

Appendix D

Guidance for Preparing a Stormwater Control Plan

Appendix D: Supplementary Information & How to Prepare a SWCP

- Redevelopment Examples D - 2
- Impervious Surface Data Sheet for NPDES MS4 Permit Compliance..... D - 4
- How to Prepare a Storm Water Control Plan: D - 6

Storm Water Control Plan Checklist

- 1) Project Description including Contact Information (see P. D-4)
- 2) Topographic Base Map, (scale 1" = 200')
- 3) Soils Information (for Infiltration Devices)
- 4) Calculations (for BMP Description)

Table D-1, BMP Summary Table example

- a) Reducing Imperviousness and Connectivity
- 5) Landscaping Plan: Post construction BMP maintenance

Table D-2, Example: Post-construction Maintenance and/or Source Control

Additional Information that May Be Required for Larger Projects at Discretion of City Engineer

- 6) Additional BMP Selection Description
- 7) Self Inspection Program Documentation
- 8) Employee Training Program Documentation
- 9) Existing and Proposed site plans (to scale)
- 10) Storm Water Control Plan sheet list
- 11) Other Information and/or Plans

Redevelopment Examples

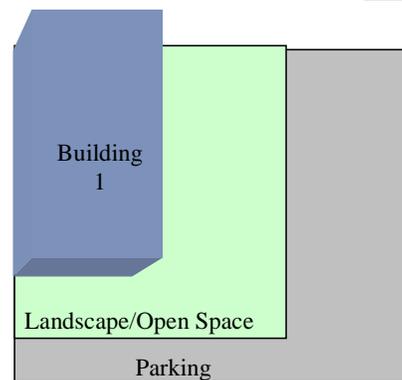
Pursuant to Order No. R3-2004-0135, Attachment 4, Section C.1 (p. 7 of Attachment 4), redevelopment projects have specific impervious square footage and percent of total site thresholds that govern whether Development Standards apply to a portion or all of the site. Examples of various redevelopment project scenarios and the portions of the project that would be subject to Development Standards for storm water BMPs depending on the proportion of the project site that is being redeveloped are also shown and described on the figure below.

Redevelopments that could increase the impervious surface could include remodel, tenant improvement, or new building to replace an existing building.

EXAMPLE: REDEVELOPMENT PROJECTS (Not To Scale)

ORIGINAL SITE DESCRIPTION

Building 1 = 15,000 ft²
Parking = 9,500 ft²
Landscaping = 7,500 ft²
Open Space = 20,000 ft²
Total Site = 52,000 ft²
Total Impervious Surface = 24,500 ft²

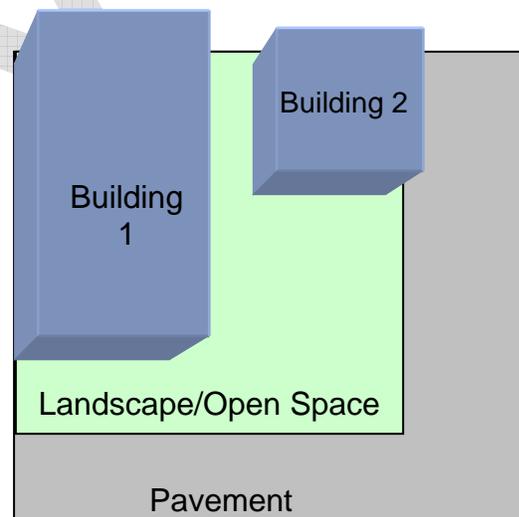


EXAMPLE A

Redevelopment of Site with:
New Building 2 = 2,000 ft² and
Increase of Parking by 2,000 ft²
Total of new impervious surface added is
4,000 ft²
Total Site Impervious Surface = 28,500 ft²

Added impervious surface after
Redevelopment is <5,000 ft², therefore;

Site is **NOT** subject to City Develop
Standards Plan requirements. However, site
developer is encouraged to minimize
impervious areas and to drain storm water to
vegetated areas as much as possible.

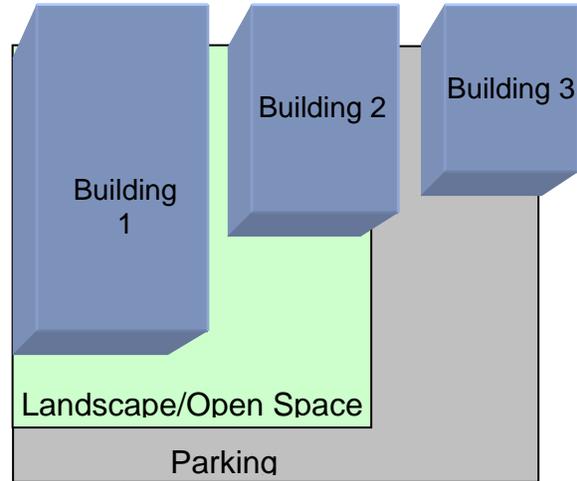


EXAMPLE B

Redevelopment of Site with:
Existing Building = 15,000 ft²
New Building 2 = 10,000 ft² and
New Building 3 = 7,000 ft² and
increase of Parking to 11,500 ft² and
Total Site Impervious Surface= 43,500 ft²

Total Redevelopment is > 5,000 ft² and
therefore,

Entire 43,500 ft² of original site is subject to
Development Standards storm water BMPs



EXAMPLE C

Redevelopment of Site with:

Original Building = 15,000 ft²

New Building 2 = 6,000 ft² and

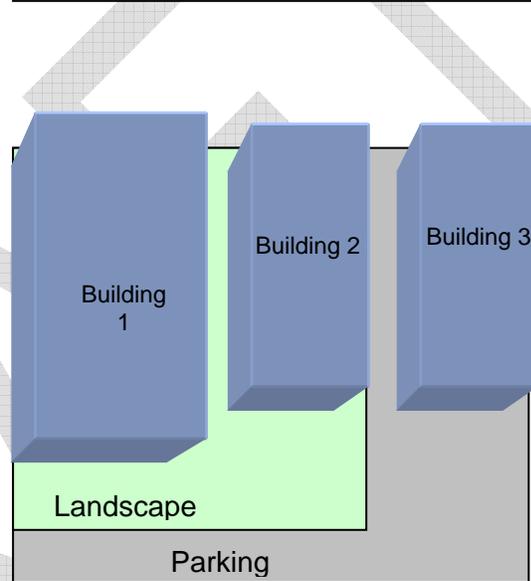
New Building 3 = 6,000 ft² and

Parking to 9,500 ft² and

Total Site Impervious Surface= 38,500 ft²

Total Redevelopment adds 12,000 ft²
impervious area, but is <50% of the existing
impervious area, therefore,

Only the 12,000 ft² of new impervious area
added to the site is subject to Development
Standards for storm water BMPs.



IMPERVIOUS SURFACE DATA FORM

What Projects Apply?

All applicants for projects adding, or replacing 5000 sq. ft. or more of impervious surface on the project site or adding impervious surface per NPDES Priority Development criteria for new development projects must fill out this worksheet and submit it to the Engineering Services Section at the City of Salinas Permit Center prior to the issuance of a building permit.

What is an Impervious Surface?

An impervious surface prevents the infiltration or passage of water into the soil. Impervious surfaces include building rooftops, paved patios, covered patios, driveways, parking lots, paved walkways, sidewalks and streets.

For More Information

For more information regarding selection of Best Management Practices for stormwater pollution prevention or stormwater treatment contact: Dale Rosskamp, P.E., Senior Civil Engineer, City of Salinas Permit Center, 831-758-7295

Project Name: _____ **APN #** _____ - _____ - _____

Applicant Name: _____

Project Location: _____
(address)

1. Project Type (Check all that apply):

Residential Commercial Industrial Public

2. Project size:

- a. Site size _____ sq. ft.
- b. Existing impervious surface area (includes land covered by buildings, sheds, patios/covers, parking lots, streets, sidewalks, paved walkways and driveways) _____ sq. ft.
- c. Impervious surface area created, added, or replaced _____ sq. ft.
- d. Total impervious surface area (new + existing) _____ sq. ft.
- e. Percent increase/replacement of impervious surface area _____ %
c/b(100%)
- f. Estimated area of land disturbance during construction _____ sq. ft.
(including clearing, grading, or excavating).

If impervious surface area added or replaced is > 5,000 sq. ft, then low impact development measures and practices as described in the City of Salinas Development Standards apply.

4. Types of Stormwater Controls Used (check all that apply):

<u>Description</u>	<u>Code</u>
<input type="checkbox"/> Stormwater Treatment Measure	STM
<input type="checkbox"/> Source Control Measure	SCM
<input type="checkbox"/> Site Design Measure	SDM
<input type="checkbox"/> Doesn't Apply	DNA

Examples of Stormwater Control Measures:

Stormwater Treatment	Source Controls	Site Design
<ul style="list-style-type: none"> • Biofilter (veg. swale/strip) • Detention basin (dry) • Detention pond (wet) • Underground detention • Media filter (sand, organic matter, bioretention) • Hydrodynamic device (commercially available in-line treatment unit) • Infiltration trench • Porous pavement • Wetland basin • Wetland channel • Inlet filter • Other _____ 	<ul style="list-style-type: none"> • Wash area/racks, drain to sanitary sewer • Covered dumpster area, drain to sanitary sewer • Swimming pool drain to sanitary sewer • Beneficial landscaping (minimizes irrigation, runoff, pesticides and fertilizers; promotes treatment) • Outdoor material storage protection • Covers, drains for loading docks, maintenance bays, fueling areas • Maintenance (street sweeping, catch basin cleaning) • Other _____ 	<ul style="list-style-type: none"> • Minimize land disturbance • Minimize impervious surfaces • Minimum-impact street or parking lot design • Cluster structures/pavement • Disconnect downspouts • Alternative driveway design • Microdetention in landscape • Preserve open space • Protect riparian and wetland areas, riparian buffers • Minimize change in runoff hydrograph • Other _____

Reviewed:

City of Salinas Permit Center

Engineering Section: _____ **Date:** _____

How to Prepare a Storm Water Control Plan (SWCP)

The following section includes a checklist and descriptions of the information needed to complete a Storm Water Control Plan (SWCP) summarized in Section 1.6.2. The SWCP consists of two parts: first, a written narrative that provide a description and overview of the plan and second, appropriate maps and site plans that show the location of treatment BMPs and the areas from which they will be treating storm water flows.

Design plan sheets, drawn to scale and including cross-sectional drawing of the treatment BMPs selected for construction at the site need to be included, where appropriate.

No application for development of applicable projects in Section 1.4 will be approved unless it includes a project site specific SWCP detailing **in concept** how runoff and associated water quality impacts resulting from the development will be controlled or managed. This final plan must be stamped and signed by a California licensed professional civil engineer, who will verify that the design of all Storm Water Control practices meet the submittal requirements outlined herein. No building, grading, or sediment control permit for applicable projects shall be issued until a satisfactory final SWCP, or a waiver thereof, shall have undergone a review and been approved by the City Engineer, after determining that the plan is consistent with the requirements of these Storm Water Development Standards.

Storm Water Control Plan Checklist

Storm Water Control Plan	Check Items
1. Project Description – Document in Page 1 of Impervious Surface Data Sheet (p. D-4) a. General Information <ul style="list-style-type: none"> • Project and Applicant Name • Project Location (address) and APN # • Project Type/Classification (new, redevelopment, residential, commercial, industrial, roadway) • Description of facility activity and pollutants of concern 	
2. Provide a Topographic Base Map (scale 1" = 200') that extends a minimum of 100 feet beyond the proposed development and shows existing surface water drainage; current land use including existing structures; utilities/roads; and significant natural and manmade features, as well as completed drainage areas and BMP locations.	
3. Calculations and BMP Description - Complete BMP Summary Table 1 and identify BMP selection based on Site Design Planning (Section 1.5.2). Provide calculations for BMPs selected (Section 1.5.5). a. For each BMP used provide: <ul style="list-style-type: none"> • Description and acreage of drainage entire area/sub-areas and, if applicable, size of area/sub-area that may be off of the project property but that drains on the project property • Peak flow and/or volume generated by drainage area (shown on Topographic Map 2) including back-up hydrologic and hydraulic computations such as percent Impervious or runoff coefficient (Section 1.5.4) • Site soil infiltration rates (See also 4. below) if applicable • Site conveyance piping size/capacities (Section 1.5.3) b. Minimizing Imperviousness and Connectivity – Describe, in overview, how you will use BMPs to minimize imperviousness (Section 1.5.1) and connectivity	
4. Soils Information (for Infiltration BMPS): Describe and provide supporting geotechnical investigations (soil maps, depth to groundwater, soil permeability) if existing site soils are to be used for infiltration	
5. Landscape Plan: Post-Construction BMP maintenance	
a. Describe preventive maintenance actions needed for the operation of all treatment BMPs in Table 2.	
b. Describe long-term maintenance of vegetated LID practices	
Additional Information That May be Required for Large Developments at Discretion of City Engineer	
6. Additional BMP Selection Description	
7. Self Inspection Program Documentation	
a. Describe record keeping and internal reporting procedures	
b. Provide facility owner/operator contact information for post-construction inspections of BMPs.	
8. Employee Training Program Documentation	
9. Provide Existing and Proposed Site Maps/Plans (scale 1" = 40')	
10. Storm Water Control Plan Sheet List	
11. Other Information and/or plans (e.g. more detailed pollutants of concern, grading plans. Utility plans, landscaping plans)	

Storm Water Control Plan Preparation Instructions for Checklist Items

Use the Check List provided above to ensure that each of the following items are addressed in the SWCP provided with the project application. The SWCP must include all of the following information before it can be considered complete.

1. Project Description (Page D-4 Impervious Surface Data Sheet, Appendix D)

- a. Provide Contact Information
 - i. Project Name and Applicant Name, Applicant Address and Phone Number
 - ii. Project Location (address) and APN #
 - iii. Project type (new development or redevelopment of an already developed property) and Project Classification (residential, commercial, industrial, roadway)
 - iv. Description of proposed activities that will occur at the facility including pollutants of concern (Section 4.2)

2. Provide a topographic base map (1" = 200 ft) The topographic base map information must match all information presented in the Storm Water Control Plan narrative submitted as a part of the Project Application. Identify the following:

- a. Entire property with property lines and any easements and rights-of-way within 100 feet of the property.
- b. Existing and proposed drainage areas and sub-areas delineated with arrows showing surface water flow direction. Include off-site drainage that may be conveyed through the site.
- c. Show any existing structures/impervious surface that will remain and all new/proposed: buildings, sidewalks, driveways, parking areas, and covered activity areas as described in Table 1 – BMP Summary Table. Provide information on acreage/square feet of entire project property, acreage/square feet of new or replaced impervious surface of the project property, and estimated surface drainage area being treated by an individual BMP. The Table D - 1- BMP Summary Table from above can be copied to the site map to provide this information.
- d. Identify locations of treatment control Best Management Practice measures and show proposed areas that will drain into them.
- e. Within 100 ft of the property boundary, identify private storm drain systems and/or public storm conveyance systems including storm drain inlets and provide information on existing and proposed flows to each inlet.
- f. Identify any water bodies (e.g. streams, creeks, channels, and ponds), impoundments, and wetlands that occur within 100 ft. of the property boundary and identify if runoff from property will enter water bodies.
- g. Identify other site utilities (e.g. sewer, water, gas, electric, telecom, etc.)
- h. Identify potential areas where soil erosion could occur.
- i. If applicable, show the following
 - i. 100-year Flood elevations
 - ii. Landscaping Plan (if landscape is to be used as part of a storm water treatment BMP).

3. Calculations and BMP Description, as reported in the SWCP text and BMP Summary Table:

- a. Once the site-specific factors have been identified, select the appropriate BMPs for the site as discussed in Step 2 of the planning process. Summarize all BMPs selected in a table, using headings similar to those provided as an example in Table D - 1.

Certain BMPs are not low impact development measures and do not meet the Storm Water "maximum extent practicable" standard. Therefore, they cannot be approved as "stand-alone" storm water treatment devices. These BMPs that cannot be considered "MEP" when used by themselves and include the following storm drain inlet filters¹ (drain inserts) and oil/water

¹ Storm Drain Inlet Filters (also known as drain inserts) have been shown to have limited effectiveness in removing pollutants, due to their design. Inlet filters are typically bags or trays of media filter that are designed

separators². They can be considered for use as a pretreatment measure at the discretion of the City Engineer

In the Area ID or Comments column of the BMP Summary Table, provide information regarding the BMPs selected.

- Provide brief description of Area IDs or sub-drainage areas to each BMP
- Identify all treatment BMP locations using BMP ID #, and on Topographic Base map show, the drainage or sub-drainage areas flowing into them, and identify the direction of storm water flows into the BMP on the topographic for the project area. Provide the description of each BMP selected
- Classify the BMP selected as either Site Design (Section 2.3), Source Control (Section 2.6), or Treatment Control (Section 3)
- Identify the type of sizing criteria (Section 4.4) used: either Volume Hydraulic Design or Flow Hydraulic Design (include site soil infiltration information in 4. below)
- Identify the sizing method (Appendix E) (volume vs. flow) used³
- Identify the potential pollutants present for each sub drainage area, which would be a subset of all pollutants of concern for the site (Section 4.2).
- Identify the Runoff Coefficient selected and the BMP size in either cubic feet or cubic feet/second (Section 4.4)
- List the pollutants that will be addressed by each BMP
- Provide the hydrologic and hydraulic computations for flow and/or volume for each of the sub drainage areas for both BMPs and conveyance (Section 5.5)
- Provide a summary of the percent impervious surface present

b. Reducing Imperviousness and Connectivity

Describe, in overview, how you will use BMPs to accomplish the reduction of imperviousness as described in Section 3.2. (See Section 3.4.3 and 3.4.4 for ideas e.g. porous pavement, green roof) and how to reduce connectivity. Specific BMPs for larger developments should be described in greater detail in 7. below.

to catch and treat runoff as it enters the storm drain. Filters reviewed were subject to clogging in very frequently result in runoff bypassing the filter or causing flooding. Required maintenance is very frequent, sometimes as often as during and after every storm, and in practice, maintenance is not completed an effective frequency to avoid bypasses of the filtering element that becomes clogged with debris.

² Oil/Water Separators (water quality inlets) are generally ineffective in removing pollutants in concentrations seen in urban storm water runoff. Since the removal rates are low, those pollutants that are removed are often flushed out by subsequent storms, especially when the inlet frequently maintained. This type of device may be suitable for use as part of a "treatment train" approach where there are projects with potentially high oil and grease concentrations and where other controls are not included as part of the treatment after water goes through the oil/water separator.

³ For Volume it is either the Urban Runoff Quality Management (85th percentile of the 24-hour storm runoff event) or the CA BMP Handbooks Appendix D method to achieve 80% or more capture, using local rainfall data. For Flow Hydraulic Design, BMPs will be sized using one of these three options: Factored Flood Flow Method (10% of the 50-year peak flow rate; the California Stormwater BMP Handbook method (The flow produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity); or the Uniform Intensity Method (the flow produced by a rain event equal to at least 0.2 inches/hour intensity).

Table D-1: BMP Summary Table

Area ID	Existing Area (Ac or Ft ²)	Proposed Area (Ac or Ft ²)	BMP ID	BMP Classification			Sizing Criteria (Volume or Flow)	Sizing Method (URQM or CA BMP)	Runoff Coefficient	BMP size (ft ³ or cfs)	Pollutant(s) addressed by BMP	SWCP Calculation Sheet Page No.	Comments
				Site Design	Source Control	Treatment Control							
Building____													
Building____													
Building____													
Building____													
Parking - Impervious													
Other Hardscape													
Subtotal - Total Impervious Area													
Landscape													
Turf													
Parking - Pervious													
Open Space													
Other													
Subtotal - Total Pervious Area													
Total Project Area													
% of Total Project Area Impervious													
% of Total Project Area Pervious													

Note: Add or Remove Rows as Necessary to Describe Project

4. Soils Information (for Infiltration BMPs)

If an infiltration device will be used, identify the vertical distance between the base of an infiltration device and seasonal high groundwater depth. For additional information, see Section 4.3 regarding considerations for design of infiltration BMPs, design standards, and site screening and infiltration testing requirements.

5. Landscape Plan: Post-Construction BMP Maintenance

- a. Describe preventive maintenance actions needed for the operation of treatment BMPs once the facility is constructed.
- b. Describe long-term maintenance of vegetated LID practices such as frequency of maintenance and specified maintenance activities (e.g. mowing, trimming, etc.)

Additional Information and Plans for Large Developments At the Discretion of the City Engineer

6. BMP Selection Description

Provide written information regarding the how BMPs were selected which could include but not be limited to:

- a. Pollutants of Concern in Receiving Waters: Identify pollutants of concern based on potential activities and land uses of the project site. At a minimum, BMPs selected for the project should be able to protect receiving waters from pollutants of concern. Pollutants of concern are listed in the 2002 CWA Section 303(d) List of Water Quality Limited Segments adopted by the SWRCB in 2003 (See the Region 3 list at http://www.waterboards.ca.gov/tmdl/303d_lists.html). The following table describes typical pollutants associated with facility activities. Other specific activities may have more potential pollutants of concern. Pollutants of concern are summarized in the table below.

Pollutants of Concern Based on Facility Activities

Facility Activity	Pollutants of Concern
Commercial/Residential – General	Oil and grease, sediments, pesticides, trash
Commercial – food related	Pathogens, oil, and grease, pesticides, trash
Commercial – animal related	Pathogens, nutrients, pesticides
Commercial – auto related	Total petroleum hydrocarbons, metals, Poly Aromatic Hydrocarbons (PAH), and surfactants
Industrial	Total petroleum hydrocarbons, sediment, metals, PAHs, PCB, pH, surfactants
Agricultural	Sediment, nutrients, pesticides

The pollutants of concern for a facility should be summarized in the Impervious Surface Data Sheet and described further, as necessary, in the text of the Storm Water Control Plan. Treatment BMPs selected for the project must provide suitable treatment for the pollutants of concern identified for the project.

- b. Provide a description of the entire site drainage area, including all the project properties and, if applicable, any areas that may be off the project property, but drains onto it.
- c. Describe the proposed site activities that may affect storm water quality in each of the drainage or sub-drainage areas. Identify the potential pollutants present for each sub drainage area, which would be a subset of all pollutants of concern for the site.
- d. Provide the percent impervious surface present and/or the runoff coefficient to be used for the BMPs
- e. Provide the hydrologic and hydraulic computations or modeling for flow and/or volume of stormwater for each of the sub drainage areas including computations for runoff conveyance systems (e.g., swales, channels, culverts, pipes, etc.)
- f. Identify other facility equipment, and systems needed to ensure source control BMP measures are followed after the facility is constructed. Provide this information in a table, similar to Table D-2 below.

Table D-2: Example – Post Construction Source Control Activities

Name of Party or Agency/Company responsible for Source Control: _____ Identify each of the parties responsible for Source Control Activities (e.g., sweeping, litter pick up, landscape maintenance, if a part of a BMP) Provide the following contact information: Address _____ Phone_ (_____) _____ FAX_ (_____) _____ E-mail _ _____		
Source Control Measure Descriptions	Date When Source Control Activity Began Operation	Proposed Maintenance Schedule (daily, weekly, monthly, quarterly, etc.) and description of maintenance activities

7. Self Inspection Program Documentation

Identify the elements of a self-inspection program to investigate non-storm water discharges, BMP maintenance activities, effectiveness of BMPs, and prevention of soil erosion. Provide this information in a table, similar to Table D-3 that follows.

- a. Describe record keeping and internal reporting procedures (e.g. (who will be responsible for maintenance and preparation of reports, who will review reports, location of records, who is responsible for ensuring that maintenance occurs)
- b. Provide facility owner/operator contact information for post-construction inspections of BMPS. (e.g. name, address, phone #s (business and cell), e-mail)

Table D-3: Example – Self-Inspection Program Description

Name of Responsible Party for Self Inspections: _____ Provide the following contact information: Address _____ Phone () _____ FAX () _____ E-mail _____	
Description of Items for Self Inspection (e.g. BMP, non-storm water discharges, BMP maintenance actions, soil erosion, and others as applicable to site)	Self-Inspection Schedule

8. Employee Training Program Documentation

Describe employee training program to implement the post-construction operations and maintenance of all storm water BMPs at the project site.

Table D-4: Example – Employee Training Program

Name of Responsible Party for training: _____ Provide the following contact information: Address _____ Phone () _____ FAX () _____ E-mail _____		
Description of Items for Training (e.g. maintenance, inspection, pesticide use, others as applicable to site)	Training Schedule	Employees To Be Trained (Job Category or Title)

- a. Describe spill response procedures (if applicable) based on the types of materials being handled outdoors at the facility.
- b. Identify any areas to be used for outdoor storage and handling of process materials and wastes. (e.g., stockpiles, dumpsters, tallow bins, recyclables or vehicle storage) on the site map described in #8 below. Describe how materials will be handled or stored on site to prevent storm water runoff contamination or spills.
- c. Describe record keeping and internal reporting procedures for self-inspections and maintenance of BMPs. Provide information as to who will keep the records and where they will be located.
- d. Provide current contact information for the facility owner or operator so that post-construction inspections of the storm water treatment BMPs can be scheduled.

9. Provide Existing and Proposed Site Plan (scale 1" = 40').

Items that could be requested by the City Engineer include but are not limited to:

- a. Entire property included on one plan sheet/map with property lines any easements and rights-of-way within 100 feet of the property
- b. Existing and proposed topographic contours with drainage areas and sub-areas (if applicable) delineated and arrow showing flow direction of storm water.
- c. Identify areas for outdoor storage of process materials and wastes on the site plan described below.
- d. Show existing/proposed buildings, covered activity areas, and treatment BMP measure locations and type. Copy Table 1 BMP Summary Table to provide information such as square feet of project property/impervious areas, and flow/volume sizing of individual BMPs.
- e. Identify water bodies (e.g. streams, creeks, channels, ponds), impoundments, and wetlands on project location
- f. Identify potential areas where soil erosion could occur and describe measures to minimize erosion
- g. Landscaping Plans, if used as part of Storm Water Treatment
- h. Additional information to be shown can include:
 - i. Soil boring locations, depth(s) to groundwater and date(s) of measurement
 - ii. Monitoring well locations, depth(s) to groundwater and date(s) of measurement
 - iii. Water supply well locations within property and on adjacent properties (within 100 ft.)

10. Storm Water Control Plan Sheet List

In addition to the site map, the applicant may be required to submit a list of plan sheets related to the storm water facilities that will be prepared and submitted to the City for the building permit. These design plan sheets need to include profiles or cross-sections and details of any structures that will be constructed to manage storm water from the project site. The Storm Water Control Plan narrative and the Storm Water Control Plan Sheets must match; all BMP designs and treatment devices included on the plan sheets must also be discussed in the SWCP narrative.

11. Other Information and/or plans

Information such as pollutants of concern associated with development may be requested.

The plans listed below may be required as part of the building permit application, depending on the project. If they are submitted, there must be no conflicts between these plans and the Storm Water Control Plan Sheets.

- a. Grading Plan
- b. Utility Plan
- c. Landscaping Plans