Preliminary Water Quality Management Plan (PWQMP)

For compliance with the California Water Quality Control Board, Santa Ana Region

Order Number R8-2010-0036 (NPDES Permit No. CAS618036)

for

Project Name: _____

Project Description: _____

Applicant Name: _____

Applicant Address: _____

Project Address: _____

Size of Development: _____

Submittal Date: _____

Preliminary Water Quality Management Plan (PWQMP)

1. Introduction

The Preliminary WQMP is a planning tool to improve integration of required water quality elements, stormwater management, water conservation, rainwater harvesting and re-use, and flood management in land use planning and the City's development process. The Preliminary WQMP will assist project applicants and planners in properly designing and laying out project sites so that water quality may be incorporated in the most effective manner and at the lowest cost for the developer.

The San Bernardino County Municipal Separate Storm Sewer System Permit (MS4 permit) requires project-specific Water Quality Management Plans (WQMP) to be prepared for all priority new development and significant redevelopment projects listed in Section 2 of this document. The MS4 Permit stipulates that the City of Ontario require priority project applicants to submit a Preliminary project-specific WQMP, as early as possible, during the environmental review or planning phase of a development project and that the Preliminary WQMP be approved prior to the issuance of land use entitlement.

2. Priority Projects (requiring a Preliminary WQMP)

Land use entitlement shall not be issued for any of the listed projects, below, until a Preliminary WQMP has been approved by the City's Engineering Department. For construction projects not going through entitlement, a Preliminary and Final project-specific WQMP shall be approved, prior to issuance of construction permits:

Check the appropriate project category below, for this project:

Check below	**Project Categories**
	1. All significant re-development projects. Significant re-development is defined as the addition or replacement of 5,000 or more square feet of impervious surface on an already developed site subject to discretionary approval of the agency. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety. Where redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing developed site, and the existing development was not subject to WQMP requirements, the numeric sizing criteria discussed below applies only to the addition or replacement, and not to the entire developed site. Where redevelopment results in an increase of fifty percent or more of the impervious surfaces of a previously existing developed site, the numeric sizing criteria applies to the entire development (new and existing).

Check below	**Project Categories**
	2. New development projects that create 10,000 square feet or more of impervious surface (collectively over the entire project site) including commercial, industrial, residential housing subdivisions (i.e., detached single family home subdivisions, multi-family attached subdivisions or townhomes, condominiums, apartments, etc.),mixed-use, and public projects. This category includes development projects on public and private land, which fall under the planning and building authority of the permittee agency.
	3. Automotive repair shops (with SIC codes 5013, 5014, 5541, 7532-7534, 7536-7539).
	4. Restaurants and food service establishments where the land area of development is 5,000 square feet or more.
	5. Developments of 2,500 square feet of impervious surface or more adjacent to (within 200 feet) or discharging directly into environmentally sensitive areas such as areas designated in the Ocean Plan as areas of special biological significance or waterbodies listed on the CWA Section 303(d) list of impaired waters.
	6. Parking lots of 5,000 square feet or more exposed to storm water. Parking lot is defined as land area or facility for the temporary storage of motor vehicles.
	7. Retail Gasoline Outlets that are either 5,000 sq ft or more, or have a projected average daily traffic of 100 or more vehicles per day.
	8. *This project is not covered under any of the categories listed above.

*If the development is not covered under any of the project categories listed in Section 2, the project is not required to design and install Site Design/LID BMPs or Treatment Control BMPs to treat the design storm event (Design Capture Volume) described in Section 4.

3. Preliminary WQMP Objectives

Through a combination of Site Design/LID BMPs (where feasible), Source Control, and/or Treatment Control BMPs, including regional treatment systems, project-specific WQMPs shall address all identified pollutants and hydrologic conditions of concern from new development and significant re-development projects for the categories of projects (priority projects) listed in Section 2. Under each type of BMP, listed below, please indicate which BMPs are planned to be implemented and included in the Final WQMP for the project:

A. Site Design/LID (Low Impact Design) for Reducing Stormwater Runoff:

The MS4 Permit requires post-construction BMPs using Site Design/LID techniques to be implemented for all development projects unless it is determined to be infeasible. In order to minimize adverse effects from

development projects, project applicants shall submit a Preliminary Water Quality Management Plan that includes site designs that capture runoff and pollutant transport by minimizing impervious surfaces and maximizing LID BMPs (retention/infiltration, harvest and use and vegetated BMPs that promote biotreatment and evapotranspiration) of the 2-year, 24 hour rainfall event. Please indicate in the table below which Site Design/LID BMPs will be utilized on this project to accomplish this requirement:

Site Design/LID Practice	Planned	Not Planned
Provide at least the minimum effective area required for LID BMPs, to comply with the WQMP (see Table 3-1 below)		
Grade parking lot areas/drive aisles to sheet flow runoff into perimeter landscaped belts & swales		
Locate swaled landscaped areas in strategic areas to accept building roof and parking lot runoff water		
Grade all landscaped areas to function as retention basins, swales or trenches		
Install underground stormwater retention chambers where downstream landscaped areas are limited		
Install pervious pavement in parking stalls, alleys, driveways, trails or patios		
Install approved Stormwater Drywells		
Construct streets, sidewalks, and parking lot stalls to the minimum widths necessary		
Install Biotreatment basins/trenches with underdrain system, where soil type is poorly draining		
Install “Engineered Soil” for increased Evapotranspiration		
Install Rainwater Harvesting/Use Equipment		
Utilize approved off-site retention/infiltration facilities where it is infeasible to infiltrate design storm runoff		

Table 3-1. Minimum Effective Area[1] Required for LID BMPs (surface + subsurface facilities) for Project WQMP to Demonstrate Infeasibility[2] (%of site)

Project Type	New Development	Re-Development
SF/MF Residential < 7 du/ac	10%	5%
SF/MF Residential 7- 18 du/ac	7%	3.5%
SF/MF Residential > 18 du/ac	5%	2.5%
Mixed Use, Commercial/Industrial w/FAR < 1.0	10%	5%
Mixed Use, Commercial/Industrial w/FAR 1.0-2.0	7%	3.5%
Mixed Use, Commercial/Industrial w/FAR > 2.0	5%	2.5%
Podium (parking under > 75% of project)	3%	1.5%
Zoning allowing development to property lines	2%	1%
Transit Oriented Development[3]	5%	2.5%
Parking	5%	2.5%

[1] "Effective area" is defined as area which 1) is suitable for a BMP (for example, if infiltration is potentially feasible for the site based on infeasibility criteria, infiltration must be allowed over this area) and 2) receives runoff from impervious areas.
[2] Criteria only required if the project WQMP seeks to demonstrate that the full DCV cannot be feasibly managed on-sit.
[3] Transit oriented development is defined as a project with development center within one half mile of a mass transit center.
Key: du/ac= dwelling units/acre, FAR = Floor Area Ration = ratio of gross floor area of building to gross lot area, MF = Multi Family, SF = Single Family

B. Source Control BMPs – The following BMPs are designed to control stormwater pollutants and runoff water at the location where it is generated. Please indicate which of the listed BMPs are planned to be implemented for the project:

Source Control BMP	Planned	Not Planned
Minimize non-stormwater site runoff through efficient irrigation design		
Minimize trash and debris in storm runoff through a regular parking lot & storage yard sweeping program		
Provide proper covers/roofs and secondary containment for outside material storage & work areas		
Provide solid roofs over all trash enclosures		
Provide Education/Training of site occupants on storm water Best Management Practices		
Install stormwater placards/stenciled messages on each storm drain inlet within the project		
Provide equipment/vehicle wash areas that discharge to sanitary sewer		

C. Treatment Control BMPs – The following BMPs are designed to control stormwater pollutants where it is not feasible to install on-site Site Design/LID BMPs with the requisite capacity to treat the Design Capture Volume for the project and provide effective treatment for the identified Pollutants of Concern for the project. Please indicate which of the listed BMPs are planned to be implemented for the project:

Treatment Control BMP	Planned	Not Planned
Gravity Separator devices for pretreatment of sediment, trash & litter or oil & grease		
Proprietary Biofilters		
Media Cartridge Filtration Vaults		
Proprietary Filter Insert devices for on-site storm drain inlets or retention basin/trench overflow drains		
Regional treatment facilities are installed or are planned for installation, off-site, and provide a superior level of treatment or clear advantage to on-site treatment BMPs		

4. Volume-based calculation (approximate) for sizing on-site Stormwater Retention or Biotreatment facilities:

Volume-Based Design:

1) Calculate the "Watershed Imperviousness Ratio", i, which is equal to the percent of impervious area in each drainage sub-area divided by 100.

2) Calculate the composite runoff coefficient C_{BMP} for each drainage sub-area using the following equation:

$$\mathbf{C_{BMP} = 0.858i^3 - 0.78i^2 + 0.774i + 0.04}$$

where: $\mathbf{C_{BMP}}$ = composite runoff coefficient; and,

i = watershed imperviousness ratio.

3) Determine the area-averaged "6-hour Mean Storm Rainfall", P_6, for the project area. This is calculated by multiplying the area averaged 2-year 1-hour value (0.5" or 0.6") by the appropriate regression coefficient from Table 1 (1.4807). The 2-yr, 1-hr value for southern Ontario is approximately 0.5" (P_6 = 0.5 *1.4807= 0.74) and northern Ontario is approximately 0.6" in/hr (P_6 = 0.6*1.4807= 0.89).

4) Determine the appropriate drawdown time. Use the regression constant a = 1.582 for 24 hours and a = 1.963 for 48 hours. *Note: Regression constants are provided for both 24 hour and 48 hour drawdown times; however, 48 hour drawdown times should be used in most areas of California. Drawdown times in excess of 48 hours should be used with caution as vector breeding can be a problem after water has stood in excess of 72 hours. (Use of the 24 hour drawdown time should be limited to drainage areas with coarse soils (Class 'A' soils, that readily drain.)*

5) Calculate the "Maximized Detention Volume", P_0, for all drainage sub-areas of the project, using the following equation:

$$P_0 = a \cdot C_{BMP} \cdot P_6$$

where: $\mathbf{P_0}$ = Maximized Detention Volume, in inches

a = 1.582 for 24 hour and a = 1.963 for 48 hour drawdown,

C_{BMP} = composite runoff coefficient; and,

P_6 = 6-hour Mean Storm Rainfall, in inches

6) Calculate the "Target Capture Volume", V_0, for each drainage sub-area of the project, using the following equation:

$$V_0 = (P_0 \cdot A) / 12$$

where: V_0 = Target Capture Volume, in acre-feet

P_0 = Maximized Detention Volume, in inches; and,

A = BMP Drainage Area, in acres

Project Volume-based calculation ("Design Capture Volume") for planned on-site Stormwater Retention or Biotreatment facilities:

Variable	Factor/Formula	Area 1 Result	Area 2 Result	Area 3 Result
Ratio of impervious surface/total site surface	(i)			
C_{BMP}= runoff coefficient	$0.858i^3 - 0.78i^2 + 0.774i + 0.04 =$			
P_6	$P_6 = 0.55$ or $0.6 * 1.4807 =$			
Detention Volume-inches	$P_0 = a * C_{BMP} * P_6 =$			
Drawdown rate of basin/trench (a)	1.582 for 24-hr drawdown or 1.963 for 48-hr drawdown =			
Project Total Area (acres)	(A)			
Target Capture Volume-cu. Ft.	$V_0 = [(P_0 * A)/12]*43560 =$			
Retention/treatment Volume provided, cu.ft.	Calculate dimensions of retention basin, trench, underground system or biotreatment basin			

5. Hydrologic Conditions of Concern (HCOC) and use of the on-line San Bernardino County HCOC Map for determining necessary mitigation steps necessary if there are HCOCs downstream of a project.

If the Design Capture Volume cannot be retained/infiltered or harvested/used on-site, the project applicant may access the on-line HCOC Map at: http://sbcounty.permitrack.com/WAP/ . The Map will indicate any hydrology concerns with downstream waterways that are hydraulically connected to the project and will indicate if there are any approved regional projects downstream that could be utilized for off-site mitigation of HCOCs. Please indicate here if the project will or will not be able to retain/infilter or harvest and use the Design Capture Volume, on-site, as calculated in Section 4 and if there are HCOCs identified downstream of the project:

Retain or Harvest/Use the DCV on site?	Yes		No	
Biotreat the DCV but not infilter the runoff?	Yes		No	
HCOCs identified downstream of site?	Yes		No	

If the DCV will not be retained on site or the DCV is biotreated but not captured and infiltered and HCOCs are identified, downstream of the site, please list here, what additional mitigation measures will be utilized (on-site or off-site) to address HCOCs.

_____

_____

_____

6. **Site Plan and Conceptual Grading/Drainage Plan requirements for submission with the Preliminary WQMP:**

   Provide a Site Plan and Conceptual Grading/Drainage Plan along with this Preliminary WQMP, which shows the proposed locations of buildings, parking lot areas, landscaped areas and drainage patterns, methods of conveyance, and proposed retention and percolation facilities incorporated into landscaped areas of the site or into underground features that are planned for installation. Where it is already determined that site soils are “Class D” or it is infeasible to percolate design storm runoff, on-site, please include other design features as described in Section 3, above. Include numbered or lettered notes on the Site Plan with a legend detailing other BMPs, as described in Section 3, above.