City of Santa Monica

New General Construction Permit

June 3, 2010

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The New Statewide NPDES Permit

Associated with Construction and Land Disturbance Activities

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Background and Important Dates

- 1972 CWA and NPDES permit
- 1987 amendments for municipal and industrial storm water discharges
- Nov 16, 1990 USEPA, 5 acre limit for specified categories of industries
- Aug 19, 1999 order no. 99-08-DWQ
- Dec 8, 1999 threshold lowered to 1 acre
- 2005-2006 Blue Ribbon Panel, NEL
- Sep 2, 2009 order no. 2009-0009-DWQ
- June 3, 2010
- July 1, 2010 effective date

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State Storm Water Permit
Requirements in Both Current & New NPDES Permit
National Pollution Discharge Elimination System Permit

The Objectives of the NPDES Permit is to Eliminate Discharges of Sediment & Pollutants from the Construction Site to Storm Drains and Water Bodies of the U.S.

"Waters of the United States" means any water, surface or underground, including saline waters, within the boundaries of the United States.

"How"

Both EPA & State Program

Implement an Effective Combination of Best Management Practices (BMPs) based on Best Available Technology (BAT) and Best Available Controls (BACs)

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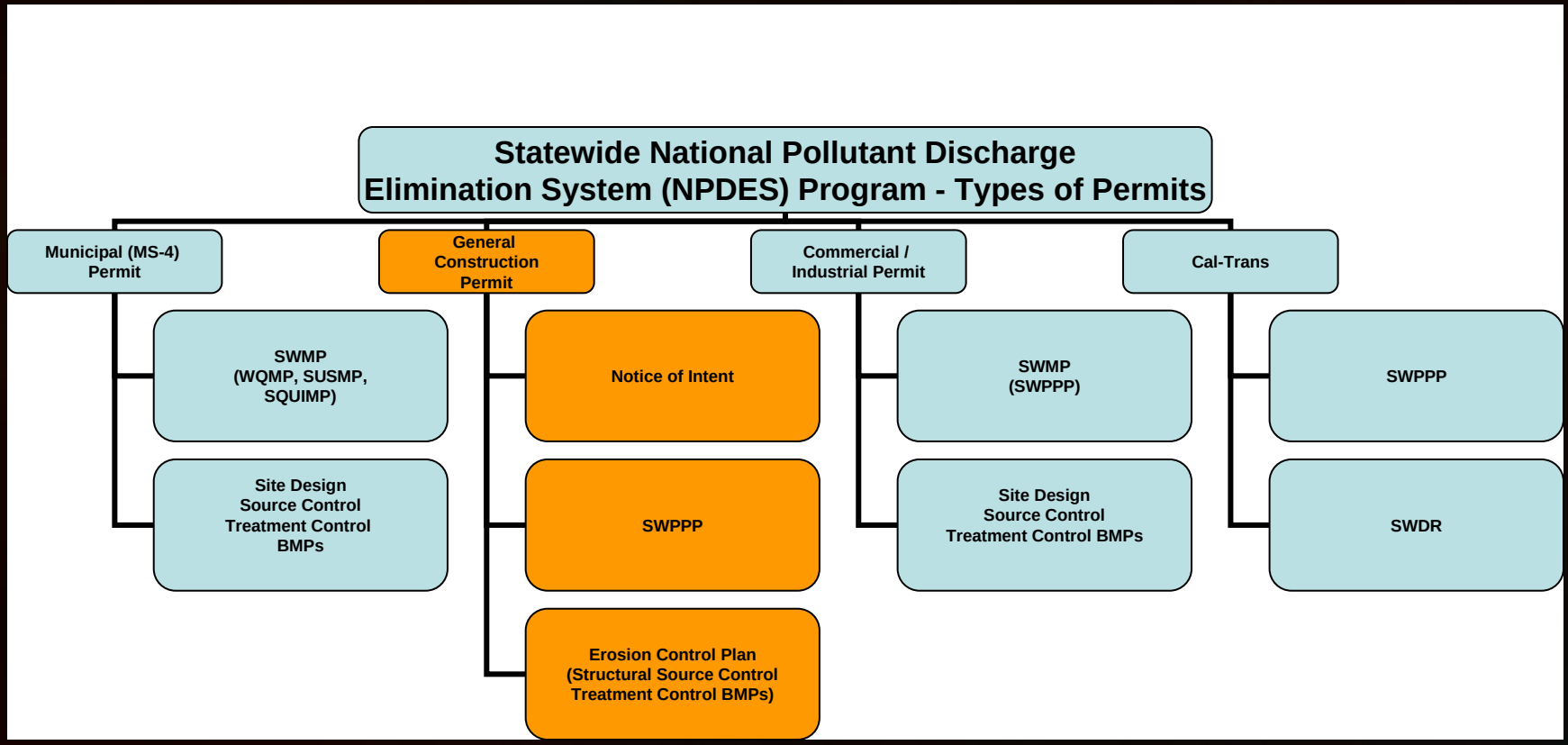
SWRCB GCP Structure



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What is covered under GCP?

- Demolition
- Clearing and grubbing
- Grading or excavation
- Land disturbance greater than 1 acre
- Residential, Commercial, or Industrial Development
- LUPs

What is not ?

- Construction activity that disturbs less than 1 acre of land surface
- Custom Homes
- Routine maintenance within right-of-way
- Landfill subject to Industrial permit
- Storm and Sewer combined discharge

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This GCP Recognizes Four Phases

- Grading and Land Development
- Streets and Utilities
- Vertical Construction
- Final Landscaping and Site Stabilization

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Significant changes in Implementation

Requires All Reporting Electronically

- Electronic Submittal via SMART State Platform
- Permit Registration Documents (PRDs)
  - Notice of Intent (NOI)
  - Risk Assessment (Exception for existing sites with current permit)
  - Site Map
  - SWPPP
  - Annual Fee
  - Signed Certification Checklist
- Inspections – Designated Individual

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Summary of Significant Changes

- Risk-Based Permitting Approach
- Technology-Based NAL, 6.5 to 8.5 pH, 250 NTU turbidity
- Technology-Based NEL, 6 to 9 pH, 500 NTU for Risk 3
- Linear Underground/Overhead Projects
- Rain Event Action Plan, REAP, 48 hrs
- Certification/Training Requirements for Key Personnel
- Effluent Monitoring and Reporting

Summary of Significant Changes continued

- Rainfall Erosivity Waiver, R<5, 1 to 5 acre sites
- Project Site Soil Characteristics Monitoring & Reporting
- Minimum Requirements Specified, more BMPs
- Receiving Water Monitoring and Reporting, Risk 3
- Post-Construction Storm Water Performance Standards (exception for LUP projects)
- Annual Reporting

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Risk Determination

- Traditional Projects
- Linear Projects

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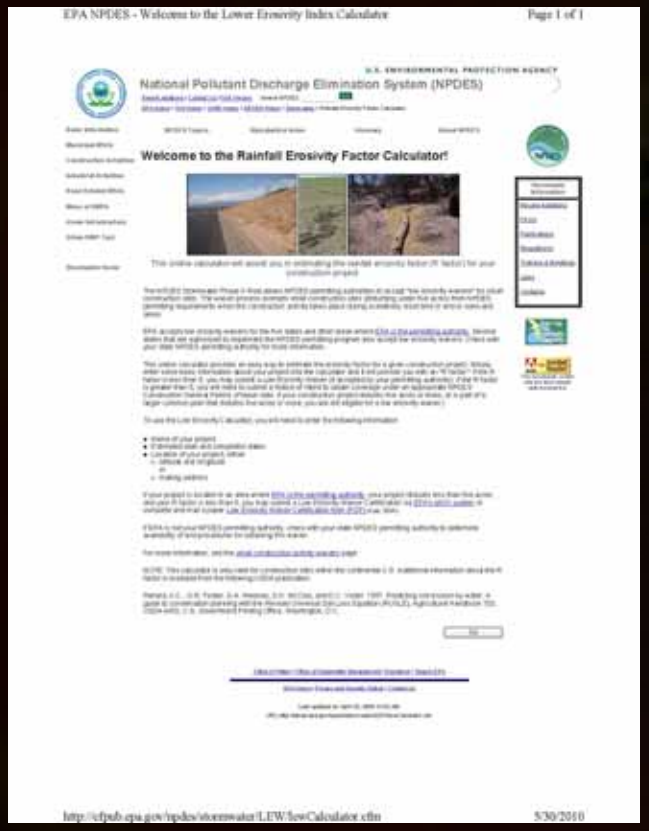
Traditional Projects

- The project's overall risk is broken up into two elements
- (1) project sediment risk
- (2) receiving water risk

- Project Sediment Risk:
- A = (R)(K)(LS)(C)(P)
- Where: A = the rate of sheet and rill erosion R = rainfall-runoff erosivity factor, K = soil erodibility factor, LS = length-slope factor, C = cover factor (erosion controls), P = management operations and support practices (sediment controls)
- R factor for the project is calculated using the online calculator at http://cfpub.epa.gov/npdes/st ormwater/LEW/lewCalculator.cfm.
- The product of K and LS are mapped
- To determine soil loss in tons per acre, the discharger multiplies the R factor times the value for K times LS from the map.

Sample "R" Factor Calculation

http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm



Name of the project

Start date

End date

Address or Latitude/Longitude

3-month duration

R=1.75

0.02 to 51.01 range !

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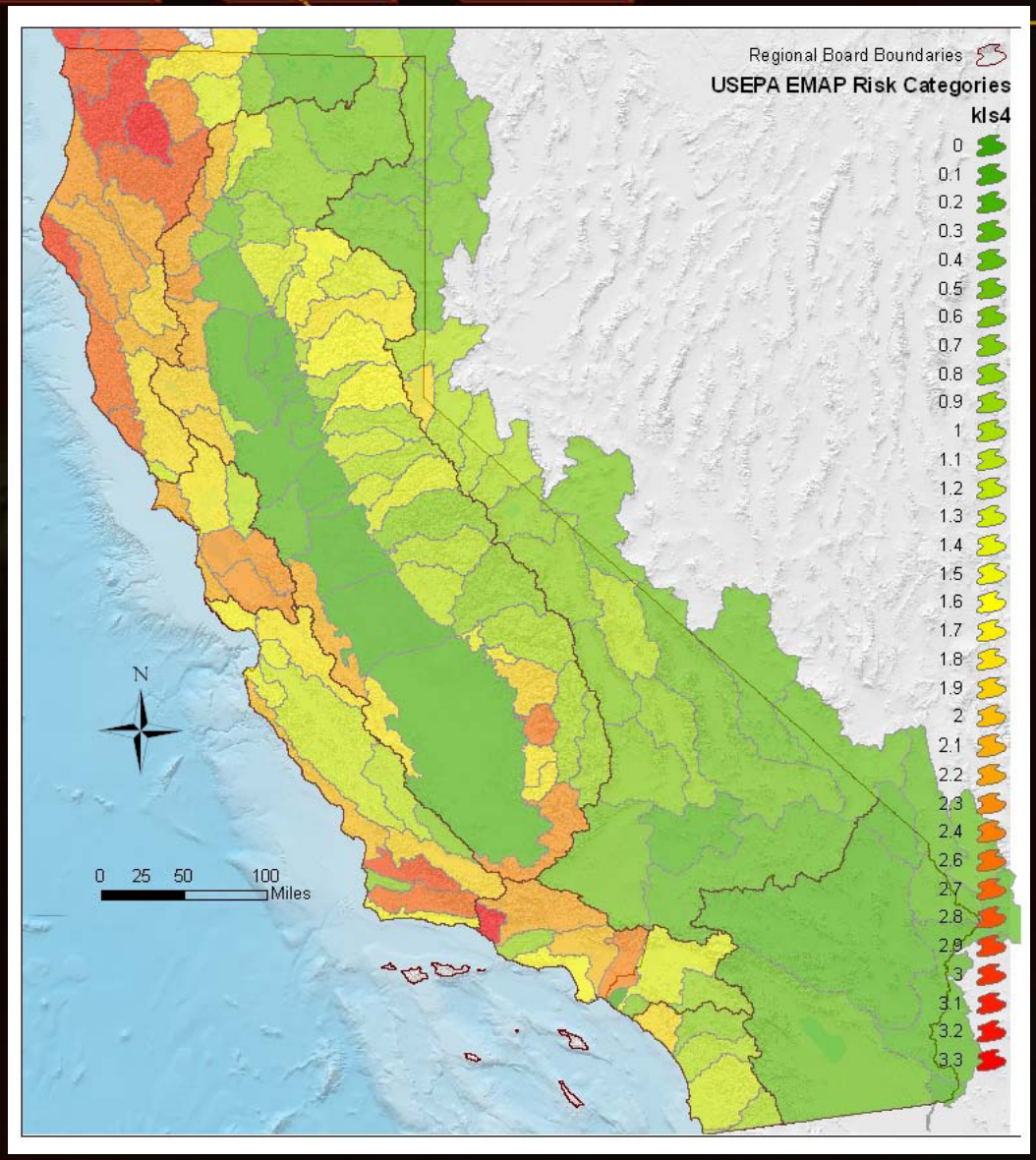
K*LS Map



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Combined Risk Level Matrix

Project Sediment Risk: Low

Project RW Risk: High

Project Combined Risk: Level 2

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Risk Level Requirements

- Risk level 1 projects are subject to minimum BMP and visual monitoring requirements
- Risk level 2 projects are subject to NALs and some additional monitoring requirements
- Risk level 3 projects are subject to NELs, and more rigorous monitoring requirements such as receiving water monitoring and in some cases bioassessment

Risk Factor Entry Form

Sediment Risk Factor Worksheet	Entry
A) R Factor	
Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site. http://cfpub.epa.gov/npdes/stormwater/LEWlewCalculator.cfm	
R Factor Value	0
B) K Factor (weighted average, by area, for all site soils)	
The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted. Site-specific K factor guidance	
K Factor Value	0
C) LS Factor (weighted average, by area, for all slopes)	
The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction. LS Table	
LS Factor Value	0
Watershed Erosion Estimate (=RxKxLS) in tons/acre	0
Site Sediment Risk Factor Low Sediment Risk: < 15 tons/acre Medium Sediment Risk: >=15 and <75 tons/acre High Sediment Risk: >= 75 tons/acre	**Low**

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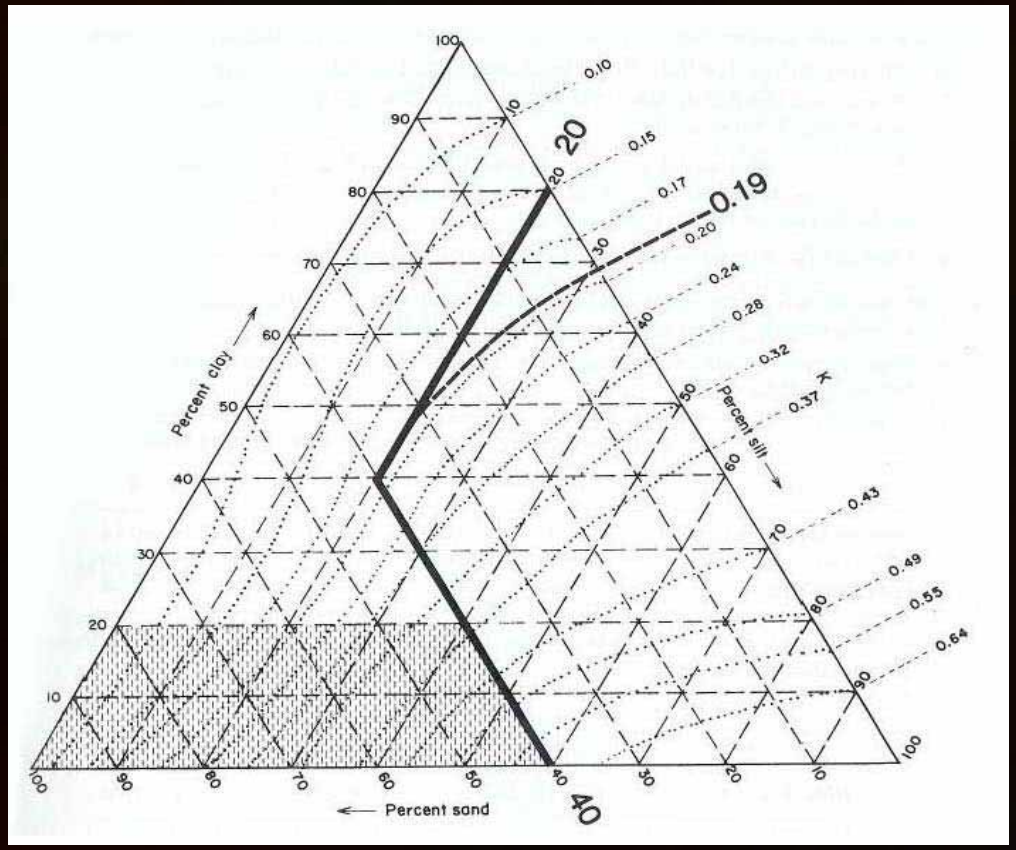
Soil Erodibility Factor "K" nomograph



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Average Watershed Slope "LS"

	Average Watershed Slope (%)																		
Sheet Flow Length (ft)	**0.2**	**0.5**	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**	**8.0**	**10.0**	**12.0**	**14.0**	**16.0**	**20.0**	**25.0**	**30.0**	**40.0**	**50.0**	**60.0**
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.35	0.36	0.38	0.39	0.41	0.45	0.48	0.53	0.58	0.63
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.37	0.41	0.45	0.49	0.56	0.64	0.72	0.85	0.97	1.07
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.38	0.45	0.51	0.56	0.67	0.80	0.91	1.13	1.31	1.47
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.39	0.47	0.55	0.62	0.76	0.93	1.08	1.37	1.62	1.84
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.40	0.49	0.58	0.67	0.84	1.04	1.24	1.59	1.91	2.19
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36	0.45	0.57	0.71	0.85	0.98	1.24	1.56	1.86	2.41	2.91	3.36
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54	0.70	0.91	1.15	1.40	1.64	2.10	2.67	3.22	4.24	5.16	5.97
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69	0.91	1.20	1.54	1.87	2.21	2.86	3.67	4.44	5.89	7.20	8.37
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82	1.10	1.46	1.88	2.31	2.73	3.57	4.59	5.58	7.44	9.13	10.63
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86	1.05	1.43	1.92	2.51	3.09	3.68	4.85	6.30	7.70	10.35	12.75	14.89
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02	1.25	1.72	2.34	3.07	3.81	4.56	6.04	7.88	9.67	13.07	16.16	18.92
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16	1.43	1.99	2.72	3.60	4.48	5.37	7.16	9.38	11.55	15.67	19.42	22.78
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28	1.60	2.24	3.09	4.09	5.11	6.15	8.23	10.81	13.35	18.17	22.57	26.51
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51	1.90	2.70	3.75	5.01	6.30	7.60	10.24	13.53	16.77	22.95	28.60	33.67
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91	2.43	3.52	4.95	6.67	8.45	10.26	13.94	18.57	23.14	31.89	39.95	47.18
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25	2.89	4.24	6.03	8.17	10.40	12.69	17.35	23.24	29.07	40.29	50.63	59.93
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55	3.30	4.91	7.02	9.57	12.23	14.96	20.57	27.66	34.71	48.29	60.84	72.15

LS Factors for Construction Sites. *Table from Renard et. al., 1997.*

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Monitoring Requirements

Table 5 - Storm Water Effluent Monitoring Requirements by Risk Level

	Frequency	Effluent Monitoring (Section E, below)
Risk Level 1	when applicable	non-visible pollutant parameters (if applicable)
Risk Level 2	Minimum of 3 samples per day during qualifying rain event characterizing discharges associated with construction activity from the entire project disturbed area.	pH, turbidity, and non-visible pollutant parameters (if applicable)
Risk Level 3	Minimum of 3 samples per day during qualifying rain event characterizing discharges associated with construction activity from the entire project disturbed area.	If NEL exceeded: pH, turbidity and suspended sediment concentration (SSC)., Plus non-visible pollutant parameters if applicable

Table 4 - Required Monitoring Elements for Risk Levels

	Visual	Non-visible Pollutant	Effluent	Receiving Water
Risk Level 1	three types required for all Risk Levels: non-storm water, pre-rain and post-rain	As needed for all Risk Levels (see below)	where applicable	not required
Risk Level 2			pH, turbidity	not required
Risk Level 3			(if NEL exceeded) pH, turbidity and SSC	(if NEL exceeded) pH, turbidity and SSC. Bioassessment for sites 30 acres or larger.

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Linear Projects, "LUP"

- Confirm that the project qualifies as an LUP. See the flow chart.
- Identify which Risk type (1, 2, or 3) is applicable to the project, based on project sediment and receiving water risk.

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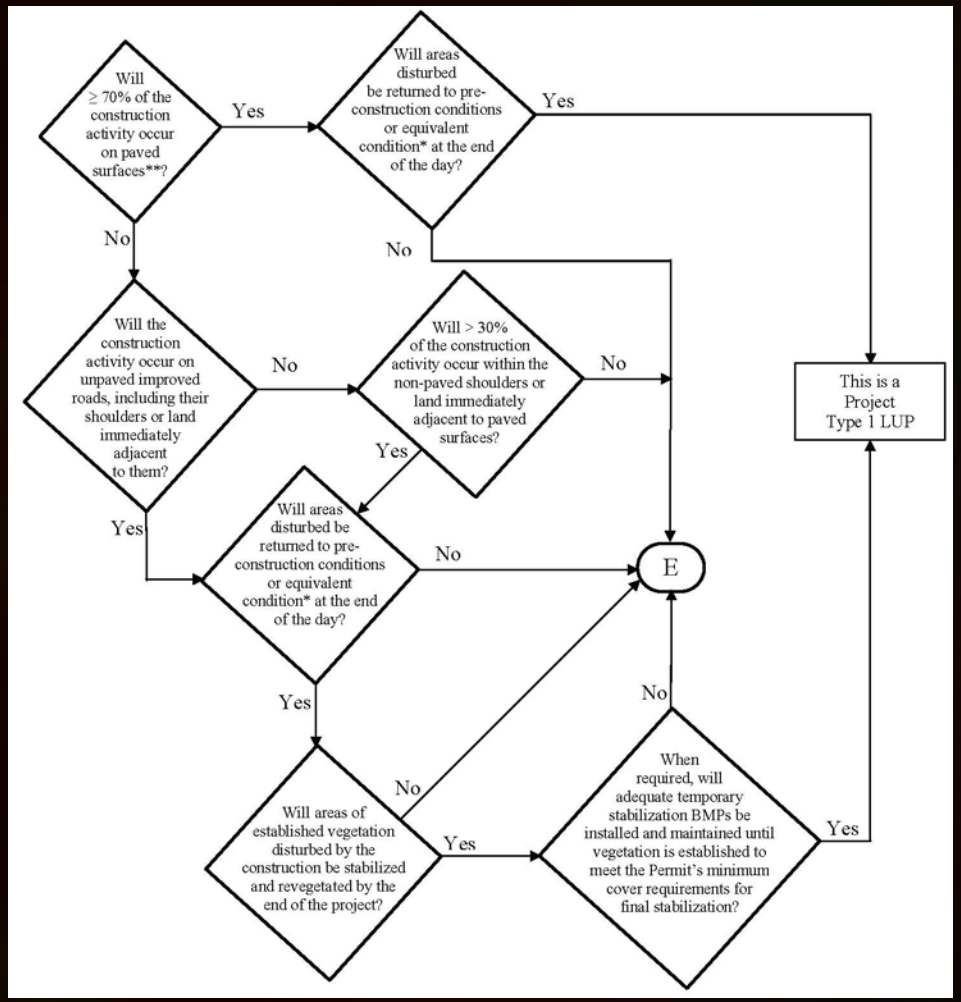
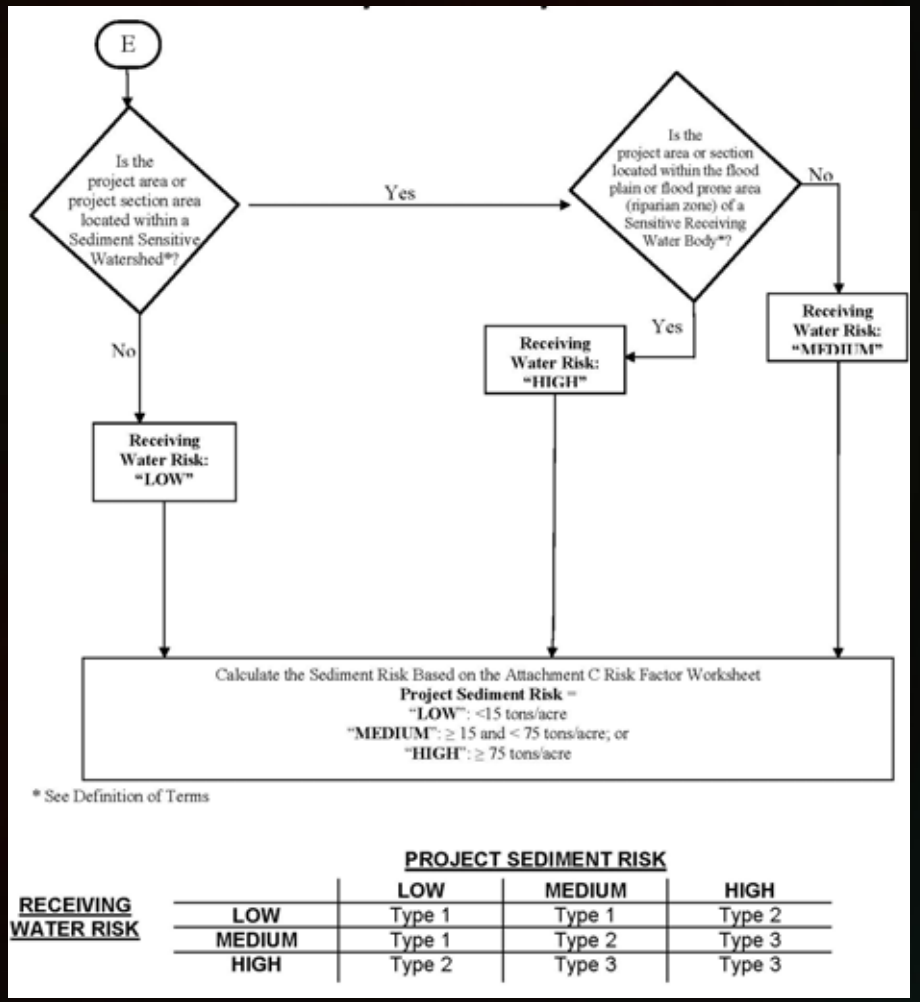
LUP Project Type Determination Flowchart





RECEIVING WATER RISK	PROJECT SEDIMENT RISK		
	LOW	MEDIUM	HIGH
LOW	Type 1	Type 1	Type 2
MEDIUM	Type 1	Type 2	Type 3
HIGH	Type 2	Type 3	Type 3

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LUP Combined Risk Level Matrix

RECEIVING WATER RISK	PROJECT SEDIMENT RISK		
	LOW	MEDIUM	HIGH
LOW	Type 1	Type 1	Type 2
MEDIUM	Type 1	Type 2	Type 3
HIGH	Type 2	Type 3	Type 3

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LUP Monitoring Requirements

Table 3. LUP Summary of Monitoring Requirements

LUP Type	Visual Inspections				Sample Collection		
	Daily Site BMP	Pre-storm Event / Baseline	Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water	Non-Visible (when applicable)
1	X						X
2	X	X	X	X	X		X
3	X	X	X	X	X	X	X

Table 4. LUP Type 2 & 3 Effluent Monitoring Requirements

LUP Type	Frequency	Effluent Monitoring
2	Minimum of 3 samples per day characterizing discharges associated with construction activity from the project active areas of construction.	Turbidity, pH, and non-visible pollutant parameters (if applicable)
3	Minimum of 3 samples per day characterizing discharges associated with construction activity from the project active areas of construction.	turbidity, pH, suspended sediment concentrations (SSC)[13] (only if turbidity NEL exceeded), plus non-visible pollutant parameters (if applicable)

LUP Requirements

Parameter	Test Method	Discharge Type	Min. Detection Limit	Reporting Units	Numeric Action Levels	Numeric Effluent Limitation (LUP Type 3)
pH	Field test with calibrated portable instrument	Type 2 & 3	0.2	pH units	Lower = 6.5 upper = 8.5	Lower = 6.0 upper = 9.0
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Type 2 & 3	1	NTU	250 NTU	500 NTU
SSC	ASTM Method D 3977-97[16]	Type 3 if NEL is exceeded	5 Mg/L		N/A	N/A
Bioassessment	(STE) Level I of (SAFIT),[17] fixed-count of 600 org/sample	Type 3 LUPs > 30 acres	N/A N/A		N/A	N/A

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pH and Turbidity

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NEL and NAL for Risk Level 2 and 3

Parameter	Test Method	Discharge Type	Min. Detection Limit	Units	Numeric Action Level	Numeric Effluent Limitation
pH	Field test with calibrated portable instrument	Risk Level 2	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5	N/A
		Risk Level 3			lower NAL = 6.5 upper NAL = 8.5	lower NEL = 6.0 upper NEL = 9.0
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2	1	NTU	250 NTU	N/A
		Risk Level 3			250 NTU	500 NTU

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Pollutants

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Significant Action Items

Inspections

- Weekly – Year Round
- Once each 24-hour period during extended storm events

Rain Event Criteria

- 48-hour forecasted rain event of 50% (vs. current 40%) or greater chance of rain 0.5 (vs. 0.75”)

SWPPP Preparation & Inspector Requirements

- All SWPPPs Must be Written, Amended, and Certified by Qualified SWPPP Developer (QSD) – By July 1, 2010
- i.e. Registered / Licensed Professional (Engineer, Geologist, Landscape Architect, Hydrologist, Soil Scientist), CPESC, and CPSWQ
- Required Coursework to be established by SWRCB
- Inspectors CESSWI or other Recognized Organization Certification – By July 1, 2012

More Impacts

Requires Rain Event Action Plan (REAP)

- Risk Levels 2 & 3

Annual Reporting Requirements

- Submit Electronically

Required Certification / Training

- SWPPP Preparers, Inspectors, SWPPP Manager

Advanced Treatment Systems (ATS)

- Detention Basins
- Flocculants
- Outsource Equipment (Baker Tank, etc.)

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ATS site

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ATS Requirements

Table 1 – Numeric Effluent Limitations, Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units

Parameter	Test Method	Discharge Type	Min. Detection Limit	Units	Numeric Action Level	Numeric Effluent Limitation
Turbidity	EPA 0180.1 and/or field test with a calibrated portable instrument	For ATS discharges	1 NTU		N/A	10 NTU for Daily Flow-Weighted Average & 20 NTU for Any Single Sample

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Non-Visible Pollutants

- Identify the source
- Clean up spills
- Repair/replace any failed BMPs
- Maintain all BMPs Not functioning Effectively
- Evaluate whether additional or alternative BMP should be implemented
- Document – Written Report & Photos
- Resample next event
- Inform Resident Engineer/ SWPPP Consultant

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Sampling Instruments

- Sample Collection
  - Sample collection may include parameters
    - pH
    - Specific conductance
    - Dissolved oxygen
    - Conductivity
    - Salinity
    - Total dissolved solids
    - Metal

Reference Websites

- State Water Resource Control Board
  http://www.waterboard.ca.gov/stormwtr/construction.html
- Caltrans Construction Sites Runoff Characterization Study, dated September 2002
  http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-02-055.pdf
- Natural Resources Conservation Service Soil Survey
  http://www.soils.usda.gov/
- National Weather Service Forecast Office http://www.srh.noaa.gov/forecast
- Erosivity Index http://ei.tamu.edu
- CASQA BMP Handbook www.cabmphandbooks.com

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Only Storm Water in the Drains

Sampling

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Good Housekeeping !

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Go Lakers !

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QUESTIONS & THANK YOU

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