

## SECTION 11

### PART I

#### STORMWATER QUALITY PROTECTION

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## SECTION 11

### STORM WATER QUALITY PROTECTION

#### **11-1 DEFINITIONS / ACRONYMS**

<b>BMP</b>	–	Best Management Practice
<b>CGP</b>	–	General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit)
<b>ESCP</b>	–	Erosion and Sediment Control Plan
<b>FORECASTED RAIN</b>	–	a 30% or better chance of rain as forecasted by the National Oceanic & Atmospheric Association ( <a href="http://www.noaa.org">www.noaa.org</a> )
<b>MS4</b>		Municipal Separate Storm Sewer System
<b>NOI</b>	–	Notice of Intent
<b>NPDES</b>	–	National Pollutant Discharge Elimination System
<b>RWQCB</b>	–	Regional Water Quality Control Board
<b>SWPPP</b>	–	Storm Water Pollution Prevention Plan (Project SWPPP's must be site specific)
<b>SWRCB</b>	–	State Water Resources Control Board
<b>Wet Season</b>	–	October 1st through April 30 <sup>th</sup> annually
<b>WPCP</b>	–	Water Pollution Control Program (Project WPCP's must be site specific)

#### **PART I – CONSTRUCTION PRACTICES**

#### **11-2 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)**

Developers meeting the project area disturbance threshold of one (1) acre or more of disturbed area shall obtain coverage under the SWRCB General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit [CGP]), prior to commencing construction activities. Coverage must be obtained by filing an NOI with a vicinity map and the appropriate fee with the SWRCB. Projects smaller than one (1) acre of disturbed soil area shall prepare a Water Pollution Control Plan (WPCP).

- A. The CGP requires development and implementation of a SWPPP. The CGP emphasizes the use of appropriately selected, correctly installed and maintained pollution reduction BMPs. This approach provides the flexibility necessary to establish BMPs which can effectively address source control of pollutants during changing construction activities.
- B. All dischargers shall prepare and implement a SWPPP prior to disturbing a site. The SWPPP must be implemented at the appropriate level to protect water quality at all times throughout the life of the project. Non-stormwater BMPs must be implemented and maintained year round. The SWPPP shall remain on the site while the site is under construction, commencing with the initial mobilization and ending with the termination of coverage under the CGP.

- C. The SWPPP has six major objectives: (1) identify all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site, and (2) identify non-storm water discharges, and (3) identify, construct, implement in accordance with a time schedule, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction, and (4) develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs), and (5) identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed on Attachment 3 of the Permit (Clean Water Act Section 303(d) [303(d)] Water Bodies listed for Sedimentation) and (6) for all construction activity, identify a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.
- D. Minimum required elements of a SWPPP include:
1. A vicinity map showing nearby roadways, the construction site perimeter, and the geographic features and general topography surrounding the site.
  2. Site description addressing the elements and characteristics specific to the site with a detailed, site-specific listing of the potential sources of storm water pollution.
  3. A site map showing the construction project in detail, including the existing and planned paved areas and buildings; general topography both before and after construction; drainage patterns across the project area; and anticipated storm water discharge locations (i.e., the receiving water, a conduit to receiving water, and/or drain inlets)
  4. Erosion and Sediment Control Plan with descriptions of BMPs to be employed.
  5. BMPs for construction waste handling and disposal.
  6. Implementation of approved local plans.
  7. Proposed post-construction controls, including description of local post-construction erosion and sediment control requirements.
  8. Non-stormwater management.
  9. The name and telephone number of the qualified person responsible for implementing the SWPPP and certification/signature by the landowner or an authorized representative
- E. SWPPP's will be modified and amended to reflect any amendments to the Permit, or any changes in construction or operations that may affect the discharge of pollutants from the construction site to surface waters, groundwaters, or the municipal separate storm sewer system (MS4). SWPPP's will also be amended if they are in violation of any condition of the Permit or has not achieved the general objective of reducing pollutants in storm water discharges. SWPPP's shall be readily available on-site for the duration of the project.
- F. Prior to approval of Improvement Plans, a copy of the NOI for coverage under the CGP with assigned WDID number shall be submitted to the City. Prior to commencing construction, the SWPPP, with its ESCP, will be submitted and reviewed by the City for adequacy. The City shall use the accepted SWPPP in conducting its inspections and monitoring under the City's NPDES permit requirements.

### **11-3 EROSION AND SEDIMENT CONTROL PLAN (ESCP)**

All projects must have adequate and effective combinations of erosion and sediment control BMPs properly implemented, installed, and maintained.

- A. Improvement Plans shall include an Erosion and Sediment Control Plan, which shall be prepared and approved per the requirements of Chapter 16.44 of Title 16 of the City Municipal Code, Land Grading and Erosion Control Ordinance. These plans may be incorporated into the Grading Plans or on separate sheets for clarity.
- B. The ESCP shall be designed to ensure that the following minimum requirements are effectively implemented at applicable construction sites:
  - 1. Sediments generated at the project site shall be controlled using adequate source control and/or structural BMPs;
  - 2. Construction-related materials and wastes shall be retained at the project site to avoid discharge to the MS4 and waters of the state;
  - 3. Unauthorized non-storm water runoff shall be contained at the project site; and
  - 4. Erosion from slopes and channels shall be controlled by implementing an effective combination of erosion and sediment control BMPs such as limiting grading during the wet season; inspecting graded areas during rain events; planting and maintenance of vegetation on slope; and covering erosion-susceptible slopes.
  - 5. The locations for construction BMPs need only be general in nature on improvement plans subject to more specific locations being noted in the SWPPP at the pre-construction conference.
- C. Specific locations for construction access, washouts, waste disposal sites, signage, portable toilets, and other BMP-related facilities must be provided as a supplement to the Erosion and Sediment Control Plan at the preconstruction meeting. During pre-construction meeting, for projects involving greater than 1.0 acre, the developer/contractor shall provide the City with a SWPPP supplementing the initial ESCP, showing the locations of BMPs and BMP-related facilities whose location is dependent on construction execution planning such as the access points, disposal points, and washouts.

### **11-4 CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPs)**

All projects shall employ appropriate temporary and permanent BMPs during construction. Construction disturbing more than 1 acre shall include BMPs in the SWPPP and Erosion and

Sediment Control Plans. Smaller projects shall select and utilize BMPs as necessary to adequately control erosion, sediment, tracking, non-storm water management, materials and waste.

The City of Elk Grove uses the California Storm Water Quality Association's (CASQA) Construction Storm Water Best Management Practice Handbook as its selection guide for selecting temporary BMPs. BMPs used for construction activities shall be selected and employed in accordance with CASQA guidelines. Drawings in these standards may also be used for employment of BMPs. Equivalent BMP guidelines generally accepted by California agencies and in general use within the State may also be used, but must be so identified and justified in the ESCP.

**NOTE: The following paragraphs describe selected City of Elk Grove minimum requirements in the employment of BMPs. These requirements are not to be considered comprehensive and must be supplemented as needed to be in full compliance with CGP.**

A. Tracking Control

Access points to the construction site shall have a stabilized construction access. A stabilized access consisting of a pad of coarse aggregate underlain with filter cloth located where traffic enters or leaves a construction site to minimize tracking of sediment from a construction site onto paved streets is required. (Drawing SQ-1). This practice may be supplemented by an entrance/outlet tire wash area. Placement of stabilized construction access points shall be clearly defined on the improvement plans. Streets adjacent to construction access points shall be swept as needed, to remove dirt and sediment tracked into the roadway.

B. Preservation of Existing Vegetation - Maintain areas of existing vegetation, utilizing stable vegetated areas to help reduce the amount of sediment in sheet flow runoff and to minimize the extent of disturbed area. Examples of how existing vegetation can be preserved include:

1. Buffer strips adjacent to wetlands and other sensitive areas in conjunction with sediment controls (fiber roll or silt fence).
2. As perimeter protection along property lines, in conjunction with sediment controls (fiber roll or silt fence).
3. Maximize undeveloped portions of a job site.

Areas of vegetation to be preserved shall be clearly marked on plans and fenced or flagged in the field. Traffic and stockpiles shall be located away from vegetated areas. Irrigation and maintenance requirements shall be specified on the plans.

C. Erosion Control

1. Inactive Disturbed Soil - Inactive disturbed soil areas, and associated earthen concentrated flow lines and conveyances, not being worked or scheduled to be worked for an extended period of time during the wet season, must be stabilized.

- a) During the wet season, inactive disturbed soil areas must be stabilized within 15 calendar days of cessation of work or prior to a forecasted rain event, whichever comes first.
  - b) Residential lots that have not yet been landscaped shall have the at least the first 18 feet behind the sidewalk (first 7.5 feet for side yards) stabilized by hydroseeding or other method.
2. Slope protection – All slopes greater than 10:1 shall be protected through the use of effective erosion controls.
3. Practices  
Such practices may include preserving existing vegetation, Silt Fencing (SQ-5), Straw Mulch, Geotextiles, Erosion Control Blankets/Mats (SQ-9A and SQ-9B), Velocity Dissipation Devices, and Hydroseeding. Hydroseeding, if used, shall be implemented in advance of the time when there is risk of erosion. Hydroseeding applied after September 15 and before April 30 shall be further protected with straw mulch, soil binder, or an erosion control blanket/mat.
- D. Sediment Control - Sediment control BMPs shall be used to settle and trap sediments before they reach the municipal storm sewer system.
- 1. Roadway Subgrades and Depressions - Subgrades and depressions during construction shall be protected from discharging pollutants during overflow.
  - 2. Perimeters - Sediment control BMPs shall be placed and maintained along the project perimeter where drainage flows from the project and at all inlets to the municipal storm drainage system for the duration of active construction.
  - 3. Practices - BMPs may include the use of Fiber Rolls (SQ-4), Silt Fencing (SQ-5), inlet barriers, and Sediment Traps (SQ-3).
  - 4. Drain Inlet Protection - Storm drain inlets shall be protected against intake of construction site sediment, debris and solid waste.
    - a. Place drainage inlet protection BMPs at storm drain inlets. BMPs shall include Inlet Sediment Control Barriers (SQ-7), and Inlet Filter Bags (SQ-8) Inlet sediment control devices are placed on the upstream side of drainage inlets. For inlets in gutter low points, inlet sediment control devices shall be installed on both sides of the inlet.
    - b. Inlet sediment control devices shall remain in place until soil disturbing activities are completed and adjacent areas are stabilized with permanent erosion control.
    - c. Filter bags and frames shall be placed such that low flow surface water does not bypass the filter bag.

#### E. Wind Erosion Control

Each construction site shall employ proper and adequate wind erosion and dust control BMPs such as applying water and other dust palliatives.

#### F. Non-Stormwater Management

Each construction site shall provide designated paint, concrete, solid and liquid waste disposal locations and washout locations as necessary. Plans shall indicate locations and designs as appropriate.

1. Concrete washouts will be designed for project sites where concrete is used as a construction material, and concrete trucks and other concrete-coating equipment are washed on site, including mortar and stucco operations. Plans shall include locations of directional signage for drivers as well as the details and locations of the washout facility. Above grade washouts must be lined and bermed.
2. Each construction site shall provide proper, water tight, storage of construction materials with secondary containment for hazardous liquids. Sites shall have an emergency response plan and proper spill kits and containment materials.
3. Each construction site shall provide proper and adequate water tight solid waste containers.

### **11-5 SCHEDULE**

A BMP installation schedule shall be included in the SWPPP and/or on the included erosion and sediment control plans. The schedule shall include the BMPs for both the wet season and the dry season.

### **11-6 MONITORING and MAINTENANCE**

A critical element of stormwater quality protection during construction is maintaining BMP facilities and monitoring BMPs in place regularly. Designs must include, in the SWPPP or on the plans, the specific requirements for monitoring the effectiveness of BMPs before, during and after storm events and during routine dry weather operations.

Maintenance requirements will be in the design documents and must ensure the following:

1. BMP facilities are functioning as designed.
2. BMP facilities and practices are preventing pollutants from entering the City municipal storm drain system, creeks and channels.
3. BMP facilities are not causing street or property flooding.
4. All BMPS's are routinely inspected, maintained and documented in the site SWPPP.

## **PART II – NEW DEVELOPMENT CONTROL MEASURES**

### **11-10 SOURCE AND TREATMENT CONTROL BEST MANAGEMENT PRACTICES**

All new development and significant redevelopment projects falling within the priority project categories as defined in the Development Standards Plan (DSP), approved by the Regional Water Quality Control Board in May, 2005; are required to implement storm water quality measures (BMPs) to reduce pollutant discharges. Acceptable control measures/BMPs are listed along with the priority projects in the “Selection Matrix for Priority Categories” (Matrix) below.

### **11-11 PRIORITY PROJECT CATEGORIES**

Priority project categories are those types of facilities that have a greater potential of negatively impacting runoff quality. These categories are specifically identified in the City’s NPDES permit and are listed in Table 11-1.

### **11-12 TYPES OF CONTROL MEASURES**

The type of control measures/BMPs applicable on the above priority projects varies depending on the need. Some are Source Control, which mainly prevents pollutants from contacting site runoff at the source; Runoff Reduction, which reduces the volume of runoff discharged from the site; and Treatment Control, which removes or reduces pollutants that have already been entrained in runoff.

### **11-13 BMP SELECTION MATRIX**

Table 11-1 lists the Priority Project Categories and the applicable control measures/BMPs. For a typical priority project, all applicable Source Control Measures are generally required. Choose one or more of the Treatment Control Measures to satisfy the treatment requirements. Runoff Reduction Measures are optional and may reduce treatment requirements.

### **11-14 DESIGN OF CONTROL MEASURES**

Specific design of a control measure will conform to the specifications in the *Stormwater Quality Design Manual*. Any deviation requires the written approval of the Director.

**Table 11-1**

**BMP Selection Matrix for Priority Project Categories**

For Agencies in Sacramento County: Effective May 18, 2006

Priority Project Category <sup>(a)</sup>	Residential			Commercial/Industrial						Hillside Developments ≥ 25% slope	Parking lots <sup>(c)</sup> ≥ 5,000 sf or 25 spaces	Streets/Roads <sup>(d)</sup> impervious area ≥ 5 acres
	Single Family Residential ≥ 10 lots (Roseville)	≥ 20 acres (Sacramento)	Multi-family Residential ≥ 1 acre	Commercial Developments impervious area ≥ 1 acre	Auto Repair Shops impervious area ≥ 1 acre	Retail Gasoline Outlets impervious area ≥ 1 acre	Restaurants impervious area ≥ 1 acre	Industrial Development <sup>(b)</sup> impervious area ≥ 1 acre				
<b>Source Control Measures</b>	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Storm Drain Markings and Signs	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fueling Areas	NA		NA	✓	✓	✓	✓	✓	(e)	NA	NA	NA
Loading Areas	NA		NA	✓	✓	✓	✓	✓	(e)	NA	NA	NA
Outdoor Storage Areas	NA		NA	✓	✓	✓	✓	✓	(e)	NA	NA	NA
Outdoor Work Areas	NA		NA	✓	✓	✓	✓	✓	(e)	NA	NA	NA
Vehicle/Equipment Wash Areas	NA		✓	✓	✓	✓	✓	✓	(e)	NA	NA	NA
Waste Management Areas	NA		✓	✓	✓	✓	✓	✓	(e)	✓	NA	NA
<b>Runoff Reduction Measures</b>	•	•	•	•	•	•	•	•	•	•	•	•
Porous Pavement	(f)	(f)	•	•	NA	NA	•	•	•	•	•	(f)
Disconnected Pavement	•	•	•	•	•	•	•	•	•	•	•	•
Alternative Driveways	•	•	•	NA	NA	NA	NA	NA	•	NA	NA	NA
Disconnected Roof Drains	•	•	•	•	•	•	•	•	•	•	NA	NA
Interceptor Trees	•	•	•	•	•	•	•	•	•	•	•	•
Ecoroof	NA	NA	•	•	•	•	•	•	•	•	NA	NA
<b>Treatment Controls<sup>(g) (h)</sup></b>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Constructed Wetland Basin	•	•	•	•	NA	NA	•	•	•	•	•	•
Detention Basins	•	•	•	•	•	•	•	•	•	•	•	•
Infiltration Basin	•	•	•	•	NA	NA	•	•	•	•	•	•
Infiltration Trench	•	•	•	•	NA	NA	•	•	•	•	•	•
Sand Filter (Austin Sand Filter)	•	•	•	•	•	•	•	•	•	•	•	•
Stormwater Planter (Flow-through)	•	•	•	•	•	•	•	•	•	•	•	•
Stormwater Planter (Infiltration)	•	•	•	•	NA	NA	•	•	•	•	•	•
Vegetated Swale	•	•	•	•	•	•	•	•	•	•	•	•
Vegetated Filter Strip	•	•	•	•	NA	NA	•	•	•	•	•	•
Proprietary Devices (i)	(h)	(h)	•	•	•	•	•	•	•	•	•	•

✓ Required if applicable to project

• Acceptable

NA Not applicable or allowed

### **11-15 INLET MARKING**

- A. Concrete Stamp – A message will be stamped into the concrete at each storm drain drop inlet to alert citizens not to dump into the storm drain system.
- B. Concrete stamps shall be applied at all new or reconstructed storm drain inlets, both privately and publicly-owned.
- C. Stamps shall be neat with 1.5" lettering. Installation shall be per drawing SQ-10.

### **11-16 OWNERSHIP OF CONTROL MEASURES FACILITIES**

Ownership of control measures serving multiple parcels will generally be located in the public right-of-way and will be publicly-owned; ownership of control measures serving one parcel or facility will generally be located on the privately-owned parcel and remain privately-owned and maintained.

### **11-17 REGIONAL WATER QUALITY FACILITIES**

Regional Water Quality Detention Basins and Water Quality Channels shall be designed in accordance with the City of Sacramento Department of Utilities Procedures Manual, Section 11.6 (Regional Water Quality Control). These procedures incorporate the Sato Method from Volume 2 of the City/County Drainage Manual (Hydrology Standards) for sizing of detention basins. The final design shall be subject to the approval of the Director. The Consulting Engineer is encouraged to present conceptual design approaches to the City as soon as possible in the earliest possible planning stages of the project.

### **11-18 MAINTENANCE OF STORM WATER QUALITY FACILITIES**

Routine inspection and maintenance is required for all storm water quality facilities in order to continue to ensure optimum pollutant removal performance.

- A. A written maintenance plan shall be required for all regional storm water quality facilities before the City will accept the facilities. The maintenance plan shall include procedures and a schedule for vegetation establishment and maintenance, as applicable.
- B. The developer shall be responsible for vegetation maintenance on regional storm water quality facilities until vegetation is established to the satisfaction of the Director.
- C. If on-site facilities are specified, a maintenance agreement is required for all on-site storm water quality facilities. The project will not be accepted by the City until the maintenance agreement has been signed by the Developer/Property Owner”.