

# Storm Water Management Requirements for Construction Projects

## PURPOSE:

UC San Diego's Phase II Small MS4 Storm Water Permit requires construction projects to eliminate or reduce pollutants from being discharged into the storm water system from project sites during and after construction and to reduce storm water runoff from the project site using Low Impact Development (LID). Project sites greater than one acre must also follow the Construction General Permit requirements. The purpose of this guidance document is to identify the activities and measures required for construction projects before, during, and after construction at UC San Diego.

## I. PRE-CONSTRUCTION REQUIREMENTS

### A. Water Pollution Control Plan

Develop a site specific Water Pollution Control Plan (may be detailed on schematic designs). The Water Pollution Control Plan shall depict the Best Management Practices (BMPs) to be implemented during construction to reduce/eliminate discharges of pollutants to the storm drain conveyance system and shall include erosion and sediment control BMPs, good housekeeping measures, and site and materials management. The following Best Management Practices (BMPs) at a minimum shall be addressed on the Water Pollution Control Plan:

1. Minimize disturbed area footprint
2. Stabilize disturbed areas
3. Protect slopes and channels
4. Control the site perimeter
5. Equipment storage, cleaning, and maintenance areas and activities
6. Points of ingress and egress to the construction site
7. Material loading, unloading, and storage practices and areas, including construction materials, building materials and waste materials

8. Materials, equipment, or vehicles that may come in contact with storm water
9. Dust control
10. Dewatering operations (if applicable)
11. Concrete waste management (washouts, etc.), if applicable

**B. Water Quality Protection Design Standards**

All development and/or redevelopment projects shall incorporate the following design standards as applicable:

1. All new storm drain inlets and catch basins within the project site shall be marked with prohibitive language and/or graphical icons to discourage illegal dumping per UCSD standards.
2. Outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system shall be covered and protected by secondary containment.
3. All trash container areas shall be enclosed to prevent off-site transport of trash and drainage shall be directed to the sanitary sewer system or the containers shall be covered to prevent exposure of trash to precipitation.
4. Interior drains must be connected to the sanitary sewer system (may not be connected to the storm water conveyance system).
5. Use native and climate appropriate plants (e.g., drought tolerant plants) for decorative landscape applications to reduce water and fertilizer needs.
6. Boiler drain lines, condensate drain lines, rooftop equipment, and drainage sumps must be connected to the sanitary sewer system or collected for reuse (may not be connected to the storm water conveyance system).
7. Decorative fountains may not be designed to discharge to the storm water conveyance system.
8. Building fire sprinklers may not be designed to discharge to the storm water conveyance system.

**C. Post-Construction Storm Water Management Measures**

Develop and incorporate post-construction storm water management controls into the project design for construction projects that will create and/or replace 2,500 square feet or more of impervious surface in accordance with the Phase II Small

MS4 Storm Water Permit Post Construction Storm Water Management Requirements (section F.5.g). Post-construction storm water management controls include permanent structural (e.g., rooftop runoff infiltration galleries) and non-structural Best Management Practices (e.g., conservation of natural and permeable areas) that remain in place after the project is completed and prevent pollution from the new or re-developed site over time.

1. Review the Post-Construction Stormwater Management Checklist to determine if storm water management controls are required. If management measures are required, complete the appropriate checklist (based on the amount of square feet of impervious surface that will be created or replaced by the project) and the Water Balance Calculator to calculate the pre- and post-project storm water runoff volumes. The Post-Construction Storm Water Design Requirement Checklists and the Water Balance Calculator are available at: <http://blink.ucsd.edu/safety/environment/outdoor/storm/post-construction.html>

#### D. Drainage/Hydrology Study

Projects that will create and/or replace 5,000 square feet or more of impervious surface shall prepare a drainage/hydrology study in accordance with the County of San Diego Hydrology Manual guidelines to demonstrate that conceptually, the site is physically suitable for the type and density of the proposed project, with the addition of appropriate on-site and off-site drainage improvements.

The preliminary drainage/hydrology study should be prepared during the schematic design phase of the project and finalized with construction drawings. The study must be prepared and stamped by a Registered Professional Engineer and include the following information:

- Preliminary analysis of pre- and post-project drainage conditions
- Conceptual demonstration with supporting calculations using the water balance calculator that post project draining concept can handle peak flows from the 85th percentile 24-hour storm and mitigates downstream impacts
- Analysis of capacity and utilization of existing storm drainage system facilities at proposed connection points
- Determination that sufficient land is available for proposed drainage facilities and maintenance corridors

- Statement on how the drainage concept appears to be consistent with the requirements in Section F.5.g of the Phase II Small MS4 Storm Water Permit

#### E. Post Construction Source Controls

Projects that will create and/or replace 5,000 square feet or more of impervious surface shall implement standard permanent and/or operational source control measures for pollutant generating activities and sources associated with the end use of the project site. This requires an evaluation of the equipment and activities that will be located or implemented at the project site after construction. Measures for the following pollutant-generating activities shall be designed consistent with recommendations from the CASQA Stormwater BMP Handbook for New Development and Redevelopment:

1. Accidental spills or leaks
2. Interior floor drains
3. Parking/Storage area maintenance
4. Indoor and structural pest control
5. Landscape/outdoor pesticide use
6. Pools, spas, ponds, decorative fountains, and other water features
7. Restaurants, grocery stores, and other food service operations
8. Storage and handling of solid waste
9. Outdoor storage of equipment or materials
10. Vehicle and equipment cleaning
11. Vehicle and equipment repair and maintenance
12. Fuel dispensing areas
13. Loading docks
14. Fire sprinkler test water
15. Drain or wash water from boiler drain lines, condensate drain lines, rooftop equipment, drainage sumps, and other sources

16. Unauthorized non-storm water discharges

17. Building and grounds maintenance

F. Pre-Construction Project Submittals/Deliverables

The items described above are to be prepared during the schematic design phase of the project. Provide draft forms to UC San Diego Project Manager from the department overseeing the project, and to the UC San Diego environmental planner for use in preparing the environmental analysis documentation for the project under the California Environmental Quality Act (CEQA). Pre-Construction Project deliverables include (as applicable):

1. Water Pollution Control Plan
2. Draft Post-Construction Storm Water Management Checklist with the following information:
  - i. Sizing and flow calculations for total new and replaced impervious surface area, total new pervious area, and calculation of Net Impervious Area.
  - ii. Description of Site Design Measures (if applicable)
  - iii. Description of Source Control Measures and Storm Water Treatment/Hydromodification Management Measures including calculations for regulated projects that will create and/or replace 5,000 square feet or more of impervious surface
  - iv. SMARTS Post Construction Calculator or equivalent calculations
  - v. Operation and Maintenance (O&M) Plan for post-construction storm water control measures including maintenance activities, frequency of those activities to be performed, manufacturer maintenance specifications or recommendations (for proprietary devices only )
3. Preliminary Drainage/Hydrology Study for projects that will create and/or replace 5,000 square feet or more of impervious surface

## II. CONSTRUCTION REQUIREMENTS

A. Construction Activity BMP Implementation

Certain contractor activities may cause pollution if not properly managed. Select BMP's on potential pollution, weather considerations, water being used on site, general site conditions and the potential for accidents or spills.

- **Manage Non-Storm Water Discharges and Materials** Construction site operators shall control wastes such as discarded building materials, concrete truck washout, chemicals, litter, paint, fuels, non-visible pollutants and sanitary waste at the construction site that may cause adverse impacts to water quality.
- **Practice Good Housekeeping:** Perform activities in a manner to keep potential pollutants from coming in contact with storm water or being transported off-site to eliminate or avoid exposure such as covering soil stockpiles when not in use, making sure that litter and trash is picked up often from the site and disposed of in the proper waste receptacles.
- **Contain Materials and Wastes:** Store construction, building and waste materials in designated areas, protected from rainfall and contact with storm water runoff. Dispose of all construction waste in designated areas, and keep storm water from flowing on to or off these areas. Prevent spills and clean up spilled materials.
- **Implement Controls for Dust and Particulate Generating Activities**
- **Implement Street sweeping/vacuuuming** to prevent tracking of dirt/sediment from the project site at a minimum of once per week but more frequently if tracking is noticed from the site.
- **Protect all storm drain inlets** within the project boundary and immediately downstream of the project.

The following BMP's, at minimum, are to be considered for these projects and implemented as applicable. They can be found in the California Storm Water Quality Association Construction Handbook (<http://www.cabmphandbooks.com>). Additional BMP's may be required upon review of the project:

- EC-2 Preservation of Existing Vegetation
- EC-4 Hydroseeding
- SE-1 or SE-5 Silt Fence or Fiber Rolls
- SE-6 Gravel Bag Berm

- SE-7 Street Sweeping and Vacuuming
- SE-10 Storm Drain Inlet Protection
- TC-1 Stabilized Construction Entrance
- WE-1 Wind Erosion/Dust Control
- WM-1 Material Delivery and Storage
- WM-3 Stockpile Management
- WM-8 Concrete Waste Management
- WM-9 Sanitary/Septic Waste Management (for projects with Porta Potties)

B. Construction Activity BMP Effectiveness Assessment

- Perform ongoing storm water pollution prevention inspections throughout construction.
- Take corrective action whenever necessary to prevent storm water or other runoff from the construction site into the storm water system or gutters and culverts leading to that system.
- Report any non-stormwater discharges that go into the storm water system to the UC San Diego Project Manager and EH&S department.

### **III. POST-CONSTRUCTION SUBMITTALS/ DELIVERABLES**

Submit the following when the project is completed to demonstrate that the project meets the Phase II MS4 Storm Water Permit requirements:

1. Finalized Post-Construction Storm Water Management Checklist to the UC San Diego Project Manager from the department overseeing the project (e.g., FD&C, FM, or HDH) and e-mail a copy to EH&S Environmental Affairs: [ehsea@ucsd.edu](mailto:ehsea@ucsd.edu) and to the UC San Diego Environmental Planner: [abuckley@ucsd.edu](mailto:abuckley@ucsd.edu)
2. Finalized Drainage/Hydrology Study for projects that create and/or replace more than 5,000 square feet of impervious surface to the UC San Diego Project Manager and email a copy to the UC San Diego Environmental Planner: [abuckley@ucsd.edu](mailto:abuckley@ucsd.edu)

3. Operation and Maintenance (O&M) Plan for post-construction storm water control measures including maintenance activities, frequency of those activities to be performed, manufacturer maintenance specifications or recommendations (for proprietary devices only ). Plan should be submitted to the UC San Diego Project Manager and to the supervisor of the UC San Diego group/department responsible for overseeing the O&M of the BMP.