

## Attachment II – Technical Comments

1. Finding 11, Fact Sheet Section III – Background and Fact Sheet Section V.I C.1 Water Quality Standards Exceedances

The Finding and Fact Sheet Section III must be significantly expanded to include a thorough and objective assessment of the status of implementation of the Bay Areas storm water programs and compliance with current NPDES permits. Most important they both must address compliance with discharge prohibitions and receiving water limitations and status of development and implementation of TMDLs. If there is a lack of water quality data to make this assessment then the Fact Sheet should explain why this has occurred and how the Tentative Order would address that deficiency. Clearly the Water Board's staff Rapid Trash Assessments and information submitted by citizens demonstrate that many municipalities have been in violation of Discharge Prohibition A.2. and Receiving Water Limitation B.1. for a considerable period of time. A Finding supported by a discussion in Section V.I must include a discussion of the Water Board's enforcement program and schedule of forthwith compliance with the existing NPDES. The Water Board is strongly encouraged to review the Los Angeles RWQCB's Fact Sheet (Attachment II –A) used to support amendments of NPDES permits to address bacteria. The LA draft Fact Sheet has a more complete discussion of legal authority, status of program implementation and discussion of the information required to support attainment of WLAs.

2. Provision C.1. – Discharge Prohibitions

A new provision must be added and C.1 renumbered to address Discharge Prohibitions Exceedances or the existing C.1 must be reworded to include both Water Quality Standards and Discharge Prohibitions Exceedances. As currently written there is no provision for addressing violations of the Discharge Prohibitions A. 1. and A.2.

3. Provision C.1.a. – Timely Reports

"Promptly notify" or submittal of reports of noncompliance in an annual report does not provide any sense of urgency in addressing violations of NPDES permits. The same level of notification required of industries and POTWs should be required of the permittees.

4. Provision C.2a. and 2.b and Fact Sheet – Effectiveness of Street Sweeping

The provision would presumably expand the street sweeping programs implemented by the permittees and require the purchase the purchase of high efficiency street sweepers. The justification appears to be based on limited number of studies listed in the Fact Sheet and reported prior to 2002. There are a number of concerns with the recommendation:

- Specifying this level of implementation measures or BMPs is a violation of Section 13360 of the California Water Code.
- If a municipality does exactly what the NPDES Permit specifies and there is an ongoing exceedance of water quality standards or prohibitions, what can the RWQCB really do about it since they specified what was necessary for compliance?
- The Caltrans freeway sweeping studies show that sweeping is ineffective in controlling trash discharged to receiving waters.

- Street sweeping studies show that sweeping results in poorer quality runoff than with upswept conditions.
- Street sweeping studies unless conducted under extremely controlled conditions indicate that there is minimal difference in the effectiveness of broom sweepers, the regenerative air and vacuum filter sweepers in removing particles <63 um so how can the staff rationalize requiring municipalities to spend \$250,000-350,000 for a high efficiency street sweeper with \$50,000 annual maintenance costs to address pollutants in runoff?

A more comprehensive list of studies on the effectiveness of street sweeping to control pollutants in storm water runoff is included as Attachment II-B. A number of conclusions can be drawn from these studies:

- Street sweeping historically has been conducted for aesthetic purposes and this remains one of the main benefits of “*current street sweeping practices*”.
- The effectiveness of street sweeping practices to reduce the concentration and mass of pollutants in storm water runoff and the overall performance of all types of street sweepers to reduce street-dirt including the “high efficiency dry vacuum sweepers” is affected by many factors including sweeping frequency, type and condition of paved surfaces, rainfall depth and intensity, amount and distribution of street-dirt on and across the street surface, control of motor vehicle parking and methods of operation including number of passes, speed of sweepers, maneuverability, ability to operate under wet street conditions and employment of different types of sweepers in tandem.
- Trash, litter and sediments enter storm drain inlets from traffic created or natural wind and from the “snow plow effect” of street sweepers as well as storm water runoff making it difficult to quantify and characterize trash solely based on street surface loadings. The characteristics of street trash have significantly changed since the NURP studies with increased amounts of plastics and styrofoam.
- With ~80% of the sediments found within 12-24 inches of the curb the design, type and performance of street sweepers to effectively remove street-dirt becomes critical and has not tested under many studies conducted to date.
- Removal and capture of silt and clay size (<63-µm) particles through street sweeping even the most efficient street sweepers has not been demonstrated using current street sweeping practices. Indeed studies have shown an increase in these particles attributed to the removal of larger armoring particles, fugitive dust, recirculation and subsequent loss of fine particles and crushing of larger particles by sweeper brooms.
- Street sweeping frequency to be effective in reducing pollutants in storm water runoff in the Bay Area must occur on a weekly basis during the wet weather season must be at a frequency that is less than the interval between storm events which as about 8 days in the Bay Area.

The RWQCB staff should be ***encouraging, but not requiring or specifying in detail*** a more comprehensive approach for controlling

solids and associated pollutants and controlling trash including a combination of public education, street sweeping, catch basin or storm drain cleaning, full capture devices/end of pipe treatment and receiving water cleanup:

- To control solids and associated TMDL pollutants they should look at what the State of Wisconsin DNR (Attachment II–C) is requiring municipalities to reduce TSS (SSC) by 20% by March 2008 and by 40% from existing developed areas by March 2013. This approach would place the responsibility on municipalities to select BMPs to achieve the specified reductions and develop and implement monitoring programs of pollutant loadings to document reduction in pollutant loadings and that address relationships of particle size and pollutant concentrations and storm event characteristics that mobilize the particles. The 20% reduction in TSS/SSC initial was based on assumption that street sweeping using high efficiency vacuum sweepers would achieve a 20% reduction in TSS; however, based on the 2007 USGS study they now believe that mechanical broom sweepers achieve a 5% reduction and higher efficiency sweeping can only achieve a 15% reduction.
- To control trash they should specify an annual reduction in trash loadings determined by THE ACTUAL PHYSICAL MEASUREMENT OF TRASH CAPTURED. A goal of “zero” trash should be established and significant reductions (70-80%) must be demonstrated before that goal can be reconsidered based on nuisance levels and adverse and unreasonable impacts on beneficial water uses.

5. Provision C.2b.i. – Fine Particle Removal by Regenerative Air Sweepers  
The Tentative Order indicates that regenerative air sweepers are effective in removing particulates less than 150- $\mu\text{m}$  (medium sand). The USGS 2007 study referenced in Attachment II-B conducted in Madison, Wisconsin on page 21 reports that:

- Street dirt measurements from weekly street sweeping that both regenerative-air and vacuum-assist sweepers produced only slight reductions of particles greater than 250- $\mu\text{m}$  and 500- $\mu\text{m}$  respectively.
- The broom sweeper was capable of reducing particles greater than 1,000- $\mu\text{m}$ .
- All sweepers produced slight increases in the percentage of particles less than 125- $\mu\text{m}$ .

It is important to note that this study concluded that “there is little probability that street sweeping, regardless of street-sweeper type, had any measurable effect on the quality of runoff.” These results and conclusion raise significant questions regarding the Tentative Order’s requirements that municipalities spend \$250,000-350,000 for high efficiency street sweepers with \$50,000 annual maintenance costs to address pollutants in runoff.

6. Provision C.2.f.ii.(2) – Catch Basin and Inlet Cleaning Frequency  
Catch basins and inlets are materially different in the ability to trap gross pollutants with catch basins having sumps that will retain gross pollutants while inlets have a storm drain outlet at the bottom of the structure. Catch basins

can be effective in trapping gross pollutants as long as the solids are removed when they reach 60% of the sump capacity while inlets have no trapping capability and must be frequently cleaned to prevent dry weather nuisance flows from transporting the solids into the storm drain system. Provision C.2.f.ii.(2)(a) must require that inlets be inspected monthly and catch basins semiannually with one inspection during the month of September. Provision C.2.f.ii.(2)(b) must require that catch basins be cleaned whenever 60% of the sump capacity is exceeded and during the month of September and inlets must be cleaned whenever the bottom has moved more than 4-inches of accumulated solids.

7. Provision C.2.f.iii. – Reporting of Catch Basins

A requirement must be added to report the location of all catch basins and all inlets with standing water to the county mosquito abatement district. Mosquito abatement personnel have reported that catch basins and swales are a primary habitat for mosquito breeding and reporting catch basins and inlets with standing water following the completion of Task C.2f.ii.(1) will assist in the mosquito abatement efforts.

8. Provision C.2.g.i. – Storm Water Pump Stations

It is unreasonable to require that existing pump stations comply with water quality standards. Last sentence should be changed to read “and to reduce the discharge of pollutants in the storm water discharges to the maximum extent practicable.”

9. Provision C.2.g.ii.(4) – First Flush

First flush has been defined in many different ways and there is controversy regarding its measurement and existence and applicable pollutants. Suggest changing “first flush” to first storm of the year where predicted rainfall depth will exceed 0.25-inch. Water Board staff is encouraged to read Caltrans publication CTSW-RT-05-73-02.6 “First Flush Phenomenon Characteristics” to gain a better understanding of the feasibility of applying storm water controls of the “first flush”.

10. Provision C.2.g.iii.(1) – Waste Materials Removed

Both the volume and mass of materials removed must be reported to obtain an assessment of the type of material being quantified. Floatables captured in a CDS device ahead of a storm water pump station have been found to constitute about 8% of the volume, but only 0.6% of the mass of solids.

11. Provision C.2.i.ii.(5) - Storage Areas

Outdoor storage areas can contain both waste and product material that when spilled can result in a discharge of pollutants. Outdoor storage areas must be covered and bermed.

12. Provision C.2.i.iii. – Spill Reporting

Reporting of spills of certain types of hazardous materials is required under state and federal law. This provision needs to reflect those requirements in addition to the annual reporting requirement. The submittal of reports of hazardous materials in an annual report does not provide any sense of urgency in addressing spills of hazardous materials.

13. Provision C.3.a.i.(6) – Disconnecting Roof Downspouts

The requirement to disconnect downspouts for new and redevelopments fails to recognize the potential for creating slides and damage to structures. The requirements in this provision fail to recognize the serious structural problems that could occur and is an invitation to litigation. These practices should not be undertaken unless a registered professional geotechnical engineer has reviewed and approved the overall site plan with these measures. Infiltration of storm water into the highly expansive Group D soils which dominate much of the Bay Area create moderate to severe structural damage and annoyances including sticking doors, inability to close doors, uneven settling of homes, stucco and foundation cracks in addition to damaging land slides. Correction of these conditions can include driving or drilling piling adjacent to foundations, jacking the homes to relevel them, installation of adjustable jacks to replace piers, rebuilding foundations, installation of foundation anchors and installation of french drains around the home with outlets into the streets, storm drains and creeks. These corrective actions require building permits and costs have ranged from \$35,000 to well over \$100,000. In more severe situations landslides have destroyed roadways, driveways and homes.

It is inconsistent to allow roof runoff to planter boxes, swales and bioretention devices with underdrains discharging to storm drains while insisting on disconnection of the roof leaders from storm drains. Forcing local elected officials to adopt and enforce ordinances requiring disconnection of roof leaders and controlling onsite improvements like patios, decks, driveway widening, etc. is equivalent to asking them to commit political suicide.

The requirements for onsite infiltration should be delayed until site suitability criteria specific to the Bay Area's soils are developed. Criteria similar to that in Volume III Chapter 3 of the Washington Department of Ecology's 2005 Stormwater Management Manual for Western Washington is desperately needed for the Bay Area.

14. Provision C.3.a.i.(7) and Fact Sheet C.3 – Maximum Extent Practicable

The use of "maximum extent practicable" in the third line is an incorrect application of the MEP performance standard. The Tentative Order applies it to the "inclusion of source control measures" rather than "reduction of pollutants". Change both the provision and Fact Sheet on pages 20 and 21 to apply a correct application of MEP.

15. Provision C.3.a.i.(8) – Long -Term Maintenance

Infiltration BMPs are prone to failure through clogging and there is growing concern and evidence that LID measures are not being maintained to sustain design infiltration capacities. The "maintenance of measures for the life of a project" must be added to the fourth line after "implementation".

16. Provision C.3.b.i. – Long-Term Maintenance

See comment 15. Add in the fourth line after "install" add "and require "long-term maintenance of measures for the life of a project".

17. Provision C.3.b.i.(1)( c) and (d) – Directly Connected Impervious Surface

The provisions should be modified to clarify that the portion of the development that has impervious surface that is directly connected must be considered and any impervious area that is not directly connected should receive special consideration if it is converted to directly connected to a storm drainage facility.

18. Provision C.3.b.iii.(5) – Directly Connected Impervious Surface  
Add “and directly impervious surface area” to the end of this provision. This will allow a determination of how much change in impervious surface area contributing to runoff has occurred from pre project conditions.
19. Provision C.3.b.iii.(13) - Long-Term Maintenance  
Add after “maintenance” “for the life of the project”. It is important to emphasize that maintenance of the control measures is long-term and for the life of the project
20. Provision C.3.c.i.(1)(a) - Maximum Extent Practicable  
Change “minimization” to “Reduce to the maximum practicable” to be consistent with the use of MEP in storm water permits.
21. Provision C.3.c.i.(1)(d) and (e) – Landscape Efficiency  
Combine these to read “Implement the Model Water Efficient Landscape Ordinance (Division 2, Title 23, California Code of Regulations) and minimize the use of pesticides and fertilizers.” This will allow support of a state program.
22. Provision C.3.c.i.(2)(d)(i) – Onsite Drainage  
See Comment 12. This is really a meaningless requirement because it fails to specify a specific amount of runoff that must be drained to a pervious area.
23. Provision C.3.c.i.(2)(d)(ii) – Other Pertinent Factors  
Substitute “slope stability and impact on structures for “other pertinent factors”.
24. Provision C.3.c.i.(2)e) – Use of Permeable Surfaces  
It is important to recognize that the use of permeable pavements will have limited applications in the Bay Area when the objective is to achieve flow control to achieve treatment or flow control standards. The Bay Area’s Group D soils will require installation of under drains with large gravel storage areas to achieve even marginal flow control. Applications will be also limited to flat areas or areas with minimal (<5%) slopes with 10-100 foot setbacks from structures. Permeable pavements require frequent and intense maintenance using specialized high efficiency vacuum equipment to costing \$1 million to effectively maintain porosity. Failures or clogging of permeable pavements require complete reconstruction. Water Board staff must require the development of siting and design criteria applicable to the Bay Areas soils and maintenance standards before endorsing the widespread implementation.
25. Provision C.3.c.i.(3) – Preference for Storm Water Treatment Systems  
This is extremely misguided guidance and fails to consider the potential of projects for providing augmentation of or replacing our already scarce water supplies. Considering the State’s serious water supply shortages the first priority must be projects augmenting, replacing or replenishment of domestic water

supplies. It appears that RWQCB staff has not recognized the very important role that storm water runoff will have in meeting the State's and certainly the Bay Area's water supply needs. This provision must be rewritten to reflect a hierarchy recognizing the State's water supply needs and giving the very highest priority to projects that can augment or replace current and future water supply demands. The Water Board should not be promoting the use of BMPs that require irrigation unless reclaimed water is applied.

26. Provision C.3.c.i.(3)(a)- Storm Water Treatment Requirements

This provision needs to state precisely what is meant by "practical and safe" otherwise this a meaningless requirement. "Practical" should be changed to "meets design and siting criteria" and "safe" should be "compliance with water quality standards for protection of groundwater supplies".

27. Provision C.3.c.i.(3)(b) – Specification of Proprietary Products

The specification of tree wells in this order coupled with a vendor provided information on the Filterra system on the Water Board's web site raises significant questions on whether the Water Board's staff is promoting a proprietary product. It is extremely important to recognize that significant questions have been raised on the reported pollutant removal rates of the Filterra system considering the extremely high (100-inches/hour) infiltration rates. The technology has only been accepted in Washington only for short-term testing to verify performance claims before it can be approved for general use. Laboratory and very limited field data must not be the basis for promoting the use of tree wells. The status of other responsible agencies review of the system and lack of validation of vendor supplied performance claims hardly warrant the endorsement given in the tentative order notwithstanding the prohibition of Water Board specifying compliance measures in Section 13360 of the water Code.

28. Fact Sheet – Provision C.3.c.ii. , C.3.c.iii. and C.3.c.iv. , pages 22 and 23

The reference to the corresponding provisions are out of synch and make it impossible to review, analyze and submit substantive comments. The discussion in these sections indicate that the Water Board is now being called upon to require site design measures and specific treatment systems. This is a direct violation of Section 13360 of the Water Code. The discussion suggests that the required treatment systems address soluble pollutants; however, no data is presented to substantiate this or that the required systems address soluble pollutants or those soluble pollutants are pollutants of concern. The Water Board staff has demonstrated a most unusual bias against proprietary systems yet present no data or references to support their claims. The Water Board staff has during the period of implementing the storm water program recommended devices like catch basin inserts and then had to retract that endorsement once performance information was provided. Water Board staff has also used the water quality certification program to promote their favorite treatment system such as swales. This must be avoided so that responsibility for meeting requirements lies with the permittee and project applicant.

29. Provision C.3.c.i.(3)(c) – Design, Operation and Maintenance of Treatment Systems

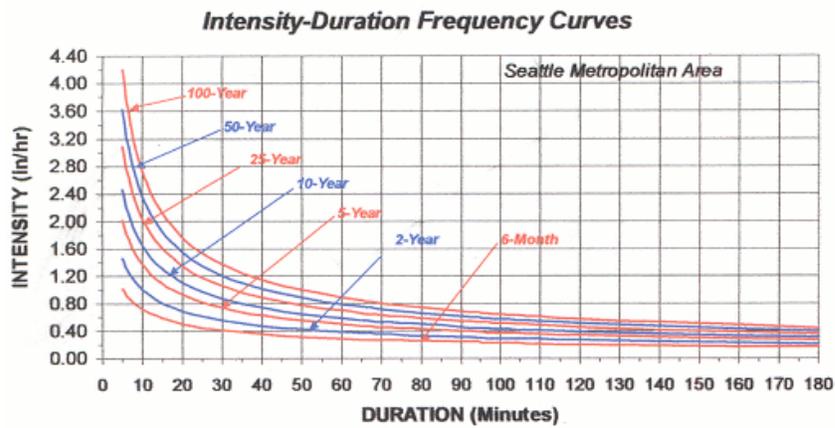
Systems must not only be constructed to meet the requirements of C.3.d, but they must also be designed, operated and maintained to meet the requirements of C.3.d. These elements must be added to the provision.

30. Provision C.3.d. (2)(c) – 0.2-inch/hour Flow Design Basis

Guidance is needed on the interpretation and application of the 0.2-inch per hour flow based criteria when sizing storm water treatment systems designed for small LID catchments where times of concentration are less than 5-minutes. It is not clear from the criteria if the intent is to design for storm events with an average storm intensity of 0.2-inch/hour or to design a system using a maximum uniform intensity of 0.2-inch/hour. The two are vastly different and produce BMPs that may be either slightly oversized or significantly undersized depending on which interpretation of the criteria is used.

The 0.2 inch/hour criteria used by the Water Board is also contained in the CASQA BMP Handbooks and was developed in the San Diego Region which has significantly different rainfall depths, storm durations and number of annual events, but similar short-duration intensities to the Bay Area. It is based on 51-years of hourly rainfall data collected at the San Diego Airport rain gauge. They found that 85% of the storm events have an intensity that is less or equal to 0.1 inch/hour. That 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 of greater intensity than 0.1 inch/hour.

Studies and data presented by NOAA indicate that these short-duration high intensity periods have rainfall intensities significantly greater than 50 and 100-year hourly intensities as indicated in the following graph developed for the City of Seattle.



The City of Seattle's experience with BMPs designed using the Western Washington Hydrology Model found that BMPs are overwhelmed and bypass or scour during an event with short-duration high intensity periods of rainfall (MGS Engineering Consultants, Inc. December 2003).

Catchments for the small LID BMPs have times of concentration ( $T_c$ ) less than 5 minutes. Rainfall intensities for 5-minute interval data can be readily obtained through software programs analyzing continuous rainfall records, NOAA and the Department of Water Resources. This type of data is readily available from a

number of continuous reporting rain gauges located throughout the Bay Area. Various software programs can easily develop the short-duration rainfall depths and intensities from existing rainfall records. A number of Bay Area communities and water agencies have continuous data to generate the 5-minute intensities. The NOAA site <http://hdsc.nws.noaa.gov/hdsc/pfds/> has information on multiple rain gauges in California where you can obtain these 5-minute intensities as well as links to EPA water quality and TMDL information. The importance of using the short-duration high intensities in the design of LID BMPs cannot be overstated. Water Board should contact Jim Goodridge former State Climatologist working as a retired annuitant for DWR to gain his professional opinion on this. He can be reached at 530-893-4036 or [jgoodridge@sbcglobal.net](mailto:jgoodridge@sbcglobal.net). Mr. Goodridge has provided all the data used to update Bulletin No. 195 for use in an analysis and refinement of the storm event criteria.

Unfortunately many storm water BMP designs are now using these flawed criteria because it results in small land requirements. These BMPs are under designed by at least a factor of 4 and possibly as high as 10 when high infiltration rates are applied and will frequently bypass or scour accumulated solids. Apparently the RWQCB staff used the 0.2 inch/hour criteria simply because it was being used elsewhere and has not done any analysis on whether it is applicable to the Bay Area's different and wide variation in rainfall event characteristics.

These issues were raised during the consideration of the Contra Costa County program's HMP because of concern in applying the criteria to design of flow through planters, but would apply to any system serving small (<5- acre catchments). The response to comments did not address the issue or indicate that the staff understands the importance at looking at short-duration high intensities that can occur even during small storm events.

31. Provision C.3.d. iv. – Limitations on Infiltration

A provision (3) must be added implementing the requirements of Safe Drinking Water Act UIC Program. This should include the following elements:

- Defining any storm water BMP that is deeper than wide as a Class V Injection wells.
- Prohibition of the use and installation of Class V Injection wells receiving motor vehicle waste.
- Prohibit installation of BMPs that meet the definition of Class V Injection Well in wellhead protection areas and areas with designated sole source aquifers.
- Requiring owners of BMPs that meet the definition of Class V Injection Well to register the well and file reports with USEPA-IX.

Attachment II-D provides information and EPA-IX contacts for further information on the SDWA UIC program.

32. Provision C.3.d.iv. (2) – Protection of Groundwater

This provision is inadequate to assure protection of groundwater quality and does not implement Section 4.25.4.5 – Shallow Drainage Well provisions of the Water Board's Basin Plan. Sections (a), (b) and (c) need to be completely rewritten to provide a proactive program for protecting groundwater resources.

The USEPA-IX Safe Drinking Water personnel, Santa Clara Valley Water District and the Alameda County Water District should be contacted for assistance in developing the program. Section (d) is inconsistent with the SDWA UIC regulations because use of injection wells from automotive facilities has been prohibited. In section (c) the distance must be increased to 500-feet for municipal water supply wells and can be set at 100-feet for private wells.

33. Provision C.3.e.i.(3) Footnote <sup>1</sup> – Maximizing Site Design Controls  
See comment 13. regarding diversion of roof downspouts. If diversion is feasible and doesn't create site stability then diversion should be acceptable. This provision should contain a minimum requirement of diverting at least 50% of the impervious area to a pervious area that is at least twice as large of the area being diverted in order to obtain an exemption.
34. Provision C.3.e.i.(3) Footnote <sup>1</sup> - Filterra Tree Wells  
See comment 28
35. Provision C.3.e.i.(3)(a) – Infiltration at Brownfield Sites  
The Water Board should not be encouraging infiltration on Brownfield sites unless geotechnical studies document that there is no potential for offsite migration of the contaminants that led to the designation of the site as a Brownfield. At best the design, construction, operation and long-term maintenance of infiltration BMPs on Brownfield sites will be a major costly challenge and infiltration BMps must be avoided and certainly not encouraged.
36. Provision C.3.e.i.(4) and Provision C.3.e.i.(3) Footnote <sup>3</sup> and Footnote <sup>4</sup>  
See comments 18 and 19. Since the Water Board is encouraging disconnection of impervious surfaces and diverting runoff to pervious surfaces then it should recognize that existing developments may have already maximized site design controls.
37. Provision C.3.f.i. – Certification of Storm Water Treatment Systems  
The certifications requirements should also apply to submittals under Provision C.3.g. Certification of the C.3.d. criteria and submittals under C.3.g.requires expertise in hydrologic analysis which is generally not taught to or an expertise architects and landscape architects. Water Board staff needs to determine whether the licensing requirements for these two professions requires demonstration of expertise in hydraulic and hydrologic analysis and if it doesn't then they should be excluded from third party reviews.
38. Provision C.3.f.ii. – Conflicts of Interest  
The Fact Sheet and provision only touch on the many conflicts that have developed form the implementation of the storm water program. Permittee's consultants that have developed storm water program requirements including recommended BMPs also serve as consultants to developers in designing projects to meet the permittee's requirements while others promote ongoing studies rather than solutions. Rather than attempting to define all the potential conflicts of interest it will be better to allow individual professional integrity to prevail and when serious conflicts arise then the Department of Consumers Affairs should address the conflicts.

39. Provision C.3.g.i. – Directly Connected Impervious Surface  
The Water Board in various storm water permits has made a point that directly connected impervious surface should be minimized. It has also encouraged that impervious surfaces be disconnected and runoff from impervious areas should be discharged to pervious surfaces. It is directly connected impervious surface that generates runoff which is the concern to be addressed in the HMP. The phrase “directly connected” should be added just prior to the three “impervious surface” phrases. To refine this further the relative impervious or coefficient of runoff should be considered for impervious surface when determining the differences between pre and post project runoff conditions.
40. Provision C.3.g.ii.(4) – Impervious BMPs  
Virtually all BMPs installed to meet the Hydromodification Management Standard will have standing water or highly saturated soils during storm events when flow controls such as orifices are included. Many of the treatment only BMPs like planter boxes, swales with flat grades or check dams and bioretention systems will have standing water during periods when short-duration rainfall intensities exceed 0.2-inch/ hour or infiltration rates fall below the design rates. This provision must be amended to indicate that all storm water treatment and flow control BMPs shall be considered impervious surfaces.
41. Provision C.3.g.iii.(2) – Regional HM Controls  
Requiring hydrologic source control measures at each of the multiple projects participating in a regional project doesn’t make sense if the regional project achieves the required controls in a more cost effective manner. This requirement only serves to make the regional project less attractive from a cost point of view, but also from a standpoint of increasing the time and cost of obtaining approval of the individual project. It is a disincentive for participation in a more cost effective and efficient regional project. The wording in the parenthesis must be removed.
42. Provision C.3.g.v.(2)(a) – Plans to Restore Creeks  
The note following the bulleted items imply that a project that has been constructed could be required to retrofit BMPs to comply with the HMP if a creek where restored. This would be a huge incentive to fight any creek restoration efforts. A simple plan to eventually do something must not be the basis for determining whether the HMP requirements are implemented. It must be a program and time schedule that would include financing commitments.
43. Provision C.3.h.i. - Operations and Maintenance Program  
This provision regarding operation and maintenance of storm water treatment systems must be significantly strengthened for infiltration BMPs if they are going to be sustainable over a projects life. The major factors that determine the sustainability of BMPs include: siting of the treatment systems, design criteria, construction, operation, maintenance and rehabilitation. Siting of BMPs and design using approved criteria are addressed by earlier sections of the Tentative Order. This provision needs to address the remaining four factors:
- Construction Element – Verification that BMP has been constructed as designed including as built drawings and field infiltration rate test.

- Operation – Verification that operation plan has been developed and is implemented.
- Maintenance - Verification that maintenance plan has been developed and is implemented.
- Rehabilitation – Determine whether system has failed and whether it has been rehabilitated or replaced.

A large number of storm water BMPs have been installed in the Bay Area over the past 17-years – Alameda Countywide Clean Water Program<sup>1</sup> (August 2005), Santa Clara Valley Urban Runoff Pollution Prevention Program<sup>2</sup> (April 2004) and Northern San Francisco Bay Area<sup>3</sup> (November 2005). These reports contain some valuable “lessons learned” and it is timely to inspect these systems during periods of rainfall to determine their functionality and levels of maintenance. The Water Board should seek funding to perform an independent evaluation of the systems that have been in place more than five years. The objectives of this study must be to determine if there are lessons to be learned that could increase the treatment systems sustainability, reduce the types of failures of observed at other sites and to determine compliance with the Tentative Order.

The performance of infiltration systems (swales, bioretention, infiltration basins, etc) degrade through normal operation as suspended and settleable solids in storm water runoff plug or clog the infiltration surface. WERF<sup>4</sup> in 2005 did an extensive study and field survey on the performance and whole life costs of BMPs. They found a wide variation in levels of maintenance of these systems and the systems tend to fail within a period of 2 to 7 years. WERF reported that even the best storm water agencies lack funding for BMP maintenance and that inadequate and deferred maintenance results in rehabilitation or reconstruction of the BMPs.

Livingston<sup>5</sup> (2002) reported that only 50% of the swales surveyed in Maryland were considered to be working. Studies on the performance and maintenance of swales found that over 75% of the 33 biofiltration swales surveyed in King County in 1995) to be in fair to poor condition having little or no vegetation or extensive channelization. Dr. Gary Minton in 1996 performed an extensive survey of swales in the Pacific Northwest and reported “These results raise concerns about bioswales as a viable treatment BMP”. Recent observations of swales in the Northwest and reports on the operation of swales have documented the poor condition of swales due to the destruction of vegetation requiring extensive and expensive reconstruction. An inspection of five Bay Area

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<sup>1</sup> Alameda Countywide Clean Water Program, August 2005, Protecting Water Quality in Development Projects, A Guidebook of Post-Construction BMP Examples

<sup>2</sup> Santa Clara Valley Urban Runoff Pollution Prevention Program, April 2004, Developments Protecting Water Quality, A Guidebook of Site Design Examples

<sup>3</sup> Protecting Water Quality in the Northern San Francisco Bay Area, A Guidebook of Post-Construction Stormwater Best Management Practices in Action, November 2005

<sup>4</sup>Water Environment Federation, Performance and Whole Life Costs of Best Management Practices and Sustainable Urban Drainage Systems, Final Report 2005

<sup>5</sup> Eric Livingston, August 1997, Operation, Maintenance & Management of Stormwater Management, Watershed Management Institute, Inc.

swales cited in BASMAA's Start at the Source found that 100% of these systems have failed due to poor design or construction and lack of maintenance. Mosquito abatement districts have reported that several of the swales have standing water and have created a habitat for breeding of mosquitoes.

A survey of LID BMPs in Portland found that many of the systems were not functioning as designed (personnel communication Gail Boyd 2006). The City of Portland<sup>6</sup>, September 2006, conducted a performance evaluation of a number of its storm water BMPs. This report provides an excellent model of what is needed to assess the long-term sustainability of storm water BMPs that have been installed in the Bay Area.

The first step in conducting this investigation is obtaining a complete inventory of all BMPs that have been installed since the inception of the storm water programs. BMPs that have been operating for more than 5-years must be targeted for investigation and assessment to determine effectiveness, levels of maintenance, identify system failures and systems requiring rehabilitation or replacement. An additional objective of this recommended program would be to design an inspection program for permittee implementation that would provide for early detection of potential failures of the BMPs.

#### 44. Provision C.3.h.i. - Operations and Maintenance Program

If the above recommended program is not pursued then the Program must include the following:

- C.3.b.i. must include both Construction and Rehabilitation elements in the Verification Program.
- C.3.b.ii.(1)(a) through (d) must also include responsibility for rehabilitation or replacement of the treatment facilities.
- C.3.b.ii.(4) must also include construction and rehabilitation of the treatment facilities.
- C.3.b.ii.(5) must require an inventory of **ALL** treatment facilities and HMP controls that have been installed since issuance of the initial NPDES permit.
- C.3.b.ii.(5)(g) – Compliance status needs to be defined and for infiltration systems it should be the presence of standing water 2-hours after a rainfall event.
- C.3.b.ii.(6)(a) must require preparation and certification of “as built plans” and conducting infiltration tests to verify compliance with the design infiltration rates.
- C.3.b.iii.(1) Compliance status bullet – Proper installation would have been verified through “as built plans” in the above comment. Infiltration testing could be used to partially verify the level of maintenance along with observations of the system.
- C.3.b.iii.(3) – It will be necessary to define compliance for each type of system installed. Systems that rely on Infiltration can use the presence of standing water at any time beyond two hours after a storm event as a basis for noncompliance.

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<sup>6</sup> Bureau of Environmental Services, City of Portland, 2006 Stormwater Management Facility Monitoring Report, Sustainable Stormwater Management Program, September 2006

45. Provision C.3.h.i. – Single Family Homes  
See Comment 13 regarding disconnecting downspouts. If this is required for all single family homes even when a HMP is not required then it will become a prime example of how far regulations have gone beyond reality and destroy whatever creditability the storm water program has developed.
46. Provision C.3.h.i. – Permeable Pavements  
Siting<sup>7</sup> (Attachment II-E) and design criteria<sup>8</sup> (Attachment II-F) for use of permeable pavements have restrictions that limit the use of permeable pavements including setbacks from structures, slopes >5% and infiltration rates of soils beneath the stone reservoir that are less than 0.5-inch/hour unless installed with underdrains. Most of the Bay Area soils are Group D with infiltration rates <0.05-inch/hour or less than 10% of the design criteria. Studies at North Carolina State University<sup>9</sup> <sup>10</sup> (Attachment II-G and H) and WERF<sup>11</sup> on the effectiveness of permeable pavements installations with underdrains is marginal in controlling flow volumes, but will affect the peak if the systems is designed to achieve storage. The Water board must do a more thorough analysis on the appropriate application and feasibility of permeable pavements in the Bay Area before mandating its use. Frequent maintenance using very high efficiency vacuum sweepers is extremely important to prevent clogging. The City of Olympia has reported that the vacuums needed to meet this high efficiency are not readily available in the United States and cost \$1 million.
47. Provision C.3.h.i. – Impervious Surface Data for Small Projects  
The data collection effort must include both impervious surface and that portion that is directly connected to a storm drainage system. This will allow an assessment of the feasibility of diverting impervious surfaces to pervious surfaces in small projects.
48. Provision C.4.b.ii.(1)(b) – Commercial Source Identification  
Recommend including flea markets, amusement parks and major sport complexes including Bay Area universities and that they be included specifically by name. Events at these facilities attract large crowds and have been identified as major sources of trash and litter.
49. Provision C.4.b.ji.(4)(b) – Inspections  
Recommend adding “presence of trash and litter” to things that are to be looked for and reported.
50. Provision C.4.b.ii.(5) – Inspection Frequency

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<sup>7</sup> EPA, Storm Water Technology Fact Sheet, Porous Pavement, September 1999, EPA 832-F-99-023

<sup>8</sup> Puget Sound Action Team and Washington State University, Low Impact Development, technical Guidance Manual for Puget Sound. January 2005

<sup>9</sup> Collins, Hunt and Hathaway, Evaluation of Various Types of Permeable Pavements with Respect to Water Quality Improvement and Flood Control, 2007

<sup>10</sup> Bean and Hunt, NC State University Permeable Pavement Research: Water Quality, Water Quantity and Clogging, November 2005

<sup>11</sup>Water Environment Research Foundation, Performance and Whole Life Costs of Best Management Practices and Sustainable Urban Drainage Systems, Final Report 2005

The Tentative Order must include definitions of high, medium and low potential. The facilities recommended in Comment 48 above must have a significantly higher inspection frequency that corresponds to major events, season of operation and days when the activity is operational. The permittees must be required to submit a schedule for these inspections subject to the approval of the Executive Officer.

51. Provision C.5.a.i.(1) – Response Authority

Recommend changing “effectuate” to “require” being more regulatory oriented. “Significant” should be eliminated and “all” added because permittees have demonstrated the tendency to significantly under report adverse conditions when given the opportunity.

52. Provision C.5.b.i.(2) – Timely Results

The first sentence is redundant and is not required because the second sentence establishes the cleanup and abatement time schedule.

53. Provision C.6.c.ii.(3) and Fact Sheet page 41 – Application of MEP to Construction Sites

The Fact Sheet incorrectly indicates that MEP performance standard applies to construction sites. Construction sites >5 acres are regulated as industrial activities and strict compliance with water quality standards is required as explained on page 10 of the Fact Sheet. Page 41 must be revised to reflect the CWA requirements.

54. Provision C.7.b.ii. – Trash and Pesticide Advertising Campaign

This past year Caltrans had an extensive campaign in the Bay Area to “Not Trash California”. Although trash and litter is a major issue in the Bay Area I seriously question whether additional campaigns are needed until there has been a thorough evaluation of the effectiveness of the Caltrans’ program. The money could be better spent implementing installation of treatment systems removing trash to demonstrate to the public that meaningful and effective measures are actually being implemented.

55. Provision C.7.g.ii. – Public Outreach Events

Vallejo and Fairfield should be required to have the same number of events as other cities of comparable size. The table as written would require small communities like Orinda, Moraga and Lafayette to have three events while much larger communities of Vallejo and Fairfield only two.

56. Provision C.7.h.i. – Behavior Changes

Delete reference to causing a behavior change since it is extremely difficult and expensive to determine.

57. Provision C.8. – Water Quality Monitoring

The format of this provision makes it extremely difficult to follow and should be reformatted so the introduction of the provision starts with the three basic elements of the program – San Francisco Estuary Monitoring, Urban Creeks and Receiving Water Monitoring, and Special Investigations. Each element should

list the subcomponent and the objectives to be achieved that are listed on page 48 of the Fact Sheet. For example:

- Urban Creeks and Receiving Water Monitoring
  - Compliance Monitoring
    - Assess compliance with numeric and narrative water quality objectives and standards *and discharge prohibitions*
    - Identify sources of pollutants
  - Status Monitoring
    - Assess chemical physical and biological impacts of urban runoff receiving waters
    - Assess progress toward reducing receiving water concentrations of impairing pollutants

The sections of the provision that follow should then describe each program element in detail. The current Provision C.8.a. should be placed toward the end and just prior to provision C.8h. Reporting rather than at the beginning of the provision.

#### 58. Provision C.8.a.i. – Regional Collaboration

The Water Quality Monitoring Program with very few exceptions must be conducted either by or under the auspicious of the San Francisco Estuary Institute. The Regional Monitoring Program can serve as a model for the proposed monitoring studies proposed by the Tentative Order and can serve as a framework for the design of the monitoring programs, data analysis and interpretation.

The Institute has demonstrated the scientific, technical and management expertise to provide high quality peer reviewed data and assessments of the impacts of pollutants on the bay's beneficial water uses. Equally important the Institute can easily include external experts on pollutant characterization, assessment and management in the development and review of monitoring programs. On the other hand the quality and integrity of some monitoring conducted by storm water dischargers has been questioned.

This provision should be rewritten to establish the Institute as the regional monitoring collaborative organization. Monitoring data submitted by the permittees should not be accepted unless the Institute has reviewed and approved the monitoring program and data collection and analysis meets the Institutes QA/QC standards.

This approach has the advantage that permittees could meet their monitoring obligations and reporting requirements by providing their fair share of the collaborative program.

#### 59. Provision C.8.c – Compliance With Water Quality Objectives and Discharge Prohibitions

The objective of determining compliance with water quality standards and *discharge prohibitions* cannot be achieved by annual rotating waterbodies. The permit should establish two waterbodies to be monitored in each county. The

waterbody and location must be based on size, land uses, level of development in the watershed and number of permittees in the watershed. Considering these criteria Pacheco Slough downstream of the confluence of Walnut Creek and Grayson Creek would be selected in Contra Costa County would be one of the watersheds required to be monitored. Sensitive watersheds such as those with domestic water supply terminal reservoirs with urban development on the watershed must be included as a special category for monitoring.

The selection of sites must also ensure that a determination can be made that the impacts are under a permittee's control as specified in Table G-1. A flood control district would be the responsible permittee if multiple permittees are discharging to the waterbody since they have the authority to control discharges to their facilities and would be the conveyor of the pollutants.

The frequency of sample collection in Table 8.1 must be based on the number of samples required to statistically determine compliance with a specific water quality standard or discharge prohibition. Permittees must not be allowed to select stations for determining compliance with discharge prohibitions i.e. trash because of the experience with the Santa Clara program's trash assessment reporting.

#### 60. Provision C.8.c. Table 1 – Trash Monitoring

The Bay Area's urban creeks are so heavily impacted by trash that it will be difficult to select a site that is only affected by programs with enhanced trash management controls. This provision to monitor trends in trash levels should be deferred until there have been >80% reductions in the mass of trash being discharged. Permittees should not be allowed to select a site unless the entire upstream catchment has the enhanced controls or full capture devices installed. None of the waterbodies listed in C.8c.ii meet that criteria and certainly not if 60% of the catchment is urban or suburban. The requirement to monitor trash using the proposed method may have to be delayed a number of years to obtain meaningful data. This monitoring requirement should be moved to Provision 8.e.ii. where it would be more appropriate objective.

End-of-pipe monitoring must be conducted to document trash reduction rather than the SCURTA or SWAMP RTA because those protocols will not document that dischargers are achieving specific targeted annual reductions in trash loading. The RTA protocols will be useful to determine acceptable levels of trash in the creeks, wetlands and the Bay's shoreline, but only after levels of trash have been reduce by 70-80%.

Attachment II-I describes monitoring protocols that have been demonstrated effective in quantifying trash in storm water discharges. The Caltrans guidance must be specified as the Method in Table 8.1 for monitoring trash.

#### 61. Provision C.8.d. – Trigger Required by Provision C.1.

Neither Provision C.8.c or C.8.d. explicitly state that results from implementing these provisions trigger the C.1 Water Quality Standards Exceedance requirements to identify and implement additional BMPs needed to meet water quality standards and discharge prohibitions. This must be added.

62. Provision C.8.d. Table 8.2. – Contra Costa County Monitoring Location  
Walnut Creek downstream of its confluence with Concord Creek or ideally downstream from the confluence with Grayson Creek in Pacheco Slough would be a far more representative watershed to be monitored in Contra Costa County in terms of land use and channel type. The Kirker Creek drainage is about 17 square miles while the Walnut Creek at Concord Creek is 112 square miles and at Pacheco slough greater than 135 square miles<sup>12</sup>. The fact that the most downstream location would be subject to tidal influence can be overcome by designing a program that samples during periods when runoff influences the water quality.
63. Provision C.8.d. Table 8.3. – Dissolved Metals  
Samples must not be analyzed for dissolved metals unless they are either filtered or analyzed within 6-hours of the time the sample is collected otherwise the data is unreliable and provides erroneous information. Partitioning of metals to particulates occurs within several hours of sample collection particularly when SSC concentrations are greater than 100-mg/l. The Water Board staff is encouraged to carefully read papers by Breault and Granato in the FHWA/USGS report “The National Highway Runoff Data and Methodology Synthesis” FHWA-EP-03-054 and recent Caltrans study on first flush characterization<sup>13</sup>.
64. Provision C.8.e.ii. – BMP Effectiveness  
This provision lacks detail on what is expected in terms of an effectiveness evaluation and does not spell out the protocols that would be followed during the evaluation process. This provision must include monitoring protocols that are equivalent to those used by the Washington Department of Ecology<sup>14</sup> (Attachment II-J).

The Contra Costa County program is required by Order No.R2-2006-0050 to monitor HMP related IMPs at five sites over a period of two years. The IMPs are to include at least one infiltration planter, a flow-through planter and a “dry” swale. Caltrans is reportedly constructing and will monitor a bioretention system in the Bay Area. Although these monitoring efforts will provide information on newly installed systems it is unfortunate that the monitoring will not be performed under more typical conditions where maintenance programs are less than optimal and after the infiltration BMPs have experienced normal clogging. This must be taken into consideration so that maintenance becomes a requirement of the effectiveness of a BMP.

Given that BMPs are already proposed for monitoring by permittees this provision could undertake an effectiveness evaluation of permeable pavements being promoted by the Water Board staff.

This provision must also require the research, development and evaluation of BMPs that will address the pollutants of concern and that will eventually be

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<sup>12</sup> Contra Costa County Inventory and Watershed Characterization Report

<sup>13</sup> Stenstrom and Kayhanian, First Flush Phenomenon Characterization, Caltrans CTSW-RT-05-73- 02.6, August 2005

<sup>14</sup> Guidance for Evaluating Emerging Stormwater Treatment Technologies, Technology Assessment Protocol-Ecology, Washington Department of Ecology, Pub No. 02-10-037, August 2007 Revision

required as Provision C.1 is implemented. This effort should begin so there is no delay once the compliance monitoring begins to produce evidence of noncompliance.

65. Provision C.8.e.iii. – Dry Weather Investigations

There are no pump stations listed in Contra Costa County and they should be listed if there are any. The reporting requirements for the initial screening effort should include drainage area, land uses, estimated pump station capacity if that information wasn't already available when the list was prepared. These factors should be considered in prioritizing the 10 worst stations for investigation. The report that prioritizes the 10 worst pump stations must include the distance to the nearest sanitary sewer where connection can be made by gravity or by pumping to identify those stations that will be candidates for early implementation.

66. Provision C.8.e.iv. (2)– Geomorphic Project

Water Board staff needs to carefully review the Center for Watershed Protection's study<sup>15</sup> and the USGS paper on urban land use change<sup>16</sup> on impacts of impervious cover before embarking on a study that only focuses on decentralized landscaped-based retention systems. The Water Board should encourage that a wide array of actions be investigated to protect, enhance or restore the health of creeks including: instream recharge, increasing shading, runoff detention and storm drain flow attenuation, regional projects that can be located where groundwater recharge is optimal, stream setbacks, removal of fish migration obstacles, installation of full capture devices to control the discharge of trash and gross pollutants, stream channel meandering or obstructions to slow erosive flows and removal of invasive vegetation. The chances of success appear to be minimal if the focus is only on decentralized landscaped-based retention systems and to require permittees to undertake a research project that will likely be extremely costly is questionable when there are so many other opportunities to improve the overall health of an impacted waterbody. This requirement must be amended or better yet undertaken and funded by the Water Board as a research demonstration project and conducted by a university.

67. Provision C.8.e.iv. (3)–Stream Channel Equilibrium

It is not clear that this information is required to implement the current Hydromodification Management Standards or is a research project that could lead to new regulatory requirements. If it is the latter then must be either deleted or undertaken and funded by the Water Board as a research project and conducted by a university.

68. Provision C.8.e.v. – Monitoring Reports

This provision is confusing and seems misplaced because it refers to Urban Creeks monitoring which is in Provision C.8.c. The overall organization of the Monitoring Provision is confusing and needs to be restructured so that there is a logical flow for each of the monitoring elements including a separate and distinct reporting requirement for each monitoring element.

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<sup>15</sup> Center for Watershed Protection, Impacts of Impervious Cover on Aquatic Systems, March 2003

<sup>16</sup> USGS, Rates, Trends, Causes and Consequences of Urban Land Use Change in the United States, Professional Paper 1726, 2006

69. Provision C.8.e.i. – Station Locations

The specific locations for monitoring must be designated for the Guadalupe River, Walnut Creek and San Mateo Creek. The Guadalupe River station should be at the site used by SFEI for its recent monitoring, Walnut Creek downstream of the confluence with Grayson Creek in Pacheco Slough and San Mateo Creek at Gateway Park.

70. Provision C.8.f.ii. – Category 3 Pollutants

A Category 3 list of pollutants must be added that addresses all other pollutants covered by the basin Plan including the CTR parameters. These must be sampled and analyzed at least once during the permit term and during the initial major runoff event. This information can then be used to determine monitoring needs in the next permit term.

71. Provision C.8.f.Table 8.5 - Dissolved Metals and Particle Size Distribution/Pollutant Relationships

See comment 63 regarding dissolved metals.

Enhanced storm water treatment systems required to achieve compliance with water quality standards will require designing the systems using treatment train unit processes and operations<sup>17</sup>. The characterization of pollutants across the range of particle sizes found in storm water runoff will be required. There is limited information available on particle size distribution/pollutant relationships<sup>18</sup> (Attachment II-K) and monitoring must include characterization of pollutants across particle sizes. The techniques and protocols for conducting this type of monitoring are challenging and will be costly to implement so the table should indicate that implementation will require development and validation of the techniques before full implementation. Water Board staff should consult with Drs. Sansalone, Stenstrom and Kayhanian to obtain the latest perspective of the status and feasibility on performing this type of characterization of pollutants.

72. Provision C.8.f.- Sediment Delivery

Other studies (ref 15 section 4.4.3) have investigated the sources and source areas of sediments in urban areas. The value of undertaking this study at this time is questionable and should be deferred at least until results are available from the Pollutants of Concern Monitoring. This will allow time for Water Board staff to consult with experts at USGS including Art Horowitz that have extensive experience in performing this type of monitoring. They need to be consulted to determine a general scope, realistic cost and benefits of such a study before requiring permittees to begin design of the study.

73. Provision C.8.h.ii.(5) – Implementation of Provision C.1.

The report required by Provision C.1. must be a stand alone requirement under Provision C.8.h.ii.(5). The report should require all the elements in Provision C.1.a. including:

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<sup>17</sup> John J. Sansalone, Perspective on the Synthesis of Unit Operations and Process (UOP- Concepts and Hydrologic Controls for Rainfall-Runoff, Journal of Environmental Engineering, July 2005

<sup>18</sup> Roger B. James, Compilation of Investigations , Particle Size of Solids and Associated Pollutants, Storm Water Runoff and Street Dirt, March 2005

- Description of BMPs currently being implemented and the current level of implementation.
- Additional BMPs implemented and/or an increased level of implementation.
- Evaluation that the additional BMPs will achieve compliance with the water quality standards
- Schedule for implementation of the BMPs

The reporting requirements must also include an initial written notification of the exceedances within 30-days that the exceedance was detected in addition to the reports required in the Annual Report. Sixty, 90 and 120-day reports leading up to the annual report must also be required reporting on the status and schedule for identification of additional or enhanced BMPs. The exceedance of a water quality standard or discharge prohibition must also trigger an accelerated monitoring program to confirm the magnitude and level of the exceedance.

74. Provision C.8.h.iv. – Report Content

Bullets must be added that requires reporting:

- Sampling, sampling management or analytical procedures that would limit the quality of the data
- Sample management procedures including methods used for subsampling

75. Provision C.9.b.iii.(1) – Water Quality Threatening Pesticides

Almost every pesticide if misapplied is a threat to water quality therefore delete “that threaten water quality”

76. Provision C.10. - Trash Reduction

See Policy comments

77. Fact Sheet Page 55 – Sediment Bound Pollutant Strategy

The Fact Sheet describes the benefits from implementing a strategy addressing multiple sediment-bound pollutants that would address a host of pollutants of concern. It is extremely important to recognize that some technologies that control trash would also address sediments and the associated pollutants.

The performance and effectiveness of these systems to treat sediment bound pollutants is dependent on the size of the particulates on which the pollutants are adsorbed. Research to develop this relationship has only been undertaken within the past few years by researchers such as Dr. John Sansalone. A literature search (Attachment II –I) conducted three years ago identified studies where the relationships were developed. Subsequent to that search additional studies have been conducted and need to be evaluated.

The Water Board must:

- Encourage permittees to undertake a comprehensive compliance strategy to control all pollutants of concern and avoid a pollutant by pollutant approach for compliance with water quality standards and discharge prohibitions
- Develop a compliance program that ensures permittees pursue the comprehensive strategy

The Fact Sheet strategy must be revised to encourage permittees to implement an overall approach for controlling all pollutants of concern rather than a pollutant- by- pollutant approach.

The Water Board must also consider the regulatory approach (Attachment II-C) being implemented in the State of Wisconsin where control of sediments is mandated in developed urban areas. Implementation of this approach should include consideration of establishing SSC limits at this time or a statement of intent to establish the limits in the next permit.

78. Provision C.11.d.- Enhanced Municipal Sediment Removal  
Comments on the C.2 provision indicate that only marginal if any benefits result from enhancing municipal maintenance practices. Pump station cleaning or diversions and street flushing are the only additional control measures that require evaluation. The practice of street flushing will raise questions about the waste and unreasonable use of water and will require a significant public education program to overcome citizen concerns. The Water Board staff should consult with water conservation staff at water supply agencies to determine how they would view this type of use of water and whether it could impact their water conservation efforts.
79. Provision C.11.e.i.- On-Site Storm Water Treatment  
Onsite treatment in retrofit situations will likely occur in urban areas with significant space constraints and huge land values. The specification of detention basins, bioretention units, infiltration basins and treatment wetlands all but guarantee that the pilot project will be found infeasible because of the large footprint required by these systems. The specific listing of these systems must be deleted allowing permittees to look at a broad array of control measures.
80. Provision C.11.f.i.- Pump Station Selection  
The wording suggests that only pump stations within the county service areas are to be selected rather than throughout the county. The phrase “distributed throughout the Permittees’ county areas and” must be deleted. There is going to be reluctance on the part of wastewater agencies to accept storm water runoff from another agency. Agencies such as Palo Alto, San Jose, Sunnyvale, Vallejo and Fairfield should be targeted for early assessment of the acceptance of storm water runoff into their sanitary sewer systems.
81. Provision C.11.i.- Responsibility to Manage Public Health Risks  
The responsibility to manage public health risks lies with the county health departments and the State Department of Health Services and not that of the permittees. The permittees should be required to coordinate with and furnish information to these agencies, but not required to assume their authority or responsibility.
82. Provision C.12.c. – PCB Hotspots  
The program as outlined is the responsibility of the Water Board and DTSC to develop, fund and implement. While the permittees may be the incidental conveyors of PCBs the real authority and responsibility to achieve cleanup of legacy sites rests with the Water Board and DTSC. The PCB abatement program during the term of this permit should focus on Water Board or DTSC achieving

cleanup of known “hot spots”. Permittees should not be required to conduct soil/sediment sampling to identify additional “hot spots” at this time until the Water Board or DTSC demonstrates the ability to effectively cleanup known “hot spots”.

83. Provision C.12.d. – Enhanced Municipal Sediment Removal

See Comments 4 and 6 regarding effectiveness of street seeping programs and catch basin/inlet cleaning. In view of the documented very limited effectiveness of these programs it hardly makes sense to only marginally improve their effectiveness. A pilot project to look at street washing must consider the potential waste of municipal water supplies and consider the public’s perception and response to washing of streets. The Water Board staff must consult with water conservation staff at EBMUD to determine how such practices would affect their water conservation efforts before this proceeding with this task.

84. Provision C.12.e. – PCB Retrofit Pilot Projects

It does not make sense to sequester PCBs in these types of systems where it could be subsequently released to the environment or wildlife may become exposed to PCBs. The objective and emphasis of the PCB abatement program must be identification and cleanup of “hot spots” and disposal of the PCBs in accordance with environmental regulations. Systems to treat runoff of PCBs should be designed to capture and retain the PCBs before cleanout and safe disposal rather than on systems as proposed that would allow ongoing exposure to wildlife.

85. Provision C.12.f. – Diversions to POTWs

This requirement is also contained in provision C.8.e.iii and provision C.11.f. See comments 69 and 80. To avoid confusion these three should be combined into one requirement.

86. Provision C.12.g. and C12.h. – PCB Monitoring and Studies

It is highly speculative that a creek runoff monitoring program proposed in provision C.8.f. will be able to quantify load reductions because of the wide variation in runoff rates. A program that would accurately detect load reductions would require flow measurement techniques and an extremely expensive and robust sampling program. The Water Board staff must limit the quantification during this permit term to cleanup of “hot spots”, treatment and other management measures until a runoff control plan is fully developed. See comment 58. These tasks should only be undertaken by or conducted under the auspicious of the SFEI and not by permittees.

87. Provision C.12.i. Management of Health Risks

See comment 81

88. Provision C.13.b.ii. and C.15.b.v.(1)(c) – Pool, Hot Tubs, Spas and Fountain Discharges

The direct discharge to storm drain systems from these sources should be prohibited, but should not mandate connection to a sanitary sewer. The provision should allow discharge and irrigation of landscaping particularly for the smaller volume discharges.

89. Glossary – Impervious Surface

See comment 40. Virtually all infiltration BMPs installed to meet the Hydromodification Management Standard and the treatment requirements will have standing water during a storm event. They all should be considered as impervious surfaces.

February 28, 2008





