

Storm Water Management Guidelines

Background

Runoff of polluted storm water is a leading cause of impairment to nearly 40 percent of surveyed water bodies in the United States that do not meet water quality standards. Polluted runoff is discharged, often untreated over land or via storm sewer systems directly into local water bodies. Without the proper controls this runoff not only may destroy wildlife habitats, but also threatens public health by contaminating food and drinking water supplies and potentially impairing recreational waterways. Originally, the most significant contributor of pollution were Combined Sewage Systems (CSSs), which during heavy rainfall would overflow because their capacity exceeded that of the local treatment facilities. The first CSS, Cloaca Maxima, dates back to Ancient Rome and is still in operation today. In the US there are approximately 770 Combined Sewer Systems primarily located in the Pacific Northwest and the Northeast and Great Lake regions, which are also regulated under the NPDES Program.

In 1972, the Federal Water Pollution Control Act (Clean Water Act, CWA) was amended to provide that any discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollution Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA established a framework for regulating discharges associated with various activities including construction under the NPDES Program. The NPDES Program was designed to track point sources and require implementation of the controls necessary to minimize the discharges of pollutants.

In the late 1990s the U.S. Protection Agency (USEPA) published final regulations that establish Storm water permit application requirements, known as Phase I of the NPDES Program. This program applied to operators of medium to large Municipal Separate Storm Sewer Systems (MS4s) serving populations of 100,000 or more and required operators to implement a storm water management program which would control polluted discharges to MS4's. The program primarily applies to municipal, industrial activities and construction projects of five acres or more.

Almost ten years later in December of 1999, the Storm Water Phase II rule was published requiring operators of small MS4s in urbanized areas to develop and implement programs and practices to control polluted storm water runoff. Phase II required a program which addressed a number of minimum control measures for areas in public participation and education, illicit discharges, pollution prevention and construction. What once had only applied to large construction sites applies to sites greater than an acre.

The NPDES Permit applies to small construction sites with a soil disturbance equal to or greater than one and less than five acres of land or part of a larger common plan of development which disturbs more than one acre.

As of March 7, 2003, University of California, Irvine (UCI) applies for an MS4 NPDES Storm Water Permit Application (Form 200) along with a Storm Water Management Plan (SWMP). This document can be located in the appendix at the end of the document.

Definitions

- NPDES Permit for Storm water Discharges: National Pollutant Discharge Elimination System. NPDES is the national program for administering and regulation Sections 307,318,402 and 405 of the Clean Water Act (CWA). In California, the State Resources Control Board (SWRCB) has issued a General Permit for storm water discharges associated with Phase II communities. For Phase I communities the Regional Water Quality Boards issued individual NPDES permits to either an individual permittee or a group of permittees.
- Notice of Intent (NOI): Is a formal notice to the SWRCB submitted by a Phase II municipality. The NOI provides information on the permittee, location of the discharges, types of discharges and certifies that the permittee will comply with all conditions of the Phase II General Permit. The NOI is not a permit application and does not require approval.
- A Best Management Practice (BMP): is defined as any program, technology, process, standard criteria, operating method, measure, or device, which controls, prevents, removes, or reduces pollution.
- Source Control BMPs: are operational practices that prevent pollution by reducing potential pollutants at the source. They typically do not require maintenance or construction.
- Treatment Controls BMPs: are methods of treatment to remove pollutants from storm water.
- Non-Storm water Discharge: is any discharge to municipal separate storm sewer that is not composed entirely of storm water.

General Requirements Under Phase II

Construction activity resulting in a land disturbance of one acre or more, or less than one acre but part of a larger common plan of development must obtain the Construction Activities Storm Water General Permit (General Permit). Construction activity includes clearing, grading, excavation, stockpiling, and reconstruction of existing facilities involving removal and replacement.

Construction activities, which are exempt, include

- Routine maintenance of an original line and grade or hydraulic function
- Emergency activities
- Construction activities meeting all three criteria
 - Soil disturbances less than one acre
 - Not part of a larger common plan of development that disturbs one or more acres of soil
 - Does not constitute a threat to water quality

The primary objectives of the General Permit are to:

- Reduce erosion
- Minimize or eliminate sediment in storm water discharges
- Prevent material used at a construction site from contacting storm water
- Implement a sampling and analysis program if storm water is exposed to construction materials
- Eliminate unauthorized non-storm water discharges from the construction sites
- Implement appropriate measures to reduce potential impacts on waterways both during and after construction projects
- Establish maintenance commitments on post-construction pollution control measures

How to comply with General Permit for Construction Activities

- Owners of new construction must file a complete Notice of Intent (NOI) package and pay fees prior to the beginning of construction. A copy of the NOI can be located at <http://www.swrcb.ca.gov/stormwtr/construction.html>. Line by line instructions and forms are located in the appendix at the end of the document.
- A Waste Discharger Identification (WDID) number will be issued to within 10 business days after the SWRCB receives a complete NOI package (original signed NOI, vicinity map, and check)
- Develop a Storm water Pollution Prevention Plan (SWPPP) in accordance with Section A of the General Permit prior to the commencement of soil disturbing activities
- The SWPPP describes the following
 - The project location, site features and materials and activities that may result in the off-site discharge of pollutants during construction
 - Controls to be implemented during construction:

- Select Best Management Practices (BMPs) in the areas of erosion control, discharge of sediment and other pollution sources
 - An inspection and maintenance program for BMPs
 - A sampling and analysis plan for sediment discharges and other pollutants to water bodies
 - Post construction controls after construction activities are complete
- Keep the SWPPP on site and implement it during construction
- Update the SWPPP to reflect any changes during all phases of construction
- A check list for a SWPPP is provided in the Appendix

The current fee is \$700.00. You will continue to receive an annual invoice until your project is complete and a Notice of Termination submitted and approved by the RWQCB.

1. Mail a complete NOI package including: the **original signed NOI, site map, and appropriate fee** to the State Water Resources Control Board at the following address:

Regular Mail:

State Water Resources Control Board
 Division of Water Quality
 Attn: Storm water Section
 PO Box 1977
 Sacramento, CA 95812-1977

Fed ex or other overnight mail:

State Water Resources Control Board
 Division of Water Quality
 Attn: Storm water Section
 1001 I Street
 Sacramento, CA 95814

Submit a Notice of Termination (NOT) when the construction is complete and conditions of termination listed in the NOT have been satisfied a copy of the NOT can be located at <http://www.swrcb.ca.gov/stormwtr/construction.html>.

The coverage under the General Permit remains in effect until a Notice of Termination (NOT) is submitted and approved by the RWQCB. Once the appropriate RWQCB approved the NOT and informs the SWRCB, the permit is terminated and the annual fees no longer accrue. A letter is sent to the discharge by the SWRCB confirming the permit is terminated in the database. If the RWQCB denies the NOT, you are responsible for any missed or outstanding invoices prior to filing the NOT. Instructions and forms can be found in the Appendix of this document.

The next section describes specific source control Best Management Practices (BMPs) to be considered for incorporation into daily practices and long term planning for new site development by the campus community. The source control facts sheets are listed below in the table are arranged by Minimum Control Measures for the six MS4 program elements:

Public Education and Outreach on Storm Water Impacts

Public Participation and Involvement

Illicit Discharge Detection and Elimination

Construction Site Storm Water Runoff Control

Post-Construction Storm Water Management in New Development and Redevelopment

Pollution Prevention/Good Housekeeping

These MS4 Program elements are aimed at improving water quality on campus. The applicable campus departments and areas in which the BMPs may apply are as follows:

Campus Community, General Public (CC)

Environmental Planning and Sustainability (EP&S)

Design and Construction Services (D&CS)

Facilities Management (FM)

Transportation and Distribution Services (T&DS)

Student Services (SS)

Best Management Practices List

Minimum Control Measures

#	Best Management Practices	All	CC	EP&S	D&CS	FM	T&DS	SS
	Public Education/Outreach on Storm water Impacts.	X						
1	Public Education/Outreach	X						
	Public Participation/Involvement							
2	Public Participation	X						
	Illicit Discharge Detection and Elimination		X			X		
3	Illicit Connection Detection Reporting & Removal				X	X		
4	Illegal Dumping	X						
5	Roofing Runoff				X	X		
	Outdoor Sanitary Sewer Overflows and Cleanup	X						
6	Sewer Line Overflows							
7	Vehicle Refueling		X		X	X	X	X
	Fire Sprinkler and Hydrant Testing/Flushing				X	X		
	Construction Site Storm Water Run-Off Control				X	X		
8	All-Inclusionary			X	X	X		
9	Brush or Rock Filter				X			
10	Check Dams				X			
11	Dewatering				X			
12	Dust Control				X			
13	Hydroseeding				X	X		
14	Mulching				X	X		
15	Prevention of Existing Vegetation				X	X		
16	Sand/Gravel Bag				X	X		
17	Scheduling			X	X	X	X	X
18	Secondary Filtration				X			
19	Silt Fences				X			
20	Stabilized Construction Entrance				X	X		
21	Storm Drain Inlet Protection				X	X		
	Non-Storm Water Discharges/Dry Weather Flows	X						
	Post-Construction Storm Water Management in New Development and Redevelopment				X	X		
22	Catch Basins			X	X			

#	Best Management Practices	All	CC	EP&S	D&CS	FM	T&DS	SS
23	Design to Reduce Existing & Minimize New Impervious Surfaces			X	X	X	X	
24	Dry walling				X	X		
25	Outlet Protection/Energy Dissipation			X	X			
26	Painting/Staining				X	X		
27	Permanent Seeding				X	X		
	Potable Water System Flushing or Chlorination				X	X		
28	Roofing				X	X		
29	Saw Cutting				X	X		
30	Solid Demolition					X		
31	Structure Cleaning					X		
	Housekeeping	X						
32	Food Service					X		X
33	Hazardous Materials, Use, Handling and Storage	X						
34	Hazardous Waste Management	X						
35	Landscaping Management			X	X	X		
	Integrated Pest Management					X		X
36	Sanitary/Septic Waste Management				X	X		X
37	Spill Prevention and Control	X						
38	Street Sweeping				X	X	X	
39	Surface Cleaning		X		X	X		X
40	Trash Areas	X						
41	Trash Compactors Areas					X		
	Fueling Operations						X	
42	Vehicle Maintenance		X		X	X	X	X
43	Vehicle Washing		X		X	X	X	X

Note: All indicates all departments and campus community

Best Management Practices (BMPs)

Public Education/Outreach

Pollutants of Concern:	All potential pollutants
Purpose:	Public education and outreach can be an effective storm water pollution prevention tool. As the public becomes aware of the personal responsibilities expected of them and others campus wide, there will be fewer unauthorized discharges directly to water bodies such as San Diego Creek.
Application:	This BMP applies to all students, faculty, and staff as well as visitors.
Practices:	<ul style="list-style-type: none"> • Train employees and residents not to dump waste • Train employees and residents to call EH&S at (949) 824-6200 if dumping is witnessed or discovered • Distribute educational materials to new students, faculty and staff • Post information on the website • CEQA (California Environmental Quality Act) documents are available to the public at the campus library
Limitations:	Not all outreach programs are applicable to all campus and community activities
Inspection & Maintenance:	Record any training sessions and campus/community events attended by employees, students and members of the community
References:	1,2 and 3

Comments And Other Information:

Best Management Practices (BMPs)

Public Participation

Pollutants of Concern:	All potential pollutants
Purpose:	Public can provide valuable input and assistance by playing an active role in the development and implementation of the program. There will be fewer legal obstacles resulting in shorter implementation schedules. They will offer a broader base of expertise as well as economic benefits.
Application:	This BMP applies to all students, faculty, and staff as well as visitors.
Practices:	<ul style="list-style-type: none"> • Participate in campus events to advertise and promote awareness • Disseminate campus wide information by emails, newsletters, campus newspaper and radio • Storm water issues are discussed at periodic Storm Water Advisory Council meetings • University Extension offers classes on Watershed Management • Marsh Steward under the Division of Agriculture & Natural Reserves provides tours of the Marsh as a collaborative program with K 6-12 groups
Limitations:	Not all outreach programs are applicable to all campus and community activities
Inspection & Maintenance:	Record any training sessions and campus/community events attended by employees, students and members of the community
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Illicit Connection Detection, Reporting & Removal

Pollutants of Concern:	<ul style="list-style-type: none"> • Bacteria and viruses • Detergents • Nutrients • Sanitary wastes • Sediments • Waste water
Purpose:	Follow Facilities Management Procedures to prevent, detect, and report illicit connections via underground permanent pipes to any storm drain systems. This management practice is directed at continuous or reoccurring discharges.
Application:	Illicit connections are permanent connections to the storm drain system that are not permitted. This BMP applies to detecting, reporting and removing physical illicit connections from the storm drainage system maintained by Facilities Management.
Practices:	<ul style="list-style-type: none"> • Report all observed suspected illicit connections to EH&S at (949) 824-6200 • Continue to map outfall locations • EH&S will coordinate cleanup and notify appropriate agencies when necessary • Review/develop programs to detect and eliminate illicit discharges • Follow/review SSMP for sewage spills and discharges
Limitations:	<ul style="list-style-type: none"> • Can not completely control access to all parts of the campus • Dye and smoke testing methods are more costly than visual inspections • Baseline determinations for effluents into the storm drains by rainfall have time restraints
Inspection & Maintenance:	Follow Facilities' Management Procedures
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Illegal Dumping

Pollutants of Concern:	<ul style="list-style-type: none"> • Any hazardous waste • Cleaning fluids • Green waste • Litter/debris • Paint • Pet waste • Solid waste • Vehicle fluids • Waste drums
Purpose:	Eliminate unauthorized non-storm water discharges.
Application:	Dumping in the unauthorized discharge of any materials that may reach the storm drain.
Practices:	<ul style="list-style-type: none"> • Train employees and residents not to dump waste • Train employees and residents to call EH&S at (949) 824-2183 if any hazardous materials are abandoned or dumped • Control access to campus buildings. Secure boundaries to campus property when the use of fences is practical • Post signs to discourage any unauthorized discharge.
Limitations:	<ul style="list-style-type: none"> • EH&S will respond to any authorized discharge or dumping. Clean up capabilities will be determined and accessed • Cost and frequency of disposal • Design features and security
Inspection & Maintenance:	<ul style="list-style-type: none"> • Record training dates for UCI staff regarding the appropriate disposal methods for waste • Routinely perform inspection of the University's property to ensure unauthorized discharge or dumping is reported in a timely manner • Routinely inspect signage to ensure presence and readability
References:	1, 2, 3, 4 and 5

Comments And Other Information:
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Best Management Practices (BMPs)

Roofing Runoff

Pollutants of Concern:	<ul style="list-style-type: none">• Hydrocarbons• Sediment from increased surface flow• Particulates
Purpose:	Prevents contaminants from rainfall and air deposition from being washed into storm drains
Application:	Retrofit gutter systems on buildings to gather roof runoff and route it to landscaped areas prior to being discharges to storm water drains
Practices:	Roof runoff is directed to landscaped areas large enough to filter flow
Limitations:	When vegetative areas are not available, roof runoff should be collected by a cistern collection system. These systems have limited collection capacities
Inspection & Maintenance:	Monitor gutter collection system for blockage and leaks.
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Outdoor Sanitary Sewer Overflows and Cleanup

Pollutants of Concern:	<ul style="list-style-type: none"> • Bacteria • Dry Weather Flows
Purpose:	Prevent or reduce the discharge of sanitary sewer overflows to the storm drain system.
Applications	Sanitary sewer system operation and maintenance.
Practices:	<p>DO NOT dispose of any of the following into the sanitary sewer system:</p> <ul style="list-style-type: none"> • Concentrated chemicals with a pH<5 or >12.5 • Substances that may obstruct flow like greases and oils • Hazardous substances or waste • Heated waste streams equal to or greater than 150°F • Storm water • Batch discharges without prior approval from EH&S <p>Response Procedures for Sanitary Overflows into the Environment:</p> <ol style="list-style-type: none"> 1. Notify EH&S IMMEDIATELY: (949) 824-6200 2. Try to stop or control the release at the source 3. Block nearby storm drains 4. Call a vactor truck company for assistance to collect the overflow if release cannot be quickly stopped or contained
Inspection & Maintenance:	<ul style="list-style-type: none"> • Maintain sanitary sewer system to prevent blockages and/or overflows in accordance with UC Irvine’s Sanitary Sewer Management Plan. • Inspect spill kit provisions on a regular basis and replace as needed.
References:	1,2, 3, 4, and 5
Additional Information:	UC Irvine’s Storm Water Management Program

Best Management Practices (BMPs)

Sewer Line Overflows

Pollutants of Concern:	Domestic sewage and grease
Purpose:	Follow Facilities Management Procedures to prevent, detect, report, correct; infiltration from sanitary sewer discharges. This BMP covers inflow sewer blockages, wet weather, broken pipes and grease trap blockage
Application:	BMP applies to campus maintained sanitary sewers
Practices:	<ul style="list-style-type: none"> • Follow procedures developed by Facilities Management for the campus drains systems • The larger mains are cleaned by an outside contractor • All other are either jetted or cleaned mechanically • Blockages and separations in pipes and their joints are detected by the use of an optic camera during routine inspection and maintenance • All new construction of storm drains and sanitary sewers are also inspected in the same manner
Limitations:	<ul style="list-style-type: none"> • University approved contractor response time to spill • Access to lines may require excavating large areas possibly impacting other campus activities
Inspection & Maintenance:	<p>Follow Facilities' Management Procedure, "UCI Sewer System Prevention Maintenance Practices."</p> <ul style="list-style-type: none"> • The main sewer system is jetted on an annual basis • Lateral mains to buildings are cleaned with mechanical snakes as needed • Housing areas are on a more frequent monitoring schedule • Debris is removed with a vacuum truck at various manhole locations as needed • The plumbing shop has initiated chemical based preventative program to relieve sludge built up in some of the lines, particularly those servicing the food service vendors/eateries
References:	1, 2, 3, 4, 5 and 7

Best Management Practices (BMPs)

Fire Sprinkler and Hydrant Testing/Flushing

Pollutants of Concern:	<p>Polluted Runoff:</p> <ul style="list-style-type: none"> • Bacteria • Dry Weather Flows • Total Residual Chlorine
Purpose:	To prevent the discharge of water from fire sprinkler or hydrant flushing and testing from going into storm drains.
Application:	Fire sprinkler and hydrant testing and flushing activities.
Practices:	<ul style="list-style-type: none"> • DO NOT drain water from fire sprinkler or fire hydrant testing or flushing into a storm drain or onto an area that will discharge into a storm drain. • Cover/protect nearby storm drain inlets from outdoor work activities as needed. • Collect water into a portable tank or a tanker truck (collection tank capacity must be greater than the volume of water being flushed/discharged) and dispose of as follows: <ul style="list-style-type: none"> ○ Fire sprinkler and hydrant water must be disposed into the sanitary sewer system. Discharge must not exceed 35 gallons/minute and/or 6,500 gallons/day. ○ Small volumes (less than 25 gallons) of clean water may be discharged to a pervious vegetated area where the water can infiltrate into the ground if it will not cause erosion or reach a storm drain.
Inspection & Maintenance:	Notify EH&S of any observed discharges of water form fire spinklers or fire hydrants into storm drain inlets to stormwater@uci.edu .
References:	1,2, 3, 4 and 5
Additional Information:	UC Irvine Storm Water Management Program

Best Management Practices (BMPs)

Vehicle Refueling

Pollutants of Concern:	<ul style="list-style-type: none"> • Gasoline and Diesel • Vehicle fluid
Purpose:	Eliminate unauthorized discharge to the storm water drain system.
Application:	Dumping is the unauthorized discharge of any materials that may reach the storm drain of a receiving water body.
Practices:	<ul style="list-style-type: none"> • Employees are trained as first responders and to mitigate spills • Fleet Services uses multi-stage interceptor tanks to capture run off from the fueling area • Control access to campus boundaries via fences at Fleet Services and Grounds during hours of non-operation • Post signs to discourage dumping
Limitations:	EH&S will respond when authorized discharges or spills occur.
Inspection & Maintenance:	<ul style="list-style-type: none"> • Record training dates for UCI staff regarding the appropriate disposal methods for waste and procedures for SPCC Plans • Routinely perform inspection of Fleet Services filling area and equipment for proper operation • Report any unauthorized discharges to EH&S as soon as possible at (949) 824-6200 • Routinely inspect fences for impermeability • Clean or pump fill clean-outs after washing down, storm events or overflow by vendors or at the time of fill up • Routinely inspect signage to ensure presence and readability
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

All-Inclusionary

Pollutants of Concern:	<ul style="list-style-type: none"> • Any materials defined as hazardous by federal, state, and local laws and regulation • Sediments
Purpose:	The procedures developed for campus department such as Capital Planning, Campus & Environmental Planning, Design & Construction, Environmental Health & Safety and Facilities Management should assist campus departments to comply with Storm Water Phase II regulations when working with contractors during all phases of planning, design and construction of all campus projects.
Applications:	All projects undertaken by the University of California, Irvine
Practices:	All UCI projects shall address, incorporate and comply with applicable University Storm Water Pollution Prevention Plan's Best Management Practices during all phases of project development through the final stages of completion. Documents such as the Campus' Long Range Development Plan, any Environmental Impacts Reports, contract language, request for quotes and proposals and final bid documents must be consistent with the Best Management Practices of the campus.
Limitations:	All BMPs shall be updated when necessary to comply with any additions or changes to federal, state and local laws and regulations
Inspection & Maintenance:	Planners, project managers, and project reviewers shall be responsible to ensure applicable BMPs have been incorporated into all UCI projects.
References:	1,2, 3 ,4 and 5

Comments And Other Information:
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Best Management Practices (BMPs)

Brush or Rock Filter

Pollutants of Concern:	<ul style="list-style-type: none">• All pollutants• Sealants• Sediments• Silt laden water
Purpose:	Temporary barrier of brush wrapped in filter cloth or rock that are anchored down to intercept and filter sediment-laden storm water runoff from disturbed areas which tent to retain sediment and release water ass sheet flow.
Application;	<ul style="list-style-type: none">• Along streams and channels• Across mildly sloped construction roads• Along the perimeter of disturbed areas• Where contributing drain areas are 5 acres or less
Limitations:	<ul style="list-style-type: none">• Rock filter berms are difficult to remove• Not effective for diverting runoff• Requires sufficient space for water to pond
Inspection & Maintenance:	<ul style="list-style-type: none">• Inspector should monitor berms after rainfall event, and weekly throughout season• Reshape berms and replace fabric or brush as needed• Remove filer barriers upon completion of construction activities
References:	1,2, 3 ,4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Check Dams

Pollutants of Concern:	<ul style="list-style-type: none"> • Sediments • Silts
Purpose:	These temporary dams serve to reduce flow velocity of storm water runoff entering natural drainage ditch minimizing erosion.
Application:	<ul style="list-style-type: none"> • In steep channel where storm water runoff velocities exceed 5 f/sec • In small open channels that drain 2 to 10 acres or less • When new seedlings have not had time to take root and fully develop • In temporary ditches or channels where the short length of service does not allow or warrant establishment or construction of erosion- resistant linings.
Practices:	<ul style="list-style-type: none"> • Use across natural or man-made channels • Construct with rocks, gravel, sandbags and pieces of timber
Limitations:	<ul style="list-style-type: none"> • Can not be used in live streams or those which are already grassed lined • Not appropriate for sites over 10 acres • After high velocities flows extensive maintenance is required • All sediment must be removed after a storm event to prevent resuspension
Inspection & Maintenance:	<ul style="list-style-type: none"> • Inspect periodically before and after storm events to check for undermining • Repair failures by replacing loosened materials such as rocks and gravel bags
References:	1,2, 3 ,4 and 5

Comments And Other Information:
Runoff Control

Best Management Practices (BMPs)

Dewatering

Pollutants of Concern:	<ul style="list-style-type: none"> • Sediments • Any hazardous material
Purpose:	<ul style="list-style-type: none"> • Temporary method to filter sediment from groundwater and precipitation prior to discharge into storm drain systems
Application;	<ul style="list-style-type: none"> • Construction sites • Central plants tunnel and vaults • Large area of depression where waters have accumulated • Types of dewatering devices <ul style="list-style-type: none"> ○ Desilting basins ○ Portable sediment tanks ○ Sediment traps ○ Sump pits with perforated piping system
Limitations:	<ul style="list-style-type: none"> • Dewatering device need to be appropriately sized to handle the capacity of the waters being filtered prior to discharge to the storm drain • System design is site specific • Procedurally only for waters contaminated with sediments • Dewatering operations must comply with all applicable local permitting requirements
Inspection & Maintenance:	<ul style="list-style-type: none"> • File and maintain appropriate paperwork for permit application • Permits may require testing requirements • Units require frequent maintenance when sediment reduces effectiveness of the unit
References:	1,2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Dust Control

Pollutants of Concern:	<ul style="list-style-type: none"> • Dust • Paint chips • Rust • Metallic debris • Sediment • Sealants • Wash Water
Purpose:	Prevent structural related contaminants from entering the storm water system.
Application;	Structure washing and refinishing operations.
Purpose:	<ul style="list-style-type: none"> • Close work area to pedestrians and vehicular traffic to avoid tracking materials outside the designated work area • Use non-detergent water for washing • Identify and protect backsplash areas with collection barriers • Filter captured backsplash materials and dispose of debris properly • Filter storm drain inlets • Use chip-resistant building siding and roofing in any renovation or construction project • Lead- based paint debris and backsplash must comply with hazardous materials BMPs
Limitations:	<ul style="list-style-type: none"> • Costs of filtering wash water is prohibited • Utility structures and connections to buildings make it difficult • Chemical stabilization materials may have harmful effects on water quality if used incorrectly. • Excessive sprinkling with water may result in non-storm water discharge from the site.
Inspection & Maintenance:	<ul style="list-style-type: none"> • Where wind and vehicle traffic is excessive, daily inspections should be performed • Apply stabilizers based on need within appropriate intervals
References:	1,2, 3 ,4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Hydroseeding

Pollutants of Concern:	<ul style="list-style-type: none">• Sediment
Purpose:	Used to reduce erosion by establishing quick growing plants to stabilize disturbed areas which will not have permanent landscaping installed for a period of time. Stabilizes disturbed soils and protects from rain impact.
Application:	<ul style="list-style-type: none">• Used on construction sites or areas where temporary protection is needed until permanent landscaping is established
Practices:	<ul style="list-style-type: none">• Apply mulch over seedlings to retain moisture• Can be applied as a wet slurry of seed , mulch fiber and fertilizer
Limitations:	<ul style="list-style-type: none">• Requires frequent inspections• May have to use additional erosion measures such as blankets, netting or matrices when erosion or seeding on slopes is necessary
Inspection & Maintenance:	<ul style="list-style-type: none">• Inspect after storm events• Repair washed out areas and reseed areas where necessary
References:	1,2, 3 ,4 and 5

Comments And Other Information:
Temporary or Permanent

Best Management Practices, (BMPs)

Mulching

Pollutants of Concern:	<ul style="list-style-type: none">• Varies depending on type• Organic solvent(turpentine)
Purpose:	<ul style="list-style-type: none">• Temporary method of erosion control• Reduces storm water runoff velocity
Application:	<ul style="list-style-type: none">• Used in area where slopes are steeper than 2:1 or to retain moisture• Used in areas where temporary seeding is not feasible due to environmental constraints
Practices:	<ul style="list-style-type: none">• Organic mulches should be used whenever possible• Use with netting
Limitations:	<ul style="list-style-type: none">• May delay germination• Subject to erosion
Inspection & Maintenance:	<ul style="list-style-type: none">• Inspect after storm events• Repair washed out areas and reseed areas where necessary
References:	1,2, 3 ,4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Preservation of Existing Vegetation

Pollutants of Concern:	<ul style="list-style-type: none"> • Herbicides • Pesticides • Sediments • Silts
Purpose:	During land disturbing activities, protect plants and trees which provide erosion and sediment control
Application:	<ul style="list-style-type: none"> • Appropriate to all types of construction sites • Cleared areas in preparation for future construction sites • Flood plains • Landfills • Sensitive habitat area where natural vegetation exists • Steep slopes
Practices:	<ul style="list-style-type: none"> • All attempts should be made to preserve existing vegetation • Areas not to be disturbed should be clearly marked with construction fencing and communicated to contractors • Any damage to the area must be repaired immediately in accordance with Campus Environmental Planning's Policies and Procedures
Limitations:	Protection of existing vegetation may constrict the areas available for construction activities. Timing and weather conditions may impact restoration activities
Inspection & Maintenance:	Inspectors should monitor impacts to vegetation during all phases of construction
References:	1,2, 3 , 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Sand/Gravel Bag Barrier

Pollutants of Concern:	<ul style="list-style-type: none">• Sediments• Silts
Purpose:	Temporary method of detaining sediment laden runoff from disturbed areas
Application:	<ul style="list-style-type: none">• Used to provide channel crossing for construction equipment• Use along perimeters or run parallel to keep sediment off paved areas• Used to temporarily divert flow to sediment basins• When construction sequencing requires adjustments or relocations
Practices:	<ul style="list-style-type: none">• Install gravel bags along level contours• Gravel is preferred over sand bags
Limitations:	<ul style="list-style-type: none">• Installation is labor intensive• Limits drainage area upstream of barriers to 5 acres• Should not be used to detain concentrated flows
Inspection & Maintenance:	<ul style="list-style-type: none">• Inspect before and after storm events• Repair washed out areas and remove when the barrier is not longer needed• Remove the sediments when water reaches one-third the barrier height
References:	1,2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Scheduling

Pollutants of Concern:	<ul style="list-style-type: none"> • Gasoline and diesel • Oil
Purpose:	Develop a schedule for each project, which sequences construction activities with the implementation of construction site BMPs for erosion control. The purpose is to reduce the amount and duration of soil exposed to the elements, runoff and vehicles tracking and to perform the construction activities and control practices in accordance with the planning schedule
Application:	Any project that would disturb land
Practices:	<ul style="list-style-type: none"> • Use schedule or flow chart to lay out construction plan which describes erosion controls in conjunction with the sequence of items from site clearing to foundation pouring • Minimize grading activities during the rainy season • Allow enough time to stabilize soil with vegetation to trap sediments • Maintain site stabilization year-round, and keep wet-season sediment trapping devices in operational condition. • Minimize site disturbance at any one time • Sequence trenching activities by closing open portions before new trenching begins
Limitations:	<ul style="list-style-type: none"> • Inclement weather • Equipment failure or product delivery • Conflicting trade schedules
Inspection & Maintenance:	<ul style="list-style-type: none"> • Verify work progress • Adjust schedule project schedule in advance to anticipate corrective measures
References:	1,2, 3, 4 and 5

Comments And Other Information:
Erosion Control

Best Management Practices (BMPs)

Secondary Filtration

Pollutants of Concern:	Fine sediment
Purpose:	Utilizes high efficiency filter cartridges to remove fine particles such as clays from sediment ponds, storm water runoff and excavated areas on construction sites.
Application;	<ul style="list-style-type: none">• Used as secondary treatment after a dewatering process on fine sediment laden water from construction sites• To remove fines sediments not settled in sediment basins• To protect against discharge of heavily sediment laden water from overflow to sediment basins• Used as a pretreatment, to remove sediments from hydrocarbon contaminated ground and surface water
Limitations:	<ul style="list-style-type: none">• Requires a pump to process water through system• Recommend pre treatment such as settling tanks or sand filters• Is not very efficient on heavy sediments loads• Will not remove colloidal clay
Inspections & Maintenance:	<ul style="list-style-type: none">• Check operating pressures frequently. When the pressure increases or the quality of water discharged deteriorates, the cartridges need replacing• Ensure the discharges are not causing erosion
References:	1,2, 3 ,4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Silt Fences

Pollutants of Concern:	<ul style="list-style-type: none"> • Any material defined as hazardous under federal, state, and local laws and regulations • Sediments
Purpose:	Used as temporarily linear sediment barrier of permeable fabric designed to intercept and slow the flow velocity of runoff from soils/sediments having been disturbed during construction activities. Silt fences allow sediment to settle from runoff before water leaves the construction site.
Practices:	<ul style="list-style-type: none"> • Construct along a level contour so not to create rills or gullies • For ponding to be effective turn the last 6 feet of fence up the slope in the shape of a “J” or “L” • Do not connect segments of the fence
Application:	<ul style="list-style-type: none"> • Along the perimeters of the site below the toe of exposed and eroded slopes • Used around temporary soil and stockpiles • Along channels • Down slope of any exposed soil areas
Limitations:	<ul style="list-style-type: none"> • Additional protection may be necessary immediately adjacent to the bottom of the slope prior to the fence for slopes steeper than 1:2 • Not suitable for grades greater than 1:4 • Maximum length should not exceed 500 ft. • Not to be used across channels or to redirect flow
Inspection & Maintenance:	<ul style="list-style-type: none"> • Superintendents or inspectors need to monitor the condition of the fence when rain is forecasted and after a rain event • Remove accumulated sediment when it reaches one third of the height of the fence • Maintain undercut of the fence and replace damaged fabric as need • May need replacing after 6 months of use
References:	1,2, 3, 4 and 5

Comments And Other Information:
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Best Management Practices (BMPs)

Storm Drain Inlet Protection

Pollutants of Concern:	<ul style="list-style-type: none">• All pollutants• Trash/debris• Green waste
Purpose:	Temporary control devices constructed by excavation, use of fabric or gravel barriers around inlets to reduce soil or debris from site erosion
Application:	<ul style="list-style-type: none">• Where sediment laden surface runoff may enter an inlet• Where the drainage areas have not been permanently stabilized• Where drainage area is 1 acre or less• Appropriate during wet seasons• Block and gravel bag barriers are applicable when sheet flow or concentrated flows exceed 0.5cfs, and it is necessary to allow for overtopping to prevent flooding• Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected and overflow capability is needed
Limitations:	<ul style="list-style-type: none">• Use only when ponding will not encroach into highway traffic or onto erodible surfaces and slopes• Generally used for low sediment and low volume flows• Frequent maintenance is required to minimize sediment deposits and build up
Inspections & Maintenance:	<ul style="list-style-type: none">• Bring disturbed area to the grade of the drop inlet and smooth a compact it• The contractor must properly dispose of accumulated sediment• Inspector should monitor all inlet devices after a rain event
References:	1,2,3,4 and 5
Comments and Other Comments:	

Best Management Practices (BMPs)

Non-Storm Water Discharges/Dry Weather Flows

Pollutants of Concern:	<ul style="list-style-type: none"> • All pollutants • Trash/debris • Green waste
Purpose:	To prevent non-storm water discharges to the storm water drainage system by implementing measures to detect, correct, and enforce against illicit connections and discharges.
Application:	Irrigation systems, outdoor public use areas and outdoor cleaning activities.
Practices:	<p>Anything that discharges to a storm drain that is not composed entirely of storm water is a <i>non-storm water discharge</i> (e.g., irrigation runoff, wash water, etc.)</p> <ul style="list-style-type: none"> • Mark storm drains with “No Dumping” signage to prevent people from dumping water or other pollutants into them. • If you see water going to a storm drain and it isn’t raining (i.e., dry weather flow), try to identify the source and stop it if possible. • Report non-storm water discharges to the UC Irvine storm drains: <ul style="list-style-type: none"> ○ Report a water leak, broken pipe or sprinkle, or irrigation problem by texting to water@uci.edu and include a photo too, or call Facilities Management at (949) 824-5444. ○ For hazardous materials spills call EH&S at (949) 824-6200. ○ For other non-storm water discharges, email stormwater@uci.edu or call EH&S at (949) 824-6200.
Inspections & Maintenance:	<ul style="list-style-type: none"> • Look for non-storm water discharges/dry weather flows into storm drains during routine maintenance and grounds keeping activities. • Monitor irrigation system at least once a year for discharges into the storm water conveyance system. Adjust irrigation system as needed. • Maintain equipment to prevent leaks and spills.
References:	1,2,3,4 and 5
Comments and Other Comments:	

Best Management Practices (BMPs)

Stabilized Construction Entrance

Pollutants of Concern:	<ul style="list-style-type: none"> • Sediments • Silts
Purpose:	Minimizes the tracking of dirt and mud from construction vehicles by stabilizing all entrances and exits of a construction site
Application:	On sites where tracking materials onto a public roadways becomes an issue due to poor; dusty or wet soil conditions
Practices:	<ul style="list-style-type: none"> • Properly grade entrance to prevent runoff from the construction site • Select entrance stabilization material such as aggregate, asphalt, or concrete based on required performance standards and site conditions • When using aggregate place 8 inches of 200mm course grade material on base • Design entrance to support the heaviest vehicle on-site • Route runoff from stabilized entrance through a sediment trap before water is discharged
Limitations:	<ul style="list-style-type: none"> • May require additional street sweeping adjacent to entrances for • Material that become deposited on tires. Water may be trucked in if not available on site for washing down truck and equipment • Limit points of entrances and exits as well as speeds of the vehicles
Inspection & Maintenance:	<ul style="list-style-type: none"> • Inspect routinely for damage and necessary repair • Maintain/service sediment trapping devices on a frequent basis • Require all vehicles to use the stabilized entrance
References:	1,2, 3 and 4

Comments And Other Information:
Runoff Control

Best Management Practices (BMPs)

Catch Basins

Pollutants of Concern:	<ul style="list-style-type: none">• Trash• Debris• Sediment• Silt
Purpose:	To minimize sediment and debris entering the storm drain
Application;	<ul style="list-style-type: none">• Used whenever vegetative area can not adequately filter sediment laden water
Installation & Design	<ul style="list-style-type: none">• Secure screens with finer mesh to inlet grate openings• Dimensions of a catch basin should be 4 times larger than the diameter (D) of the basins outlet pipe• The minimum sump depth should be 4 times D• The outlet pipe should be 1.5D from the bottom of the basin
Inspection and Maintenance:	<ul style="list-style-type: none">• Contractor or Facilities Management need to monitor and clean a minimum of twice a year or when debris accumulates by trained employees• Maintain a log of the amount of sediment removed and the date of removal• All sediments must be disposed of appropriately in accordance with the campus' hazardous waste guidelines
References:	1,2, 3 ,4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Building/Outside Project Site Remodels or Repairs

Pollutants of Concern:	Bacteria, Metals, Nutrients, Oil & Grease, Organics, Sediments and Trash
Purpose:	Remodeling of existing buildings are outside pavement, road or landscaping activities can generate pollutants such as solvents, paints finishing residuals cleaners, asbestos, concrete and asphalt. Good house keeping practices will eliminate any discharges to storm drains or receiving waters.
Application:	<ul style="list-style-type: none"> • Building renovations or retrofits managed by Facilities Management • Asbestos abatement • General routine maintenance • Street, parking lot, pavement and walkway repairs, installations and demolitions • Landscaping
Practices:	<ul style="list-style-type: none"> • Follow and train staff on the Construction Good House Keeping BMPs • Be sure to secure project sites with barriers or fences • Cover materials exposed to any weather conditions • Store all materials used in project activities in secure containers and or areas • Protect any storm drain inlets with socks or geofabric to prevent materials entering storm drains • Capture all cleanup water and dispose of properly • Do not wash down equipment or vehicles used in conjunction with construction activities in areas which discharge to storm drain systems.
Limitations:	Scheduling, time limitations and staffing may result in not following all BMP practices
Inspection & Maintenance:	<ul style="list-style-type: none"> • Project oversight and review of BMPs by Facilities Management Project Management Team • Routine inspections as performed by FM inspectors • Routine maintenance of project site preformed by appropriate trades performing activities
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Design New Impervious Surfaces

Pollutants of Concern:	Bacteria, Metals, Nutrients, Oil & Grease, Organics, Sediments and Trash
Purpose:	Porous pavement is a permeable pavement surface with an underlying stone reservoir to temporarily store surface runoff before it infiltrates into the subsoil. This porous surface replaces traditional pavement, allowing parking lot storm water to infiltrate directly and receive water quality treatment.
Application:	<ul style="list-style-type: none"> • Low-traffic or overflow parking areas • Areas where hydroplaning may occur • In densely developed areas because they consume no space. Porous pavement serves two purposes, not just as pavement, but drainage where normally there would be a lack of space due to the density and hard surfaces.
Practices:	<ul style="list-style-type: none"> • There are few porous pavement options, including porous asphalt, pervious concrete, and grass pavers. Porous asphalt and pervious concrete appear to be the same as traditional pavement from the surface, but are manufactures without “fine” materials, and incorporate void spaces to allow infiltration. • Grass pavers are concrete interlocking blocks or synthetic fibrous gridded systems with open areas designed to allow grass to grow with the void areas.
Limitations:	<ul style="list-style-type: none"> • Maintenance has been a concern in past applications • Should not be used in high-traffic areas due to the potential for failure causes clogging • Should not be used in areas where they may be a high incidence of contaminated runoff due to activities such as vehicle maintenance areas or excessive runoff from parking lots
Inspection & Maintenance:	<ul style="list-style-type: none"> • FM department would have to establish a routine maintenance schedule to ensure that paving is free of debris and sediment • Ensure paving areas dewater between storms • Mow areas and reseed when necessary • Inspect the surface of deterioration or spalling
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Drywalling

Pollutants of Concern:	<ul style="list-style-type: none">• Dust• Plaster• Spackle• Metallic debris• Slurry
Purpose:	Procedures of project managers and contractor to prevent drywalling-related contaminants from entering the storm drain systems
Application;	Drywall installation and replacement
Practices:	<ul style="list-style-type: none">• Do not work nor carry drywall in the rain• Clean delivery trucks of dust and debris in the containment area\ and dispose of properly• Clean and store tools on a covered containment pallet• Filter ventilation systems and install temporary dust barriers on windows and door
Inspection and Maintenance:	<ul style="list-style-type: none">• Drywall dust is very fine and therefore difficult to completely contain
References:	1,2, 3 ,4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Outlet Protection/Energy Dissipation

Pollutants of Concern:	All pollutants
Purpose:	Physical devices placed at pipe outlets and in channels to reduce the velocity and energy of concentrated storm water flows. Outlet protection helps to prevent scour and minimize the potentials for downstream erosion.
Application:	<ul style="list-style-type: none">• Outlets of pipes, drains, culverts, conduits or channels• Outlet of channels that carry continuous flow of water• Outlet located at the bottom of mild to steep slopes• Where lined conveyances discharge to unlined conveyances
Limitations:	<ul style="list-style-type: none">• Loosen or wash rock or stones during high flows• Slow flows may result in an increase in hydrostatic pressure around the device resulting in erosion of the grout which connects the pipe to the device
Inspection & Maintenance:	<ul style="list-style-type: none">• Requires maintenance to prevent blockage resulting in possible health hazards due to pests• Maintain and monitor blockages
References:	1,2, 3,4,5

Comments And Other Information:

Best Management Practices (BMPs)

Painting and Staining

Pollutants of Concern:	Paint chips, rust, metallic residuals, sediments, dust, sealants, solvents, corrosives, paints, stains, and wash water
Purpose:	Procedure for project managers and contractors to prevent painting and staining-related contaminants from entering the local storm drain system.
Application:	Painting or other chemical finishing of structural interiors and or exteriors.
Practices:	<ul style="list-style-type: none"> • Do not paint in the rain • Close work area to pedestrian and vehicle traffic to avoid tracking • Protect landscapes, ventilation systems, and drainage systems with appropriate fabric or plastic barriers • Use only non-lead-based paints and are compliant with AQMD VOC rules • Store all liquids in appropriate containers in covered containment pallet • Clean all equipment in containment area, and cleaners properly • Dispose of all debris, tarps, empty containers, and cleaners properly • Lead-based paint debris shall comply with Hazardous Materials BMPs • Develop/review preparatory cleaning procedures for washing buildings and surface • Never rinse paint brushes or materials in a gutter or street • Paint out excess water-based paint before rinsing brushes, rollers, and containers in the sink
Limitations:	Not all renovations or construction projects are managed by Design & Construction or Facilities Management under which all campus policies and procedures are apart of contract language the contactor Complies with. Develop guidance documents to educate staff and faculty who may hire contractors unfamiliar with the University's standards.
Inspections & Maintenance:	EH&S will need to monitor those sites and projects where there is no oversight from either Design & Construction or Facilities Management.
References:	Refer to items

Comments and any other information:

Best Management Practices (BMPs)

Permanent Seeding

Pollutants of Concern:	<ul style="list-style-type: none"> • Sediments • Silt Laden water
Purpose:	<p>To establish a permanent vegetative cover on disturbed sites/areas due to new construction or other activities. Established vegetative covering not only enhances aesthetics of a site but provides other benefits:</p> <ul style="list-style-type: none"> • Reduces erosion by slowing flow velocities • Traps sediments and other particulates • Protects soil surface from precipitation impact • Enhances infiltration, transpiration and porosity of clay soils
Application:	Buffer strips, natural channels, and cut and fill areas, landscape corridors, slopes, stream banks and waterways.
Practices:	<ul style="list-style-type: none"> • Follow all University polices, procedures and guidelines prescribed in campus landscaping standards prescribed by Campus and Environmental Planning for environmental impact, design, criteria and vegetation selection of any project within campus boundaries • Ensure all requirements are included in any contract language, RFPs, RFQs and final contract documents
Limitations:	<ul style="list-style-type: none"> • Ensuring University polices, procedures and guidelines are followed for projects not managed by Design and Construction Services (D&CS) or Facilities Management (MF) • If the site is susceptible to erosion, additional control measures may be necessary during the establishment of vegetation. • Frequent monitoring, and irrigation during dry seasons • Follow routine and constant maintenance schedule
Inspection & Maintenance:	<p>D&CS inspectors, and FM staff should provide over site during new construction and other projects managed respectively</p> <ul style="list-style-type: none"> • Monitor soil moisture and nutrients during the establishment of new vegetation • All seeded areas should be inspected for failures and reseeded, fertilized and mulched within the planting season • Encourage spread of newly established grass with frequent mowing
References:	1,2,3,4 and 5

Best Management Practices (BMPs)

Potable Water System Flushing or Chlorination

Pollutants of Concern:	<p>Polluted Runoff:</p> <ul style="list-style-type: none"> <li style="display: inline-block; width: 45%;">• Dry Weather Flows <li style="display: inline-block; width: 45%;">• Total Residual Chlorine
Purpose:	To prevent the discharge of water from potable water system flushing and testing, or chlorination of new lines from going into storm drains.
Application:	New potable water line chlorination and water system flushing/testing activities.
Practices:	<ul style="list-style-type: none"> • DO NOT drain water from potable water line chlorination and water system flushing/testing or new line chlorination into a storm drain or onto an area that will discharge into a storm drain. • Cover/protect nearby storm drain inlets from outdoor work activities as needed. • System flushing: <ul style="list-style-type: none"> ○ Before beginning the flush, collect any chemicals from the system (e.g., propylene glycol, inhibitors, etc.) into drums for proper disposal as hazardous waste. ○ Collect water into a portable tank or a tanker truck (collection tank capacity must be greater than the volume of water being flushed/discharged) and dispose of to the sanitary sewer system. Discharge must not exceed 35 gallons/minute and/or 6,500 gallons/day. • Chlorination of New Water Lines: <ul style="list-style-type: none"> ○ Collect chlorinated water and de-chlorinate prior to discharge to the sanitary sewer system. Discharge must not exceed 35 gallons/minute and/or 6,500 gallons/day.
Inspection & Maintenance:	Notify EH&S of any observed discharges of water from potable water system flushing and testing into storm drain inlets to stormwater@uci.edu .
References:	1,2, 3, 4 and 5
Additional Information:	UC Irvine Storm Water Management Program

Best Management Practices (BMPs)

Roofing

Pollutants of Concern:	<ul style="list-style-type: none"> • Dust/debris from preparation and cleaning • Flux • Mastic • Material chips • Metallic debris • Solder • Tar
Purpose:	Procedure for contractors to prevent roof-related contaminants entering storm drain system
Application:	All roofing repairs and new construction
Practices:	<ul style="list-style-type: none"> • Do not work in the rain • Use materials least susceptible to degradation • Keep all flux, mastics, solder and tar on covered containment pallets • Use non-flammable dust barriers and liners for chip/dust containment • Protect with temporary barriers against pedestrian tracking • Capture and filter/settle all runoff during construction • Clean vehicle tires of any tracked debris before exiting the jobsite • Properly dispose of used containers and capered debris
Limitations:	Oversight on projects that are not managed by Design and Construction Services or Facilities Management
Inspection & Maintenance:	<ul style="list-style-type: none"> • Inspectors should frequently monitor and ensure contractors follow University polices and procedures
References:	1,2, 3, 4 and 5

Comments And Other Information:
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Best Management Practices (BMPs)

Saw Cutting

Pollutants of Concern:	<ul style="list-style-type: none"> • Concrete and asphalt chips • Dust
Purpose:	Procedure for project managers and contractors to prevent saw cutting and coring related contaminants from entering the storm drains
Application:	Concrete and asphalt saw cutting and core drilling
Practices:	<ul style="list-style-type: none"> • Keep saw slurry and contaminated runoff from entering storm drains and water courses • Do not work in the rain • Minimize water use during coring and cutting operations • Protect storm drains with filter fabric during operations • Shovel, absorb or vacuum residual from all effected pave areas and dispose of properly • Clean and store equipment on a covered containment pallet
Limitations:	Use barricades and flag people to prevent traffic tracking
Inspection & Maintenance:	Perform periodic inspections to insure contractor is following campus policies and procedures written in contract language.
References:	1,2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Solid and Demolition Waste Management

Pollutants of Concern:	Any debris contaminated with hazardous materials
Purpose:	The proper management of demolition materials and solid waste created and stockpiled on site eliminates and minimizes the discharge of pollutants to storm drain systems.
Application;	<ul style="list-style-type: none">• Applies to all non-hazardous materials• Reusable materials such as doors floorboards windows and old dense 2" 4" lumber• Recyclable materials such as asphalt, bricks, concrete, cement mortar, plate glass plant material, cleared vegetation, tree trimmings and metal/wood framing materials
Limitations:	<ul style="list-style-type: none">• Temporary stockpiling certain construction waste may necessitate stringent drainage controls during wet seasons• Any hazardous materials leaching or flaking off of construction debris must be disposed of as hazardous waste following at federal, state and local regulations and campus guidelines.
Inspection & Maintenance:	<ul style="list-style-type: none">• Construction superintendent and inspectors should monitor on-site solid waste storage and disposal procedures• Sites should be routinely policed for litter and debris
References:	1,2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Structure Cleaning

Pollutants of Concern:	<ul style="list-style-type: none"> • Dust • Metallic debris • Paint chips • Sediment
Purpose:	Procedure for project managers, contractors and staff to prevent structural related pollutants from entering the local storm drain system.
Applications	Structure washing and refinishing
Practices:	<ul style="list-style-type: none"> • Use chip-resistant building siding and roofing in construction and renovations • Identify/ protect potential backsplash area with collections barriers • Block storm drains in vicinity • Close work area off to pedestrian and vehicle traffic to avoid tracking • Filter/settle captured backsplash and dispose of debris properly • Lead based paint debris/backsplash must comply with hazardous waste BMPS
Limitations:	<ul style="list-style-type: none"> • Do not conduct cleaning during rain events • Utility structures and connections to buildings make full capture difficult
Inspection & Maintenance:	Check to see if measures taken to capture wash water during cleaning activities worked adequately.
References:	1,2, 3, 4,and 5

Comments And Other Information:

Best Management Practices (BMPs)

Housekeeping

Pollutants of Concern:	<p>Polluted Runoff:</p> <ul style="list-style-type: none"> • Nutrients • Trash • Metals • Organics • Oil and greases • Sediment • Bacteria • Dry Weather Flows
Purpose:	To prevent or reduce the discharge of pollutants from outdoor work and storage areas from going into storm drains.
Application:	Outdoor work and material and equipment storage areas
Practices:	<ul style="list-style-type: none"> • Keep outdoor work and storage areas clean and orderly • Use dry cleaning methods (e.g., sweeping or vaccuming) to remove all loose debris (e.g., metal or wood shavings), discarded materials, sediment, rags, etc. • Use absorbent materials to clean up spilled oil or other liquid chemicals and place used absorbents in a properly labeled container for pickup by EH&S. • Do not store machinery, equipment, or vehicles over storm drains. • Store equipment with exposed oily/greasy parts or other potential pollutants (e.g., metals) in a covered area or on pallets or in bins and under plastic sheeting/tarps to prevent contact with rainwater. • Prevent surface flow from contacting raw materials, equipment, or machinery by storing them on pallets or blocks, or by surrounding the objects with berms. • Cover/protect storm drain inlets from outdoor work activities as needed. • Keep outdoor trash cans/bins closed • If water is used to clean, do not allow wash water to get into storm drains.
Inspection & Maintenance:	<ul style="list-style-type: none"> • Sweep or vaccum outdoor work and storage areas where pollutants have accumulated weekly during the wet season (October through May). • Using street sweeper, clean asphalt covered parking lots and streets weekly.
References:	1,2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Food Services

Pollutants of Concern:	Oil, Grease, Cleaning Products, Food Byproducts and Trash
Purpose:	The byproducts of food-related cleaning can harm the environment if they enter the storm drain systems. Food related activities can cause harm by putting food waste in leaky dumpsters, cleaning oily vents, not cleaning up outdoor food or chemical spills, or by washing outdoor spills into the storm drain. Oil and grease can block oxygen from entering the water.
Application:	Anywhere food is prepared or served on campus at any one of the dining facilities or campus housing facilities.
Practices:	<ul style="list-style-type: none"> • Storage containers should be kept in good condition • Place materials inside rigid, durable water tight and rodent proof containers • Store materials inside a building or a covered, paved area protected from the weather • Grease containers should have secondary containment • Wash all food service related equipment including floor mats, filters and vents inside the building with the discharges to the sanitary sewer • Post signs near sinks reminding worker to never pour oil or grease down sink or floor drains • Collect oil and grease in rigid containers • Use an approved contractor/hauler to pickup and recycle the oil and grease wastes • When possible serve food on non-disposable products such as ceramic dishware • Use environmentally safe cleaning products. Contact EH&S at (949) 824-6200 with any questions • Quarterly, contract an approved, licensed contractor such as Baker Commodities, Inc. to clean grease traps. Frequency will depend on usage. The contractor should be available for emergency spills where grease traps become blocked and backup into sewer or storm drains.
Limitations:	<ul style="list-style-type: none"> • Staff are not properly trained • Facility design does not facilitate easy wash down areas • Grease containers are not within close proximity to staff work areas • Contractors grease containers do not provide convenient access for staff

Inspection & Maintenance:	<ul style="list-style-type: none"> • Supervisor of facility proves training to employees and general facility oversight • A trained employee should oversee contractor operations • Maintain records for and serviced performed by contractors such as any maintenance performed and waste disposal receipts
References:	1-5, 8 and 10

Comments And Other Information: For any information related to grease traps and interceptors go to <http://www.oracwa.org/Pages/welcome.htm>, The Oregon Association of Clean Water Agencies.

Best Management Practices (BMPs)

Hazardous Materials

Use, Handling and Storage

Pollutants of Concern:	Any material defined as hazardous under federal, state or local laws and regulations
Purpose:	Proper handling, use and storage minimizes or eliminates discharge of these materials to the storm drain system
Application:	Anywhere hazardous materials are handled used delivered and stored
Limitations:	<ul style="list-style-type: none"> • Storage areas must meet all federal, state and local laws, regulations and requirements • Materials must be protected from the elements • Must provide spill protection for all materials
Practices:	<ul style="list-style-type: none"> • Maintain chemical inventories and annual usages if applicable • Maintain Safety Materials Data Sheets on all materials handled • Store all materials in original containers unless damaged • All materials must be properly labeled according to original manufacturers label • Use materials only where and when needed to complete the job • Do not leave containers opened while unattended • Substitute hazardous materials with Environmentally Safe substitutes when possible • Notify EH&S if materials are spilled or released into the environment
Inspection & Maintenance:	<ul style="list-style-type: none"> • Routinely check to make sure container are in good condition and are stored adequately
References:	1,2, 3 ,4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Hazardous Waste Management

Pollutants of Concern:	Any hazardous material defined under Federal, State and local laws and regulations
Purpose:	Proper handling and disposal of hazardous waste eliminates or minimizes the discharge of such pollutants to storm drains and water ways
Application;	<ul style="list-style-type: none">• Any material defined as hazardous under California State Regulations• Petroleum products such as oil, fuel and grease• Asphalt products including roof tar• Concrete curing compounds• Herbicides and Pesticides• Chemical additives used for soil stabilization• Acids for cleaning masonry• Stains and wood preservatives• Paints and solvents• Demolition waste containing or coated with hazardous materials such as lead paint and asbestos• Septic/Medical wastes
Limitations:	<ul style="list-style-type: none">• Proper waste determination• Disposal only to authorized System-wide TSDFs• Serious fines and penalties up to and including jail time for illegally dumping or transportation• Costs for disposal and treatment
Inspection & Maintenance:	<ul style="list-style-type: none">• EH&S monitors the safe use, labeling, and storage of hazardous wastes campus wide
References:	1,2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Landscaping Management

Pollutants of Concern:	Fertilizers, pesticides and sediment
Purpose:	Proper use and management of chemicals materials and soils used in landscaping eliminates or minimizes erosion and the discharge of pollutants to the storm drain system.
Application:	<ul style="list-style-type: none">• Use and storage of fertilizers and pesticides• Any modification of soils in preparation of landscaping activities• Any area or site where planting activities occur
Practices:	<ul style="list-style-type: none">• Follow campus standards for design criteria and vegetation selection• Use plant vegetation that is native, non-invasive, drought and pest tolerant to decrease chemical and labor use over the short/long term• Schedule landscaping-related grading and excavation for dry weather when possible• Protect stockpiles and landscaping materials from the elements• Protect storm drains with sediment controls• Use check dams or ditches to divert runoff away from storm drain inlets• Minimize the use of chemical quantities purchased and used• Substitute with organic or environmentally safe materials• Rinse all chemical containers using rinse water as product and deface labeling on containers prior to disposal in regular or recycled trash• Any materials defined as hazardous in Federal, State, and Local Laws and regulations must be disposed as hazardous waste following campus standards
Limitations:	Selected plant material may not be readily available from suppliers and vendors
Inspection & Maintenance:	Inspectors should monitor revegetated areas for erosion. Contractors will add and replace plant materials when necessary
References:	1,2, 3, 4 and 5

Best Management Practices (BMPs)

Integrated Pest Management

Pollutants of Concern:	<ul style="list-style-type: none"> • Pesticides • Dry Weather Flows
Purpose:	To coordinate multiple measures (e.g., biological, mechanical, cultural, chemical) to facilitate the long term elimination of unwanted pests from landscapes, minimizing the need for chemicals that could be harmful to the people and environment.
Application:	Grounds and landscaping, outdoor storage areas and other pest control areas.
Practices:	<ul style="list-style-type: none"> • Keep outdoor storage areas clean and orderly. • Eliminate pest attractants such as food, water, debris, shelter and infested plant material. • Frequently remove weeds from plant beds that may become invasive or attract unwanted pests. • Maintain irrigation systems to eliminate irrigation runoff, possible water sources for pests and breeding sites for insects. • Use proper fertilizing, sanitation and watering techniques to maintain plant health. • Utilize pest resistant plants to eliminate the necessity for chemical based pesticides. • Create physical barriers around plant beds to limit the access of rodents and other pests. • Use mechanical elements, such as soil solarization, heat treatments, or traps to prevent pests from propagating. • Strategically cultivate plant species that will attract competitive organisms in order to reduce the survival potential and expansion of a particular pest species. • Cultivate plant species that are drought tolerant to reduce the amount of irrigation required and potential runoff. • Use organic materials and mulch to control irrigation runoff and reduce the need for chemical controls. • Use the least toxic, most effective and pest specific pesticides when necessary. • Empty trash receptacles frequently, clean dishes immediately after use, reduce clutter, seal areas where pests may enter buildings, and keep premises free of trash and overgrown vegetation in order to reduce the possibility of attracting indoor pests.
Inspections & Maintenance:	<ul style="list-style-type: none"> • Monitor irrigation system at least once during the dry season (May-September) for discharges into the storm water conveyance system. Adjust irrigation system as needed • Regularly inspect grounds and landscaping for evidence of pests. • Visually inspect for trash and remove as needed.
References:	1,2,3,4 and 5
Additional Information:	UC Irvine's Storm Water Pollution Prevention Program UC Irvine's Integrated Pest Management Plan

Best Management Practice

Sanitary/ Septic Management

Pollutants of Concern:	Sewage
Purpose:	Leaking and portable toilets are a potentials health and environmental hazard. Proper management will minimize of eliminate human and natural resources exposures to hazard
Application:	<ul style="list-style-type: none">• Portable toilets• Other portable or temporary septic systems
Practices:	<ul style="list-style-type: none">• Monitor the system for potential leaks• Train employees and contractors to call EH&S at (949) 824-6200 for leaks or the unit is tipped over• Contract University approved contractor for spills
Limitations:	University approved contractor must have a permit to dispose of the waste to the sanitary sewer
Inspection & Maintenance:	<ul style="list-style-type: none">• User needs to monitor at frequent intervals. Generally when used or at least weekly to report any leakage or gross odor• Be sure the leasing company adequately maintains, properly, repairs and replace the units when needed
References:	1,2,3,4,5 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Spill Prevention and Control

Pollutants of Concern:	All pollutants
Purpose:	Prevent and control of spills minimizes or eliminates the discharge of hazardous materials to the storm drain system.
Applications	Any material defined as hazardous under federal, state and local laws and regulations
Practices:	<ul style="list-style-type: none"> • Notify EH&S at (949) 824-6200 when a hazardous spill occurs. • Locate hazardous materials storage and handling areas away from natural watercourses, canals and storm drains • Store materials in areas protected from the elements and provide secondary containment in case of leaks • Immediately clean up spills and properly dispose of contaminated soils and clean up materials: <ul style="list-style-type: none"> ○ Sweep dry spills ○ Soak up wet spills with absorbent materials ○ Dig up wet spills on soil • For refueling areas, provide secondary containment to hold the capacity of the spill • Only use certified hazardous waste haulers and TSDFs for disposal
Limitations:	<ul style="list-style-type: none"> • Procedure and practices are very general • Contractors should have written procedures for spills in their Health & Safety Plan
Inspection & Maintenance:	<ul style="list-style-type: none"> • Verify weekly that sufficient spill control materials are located near materials storage, unloading and use areas • The user should inspect structures for storage • Fueling areas and storage tanks should be inspected on a regular basis
References:	1,2, 3, 4, and 5

Comments And Other Information:
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Best Management Practices (BMPs)

Street Sweeping

Pollutants of Concern:	<ul style="list-style-type: none"> • Bacteria • Metals • Nutrients • Oil and Grease • Organics • Sediment • Trash
Purpose:	Street and parking lot sweeping and vacuuming includes the use of self-propelled and manual dry sweeping equipment to remove sediment from streets, roadways and parking lots. Sweeping and cleaning prevents sediment and other pollutants from construction sites and general erosion run-off from entering storm drains or receiving waters.
Application:	<ul style="list-style-type: none"> • Anywhere sediment is traced from any project site • Extreme weather conditions from high winds or rains • Erosion from landscaped areas
Practices:	<ul style="list-style-type: none"> • Control the number of exits out of construction sites • Follow BMP for Stabilized construction Site Entrances • Routing Scheduled for street and parking lot sweeping by Facilities Management • Dispose of wastes from dry sweepings at an approved site and report any hazardous materials to EH&S at (949) 824-6200
Limitations:	<ul style="list-style-type: none"> • May not be effective when sediment is wet or tracked soil is caked • Street sweeper accidentally drives through unknown potentially hazardous material
Inspection & Maintenance:	<ul style="list-style-type: none"> • Daily by contractors at construction sites • Oversight by D&CS Inspectors or Facilities Management personnel on a routine basis
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Surface Cleaning

Pollutants of Concern:	<ul style="list-style-type: none"> • Chloramines(residual chlorine) • Detergents • Dust • Food Waste • Heavy Metals • Litter and debris • Oil and grease • Sealants/surface treatments • Sediment
Purpose:	Procedure for project managers, contractors and staff to prevent surface-related pollutants from entering the local storm drain system. In addition the wash water can pick up pollutants already on the ground or in the catch basins as it drains to the storm water system.
Application:	<ul style="list-style-type: none"> • Applies to any exterior building surface washing that generates wash water included and no limited to steps, plazas, patios, sidewalks, entryways, parking lots, trash storage areas, roofs, loading docks and bleachers. • Applies to cleaning equipment and materials such as food racks, floor mats and rooftop equipment. • Can be implemented anywhere sediment is tracked from a construction site onto a public road
Practices:	<ul style="list-style-type: none"> • Clean surfaces by dry sweeping or vacuuming prior to washing any sediments down the storm drain • Use sand bags or spill mats to temporarily berm or [lug storm drains prior to wash down • Collect wash water and dispose of appropriately
Limitations:	<ul style="list-style-type: none"> • Do not conduct cleaning during rain events • Utility structures and connections to buildings make full capture difficult
Inspection & Maintenance:	Check to see if measures taken to capture wash water during cleaning activities worked adequately.
References:	1,2, 3 ,4 and 5

Comments And Other Information:
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Best Management Practices (BMPs)

Trash Areas

Pollutants of Concern:	<p>Polluted Runoff:</p> <ul style="list-style-type: none"> • Nutrients • Litter & Debris • Oil and greases • Bacteria
Purpose:	If not designated or maintained appropriately, trash storage areas can lead to polluted runoff to the storm drain system. Rainwater and wash water can come into contact with pollutants and flow to the storm drain.
Application:	Existing and new trash storage areas that house dumpsters, bins and other large refuse containers.
Practices:	<p>Eliminate contact of water and bin contents by covering. If this is not possible, the water must be discharged to the sanitary sewer, landscaped area or some type of containment area/ sump. This can be Achieved using several options:</p> <ul style="list-style-type: none"> • Cover the trash storage areas to eliminate exposure to rain water (no drain is required unless the area is regularly washed down or used for cleaning) • Containments methods include roll over berms to contain the water for removal with wet/dry vacuum or mops • Drainage from enclosure discharges from trash enclosure areas must drain to either landscaped areas or the sanitary sewer • Signage to discourage dumping
Limitations:	<ul style="list-style-type: none"> • When hazardous wastes are combined with trash • When excessive trash is placed in the containers prior to routine pickup
Inspection & Maintenance:	<ul style="list-style-type: none"> • Routinely perform inspection of trash enclosures and trash compactor areas for housekeeping • Routinely inspect signage to ensure presence and readability
References:	1,2, 3, 4 and 5
Additional Information:	UC Irvine's Storm Water Program

Best Management Practices (BMPs)

Trash Compactors

Pollutants of Concern:	<ul style="list-style-type: none"> • Nutrients • Oil and greases • Trash
Purpose:	If not designated or maintained appropriately, trash compactor areas can lead to polluted runoff to the storm drain system. Rainwater and wash water can come into contact with pollutants and flow to the storm drain.
Application:	New and existing trash storage areas that house compactors
Practices:	<p>Eliminate contact of water and bin contents by covering if compactor is not self-contained. If this is not possible, the water must be discharged to the sanitary sewer, landscaped area or some type of containment area/sump. This can be achieved using several options:</p> <ul style="list-style-type: none"> • Ensure all contents of portable trash bins are emptied into the compactor • Containment methods include roll over berms to contain the water for removal with wet/dry vacuums or mops • Drainage from compactor enclosure areas must drain to landscaped area or sanitary sewer systems • Provide signage to discourage dumping
Limitations:	When hazardous materials are illegally dumped into compactors
Inspection & Maintenance:	<ul style="list-style-type: none"> • EH&S should maintain training records for UCI staff regarding the appropriate disposal method and safe use of equipment • Contractors, EH&S and FM staff should routinely monitor trash compactor areas and report any leaks from hydraulic lines • Routinely inspect signage to ensure presence and readability
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Fueling Operations

Pollutants of Concern:	<ul style="list-style-type: none"> • Organics • Oil and Grease
Purpose:	Prevent and or reduce the discharge of pollutants from fueling operations from going into the storm drain system.
Applications	Equipment and vehicles
Practices:	<ul style="list-style-type: none"> • Fueling activities must be overseen by the equipment operator at all times. DO NOT leave fueling operations unattended. • During fueling operations, visually monitor the liquid level indicator or equipment to prevent the tank from being overfilled. • The maximum amount of product received shall not exceed 95% capacity of the receiving tank. • Do not run vehicles, tanker trucks, or equipment during fueling operations. • Do not park machinery, equipment or vehicles over storm drains. • Block nearby storm drain inlets with rubber mats or absorbent rolls during large fueling operations. • Restrict access to fueling equipment and maintain equipment to prevent leaks. • Maintain clean fuel-dispensing areas using dry cleanup methods such as sweeping for removal of litter and debris or use of rags and absorbents for leaks and spills. Do not wash down areas with water. Clean up used absorbent and put it in a container labeled “Used Absorbent” for proper disposal through EH&S, do not leave it on the ground. • Train employees on proper fueling procedures (these management measures) and spill response procedures.
Inspection & Maintenance:	<ul style="list-style-type: none"> • These procedures must be implemented during all fueling operations. • Maintain spill response material in a location that is easy to access and known to personnel. Inspect spill kit provisions on a regular basis and replace as needed. • Repair or replace leaking or damaged fuel-dispensing equipment as needed.
References:	1,2, 3, 4, and 5
Additional Information:	UC Irvine’s Storm Water Management Program

Best Management Practices (BMPs)

Vehicle Maintenance and Repair

Pollutants of Concern:	<ul style="list-style-type: none"> • Antifreeze • Batteries • Brake fluid • Cleaning fluids • Fuels (gasoline and diesel) • Lubricating grease • Transmission fluid
Purpose:	Eliminate unauthorized non-storm water discharge.
Application:	Dumping is the unauthorized discharge of any material that may reach the storm drain or receiving body
Practices:	<ul style="list-style-type: none"> • Train employees and residents • Conduct all vehicle fluid removal or changing inside or under cover to prevent runoff of stormwater and the runoff of spills • Keep drip pans or containers under vehicles or equipment that might drip during repairs • Do not change motor oil or perform equipment maintenance in non-appropriate areas • Post signs describing best management practices.
Limitations:	EH&S will respond when authorized discharges are reported
Inspection & Maintenance:	<ul style="list-style-type: none"> • EH&S and Fleet Services Supervisors maintain and record training dates for UCI staff regarding the appropriate procedures • Report unauthorized vehicle maintenance activities on University property which could result in an unauthorized discharge to the storm drain system • Fleet Services regularly inspects vehicles and equipment for leaks and repair immediately • Make sure incoming vehicles are checked for leaking oil and fluids. Apply controls accordingly.
References:	1, 2, 3, 4 and 5

Comments And Other Information:

Best Management Practices (BMPs)

Vehicle Washing

Pollutants of Concern:	<ul style="list-style-type: none">• Vehicle fluids (oils, greases, coolants)• Detergents• Cleaning fluids (solvents and degreasers)
Purpose:	Eliminate unauthorized non-storm water discharges by controlling leaks and wash waters from vehicles
Application:	Dumping is the unauthorized discharge of any material that may reach the storm drain or receiving bodies of water
Practices:	<ul style="list-style-type: none">• EH&S should provide training to staff and residents• Conduct washing operations off-site when possible• If vehicle washing must be conducted on-site, clean with water in bermed areas restricting rinse water from gutters, streets and storm drains• If soap is necessary, only use biodegradable soap• Minimize water by utilizing hoses with nozzles that automatically shut off when unattended.
Limitations:	EH&S will respond when unauthorized discharges are reported
Inspection & Maintenance:	<ul style="list-style-type: none">• Report unauthorized washing activities on University property which would result in an authorized discharge to storm water drain systems
References:	1,2, 3, 4 and 5

Comments And Other Information:

References for BMPS

UC Berkeley, Best Management Practices, EH&S

U.S. Environmental Protection Agency, National Pollution Discharge Elimination Systems (NPDES), Best Management Practices Menu
http://cfpub.epa.gov/npdes/storm_water/menuofbmps

California Environmental Protection Agency, State Resources Control Board
Water Quality
<http://www.swrcb.ca.gov/stormwtr>

California Storm water BMP Handbooks, Municipal, Industrial & Commercial, Construction, and New Development & Redevelopment
<https://www.casqa.org/resources/bmp-handbooks>

Cal Trans State of California Department of Transportation, Construction Site Best Management Practice Field Manual and Water Quality Handbooks
<http://www.swrcb.ca.gov/stormwtr/caltrans.html>

Land Development Handbook. Planning, Engineering, and Surveying. The Dewberry Companies, 2nd Edition

UCI Sewer System Prevention Maintenance Practices

City of Los Angeles Best Management Practices

San Mateo Countywide Storm water Pollution Prevention Program

The Oregon Association of Clean Water Agencies

Appendix

UCI Storm Water Waste Management Plan

Notice of Intent

Notice of Termination

SWPPP Check List