

### E.13.d.2. Special Studies

- (i) **Task Description** – Within the first year of the effective date of the permit, the Permittee, as an alternative to Section E.13.d.1. Receiving Water Monitoring, may develop and implement a special study monitoring program to assess and evaluate the effectiveness of water quality projects or storm water program elements designed to reduce specific water quality pollutants that are causing or contributing to beneficial use impairment. The special studies must demonstrate the nexus between storm water program implementation, water quality protection and pollutant reduction effectiveness and may include, but are not limited to:
- (a) Assessment of effectiveness of habitat enhancement efforts and assessment of effectiveness of stream restoration projects (i.e., stream channel restoration as related to implementation of hydromodification standards);
  - (b) Assessment of effectiveness of low impact development pilot projects, and assessment of storm water program components through pollutant load reduction quantification and/or discharge water quality monitoring (i.e., reduction of impervious surface related to implementation of Post-Construction Storm Water Management Program).
- (ii) **Implementation Level** – By the first year of the permit, the Permittee shall develop and implement a special study plan and shall submit to an applicable Regional Board for review and approval. Within the second year of the effective date of the permit, the Permittee shall begin implementation of the approved special study plan. The study plan shall include, at a minimum:
- (a) Purpose/objective of the monitoring (sampling rationale), including reasoning to implement a special study in lieu of the Receiving Water Monitoring described in Section E.13.d.1.
  - (b) Brief project background information and overall study design (i.e., surrounding land uses, reference monitoring data, if applicable, and site conditions)
  - (c) Parameters that are being measured, how parameters are measured and rationale for parameter selection.
  - (d) Frequency that parameters are being measured (sampling frequency)
  - (e) Sampling site location
  - (f) Description of how the data will be managed, analyzed (including statistical analysis) and reported
  - (g) Expected results based on study plan design and hypothesis
- (iii) **Reporting** – By the second year Annual Report, the Permittee shall complete and have available a report (50 page maximum) that includes a summary of baseline data collections and discussion of monitoring program results.

By the fifth year Annual Report, the Permittee shall complete and have available a report (50 page maximum) that includes a comparison of data collection to baseline data, and discussion of monitoring program results.

At a minimum, the second and fifth year Annual Reports shall include the following information:

- (a) The purpose of the monitoring, contextual background and a description of the study design and rationale.
- (b) Sampling site(s) locations, including latitude and longitude coordinates, water body name and water body segment if applicable. Sampling design, including sampling protocol, time of year, sampling frequency and length of sampling.
- (c) Methods used for sample collection: list methods used for sample collection, sample or data collection identification, collection date, and media if applicable.
- (d) Results of data collection, including concentration detected, measurement units, and detection limits if applicable.
- (e) Quantifiable assessment analysis and interpretation of data for each monitoring parameter or other data type.
- (f) Comparison to reference sites (if applicable), guidelines or targets
- (g) Discussion of whether data collected addresses the objective(s) or question(s) in the study plan
- (h) **Quantifiable discussion of program/study pollutant reduction effectiveness.**

Where applicable, the Permittee shall prepare, maintain, and implement a QAPP in accordance with SWAMP. All monitoring samples shall be collected and analyzed according to the Program QAPP developed for the purpose of compliance with this Order. SWAMP Quality Assurance Program Plan (2008) is available at:

[http://www.waterboards.ca.gov/water\\_issues/programs/swamp/docs/qapp/qappr082209.pdf](http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/qapp/qappr082209.pdf)

A formatted Microsoft Word document that includes guidelines and boilerplate language for developing the permit QAPP is available at:

[http://www.waterboards.ca.gov/water\\_issues/programs/swamp/tools.shtml#qa](http://www.waterboards.ca.gov/water_issues/programs/swamp/tools.shtml#qa)

Water quality data shall be uploaded to the Storm Water Multi-Application Reporting and Tracking System (SMARTS) and must conform to "CEDEN Minimum Data Templates" format. CEDEN Minimum Data Templates are also available at:

<http://ceden.org/>

## E.14. PROGRAM EFFECTIVENESS ASSESSMENT AND IMPROVEMENT

### E.14.a. Program Effectiveness Assessment and improvement Plan

- (i) **Task Description** - The Permittee shall develop and implement a Program Effectiveness Assessment and Improvement Plan that tracks annual and long-term effectiveness of the storm water program. The Program Effectiveness Assessment and Improvement Plan will assist the Permittee to document compliance with permit conditions and to adaptively manage its storm water program and make necessary modifications to the program to improve program effectiveness at reducing pollutants of concern, achieving the MEP standard, and protecting water quality. The Program Effectiveness Assessment and Improvement Plan shall identify the strategy used to gauge the effectiveness of prioritized BMPs and program implementation as a whole. Prioritized BMPs include BMPs implemented based on pollutants of concern. Where pollutants of concern are unidentified, prioritized BMPs are based on common urban pollutants (i.e., sediment, bacteria, trash, nutrients). The annual effectiveness assessments will help identify potential modifications to the program to ensure long-term effectiveness.
- (ii) **Implementation Level** - The Program Effectiveness Assessment and Improvement Plan may be modeled upon the most recent version (if applicable) Municipal Storm Water Program Effectiveness Assessment Guidance (CASQA, May 2007) or equivalent.
- (a) The Program Effectiveness Assessment and Improvement Plan shall include the following elements, at a minimum as applicable:
- 1) Identification of overall program goals including pollutants of concern and prioritized BMPs
  - 2) Documentation of the level of implementation of storm water program elements
  - 3) Identification and targeting of target audience(s)
  - 4) Assessment of BMP performance at achieving outcome levels
  - 5) Assessment of pollutant source reductions achieved by individual BMPs
  - 6) Quantification of pollutant loads and pollutant load reductions achieved by the program as a whole
  - 7) MS4 discharge quality, where available, including analysis of the data
  - 8) Receiving water quality data, including analysis of the data
  - 9) Identification of long-term effectiveness assessment, to be implemented beyond the permit term
- (b) The Program Effectiveness Assessment and Improvement Plan shall assess BMP and program effectiveness in terms of the following Outcome Levels:
- 1) Storm water program activities
  - 2) Awareness
  - 3) Behavior
  - 4) Pollutant load reductions
  - 5) MS4 discharge quality (where assessment is supported by MS4 discharge quality data)

- 6) Receiving water conditions
- (c) The Program Effectiveness Assessment and Improvement Plan shall identify assessment methods for privately owned BMPs.
- (d) The Program Effectiveness Assessment and Improvement Plan shall identify assessment methods the Permittee will use to quantitatively assess BMP performance at reducing pollutant loads wherever feasible, using the following or equivalent methods:
  - 1) Direct quantitative measurement of pollutant load removal for BMPs that lend themselves to such measurement (e.g., measuring sediment collected through street-sweeping activities);
  - 2) Science-based estimates of pollutant load removal for BMPs where direct measurement of pollutant removal is overly challenging (e.g., removal of heavy metals through a bioswale);
  - 3) Direct quantitative measurement of behaviors that serve as proxies of pollutant removal or reduction (e.g., the percentage of construction sites demonstrated by inspection to be in compliance with permit conditions);  
or
  - 4) Visual comparison (e.g., using photographs to compare the amount of trash in a creek between one year and the next).
- (e) The Program Effectiveness Assessment and Improvement Plan shall ask and answer the following Management Questions for prioritized BMPs for which answers to management questions can be based on quantitative data appropriate to the question being answered.
  - 1) Were prioritized BMPs or group of BMPs implemented in accordance with the permit requirements? The Permittee shall develop quantitative data using the following or equivalent methods:
    - a) Confirmation – Documenting whether an activity or task has been completed, expressed as positive or negative outcome (i.e., yes or no)
    - b) Tabulation – Simple accounting expressed in absolute (e.g., number of people participating), or relative terms (e.g. percent increase in recycled household hazardous waste)
  - 2) To what extent did prioritized BMPs or group of BMPs change the target audience's behavior? The Permittee shall develop quantitative data using the following or equivalent methods:
    - a) Surveys or interviews to discern knowledge, attitudes, awareness, behavior of specific population, etc.
    - b) Interviews of site personnel to discern awareness and behavior
    - c) Inspections or site visits to directly observe or assess a practice.
  - 3) To what extent did prioritized BMPs or group of BMPs reduce pollutant loads from their sources to the storm drain system?
- (f) The Program Effectiveness Assessment and Improvement Plan shall include water quality monitoring data, where available, to answer the following long-term management questions, effectiveness of BMPs and the overall storm water program will be assessed in future permit terms.

- 1) To what extent did implementation of the BMP, group of BMPs, or storm water program enhance or change the urban runoff and discharge quality?
- 2) To what extent did implementation of the BMP, group of BMPs, or storm water program enhance or change receiving water quality?
- 3) Did exceedance(s) of water quality objectives or water quality standards persist notwithstanding implementation of the storm water program?

The Program Effectiveness Assessment and Improvement Plan shall include documentation of the effectiveness of BMPs implemented to reduce the discharge of pollutants to the MS4 to the MEP and protect water quality.

- (iii) **Reporting** – By the second year Annual Report complete and submit the Program Effectiveness Assessment and Improvement Plan. The Plan shall include the strategy the Permittee will use to assess the effectiveness of the program, the specific measures the Permittee will use to assess the effectiveness of BMPs and/or groups of BMPs, and how the Permittee will use the information obtained through effectiveness assessment to modify individual BMPs and the program as a whole to increase short and long-term effectiveness. In subsequent Annual Reports, describe implementation of the Program Effectiveness Assessment and Improvement Plan, summarize data obtained through effectiveness assessment measures and the short and long-term progress of the storm water program, and provide an analysis of the data to improve program effectiveness, to achieve the MEP standard, protect water quality, and to document the Permittee's compliance with permit conditions. Permittees that have a Program Effectiveness Assessment and Improvement Plans, or equivalent, approved by the applicable Regional Board, or that have a schedule approved by the applicable Regional Board to develop and implement such a Plan, shall adhere to the Plan and/or schedule approved by the Regional Board unless otherwise directed by the Regional Board. By the fifth year annual report, complete and submit an analysis of the effectiveness of modifications made at improving BMP and/or program effectiveness.

#### **E.14.b. Storm Water Program Modifications**

- (i) **Task Description** –The Permittee shall modify BMPs and/or the program as a whole to improve compliance with permit conditions and improve program effectiveness at reducing pollutant loads, achieving the MEP standard, and protecting water quality. The Permittee shall use information gained through effectiveness assessment and MS4 discharge and receiving water monitoring to identify priority areas for program improvement. In addition, the Permittee shall identify and make modifications to BMPs, including new BMPs or modification to existing BMPs, to improve effectiveness in each priority area. The Permittee shall consult with the applicable Regional Water Board in setting expectations for the scope, timing, and frequency of BMP modifications.
- (ii) **Implementation Level** – Within the fifth year of the effective date of the permit, the Permittee shall identify and summarize BMP and/or program modifications identified in priority program areas. Modifications shall include:
- (a) Improving upon BMPs that are underperforming

- (b) Continuing and expanding upon BMPs that proved to be effective, including identifying new BMPs or modifications to existing BMPs designed to increase pollutant load reductions;
  - (c) Discontinuing BMPs that may no longer be productive and replacing with more effective BMPs; and
  - (d) Shifting priorities to make more effective use of resources
- (iii) **Reporting** – By the fifth year Annual Report, complete and submit the list of BMP and/or program modifications, as specified in E.14.c(ii), the Permittee will make for priority program areas, including identification of priority program areas and the schedule the Permittee will follow to complete identified modifications during the next permit term. The modifications shall be aimed at the goal of reducing pollutant loads, achieving the MEP standard and protecting water quality.

## **E.15. TOTAL MAXIMUM DAILY LOADS COMPLIANCE REQUIREMENTS**

- E.15.a.** The Permittee shall comply with all applicable TMDLs approved pursuant to 40 Code of Federal Regulations section 130.7 that assign a Waste Load Allocation to the Permittee and that have been identified in Attachment G.
- E.15.b.** WLA, Load Allocations (LA), effluent limitations, implementation requirements, and monitoring requirements are specified in the adopted and approved Regional Water Board Basin Plans and authorizing resolutions which are incorporated herein by reference as enforceable parts of this Order. Applicable Basin Plan amendments and resolutions are identified in Attachment G. Attachment G additionally contains a list of TMDL-specific permit requirements developed by the Regional Water Boards for compliance with the implementation requirements of the relevant TMDLs. These requirements are an enforceable component of this Order. In some cases, dates are given that fall outside the term of this Order. Compliance dates that have already passed are enforceable on the effective date of this Order. Compliance dates that exceed the term of this Order are included for reference, and become enforceable in the event that this Order is administratively extended.
- E.15.c.** The Regional Water Boards are directed to review, within one year of the effective date of this Order, the TMDL-specific permit requirements contained in Attachment G and to develop or propose revisions, as appropriate, to TMDL-specific permit requirements to the State Water Board after consultation with the Permittees and State Water Board staff. Any proposed revisions by the Regional Water Boards shall be supported by an explanation of how the proposed TMDL-specific permit requirements are consistent with the assumptions and requirements of applicable WLAs and with the goals of the TMDL. Where a TMDL is limited to a single constituent within a single reach of the watershed, the Regional Water Board Executive Officer may require additional monitoring, per Water Code § 13383. The State Water Board will incorporate any necessary revisions through a reopener. The State Water Board may additionally revise this Order through a reopener to incorporate any modifications or revisions to the TMDLs in Attachment G, or to incorporate any new TMDLs adopted during the term of this Order that assign a WLA to a Regulated Small MS4 or that identify a Regulated Small MS4 as a responsible

## F.5.h. PROGRAM EFFECTIVENESS ASSESSMENT AND IMPROVEMENT

### F.5.h.1. Program Effectiveness Assessment and Improvement Plan

- (i) **Task Description** - The Permittee shall develop and implement a Program Effectiveness Assessment and Improvement Plan that tracks short and long-term progress of the storm water program. The Program Effectiveness Assessment and Improvement Plan will assist the Permittee to adaptively manage its storm water program and make necessary modifications to the program to improve program effectiveness, reduce pollutants of concern, achieve the MEP standard, and protect water quality, and to document the Permittee's compliance with permit conditions. The Program Effectiveness Assessment and Improvement Plan shall identify the strategy used to gauge the effectiveness of prioritized BMPs and program implementation as a whole. Prioritized BMPs include BMPs implemented based on pollutants of concern. Where pollutants of concern are unidentified, prioritized BMPs are based on common pollutants of concern (i.e., sediment, bacteria, trash, nutrients). The effectiveness assessments will build upon each other from one year to the next and shall identify modifications to the program the Permittee must undertake to improve effectiveness.
- (ii) **Implementation Level** - The Program Effectiveness Assessment and Improvement Plan may be modeled upon the most recent version (if applicable) Municipal Storm Water Program Effectiveness Assessment Guidance (CASQA, May 2007) or equivalent.
  - (a) The Program Effectiveness Assessment and Improvement Plan shall include the following minimum elements:
    - (1) Implementation of storm water program elements
    - (2) Identification and targeting of Target Audience(s)
- (iii) **Reporting** - By the second year Annual Report complete and submit the Program Effectiveness Assessment and Improvement Plan. At a minimum, the Plan shall include implementation of storm water program elements and identification of the Targeted Audience(s).

### F.5.h.2 Storm Water Program Modifications

- (i) **Task Description** – Within the fifth year of the effective date of the permit, based on the information gained from the effectiveness assessment, the Permittee shall identify modifications to control measures/significant activities, including new BMPs or modification to existing BMPs. The Permittee shall consult with the Regional Water Board in setting expectations for the scope, timing, and frequency of BMP modifications for the next permit cycle.
- (ii) **Implementation Level** – The Permittee shall identify program modifications to include:
  - (a) Improving upon BMPs that did not accomplish goals;
  - (b) Continuing and expanding upon BMPs that proved to be effective, including identifying new BMPs or modifications to existing BMPs designed to increase pollutant load reductions;

- (c) Discontinuing BMPs that may no longer be productive and replacing with more effective BMPs; and
  - (d) Shifting priorities to make more effective use of resources
- (iii) **Reporting** – By the fifth year Annual Report complete and have available a list of maintenance activities of highest priority BMPs. **By the fifth year Annual Report, complete and have available a summary of proposed modifications to the storm water program to improve program effectiveness, to achieve the MEP standard, and to protect water quality.**

#### **F.5.i. TOTAL MAXIMUM DAILY LOADS COMPLIANCE REQUIREMENTS**

**F.5.i.1.** The Permittee shall comply with all applicable TMDLs approved pursuant to 40 Code of Federal Regulations § 130.7 that assign a Waste Load Allocation to the Permittee and that have been identified in Attachment G.

**F.5.i.2.** Waste Load Allocations (WLA), Load Allocations (LA), effluent limitations, implementation requirements, and monitoring requirements are specified in the adopted and approved Regional Water Board Basin Plans and authorizing resolutions which are incorporated herein by reference as enforceable parts of this Order. Applicable Basin Plan amendments and resolutions are identified in Attachment G. With the exception of the TMDLs for the Los Angeles Regional Water Board, Attachment G additionally contains a list of TMDL-specific permit requirements developed by the Regional Boards for compliance with the implementation requirements of the relevant TMDLs. These requirements are an enforceable component of this Order. In some cases, dates are given that fall outside the term of this Order. Compliance dates that have already passed are enforceable on the effective date of this Order. Compliance dates that exceed the term of this Order are included for reference, and become enforceable in the event that this Order is administratively extended.

**F.5.i.3.** The Regional Water Boards are directed to review, within one year of the effective date of this Order, the TMDL-specific permit requirements contained in Attachment G and to propose to the State Water Board any appropriate revisions after consultation with the Permittees and State Water Board staff. The Los Angeles Regional Water Board will develop TMDL-specific permit requirements within one year of the effective date of this Order in consultation with the Permittees and State Water Board staff. Any proposed revisions by the Regional Water Boards shall be supported by a statement of reasons explaining how the proposed TMDL-specific permit requirements are consistent with the assumptions and requirements of applicable WLAs and with the goals of the TMDL. The State Water Board will incorporate into this Order any necessary revisions, including the statements of reasons through a reopener. The State Water Board may additionally revise this Order through a reopener to incorporate any modifications or revisions to the TMDLs in Attachment G, or to incorporate any new TMDLs adopted during the term of this General Permit that assign a WLA to the Permittee or that identify the Permittee as a responsible party. Where a TMDL is limited to a single constituent within a single reach of the watershed, the Regional Water Board Executive Officer may require additional monitoring, per Water Code § 13383. In revising Attachment G, the State Water Board will allow adequate notice and public review.