SECOND DRAFT COUNTY BMP DESIGN MANUAL

SECOND PUBLIC WORKSHOP

FEBRUARY 1, 2016

MEETING OUTLINE

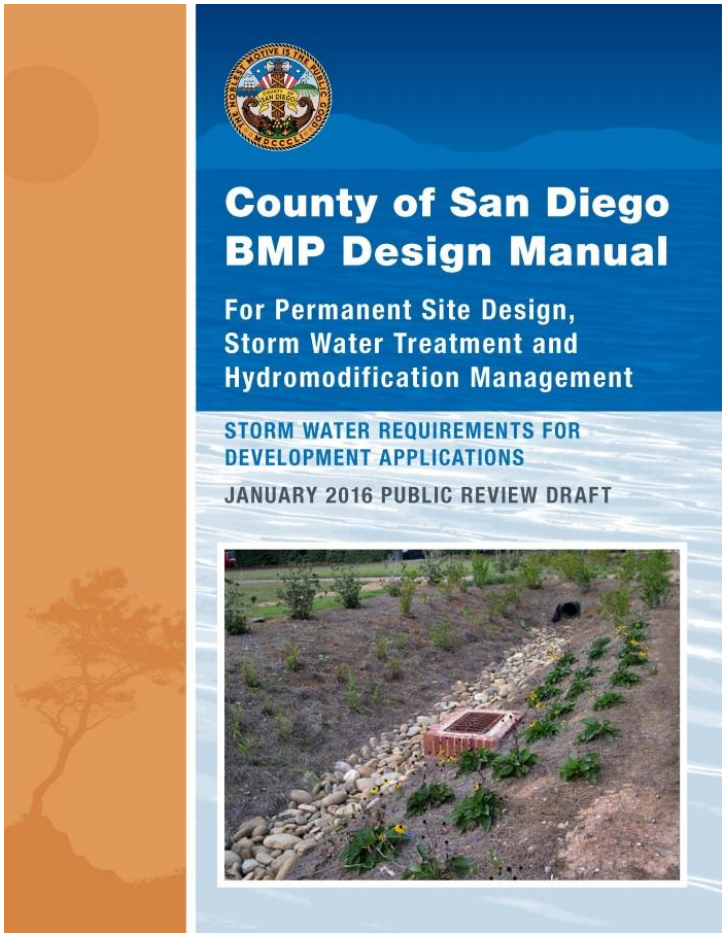
Time	Agenda Item	Presenter(s)
1:00 pm	Introductions and Administration	Sheri McPherson (County of San Diego)
1:10 pm	Overview of edits to Draft 2 of BMPDM	Nancy Richardson (County of San Diego)
1:55 pm	Appendix B – Pollutant Control Hydrologic Calculations and Sizing Methods	Charles Mohrlock (County of San Diego)
2:10 pm	Q & A	
2:20 pm	Appendix H - Critical Coarse Sediment Guidance	Charles Mohrlock (County of San Diego)/ Venkat Gummadi (Geosyntec)
3:00 pm	Q & A	
3:10 pm	Appendix J – Offsite Alternative Compliance Requirements and Guidance	Sheri McPherson (County of San Diego)
3:25 pm	Q & A	
3:35 pm	Appendix K – Green Infrastructure Guidance	René Vidales (County of San Diego)
3:55 pm	Q & A	
4:05 pm	Prior Lawful Approval	Jon Van Rhyn (County of San Diego)
4:20 pm	Q & A	
4:30 pm	Closing Items and Discussion	Sheri McPherson (County of San Diego)
4:40 pm	Adjourn	

TIMELINE

- **County BMP Design Manual**
  - ~~Model BMP Design Manual (June 26, 2015)~~
  - ~~First County Draft Release (November 23, 2015)~~
  - ~~Second County Draft Release (January 25, 2016)~~
  - Second Workshop (February 1, 2016)
  - Public Comment Ends (February 5, 2016)
  - Final County Release (Mid-Late February)
  - Effective Date (February 26, 2016)

BMP DESIGN MANUAL

- Posted on Department of Public Works Watershed Protection Program website
- Public Comment Ends February 5, 2016



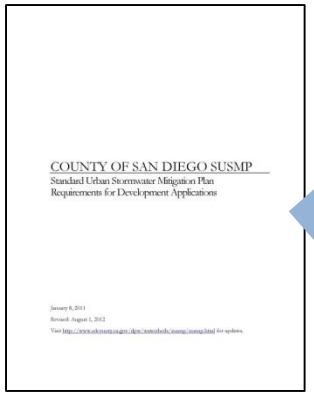
OVERVIEW OF EDITS TO SECOND DRAFT COUNTY BMP DESIGN MANUAL

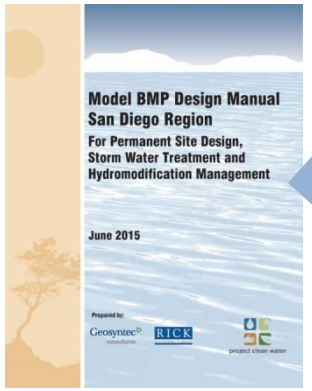
SECOND PUBLIC WORKSHOP

FEBRUARY 1, 2016

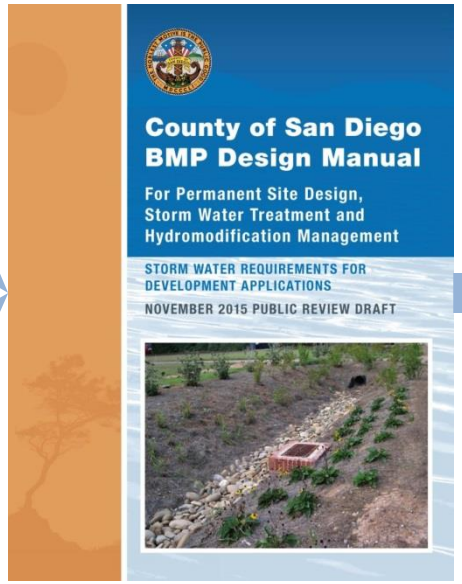
MANUAL DEVELOPMENT

SUSMP

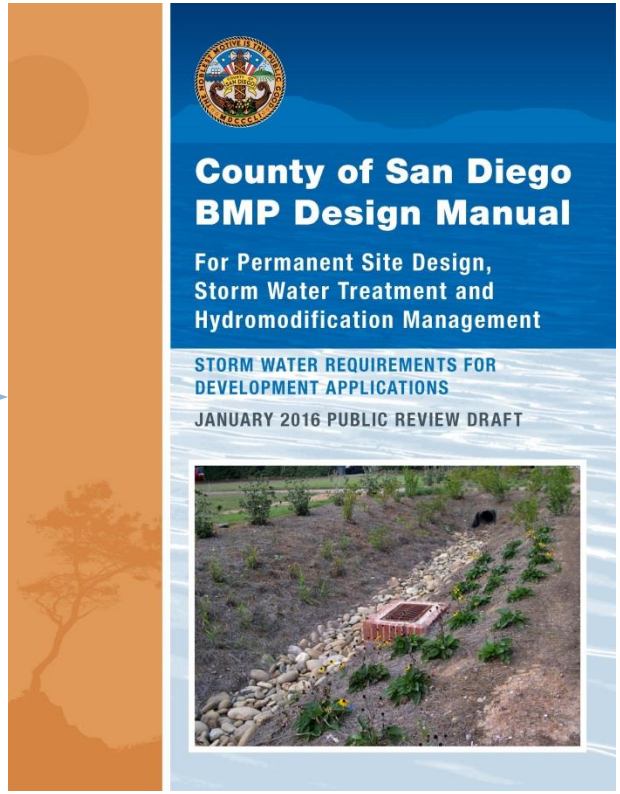




Model



1st Draft



2nd Draft

ROAD MAP

- **BMP DM Chapters**
- **BMP DM Appendices**
  - Overview
  - More thorough review of:
    - Worksheets (Appendix B)
    - Critical Coarse Sediment (Appendix H)
    - Offsite Alternative Compliance (Appendix J)
    - Green Infrastructure Guidance (Appendix K)
    - Prior Lawful Approval (Appendix L)

COUNTY BMP DM

Table of Contents-Chapters

1. **Policies and Procedural Requirements**
2. **Performance Standards and Concepts**
3. **Planning and Design**
4. **Source Control and Site Design**
5. **Pollutant Control for PDPs**
6. **Hydromodification Management for PDPs**
7. Long Term Maintenance
8. Submittal Requirements

CHAPTER 1: POLICIES AND PROCEDURAL REQUIREMENTS

- ***Project Requirements DO NOT apply to:***
  - Replacement of impervious surfaces that are part of a routine maintenance activity, such as:
    - ~~Constructing new sidewalk~~ Resurfacing existing sidewalks, pedestrian ramps or bike lanes on existing roads (within existing street right-of-way)

BMP DM Table 1-2

CHAPTER 1: POLICIES AND PROCEDURAL REQUIREMENTS

- **Solar energy farms that are not also one of the categories listed in Step 2b of Table 1-1 may be exempt from PDP requirements.**
  - County staff must also determine that appropriate BMPs are provided to mitigate for downstream impacts due to significant changes to the existing hydrology

CHAPTER 2: PERFORMANCE STANDARDS AND CONCEPTS

☑ Project Type	Source Control and Site Design (Section 2.1 and Chapter 4)	Structural Pollutant Control (Section 2.2 and Chapter 5 and 7)	Structural Hydromodification Management (Section 2.3, 2.4 and Chapter 6 and 7)
Standard Projects			
Standard Projects based on PDP classification criteria (Section 1.4)		NA	NA
PDP-exempted Projects			
• **New or retrofit paved sidewalks, bicycle lanes, or trails (Section 1.4.3)**	**X**	**NA**	**NA**
• **Retrofitting or redevelopment of paved alleys, streets or roads (Section 1.4.3)**	**X**	**X**	**NA**
PDPs			
• PDPs without HMP Exemptions (Section 1.4)	X	X	X
• PDPs with HMP Exemptions (Section 6.1)	X	X	NA

BMP DM Tables 1-3, 2-1

CHAPTER 2: PERFORMANCE STANDARDS AND CONCEPTS

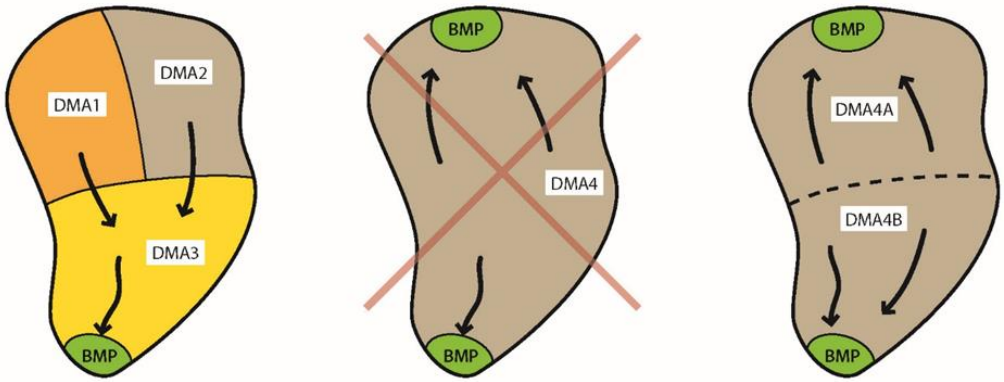
- **Encourage use of Green Infrastructure Guidance for Site Design.**
  - *"…utilize Appendix K as a basis for designing and constructing low impact design and sustainable infrastructure features for their projects. In addition to generally being environmentally preferable, these features can significantly reduce construction and maintenance costs when compared to traditional structural approaches."*

BMP DM -thoughout

CHAPTER 3: PLANNING AND DESIGN

❖ *Drainage Management Areas*

- *For onsite drainage*
- *Clarify 1 DMA may drain to 2 BMPs, if they are in-series*
- *DMA required for all disturbed areas*
- *Must be CEQA compliant: if ultimate build out unknown, assume percent impervious.*
- *Refer to Ch. 5 & 6 for more design guidance*



BMP DM *3.3.3*

CHAPTER 3: PLANNING AND DESIGN

- ~~***Temporary Improvements***~~ ***Interim Improvements***
  - *Refers to improvements (new impervious areas) which are built to serve the project on an interim basis until they are later replaced with permanent or ultimate improvements.*
  - *Require Structural BMPs*
  - *Temporary access roads are NOT Interim improvements if: they are part of the construction site; and they are removed at the end of the project.*

CHAPTER 4: SOURCE CONTROL AND SITE DESIGN

- **For Example:**
- **4.2.1 Prevent illicit discharges into the MS4**
  - SC-**B** – Interior floor drains and elevator shaft sump pumps plumbed to sanitary sewer;
  - SC-**C** – Interior parking garage floor drains plumbed to sanitary sewers;
  - SC-**E** – Pools, spas, ponds with accessible sanitary sewer cleanout;
  - SC-**F** – Food service floor mat & equipment cleanout area exposure reduction;…

BMP DM 4.2 & 4.3 MS4 R9-2015-0100 E.3.a.(2) & (3)

CHAPTER 4: SOURCE CONTROL AND SITE DESIGN

- Landscape with native or drought tolerant species

BMP DM 4.3.7

CHAPTER 4: SOURCE CONTROL AND SITE DESIGN

- **Harvest and use precipitation**
  - Proposals for indoor uses require consultation with staff

Photograph Courtesy of Arid Solutions, Inc.

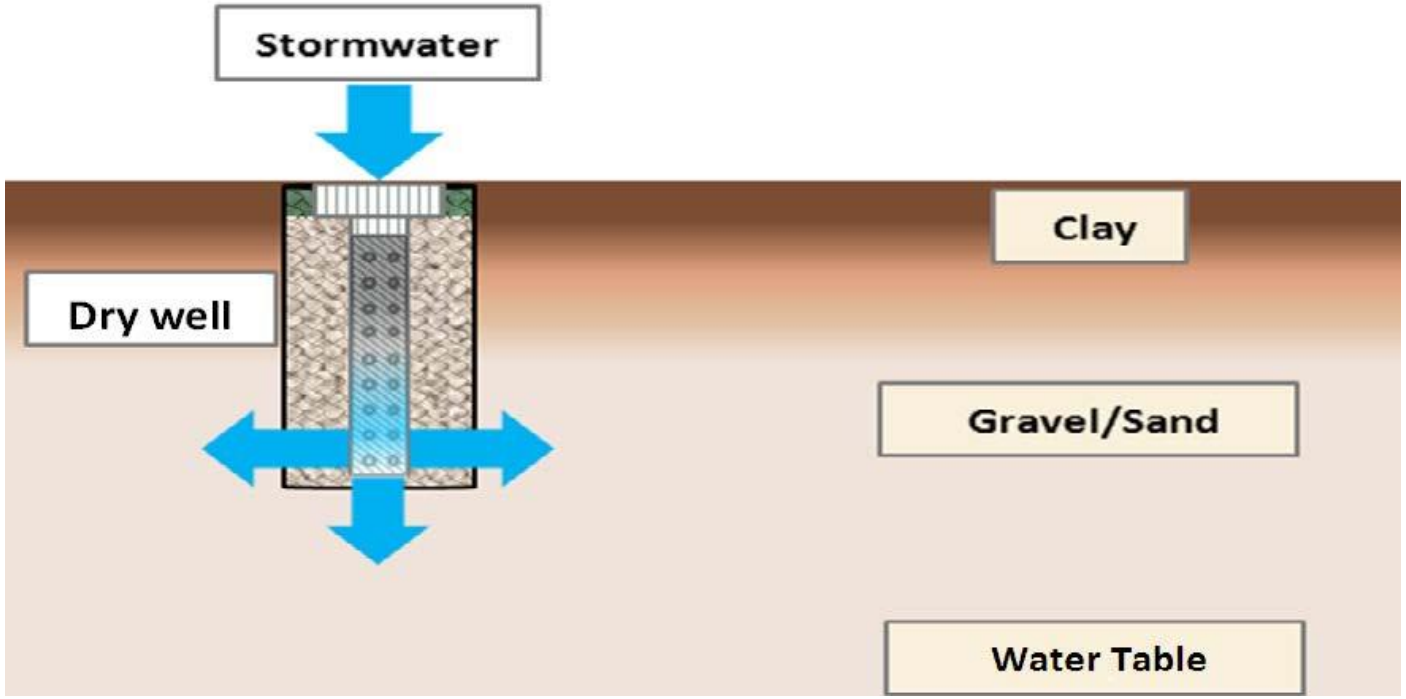
BMP DM 4.3.8

CHAPTER 5: POLLUTANT CONTROL FOR PDPS

- Applicants are solely responsible for understanding and complying with all laws, regulations, or other authorities applicable to the design, production, and use of any BMPs or other devices proposed to, or approved by, the County. Approval of a device by the County does not in itself constitute compliance with any applicable regulatory requirements for that device. Likewise the County is not responsible for overseeing or enforcing compliance with any requirements other than those it is specifically obligated and possess the regulatory authority to implement.

CHAPTER 5: POLLUTANT CONTROL FOR PDPS

- Dry wells are acceptable as alternative infiltration devices.



BMP DM 5.5.1

CHAPTER 5: POLLUTANT CONTROL FOR PDPS

- While the County has no obligation to accept the use of any proposed proprietary flow-thru BMP, applicants will be provided a written explanation describing the rationale for the rejection of any proposed devices.

CHAPTER 6: HYDROMODIFICATION MANAGEMENT FOR PDPS

- Protection of Critical Coarse Sediment Yield Areas

CHAPTER 7 & 8

- Long Term Maintenance
- Submittal Requirements

No changes

APPENDICES

A. **Submittal Templates**

B. **Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods**

C. **Geotechnical and Groundwater Investigation Requirements**

D. Approved Infiltration Rate Assessment Methods for Selection and Design of Storm Water BMPs

E. **BMP Design Fact Sheets**

F. Biofiltration Standard and Checklist

APPENDICES CONTINUED

G. Guidance for Continuous Simulation and Hydromodification Management Sizing Factors

H. Guidance for Investigating Potential Critical Coarse Sediment Yield Areas

I. Forms and Checklists

J. Offsite Alternative Compliance Requirements and Guidance

K. Green Infrastructure Requirements and Guidance

L. Prior Lawful Approval Requirements and Guidance

M. Glossary of Key Terms

APPENDICES-FURTHER DISCUSSION

B. Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

H. Guidance for Investigating Potential Critical Coarse Sediment Yield Areas

J. Offsite Alternative Compliance Requirements and Guidance

K. Green Infrastructure Requirements and Guidance

L. Prior Lawful Approval and Guidance

APPENDIX A: SUBMITTAL TEMPLATES

- Intake Form
- Standard SWQMP
- Priority Development Project (PDP) SWQMP
- Green Infrastructure SWQMP for PDP Exempt
- Offsite Alternative Compliance Program (ACP) SWQMP

APPENDIX B: POLLUTANT CONTROL HYDROLOGIC CALCULATIONS AND SIZING METHODS

- **Automated Worksheets**
  - B.2-1 DCV calculation
  - B.4-1 & B.4-2 Retention and Infiltriation
  - B.5-1 Biofiltration
  - B.5-2 Partial Retention
  - B.5-3 Alternate Minimum Biofiltration Footprint

…..Later discussion

APPENDIX B: POLLUTANT CONTROL HYDROLOGIC CALCULATIONS AND SIZING METHODS

- **DCV – Reduce using Site Design such as: Tree Wells and Rain Barrels, and Impervious Area Dispersion**
- ~~**Street trees**~~ **Tree wells**

APPENDIX B: POLLUTANT CONTROL HYDROLOGIC CALCULATIONS AND SIZING METHODS

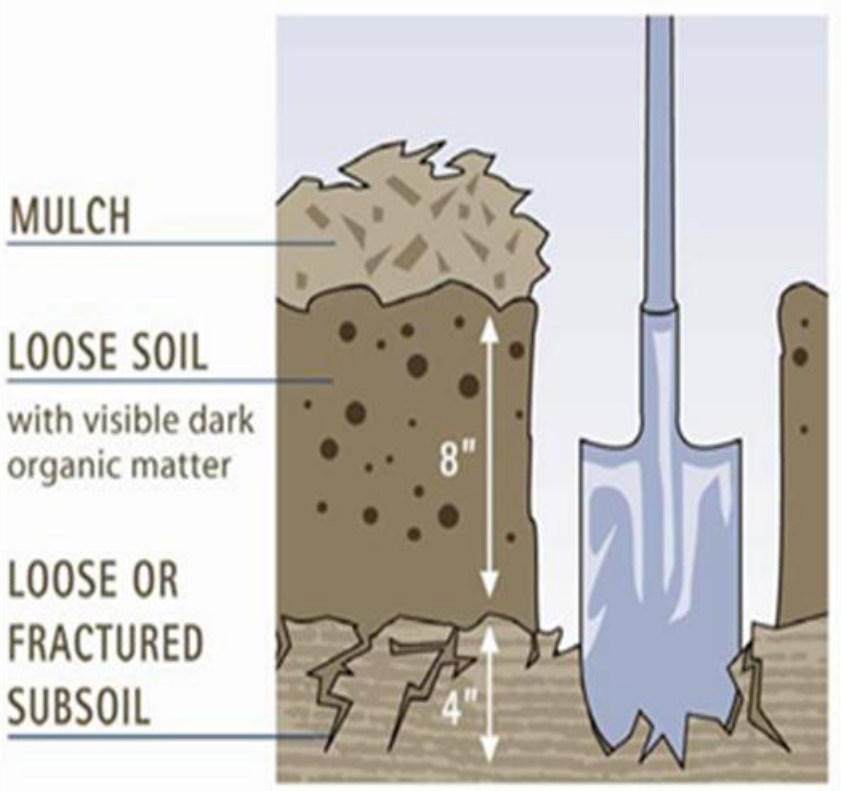
Table B.1-1: Runoff factors for surfaces draining to BMPs – Pollutant Control BMPs

Surface	Runoff Factor
Roofs	0.90
Concrete or Asphalt[1]	0.90
Unit Pavers (grouted)[1]	0.90
Decomposed Granite	0.30
Cobbles or Crushed Aggregate	0.30
Mulched and Amended Soils per the Water Conservation in Landscaping Ordinance, Section 86.709 & Fact Sheet SD-F in Appendix E	**0.10**
Compacted Soil (e.g., unpaved parking)	0.30
Natural (A Soil)	0.10
Natural (B Soil)	0.14
Natural (C Soil)	0.23
Natural (D Soil)	0.30

Tables B.1-1, B.1-2, Fact Sheet SD-F Amended Soil

APPENDIX B: POLLUTANT CONTROL HYDROLOGIC CALCULATIONS AND SIZING METHODS

- Appendix E
  - Fact Sheet SD-F
    - Amended Soil



Tables B.1-1, B.1-2, Appendix E-11 Fact Sheet SD-F Amended Soil

APPENDIX B: POLLUTANT CONTROL HYDROLOGIC CALCULATIONS AND SIZING METHODS

Table B.2-1: Impervious area adjustment factors that accounts for dispersion

Pervious area hydrologic soil group	Ratio = Impervious area/Pervious area			
	<=1	2	3	4
A/Amended Soil	0.00	0.00	0.23	0.36
B	0.00	0.27	0.42	0.53
C	0.34	0.56	0.67	0.74
D	0.86	0.93	0.97	1.00

Tables B.1-1, B.1-2, Fact Sheet SD-F Amended Soil

APPENDIX C: GEOTECHNICAL AND GROUNDWATER INVESTIGATION REQUIREMENTS

- **Infiltration Feasibility Analysis worksheet**
  - Re-iterated on the form:
    - A letter of justification from a geotechnical professional familiar with the local conditions substantiating any geotechnical issues can preclude the requirement for an infeasibility analysis.

APPENDIX E: BMP DESIGN FACT SHEETS

MS4 Category	Manual Category	Design Fact Sheet	Typical Design
Source Control	Source Control	SC: Source Control BMP Requirements **SC-6A**: Large Trash Generating Facilities **SC-6B**: Animal Facilities **SC-6C**: Plant Nurseries and Garden Centers **SC-6D**: Automotive-related Uses	
Site Design	Site Design	**SD-A** Tree Wells **SD-B**: Impervious Area Dispersion **SD-C**: Green Roofs **SD-D**: Permeable Pavement (Site Design BMP) **SD-E**: Rain Barrels **SD-F: Amended Soil**	
		PL: Plant **List for Bioretention Facilities**	

APPENDIX E: BMP DESIGN FACT SHEETS

- **Inserted Siting Design Criteria:**
  - **Ensure area is graded; and the tree well/impervious area is located so that full DCV water drains to the tree well/ impervious area to <u>minimize short-circuiting of run- off</u>**

E.6 (SD-A Tree Wells) & E.7 (SD-B (Impervious Area Dispersion)

APPENDIX G: GUIDANCE FOR CONTINUOUS SIMULATION AND HYDROMODIFICATION MANAGEMENT SIZING FACTORS

- **Updated Discharge rate and Duration requirement to reflect New Permit requirement.**
  - The post-project discharge rates and durations must not exceed the pre-development rates and durations by more than 10 percent.

APPENDIX I: FORMS AND CHECKLISTS

- **Provided Templates for:**
  - **Maintenance Notification Agreement (Category 1)**
  - **Maintenance Agreement Instructions for preparing (Category 2)**

- **Examples of Additional Exhibits required**:
  - Project Site Vicinity Map
  - Project Site Map
  - a map for each BMP and it's Drainage Management Area

APPENDIX M: GLOSSARY OF KEY TERMS

- **Added:**
  - **Pacific/Salton Sea Divide**
- **Revised**
  - **Redevelopment**

APPENDICES-FURTHER DISCUSSION

B. Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

H. Guidance for Investigating Potential Critical Coarse Sediment Yield Areas

J. Offsite Alternative Compliance Requirements and Guidance

K. Green Infrastructure Requirements and Guidance

L. Prior Lawful Approval Requirements and Guidance

APPENDIX B:

STORM WATER POLLUTANT CONTROL HYDROLOGIC CALCULATIONS & SIZING METHODS

FEBRUARY 1, 2016

SUMMARY OF UPDATES

❖ Conceptual Changes

- ❖ Automate planning, design, submittal, and review process
- ❖ Shift from requirement-based to results-based calculations
- ❖ Facilitate participation in offsite alternative compliance

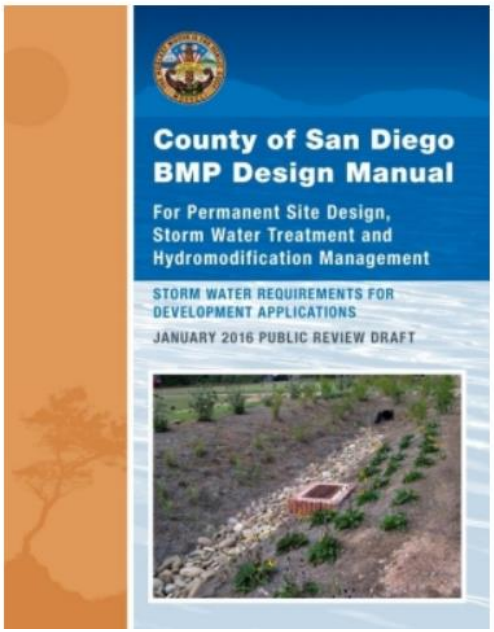
❖ Worksheets Available

- ❖ Design Capture Volume *(B.2-1)*
- ❖ Capture and Use Feasibility *(B.3-1)*
- ❖ Infiltration BMPs *(B.4-1)*
- ❖ Bioretention BMPs *(B.4-2)*
- ❖ Biofiltration BMPs *(B.5-1)*
- ❖ Partial Retention BMPs *(B.5-2)*
- ❖ Minimum Biofiltration Ratio *(B.5-3)*
- ❖ Flow-Thru Treatment BMPs *(B.6-1)*
- ❖ Summary Worksheet

Let's go over an example in Excel.

DOWNLOAD THE WORKSHEETS

http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction.html



Second Draft County BMP Design Manual and Second Public Workshop

The 2nd Draft of the County of San Diego BMP Design Manual (DM) is available for public comment as of January 25, 2016. The revisions from the 1st Draft are shown as blue text while the revisions from the Model BMP Design Manual remain as gray highlighted text. This Manual will replace the current County Standard Urban Runoff Stormwater Mitigation Plan (SUSMP). A second public workshop will be held on February 1, 2016 to discuss revisions to the BMP DM and critical coarse sediment issues.

Second Public Workshop February 1, 2016 from 1:00 to 4:00pm at the Public Hearing Room, 5520 Overland Avenue, San Diego, CA.

Comments due by Friday, February 5, 2016 at 12:00 p.m.

Please submit comments/questions via email to Nancy Richardson and Laura Henry

- **2nd Draft January 25, 2016** BMP Design Manual
  - Addendum Section 6.3
- **2nd Draft January 25, 2016** BMP Design Manual Appendices (Appendices B, C, D, E, F, G, & I only. Other appendices are posted as separate files below)
- **Appendix A**
  - Intake Form
  - Standard SWQMP
  - Priority Development Project (PDP) SWQMP
  - Green Streets PDP Exempt SWQMP
  - Offsite Alternative Compliance Project (ACP) SWQMP
- **Appendix B**
  - Excel Workbook: Automated Stormwater Pollutant Control Worksheets

QUESTIONS?

APPENDIX H:

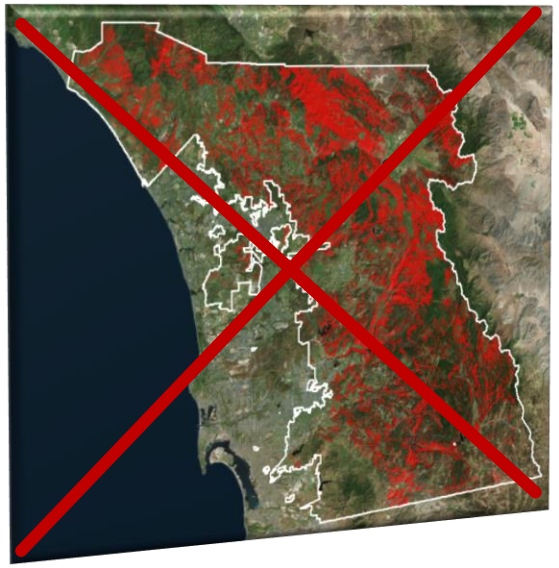
GUIDANCE FOR PROTECTING CRITICAL COARSE SEDIMENT YIELD AREAS

FEBRUARY 1, 2016

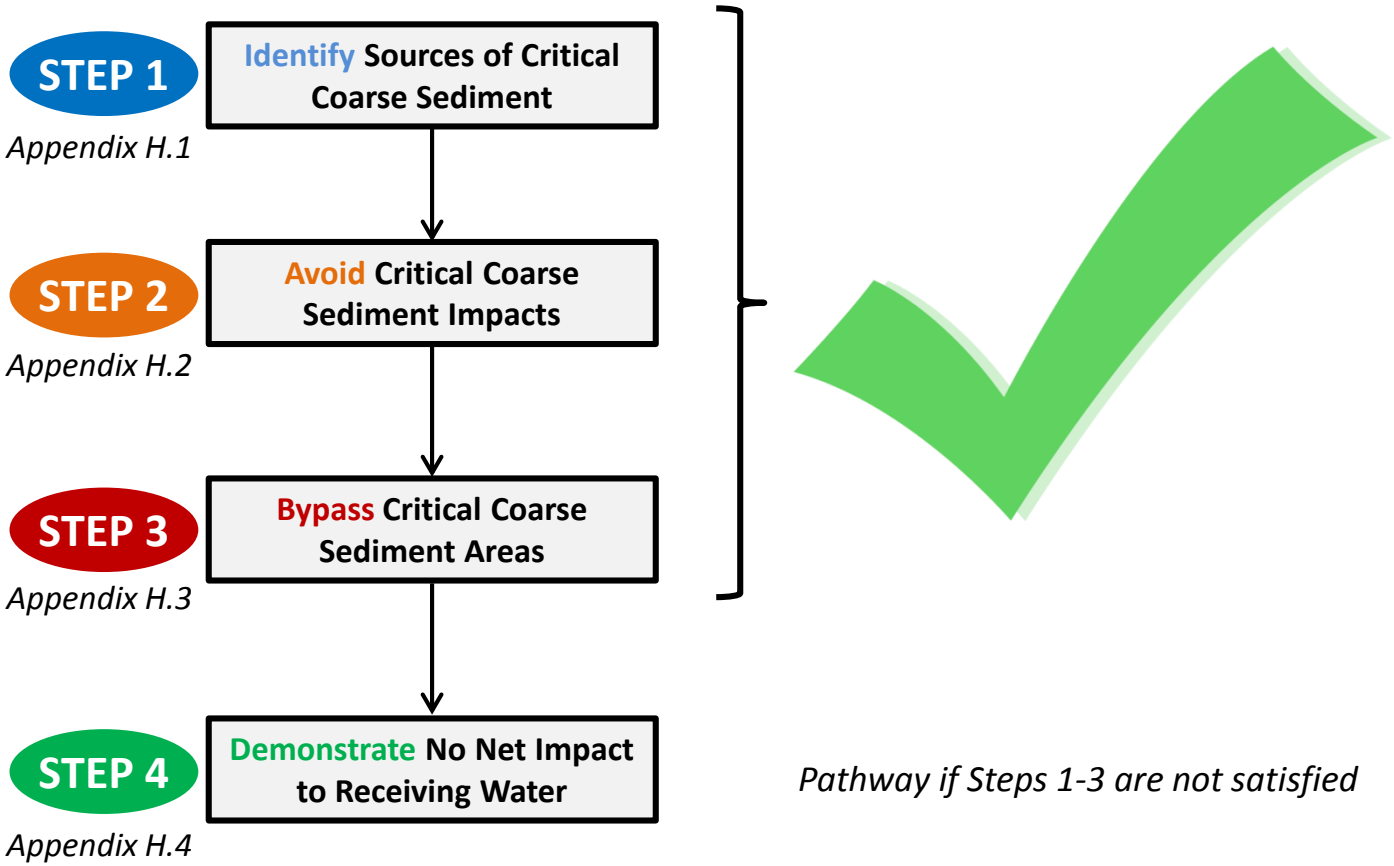
SUMMARY OF UPDATES

- **More Detailed Guidance**
  - Identify, Avoid, and Bypass Critical Coarse Sediment
  - Demonstrate No Net Impact to Receiving Waters

- **Identification of CCSYA within County**
  - Reliance on existing Resource Protection Ordinance (RPO) rather than areas mapped by the Regional WMAA.



CONCEPTUAL GUIDANCE OUTLINE



DETAILED GUIDANCE OUTLINE

STEP 1
Appendix H.1

Identify onsite/upstream areas that are coarse, ≥25% slope, and ≥50' height as Critical Coarse Sediment Yield Areas (CCSYAs). *These areas may be refined through optional analysis outlined in Appendix H.7 (deposition/channel/soils).*

STEP 2
Appendix H.2

Avoid impacts to onsite CCSYAs through effective site design. *Encroachments of 10-20% into CCSYAs may be allowed as permitted by RPO encroachment allowances.*

STEP 3
Appendix H.3

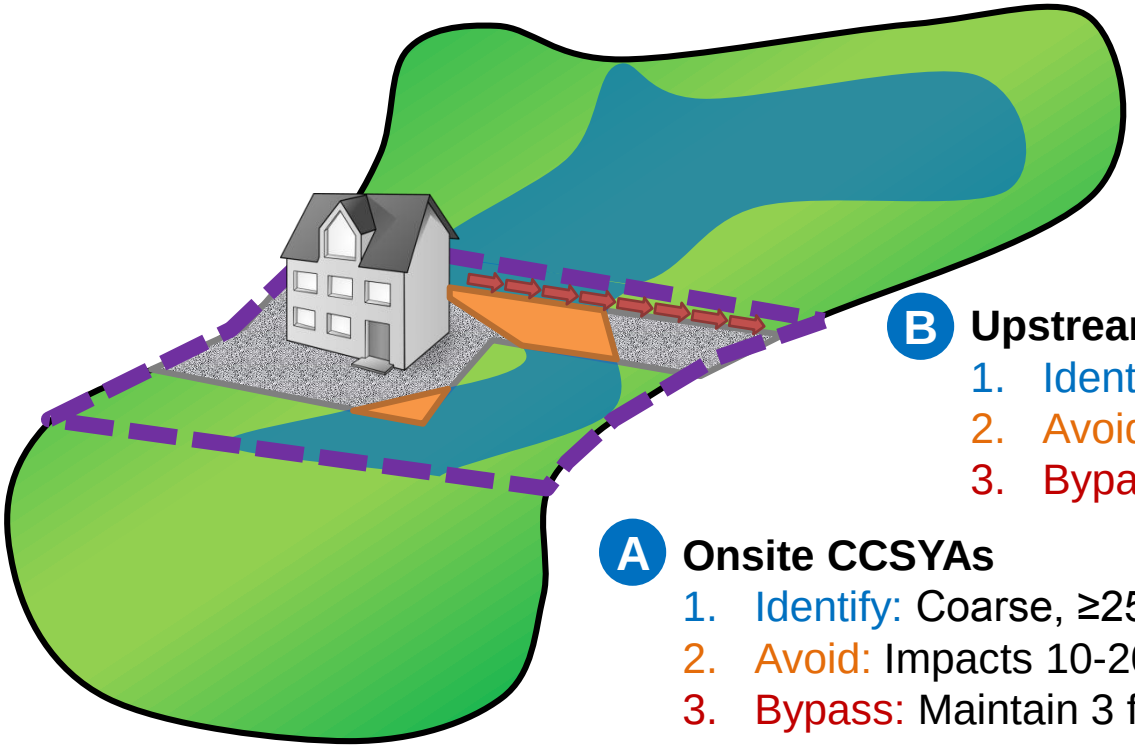
Bypass onsite/upstream CCSYAs through the project site by maintaining a peak 2 year storm velocity of ≥3 feet per second. *Upstream areas under ¼ acre may be omitted.*

STEP 4
Appendix H.4

Demonstrate no net impact to receiving water if steps 1-3 are not satisfied. *This option includes more in depth analysis.*

SCENARIO 1
PDP SUBJECT TO RPO

- This scenario applies to projects such as tentative parcel maps, rezones, major use permits, and site plans. These are typically new development projects.



B **Upstream CCSYAs**

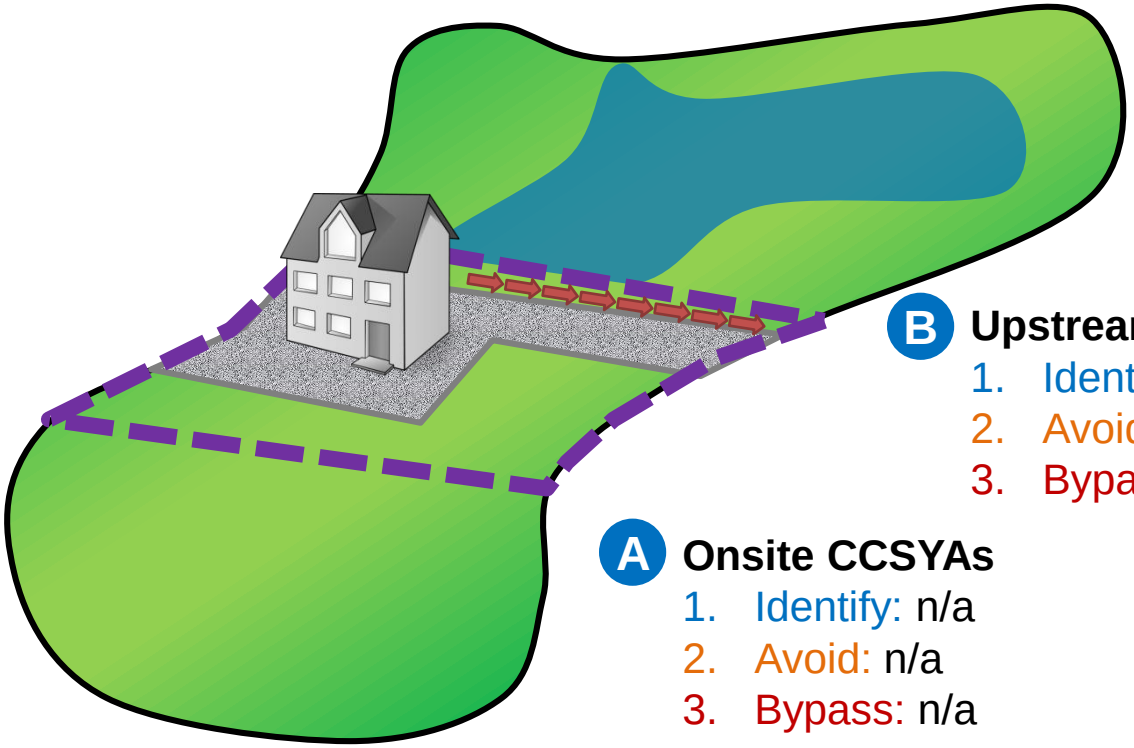
1. Identify: Coarse, ≥25% Slope, ≥50’ Height
2. Avoid: n/a
3. Bypass: Maintain 3 feet per second

A **Onsite CCSYAs**

1. Identify: Coarse, ≥25% Slope, ≥50’ Height
2. Avoid: Impacts 10-20% allowed
3. Bypass: Maintain 3 feet per second

SCENARIO 2
PDP NOT SUBJECT TO RPO

- This scenario applies to projects that are categorically exempt from RPO requirements such as public infrastructure and typical redevelopment projects.



B Upstream CCSYAs

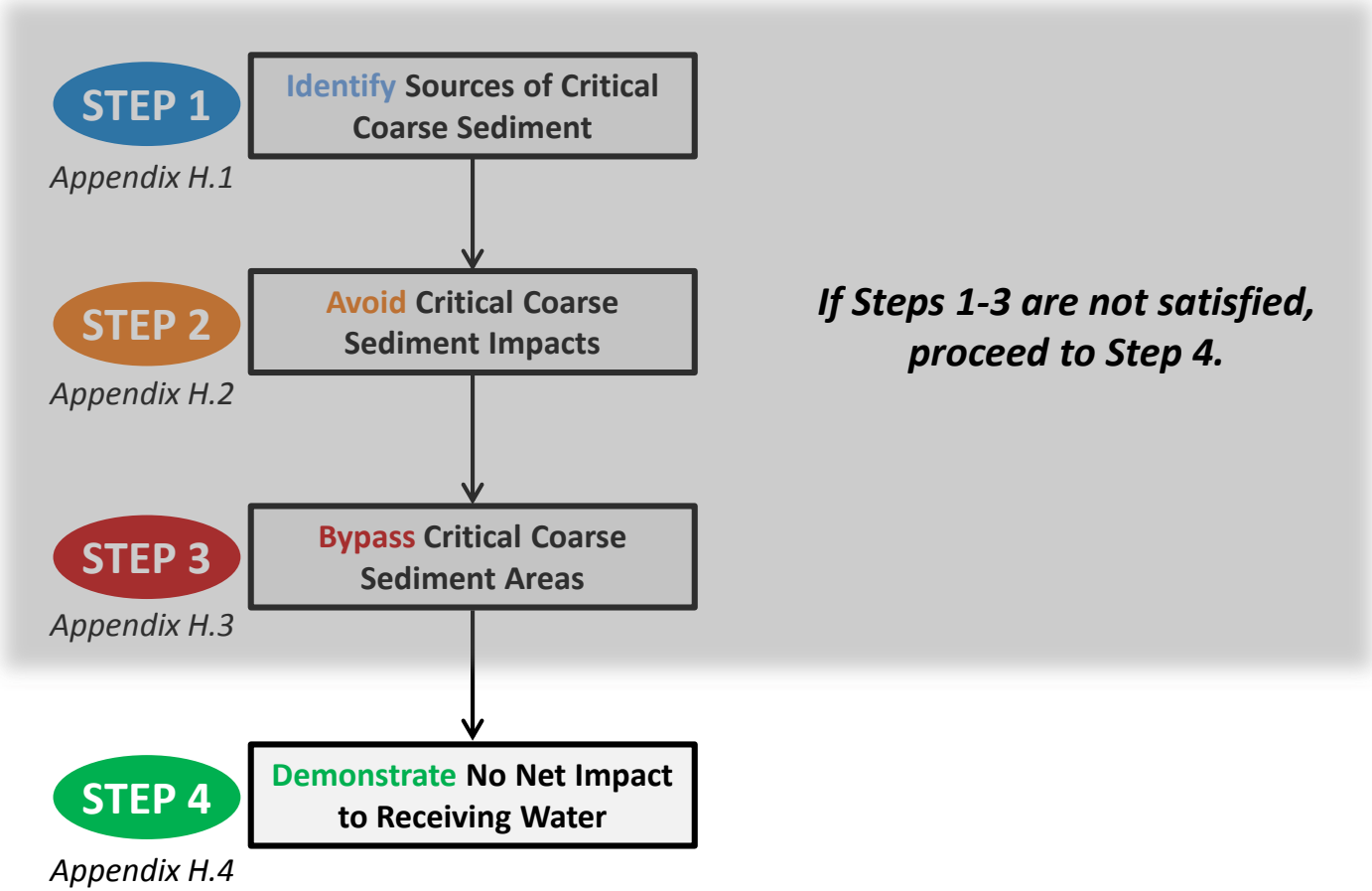
1. Identify: Coarse, ≥25% Slope, ≥50’ Height
2. Avoid: n/a
3. Bypass: Maintain 3 feet per second

A Onsite CCSYAs

1. Identify: n/a
2. Avoid: n/a
3. Bypass: n/a

Note: In rare circumstances, projects qualifying for very specific RPO exemptions may be required to demonstrate no net impact per methods outlined in Step 4.

CONCEPTUAL GUIDANCE OUTLINE

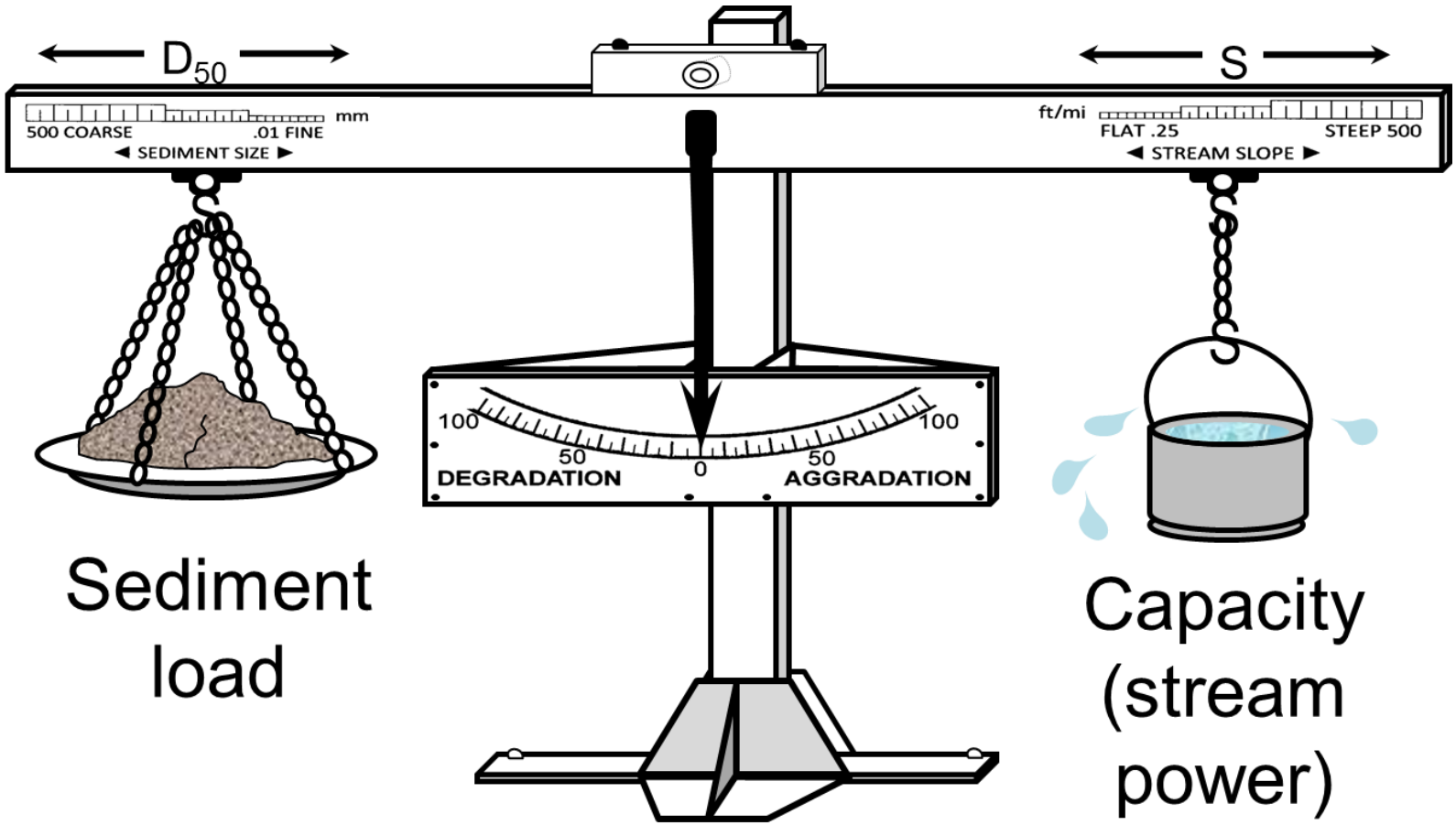


DEMONSTRATE NO NET IMPACT

- **Appendix H.4**
  - Step 4: Demonstrate No Net Impact
- **Appendix H.5**
  - References
- **Appendix H.8**
  - Calculation Methodology for Ep and Sp
- **Appendix H.9**
  - Mitigation Measures Fact Sheets

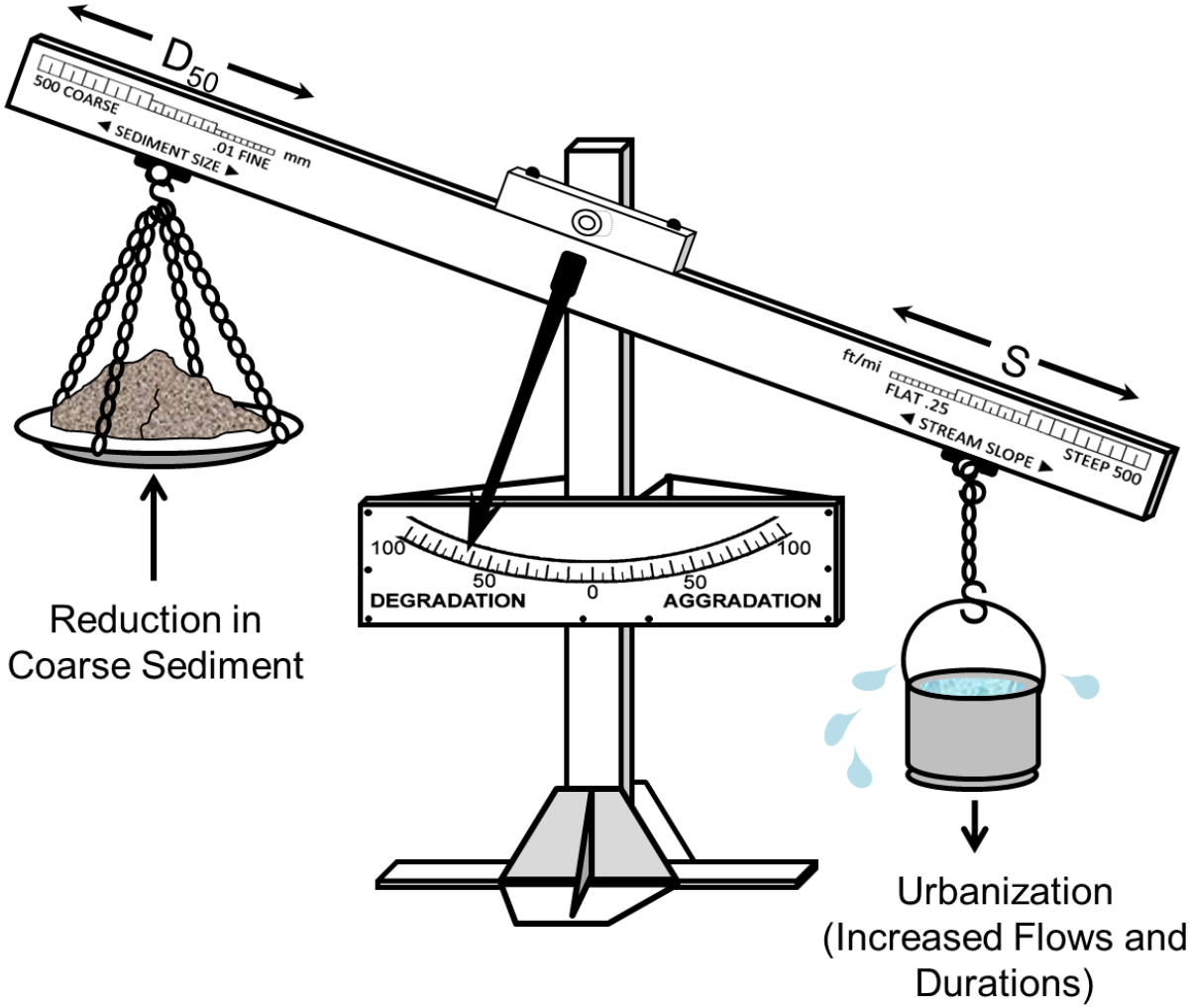
LANES RELATIONSHIP

$$Q_s \times d \propto Q_w \times S$$



Appendix H.4

POST DEVELOPMENT



Appendix H.4

MS4 PERMIT REQUIREMENT

(2) Hydromodification Management BMP Requirements

Each Copermittee must require each Priority Development Project to implement onsite BMPs to manage hydromodification that may be caused by storm water runoff discharged from a project as follows:

(a) Post-project runoff conditions (flow rates and durations) must not exceed pre-development runoff conditions by more than 10 percent (for the range of flows that result in increased potential for erosion, or degraded instream habitat downstream of Priority Development Projects).

(i) In evaluating the range of flows that results in increased potential for erosion of natural (non-hardened) channels, the lower boundary must correspond with the critical channel flow that produces the critical shear stress that initiates channel bed movement or that erodes the toe of channel banks.

(ii) The Copermittees may use monitoring results collected pursuant to Provision D.1.a.(2) to re-define the range of flows resulting in increased potential for erosion, or degraded instream habitat conditions, as warranted by the data.

(b) Each Priority Development Project must avoid critical sediment yield areas known to the Copermittee or identified by the optional Watershed Management Area Analysis pursuant to Provision B.3.b.(4), or implement measures that allow critical coarse sediment to be discharged to receiving waters, such that there is no net impact to the receiving water.

METRICS TO EVALUATE NO NET IMPACT

- **Lanes Relationship:** $Q_s \times d \propto Q_w \times S$
  - **Erosion Potential (Ep)** metric shall be used to evaluate the changes in sediment transport capacity (second half of Lane's relationship).
  - **Sediment Supply Potential (Sp)** metric shall be used to evaluate the changes in bed sediment supply (first half of Lane's relationship).

EROSION POTENTIAL

- Erosion potential (Ep) is defined as the ratio of post-project/pre-development (natural) long-term transport capacity or work

- The applicant shall perform Ep calculations using methodologies in Appendix H.8

Appendix H.4 & H.8

SEDIMENT SUPPLY POTENTIAL

- **Sediment Supply Potential (Sp) is defined as the ratio of post-project/pre-project (existing) long-term bed sediment supply**

- **The applicant shall perform Sp calculations using methodologies in Appendix H.8**

Appendix H.4 & H.8

DEMONSTRATE NO NET IMPACT (NII)

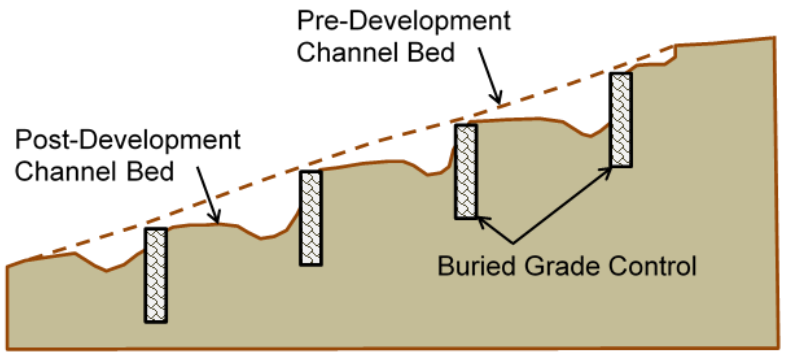
$$NII = \frac{Ep}{Sp} \leq 1.1$$

- If NII ≤ 1.1, then the project produces no net impact to the receiving water in terms of coarse sediment yield, and no further analysis is required.
- If NII > 1.1, then the project generates an impact on the receiving water and the project is required to implement mitigation measures such that the NII is reduced to a compliant value (NII ≤ 1.1).

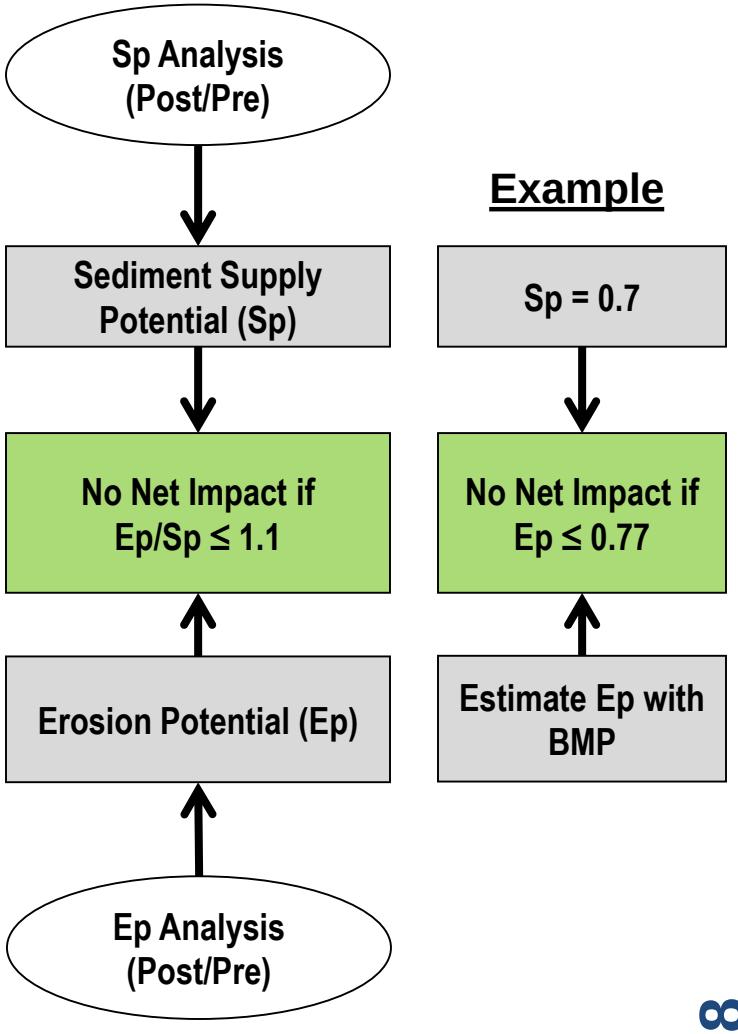
Appendix H.4

MITIGATION MEASURES

- Additional Flow Control
- Stream Rehabilitation
- Applicant Proposed Mitigation Measures



Grade Control Structures



Appendix H.4 & H.9

QUESTIONS?

Appendix H

APPENDIX J
OFFSITE ALTERNATIVE COMPLIANCE

FEBRUARY 1, 2016

WHAT IS OFFSITE ALTERNATIVE COMPLIANCE?

- Optional Program
- Allows a PDP to partially or wholly satisfy stormwater control requirements offsite through implementation of an Alternative Compliance Project (ACP)
- Must achieve a “Greater overall water quality benefit”

KEY CONCEPTS

- **Two Implementation Scenarios:**
  - Applicant-implemented ACPs
    - Party responsible for the PDP is legally responsible for the ACP
    - Does not require a credit system to be approved
  - Independent ACPs
    - Project initiated independently of any specific PDP impact
    - Available only with a RWQCB-approved credit system

KEY CONCEPTS – CONT.

- **ACP Types:**
  - Structural BMPs
    - Retrofit BMP
    - Regional BMPs
    - Water Supply BMPS
  - Natural System Management Practices (NSMPs)
    - Land Restoration
    - Land Preservation
    - Stream Rehabilitation

AVAILABLE ACP TYPE-BENEFIT COMBINATIONS

ACP Category		Stormwater Pollutant Control Benefits				Hydromod Flow Control Benefits
		Pollutant Reduction			Volume Reduction	
		Retention	Biofiltration	Flow-Thru		
BMP	Retrofit	Available	Available	Limited Availability[2]	Available	Available
	Regional	Available	Available	Limited Availability[2]	Available	Available
	Water Supply	Available	Available	Limited Availability[2]	Available	Available
NSMP	Land Restoration	Not Available	Not Available	Not Available	Available	Available
	Land Preservation	Not Available	Not Available	Not Available	Limited Availability	Available
	Stream Rehabilitation	Not Available	Not Available	Not Available	Limited Availability	Available

REQUIREMENTS FOR ACPS

- **Requirements that apply to the PDP:**
  - Must determine the portion of the design capture volume or total impervious area not managed onsite
  - Must provide onsite flow-thru treatment control BMPs
  - Must provide temporal mitigation if ACP is constructed after the completion of the PDP
  - PDP SWQMP must identify that an ACP is being used to meet project requirements

REQUIREMENTS FOR ACPS

- **Requirements that apply to the ACP:**
  - Demonstrate the water quality benefits
  - Use the approved *Water Quality Equivalency Guidance (WQE)* to quantify benefits
  - Be in the same watershed as PDP
  - Implement all practices in accordance with the BMP Design Manual:
  - Ensure effective operation and maintenance in perpetuity

SUBMITTAL REQUIREMENTS FOR ACPS

- Identify PDP deficits in the PDP SWQMP
- Utilize WQE Automated Workbook (.xls) to help calculate ACP benefits
- Submit an ACP SWQMP

QUESTIONS?

APPENDIX K
GREEN INFRASTRUCTURE

FEBRUARY 1, 2016

GREEN INFRASTRUCTURE

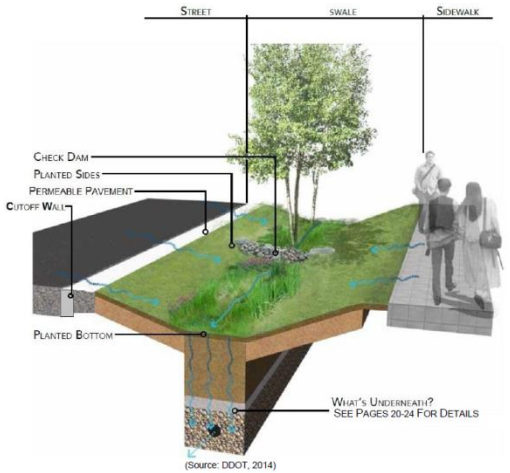
Appendix K: Green Infrastructure

OVERVIEW

- What is Green Infrastructure?
- PDP Exemption vs. PDP
- Guidance on Green Infrastructure
- Green Infrastructure Strategies
- Putting it all together

WHAT IS GREEN INFRASTRUCTURE?

- **Cost-effective, resilient approach to managing wet weather impacts that provides many community benefits**
  - Protects, restores, and mimics the natural water cycle
  - Uses vegetation, mulch, soils, and natural processes
  - Creates healthier environments



(Source: DDOT, 2014)

GRAY VS. GREEN

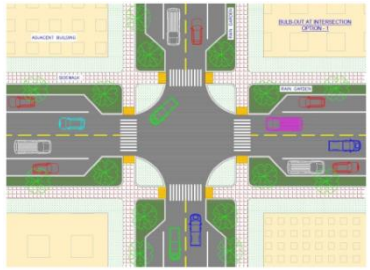
- **Gray Stormwater Infrastructure**
  - Conventional piped drainage and water treatment systems
  - Designed to move urban stormwater away from the built environment,

- **Green Infrastructure**
  - Reduces and treats stormwater at its source
  - Delivers environmental, social, and economic benefits.

GREEN INFRASTRUCTURE

- **At County scale**
  - Network of natural features
  - Provides habitat, flood protection, cleaner air, cleaner water

- **At neighborhood or site scale**
  - Stormwater and flood management systems
  - Mimic nature by soaking up and storing water



GREEN INFRASTRUCTURE

- **Elements:**
  - Downspout Disconnection
  - Rainwater Harvesting
  - Rain Gardens
  - Planter Boxes
  - Bioswales
  - Permeable Pavements
  - Green Streets and Alleys
  - Green Parking
  - Green Roofs
  - Urban Tree Canopy
  - Land Conservation

Appendix K: Green Infrastructure

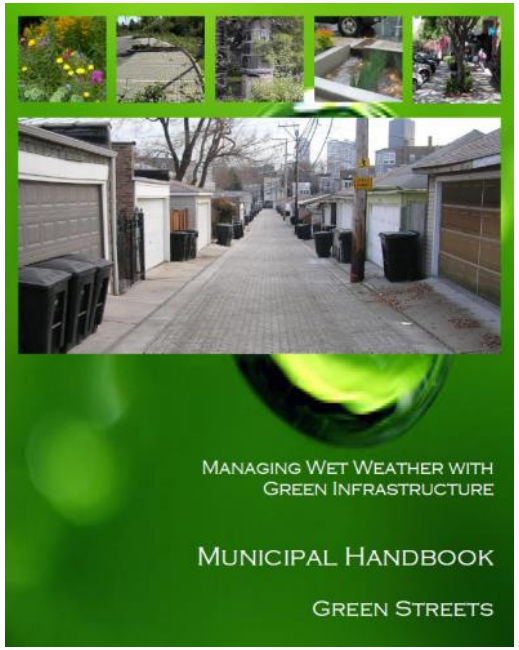
2013 MS4 PERMIT PDP EXEMPTIONS

Each Copermittee has the discretion to exempt the following projects from being defined as Priority Development Projects (PDPs)

- (a) New or retrofit paved sidewalks, bicycle lanes, or trails that meet the following criteria:
  - (i) Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas; OR
  - (ii) Designed and constructed to be hydraulically disconnected from paved streets or roads; OR
  - (iii) Designed and constructed with permeable pavements or surfaces in accordance with **USEPA Green Streets guidance**
- (b) Retrofitting or redevelopment of existing paved alleys, streets or roads that are designed and constructed in accordance with the **USEPA Green Streets Guidance**

Appendix K: Green Infrastructure

GREEN STREETS



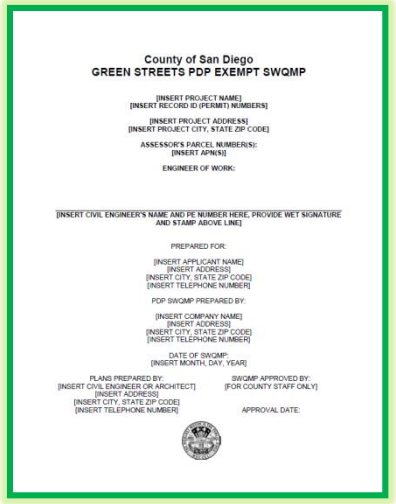
A Green Street is a street that uses natural processes to manage stormwater runoff at its source.

Appendix K: Green Infrastructure

PDP EXEMPTION VS. PDP

Using Green Infrastructure in PDP Exemption:

- See Section 1.4.3 of BMP Design Manual (Local PDP Exemptions)
- Entire project must fit category to use exemption
- See Table 2-1 for performance standards
- Use Green Streets PDP Exempt SWQMP Form



County of San Diego
GREEN STREETS PDP EXEMPT SWQMP

[INSERT PROJECT NAME]
[INSERT RECORD ID (PERMIT) NUMBER(S)]

[INSERT PROJECT ADDRESS]
[INSERT PROJECT CITY, STATE ZIP CODE]

ASSESSOR'S PARCEL NUMBER(S):
[INSERT APN(S)]

ENGINEER OF WORK:

[INSERT CIVIL ENGINEER'S NAME AND PE NUMBER HERE, PROVIDE WET SIGNATURE AND STAMP ABOVE LINE]

PREPARED FOR:

[INSERT APPLICANT NAME]
[INSERT ADDRESS]
[INSERT CITY, STATE ZIP CODE]
[INSERT TELEPHONE NUMBER]

PDP SWQMP PREPARED BY:

[INSERT COMPANY NAME]
[INSERT ADDRESS]
[INSERT CITY, STATE ZIP CODE]
[INSERT TELEPHONE NUMBER]

DATE OF SWQMP:
[INSERT MONTH, DAY, YEAR]

PLANS PREPARED BY:
[INSERT CIVIL ENGINEER OR ARCHITECT]
[INSERT ADDRESS]
[INSERT CITY, STATE ZIP CODE]
[INSERT TELEPHONE NUMBER]

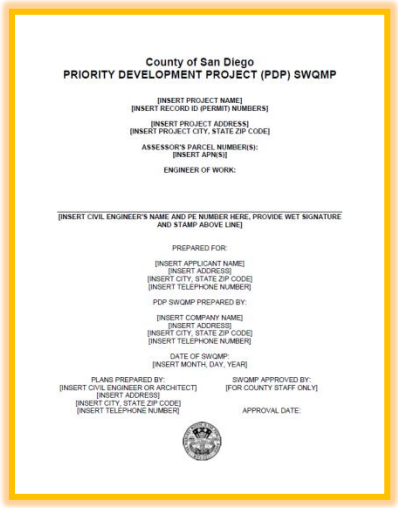
SWQMP APPROVED BY:
[FOR COUNTY STAFF ONLY]

APPROVAL DATE:

PDP EXEMPTION VS. PDP

Using Green Infrastructure in a PDP:

- Entire project is a PDP
- See Table 2-1 for performance standards
- Use Priority Development Project (PDP) SWQMP Form



County of San Diego
PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

[INSERT PROJECT NAME]
[INSERT RECORD ID (PERMIT) NUMBERS]

[INSERT PROJECT ADDRESS]
[INSERT PROJECT CITY, STATE ZIP CODE]

ASSESSOR'S PARCEL NUMBER(S):
[INSERT APN(S)]

ENGINEER OF WORK:

[INSERT CIVIL ENGINEER'S NAME AND PE NUMBER HERE, PROVIDE WET SIGNATURE AND STAMP ABOVE LINE]

PREPARED FOR:

[INSERT APPLICANT NAME]
[INSERT ADDRESS]
[INSERT CITY, STATE ZIP CODE]
[INSERT TELEPHONE NUMBER]

PDP SWQMP PREPARED BY:

[INSERT COMPANY NAME]
[INSERT ADDRESS]
[INSERT CITY, STATE ZIP CODE]
[INSERT TELEPHONE NUMBER]

DATE OF SWQMP:
[INSERT MONTH, DAY, YEAR]

PLANS PREPARED BY:
[INSERT CIVIL ENGINEER OR ARCHITECT]
[INSERT ADDRESS]
[INSERT CITY, STATE ZIP CODE]
[INSERT TELEPHONE NUMBER]

SWQMP APPROVED BY:
[FOR COUNTY STAFF ONLY]

APPROVAL DATE:

Appendix K: Green Infrastructure

TABLE 2-1
PERFORMANCE STANDARDS

Project Type	Source Control and Site Design (Section 2.1 and Chapter 4)	Structural Pollutant Control (Section 2.2 and Chapter 5 and 7)	Structural Hydromodification Management (Section 2.3, 2.4 and Chapter 6 and 7)
Standard Projects			
Standard Projects based on PDP classification criteria (Section 1.4)	☑	NA	NA
PDP-exempted Projects • New or retrofit paved sidewalks, bicycle lanes, or trails (Section 1.4.3)	☑	NA	NA
• Retrofitting or redevelopment of paved alleys, streets or roads (Section 1.4.3)	☑	☑	NA
PDPs			
• PDPs without HMP Exemptions (Section 1.4)	☑	☑	☑
• PDPs with HMP Exemptions (Section 6.1)	☑	☑	NA

CONVENTIONAL ROAD VS. GREEN STREET PDP EXEMPTION

Conventional Road

- Meets MS4 requirements for PDP
  - Retention, Pollutant Control, Hydromodification
- Standard pavements
- Biofiltration or Biofiltration & Vault

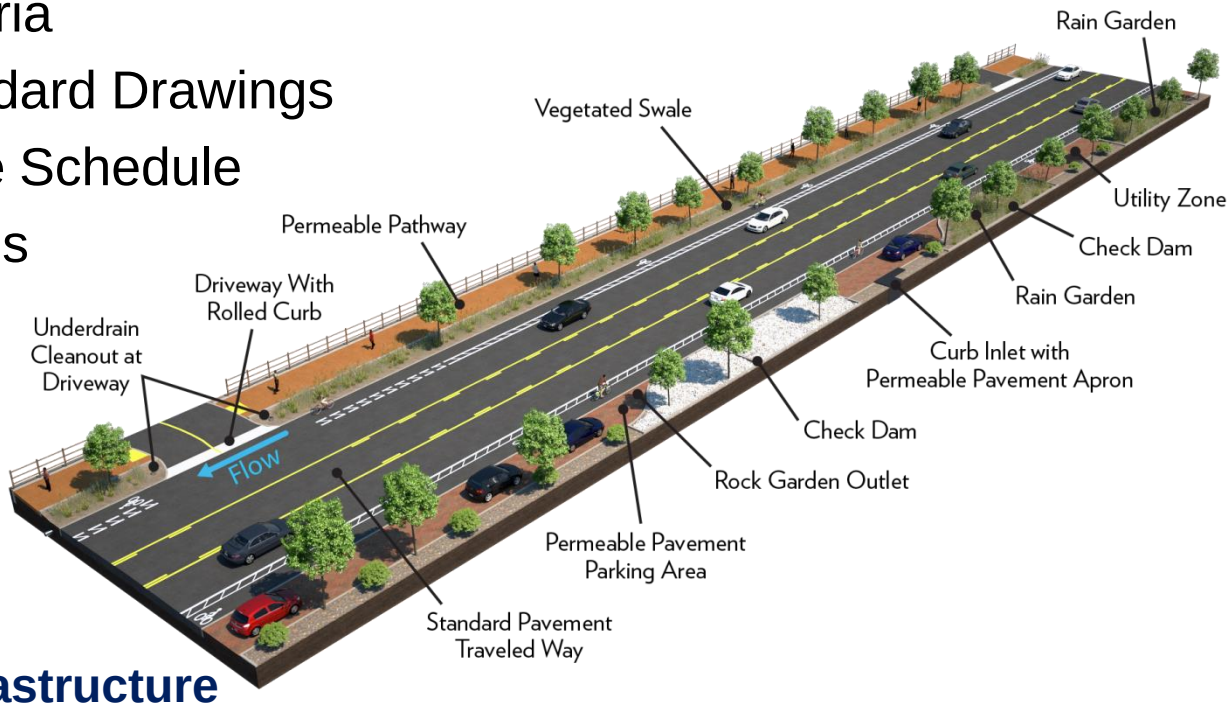
Green Street PDP Exemption:

- Exempt from PDP using EPA Green Streets criteria
  - Retention, Pollutant Control
- No Structural BMPs
- Green Infrastructure Strategies

K.1 GUIDANCE ON GREEN INFRASTRUCTURE

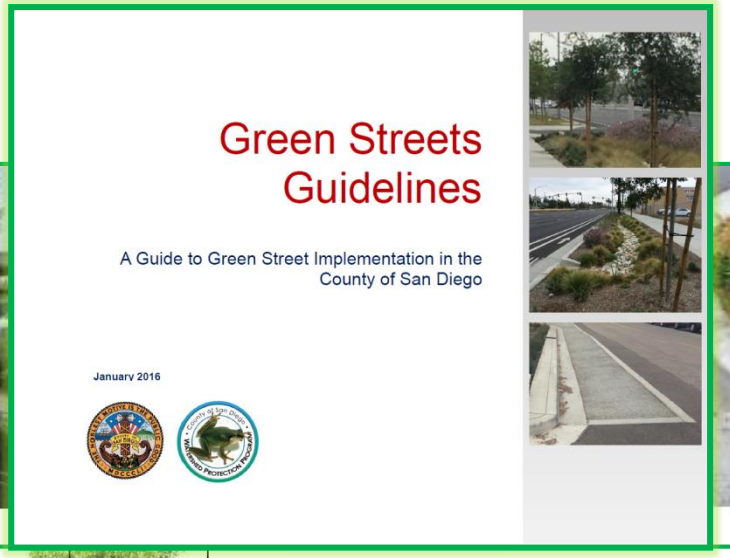
K.1 GUIDANCE ON GREEN INFRASTRUCTURE

- **K.1 County of San Diego Guidance on Green Infrastructure**
  - Green Streets
    - Guidelines
    - Design Criteria
    - Design Standard Drawings
    - Maintenance Schedule
    - Specifications

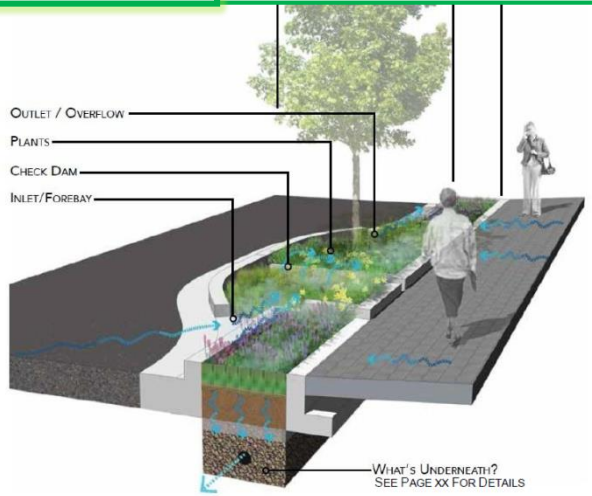


K.2 GREEN STREETS GUIDELINES

PLANTER BOXES



CURB EXTENSION

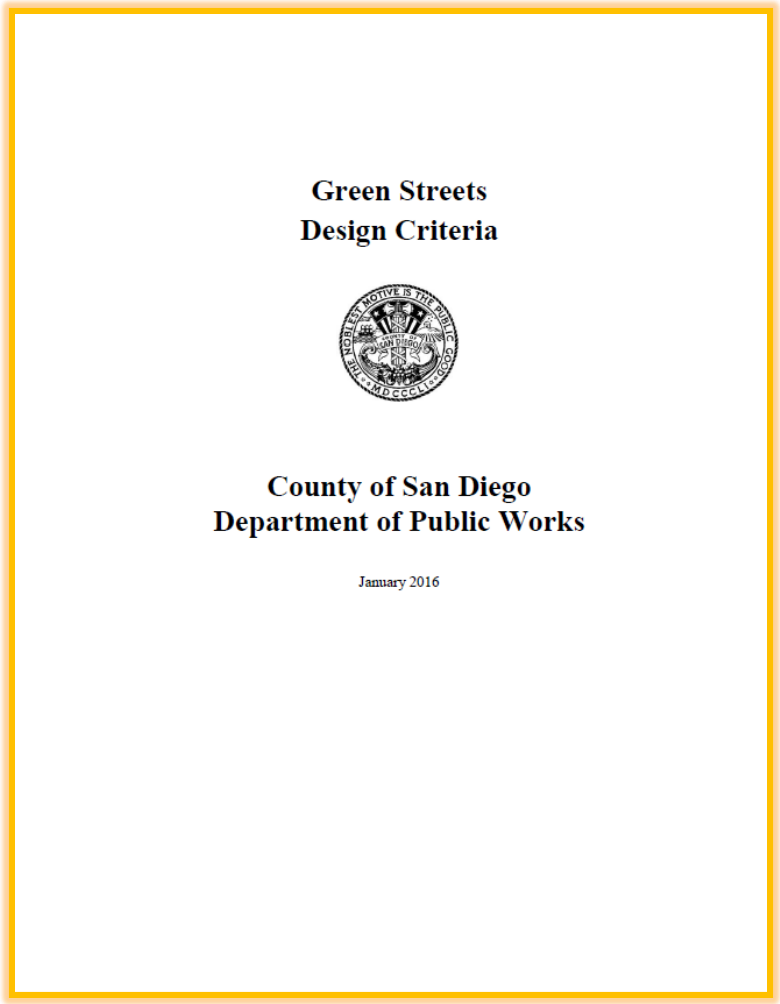


K.2 GREEN STREETS GUIDELINES

❖ Contents

- ❖ Introduction
- ❖ Strategies
- ❖ Procedures and Design Examples
- ❖ Implementing Green Streets Projects

K.3 GREEN STREETS DESIGN CRITERIA

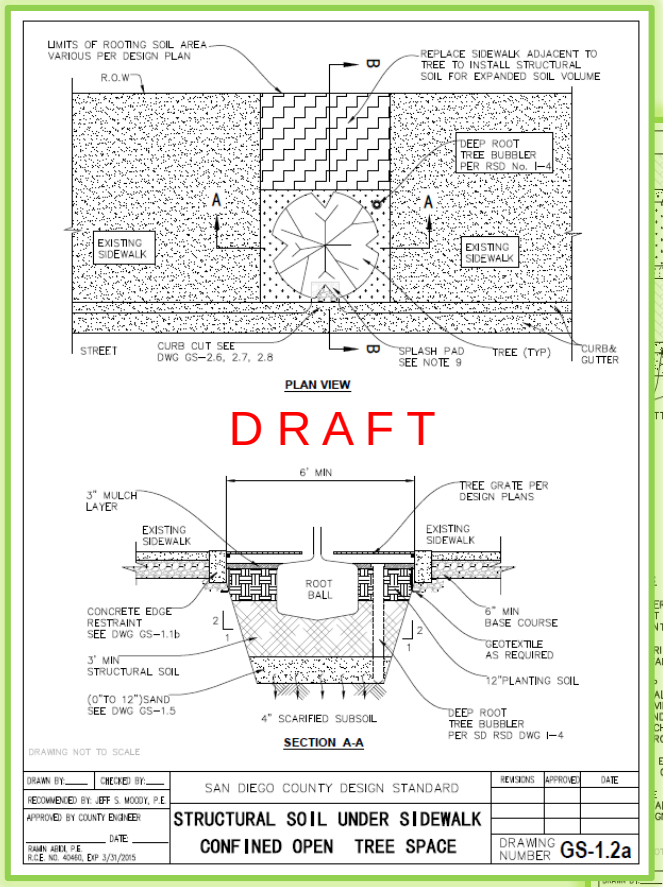

Green Streets
Design Criteria

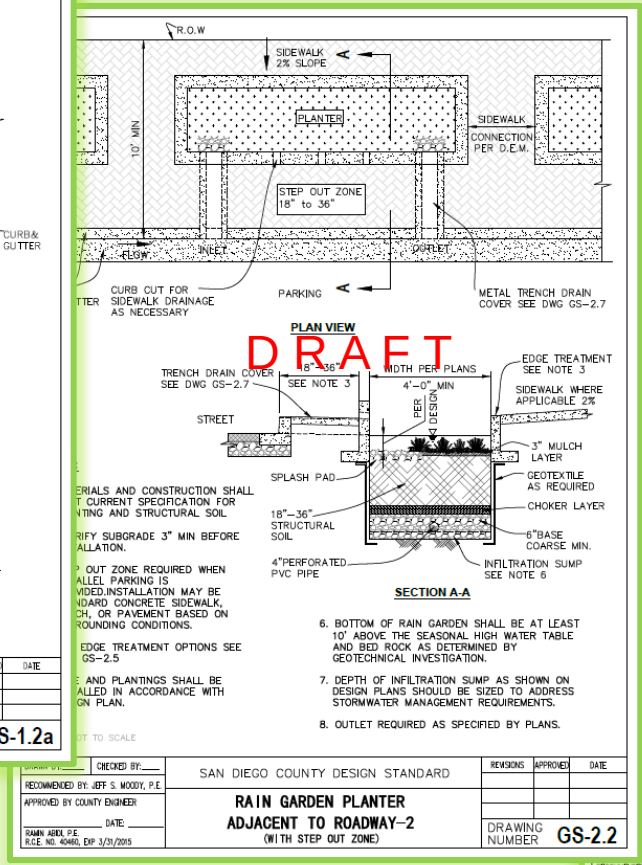
County of San Diego
Department of Public Works

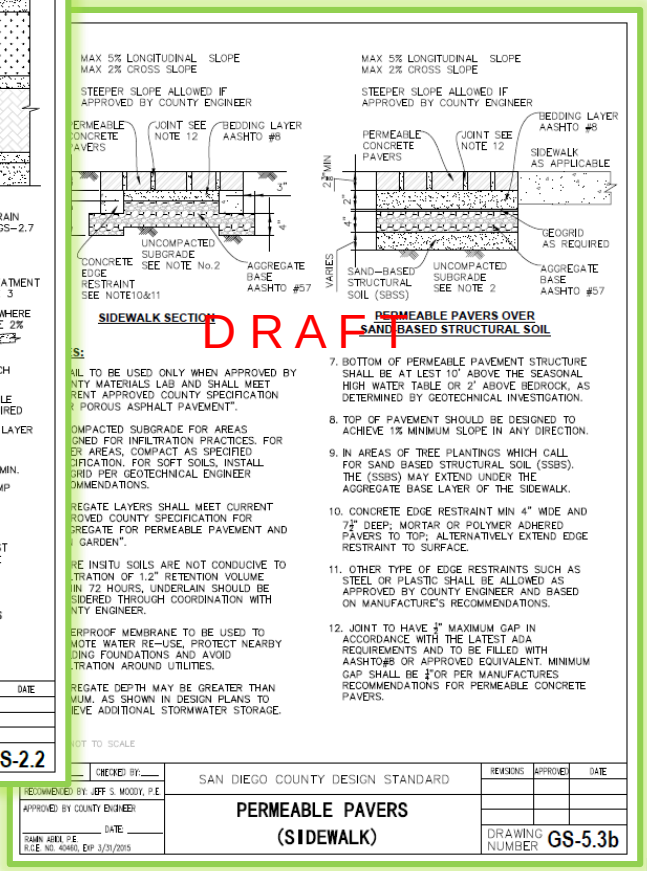
January 2016

- **Contents**
  - Introduction
  - Definitions
  - General Policy
  - ROW
  - Improvements
  - Design Principles
  - Exceptions

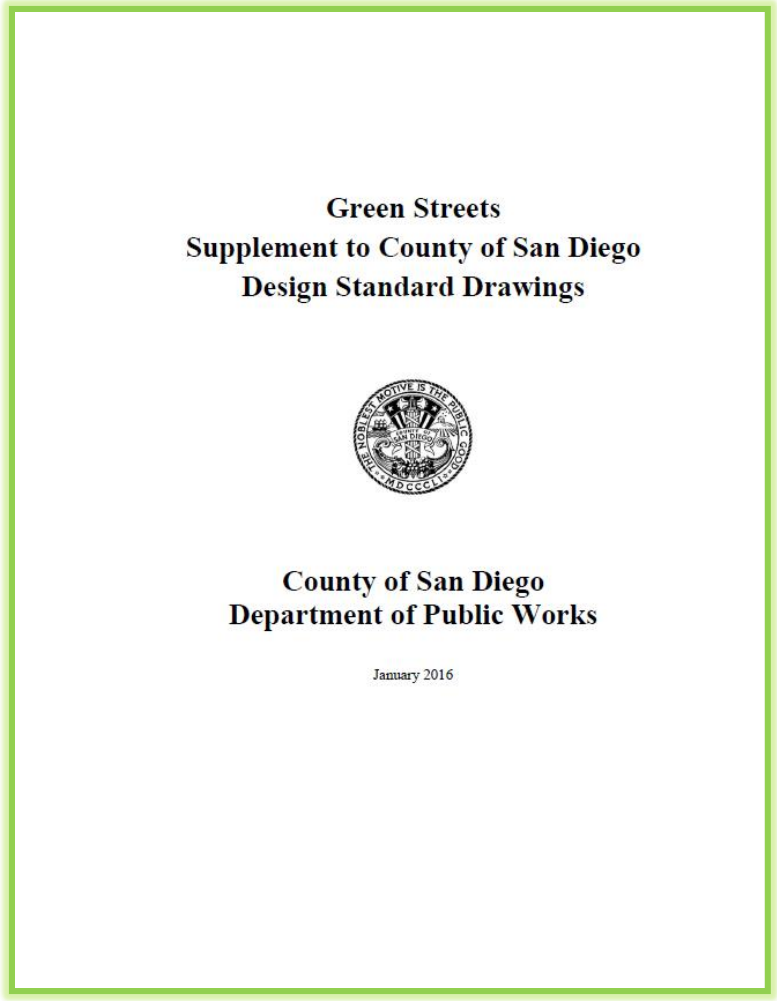
K.4 GREEN STREETS DESIGN STANDARD DRAWINGS







K.4 GREEN STREETS DESIGN STANDARD DRAWINGS


Green Streets
Supplement to County of San Diego
Design Standard Drawings

County of San Diego
Department of Public Works

January 2016

- **Contents:**
  - Trees & Structural Soil
  - Rain Garden
  - Swales
  - Curb cut
  - Curb extension
  - Check dams
  - Permeable pavement
  - Rock Swale

K.5 GREEN STREETS MAINTENANCE SCHEDULE

Green Streets
Maintenance Schedule

County of San Diego
Department of Public Works

January 2016

Section 2 Maintenance Schedule

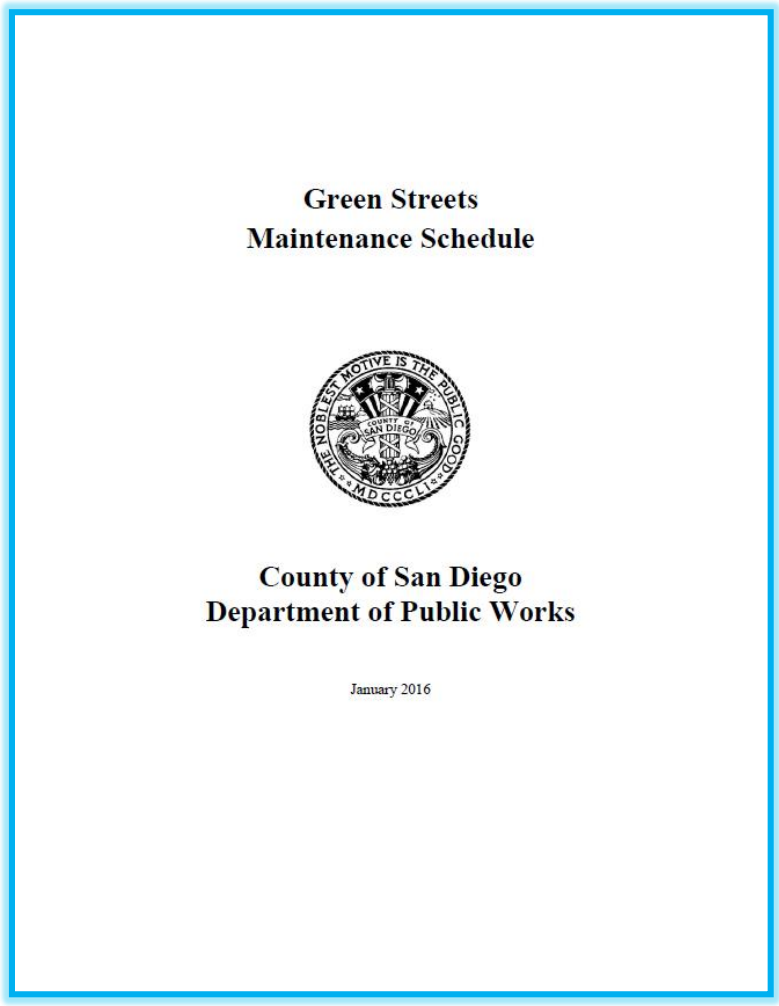
Street Trees

When	Maintenance Task	Frequency	Time of the Year
Initial maintenance during establishment period (First three years)	Inspect tree for health and establishment and report any changes to County	Three times during establishment; Every five years for life of tree	Spring 1st Season Fall 1st Season Fall 2nd Season
	Remove stakes and wires.	One time	One year after planting
	Water tree – first year	25 gallons Weekly via slow release device	April-October
	Water tree – second & third year	25 gallons Bi-Monthly via slow release device	April-October
Routine Maintenance	Remove weeds and trash	Quarterly inspection at minimum and maintenance as needed.	March-November
	Remove sediment and trash from any inlets and slot drains	Annually or as needed.	
As-Needed Maintenance			

Rain Gardens and Rock Gardens

When	Maintenance Task	Frequency	Time of the Year
Initial maintenance during establishment period (First three years)	Within 6 months following construction, the practice and drainage area should be inspected after storm events.	Twice after installation	Following storm events
	Remove stakes, wires, and tags on any new trees.	One time	One year after planting
	Water plants if applicable - initial three years	Weekly during first 2-3 months after installation, and when rainfall is less than 1 inch per week	April-October
Routine Inspection	• Conduct maintenance inspections • Check curb cuts and inlets for accumulated grit, leaves, and debris that may block inflow • Identify maintenance tasks needed • Look for erosion, bare areas, and where mulch, if applicable, needs to be applied	Quarterly inspection at minimum and maintain as needed.	
Routine Maintenance	• Spot weed • Adjust mulch, if applicable, as needed to ensure full cover • Remove trash and animal waste • Remove any dead or diseased plants • Remove sediment in pretreatment cells and inflow points • Mow filter strips with turf cover	Quarterly inspection at minimum and maintain as needed.	
	Mulch as needed to replace 3" surface cover	Annually or as needed.	February - April
As-Needed Maintenance	Prune trees and shrubs as needed to keep inlets and outlets clear.	As-needed	Feb-April and Sep - Nov as Appropriate

K.5 GREEN STREETS MAINTENANCE SCHEDULE

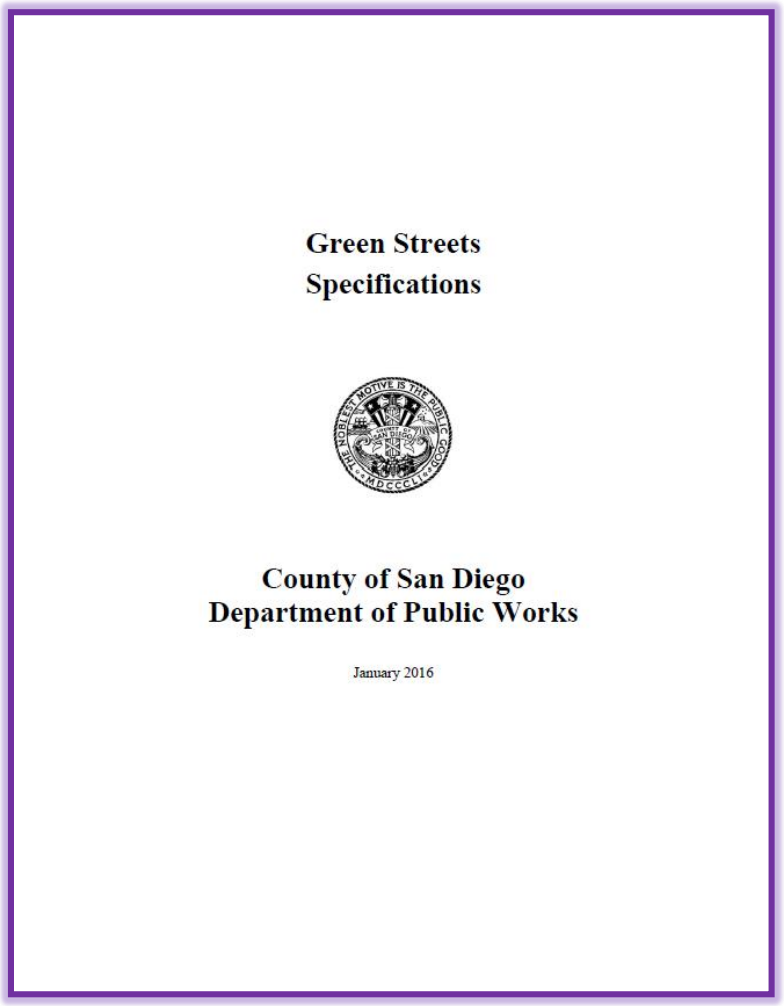

Green Streets
Maintenance Schedule

County of San Diego
Department of Public Works

January 2016

- **Contents:**
  - Maintenance tasks, frequency, time of year
  - Initial, routine, as-needed maintenance
    - Tree Wells
    - Rain Gardens and Rock Gardens
    - Permeable Pavement

K.6 GREEN STREETS SPECIFICATIONS


Green Streets
Specifications

County of San Diego
Department of Public Works

January 2016

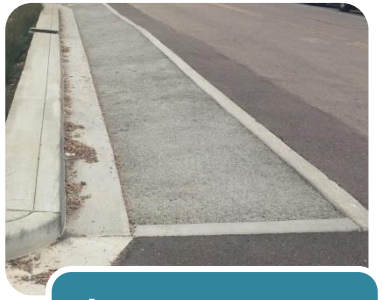
- **Contents:**
  - Aggregates
  - Geosynthetics
  - Underdrains
  - Permeable Pavement
  - Engineered Soils
  - Check Dams
  - Tree Well Grate Catch Basin

GREEN INFRASTRUCTURE STRATEGIES

1. Street Trees

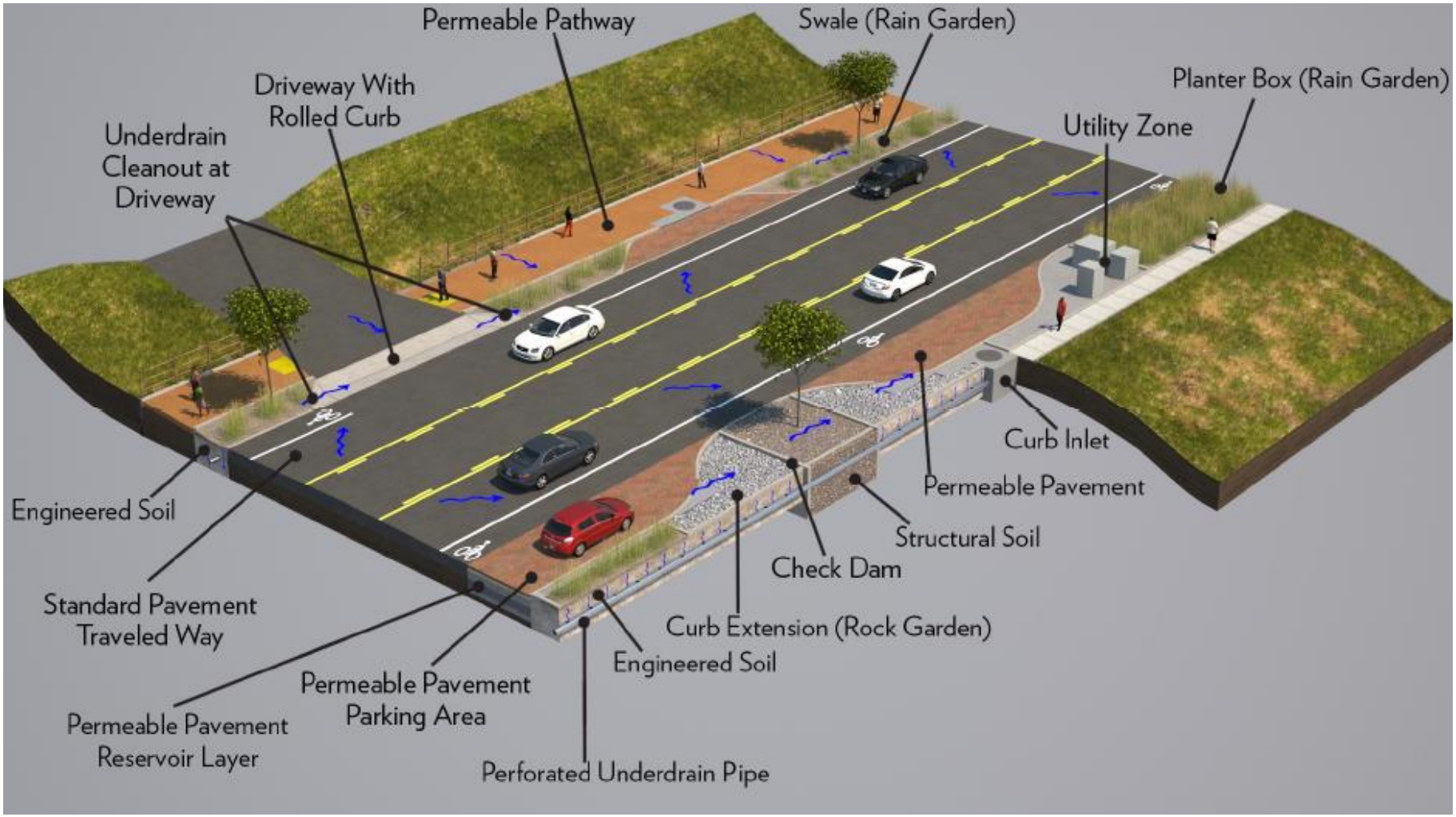
2. Rain Gardens

3. Rock Gardens



4. Permeable Pavement

PUTTING IT ALL TOGETHER



QUESTIONS?

OVERVIEW OF APPENDIX L: PRIOR LAWFUL APPROVAL REQUIREMENTS AND GUIDANCE

SECOND PUBLIC WORKSHOP

FEBRUARY 1, 2016

PRIOR LAWFUL APPROVAL

- **2 potential PLA pathways**
  - Vested Rights
    - Project has a vested right to proceed as a result of the operation of law
  - Grandfathering
    - Project is grandfathered by satisfying specific conditions of the 2013 MS4 Permit
- **Both pathways are mutually exclusive**

MS4 PERMIT EFFECTIVE DATES

Table 1: Effective Dates of Land Development-Related MS4 Permit Provisions

Permit Provision Effective Dates	Applicable Standard for Projects Grandfathered Prior to Effective Date
2001 MS4 Permit (Order No. 2001-001)	
• **February 10, 2003** Initial SUSMP effective date	• Order No. 90-42 (adopted July 16, 1990) did not contain explicit requirements for land development projects (discuss on a case basis)
2007 MS4 Permit (Order No. 2007-0001)	
• **January 24, 2008** All requirements of Order No. 2007-0001 except interim and final hydromodification	• February 2003 SUSMP
• **March 24, 2008** Interim hydromodification requirements (for sites disturbing 50 acres or more)	• Land development requirements of 2007 MS4 Permit minus hydromodification
• **January 8, 2011** Final hydromodification requirements	• Land development requirements of 2007 MS4 Permit minus hydromodification
2013 MS4 Permit (Order No. R9-2013-0001 as amended by Order. No. R9-2015-0001 and R9-2015-0100)	
• **February 26, 2016** All requirements of Provision E.3	• 2007 MS4 Permit land development standards effective on January 24, 2008 (except interim and final hydromodification) • Hydromodification requirements apply after March 24, 2008 and January 8, 2011 effective dates

Appendix L: Prior Lawful Approval Requirements and Guidance

PLA OPTION 1: VESTED RIGHTS

- **A project that has obtained a legally vested right to proceed under an existing permit or approval may continue under the MS4 Permit standard applicable at the time that the permit or approval was issued, so long as all applicable conditions continue to be met.**

APPLICABILITY OF VESTED RIGHTS OPTION

Table 1: Effective Dates of Land Development-Related MS4 Permit Provisions

Permit Provision Effective Dates	Applicable Standard for Projects Grandfathered Prior to Effective Date
2001 MS4 Permit (Order No. 2001-001)	
• **February 10, 2003** Initial SUSMP effective date	• Order No. 90-42 (adopted July 16, 1990) did not contain explicit requirements for land development projects (discuss on a case basis)
2007 MS4 Permit (Order No. 2007-0001)	
• **January 24, 2008** All requirements of Order No. 2007-0001 except interim and final hydromodification	• February 2003 SUSMP
• **March 24, 2008** Interim hydromodification requirements (for sites disturbing 50 acres or more)	• Land development requirements of 2007 MS4 Permit minus hydromodification
• **January 8, 2011** Final hydromodification requirements	• Land development requirements of 2007 MS4 Permit minus hydromodification
2013 MS4 Permit (Order No. R9-2013-0001 as amended by Order. No. R9-2015-0001 and R9-2015-0100)	
• **February 26, 2016** All requirements of Provision E.3	• 2007 MS4 Permit land development standards effective on January 24, 2008 (except interim and final hydromodification) • Hydromodification requirements apply after March 24, 2008 and January 8, 2011 effective dates

Appendix L: Prior Lawful Approval Requirements and Guidance

POTENTIAL APPROVAL TYPES

- Development agreements
- Vested tentative maps
- **Construction permits (Avco, 1976)**
- Other

CONDITIONS AND LIMITATIONS

- Must be issued by applicable effective date
- Must establish use and reliance by applicable effective date
- Rights are limited to the work conducted under the approval (scope, temporal extent, etc.)
- Subsequent approvals may require compliance with updated stormwater regulations

PLA OPTION 2: GRANDFATHERING

- **2013 MS4 Permit Provision E.3.e.(1)(a) and WPO Section 67.811(c)(2) allow projects that meet specified criteria to be grandfathered under the requirements of the 2007 MS4 Permit.**
- **Effective date is February 26, 2016.**

APPLICABILITY OF GRANDFATHERING OPTION

Table 1: Effective Dates of Land Development-Related MS4 Permit Provisions

Permit Provision Effective Dates	Applicable Standard for Projects Grandfathered Prior to Effective Date
2001 MS4 Permit (Order No. 2001-001)	
• **February 10, 2003** Initial SUSMP effective date	• Order No. 90-42 (adopted July 16, 1990) did not contain explicit requirements for land development projects (discuss on a case basis)
2007 MS4 Permit (Order No. 2007-0001)	
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• **January 8, 2011** Final hydromodification requirements	• Land development requirements of 2007 MS4 Permit minus hydromodification
2013 MS4 Permit (Order No. R9-2013-0001 as amended by Order. No. R9-2015-0001 and R9-2015-0100)	
• **February 26, 2016** All requirements of Provision E.3	• 2007 MS4 Permit land development standards effective on January 24, 2008 (except interim and final hydromodification) • Hydromodification requirements apply after March 24, 2008 and January 8, 2011 effective dates

2007 Permit Floor

PDPs Only

Appendix L: Prior Lawful Approval Requirements and Guidance

APPLICABLE CONDITIONS

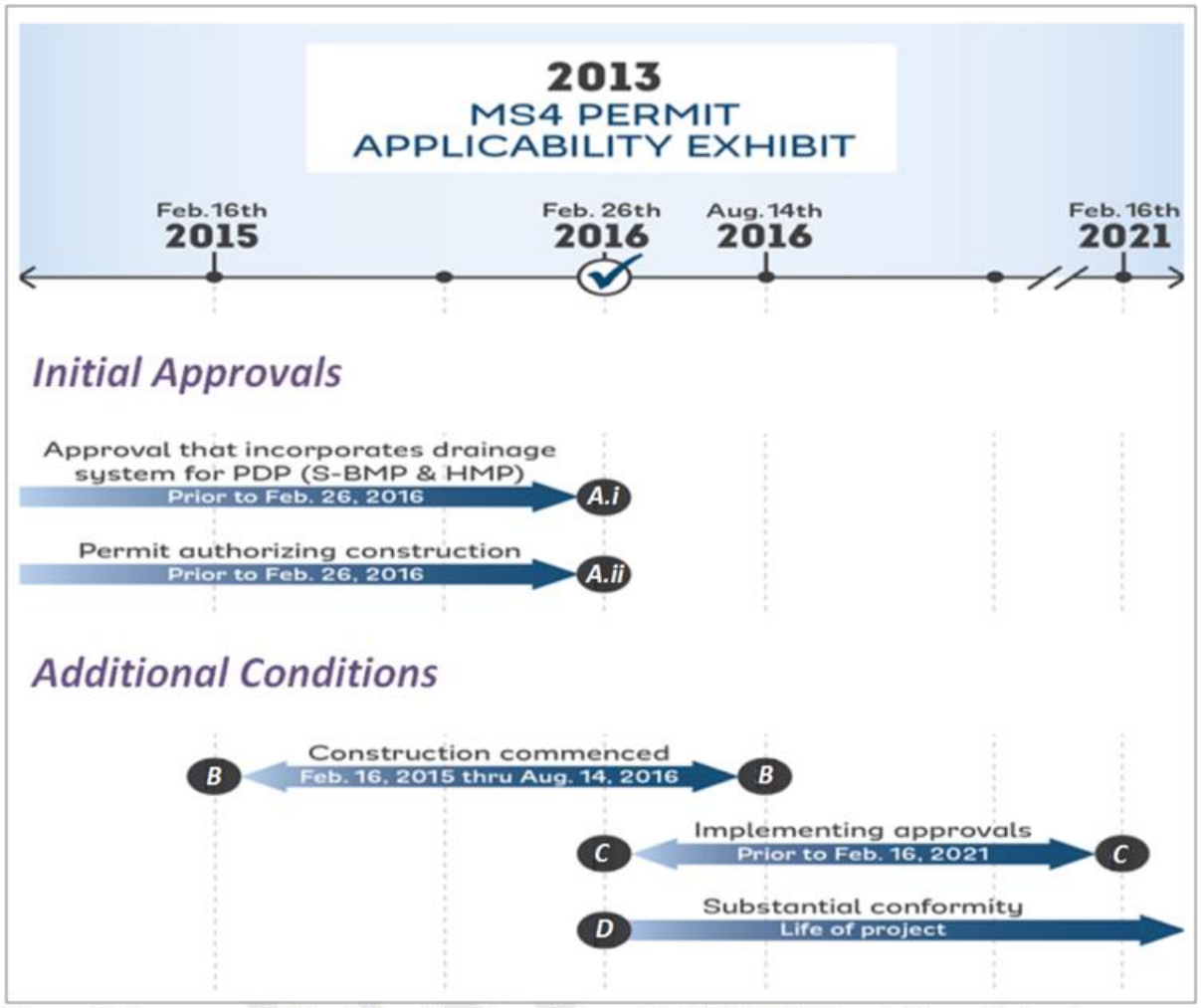


Figure 1: Summary of Deadlines for Complying with 2013 MS4 Permit Grandfathering Provisions (PLA Option 2). Note: Lettering of provisions refers to subsections of WPO Section 67.811(c)(2).

Appendix L: Prior Lawful Approval Requirements and Guidance

INITIAL APPROVALS (FEB. 26, 2016)

(A)i. Initial Design Approvals

- A County approval that incorporates the design of the storm water drainage system for the PDP in its entirety. At a minimum:
  - Delineation of **Drainage Management Areas (DMAs)** for the entire PDP,
  - Identification of all applicable **TCBMPs**,
  - Identification of all applicable **hydromodification BMPs**,
  - Identification of all **site design BMPs** that affect the design or performance requirements of TCBMPs and/or hydromodification BMPs, and
  - **Supporting calculations and assumptions** that demonstrate the ability of the PDP to fully meet all applicable treatment and hydromodification requirements for each identified DMA.

Appendix L: Prior Lawful Approval Requirements and Guidance

INITIAL APPROVALS (FEB. 26, 2016)

(A)ii. Issuance of construction permits or approvals

- A project permit or approval that authorizes the commencement of construction activities" based on the design approved under Condition (A)i above.
- One-time condition.
- Includes:
  - Grading permits,
  - Building permits,
  - Improvement plan permits,
  - Clearing and grubbing permits,
  - Well permits,
  - Construction right of way permits, and
  - Any other permit or approval recognized by the County as authorizing the applicant to commence construction activities on the PDP.

ADDITIONAL CONDITIONS

(B) Commencement of Construction (Feb. 16, 2015 -- Aug. 14, 2016)

- Not more than 365 days before or 180 days after the BMPDM Effective Date, applicants must commence construction activities under a permit issued per Condition (A)ii, above.
- One-time condition.
- Examples of documentation:
  - Inspection records,
  - Supervised grading reports
  - Condition satisfaction,
  - Payroll records,
  - Contractor or vendor invoices or payments,
  - Aerial photographs, and
  - Any other form of documentation deemed acceptable by the County.

ADDITIONAL CONDITIONS

(C) Issuance of Implementing Approvals (Feb. 16, 2021)

- Applicants must have been issued all subsequent project permits or approvals needed to implement the design initially approved under Condition (A)i.
- Establishes a “shelf life” on grandfathering decisions.
- Applies to issuance of permits or other approvals, rather than completion of work.
- Work not completed under these approvals is subject to updated MS4 Permit standards.

ADDITIONAL CONDITIONS

(D) Maintaining Substantial Conformity (life of project)

- The storm water drainage system for the PDP in its entirety, including all applicable structural pollutant treatment control and hydromodification management BMPs, must remain in substantial conformity with the design initially approved under Condition (A)i above.
- Allows reasonable modifications in the design of a project plan while preserving compliance with the performance standards initially applied to the PDP.

ADDITIONAL CONDITIONS

(D) Maintaining Substantial Conformity (life of project)

- General conditions:
  - Ministerial non-substantive changes such as a name change, engineer change, text update, or security/bond change are not considered substantial.
  - Changes in the selection, location, or design of individual BMPs or site features that will result in equal or better ability to achieve all applicable narrative and numeric treatment and hydromodification performance standards for the PDP as a whole (including applicable portions of the PDP, such as individual lots or DMAs) may be allowed.
  - Design changes, including the delineation of DMAs, that increase the overall amount of impervious surface within, or increase the overall footprint of, the PDP are generally considered substantial.

APPLICANT RESPONSIBILITIES

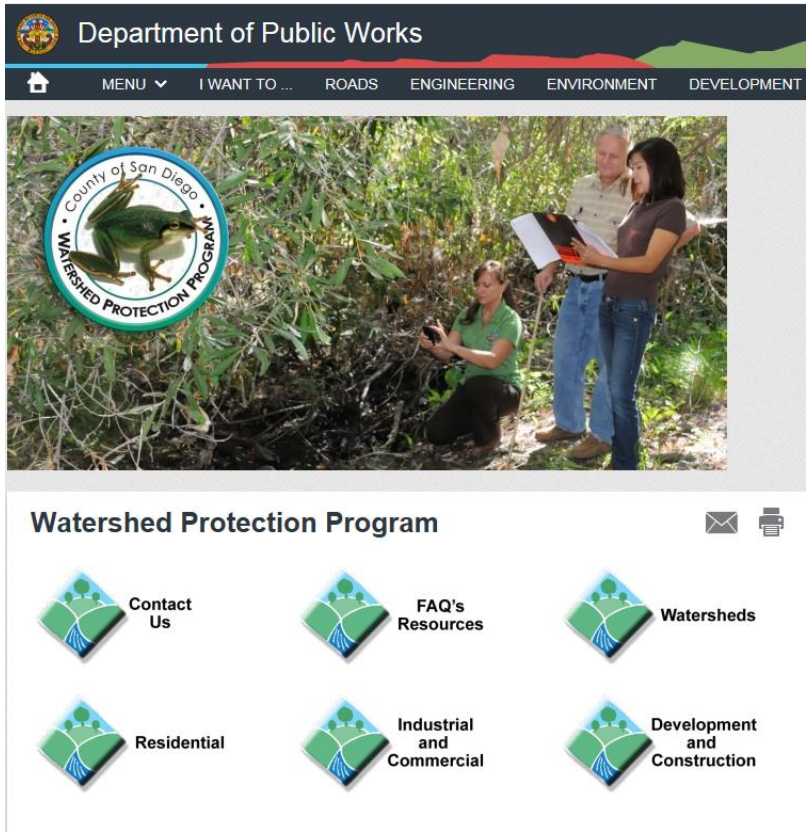
- Applicant ultimately is responsible for demonstrating that a PLA has been granted or continues to exist.
- Applicant must document the basis for their assertion in a written proposal to County staff that includes a detailed explanation and rationale, including supporting calculations and information requested by the County if applicable.
- Applicant must submit proposals and other required documentation in a timely manner (i.e., allowing sufficient time for County review and comment, resubmittal, and approval prior to applicable deadlines)
- Applicant must demonstrate and maintain documentation of ongoing compliance with the conditions of a vested right or grandfathering determination initially recognized by the County.

QUESTIONS?

CLOSING ITEMS

DRAFT 2 OF THE COUNTY BMP DESIGN MANUAL

www.sandiegocounty.gov/content/sdc/dpw/watersheds.html



OPPORTUNITY TO COMMENT

Send Comments to :

Laura Henry at lhenry@rickengineering.com

and

Nancy Richardson at Nancy.Richardson@sdcounty.ca.gov

Due by Close of Business Friday, February 5th