Chapter 2 – Core Elements for New Development and Redevelopment

The Core Elements are:

Core Element 1 – Preparation of a Stormwater Site Plan
Core Element 2 – Construction Stormwater Pollution Prevention
Core Element 3 – Source Control of Pollution
Core Element 4 – Preservation of Natural Drainage Systems
Core Element 5 – Runoff Treatment
Core Element 6 - Flow Control
Core Element 7 – Operations and Maintenance
Core Element 8 – Local Requirements
Core Element Applicability

NEW DEVELOPMENT

New Development is the conversion of previously undeveloped or pervious surfaces to impervious surfaces and managed landscape areas.

All new development projects must comply with:

Core Element 1 – Preparation of a Stormwater Site Plan
Core Element 2 – Construction Stormwater Pollution Prev.
Core Element 3 – Source Control of Pollution
Core Element 4 – Preservation of Natural Drainage System
Core Element 8 – Local Requirements
Core Element Applicability

REDEVELOPMENT Sec. 2.1.2
Redevelopment is the replacement or improvement of impervious surfaces on a developed site.

Where replacement of 5,000 s.f. or more of PGIS occurs:

Core Element 1 – Preparation of a Stormwater Site Plan
Core Element 2 – Construction Stormwater Pollution Prev.
Core Element 3 – Source Control of Pollution
Core Element 4 – Preservation of Natural Drainage System
Core Element 8 – Local Requirements

Note: Core Element 2 and 3 apply to the entire site that is affected by the project activities.
Stormwater management is most successful when integrated into project planning and design. Projects are expected to demonstrate compliance with the applicable Core Elements through preparation of a Stormwater Site Plan.

All projects, including projects proposing UIC facilities, that are subject to Core Elements 2, 3, 4, 5, 6, or 8 are expected to complete a Stormwater Site Plan (SSP).

SSP’s will be reviewed by the local jurisdictions as part of the project approval and permitting process.
The stormwater site plan is the comprehensive report containing all of the technical information and analysis necessary for regulatory agencies to evaluate a proposed new development or redevelopment project for compliance with stormwater requirements.

Content of SSP will vary with size/type of project, site characteristics, applicability of core elements, etc.
Stormwater Site Plans (SSP’s) cont.

4 Steps to Developing a Stormwater Site Plan

Step 1 – Collect and Analyze Information

Physical Info. - Topography, Soils, Groundcover, etc.

Off-site Info. – Up Gradient Basins, Downstream Analysis

Critical Areas – Streams, Wetlands, Floodplains, Geological Hazard Areas
Stormwater Site Plans (SSP's) cont.

**Step 2 – Determine Applicable Core Elements**

Review the thresholds in Chapter 2 and determine what core elements apply.

Meet with the local jurisdiction and verify requirements before starting design.
Step 3 – Prepare a Permanent Stormwater Control Plan

Components of the Stormwater Control Plan:

Report:
Includes the Narrative with summary and background information, geotechnical reports, supporting calculations, basin maps (pre and post developed), soils map, vicinity map.
Stormwater Site Plans (SSP’s) cont.

Plans:
Residential/Road Project would include plan and profile sheets. Commercial Project would include site plan with grading information. Either type of project would include cross sections, construction details, storm drainage facility details, and notes.

Step 4 – Prepare a Construction Stormwater Pollution Prevention Plan
Construction Stormwater Pollution Prevention Plans (SWPPP’s) are implemented to protect downstream properties and on-site facilities from adverse stormwater impacts due to construction activity.

Controlling erosion and preventing sediment and other pollutants from leaving the project site during the construction phase is achievable through implementation of selected Best Management Practices (BMP’s) that are appropriate both to the site and to the season during which construction activities take place.
12 ELEMENTS OF CONSTRUCTION STORMWATER POLLUTION PREVENTION

1. Mark Clearing Limits
2. Establish Construction Access
3. Control Flow Rates
4. Install Sediment Controls
5. Stabilize Soils
6. Protect Slopes
7. Protect Drain Inlets
8. Stabilize Channels & Outlets
9. Control Pollutants
10. Control De-Watering
11. Maintain BMP’s
12. Manage the Project
Element #1   Mark Clearing Limits

Clearly delineate the limits of the clearing on the SWPPP.

Show any critical areas and their buffers. Should erect orange construction fencing, or equivalent, to protect areas from construction traffic.

Element #2   Establish Construction Access

Whenever possible limit construction traffic to one access point and route.

Stabilize the construction entrance with quarry spalls or crushed rock.
Element #3  Control Flow Rates

Properties and waterways downstream shall be protected from erosion due to increased stormwater volume, velocity, and peak flow.

If permanent facilities are used to capture sediment, they must be protected from siltation.

Element #4  Install Sediment Controls

Construct and install selected BMP’s (i.e. straw bales, silt fence, sediment traps, etc.)
Element #5  Stabilize Soils

Exposed or unworked soils shall be temporarily or permanently stabilized as soon as practicable.

Soil stockpiles shall be protected from erosion.

Element #6  Protect Slopes

Design and construct slopes to minimize erosion. Consider soil type and its potential for erosion. Reduce the length of the flow path by terracing and diversion. Roughen the slope of larger cuts and fills.
Element #7  Protect Drain Inlets

Install storm drain inlet protection on every structure when it is initially installed.

Whenever possible elevate the inlet to create a sediment trap.

Element #8  Stabilize Channels and Outlets

Temporary on-site conveyance channels shall be designed and stabilized to prevent erosion from the peak flow rate of the 6 month, 3 hour storm (short duration storm) for the developed condition.
Element #9  Control Pollutants

All pollutants, including waste materials and demolition debris, that occur on-site during construction shall be handled and disposed of in a manner that does not cause contamination of stormwater.

Cover, contain, and protect any hazardous materials on-site.

Specify on the plans, and erect a sign on-site, designating a place for concrete trucks to wash out.

Element #10  Control De-Watering

Handle water from de-watering operations separately from ESC BMP’s to control turbidity and contamination.
Element #11 - Maintain BMPs

Temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function.

Sediment control BMPs shall be inspected by project personnel every day when there is a discharge from the site, and at least weekly when there is no discharge. The inspection frequency for stabilized, inactive sites may be reduced to once every month.

Temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed.
Element #12  Manage the Project

Phase construction whenever possible.

Check with the local jurisdiction for any seasonal work limitations.

Coordinate with utilities and other contractors to make sure the SWPPP encompasses their work.

All BMPs must be inspected, maintained, and repaired as needed to insure continued performance of their intended function.

A qualified professional in ESC shall be identified in the construction SWPPP and shall be on-site or on-call.
Each BMP has four sections:

- Purpose
- Conditions of Use
- Design and Installation Specifications
- Maintenance Standards
## List of BMPs (SWMMEW Sec 7.3.1)

### Source Control BMPs

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Sec. 7.3.1 SWMMEW
Runoff Conveyance and Treatment BMPs

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SWPPP’s continued

pg 7-25 Construction Stormwater Pollution Prevention Plan Checklists – one for narrative and one for plans.

Appendix 7B – Recommended Standard Notes for Erosion/Sedimentation Control (ESC) Plans

Erosivity Waiver – Seven Criteria Shown in Permit Appendix
The intent of Source Control BMPs is to prevent pollutants from coming into contact with stormwater. Source control BMPs are a cost effective means of reducing pollutant loading and concentrations in stormwater and should be a first consideration in all projects.

Projects required to meet this core element shall apply all known, available and reasonable source control BMPs.
Content and Organization Source Control Chapter

Section 8.1  Introduction and defines operational and structural source control BMPs.

Section 8.2  Identifies stormwater pollutants and their adverse impacts.

Section 8.3  Presents operational BMPs that are applicable to commercial and industrial establishments.

Section 8.4  Presents structural BMPs that are applicable to commercial and industrial establishments.

Appendix 8A  Identifies pollutant generating sources at various land uses.

Appendix 8B  Presents BMPs for managing street waste.
 Definitions:

Operational Source Control BMPs – non structural practices that prevent or reduce pollutants from entering stormwater.

Structural Source Control BMPs – physical, structural, or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater.

Applicable BMPs – required at new development or redevelopment sites.

Recommended BMPs – not expected to be mandatory, but are offered as approaches that go beyond or complement the minimum applicable BMPs.
Operational BMPs

Preventive Maintenance
Spill Prevention and Cleanup
Employee Training
Inspections
Record Keeping
Know the list of Pollutant Source Specific BMPs from Section 8.3.2 in the Table of Contents.

Common BMP Categories Include:
Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots
Fueling at Dedicated Stations
Illicit Connections to Storm Drains
Landscaping and Lawn/Vegetation Management
Maintenance and Repair of Vehicles and Equipment
Maintenance of Public and Private Utility Corridors and Facilities
Maintenance of Roadside Ditches
Maintenance of Stormwater Drainage and Treatment Systems
Parking and Storage of Vehicles and Equipment
Urban Streets
Appendix 8A – Urban Land Uses and Pollutant Generating Sources


Businesses are also listed by 1987 Standard Industrial Classification (SIC).

Appendix 8B – Best Management Practices for Managing Street Waste
Core Element 4 (Sec 2.2.4 SWMMEW)  
Preservation of Natural Drainage Systems

Natural drainage patterns should be maintained and discharges from the project site should occur at the natural location to the maximum extent practicable.

Stormwater should be discharged in the same manner, at the same location, and at the same flow rate and volume as under the conditions that existed prior to development. Because some change is unavoidable, the preferred options for discharge of excess stormwater are, in order of preference to maintain the natural drainage systems:
1. Maintain dispersed sheet flow to match natural conditions.
2. Infiltrate on-site.
3. Infiltrate off-site.
4. Discharge to existing ditch networks, canals, or other dispersal methods that allow for potential groundwater recharge.
5. Discharge to wetlands, if allowed.
6. Evaporate on-site or off-site.
7. Create a new outfall for discharges to surface waters.
QUESTIONS?