly to weekly did not statistically reduce the count or weight of litter.

The results of Walker/Wong[19] study in Australia found that there is little correlation between frequency of sweeping, rainfall or wind-run with gross pollutant collected in catch baskets; and, significant amounts of gross pollutants were mobilized into the storm water system from the street during bursts of rain, wind or both, irrespective of the nature of the street sweeping program implemented. Walker and Wong concluded:

- "Current street sweeping practices are found to be not only ineffective for the reduction of fine sediments and sediment-bound contaminants, but also larger gross pollutants capable of entering the stormwater system."
- Street sweeping should be therefore accompanied by structural pollutant treatment measure to effectively reduce the discharge of gross and sediment associated pollutants.
- Significant amounts of gross pollutants are mobilized into the stormwater system during bursts of rain, wind or both.
- There is little correlation between the frequency of sweeping and the transport of gross pollutants into the stormwater system."

BASMAA (ref 9) estimated decrease in trash loadings from enhanced street sweeping relies heavily on a report by Neil Armiatge and presentation by Joe Teresi at a CASQAA conference. The efficiency curve in Figure QF-2.1 (ref 9) was adapted from work done by Neil Armitage in South Africa and indicates that an increase in the frequency of street sweeping can achieve a near 100% effectiveness. Several papers written by Armitage with coauthors clarify the basis of that assumption:

- The plot is "the ***maximum expected*** litter removal efficiency using street sweeping" *Armitage, The removal of urban litter from stormwater drainage systems, 2001*
- The plot "makes the assumptions that street sweeping is able to remove all the litter off the road, that the significant rainfall events are large enough to mobilize all the litter remaining on the road; and that catch-pits have large enough openings to accommodate the largest pieces of litter. In reality, some litter will be inaccessible (e.g. 'hidden' under motor vehicles), few rainfall events are large enough to carry every piece of litter to the catch-pits, and the litter frequently accumulates at the catch-pits without falling into them even if the opening is nominally large enough. It is easy to overestimate the efficiency of street sweeping. Since street sweeping is a relatively expensive operation, to be cost-effective it needs to be limited to areas where the

[18] Caltrans, District 7 Litter Management Pilot Study, CT-SW-RT-00-013

[19] Effectiveness of Street Sweeping for Stormwater Pollution Control, Technical Report 99/8, December 1999, T.A. Walker and T.H.F. Wong, Cooperative Research Center for Catchment Hydrology

litter loadings are particularly high, generally the commercial districts. It is also important to ensure that the litter is not being swept into catch-pits rather than being picked up and carted away." requiring supervision of the laborers. *Maris and Armitage, The measurement and reduction of urban litter entering stormwater drainage systems: paper 2 – Strategies for reducing the litter in the stormwater drainage systems, October 2004*

- The street sweeping practices consist of manual sweeping two or three times a day on weekdays in the morning and again in the afternoon. Litter is swept by hand (push brooms) into bags and removed by vehicle with supervisors to ensure that trash is not swept into storm drain inlets. In high litter areas (for example in the vicinity of restaurants and night clubs), the streets are swept mechanically late at night/very early in the morning after most people have gone home. *Marais, Armitage and Wise, The measurement and reduction of urban litter entering stormwater drainage system; Paper 1 – Quantifying the problem using the City of Cape Town as a case study, October 2004.*

Armitage (personal communication December 2012) confirmed that the curve "merely delineates the upper long-term theoretical limit" and that he has not validated the curve through actual field tests.

Claire McKinnon, Manager: Area Cleaning, Solid Waste Management, City of Cape Town (personal communication December 2012) advised that the city's sweeping program is constrained by limited resources and they are short staffed, but work the following schedule:

- Business areas are swept and litter picked up on a daily basis seven days a week with some areas having dedicated staff that move up and down them continually and cover them a number of times each day. There is also a night shift in busy areas because clubs and restaurants stay open until the early hours of the morning.
- In areas of mix business and residential they clean 5 or 6 days a week depending on need.
- Residential areas have a huge variation with some areas receive an ad hoc service based on need while poorer areas are cleaned 5 days a week.
- Manual laborers perform boundary cleaning and empty litter bins, pick up litter, sweep road kerbs and remove light illegal dumping.

It seems fairly obvious that the "sweeping" program in South Africa is not a model that can be followed in the United States and it is disingenuous and misleading to suggest that these efficiencies can be achieved through mechanical street sweeping practices.

Rather than using estimated street sweeping effectiveness based on erroneous studies the actual effectiveness of street sweeping can be measured using protocols adopted by the LA RWQCB for measuring the effectiveness of partial capture devices and institutional controls specified in the *Los Angeles River Watershed Trash TMDL, August 9, 2007 Final Staff Report, pages 31-33*.

There are additional data needs that must be addressed before technically valid estimates of street sweeping effectiveness can be determined:

- Protocols for Sampling and Characterization of Street Sweeping Debris Gross Pollutants Municipalities have been reporting gross amounts of debris collected by their sweeping programs and protocols are needed for subsampling the debris and characterizing the categories of litter. Ideally this should be done by land use.
- Baseline Street Sweeping and Parking Enforcement Programs

The current baseline street sweeping programs should be developed for each municipality that intends to use enhanced street sweeping as an approved control measure. This would include such information as type of sweeper, wet and dry season street frequency of sweeping by land use, current parking restrictions and level of enforcement, street miles by land use where there are curbs and no curbs, etc.

- Wet Season Storm Frequency
  The frequency of storm events ≥0.20-inch should be developed for each municipality so that municipalities can "tailor" their sweeping programs to their rainfall patterns. The wide differences in rainfall totals and storm intensities found in California require this level of refinement.
- Snow Plow Effect
  Caltrans and the *Santa Monica Bay Area Municipal Storm Water/Urban Runoff Project – Evaluation of Catchbasin Retrofits, September 24, 1998* have reported on the "snow plow" effect of sweeping gross pollutants into storm drain inlets when using sweepers equipped with gutter brooms. Caltrans staff that performed the studies advised that the Litter Management Pilot Study documented through photography and sampling the "snow plow" effect; however, was unable to report this because Caltrans was in the process of purchasing numerous sweepers. The "snow plow" effect could materially affect the effectiveness of sweeping programs and this needs to be investigated and if validated measures taken to address the issue – cleaning of storm drain inlets immediately after sweeping unless equipped with catch basin inserts or downstream large capacity full capture devices , modification of sweepers or new technology, etc.

The City of San Diego conducted several studies[20]and[21] to evaluate and improve its street sweeping practices to reduce street debris including sediment and other pollutants. The studies did not focus on trash; however, the results indicate that street sweeping provides an effective means of reducing concentrations of some constituents in storm water runoff. The vacuum sweeper was found to be more effective in reducing storm water constituents than the mechanical and regenerative-air sweepers that could have been due to steeper grades and inadequate curb and gutter differences at the test sites. Optimal load reductions were achieved by the vacuum sweeper at a twice a week frequency while the mechanical sweeper was most effective at removing debris and contaminants at a once a week frequency. Phase III and IV of the pilot study reported in the Stormwater article (ref 21) found a significant buildup of roadway debris occurs within and adjacent to medians and was similar to that found in curb and gutter debris that may require hand sweeping because sweepers are unable to reach those areas. Phase IV of the study found that operational speed of mechanical sweepers had little impact on the weight of material collected.

The Santa Clara Valley Urban Runoff Pollution Prevention Program[22] conducted a literature review of institutional and structural trash control measures and found that street sweeping activities do remove significant quantities of trash from roadways, but it is unclear how much trash is prevented from entering receiving waters; that there is little evidence to support the idea that optimizing street sweeping will dramatically reduce trash loading to the storm drain system; and, the potential inability to

[20] Weston Solutions, Inc, City of San Diego Targeted Aggressive Street Sweeping Pilot Study, Effectiveness Assessment, Final Report, June 18, 2010
[21] Clem Brown and Bryan Evans, Street Sweeping Pilot Studies, Stormwater, January/February 2013
[22] EOA, Inc. Trash BMP Tool Box, Treatment and Institutional Controls, September 2007

further restrict parking in urban areas may present a major limitation to increasing street sweeping frequency.

Subjects that require further investigation include:

- Effectiveness and costs of using the Captive Hydrology street cleaners used in Europe and in the United States to clean airport pavements
- Modification of existing sweepers to prevent the gutter brushes from propelling trash into storm drain inlets and causing damage to curb inlet retractable screens
- Determination of the actual amount and percent of trash that is included in debris removed by street sweepers

BASMAA has proposed as part of the Tracking California's Trash Proposition 84 grant to document trash load reductions by enhanced street sweeping and parking controls and enhanced storm drain cleaning.

Recommendations:

1. That the above information be included in Section 5.2.2
2. That the SWRCB increase funding for BSAMAA's study and expand the scope of that study to include:
    - Effectiveness and costs of using the Captive Hydrology street cleaners used in Europe and in the United States to clean airport pavements
    - Modification of existing sweepers or development of a new model of sweeper that would prevent the gutter brushes from propelling trash into storm drain inlets and causing damage to curb inlet retractable screens
    - Determination of the actual amount and percent of trash that is included in debris removed by street sweepers

<u>Comment #26 – Storm Drain Cleaning- (section 5.2.3, page 91)</u>

Caltrans reported in the Drain Inlet Cleaning Efficiency Study[23] conducted in District 7 that drain inlets are designed to be self-cleaning and not capture any solids or sediment, but retention of debris can still occur. During the study inlets were cleaned three times per season at approximately six week intervals, whereas no inlet cleaning was performed in the control catchments. Caltrans found that no obvious trends were seen in litter collected from the cleaned and uncleaned catchments; cleaned catchments had both the highest and lowest litter amounts; and, the district-wide inspection and cleaning program removed between 7 and 14% of litter typically found in runoff from Caltrans right-of-way. Caltrans concluded that for watersheds with TMDLs, focus compliance efforts on BMPs other than drain inlet cleaning.

BASMAA has proposed as part of the Tracking California's Trash Proposition 84 grant to document trash load reductions by enhanced storm drain cleaning that can also be applied.

Recommendation:

1. The above information be included in section 5.2.3
2. That the SWRCB increase funding for BSAMAA's study to ensure that definitive answers are provided on the effectiveness and costs of enhanced storm drain cleaning.

<u>Comment #27 – Section 5.3, page 93</u>

The discussion in the latter part of this section does not make sense.

[23] Caltrans, Drain Inlet Cleaning Efficacy Study, Final Report, CTSW-RT-03-057.36.1, June 2003

Comment #28 – Installation of Catch Basin Inserts (Section 5.3.1, page 93)
The installation of catch basin inserts will require compliance with CalOSHA, Title 8, Subchapter 7 General Industry Safety Orders, Group 16 Control of Hazardous Substances, Article 108 Confined Spaces, Section 5157.

Recommendations:

1. Add the above information to this section.
2. The need to implement confined space entry requirements during installation, maintenance and replacement should be determined for each device that is certified as a full capture system.

Comment #29 – Installation of GSRD and Vortex Separation System (section 5.3.1, page 94)
This section does not include any discussion of the installation of the CDS device.

Recommendation: Contact Contech Engineered Solutions representative for this information because it is significantly different than for installation of the GSRD.

Comment #30 – Maintenance of Treatment Controls (Section 5.3.2, page 95)
Maintenance of treatment controls will require a wide variation of tools and equipment. Storm drain inlet inserts and the Coanda Screens can require shovels, picks, trowels, dust pans, buckets, brooms, etc while larger capacity devices like GSRD and CDS device can be cleaned using vacuum trucks. Removal and replacement of trash nets will likely require heavy equipment like cranes and water tight dump trucks. Clogged screens of storm drain inlet inserts and connector pipe screens will require use of wire brushes and/or steam cleaners or power washers and vacuum equipment to remove residual solids and water from the storm drain inlet to prevent the entry of that material into the connector pipe. Maintenance of many of the storm drain inlet inserts, connector pipe screens and the Coanda Screen will also require the use of confined space entry equipment.

The San Francisco Estuary Partnership in the Final Project Report (ref 3) Table 4 included a listing of equipment that municipalities used during maintenance operations.

The City of San Diego in the Storm Drain Insert Pilot Study (ref 10) in Table 4 lists logistical and equipment requirements used in the maintenance of drain inlet inserts including requirements for confined space entry, pressure washing of screens and time for accomplishment of maintenance activities.

Recommendation: That this section list the types of equipment required to maintain the various types of devices and implement various institutional control measures.

Comment #31 – Impacts to Public Health (page 98)
Installation of full capture devices would prevent the discharge of “loaded” diapers, hypodermic needles, syringes, condoms, broken glass and sharp metal items that can be deposited in areas were public recreation occurs or areas where volunteer trash cleanup events take place. Many of devices impound trash, sediment and vegetation resulting in ponding storm water or nuisance water creating an environment for mosquito breeding with concerns about the West Nile Virus. The organic material in gross pollutants including sewage from sanitary sewer overflows trapped in storm drain inlets creates a habitat for cockroaches, spiders, flies, rodents that can have a more direct effect on maintenance

personnel than the general public, but nevertheless there is a potential for affecting the general public. Some devices like trash nets and the GSRD also collect organic material that attracts rodents, flies, etc. and decomposition creates odors. Many adverse impacts on the general public can be addressed by more frequent cleaning of the devices, coordination with mosquito abatement districts and using controls like Mosquito Dunks®.

> Recommendation: A section needs to be added incorporating the above comments that addresses the impacts to public health.

Comment #32 – Catch Basin Cleaning Frequency (page 107)
Semiannual cleaning of catch basins is an incorrect assumption. The LARWQCB requires cleaning from quarterly to annually based on trash generation estimates and priority of catch basins for capturing trash. The San Francisco Bay Area municipalities in their 2012-13 annual reports indicate that storm drain inlet connector pipe screens are cleaned at widely varying frequencies ranging from annually to as much as before October 1, before the first storm event and before and after every significant storm event. The City of Alameda found it necessary to clean the StormTek™ devices as many as 14 times during the year.

The San Diego study (ref 10) found that storm drain inlet inserts required at least quarterly maintenance and would likely be more frequent since the storm drain inserts were clogged just after two storm events.

> Recommendation: This section should include the above information and indicate that the frequency of catch basin cleaning will be vary significantly depending on a catchments gross solids loadings, rainfall events and blockage of screens/filter media .

Comment #33 – Street Sweepers Don't Clean Catch Basins (page 107)
Catch basins are either manually cleaned or by using vacuum trucks.

> Recommendation: Change street sweeper vehicles to vacuum trucks.

Comment #34 – Adjustment of Screen Size to Prevent Clogging (page 107)
Adjusting the screen size to prevent clogging would violate definition of a Trash Full Capture Device that specifies a 5mm – (0.197-inch) mesh size.

> Recommendation: delete "and adjusting screen size to prevent clogging."

Comment #35 – Trash Net Replacement and Cleaning (page 110)
The San Francisco Estuary Partnership (ref 3) reported on the maintenance of the Fresh Creek Technologies trash nets and indicated that nets were full and needed to be replaced at maintenance. The Santa Clara Valley Urban Runoff Pollution Prevention Program (ref 16) reported that the Fresh Creek Netting Trash Trap ™ at Hamilton Bowl nets were changed out 18 times during the first year of operation.

> Recommendation: That the SWRCB staff find better information on the actual experience with the maintenance of netting systems.

Comment #36 – Hazards of Trash Collected by Vortex Devices (page 132)

The cleanout of vortex devices ie the CDS device provides the very least exposure to hazardous material to the public and maintenance workers of all devices that have been discussed in the staff report. The CDS devices are cleaned using vacuum trucks that suck out the trash and transport it in a closed chamber of the vacuum truck for disposal at a regulated disposal site. Conversely almost all of the other devices result in maintenance workers coming in direct contact with the gross solids. Gross solids captured in trash nets and GSRD unless enclosed in a structure are exposed to vectors and rodents that can transmit health hazards to the general public.

Recommendation: The above information be included in this section.

Comment #37 – Storm Drain Inlet Screens vs Storm Drain Inlet Inserts vs Connector Pipe Screens (page 135)

These three devices are distinctively different in their design, operation and function and need to be better described in section 5 of the staff report. The storm drain inlet screens (trash deflectors) are placed in the curb face and are designed to prevent trash from entering the inlet, but leave trash in the street. Some are designed with retractable screens to prevent flooding when trash and vegetation block the screening mechanism. Storm drain inlet screens would not be effective with grate inlets. Storm drain inserts are devices installed in the inlet and are designed to capture trash within the inlet. Connector pipe screens are placed immediately ahead of the connector pipe and are designed to prevent trash from flowing into the pipe connecting the inlet to the main storm drain. Storm drain inlet screens are often used in combination with inserts and connector pipe screens to reduce the amount of trash that must be removed from the inlet, but require more frequent street cleaning and have been associated with flooding. Storm drain inlet inserts and connector pipe screens are prone to blockage with trash, vegetation and sediment resulting in the scouring of previously captured solids (Figures 2-8). The San Diego Storm Drain Inlet Study (ref 10) found that clogging of insert filter material/fabric/screens was a contributing factor for bypass of these devices. The adverse impacts can be partially mitigated by increasing the frequency of inspections and maintenance.

Recommendation: That the above information be included in this section.

Comment #38 – Vortex Separation System (page 136)

The CDS devices are designed to safely bypass peak flows in excess of the units design capacity to prevent any threat of flooding while continuing to treat that portion of the runoff less than the design capacity. Trash is retained offline in the sump and separation chamber and it is physically impossible to bypass previously captured trash. Units have been constructed with collapsible weirs in areas where there is minimum hydraulic head required for operation of the unit. If trash or sediments were to accumulate in the separation chamber above the screen peak flows would simply be carried safely over the weir. This can mitigated by periodic inspections to determine depth of solids in the sump and maintenance of the device when 85% of the sump is filled.

Recommendation: Incorporate the above information in this section.

Comment #39 – Noise Levels of Vacuum Trucks and Street Sweepers (pages 140,147, 148)

The sound levels of vacuum trucks and street sweepers under full operation should be included in Table 10. Proposed control measures including increased street sweeping in residential areas as an alternative to the installation of full capture devices; as a result of the installation of storm drain inlet screens at the curb face; and, as an enhanced institutional control measure will increase the frequency and duration of noise impacts to a community. The impacts of noise from vacuum trucks will also increase as a result of

the increase in frequency of maintenance of storm drain inlet inserts and inlets with connector pipe screens. These impacts could be mitigated by selecting larger capacity full capture devices that can be sited at more remote locations.

Recommendation: Incorporate the above information in this section.

Comment #40 – Impacts on Public Services – (section 6.11.2, page 149 and 151)
The installation and maintenance of most of the storm drain inlet inserts and connector pipe screens and the Canoda screen require compliance with CalOSHA confined space entry requirements. A key element of that program requires advance notification of first responders of the planned entry so they can be prepared to respond to any incidents. This could have an impact on the ability of these agencies to respond to other emergencies. Some devices lie trash nets, GSRD and CDS do not require implementation of confined entry procedures and would not impact police and fire services.

The impacts of increased street sweeping cannot be easily mitigated by changing the timing of the sweeping. The use of parking restrictions to increase the effectiveness of sweepers is a key control when effective sweeping can be performed. Sweeping must also be conducted at a frequency to remove trash that has collected in the gutter before it is carried into storm drain inlets by natural or vehicle caused winds.

Recommendation: Incorporate the above information in this section.

Comment #41 – Impacts and Mitigation – (section 6.12.2, page 152 and 157)
The frequency of cleaning vortex systems depends on the accumulation of trash and depends on the catchments gross solids generation rates. The CDS device should be inspected after the first significant storm of the season and then periodically inspected during the rainy season and cleaned when the sump is 85% full.

The frequency of cleaning of inlets with storm drain inlet inserts and connector pipe screens must be significantly increased as recommended in Comment #32 if they are to be even marginally effective.

The risk of increased street flooding is greater with storm drain inlet screens installed at the curb face when the screens are clogged with trash, sediment and vegetation (see Comment #21). Storm drain inlet inserts are less likely to cause flooding in the streets if they are designed with adequate bypass capacity: however, the City of South San Francisco in the 2012-2013 annual report reported that the West Coast Storm connector pipe screen caused flooding even when cleaned and maintained during storm events.

Recommendation: Include the above information in section 6.12.2 including the Comments #21 and #32

Comment #42 – Storm Water Discharge Mitigation Measures –(section 6.13.2, page 158 and 159)
The Los Angeles and San Francisco Bay RWQCBs have created a regulatory dilemma by certifying Trash Full Capture Devices because we now have 1000's of storm drain inlet inserts and connector pipe screens as well as many other devices that have been found to bypass trash and do little towards reaching the receiving water goals for trash. Of most concern is that the Regional Boards consider the

installation and maintenance of the devices as compliance with NPDES permits. This action is a violation of Section 13360(a)[24] of the California Water Code which states:

> "No waste discharge requirement or other order of a regional board or the state board or decree of a court issued under this division shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be permitted to comply with the order in any lawful manner."

The State and RWQCBs ability to require compliance with trash water quality objectives with respect to the installed "certified" devices appears to be limited to ensuring that the highest level of maintenance is provided and accepting that significant quantities of trash will continue to be discharged from MS4s.

This section must also address USEPA's November 22, 2002 guidance[25] on establishing wasteload allocations for storm water discharges in TMDLs. Although that guidance addresses TMDLs it provides a clear strategy to include in the Policy Amendments for achieving compliance with water standards established in NPDES permits even where TMDLs have not been developed. That strategy must incorporate the following elements:

- Discharge or effluent limitations in the form of BMPs (certified full capture devices and institutional control measures)
- Administrative record that supports that the BMPs will achieve compliance with water quality objectives
- Monitoring necessary to assess compliance with the water quality objectives (BMP performance data)
- Provision for making adjustments to the required BMPs necessary to achieve compliance with water quality objectives (iterative process)

Recommended mitigation measure (ii) must also include Frequent Inspections with immediate follow-up maintenance when bypassing of trash is found in addition to regularly scheduled maintenance: and, replacement of damaged or inoperative devices. Monitoring BMP performance should be added as (iii) and (iv) would implement the iterative process adding additional BMPs and trash control measures necessary to meet to achieve compliance with water quality standard.

The statement that the State Board does not direct compliance measures agencies choose or mitigation measures they apply is misleading because the Regional Boards have certified specific full capture devices and stated that compliance with NPDES permits is achieved through the installation and maintenance of the devices.

[24] A little history behind this section of the Water Code that was added by the Porter-Cologne Act in 1968. It came about as a result of discussions between Jerry Gilbert (member of SFBRWQCB, member of the committee that developed recommendations on amendment of the Water Code and subsequently Executive Director of the SWRCB), Fred Dierker (Executive Officer of the SFBRWQCB) and myself. At the time Mr. Dierker and I were being pressed to recommend a POTW treatment process and we were concerned that the RWQCB's regulatory would be compromised if the process failed to meet waste discharge requirements.

[25] November 22, 2002 memorandum from Robert H. Wayland and James A. Hanlon to Water Division Directors, Establishing Total maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Strom Water Sources and NPDES Permits Based on Those WLAs

LID controls and multi-benefit projects must be designed to meet the trash trapping and retention standard and have the hydraulic flow capacity required of full capture devices in order to be considered as equivalent.

Recommendation: Incorporate the above in the Trash Amendments

Comment #43 – Track 1 versus Track2 – (sections 8.3 and 8.4, page 168 and 169)

Municipalities in the Los Angeles and Bay areas have taken different approach in complying with NPDES permit requirements. In Los Angeles they have chosen to install trash capture devices implementing the Full Capture System Alternative while in the Bay Area the program has morphed into a "more studies" approach implementing the Institutional Control Alternative before implementing meaningful trash control programs even with the availability of federal stimulus and state grant funds. While Track 2 appears to offer some advantages over Track 1 and have the greatest flexibility the State Board should accelerate the implementation schedule.

Recommendations:

1. The State Board at the public hearings should seek out reasons for the two different approaches, identify the constraints in developing and implementation of trash reduction programs and determine which approach can be more quickly implemented and include review should include an assessment of the State's staff resources required to implement different regulatory approaches.
2. Accelerate the Time Schedule for Track 2

Comment #44 – Beneficial Uses Impacted by Trash – (Appendix A.1, page 187)

The Water Boards are also required to protect uses from "contamination" in addition to pollution and nuisance.

Recommendation: Add "and contamination" after nuisance in Appendix A.1

Comment #45 – Trash-Related Impacts to Public Health Beneficial Uses – (table 14, page A-8)

Recommendation: Broken glass, sharp metal and hypodermic needles/syringes should be added to the health and safety hazards.

Comment #46 – Trash in the Environment – (section II, page A-11 and A-13)

Trash can have adverse impacts on the environment even before it enters waters of the state. Trash is present throughout a watershed in parking lots, streets, sidewalks, parks and other public areas and has community drawbacks. Quality-of-life issues related to environmental blight (including the presence of trash) are rooted in the "broken window" theory, postulated in the 1940s. The presence of trash is a sign of neglect and apathy taken root in a neighborhood fueling further deterioration often leading to other societal ills. Litter is often viewed as one of the earliest indicators that a neighborhood is in distress.[26] The use of curb face screens at storm drain inlets leaves trash in the streets until removed by institutional control measures such as street sweeping and their use should be considered as having potential adverse impact on the environment.

Recommendation: Incorporate the above information in this section.

[26] City of Los Angeles Department of Public Works, Bureau of Sanitation, Watershed Protection Division, High Trash-Generation Areas and Control Measures, January 2002

Comment #47 – The Santa Clara Valley Urban Runoff Pollution Prevention Program Rapid Trash Assessments (Trash Assessment Studies, page A-14)
Did the Santa Clara Valley Urban Runoff Pollution Prevention Program actually perform Rapid Trash Assessments in the Los Angeles River Watershed and Los Angeles area lakes?

Comment #48 – Outfall and Storm Drain Monitoring (page A-16)
The discussion of the Caltrans Public Education Litter Monitoring Study should note that sediment was not measured during the study.

The Bay Area baseline monitoring effort (ref 9) reported that trash is 17% by volume and 4% by weight of all solids in runoff and reported various components of trash – recommend that the pie charts be included in the staff report.

Recommendation: Incorporate the above information in this section.

Comment #49 – Economic Analysis "LIFE CYCLE COSTS" – (section 3. Page C-1)
The economic analysis in Appendix C is deficient because it failed to consider the life cycle costs of implementing institutional controls and various types of treatment controls. An economic analysis that simply looks at initial costs and current personnel labor costs, operation and maintenance expenses provides little useful information to the public and those entities that must make informed decisions on which track to pursue. The City of San Jose (ref 3, page 42) performed a comparative cost study and analyzed the relative capital and operation/maintenance cost of small devices (inlet screens/ARS combinations) versus CDS device treating an area of 1000 acres over a 10 and 20 year time frame; accounted for repair and replacement of small units and predictable cost-of-living increases for labor; and, found small devices are more economical in the first decade the cost advantage disappears in the second decade. Small devices are considered to have a useful life of 5 years while large capacity devices are considered to have a minimum 25-year useful life.

The State Board in the grant to the San Francisco Estuary Partnership, Trash Capture Demonstration project (ref 3, Appendix 5) required recipients to properly staff, operate, maintain and perform repairs to all portions of the Project during its useful life including reconstruction, repair and replacement and defined the useful life as 20-25 years. Replacement and repair of treatment devices, equipment including street sweepers, vacuum trucks, etc and increased labor costs that will drive up the maintenance costs and must be included in a life cycle analysis. It is disingenuous to simply show increased costs as a result of installation of additional devices. Several municipalities in the Los Angeles area are reporting that they are currently budgeting for the replacement of small treatment devices. Municipalities that implement administrative institutional controls will be faced with ongoing increases in labor costs and monitoring of trash discharges to demonstrate compliance which can be significant.

The maintenance costs must reflect a realistic frequency and costs of maintaining small treatment devices. The Analysis apparently assumes (page C-43) that "one catch basin per acre" is needed for in high intensity developed areas i.e. industrial, commercial, schools, apartment complexes, etc that have internal private storm drainage systems connected to a MS4. The municipalities cost of providing the oversight of design, installation, operation, monitoring and maintenance need to be included in alternatives analysis that compare these costs plus the installation and maintenance costs borne by the land user to the alternative of providing an offsite treatment by a larger capacity device.

Recommendation: That the Economic Analysis be redone to include realistic and predictable 25-year life cycle costs.

Comment #50- Costs of Maintaining Vortex Separators – (section 6.b.2, page C-44)

The $30,000 cost for annual maintenance is extremely high and it appears to have been taken from the Hamilton Bowl project presentation that reports the $30,000 as the cost for maintaining the four different types of devices that were installed in the drainage area including the Fresh Creek nets, Roscoe Moss linear unit, CDS device and catch basin inserts. I have been personally involved in over 15 cleanouts of CDS devices in the Bay Area including the three units located in a heavy traffic area in the Embarcadero in front of the San Francisco Ferry Building. None of the annual cleanout events cost more than the minimum "callout cost" of $600.

Recommendation: That actual costs be developed for maintenance of the CDS device.

Recommended Changes to Ocean Plan and ISWEBE Trash Amendments

1. Water Quality Objectives – Ocean Plan, C. Physical Characteristics 5. and ISWEBE, B. Trash
    a. Add "or cause a contamination or hazard to public health".
    b. Add footnote "To achieve statewide consistency in the application of this objective the State Board intends to develop guidance to the regional boards for determining "acceptable" levels of trash in creeks, flood control drainage systems, wetlands, estuaries and the ocean that do not constitute a nuisance, adversely affect beneficial water uses and/or cause a contamination."
2. Applicability – Ocean Plan – Applicability –L.1.b. and ISWEBE – B.1.b.
    a. A provision must be added that addresses systems /devices that could be certified during the interim period between now and when effective date of the Trash Provisions.
    b. A new provision (3) must be added that requires all systems/devices meet the new definition/criteria added in the Monitoring and Reporting Sections and Appendices. (See Comments #11 and 19)
    c. A new provision (4) must be added that addresses those devices that have already been certified and upon review have been found to not comply with the new definition/criteria. (See Comment #12)
3. Permitted Dischargers Compliance – Ocean Plan – L.2.a. and ISWEBE – B.3.a.
    a. These sections need to address a MS4 permittees responsibility to address those dischargers where they have no regulatory authority yet those dischargers actually discharge to the MS4.
4. Permitted Dischargers Compliance – Ocean Plan – L.2.a.(1) and (2) and ISWEBE – B.3.a.(1) and (2)
    a. Add a footnote that "Municipalities may require and oversee the design, installation, operation and maintenance of full capture systems, other treatment controls and institutional controls on private property". (See Comment #3)
5. Additional High Trash Generating Land Uses – Ocean Plan – L.2.d. and ISWEBE – B.4.
    a. Add amusement parks, sports complexes, regional transit parking lots and flea markets.
6. Time Schedule – Ocean Plan – L.4.(2) and ISWEBE – B.5.(2)
    a. The permittee must do more than explain how the controls are "designed" to achieve the same performance results as Track 1. They must also be required to submit a monitoring program plan that documents the reduction in the discharge of trash achieving the same performance results as Track 1.

7. Time Schedule – Ocean Plan – L.4.(3) and (4) ISWEBE – B.5.(3)and (4)
    a. Institutional controls such as street sweeping, storm drain cleaning, enforcement, etc under Track 2 should be given a time schedule of two budget cycles or three years from the effective date of the proposed Trash Amendments to implement these control measures. Institutional controls such as ordinances could require 5 years to be fully implemented. Installation of Full Capture systems/devices installed in storm drain inlets should have a time schedule of 5 years. The 10-year compliance time frame in Track 1 and 2 must be limited to installation of large capacity Full Capture Devices serving large areas. (See comment 9)
8. Time Extensions - Ocean Plan – L.5. and ISWEBE – B.6.
    a. This section should be deleted because dischargers have already been alerted as a result of the Public Notice and the draft Trash Amendments that they must develop and implement trash control measures.
9. Monitoring and Reporting - Ocean Plan – L.6. and ISWEBE – B.7.
    a. That the Installation, Inspection and Operation and Maintenance Programs in Comment #11 be adopted as minimum level of effort under Monitoring and Reporting and be included as Appendices to the Trash Amendments.
10. Monitoring and Reporting - Ocean Plan – L.6.b.(3) and ISWEBE – B.7.b.(3).
    a. Include in the Definition of Terms a definition of “effectiveness”.
11. Monitoring and Reporting - Ocean Plan – L.6.b.(4) and ISWEBE – B.7.b.(4).
    a. That the demonstration of the reduction in trash discharged from previous years be determined by measuring the mass and volume of trash actually removed by the control measure and/or discharged from the MS4.
    b. The monitoring results must be reported by individual land use categories.
    c. The mass and volume of trash reduced must be reported.
12. Monitoring and Reporting - Ocean Plan – L.6.b.(5) and ISWEBE – B.7.b.(5).
    a. This reporting requirement can be deleted if the volume and mass of trash discharge are reported.
13. Enforcement Strategy – Ocean Plan – New Section 7. and ISWEBE – New Section 8.
    a. An enforcement strategy must be added to the Trash Amendments that implements USEPA’s guidance on establishment of TMDLs and NPDES permits. See Comment #42. This strategy must provide guidance to the Regional Boards on NPDES permit revisions and/or enforcement actions that would implement the iterative process by adding additional Full Capture Certified system/devices and trash control measures necessary to achieve compliance with water quality standard.
    b. The enforcement strategy must address the failure of currently certified systems/devices that do not comply with the revised definition/criteria.
14. Revised Definition/Criteria of Full Capture System – Ocean Plan – Appendix I and ISWEBE-Appendix A
    a. The following additional minimum criteria are recommended:
        - Require that all devices installed in storm drain inlets be sized based on the peak 5-minute rainfall intensity determined by NOAA’s Point Precipitation Frequency Estimates and that large capacity full capture devices be sized using the catchments Tc and NOAA’s Point Precipitation Frequency Estimates.
        - Prohibit the use of on-line trash control devices that allow peak flows to circulate or low through the trash storage area unless they are cleaned out after each storm event; or specify that trash control devices shall retain trash in an

"off line" configuration where peak flows are bypassed upstream of the devices trash storage area
        - Label storm drain inlets that require confined space entry for maintenance or replacement "Danger Permit Required – Confine Space Entry Do Not Enter" and provide confined space entry training and certification for installation and maintenance personnel
        - Capture residual solids and water used to power wash screens and the inlet and dispose in sanitary sewer or regulated disposal site
        - Coordination of inspections and mosquito abatement with mosquito abatement agencies
    b. The devices that have been certified/recognized by the Regional Boards should be critically reviewed to determine whether they meet the updated definition/criteria and a revised list must be published.
15. Priority Land Uses - Ocean Plan – Appendix I and ISWEBE- Appendix A
    a. Change "High-density residential" to "Residential" – see Comments #13 and #15.
16. Public Transportation Stations - Appendix I, Priority land uses and ISWEBE- Appendix A, Priority land uses
    a. Add "regional transit parking lots".
17. Exemption from priority land use designation - Appendix I, Priority land uses (7) and ISWEBE-Appendix A, Priority land uses (7)
    a. Add a provision (7) Exemption from a priority land use designation: An MS4 permittee may request from the applicable permitting authority the exemption of a designated Priority Land Use or specific areas of a Priority Land Use based on low trash generation rates determined by measurement of the mass and volume of discharged.
18. Trash - Appendix I and ISWEBE- Appendix A
    a. Add to the definition those items that have been found in storm water runoff. See Comment #14.

If there are any questions regarding the above comments and recommendations please contact me at roger.james1@comcast.net or 425-202-7495.

Sincerely

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Attachments: Figures 19, CD of Ref 10