

Major Stormwater Management Plan (Major SWMP)

Project Number: PDS2012-3500-12-020

ENVIRONMENTAL LOG NO.: PDS2012-3910-1209003

For

(Kahoots, Retail Feed & Pet Supplies)

Preparation Date /9/10/12, Revised: 2/8/13, 5/1/13, 9/22/14, 10/21/14

Prepared for:

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The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan have been prepared under the direction of the following Registered Civil Engineer and meet the requirements of Regional Water Quality Control Board Order R9-2007-0001 and subsequent amendments.



10/21/14

Name, RCE #

Date

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

Project Number: PDS2012-3500-12-020

Project Name:	Kahoots, Retail Feed & Pet Supplies
Project Location/Address:	HWY 67 & Letton Street, Ramona CA
Permit Number (Land Development Projects):	Case # 3500 12-020 (STP)
Work Authorization Number (CIP only):	
Applicant:	Kahoots, Inc. c/o Mike Bittering
Applicant's Address:	PO Box 2123, Ramona, CA 92065
Plan Prepared By (<i>Leave blank if same as applicant</i>):	Spear & Associates Inc.
Preparer's Address:	475 Production Street, San Marcos, CA 92078
Date:	10/21/14

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9926) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Stages	Does the SWMP need revisions?		If YES, Provide Revision Date	County Reviewer
	YES	NO		
		X		

Instructions for a Major SWMP can be downloaded at <http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html>

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

STEP 1

PRIORITY DEVELOPMENT PROJECT DETERMINATION

TABLE 1: IS THE PROJECT IN ANY OF THESE CATEGORIES?

Yes <input type="checkbox"/>	No X	A	Housing subdivisions of 10 or more dwelling units. Examples: single-family homes, multi-family homes, condominiums, and apartments.
Yes X	No <input type="checkbox"/>	B	Commercial—greater than one acre (total disturbed area). Any development other than heavy industry or residential. Examples: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; municipal facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities.
Yes <input type="checkbox"/>	No X	C	Heavy industry—greater than one acre (total disturbed area). Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.).
Yes <input type="checkbox"/>	No X	D	Automotive repair shops. A facility categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.
Yes X	No <input type="checkbox"/>	E	Restaurants. Any facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirements and hydromodification requirements.
Yes <input type="checkbox"/>	No X	F	Hillside development greater than 5,000 square feet. Any development that creates 5,000 square feet of impervious surface and is located in an area with known erosive soil conditions, where the development will grade on any natural slope that is twenty-five percent or greater.
Yes <input type="checkbox"/>	No X	G	Environmentally Sensitive Areas (ESAs). All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. “Directly adjacent” means situated within 200 feet of the ESA. “Discharging directly to” means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.
Yes X	No <input type="checkbox"/>	H	Parking lots 5,000 square feet or more or with 15 or more (paved) parking spaces and potentially exposed to urban runoff.
Yes X	No <input type="checkbox"/>	I	Street, roads, highways, and freeways. Any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles.
Yes <input type="checkbox"/>	No X	J	Retail Gasoline Outlets (RGOs) that are: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

To use the table, review each definition A through K. If any of the definitions match, the project is a Priority Development Project. Note some thresholds are defined by square footage of impervious area created; others by the total area of the development. Please see special requirements for previously developed sites and project exemptions on page 6 of the County SUSMP.

STEP 2

PROJECT STORMWATER QUALITY DETERMINATION

Total Project Site Area 1.48 (Acres or ft²)

Estimated amount of disturbed area: 1.48 (Acres or ft²)

(If >1 acre, you must also provide a WDID number from the SWRCB) WDID: (not available)

Complete A through C and the calculations below to determine the amount of impervious surface on your project before and after construction.

- A. Total size of project site: 1.48 Acres
- B. Total impervious area (including roof tops) before construction 0.0 Acres
- C. Total impervious area (including roof tops) after construction 1.38 Acres

Calculate percent impervious before construction: $B/A = 0 \%$

Calculate percent impervious after construction: $C/A = 93 \%$

Please provide detailed descriptions regarding the following questions:

TABLE 2: PROJECT SPECIFIC STORMWATER ANALYSIS

1.	Please provide a brief description of the project.
The project will disturb approximately 1.48 acres and consists of developing a Retail Feed & Pet Supplies facility. Construction will include a new building, driveway, parking lot, utilities, landscaping and onsite bioretention facilities for stormwater treatment.	
2.	Describe the current and proposed zoning and land use designation.
Commercial Development	
3.	Describe the pre-project and post-project topography of the project. (Show on Plan)
The onsite topography slopes gently in a southeasterly direction with elevations approximately ranging from 1409' to 1404.5'. The undeveloped portion of the site was previously graded and is covered with native grasses, trees and patches of barren soils.	
4.	Describe the soil classification, permeability, erodibility, and depth to groundwater for LID and Treatment BMP consideration. (Show on Plan) If infiltration BMPs are proposed, a Geotechnical Engineer must certify infiltration BMPs in Attachment E.
According to a Soil Percolation test conducted by CTE Inc. dated 1/22/13, the project site soil is Type A with high infiltration rates (see attachment E). No erodibility was noticed onsite. According to a soils report by CTE Inc. dated 7/5/12, ground water table was not encountered to the depth of exploration at 15.5'.	
5.	Describe if contaminated or hazardous soils are within the project area. (Show on Plan)
None	
6.	Describe the existing site drainage and natural hydrologic features. (Show on Plan).
The drainage areas include northeastern offsite tributaries and the onsite flow drains into an existing channel running westerly, parallel to Kelly Avenue then to Santa Maria Creek, Santa Ysabel Creek, Lake Hodges, San Dieguito River and the Pacific Ocean.	
7.	Describe site features and conditions that constrain, or provide opportunities for stormwater control, such as LID features.
The site has been previously graded and is covered with Eucalyptus trees which are to remain in place. Offsite drainage runs along the property adjacent to Kelly Avenue.	
8.	Is this project within the environmentally sensitive areas as defined on the maps in Appendix A of the <i>County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects</i> ?
Yes	
X No	
9.	Is this an emergency project? If yes, please provide a description below.
Yes	
X No	

CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

TABLE 3: CHANNEL & DRAINAGE ANALYSIS

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?	X			If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?	X			If YES go to 6.
3.	Will the project discharge to unlined channels?		X		If YES go to 6.
4.	Will the project increase potential sediment load of downstream flow?		X		If YES go to 6.
5.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?		X		If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.	X			Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.	X			Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.			X	Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.	X			Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.		X		Continue to 11.
11.	“Hardening“ natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.		X		Continue to 12.
12.	Provide other design principles that are comparable and equally effective.	X			Continue to 13.
13.	End				

TEMPORARY CONSTRUCTION BMPs

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

- | | |
|---|--|
| <input checked="" type="checkbox"/> Silt Fence | <input type="checkbox"/> Desilting Basin |
| <input checked="" type="checkbox"/> Fiber Rolls | <input checked="" type="checkbox"/> Gravel Bag Berm |
| <input checked="" type="checkbox"/> Street Sweeping and Vacuuming | <input type="checkbox"/> Sandbag Barrier |
| <input checked="" type="checkbox"/> Storm Drain Inlet Protection | <input checked="" type="checkbox"/> Material Delivery and Storage |
| <input checked="" type="checkbox"/> Stockpile Management | <input checked="" type="checkbox"/> Spill Prevention and Control |
| <input checked="" type="checkbox"/> Solid Waste Management | <input checked="" type="checkbox"/> Concrete Waste Management |
| <input checked="" type="checkbox"/> Stabilized Construction Entrance/Exit | <input checked="" type="checkbox"/> Water Conservation Practices |
| <input type="checkbox"/> Dewatering Operations | <input checked="" type="checkbox"/> Paving and Grinding Operations |
| <input checked="" type="checkbox"/> Vehicle and Equipment Maintenance | |
- Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.

EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an “exceptional threat to water quality,” and therefore require Advanced Treatment Best Management Practices during the construction phase.

TABLE 4: EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

No.	CRITERIA	YES	NO	INFORMATION
1.	Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.waterboards.ca.gov/water_issues/programs/tmdl/2010_state_ir_reports/category5_report.shtml		X	If YES, continue to 2. If NO, go to 5.
2.	Will the project disturb more than 5 acres, including all phases of the development?		X	If YES, continue to 3. If NO, go to 5.
3.	Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity?		X	If YES, continue to 4. If NO, go to 5.
4.	Will the project disturb soils with a predominance of USDA-NRCS Erosion factors k_f greater than or equal to 0.4? http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm		X	If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.	X		Document for Project Files by referencing this checklist.
6.	Project poses an “exceptional threat to water quality” and is required to use Advanced Treatment BMPs.		X	Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

Exemption potentially available for projects that require advanced treatment: Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that demonstrates (to the County official’s satisfaction) that advanced treatment is not required.

STEP 3

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management plan (HMP) issues. If the project is exempt from the HMP criteria, please provide the supporting documentation in Attachment H. Please reference the full descriptions of the HMP exemptions located in Figure 1-1 of the County SUSMP.

TABLE 5: HYDROMODIFICATION DETERMINATION

	QUESTIONS	YES	NO	Information
1.	Will the project reduce the pre-project impervious area and are the unmitigated post-project outflows (outflows without detention routing) to each outlet location less as compared to the pre-project condition?		X	If NO, continue to 2. If YES, go to 7.
2.	Would the project site discharge runoff directly to an exempt receiving water, such as the Pacific Ocean, San Diego Bay, an exempt reservoir, or a tidally-influenced area?		X	If NO, continue to 3. If YES, go to 7.
3.	Would the project site discharge to a stabilized conveyance system, which has the capacity for the ultimate Q_{10} , and extends to the Pacific Ocean, San Diego Bay, a tidally-influenced area, an exempt river reach or reservoir?		X	If NO, continue to 4. If YES, go to 7.
4.	Does the contributing watershed area to which the project discharges have an impervious area percentage greater than 70 percent?		X	If NO, continue to 5. If YES, go to 7.
5.	Is this an urban infill project which discharges to an existing hardened or rehabilitated conveyance system that extends beyond the “domain of analysis,” where the potential for cumulative impacts in the watershed are low, and the ultimate receiving channel has a “Low” susceptibility to erosion as defined in the SCCWRP channel assessment tool?		X	If NO, continue to 6. If YES, go to 7.
6.	Project is required to manage hydromodification impacts.	X		Reference Appendix G “Hydromodification Management Plan” of the County SUSMP.
7.	Project is not required to manage hydromodification impacts.			Hydromodification Exempt. Keep on file.

STEP 4

POLLUTANTS OF CONCERN DETERMINATION

WATERSHED

Please check the watershed(s) for the project.

<input type="checkbox"/> San Juan 901	<input type="checkbox"/> Santa Margarita 902	<input type="checkbox"/> San Luis Rey 903	<input type="checkbox"/> Carlsbad 904
<input checked="" type="checkbox"/> San Dieguito 905	<input type="checkbox"/> Penasquitos 906	<input type="checkbox"/> San Diego 907	<input type="checkbox"/> Sweetwater 909
<input type="checkbox"/> Otay 910	<input type="checkbox"/> Tijuana 911	<input type="checkbox"/> Whitewater 719*	<input type="checkbox"/> Clark 720*
<input type="checkbox"/> West Salton 721*	<input type="checkbox"/> Anza Borrego 722*	<input type="checkbox"/> Imperial 723*	

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

*Projects located fully within these watersheds require only a Minor SWMP.

HYDROLOGIC SUB-AREA NAME AND BASIN NUMBER(S)

Basin Number	Sub-Area Name
905.41	Ramona

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

RECEIVING WATERS that each project discharge point proposes to discharge to.

RECEIVING WATERS (river, lake, reservoir, etc.)	Hydrologic Unit Basin Number	Impairment(s) listed [303(d) listed waters or waters with established TMDLs]. List the impairments identified in Table 7 .	Distance to Project
Santa Ysabel Creek	905.53	Toxicity	0.25 miles
Lake Hodges	905.21	Color, Manganese, Mercury, Nitrogen, Phosphorus, Turbidity, pH	11.8 miles
San Dieguito River, Pacific Ocean	905.11	Enterococcus, Fecal Coliform, Nitrogen, Phosphorus, Total Dissolved Solids, Toxicity	24.2

http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r9_06_303d_reqtmls.pdf

GROUND WATERS

Ground Waters	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH
Ramona	905.41	X	X	X	X		
Hodges	905.2	X	X	X			
Santa Ysabel	905.5	X	X				

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

+ Excepted from Municipal

● Existing Beneficial Use

○ Potential Beneficial Use

PROJECT ANTICIPATED AND POTENTIAL POLLUTANTS

Using Table 6, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

TABLE 6: ANTICIPATED AND POTENTIAL POLLUTANTS GENERATED BY LAND USE TYPE

<i>PDP Categories</i>	<i>General Pollutant Categories</i>								
	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P ⁽¹⁾	P ⁽²⁾	P	X
Commercial Development 1 acre or greater	P ⁽¹⁾	P ⁽¹⁾		P ⁽²⁾	X	P ⁽⁵⁾	X	P ⁽³⁾	P ⁽⁵⁾
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X ^(4/5)	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft ²	X	X			X	X	X		X
Parking Lots	P ⁽¹⁾	P ⁽¹⁾	X		X	P ⁽¹⁾	X		P ⁽¹⁾
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P ⁽¹⁾	X	X ⁽⁴⁾	X	P ⁽⁵⁾	X		
<p>X = anticipated P = potential (1) A potential pollutant if landscaping exists on-site. (2) A potential pollutant if the project includes uncovered parking areas. (3) A potential pollutant if land use involves food or animal waste products. (4) Including petroleum hydrocarbons. (5) Including solvents.</p>									

PROJECT POLLUTANTS OF CONCERN SUMMARY TABLE

Please summarize the identified project pollutants-of-concern by checking the appropriate boxes in the table below and list any surface water impairments identified. Pollutants anticipated to be generated by the project, which are also causing impairment of receiving waters, shall be considered the primary pollutants of concern. For projects where no primary pollutants of concern exist, those pollutants identified as anticipated shall be considered secondary pollutants of concern.

TABLE 7: PROJECT POLLUTANTS OF CONCERN

Pollutant Category	Anticipated (X)	Potential (P)	Surface Water Impairments (determined by your receiving waters impairments on page 10)
Sediments		X	
Nutrients		X	
Heavy Metals	X		
Organic Compounds		X	
Trash & Debris		X	
Oxygen Demanding Substances		X	
Oil & Grease	X		
Bacteria & Viruses		X	
Pesticides		X	

STEP 5

LID AND SITE DESIGN STRATEGIES

Each numbered item below is a Low Impact Development (LID) requirement of the WPO. Please check the box(s) under each number that best describes the LID BMP(s) and Site Design Strategies selected for this project. LID BMPs selected on this table will be typically represented as a self-retaining area, self-treating area, pervious pavement and greenroof, which, should be delineated in the Drainage Management Area map in Attachment C.

TABLE 8: LID AND SITE DESIGN

1.	Conserve natural Areas, Soils, and Vegetation
	<input checked="" type="checkbox"/> Preserve well draining soils (Type A or B)
	<input type="checkbox"/> Preserve Significant Trees
	<input type="checkbox"/> Preserve critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions
	<input type="checkbox"/> Other. Description:
2.	Minimize Disturbance to Natural Drainages
	<input checked="" type="checkbox"/> Set-back development envelope from drainages
	<input type="checkbox"/> Restrict heavy construction equipment access to planned green/ open space areas
	<input type="checkbox"/> Other. Description:
3.	Minimize and Disconnect Impervious Surfaces (see 5)
	<input type="checkbox"/> Clustered Lot Design
	<input checked="" type="checkbox"/> Items checked in 5
	<input type="checkbox"/> Other. Description:
4.	Minimize Soil Compaction
	<input checked="" type="checkbox"/> Restrict heavy construction equipment access to planned green/open space areas
	<input checked="" type="checkbox"/> Re-till soils compacted by construction vehicles/equipment
	<input type="checkbox"/> Collect & reuse upper soil layers of development site containing organic materials
	<input type="checkbox"/> Other. Description:
5.	Drain Runoff from Impervious Surfaces to Pervious Areas
	<u>LID Street & Road Design</u>
	<input checked="" type="checkbox"/> Curb-cuts to landscaping
	<input type="checkbox"/> Rural Swales
	<input type="checkbox"/> Concave Median
	<input type="checkbox"/> Cul-de-sac Landscaping Design
	<input type="checkbox"/> Other. Description:

<u>LID Parking Lot Design</u>	
<input type="checkbox"/>	Permeable Pavements
X	Curb-cuts to landscaping
<input type="checkbox"/>	Other. Description:
<u>LID Driveway, Sidewalk, Bike-path Design</u>	
<input type="checkbox"/>	Permeable Pavements
X	Pitch pavements toward landscaping
<input type="checkbox"/>	Other. Description:
<u>LID Building Design</u>	
<input type="checkbox"/>	Cisterns & Rain Barrels
X	Downspout to swale or landscaping
<input type="checkbox"/>	Vegetated Roofs
<input type="checkbox"/>	Other. Description:
<u>LID Landscaping Design</u>	
X	Soil Amendments
<input type="checkbox"/>	Reuse of Native Soils
X	Smart Irrigation Systems
<input type="checkbox"/>	Street Trees
<input type="checkbox"/>	Other. Description:
6.	Minimize erosion from slopes
<input type="checkbox"/>	Disturb existing slopes only when necessary
<input type="checkbox"/>	Minimize cut and fill areas to reduce slope lengths
<input type="checkbox"/>	Incorporate retaining walls to reduce steepness of slopes or to shorten slopes
<input type="checkbox"/>	Provide benches or terraces on high cut and fill slopes to reduce concentration of flows
<input type="checkbox"/>	Rounding and shaping slopes to reduce concentrated flow
<input type="checkbox"/>	Collect concentrated flows in stabilized drains and channels
X	Other. Description: No slopes proposed

STEP 6

SOURCE CONTROL

Please complete the checklist on the following pages to determine Source Control BMPs. Below is instruction on how to use the checklist. (Also see instructions on page 60 of the *SUSMP*)

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies and list in Table 9.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your Source Control Exhibit in Attachment B.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs into Table 9.
4. Use the format in Table 9 below to summarize the project Source Control BMPs. Incorporate all identified Source Control BMPs in your Source Control Exhibit in Attachment B.

TABLE 9: PROJECT SOURCE CONTROL BMPS

<i>Potential source of runoff pollutants</i>	<i>Permanent source control BMPs</i>	<i>Operational source control BMPs</i>
Landscape/outside pesticide use	<p>Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.</p> <p>Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions</p>	<p>Maintain landscaping using minimum or no pesticides.</p> <p>See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com (see attached in this report) Provide IPM information to new owners, lessees and operators.</p>
Refuse Areas	Show where site refuse and recycled materials will be handled and stored for pickup.	State how the following will be implemented: Provide adequate number of

	<p>See local municipal requirements for sizes and other details of refuse areas. If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.</p> <p>State how site refuse will be handled and provide supporting detail to what is shown on plans.</p>	<p>receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
Roofing, gutters, and trim.	Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
Plazas, sidewalks, and parking lots.		<p>Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.</p>

Describe your specific Source Control BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting Source Control BMPs or substituting alternatives.

Landscape / Outdoor Pesticide Use:

Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.

Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.

Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.

Consider using pest-resistant plants, especially adjacent to hardscape.

To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.

Please refer to the landscape architectural plans for details on design and implementation of landscape and outdoor pesticide use BMPs.

Operational BMPs:

Maintain landscaping using minimum or no pesticides.

See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com (see attached in this report)

Provide IPM information to new owners, lessees and operators

Refuse Areas:

Show where site refuse and recycled materials will be handled and stored for pickup.

See local municipal requirements for sizes and other details of refuse areas.

If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.

State how site refuse will be handled and provide supporting detail to what is shown on plans.

State how the following will be implemented:

Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

Roofing, gutters, and trim:

Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.

Plazas, sidewalks, and parking lots:

Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> A. On-site storm drain inlets	<input type="checkbox"/> Locations of inlets.	<input type="checkbox"/> Mark all inlets with the words “No Dumping! Flows to Bay” or similar where feasible.	<input type="checkbox"/> Maintain and periodically repaint or replace inlet markings. <input type="checkbox"/> Provide stormwater pollution prevention information to new site owners, lessees, or operators. <input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com <input type="checkbox"/> Include the following in lease agreements: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”
<input type="checkbox"/> B. Interior floor drains and elevator shaft sump pumps		<input type="checkbox"/> State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.
<input type="checkbox"/> C. Interior parking garages		<input type="checkbox"/> State that parking garage floor drains will be plumbed to the sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> D1. Need for future indoor & structural pest control		<input type="checkbox"/> Note building design features that discourage entry of pests.	<input type="checkbox"/> Provide Integrated Pest Management information to owners, lessees, and operators.
<input checked="" type="checkbox"/> D2. Landscape/ Outdoor Pesticide Use <u>Note: Should be consistent with project landscape plan (if applicable).</u>	<input type="checkbox"/> Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. <input type="checkbox"/> Show self-retaining landscape areas, if any. <input type="checkbox"/> Show stormwater treatment facilities.	<p>State that final landscape plans will accomplish all of the following:</p> <input type="checkbox"/> Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. <input checked="" type="checkbox"/> Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. <input checked="" type="checkbox"/> Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. <input checked="" type="checkbox"/> Consider using pest-resistant plants, especially adjacent to hardscape. <input checked="" type="checkbox"/> To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	<input checked="" type="checkbox"/> Maintain landscaping using minimum or no pesticides. <input checked="" type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com <input checked="" type="checkbox"/> Provide IPM information to new owners, lessees and operators.

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> E. Pools, spas, ponds, decorative fountains, and other water features.	<input type="checkbox"/> Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	<input type="checkbox"/> If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	<input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-72, “Fountain and Pool Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
<input type="checkbox"/> F. Food service	<input type="checkbox"/> For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. <input type="checkbox"/> On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	<input type="checkbox"/> Describe the location and features of the designated cleaning area. <input type="checkbox"/> Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	<input type="checkbox"/>

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<p><input checked="" type="checkbox"/> G. Refuse areas</p>	<p><input checked="" type="checkbox"/> Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.</p> <p><input checked="" type="checkbox"/> If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.</p> <p><input type="checkbox"/> Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.</p>	<p><input checked="" type="checkbox"/> State how site refuse will be handled and provide supporting detail to what is shown on plans.</p> <p><input type="checkbox"/> State that signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.</p>	<p><input checked="" type="checkbox"/> State how the following will be implemented:</p> <p>Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
<p><input type="checkbox"/> H. Industrial processes.</p>	<p><input type="checkbox"/> Show process area.</p>	<p><input type="checkbox"/> If industrial processes are to be located on site, state: “All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.”</p>	<p><input type="checkbox"/> See Fact Sheet SC-10, “Non-Stormwater Discharges” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>

IF THESE SOURCES WILL BE ON THE PROJECT SITE THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs		
1 Potential Sources of Runoff Pollutants – List in Table 9	2 Permanent Controls—Show on Source Control Exhibit, Attachment B	3 Permanent Controls—List in Table 9 and Narrative	4 Operational BMPs—Include in Table 9 and Narrative
<input type="checkbox"/> I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	<input type="checkbox"/> Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. <input type="checkbox"/> Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. <input type="checkbox"/> Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	<input type="checkbox"/> Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for: <ul style="list-style-type: none"> ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank 	<input type="checkbox"/> See the Fact Sheets SC-31, “Outdoor Liquid Container Storage” and SC-33, “Outdoor Storage of Raw Materials ” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

<p><input type="checkbox"/> J. Vehicle and Equipment Cleaning</p>	<p><input type="checkbox"/> Show on drawings as appropriate:</p> <p>(1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.</p> <p>(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).</p> <p>(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.</p> <p>(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.</p>	<p><input type="checkbox"/> If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.</p>	<p>Describe operational measures to implement the following (if applicable):</p> <p><input type="checkbox"/> Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.</p> <p><input type="checkbox"/> Car dealerships and similar may rinse cars with water only.</p> <p><input type="checkbox"/> See Fact Sheet SC-21, “Vehicle and Equipment Cleaning,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
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<p><input type="checkbox"/> K. Vehicle/Equipment Repair and Maintenance</p>	<p><input type="checkbox"/> Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.</p> <p><input type="checkbox"/> Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.</p> <p><input type="checkbox"/> Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.</p>	<p><input type="checkbox"/> State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.</p> <p><input type="checkbox"/> State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.</p> <p><input type="checkbox"/> State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.</p>	<p>In the SUSMP report, note that all of the following restrictions apply to use the site:</p> <p><input type="checkbox"/> No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.</p> <p>No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.</p> <p><input type="checkbox"/> No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.</p>
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<ul style="list-style-type: none"> <input type="checkbox"/> L. Fuel Dispensing Areas 	<ul style="list-style-type: none"> <input type="checkbox"/> Fueling areas¹ shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. <p>Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area¹.] The canopy [or cover] shall not drain onto the fueling area.</p> <ul style="list-style-type: none"> <input type="checkbox"/> 		<ul style="list-style-type: none"> <input type="checkbox"/> The property owner shall dry sweep the fueling area routinely. <input type="checkbox"/> See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
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¹ The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

<input type="checkbox"/> M. Loading Docks	<input type="checkbox"/> Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited. <input type="checkbox"/> Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. <input type="checkbox"/> Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		<input type="checkbox"/> Move loaded and unloaded items indoors as soon as possible. <input type="checkbox"/> See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
<input type="checkbox"/> N. Fire Sprinkler Test Water		<input type="checkbox"/> Provide a means to drain fire sprinkler test water to the sanitary sewer.	<input type="checkbox"/> See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

<p>○ Miscellaneous Drain or Wash Water</p> <ul style="list-style-type: none"> <input type="checkbox"/> Boiler drain lines <input type="checkbox"/> Condensate drain lines <input type="checkbox"/> Rooftop equipment <input type="checkbox"/> Drainage sumps <input checked="" type="checkbox"/> Roofing, gutters, and trim. 		<ul style="list-style-type: none"> <input type="checkbox"/> Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. <input type="checkbox"/> Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. <input type="checkbox"/> Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. <input type="checkbox"/> Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. <input checked="" type="checkbox"/> Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. 	
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> P. Plazas, sidewalks, and parking lots. 			<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

STEP 7

LID AND TREATMENT CONTROL SELECTION

A treatment control BMP and/or LID IMP must be selected to treat the project pollutants of concern identified in Table 7 “Project Pollutants of Concern”. A treatment control facility with a high or medium pollutant removal efficiency for the project’s most significant pollutant of concern shall be selected. It is recommended to use the design procedure in Chapter 4 of the SUSMP to meet NPDES permit LID requirements, treatment requirements, and flow control requirements. If your project does not utilize this approach, the project will need to demonstrate compliance with LID, treatment and hydromodification flow control requirements. Review Chapter 2 “Selection of Stormwater Treatment Facilities” in the SUSMP to assist in determining the appropriate treatment facility for your project.

Will this project be utilizing the unified LID design procedure as described in Chapter 4 of the Local SUSMP? <i>(If yes, please document in Attachment D following the steps in Chapter 4 of the County SUSMP)</i>	
X Yes	No
If this project is not utilizing the unified LID design procedure, please describe how the alternative treatment facilities will comply with applicable LID criteria, stormwater treatment criteria, and hydromodification management criteria.	

- Indicate the project pollutants of concern (POCs) from Table 7 in Column 2 below.

TABLE 10: GROUPING OF POTENTIAL POLLUTANTS of Concern (POCs) by fate during stormwater treatment

Pollutant	Check Project Specific POCs	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	X	
Nutrients	X		X	X
Heavy Metals	X		X	
Organic Compounds	X		X	
Trash & Debris	X	X		
Oxygen Demanding	X		X	
Bacteria	X		X	
Oil & Grease	X		X	
Pesticides	X		X	

- Indicate the treatment facility(s) chosen for this project in the following table.

TABLE 11: GROUPS OF POLLUTANTS and relative effectiveness of treatment facilities

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Constructed Wetlands	Infiltration Devices (LID)	Media Filters	Higher-rate biofilters	Higher-rate media filters	Trash Racks & Hydro-dynamic Devices	Vegetated Swales
Coarse Sediment and Trash	High	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low	Medium
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

- Please check the box(s) that best describes the Treatment Control BMP(s) and/or LID IMP selected for this project. Please check if the treatment facility is designed for water quality or hydromodification flow control. Check both boxes if the facility is designed for both water quality and hydromodification flow control.

TABLE 12: PROJECT TCBMPS - BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPS.

TCBMP Type	Water Quality Treatment	Hydromodification Flow Control
Bioretention Facilities (LID)		
<input type="checkbox"/> Bioretention area	X	X
<input type="checkbox"/> Flow-through Planter		
<input type="checkbox"/> Cistern with Bioretention		
Basins		
<input type="checkbox"/> Extended/dry detention basin with grass/vegetated lining		
<input type="checkbox"/> Extended/dry detention basin with impervious lining		
<input type="checkbox"/> Underground vault		
<input type="checkbox"/> Cistern		
Infiltration Devices (LID)		

<input type="checkbox"/> Infiltration basin		
<input type="checkbox"/> Infiltration trench		
<input type="checkbox"/> Other _____		
Wet Ponds and Constructed Wetlands		
<input type="checkbox"/> Wet pond/basin (permanent pool)		
<input type="checkbox"/> Constructed wetland		
Vegetated Swales (LID⁽¹⁾)		
<input type="checkbox"/> Vegetated Swale		
Media Filters		
<input type="checkbox"/> Austin Sand Filter		
<input type="checkbox"/> Delaware Sand Filter		
<input type="checkbox"/> Multi-Chambered Treatment Train (MCTT)		
Higher-rate Biofilters		
<input type="checkbox"/> Tree-pit-style unit		
<input type="checkbox"/> Other _____		
Higher-rate Media Filters		
<input type="checkbox"/> Vault-based filtration unit with replaceable cartridges		
<input type="checkbox"/> Other _____		
Hydrodynamic Separator Systems		
<input type="checkbox"/> Swirl Concentrator		
<input type="checkbox"/> Other _____		
Trash Racks		
<input type="checkbox"/> Catch Basin Insert		
<input type="checkbox"/> Catch Basin Insert w/ Hydrocarbon boom		
<input type="checkbox"/> Other _____		
Self-Retaining Areas (LID)		
<input type="checkbox"/> Permeable Pavements		
<input type="checkbox"/> Self-Retaining		
<input type="checkbox"/> Vegetated Roof		

⁽¹⁾ Must be designed per SUSMP “Vegetated Swales” design criteria for water quality treatment credit (p. 102-103).

For design guidelines and calculations refer to Chapter 4 “Low Impact Development Design Guide” in the SUSMP. Please show all calculations and design sheets for all treatment control BMPs proposed in Attachment D.

- Create a Construction Plan SWMP Checklist for your project.

Instructions on how to fill out table

1. Number and list each measure or BMP you have specified in your SWMP in Columns 1 and Maintenance Category in Column 3 of the table. Leave Column 2 blank.
2. When you submit construction plans, duplicate the table (by photocopy or electronically). Now fill in Column 2, identifying the plan sheets where the BMPs are shown. List all plan sheets on which the BMP appears. **This table must be shown on the front sheet of the grading and improvement plans.**

Treatment Control BMPs ¹			
Description / Type	Sheet	Maintenance Category	Revisions
Bioretention Facility		Medium to High	

¹ BMPs designed to treat stormwater (e.g., LID and hydromod) shall be considered TCBMPs.

*BMP's approved as part of Stormwater Management Plan (SWMP) dated xx/xx/xx on file with DPW. Any changes to the above BMP's will require SWMP revision and Plan Change approvals.

- Please describe why the chosen treatment control BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a **feasibility analysis** that demonstrates utilization of a treatment control BMP with a high or medium removal efficiency ranking is infeasible.

Bioretention Facilities are the most effective BMP s to treat this project’s pollutants of concern. Facilities are designed to capture runoff and infiltrate slowly through soil media which also supports vegetation. Bioretention facilities, effectively promote infiltration into native soils. In clay soils, facilities may capture excess treated runoff in an underdrain piped to the municipal storm drain system. Typical criteria: an infiltration surface area at least 4% of tributary impervious area, 6-inch average depth of top reservoir, 18-inch soil layer, 12-inch to 18-inch gravel subsurface storage layer.

- **Please provide the sizing design calculations for each Drainage Management Area in Attachment D.** Guidelines for design calculations are located in Chapter 4 of the County SUSMP. To assist in these calculations a BMP sizing calculator is available for use at the following location:
http://www.projectcleanwater.org/html/wg_susmp.html

STEP 8

OPERATION AND MAINTENANCE

- Please check the box that best describes the maintenance mechanism(s) for this project. The recorded maintenance agreement shall be included in the Maintenance Plan for this project (Attachment F).

TABLE 13: PROJECT BMP CATEGORY

CATEGORY	SELECTED		BMP Description
	YES	NO	
First ¹	X		Bioretention Facility
Second ²			
Third ³			
Fourth ⁴			

Note:

1. A maintenance notification will be required.
2. A recorded maintenance agreement and access easement will be required.
3. The project will be required to establish or be included in a watershed specific Community Facility District (CFD) for long-term maintenance.
4. The developer would be required to dedicate the BMP (and the property on which it is located and any necessary access) to the County.

➤ Responsible Party for the Construction Phase:

Identify the parties responsible for maintenance during the construction phase of the BMPs identified above and Source Controls specified in Attachment B.

Developer's Name: Mike Bittinger, Kahoots, Inc.

Address: PO Box 2123, Ramona, CA 92065

Email Address: mike@kahootspet.com

Phone Number: 760 505-2123

Engineer of Work: Spear & Associates Inc.

Engineer's Phone Number: 760 736-2040

➤ Responsible Party for Ongoing Maintenance:

Identify the parties responsible for long-term maintenance of the BMPs identified above and Source Controls specified in Attachment B. Include the appropriate written agreement with the entities responsible for O&M in Attachment F. Please see Chapter 5 "Stormwater Facility Maintenance" of the County SUSMP for appropriate maintenance mechanisms.

Owner's Name: Mike Bittinger

Address: PO Box 2123, Ramona, CA 92065

Email Address: mike@kahootspet.com

Phone Number: 760 505-2123

➤ Funding Source:

Provide the funding source or sources for long-term operation and maintenance of each BMP identified above. Please see Chapter 5 “Stormwater Facility Maintenance” of the County SUSMP for the appropriate funding source options. By certifying the Major SWMP the applicant is certifying that the funding responsibilities have been addressed and will be transferred to future owners.

Kahoots, Inc.
 c/o Mike Bittinger
 PO Box 2123, Ramona, CA 92065
 Phone: 760 505-2123

ATTACHMENTS

Please include the following attachments.

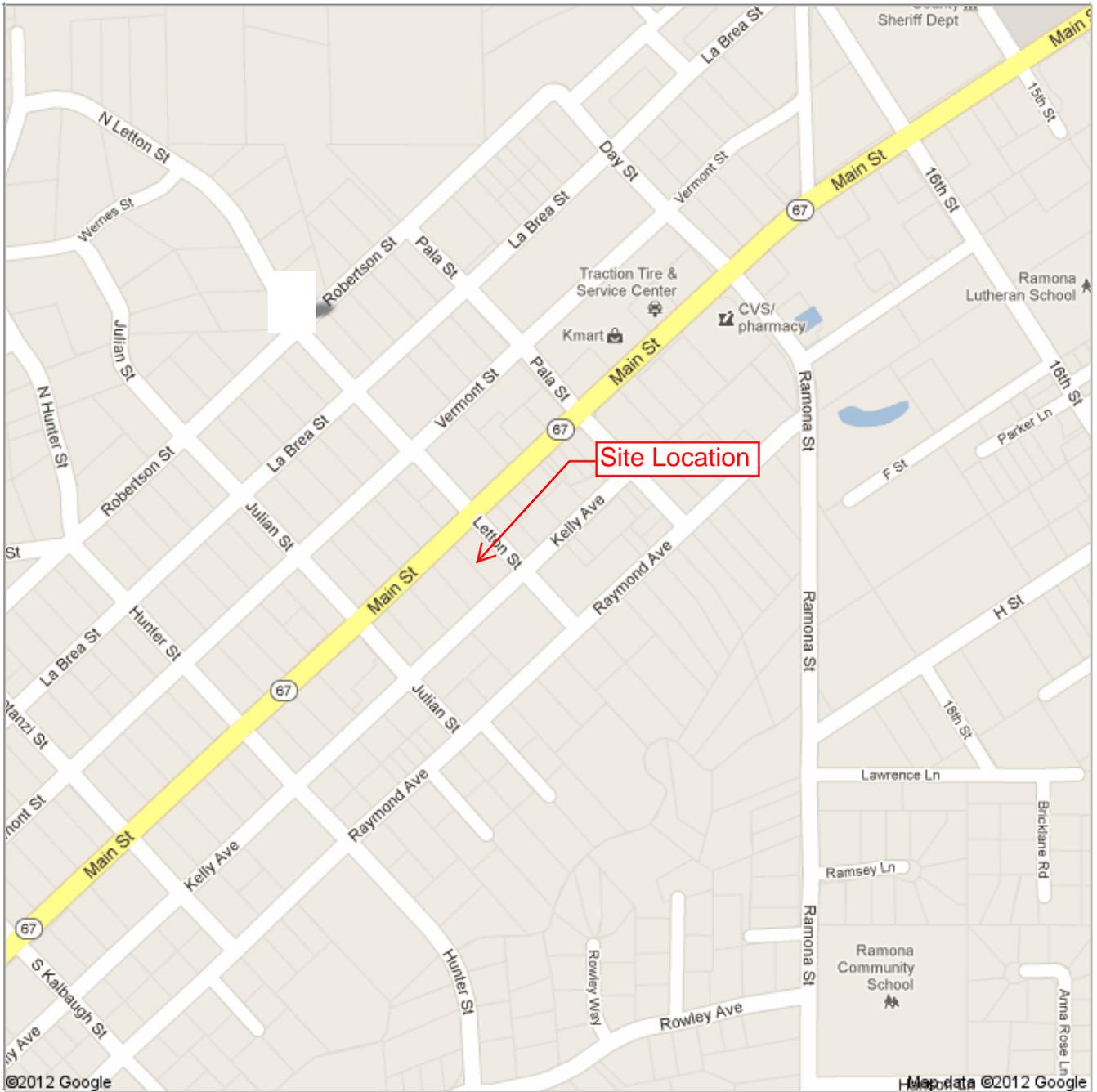
ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Source Control Exhibit	X	
C	Drainage Management Area (DMA) Exhibit	X	
D	BMP Sizing Design Calculations (Water Quality and Hydromodification) and TCBMP/IMP Design Details	X	
E	Geotechnical Certification Sheet	X	
F	Maintenance Plan	X	
G	Treatment Control BMP Certification (due at project completion)		
H	HMP Study		
I	Geomorphic Assessment		
J	HMP Exemption Documentation		
K	Addendum		

Note: Attachments B and C may be combined.

ATTACHMENT A

Project Location Map

Address Letton St
Ramona, CA 92065

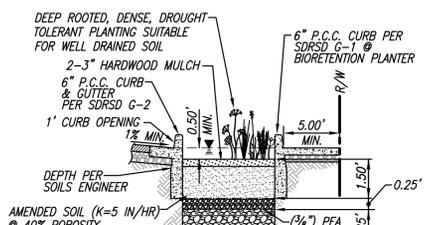


ATTACHMENT B

Source Control Exhibit

ALL IDEAS, DESIGNS, & ARRANGEMENTS REPRESENTED HEREON ARE THE PROPERTY OF SPEAR & ASSOCIATES CIVIL ENGINEERING & SHALL BE USED FOR THIS PROJECT ONLY EXCEPT WITH THE WRITTEN PERMISSION OF SAID ENGINEER. ANY CHANGE MADE BY PARTIES OTHER THAN SAID CIVIL ENGINEER SHALL RELIEVE CIVIL ENGINEER OF RESPONSIBILITY FOR THE FACILITY OR AFFECTED PORTION THEREOF. CONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF ANY WORK & SHALL REPORT ANY DISCREPANCY TO THE CIVIL ENGINEER.

DRAINAGE AREA DMA BREAKDOWN						
DRAINAGE AREA SURFACE	SOIL TYPE	1' (NORTH SIDE)	2' (EAST SIDE)	3' (WEST SIDE)	LETTON ST.	KELLY AVE.
BUILDING ROOFTOP	TYPE A	0.042 ACRES 4,043 SQ FT	0.092 ACRES 11,054 SQ FT	0.253 ACRES 11,054 SQ FT	0.000 ACRES 0000 SQ FT	0.000 ACRES 0000 SQ FT
PARKING/HARDSCAPING IMPERVIOUS AREA	TYPE A	0.271 ACRES 11,845 SQ FT	0.170 ACRES 7,346 SQ FT	0.203 ACRES 8,859 SQ FT	0.124 ACRES 5,438 SQ FT	0.222 ACRES 9,680 SQ FT
BIORETENTION	TYPE A	0.015 ACRES 690 SQ FT	0.013 ACRES 575 SQ FT	0.022 ACRES 1,000 SQ FT	0.006 ACRES 275 SQ FT	0.011 ACRES 480 SQ FT



DMA SURFACE LEGEND	
SYMBOL	SURFACE
[Cross-hatch pattern]	BUILDING ROOFTOP
[Diagonal lines]	CONCRETE WALKWAYS
[Dotted pattern]	IMPERVIOUS CONCRETE PARKING LOT
[Horizontal lines]	IMPERVIOUS AC PAVEMENT
[Stippled pattern]	BIORETENTION

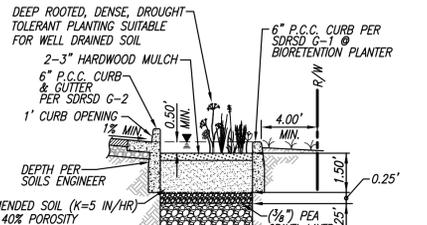
SITE ADDRESS:
 HWY 67/MAIN STREET & LETTON STREET.
 RAMONA, CA 92065

PARKING COUNT
 ACCESSIBLE PARKING STALLS = 3 STALLS
 STANDARD PARKING STALLS = 67 STALLS

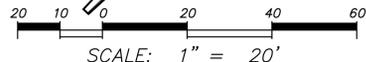
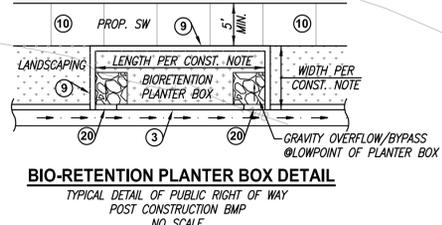
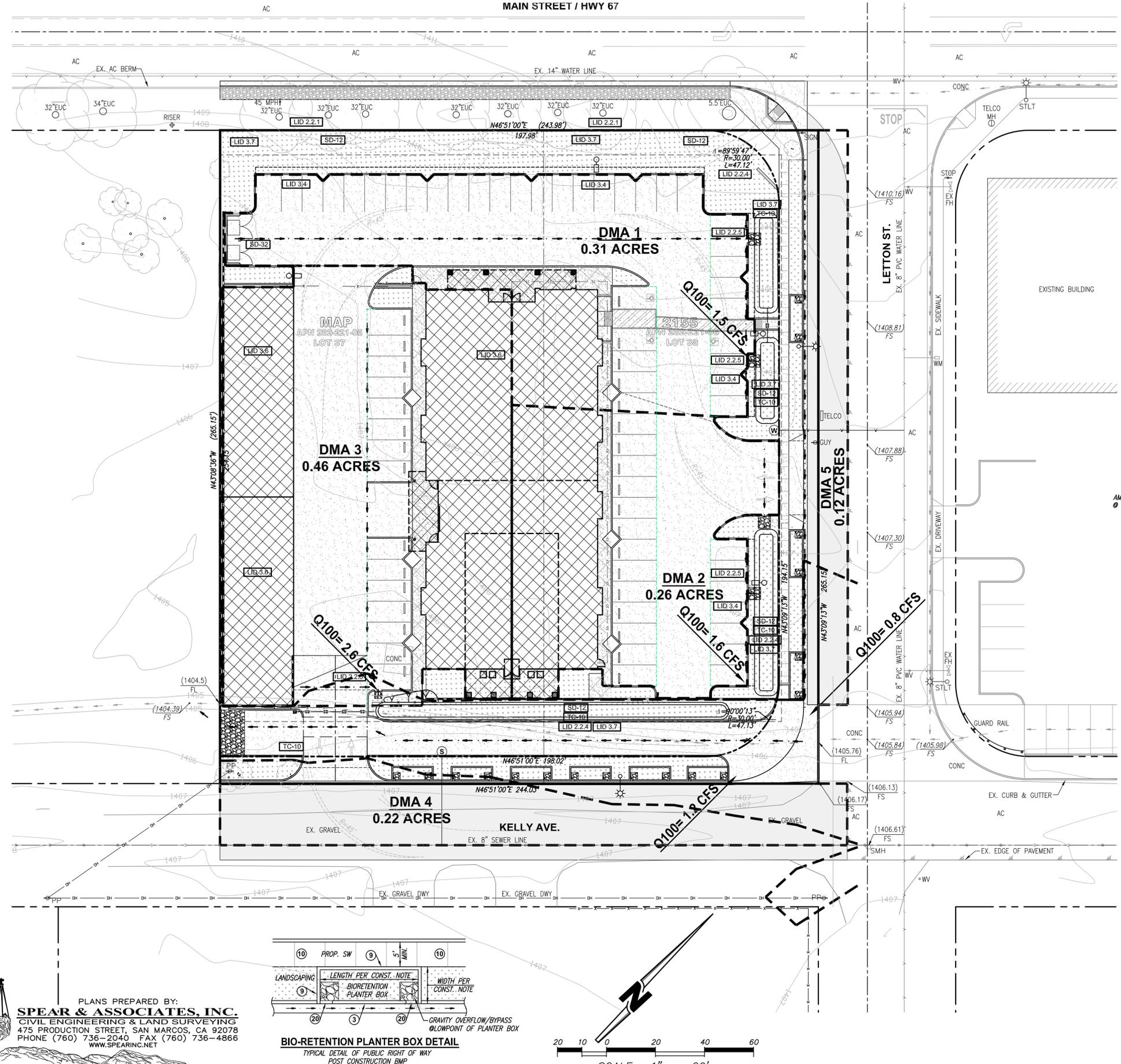
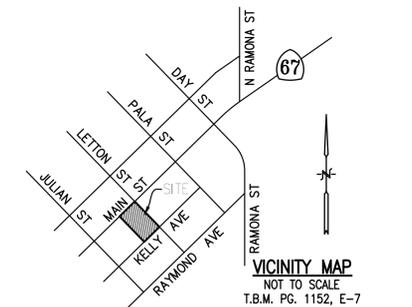
IMPERVIOUS AREAS
 EXIST. IMPERVIOUS AREA = 124 S.F.
 PROP. IMPERVIOUS PCC PARKING AREA = 26,203 S.F.
 PROP. IMPERVIOUS SIDEWALK AREA = 1,890 S.F.
 PROP. IMPERVIOUS BLDG ROOF AREA = 16,968 S.F.

OWNER/APPLICANT: APN:
 RAMONA HIGHWAY 67, LLC 282-221-05 & 06
 C/O MICHAEL J. BITTINGER
 947 MAIN STREET
 RAMONA, CA 92065
 (760) 505-2123

BENCHMARK
 THE BENCH MARK FOR THIS SURVEY A STANDARD BRASS DISK STAMPED
 "RA155 1970" AT NORTHWEST CORNER JULIAN STREET AND MAIN STREET
 PER SAN DIEGO VERTICAL CONTROL BOOK, DATED 1980.
 ELEVATION = 1408.433



BMP LEGEND	
PERMANENT BMPs:	
[SD-10]	PROTECTION OF CHANNEL BANKS / MANUFACTURED SLOPES AND FLAT PAD AREA COVERAGE
[SD-12]	IMPLEMENTATION OF EFFICIENT IRRIGATION SYSTEMS
[SD-32]	PROPER DESIGN OF TRASH STORAGE AREAS
[TC-10]	UNDERGROUND INFILTRATION TRENCH
LOW IMPACT DEVELOPMENT BMPs:	
[LID 2.2.1]	CONSERVATION OF NATURAL DRAINAGES, WELL DRAINED SOILS AND SIGNIFICANT VEGETATION
[LID 2.2.2]	MINIMIZE DISTURBANCES TO NATURAL DRAINAGES
[LID 2.2.4]	MINIMIZE SOIL COMPACTION
[LID 2.2.5]	DRAIN RUNOFF FROM IMPERVIOUS SURFACES TO PERVIOUS AREAS
[LID 3.1]	HYDROLOGIC DESIGN
[LID 3.4]	PARKING LOT DESIGN FOR COMMERCIAL PROJECTS
[LID 3.6]	BUILDING DESIGN
[LID 3.7]	LANDSCAPING DESIGN



8: Spear, Project: 20121213 KAHOOTS, INC. - HWY 67 & LETTON ST. MAIN ST. RAMONA CAD12-13BMP.dwg
 PLOT DATE: 10/22/2014 9:37 AM

PLANS PREPARED BY:
SPEAR & ASSOCIATES, INC.
 CIVIL ENGINEERING & LAND SURVEYING
 475 PRODUCTION STREET, SAN MARCOS, CA 92078
 PHONE (760) 736-2040 FAX (760) 736-4866
 WWW.SPEARINC.NET

SHEET 1	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	SHEETS 1
SOURCE CONTROL & DRAINAGE MANAGEMENT (DMA) AREA EXHIBIT: KAHOOTS, RETAIL FEED & PET SUPPLIES		

ATTACHMENT C

Drainage Management Area (DMA) Exhibit

See attachment B

ATTACHMENT D

Sizing Design Calculations and TCBMP/LID Design Details

(Provide BMP Sizing Calculator results and/or continuous simulation modeling results, if applicable)

Project Summary

Project Name	12-173
Project Applicant	Kahootz Inc
Jurisdiction	County of San Diego
Parcel (APN)	282-221-05 &06
Hydrologic Unit	San Dieguito

Compliance Basin Summary

Basin Name:	12-173
Receiving Water:	Santa Maria Creek
Rainfall Basin	Lake Wohlford
Mean Annual Precipitation (inches)	19.0
Project Basin Area (acres):	1.48
Watershed Area (acres):	1.48
SCCWRP Lateral Channel Susceptibility (H, M, L):	
SCCWRP Vertical Channel Susceptibility (H, M, L):	
Overall Channel Susceptibility (H, M, L):	HIGH
Lower Flow Threshold (% of 2-Year Flow):	0.1

Drainage Management Area Summary

ID	Type	BMP ID	Description	Area (ac)	Pre-Project Cover	Post Surface Type	Drainage Soil	Slope
20290	Drains to LID	BMP 1	DMA 1 Rooftop	0.04	Pervious (Pre)	Roofs	Type A (low runoff - sandy soi...	Flat - slope (less ...
20291	Drains to LID	BMP 1	DMA 1 Hardscape/PCC pvmt	0.27	Pervious (Pre)	Concrete or asphalt	Type A (low runoff - sandy soi...	Flat - slope (less ...
20292	Drains to LID	BMP 2	DMA 2 Rooftop	0.09	Pervious (Pre)	Roofs	Type A (low runoff - sandy soi...	Flat - slope (less ...
20293	Drains to LID	BMP 2	DMA 2 Hardscape/PCC pvmt	0.17	Pervious (Pre)	Concrete or asphalt	Type A (low runoff - sandy soi...	Flat - slope (less ...

20294	Drains to LID	BMP 3	DMA 3 Rooftop	0.25	Pervious (Pre)	Roofs	Type A (low runoff - sandy soi...	Flat - slope (less ...
20295	Drains to LID	BMP 3	DMA 3 Hardscape/PCC pvmt	0.20	Pervious (Pre)	Concrete or asphalt	Type A (low runoff - sandy soi...	Flat - slope (less ...
24382	Drains to LID	BMP 4	DMA 4 Kelly Ave. new pvmt/conc.	0.22	Pervious (Pre)	Concrete or asphalt	Type A (low runoff - sandy soi...	Flat - slope (less ...
24428	Drains to LID	BMP 5	DMA 5 Letton St. new pvmt/conc.	0.12	Pervious (Pre)	Concrete or asphalt	Type A (low runoff - sandy soi...	Flat - slope (less ...

LID Facility Summary

BMP ID	Type	Description	Plan Area (sqft)	Volume 1(cft)	Volume 2(cft)	Orifice Flow (cfs)	Orifice Size (inch)
BMP 1	Bioretention	DMA 1	686	572	0.00	0.004	0.3
BMP 2	Bioretention	DMA 2	572	477	0.00	0.003	0.00
BMP 3	Bioretention	DMA 3	995	830	0.00	0.006	0.00
BMP 4	Bioretention	DMA 4	479	399	0.00	0.003	0.2
BMP 5	Bioretention	DMA 5	272	227	0.00	0.001	0.2

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit:

Tool:

Result View

Define Drainage Basins

Basin: 12-173 Project: 12-173

Start Project Basin POC Export

Manage Your Projects

Create a new Project by clicking the New button and scroll down to view entry. Alternatively, select an existing Project from table and view properties below. Click Edit button to change Project properties then press Save to commit changes.

Name
12-173

New Edit Save Delete

Name: Description:

Applicant:

Parcel (APN): Street:

Jurisdiction: City:

Hydrological Unit:

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit:

Tool:

Result View

Define Drainage Basins

Basin: 12-173 Project: 12-173

Start Project Basin POC Export

Manage Your Basins

Create a new Basin by clicking the New button and scroll down to view entry. Alternatively, select an existing Basin from table and view properties below. Click Edit button to change Basin properties then press Save to commit changes.

Name
12-173

New Edit Save Delete

Description:

Design Goal:

Rainfall Basin:

Point of Compliance:

Project Basin Area (ac):

Mean Annual Precipitation (in):

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit: HydroMod Tools

Tool: LID Sizer

Result View

Size LID Facility

Basin: 12-173 Project: 12-173

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

New Edit Save Delete

DMA ID	Description
20290	DMA 1 Rooftop
20291	DMA 1 Hardscape/PCC pvmt
20292	DMA 2 Rooftop
20293	DMA 2 Hardscape/PCC pvmt

Define DMA Properties

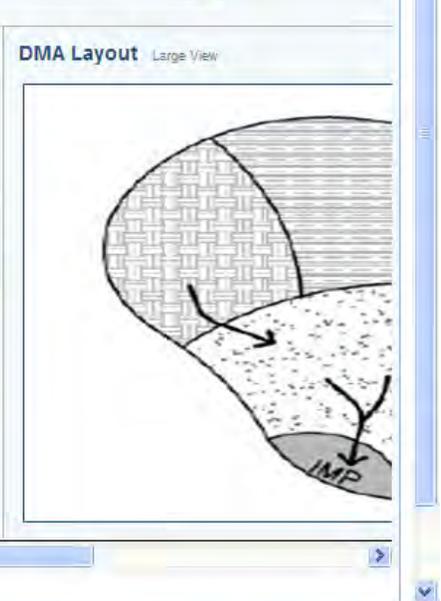
DMA Type: Drains to LID Drainage Area (ac): 0.04

BMP ID: BMP 1 Drain To DMA ID: DMA

Drainage Soil: Type A (low runoff - sandy soils) Pre-Project Cover: Pervious (Pre)

Post Surface: Roofs Pre-Project Slope: Flat - slope (less 5%)

Messages:



uKnow - Windows Internet Explorer

http://uknow.brwncald.com/wastewater/MapOL.aspx

File Edit View Favorites Tools Help

Search Safe Do Not Track Weather Facebook Speedtest

Favorites uKnow

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit: HydroMod Tools

Tool: LID Sizer

Result View

Size LID Facility Basin: 12-173 Project: 12-173

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

New Edit Save Delete

DMA ID	Description
20290	DMA 1 Rooftop
20291	DMA 1 Hardscape/PCC pvmt
20292	DMA 2 Rooftop
20293	DMA 2 Hardscape/PCC pvmt

Define DMA Properties

DMA Type: Drains to LID Drainage Area (ac): 0.27

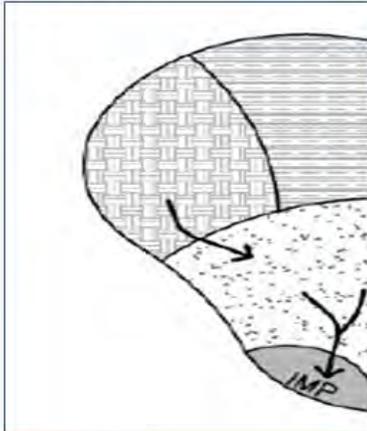
BMP ID: BMP 1 Drain To DMA ID: []

Drainage Soil: Type A (low runoff - sandy soils) Pre-Project Cover: Pervious (Pre)

Post Surface: Concrete or asphalt Pre-Project Slope: Flat - slope (less 5%)

Messages:

DMA Layout Large View



Done Unknown Zone (Mixed) 100%

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uKnow - Windows Internet Explorer

http://uknow.brwncaid.com/wastewater/MapQL.aspx

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AVG Search Safe Do Not Track Weather Facebook Speedtest

Favorites uKnow

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit: HydroMod Tools

Tool: LID Sizer

Result View

Size LID Facility Basin: 12-173 Project: 12-173

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

New Edit Save Delete

DMA ID	Description
20290	DMA 1 Rooftop
20291	DMA 1 Hardscape/PCC pvmt
20292	DMA 2 Rooftop
20293	DMA 2 Hardscape/PCC pvmt

Define DMA Properties

DMA Type: Drains to LID Drainage Area (ac): 0.09

BMP ID: BMP 2 Drain To DMA ID: DMA

Drainage Soil: Type A (low runoff - sandy soils) Pre-Project Cover: Pervious (Pre)

Post Surface: Roofs Pre-Project Slope: Flat - slope (less 5%)

Messages:

DMA Layout Large View

Done Unknown Zone (Mixed) 100%

start SUSMP and Hydromo... uKnow - Windows Int... Document - WordPad 3:00 PM

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit:

Tool:

Result View

Size LID Facility

Basin: **12-173** Project: **12-173**

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

DMA ID	Description
20290	DMA 1 Rooftop
20291	DMA 1 Hardscape/PCC pvmt
20292	DMA 2 Rooftop
20293	DMA 2 Hardscape/PCC pvmt

Define DMA Properties

DMA Type: Drainage Area (ac):

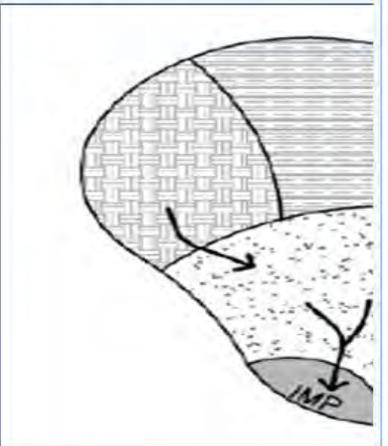
BMP ID: Drain To DMA ID:

Drainage Soil: Pre-Project Cover:

Post Surface: Pre-Project Slope:

Messages:

DMA Layout Large View



uKnow - Windows Internet Explorer

http://uknow.brwncaid.com/wastewater/MapOL.aspx

File Edit View Favorites Tools Help

AVG Search Safe Do Not Track Weather Facebook Speedtest

Favorites uKnow

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit: HydroMod Tools

Tool: LD Sizer

Result View

Size LID Facility Basin: 12-173 Project: 12-173

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

New Edit Save Delete

DMA ID	Description
20294	DMA 3 Rooftop
20295	DMA 3 Hardscape/PCC pvmt
24382	DMA 4 Kelly Ave. new pvmt/conc.
24431	DMA 5 Letton St. new pvmt/conc.

Define DMA Properties

DMA Type: Drains to LID Drainage Area (ac): 0.25

BMP ID: BMP 3 Drain To DMA ID: (N/A)

Drainage Soil: Type A (low runoff - sandy soils) Pre-Project Cover: Pervious (Pre)

Post Surface: Roofs Pre-Project Slope: Flat - slope (less 5%)

Messages:

DMA Layout Large View

Done

start SUSMP and Hydromo... uKnow - Windows Int... Document - WordPad Unknown Zone (Mixed) 100% 3:01 PM

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit:

Tool:

Result View

Size LID Facility

Basin: 12-173 Project: 12-173

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

DMA ID	Description
20294	DMA 3 Rooftop
20295	DMA 3 Hardscape/PCC pvmt
24382	DMA 4 Kelly Ave. new pvmt/conc.
24431	DMA 5 Letton St. new pvmt/conc.

New Edit Save Delete

Define DMA Properties

DMA Type: Drainage Area (ac):

BMP ID: Drain To DMA ID:

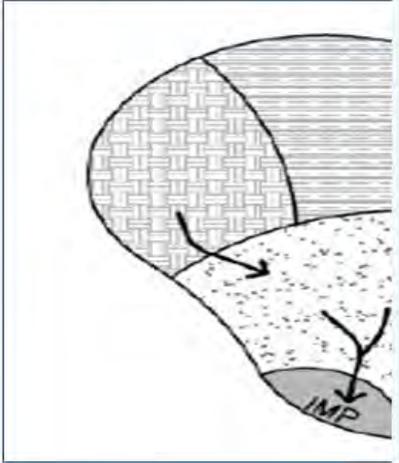
Drainage Soil: Pre-Project Cover:

Post Surface: Pre-Project Slope:

Messages:

DMA Layout

Large View



uKnow - Windows Internet Explorer

http://uknow.brwncaid.com/wastewater/MapOL.aspx

File Edit View Favorites Tools Help

AVG Search Safe Do Not Track Weather Facebook Speedtest

Favorites uKnow

Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit: HydroMod Tools

Tool: LID Sizer

Result View

Size LID Facility

Basin: 12-173 Project: 12-173

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

New Edit Save Delete

DMA ID	Description
20294	DMA 3 Rooftop
20295	DMA 3 Hardscape/PCC pvmt
24382	DMA 4 Kelly Ave. new pvmt/conc.
24431	DMA 5 Letton St. new pvmt/conc.

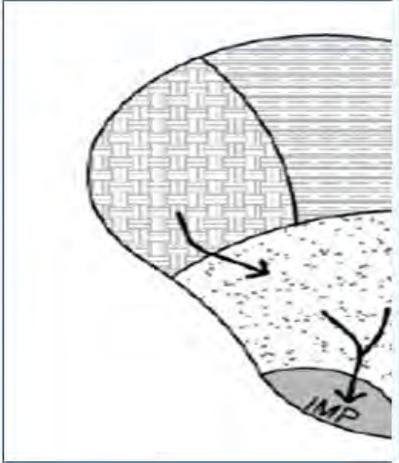
Define DMA Properties

DMA Type: Drains to LID Drainage Area (ac): 0.22
 BMP ID: BMP 4 Drain To DMA ID: DMA

Drainage Soil: Type A (low runoff - sandy soils) Pre-Project Cover: Pervious (Pre)
 Post Surface: Concrete or asphalt Pre-Project Slope: Flat - slope (less 5%)

Messages:

DMA Layout Large View



Manage Basins

- San Diego County - HMP

Manage Map Layers

- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

Select a Tool

Toolkit:

Tool:

Result View

Size LID Facility

Basin: **12-173** Project: **12-173**

Start DMA LID Report Export

Manage Your DMA's

Create a new DMA by clicking the New button and scroll down to view entry. Alternatively, select an existing DMA from table and view properties below. Click Edit button to change DMA properties then press Save to commit changes.

DMA ID	Description
20294	DMA 3 Rooftop
20295	DMA 3 Hardscape/PCC pvmt
24382	DMA 4 Kelly Ave. new pvmt/conc.
24431	DMA 5 Letton St. new pvmt/conc.

Define DMA Properties

DMA Type: Drainage Area (ac):

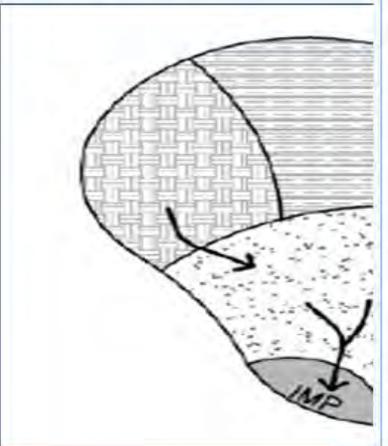
BMP ID: Drain To DMA ID:

Drainage Soil: Pre-Project Cover:

Post Surface: Pre-Project Slope:

Messages:

DMA Layout Large View



ATTACHMENT E

Geotechnical Certification Sheet (if applicable)

The design of stormwater treatment and other control measures proposed in this plan requiring specific soil infiltration characteristics and/or geological conditions has been reviewed and approved by a registered Civil Engineer, Geotechnical Engineer, or Geologist in the State of California.

Name and registration #

Date



CONSTRUCTION TESTING & ENGINEERING, INC.

1441 MONTIEL ROAD, SUITE 115 | ESCONDIDO, CA 92026 | 760.746.4955 | FAX 760.746.9808

November 19, 2013

CTE Job No. 10-11391G

Kahoots

Attention: Mr. Ed Hoban

P.O. Box 2123

Ramona, California 92065

Telephone: (760) 789-3003

Subject: Percolation Test Results for Storm Water Infiltration Design & Evaluation
Proposed Retail Feed and Pet Supplies Improvements
Highway 67 and Letton Street
Ramona, California

Mr. Hoban:

As requested, please find the provided results of previous percolation testing conducted at subject site. The testing was performed on January 15, 2013. Tests were conducted at the approximate locations as shown on the attached Figure 1.

Percolation testing was conducted in general accordance with the San Diego County Department of Environmental Health guidelines. The percolation testing consisted of excavating four test holes to the anticipated depth of the proposed infiltration improvements. Following excavation, the holes were presoaked by adding and maintaining 12 to 14 inches of clear water for a duration of four hours, then the water level was left to percolate overnight. CTE returned approximately 16 hours after the water levels were allowed to percolate overnight and found that the water had completely drained from the test holes, which results in a Case III percolation test to determine the rate. The holes were cleaned out, establishing a clean soil surface throughout the test holes and approximately two inches of pea gravel was added to all the holes. Following preparation of the holes, lath was placed across the top of each hole to establish a fixed point to measure from, and 6.0 inches of water was added to each hole. The water levels were measured every 30 minutes for the duration of four hours. The following table presents all readings for the percolation testing.

Time (min)	P-1 (drop in inches)	P-2 (drop in inches)	P-3 (drop in inches)	P-4 (drop in inches)
30	1.00	0.13	0.13	1.13
60	1.00	0.13	0.13	1.13
90	0.56	0.88	1.00	0.50
120	0.75	0.50	0.25	0.50
150	0.75	0.50	0.38	0.50
180	0.50	0.50	0.38	0.50
210	0.38	0.50	0.25	0.50
240	0.38	0.50	0.25	0.50

The following rates were determined by multiplying the last drop by two to get the final or stabilized percolation rate in inches per hour.

- PT-1 3/4" per hour
- PT-2 1" per hour
- PT-3 1/2" per hour
- PT-4 1" per hour

We appreciate the opportunity to be of service on this project. Should you have any questions or need further information please do not hesitate to contact this office.

Respectfully submitted,

CONSTRUCTION TESTING & ENGINEERING, INC.



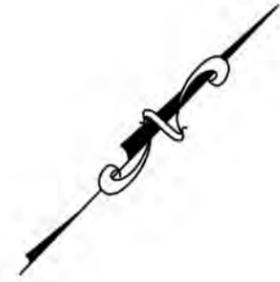
Dan T. Math, GE #2665
Principal Engineer



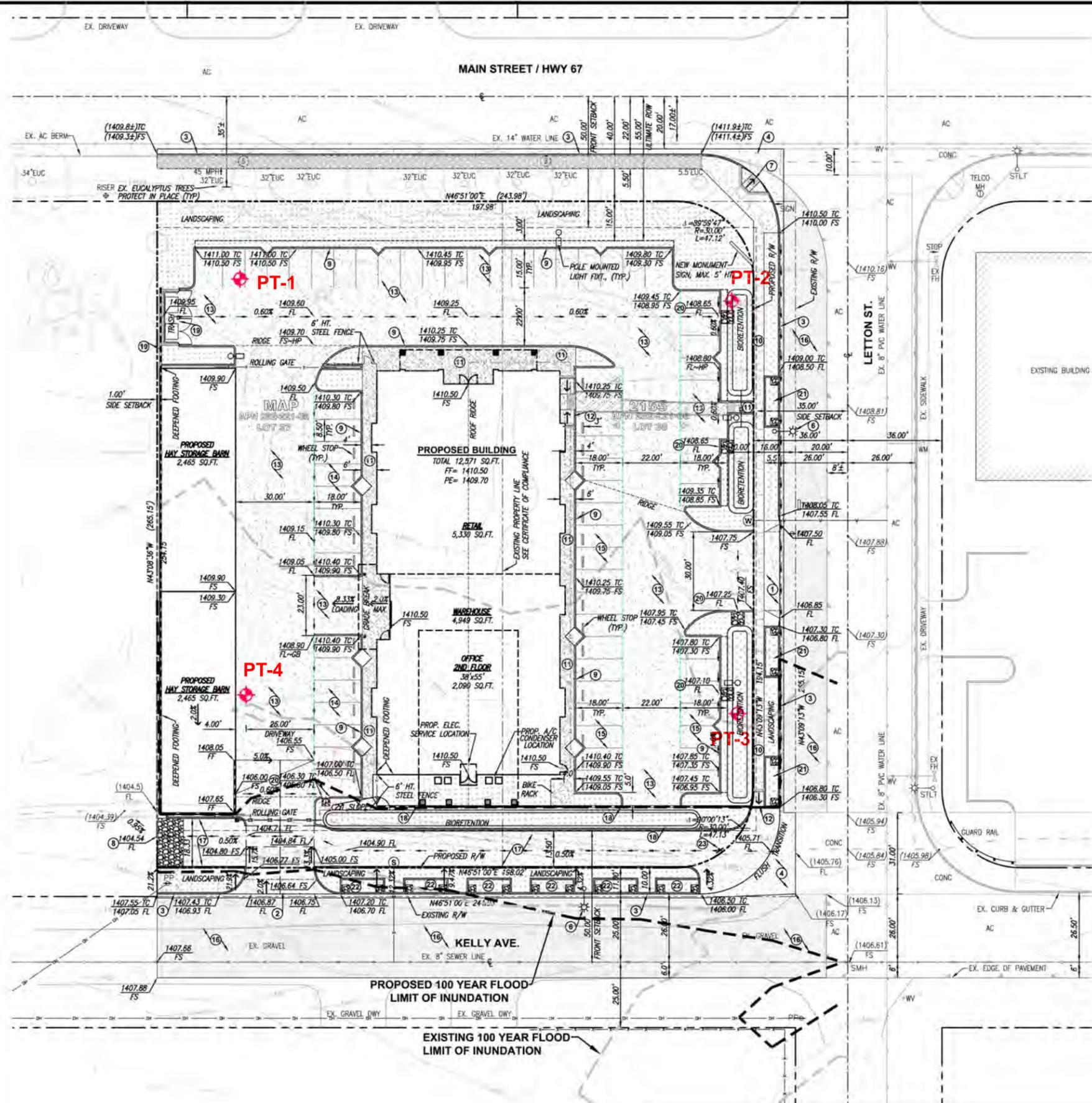
CC: josh@spearinc.net; ehoban@commercialwest.com; mike@kahootspet.com;
dannyabada@gmail.com

LEGEND

PT-4  APPROXIMATE PERCOLATION TEST LOCATION



Percolation Test Location	Percolation Rate (in/hr)
PT-1	3/4"
PT-2	1"
PT-3	1/2"
PT-4	1"



CONSTRUCTION TESTING & ENGINEERING, INC.
 PLANNING - CIVIL ENGINEERING - LAND SURVEYING - GEOTECHNICAL
 1441 MONTIEL ROAD, SUITE 115 ESCONDIDO CA. 92026, PH: (760) 746-4955

PERCOLATION TEST LOCATION MAP
 PROPOSED RETAIL FEED AND PET SUPPLIES IMPROVEMENTS
 HIGHWAY 67 AND LETTON STREET
 RAMONA, CALIFORNIA

CIE JOB NO:
 10-11391G
 SCALE:
 1" = 40'
 DATE:
 1/13
 FIGURE:
 1

\\Esc_server\projects\10-11391G\Figure 1.dwg 1/22/2013 11:00:44 AM PST

Soil Types & Infiltration Rates			
SCS Hydrologic Soil Group	INFILT Estimate		Runoff Potential
	(in/hr)	(mm/hr)	
 A	0.4 - 1.0	10.0 - 25.0	Low
B	0.1 - 0.4	2.5 - 10.0	Moderate
C	0.05 - 0.1	1.25 - 2.5	Moderate to High
D	0.01 - 0.05	0.25 - 1.25	High

ATTACHMENT F

OPERATION & MAINTENANCE (O&M) PLAN

1. Table of Contents

INTRODUCTION	1
1. OPERATION & MAINTENANCE PLAN	1
2. Operation & Maintenance of BMP'S	1
A. Training	2
B. Landscaping	2
C. Irrigation System	5
D. Roof Drains	5
E. Trash Storage Areas	5
F. Bio-Retentions and Vegetated Swales	5

ATTACHMENTS

A1. Inspection & Maintenance Schedule

B1. Cost Estimate

C1. BMP Training Log

D1. Inspection & Maintenance Log

E1. BMP Specifications

INTRODUCTION

The OPERATION & MAINTENANCE PLAN (O&M) requirement is under the County of San Diego “Standard Urban Storm Water Mitigation Plan” Storm Water BMP Maintenance. The purpose of this O&M is to address the continued maintenance and to appoint the responsible parties in charge of maintaining the proposed BMPs during construction and post-construction. Best Management Practices (BMPs) will be utilized to provide a long-term solution to water quality. This O&M is also intended to ensure the effectiveness of the BMPs through proper maintenance and operation based on long-term fiscal planning. This O&M is subject to approval and periodic revisions as required by the County Engineer.

1. OPERATION & MAINTENANCE PLAN

The Operation and Maintenance Plan (O&M) needs to address construction and post-construction concerns as shown in the Storm Water Mitigation Plan. Refer to this project’s Storm Water Management Plan (SWMP) for additional information on BMPs. (See enclosed attachment for location of BMPs)

2. Operation & Maintenance of BMP’S

It shall be the responsibility of the owner to maintain and to train all employees for the maintenance and operation of all BMPs, to achieve the maximum pollutant reduction they are designed for, as addressed in the approved Project’s SWMP. The following schedule of (O&M’s) must be followed to satisfy the Conditions of Concern and the Pollutants of Concern as addressed in the approved Project’s SWMP and the County’s SUSMP. This schedule shall include periodic inspections of all Source Control and Treatment Control BMP’s. All maintenance records for training, inspection and maintenance shall be kept for a minimum of five (5) years.

All BMPs shall be inspected 30 days prior to October 1st each year and certified to the County Engineering Department as to their readiness to receive runoff from the annual rainfall season (See enclosed attachment for a more detailed schedule of maintenance)

The owner will also, provide to the County as part of the maintenance and operation agreement an executed access easement that shall be binding on the land throughout the life of the project, until such time that the storm water BMPs requiring access are replaced satisfactory to the County Engineer.

The proposed bioretentions and landscaping located within the public ROW shall be maintained by the applicant with a landscape maintenance agreement.

Responsible Party for O&M and For Training

Kahoots, Inc.
c/o Mike Bittinger
PO Box 2123, Ramona, CA 92065
Phone: 760 505-2123

A. Training

Training of Operation and Maintenance personnel is of primary importance to provide knowledge of the operation and maintenance of BMPs. Proper training shall provide information that will enable employees to in place an effective preventive maintenance

Program as described in this O & M manual. The responsible party mentioned above should take the course provided by the “BULDING INDUSTRIES ASSOCIATION of SAN DIEGO COUNTY” to be trained in the purpose and use of BMPs and the maintenance thereof. Proper preventive maintenance will prevent environmental incidents that may be a health and safety hazard. Also, the responsible party should refer to the following web site for resource information:

www.caBMPhanbooks.com

New employees should be trained as to the purpose and proper maintenance within the first week of their employment.

Employee training shall include receiving a copy of this O & M manual; a discussion on the location and purpose of site specific BMPs, such as Source Control and Treatment Control BMPs; trained on how to inspect and report maintenance problems and to whom they report to; They shall be trained in site specific Pollutants of Concern so that they can evaluate the functioning of all on-site BMPs this to avoid environmental incidents. These Pollutants of are given in this report under Section 2.

A log of all training and reported inspections and maintenance problems along with what was done to correct the problem shall be keep on the premises at all times for a minimum of five (5) years.

Employees shall be periodically trained, at a minimum of once a year, to refresh their abilities to Operate and Maintain all on-site BMPs.

B. Landscaping

Operational and maintenance needs include:

- Vegetation management to maintain adequate hydraulic functioning and to limit habitat for disease-carrying animals.
- Animal and vector control.
- Periodic sediment removal to optimize performance.
- Trash, debris, grass trimmings, tree pruning, and leaf collection and removal to prevent obstruction of a landscape areas so as not to prohibit their use as a BMP and monitoring irrigation equipment.
- Removal of standing water, which may contribute to the development of aquatic plant communities or mosquito breeding areas.
- Preventive maintenance on sampling, flow measurement, and associated BMP equipment and structures.
- Erosion and structural maintenance to prevent the loss of soil and maintain the performance of all landscaping.

Inspection Frequency

- The facility will be inspected and inspection visits will be completely documented:
- Once a month at a minimum.
- After every large storm (after every storm monitored or these storms with more than 0.50 inch of precipitation.)
- On a weekly basis during extended periods of wet weather.

Inspect for proper irrigation and fertilizer use, and ensure that all landscaped areas have minimum of 80% coverage.

Aesthetic Maintenance

The following activities will be included in the aesthetic maintenance program:

Grass Trimming: Trimming of grass will be done on all landscaped areas, around fences, at the inlet and outlet structures, and sampling structures.

Weed Control. Weeds will be removed through mechanical means. Herbicide will not be used because these chemicals may impact the water quality monitoring.

Functional Maintenance

Functional maintenance has two components:

- Preventive maintenance
- Corrective maintenance

Preventive Maintenance

Preventive maintenance activities to be instituted for landscaped areas are:

- **Grass Mowing:** Vegetation seed, mix within the landscaped areas, are to be designed to be kept short to maintain adequate hydraulic functioning and to limit the development of faunal habitats.
- **Trash and Debris:** During each inspection and maintenance visit to the site, debris and trash removal will be conducted to reduce the potential for inlet and outlet structures and other components from becoming clogged and inoperable during storm events.
- **Sediment Removal:** Sediment accumulation, as part of the operation and maintenance program at of landscaped areas, will be monitored once a month during the dry season, after every large storm (0.50 inch), and monthly during the wet season. Specifically, if sediment reaches a level at or near plant height, or could interfere with flow or operation, the sediment will be removed. If accumulation of debris or sediment is determined to be the cause of decline in design performance, prompt action (i.e., within ten working days) will be taken to restore the landscaped areas to design performance standards. Actions will include using additional fill and vegetation and/or removing accumulated sediment to correct channeling or ponding. Characterization and Appropriate disposal of sediment will comply with applicable local, county, state, or federal requirements. The landscaped areas will be re-graded, if the flow gradient has changed, and then replanted with sod.

- Removal of Standing Water: Standing water must be removed if it contributes to the development of aquatic plant communities or mosquito breeding areas.
- Fertilization and Irrigation: The vegetation seed mix is to be designed so that fertilization and irrigation is to be kept at a minimum. Elimination of Mosquito Breeding Habitats. The most effective mosquito control program is one that eliminates potential breeding habitats.

Corrective Maintenance

Corrective maintenance is required on an emergency or non-routine basis to correct problems and to restore the intended operation and safe function of all landscaped areas.

Corrective maintenance activities include:

Removal of Debris and Sediment: Sediment, debris, and trash, which impede the hydraulic functioning of landscaping and prevent vegetative growth, will be removed and properly disposed. Temporary arrangements will be made for handling the sediments until a permanent arrangement is made. Vegetation will be re-established after sediment removal.

Structural Repairs: Once deemed necessary, repairs to structural components of landscaping will be done within 10 working days. Qualified individuals (i.e., the designers or contractors) will conduct repairs where structural damage has occurred.

Embankment and Slope Repairs: Once deemed necessary, damage to the embankments and slopes of landscaped areas will be repaired within 10 working days.

Erosion Repair: Where a reseeding program has been ineffective, or where other factors have created erosive conditions (i.e., pedestrian traffic, concentrated flow, etc.), corrective steps will be taken to prevent loss of soil and any subsequent danger to the performance and use of landscaped areas as BMPs. There are a number of corrective actions that can be taken.

These include erosion control blankets, riprap, sodding, or reduced flow through the area. Designers or contractors will be consulted to address erosion problems if the solution is not evident.

Elimination of Animal Burrows

Animal burrows will be filled and steps taken to remove the animals if burrowing problems continue to occur (filling and compacting). If the problem persists, vector control specialists will be consulted regarding removal steps. This consulting is necessary as the threat of rabies in some areas may necessitate the animals being destroyed rather than relocated. If the BMP performance is affected, abatement will begin. Otherwise, abatement will be performed annually in September.

General Facility Maintenance: In addition to the above elements of corrective maintenance, general corrective maintenance will address the overall facility and its associated components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.

Maintenance Frequency

The maintenance indicator document included in enclosed attachment for all BMPs lists the schedule of maintenance activities to be implemented.

Debris and Sediment Disposal

Waste generated at Swales is ultimately the responsibility of the owner. Disposal of sediments, debris, and trash will comply with applicable local, county, state, and federal waste control programs.

Hazardous Waste

Suspected hazardous wastes will be analyzed to determine disposal options. Hazardous wastes generated onsite will be handled and disposed of according to applicable local, state, and federal regulations. A solid or liquid waste is considered a hazardous waste if it exceeds the criteria listed in the CCR, Title 22, Article 11.

C. Irrigation System

Inspection Frequency and Procedure

The Irrigation system shall be checked each week as a minimum. The following items shall be checked to insure that they are functioning properly:

- Shut-off devices.
- All piping and sprinkler heads to insure there are no leaks and that proper water spread is maintained.
- All flow reducers.
- Check for overspray/runoff

D. Roof Drains

All roof drains shall be inspected 30 days prior to October 1st of each year to insure that they are clean and free from trash and in good repair. They shall be flushed and any leaks or damages piping shall be either replaced or repaired. Where roof drains flow onto grass areas splash structures and or rock rip-rap shall be maintained so the flow from the roof drains do not cause erosion or damage to the grass area. During the rain season roof drains shall be inspected weekly and after each rain storm to insure that there is no trash and or silt build up that will restrict the run-off flow from the roof. All trash and/or silt build up shall be removed immediately.

E. Trash Storage Areas

- All trash storage areas shall be inspected daily to insure that they are clean from trash. Also the following shall be inspected annually 30 days prior to October 1st of each year.
 - Pavement is in good repair.
 - Drainage will not run-off onto adjacent areas.
 - That they remain screened or walled to prevent off-site transport of trash.
 - That all lids are closed and/or awnings are in good repair to minimize direct precipitation.

F. Bio-Retentions and Vegetated Swales

Operational and maintenance needs include:

- Vegetation management to maintain adequate hydraulic functioning and to limit habitat for disease-carrying animals.
- Animal and vector control.
- Periodic sediment removal to optimize performance.
- Trash, debris, grass trimmings to at least 3” in height, leaf collection and removal to prevent obstruction.
- Removal of standing water, which may contribute to the development of aquatic plant communities or mosquito breeding areas.
- Preventive maintenance on sampling, flow measurement, and associated BMP equipment and structures.
- Erosion and structural maintenance to prevent the loss of soil and maintain the performance of all landscaping.

Inspection Frequency

The facility will be inspected and inspection visits will be completely documented:

- Once a month at a minimum.
- After every large storm (after every storm monitored or these storms with more than 0.50 inch of precipitation.)
- On a weekly basis during extended periods of wet weather.

Inspect if vegetation height is greater than 12”; if there is standing water; if debris are present or if sedimentation is occurring at the vegetation height; ensure that all landscaped areas have minimum of 80% coverage and that no animal burrows are present.

Aesthetic Maintenance

The following activities will be included in the aesthetic maintenance program:

- Weed Control. Weeds will be removed through mechanical means. Herbicide shall not be used since the chemicals may impact water quality.

Functional Maintenance

Functional maintenance has two components:

- Preventive maintenance
- Corrective maintenance

Preventive Maintenance

Preventive maintenance activities to be instituted:

- Trash and Debris: During each inspection and maintenance, trash and debris shall be removed in order to minimize runoff contamination and to prevent downstream inlet and outlet structures from becoming clogged and inoperable during storm events.
- Sediment Removal: Sediment accumulation, as part of the operation and maintenance program at of landscaped areas, will be monitored once a month during the dry season, after every large storm (0.50 inch) and monthly during the wet season. Sediment shall be removed immediately if it is visibly accumulated and interferes with drainage flow. and/or removing accumulated sediment to correct channeling or ponding. Characterization and Appropriate disposal of sediment shall comply with applicable local, county, state, or federal requirements.

- **Removal of Standing Water:** Standing water must be removed if it contributes to the development of aquatic plants or mosquito breeding areas. The most effective mosquito control program is one that eliminates potential breeding habitats.

**ATTACHMENT “A1”
INSPECTION & MAINTENANCE SCHEDULE**

PREVENTATIVE MAINTENANCE AND ROUTINE INSPECTION					
TYPE BMP	Routine Action	Measurement Indicator	Measurement Frequency	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Landscaping & irrigation	Proper irrigation & Fertilizer.	Less than 80% coverage	30 days prior to October 1st each year	Re-seed or Re-plant. Repair Irrigation system with-in 5-days.	All slopes and landscaped areas are to have a minimum coverage of 80%
Trash storage areas	Trash free and removal of silt		Daily inspection	Remove trash and silt Daily.	All trash storage areas to be free from trash and silt at all times
Roof drain	Trash free and removal of silt, sedimentation & Debris	Silt build up of more than 1” no trash	30 days prior to October 1st each year and weekly during rain season.	Remove all trash and silt and repair any damage to roof drains,	All Roof to be free from trash and silt and in good repair
Bio-filters	Trash free and removal of silt	Silt build up of more than 2” no trash, Exposed soils, dead vegetation, ponded water, and excessive vegetation (see TC-30)	30 days prior to October 1st each year and weekly during rain season	Remove trash and silt –repair and reseed exposed areas, maintain grass height so as not be shorter than 2” or higher than 5” remove all ponded water weekly inspections, (See TC-30)	All bio-filters to be free from trash and silt at all times, grass area to be free from exposed soil and maintained to proper height, ponding of water for more than 72 hours maintenance will be required

ATTACHMENT "B1"

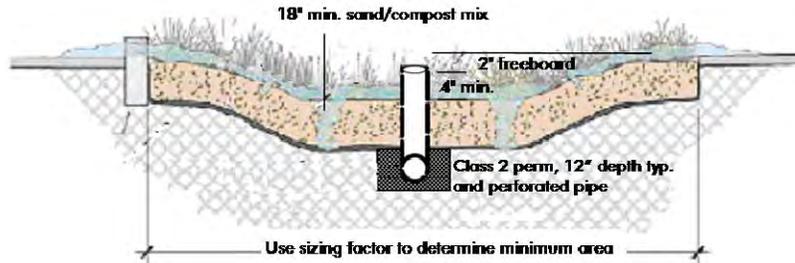
<u>Annual Estimate to Maintain all BMPs</u>	<u>Annual</u>	<u>10-Year</u>
<u>Landscaping & Bio-Retentions</u> Maintenance of landscaping and bio-retentions is already included in the property management responsibilities. Additional cost:	\$400	\$4,000
<u>Irrigation System:</u> Inspection and maintenance of the irrigation system is already included in the property management responsibilities, Additional cost:	\$100	\$1,000
<u>Roof Drains:</u> Roof drain inspection and maintenance is already included in the property management responsibilities.		
<u>Training:</u> Once a year & training of new employees within their first week of employment.	\$100	\$1,000
<u>Trash Storage Areas:</u> Inspection of trash storage area & maintenance to those areas is already included in the property management responsibilities. Additional cost:	\$50	\$500
<hr/> <hr/> Total Estimated Annual Cost to Maintain BMPs	\$650	\$6,500

ATTACHMENT "D1"

INSPECTION AND MAINTENANCE LOG				
BMP TYP & LOCATION	DATE M/D/Y	Name of Person Inspecting	Description of BMP Condition/ Description repair required if any	Date Repair made and Description repair made and by who

ATTACHMENT “E1”
BMP SPECIFICATIONS

Bioretention Facilities



Bioretention facility configured for treatment-only requirements. Bioretention facilities can be rectangular, linear, or nearly any shape.

Bioretention detains runoff in a surface reservoir, filters it through plant roots and a biologically active soil mix, and then infiltrates it into the ground. Where native soils are less permeable, an underdrain conveys treated runoff to storm drain or surface drainage.

Bioretention facilities can be configured in nearly any shape. When configured as linear swales, they can convey high flows while percolating and treating lower flows.

Bioretention facilities can be configured as in-ground or above-ground planter boxes, with the bottom open to allow infiltration to native soils underneath. If infiltration cannot be allowed, use the sizing factors and criteria for the Flow-Through Planter.

► CRITERIA

For development projects subject only to runoff treatment requirements, the following criteria apply:

Parameter	Criterion
Soil mix depth	18 inches minimum
Soil mix minimum percolation rate	5 inches per hour minimum sustained (10 inches per hour initial rate recommended)
Soil mix surface area	0.04 times tributary impervious area (or equivalent)

Best Uses

- Commercial areas
- Residential subdivisions
- Industrial developments
- Roadways
- Parking lots
- Fit in setbacks, medians, and other landscaped areas

Advantages

- Can be any shape
- Low maintenance
- Can be landscaped

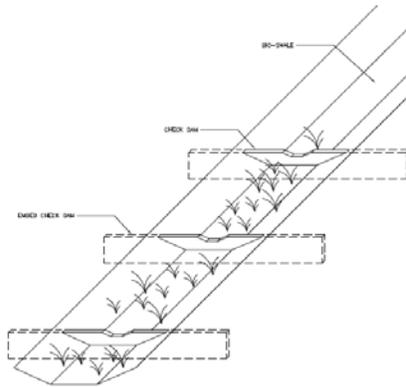
Limitations

- Require 4% of tributary impervious square footage
- Typically requires 3-4 feet of head
- Irrigation typically required

Parameter	Criterion
Surface reservoir depth	6 inches minimum; may be sloped to 4 inches where adjoining walkways.
Underdrain	Required in Group “C” and “D” soils. Perforated pipe embedded in gravel (“Class 2 permeable” recommended), connected to storm drain or other accepted discharge point.

► DETAILS

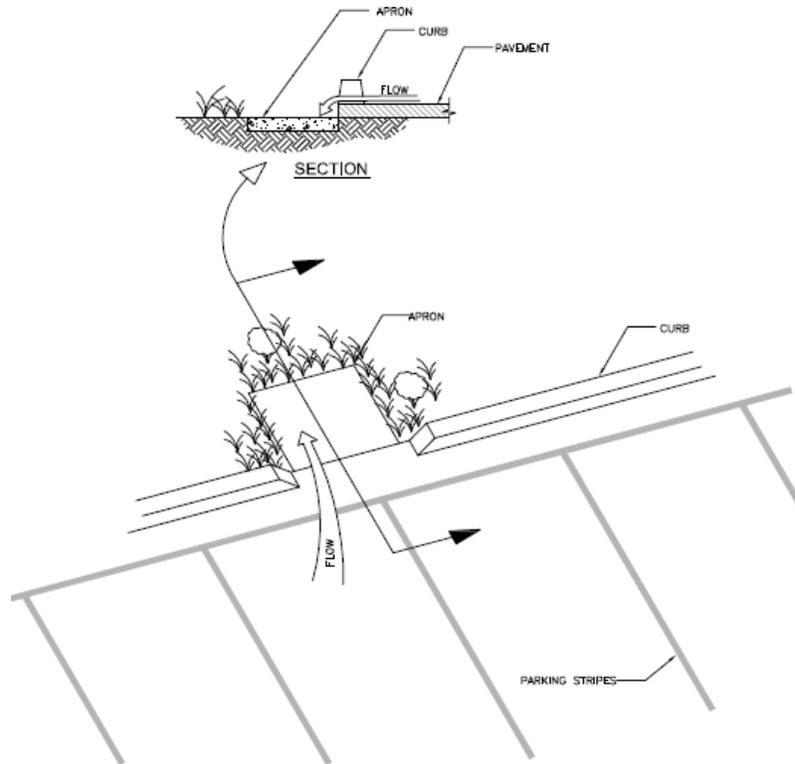
Plan. On the surface, a bioretention facility should be one level, shallow basin—or a series of basins. As runoff enters each basin, it should flood and fill throughout before runoff overflows to the outlet or to the next downstream basin. This will help prevent movement of surface mulch and soil mix.



Use check dams for linear bioretention facilities (swales) on a slope.

In a linear swale, check dams should be placed so that the lip of each dam is at least as high as the toe of the next upstream dam. A similar principle applies to bioretention facilities built as terraced roadway shoulders.

Inlets. Paved areas draining to the facility should be graded, and inlets should be placed, so that runoff remains as sheet flow or as dispersed as possible. Curb cuts should be wide (12" is recommended) to avoid clogging with leaves or debris. Allow for a minimum reveal of 4"-6" between the inlet and soil mix elevations to ensure turf or mulch buildup does not block the inlet. In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet.



Recommended design details for bioretention facility inlets (see text).

Where runoff is collected in pipes or gutters and conveyed to the facility, protect the landscaping from high-velocity flows with energy-dissipating rocks. In larger installations, provide cobble-lined channels to better distribute flows throughout the facility.

Upturned pipe outlets can be used to dissipate energy when runoff is piped from roofs and upgradient paved areas.

Soil mix. The required soil mix is similar to a loamy sand. It must maintain a minimum percolation rate of 5" per hour throughout the life of the facility, and it must be suitable for maintaining plant life. Typically, on-site soils will not be suitable due to clay content.

Storage and drainage layer. "Class 2 permeable," Caltrans specification 68-1.025, is recommended. Open-graded crushed rock, washed, may be used, but requires 4"-6" washed pea gravel be substituted at the top of the crushed rock gravel layers. Do not use filter fabric to separate the soil mix from the gravel drainage layer or the gravel drainage layer from the native soil.

Underdrains. No underdrain is required where native soils beneath the facility are Hydrologic Soil Group A or B. For treatment-only facilities where native soils are Group C or D, a

perforated pipe must be bedded in the gravel layer and must terminate at a storm drain or other approved discharge point.

Outlets. In treatment-only facilities, outlets must be set high enough to ensure the surface reservoir fills and the entire surface area of soil mix is flooded before the outlet elevation is reached. In swales, this can be achieved with appropriately placed check dams.

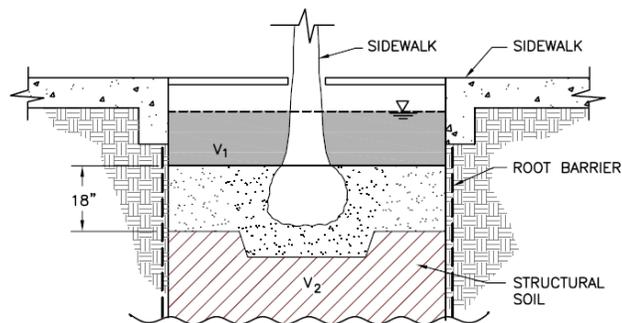
The outlet should be designed to exclude floating mulch and debris.

Vaults, utility boxes and light standards. It is best to locate utilities outside the bioretention facility—in adjacent walkways or in a separate area set aside for this purpose. If utility structures are to be placed within the facility, the locations should be anticipated and adjustments made to ensure the minimum bioretention surface area and volumes are achieved. Leaving the final locations to each individual utility can produce a haphazard, unaesthetic appearance and make the bioretention facility more difficult to maintain.

Emergency overflow. The site grading plan should anticipate extreme events and potential clogging of the overflow and route emergency overflows safely.

Trees. Bioretention areas can accommodate small or large trees. There is no need to subtract the area taken up by roots from the effective area of the facility. Extensive tree roots maintain soil permeability and help retain runoff. Normal maintenance of a bioretention facility should not affect tree lifespan.

The bioretention facility can be integrated with a tree pit of the required depth and filled with structural soil. If a root barrier is used, it can be located to allow tree roots to spread throughout the bioretention facility while protecting adjacent pavement. Locations and planting elevations should be selected to avoid blocking the facility's inlets and outlets.



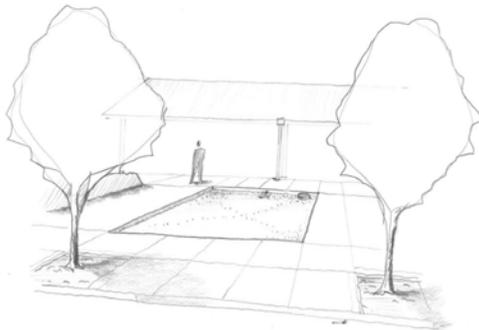
Bioretention facility configured as a tree well.
The root barrier is optional.

► APPLICATIONS

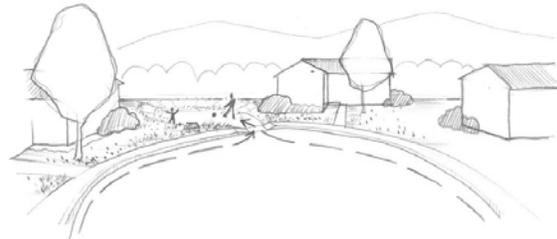
Multi-purpose landscaped areas. Bioretention facilities are easily adapted to serve multiple purposes. The loamy sand soil mix will support turf or a plant palette suitable to the location and a well-drained soil.

Example landscape treatments:

- Lawn with sloped transition to adjacent landscaping.
- Swale in setback area
- Swale in parking median
- Lawn with hardscaped edge treatment
- Decorative garden with formal or informal plantings
- Traffic island with low-maintenance landscaping
- Raised planter with seating
- Bioretention on a terraced slope



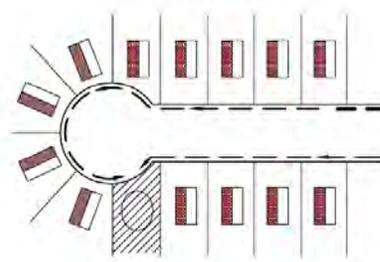
Bioretention facility configured as a recessed decorative lawn with hardscaped edge.



Bioretention facility configured and planted as a lawn/ play area.

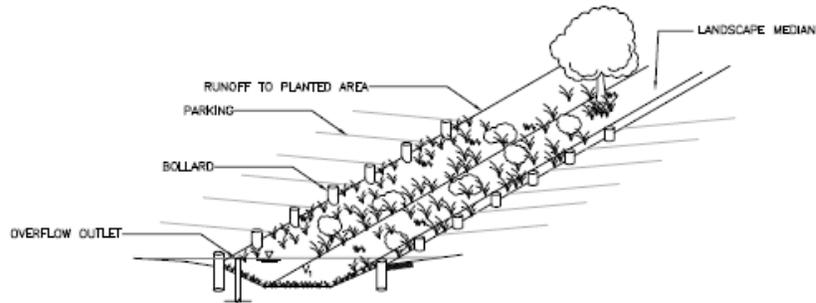
Residential subdivisions. Some subdivisions are designed to drain roofs and driveways to the streets (in the conventional manner) and then drain the streets to bioretention areas, with one bioretention area for each 1 to 6 lots, depending on subdivision layout and topography.

If allowed by the local jurisdiction, bioretention areas can be placed on a separate, dedicated parcel with joint ownership.



Bioretention facility receiving drainage from individual lots and the street in a residential subdivision.

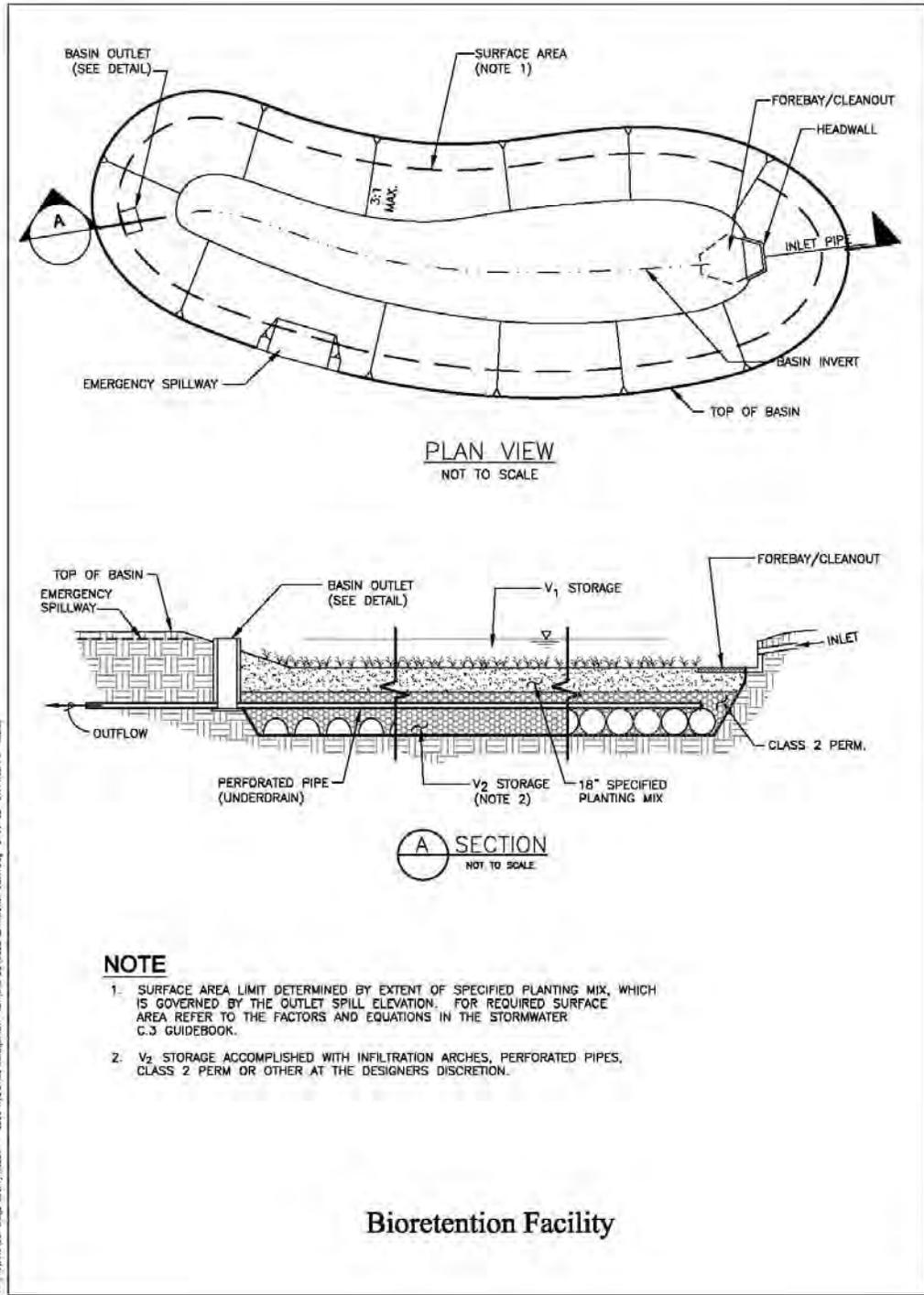
Sloped sites. Bioretention facilities must be constructed as a basin, or series of basins, with the circumference of each basin set level. It may be necessary to add curbs or low retaining walls.



Bioretention facility configured as a parking median. Note use of bollards in place of curbs, eliminating the need for curb cuts.

Design Checklist for Bioretention

- Volume or depth of surface reservoir meets or exceeds minimum.
- 18" depth "loamy sand" soil mix with minimum long-term percolation rate of 5"/hour.
- Area of soil mix meets or exceeds minimum.
- Perforated pipe underdrain bedded in "Class 2 perm" with connection and sufficient head to storm drain or discharge point (except in "A" or "B" soils).
- No filter fabric.
- Underdrain has a clean-out port consisting of a vertical, rigid, non-perforated PVC pipe, with a minimum diameter of 6 inches and a watertight cap.
- Location and footprint of facility are shown on site plan and landscaping plan.
- Bioretention area is designed as a basin (level edges) or a series of basins, and grading plan is consistent with these elevations. If facility is designed as a swale, check dams are set so the lip of each dam is at least as high as the toe of the next upstream dam.
- Inlets are 12" wide, have 4"-6" reveal and an apron or other provision to prevent blockage when vegetation grows in, and energy dissipation as needed.
- Overflow connected to a downstream storm drain or approved discharge point.
- Emergency spillage will be safely conveyed overland.
- Plantings are suitable to the climate and a well-drained soil.
- Irrigation system with connection to water supply.
- Vaults, utility boxes, and light standards are located outside the minimum soil mix surface area.
- When excavating, avoid smearing of the soils on bottom and side slopes. Minimize compaction of native soils and "rip" soils if clayey and/or compacted. Protect the area from construction site runoff.



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Landscape Maintenance

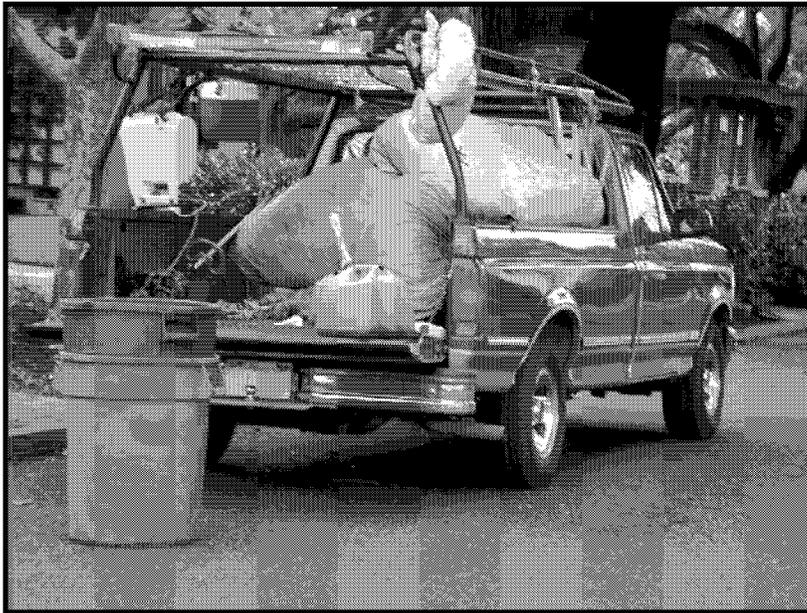


Photo Credit: Geoff Brosseau

Description

This category includes businesses that provide landscaping and landscape maintenance/gardening services.

Pollutant Sources

The following are sources of pollutants:

- Selecting plants or landscape design
- Installing new landscaping
- Maintaining landscapes
- Using pesticides and fertilizers
- Using gas-powered equipment
- Working near waterbodies

Pollutants can include:

- Nutrients (fertilizers, yard wastes)
- Pesticides
- Heavy metals (copper, lead, and zinc)
- Hydrocarbons (fuels, oils and grease)
- Sediments

Approach

Minimize the potential for stormwater pollution and the need for resources/controls (water, pesticides, fertilizers) by creating and maintaining landscapes in a way that is compatible with the local soils, climate, and amount of rain and sun. Make stormwater



Landscape Maintenance

pollution prevention BMPs a part of standard operating procedures and the employee training program. Provide employee education materials in the first language of employees, as necessary.

Source Control BMPs

The best management practices are listed by activity or area.

Landscape Design

- Specify native, low maintenance, and insectary (attract beneficial insects) plants and landscape designs.
- Design zoned, water-efficient irrigation systems using technologies such drip irrigation, soaker hoses, or microspray systems.
- Do not landscape riparian areas, except to remove non-native plants and replace them with native riparian landscaping.
- Replant with native species where possible when landscaping or building an ornamental pond. Do not assume something is native because you have seen it in your area. Contact the local nursery for information or visit the California Exotic Pest Plant Council website (www.caleppc.org).

Landscape Installation

- Protect stockpiles and landscaping materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Schedule grading and excavation projects during dry weather.
- Divert runoff from exposed soils or lower its velocity by leveling and terracing.
- Use temporary check dams or ditches to divert runoff away from storm drains.
- Protect storm drains with sandbags or other sediment controls.
- Revegetation is an excellent form of erosion control for any site. Keep soils covered with vegetation or temporary cover material (mulch) to control erosion.
- Check plant roots before buying a plant. Do not buy plants with roots that are kinked or circling around the container. Do not buy plants with soft, rotten, or deformed root crowns.
- Do not pile soil around the plant any higher than the root crown.

Landscape Maintenance

Yard Waste

- Allow leaf drop to become part of the mulch layer in tree, shrub, and groundcover areas.
- Keep lawn mower blades sharp and grasscycle.
- Grasscycle – leave grass clippings on the lawn when mowing. Once cut, grass clippings first dehydrate, then decompose, quickly disappearing from view. Proper mowing is required for successful grasscycling. Cut grass when the surface is dry, and keep mower blades sharp. Follow the "1/3 Rule": mow the lawn often enough so that no more than 1/3 of the length of the grass blade is cut in any one mowing. Frequent mowing will produce short clippings that will not cover up the grass surface. The lawn may have to be cut every seven days when the lawn is growing fast but only every 7 to 14 days when the lawn is growing slowly.

Landscape Maintenance

- Do not leave clippings on pavement or sidewalks where they can wash off into the street, gutter, or storm drain.
- Collect lawn and garden clippings, pruning waste, and tree trimmings. Chip if necessary, and compost or take to the local municipal yard waste recycling/composting facility.
- In communities with curbside pick-up of yard waste, place clippings and pruning waste at the curb in approved bags or containers. No curbside pickup of yard waste is available for commercial properties.
- Do not blow or rake leaves or other yard waste into the street, or place yard waste in gutters or on dirt shoulders, unless it is being piled up for recycling (allowed by some municipalities). After pick-up, sweep up any leaves, litter, or residue in gutters or on street.

Fertilizing and Pruning

- Perform soil analysis seasonally to determine actual fertilization need and application rates.
- Fertilize garden areas with a mulch of leaves, bark, or composted manure and/or garden waste.
- Apply chemical fertilizer only as needed, when plants can best use it, and when the potential for it being carried away by runoff is low. Make sure the fertilizer spreader is calibrated.
- Prune plants sparingly, if at all. A healthy plant – one that is native to the area and growing under the right conditions – should not need pruning, except when it is not in the right location (where safety or liability is a concern).

Watering

- Use soil probes to determine soil moisture depth, overall moisture levels, and the need to adjust irrigation schedules.

Pest and Weed Control

- Anyone who is in the business of landscape maintenance and performs pest control as part of providing that service must have a license from the state to apply pesticides. Contact the Department of Pesticide Regulation for more information.
- Become trained in and offer customers less-toxic pest control or Integrated Pest Management (IPM).
- The label on a pesticide container is a legal document. Use a pesticide only as instructed on the label.
- Store pesticides, fertilizers, and other chemicals indoors or in a shed or storage cabinet.
- Use pesticides sparingly, according to instructions on the label. Rinse empty containers, and use rinsewater as product.
- Dispose of rinsed, empty containers in the trash. Dispose of unused pesticides as hazardous waste.
- To control weeds, use drip irrigation and mulch. Hand-pull weeds including roots or cut down to ground. Repeat cutting before they flower, grow new leaves, or go to seed. Use herbicides containing pelargonic acid or herbicidal soap as a last resort.

Landscape Maintenance

Handling Gasoline

- Use only containers approved by a nationally recognized testing lab, such as Underwriters Laboratories (UL). Keep the container tightly sealed. Containers should be fitted with a spout to allow pouring without spilling and to minimize the generation of vapors.
- Fill cautiously. Always use a funnel and/or spout to prevent spilling or splashing when fueling power mowers, blowers, and all other gas-powered equipment.
- Avoid spilling gasoline on the ground, especially near wells. If a spill occurs use kitty litter, saw dust, or an absorbent towel to soak up the spill, then dispose of it properly.
- Store carefully. Gasoline moves quickly through soil and into groundwater, therefore, store and use gasoline and fuel equipment as far away from your drinking water well as possible. Be certain to keep a closed cap on the gasoline container. Store at ground level, not on a shelf to minimize the danger of falling and spilling.
- Do not dispose of gasoline down the drain, into surface water, onto the ground, or in the trash. Contact the local municipality for directions on proper disposal of excess or old gasoline. Transport old gas in an approved gasoline container.

Working Near Waterbodies

- Do not dump lawn clippings, other yard waste, or soil along creek banks or in creeks.
- Do not store stockpiles of materials (soil, mulch) along creek banks. These piles can erode over time into a creek.
- Do not spray pesticides or fertilizers by creeks.
- Do not over water near streams. The excess water may carry pesticides, fertilizers, sediments, and anything else in its path directly into the creek.
- Do not remove native vegetation along creek banks or remove large woody debris from creek banks or creeks. Instead, contact the local municipal planning department and Department of Fish & Game for guidance.

Treatment Control BMPs

Not applicable.

More Information

Bay Area Stormwater Management Agencies Association, 1999. Start at the Source – Design Guidance Manual for Stormwater Quality Protection. (<http://www.basmaa.org>).

Bay Area Water Pollution Prevention Agencies, 1998 - 2002. Less-Toxic Pest Management Fact Sheets, Less-Toxic Product List, and In-store display and promotion materials. (<http://www.basmaa.org>)

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California Integrated Waste Management Board, 1999. Grasscycle! Make the Most of Your Lawn. Make the Most of Your Time. (<http://www.ciwmb.ca.gov/organics/Pubs.htm>).

California Integrated Waste Management Board, 2001. Resource-Efficient Turf Management and Resource-Efficient Landscaping. (<http://www.ciwmb.ca.gov/organics/Pubs.htm>).

Contra Costa County, no date. Grasscycle! Clip your waste! (<http://grasscycle.abag.ca.gov>).

Landscape Maintenance

Marin County Stormwater Pollution Prevention Program, no date. Creek Care: A Guide for Urban Marin Residents. (<http://www.mcstoppp.org/>).

Professional Lawn Care Association of America, 1997. Water Quality and Your Lawn. (<http://www.pesp.org/1995/plcaa95-final.htm>).

San Francisquito Watershed Council and San Mateo Countywide Stormwater Pollution Prevention Program, no date. Streamside Planting Guide for San Mateo and Santa Clara County Streams. (<http://www.acterra.org/watershed/>)

The Alliance for Proper Gasoline Handling, 1999. Consumer Tips for Proper Gasoline Handling. (http://www.gas-care.org/consumer_tips.htm).

Videos

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CCCSO, 2001. The Healthy Home & Garden - Less-Toxic Pest Control (for residents). (<http://www.centraisan.org/education/ipm/hgonlineguide.html>).

References

Bay Area Stormwater Management Agencies Association, 1999. Start at the Source – Design Guidance Manual for Stormwater Quality Protection. (<http://www.basmaa.org>).

Bay Area Water Pollution Prevention Agencies, 1998 - 2002. Less-Toxic Pest Management Fact Sheets, Less-Toxic Product List, and In-store display and promotion materials. (<http://www.basmaa.org>)

California Integrated Waste Management Board, 1999. Grasscycle! Make the Most of Your Lawn. Make the Most of Your Time. (<http://www.ciwmb.ca.gov/organics/Pubs.htm>).

California Integrated Waste Management Board, 2001. Resource-Efficient Turf Management and Resource-Efficient Landscaping. (<http://www.ciwmb.ca.gov/organics/Pubs.htm>).

City of Bellevue, 1991. Water Quality Protection for Landscaping Businesses, Business Partners for Clean Water.

Contra Costa County, no date. Grasscycle! Clip your waste! (<http://grasscycle.abag.ca.gov>).

County of Los Angeles, no date. Landscaping and Nursery Facilities – Best Management Practices, Project Pollution Prevention.

Marin County Stormwater Pollution Prevention Program, no date. Creek Care: A Guide for Urban Marin Residents. (<http://www.mcstoppp.org/>).

Professional Lawn Care Association of America, 1997. Water Quality and Your Lawn. (<http://www.pesp.org/1995/plcaa95-final.htm>).

San Francisquito Watershed Council and San Mateo Countywide Stormwater Pollution Prevention Program, no date. Streamside Planting Guide for San Mateo and Santa Clara County Streams. (<http://www.acterra.org/watershed/>)

Santa Clara Valley Urban Runoff Pollution Prevention Program, 2001. Landscaping, Gardening, and Pool Maintenance – Best Management Practices for the Construction Industry.

The Alliance for Proper Gasoline Handling, 1999. Consumer Tips for Proper Gasoline Handling. (http://www.gas-care.org/consumer_tips.htm).



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.



- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
 - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
 - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
 - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
 - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of “redevelopment” must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under “designing new installations” above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey



- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of “redevelopment” must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under “designing new installations” above should be followed.

Additional Information***Maintenance Considerations***

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Clean Water is Important to All of Us!



When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance "storm drain" system.

Did you know that storm drains are **NOT** connected to sanitary sewer systems and treatment plants?

The storm drain system is designed to prevent flooding by transporting water away from developed areas.

However, this water is not filtered or treated, and all the contaminants it contains eventually flow to our streams, lakes, and ocean where we swim and fish.

Once there, polluted runoff can harm wildlife and habitats. In some cases, it can even cause beach closures or make fish and shellfish unsafe to eat.

Why do we need Clean Water?

Clean water is essential for every aspect of life. In addition to sustaining our local water resources it ensures economic growth and prosperity. Population growth has impacted water quality and placed increasing pressure on supplies. Controlling pollution is critical to preserving our aquatic resources and the economic viability of this region.



How you can help keep our water clean...

Residents of San Diego County can make a difference. Becoming aware of ways to prevent stormwater pollution is the first step toward



County of San Diego, Watershed Protection Program
 Stormwater HOTLINE: (888) 846-0800

We All Live Downstream!

We All Live Downstream!

Easy Steps to Clean Water

Sweep or Rake

Conserve water.

Do not use a hose to wash off sidewalks, driveways, and patios. Sweep up debris and put it in a trash can. Rake up yard waste to compost or recycle.



Reduce the Use of Landscape Chemicals

Decrease the use of lawn and garden care products such as pesticides, weed killers, and chemical fertilizers. Consider using non-toxic pest control methods. Avoid over watering which may wash these products into the gutter and storm drains.



Buy Non-Toxic Products

When possible, use non-toxic products for household cleaning. If you must use a toxic cleaning product, buy small quantities, use it sparingly, and properly dispose of unused portions. For the Household Hazardous Waste collection facility nearest you, call 1-800 CLEANUP 1(800) 253-2687.



Recycle Used Motor Oil and Earn \$\$

Certified used oil collection centers will pay a few cents per gallon for used oil. Collect used oil in sealed containers and take it to a certified center. For the certified center nearest you, call 1-800 CLEANUP 1(800) 253-2687.



For more information on how you can prevent the pollution of our creeks, rivers, lakes, and ocean or to report a problem, please call the **Stormwater HOTLINE at (888) 846-0800** or visit www.projectcleanwater.org.

Dispose of Yard Waste Frequently

By disposing of grass, leaves, shrubs, and other organic matter more frequently — less will wash into storm drains. Request a green waste bin from your trash hauler, or compost your yard waste.



Clean up After Your Pets

Take a bag when you walk your pets and always clean up after them. Flush pet waste down the toilet or dispose of it in a sealed plastic bag and throw it in the trash.



Care for Your Vehicles

Change your oil routinely. Fix fluid leaks immediately. Keep your vehicles tuned-up. Wash your vehicle at home on an unpaved area, such as lawn or gravel. Use very little soap. Pour remaining soapy water to an indoor sink or toilet. Conserve water by using a shut-off nozzle. Consider using a car wash designed to collect the wash water.



WHAT IS STORMWATER POLLUTION?

When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance ("storm drain") system. This system is designed to prevent flooding by transporting water away from developed areas.



However, this water is not filtered or treated, and all the contaminants it contains eventually flow to our streams, lakes, and ocean where we swim and fish.

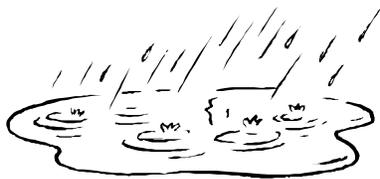


Once there, polluted runoff can harm wildlife and habitats. In some cases, it can even cause beach closures or make fish and shellfish unsafe to eat.

Wastes from yard work are among the many common stormwater pollutants that can degrade water quality. Other examples include paint, oil and automotive fluids, construction debris, pet waste, litter, pool chemicals, and dirty wash water.



ONLY RAIN IN THE STORM DRAIN



HOW DOES YARD WORK POLLUTE STORMWATER?



What you do in the yard can directly impact the quality of our local waters. When soil, organic wastes, and chemicals leave your yard, they flow directly into streams, lakes, and the ocean where they can harm human health and the environment.

OVERWATERING

Over watering washes fertilizers, pesticides, and herbicides into storm drains. In your yard these chemicals kill garden invaders, but when washed into local waters they poison fish and contaminate water.



CHEMICALS The "chemical only" approach to pest control often causes more problems than it solves. Over 90% of the insects in your lawn and garden are not harmful. Many gardeners use pesticides, herbicides, and fertilizers at over 20 times the rate necessary, greatly increasing polluted runoff.



ORGANIC WASTES

Grass clippings, leaves, and tree trimmings swept or blown into streets and gutters carry chemicals into our waterways and can clog catch basins, increasing the risk of flooding. Once they settle into water bodies, these materials begin to decompose, absorbing oxygen fish need to survive.



SEDIMENT Soil and dirt washed from yards can also harm aquatic life by clogging the gills of fish, blocking light transmission, lowering water temperatures, and inhibiting photosynthesis.

WHAT CAN I DO?



Here are some things you can do to keep contaminants out of runoff.

GENERAL LANDSCAPING TIPS

1. Schedule big projects for dry weather.
2. Store stockpiles under plastic tarps to protect them from wind and rain.
3. Store pesticides, fertilizers and other chemicals in a covered area.
4. Use plants that require less water.
5. Prevent erosion by planting fast-growing grasses to shield and bind the soil.

LAWN and GARDEN MAINTENANCE

1. Don't overwater. Use drip irrigation, soaker hoses, or micro-spray systems.
2. Use curbside yard waste recycling or take clippings to a landfill for composting.
3. Don't blow or rake leaves into the street or gutter. Avoid hosing down the pavement.
4. Don't overfertilize or apply chemicals near ditches, streams, or water bodies.

CHEMICAL ALTERNATIVES

1. Don't kill insects that aren't harmful.
2. Use less toxic products, for example dehydrating dusts (such as silica gel), insecticidal soaps, boric acid powder, horticultural oils, pyrethrin-based insecticides, bacterial insecticides, and organic or non-toxic fertilizers.
3. Use predatory insects when possible.
4. If you must use a pesticide, use one that is specifically designed to control your pest (listed on the label). Always read the label and use only as directed.

REFERRAL NUMBERS



For more information on stormwater management

(888) 846-0800



For information on recycling, composting and household toxics

**(877) R-1 Earth
(877) 713-2784**



To schedule a presentation for your community group or organization

(888) 846-0800



For residential gardening tips or questions please contact the Master Gardener Program

(858) 694-2860



For a daily update on beach and bay closures

(619) 338-2073



project clean water

"clean water through local commitment and action"

Call us for more information:

(888) 846-0800

or visit us at our web site:

www.sdcdpw.org

or

www.projectcleanwater.org



It's against the law to pollute stormwater.

County Code §67.805 prohibits the discharge of anything but rainwater to the stormwater conveyance system or receiving waters.

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06/03

STORMWATER POLLUTION PREVENTION

YARD WORK



LANDSCAPING
GARDENING
PEST CONTROL

County of San Diego
Watershed Protection Program



WHAT IS STORMWATER POLLUTION?

When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance ("storm drain") system. This system is designed to prevent flooding by transporting water away from developed areas.



However, this water is not filtered or treated, and all the contaminants it contains eventually flow to our streams, lakes, and ocean where we swim and fish.

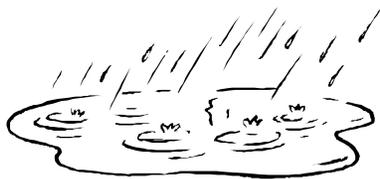


Once there, polluted runoff can harm wildlife and habitats. In some cases, it can even cause beach closures or make fish and shellfish unsafe to eat.

Pet wastes are among the many common stormwater pollutants that can degrade water quality. Other examples include paint, oil and automotive fluids, construction debris, yard wastes, pesticides, litter, pool chemicals, and dirty wash water.



ONLY RAIN IN THE STORM DRAIN



WHY IS IT SO IMPORTANT TO PICK UP AFTER YOUR PET?



During rainfall, pet waste left on lawns, beaches, trails and sidewalks washes into storm drains.

These wastes and the pathogens they contain (bacteria, parasites, and viruses) end up flowing directly into streams, lakes and the ocean where they can harm human health and the environment.



As they decompose, pet wastes demand a high level of oxygen from water. This demand can kill fish and plant life by reducing the amount of dissolved oxygen available to them.



Recent studies have shown dogs and cats are sources of fecal contamination at local beaches.

In addition to causing beach closures, this contamination can make people sick with sore throats, intestinal problems, rashes, nausea, and eye and ear infections.



County Code §67.805 prohibits the discharge of anything but rainwater to the stormwater conveyance system or receiving waters.

WHAT CAN I DO?



The next time you're caught outside in the rain, take a look at what's running off the street, into the gutters, and down storm drain inlets.

Clean up pet waste in your yard on a regular basis, to prevent polluted runoff.

Carry a bag or "scooper" when you take your pet on walks, to the park or other public places. Be prepared and clean up the pet waste.



Do your part to help keep our water clean!

PICK UP AFTER YOUR PET!

It's as easy as 1-2-3



1. **Bring a bag**



2. **Clean it up**



3. **Dispose of it properly (toilet or trash)**

REFERRAL NUMBERS



For more information on stormwater management

(888) 846-0800



To reach the County Department of Environmental Health

(619) 338-2222



For information on recycling, composting and household toxics

**(877)-R-1 Earth
(877) 713-2784**



To schedule a presentation for your community group or organization

(888) 846-0800



For a daily update on beach and bay closures

(619) 338-2073



"clean water through local commitment and action"

Call us for more information:

(888) 846-0800

Or visit us at our web site:

www.sdcdpw.org

or

www.projectcleanwater.org

For pet licensing information, visit the

Department of Animal Services
web site:

www.sddac.com



*Small changes
reduce pollution.*

Printed on recycled paper

08/03

STORMWATER POLLUTION PREVENTION

PET WASTE



County of San Diego
Watershed Protection Program



Trash Can and Street Sweeping Facts:

- ✓ Street sweepers regularly clean your neighborhood streets of trash, dirt, and leaves as part of El Cajon’s Storm Water Pollution Prevention Program. Keeping litter and debris out of the storm drains, streams and the ocean is the purpose of the city’s street sweeping program.
- ✓ The sweepers cannot sweep the streets and gutters if there are trash cans or other objects in the way. You can help us be effective in keeping your neighborhood clean by moving your vehicles and removing trash cans from the curbside or street during the hours your street is swept.
- ✓ The El Cajon Municipal Code requires that trash cans not be placed curbside prior to four p.m. on the day prior to the collection and that they be removed from the curb prior to noon on the day following the collection.
- ✓ Although street sweepers do NOT clean streets that do NOT have curbs and gutters, citizens are encouraged to help keep our streets clean by removing trash, soil and debris.

What You Can Do To Help Sweep Our Streets!

DOs	DON'Ts
DO move your trash can, car, boat or RV to allow cleaning at the curb & gutter.	DON'T place large trash items, i.e. tree branches, wood, tires, etc. in the sweeper path that can damage the sweeper.
DO remove any and all obstructions from the curb and gutter, i.e., cans, bicycles, skateboards, etc. before sweepers arrive.	DON'T sweep litter into the storm drain catch basins and inlets.
DO place all litter/garbage in the proper trash and recycling containers.	DON'T allow your gardener to blow trash & debris from your property into the streets. Instead REQUIRE proper disposal & place in Yard Waste Containers.
DO place garbage cans and recycling containers on the curb, not in the gutter/street.	DON'T place large leaf piles at the curb.
DO tell your neighbors to support street cleaning by observing the DOs and DON'Ts.	

What's New In Street Sweeping, and How Street Sweeping Keeps Our Water Clean

The City has purchased new **Elgin Crosswind Street Sweepers**. The Elgin Crosswind is a regenerative type (vacuum) sweeper and uses an airflow system that recirculates and filters air used to carry debris to the internal hopper. A minimum amount of dust is returned to the environment through a dust suppression system that has been tested and certified to collect and retain particles ten microns in diameter or larger. Ten microns is approximately one-seventh the thickness of a human hair.



The Elgin Crosswind recirculating vacuum sweeper efficiently cleans our City streets and provides two primary benefits to the City. The more obvious benefit is the collection and removal of paper, leaves, and other visible debris that collect in gutters and on the streets. In addition to being unsightly, this debris can block catch basins and other storm

water facilities, causing localized flooding during heavy rains. An equally important but less visible benefit is the removal of minute metal particles and other hazardous waste products left by cars and trucks. Although they are virtually invisible, these particles can be extremely harmful to fish and other wildlife if they reach creeks, rivers, and eventually the ocean.



Street Cleaning is an integral part of street maintenance and helps the City meet the Clean Water and National Pollution Discharge Elimination System standards set by Federal, State and City laws. Street cleaning is a multi-purpose operation with three primary objectives:

1. Prevent leaves, debris and litter from clogging the storm drain system.
2. Reduce the amount of pollutants that get into storm water runoff and pollute our storm drains, waterways and the ocean.
3. Provide a clean, aesthetically pleasing appearance to City neighborhoods.

The Environmental Protection Agency has named sweeping as one of the "best management practices" to help improve the quality of storm water runoff. The City's new sweepers will help us meet and exceed future EPA regulations.

Street sweeping is an effective method of removing both large and microscopic pollutants that collect on city streets and is paid for through the El Cajon Pollution Prevention Program.

For more information about street cleaning in your neighborhood, call the Public Works Department at (619) 441-1653.

Clean Business Program Fact Sheet

VEHICLE AND EQUIPMENT WASHING AND CLEANING

You are responsible to wash or clean vehicles and equipment (machinery, air filters, grease traps, etc.) properly to avoid contributing pollutants to runoff.

WHY IS WASHING AND CLEANING A CONCERN?

Your facility can contribute contaminants to runoff if waste water from equipment and vehicle cleaning is rinsed onto parking lots or into gutters or storm drains. Improperly stored contaminated rags may also result in an illegal discharge.

WHAT CAN I DO?

PREVENT POLLUTED RUNOFF BY:

- Implementing Best Management Practices (BMPs) as listed below
- Training employees on BMPs, good housekeeping practices & spill response

BEST MANAGEMENT PRACTICES

- If possible use off-site commercial washing and steam cleaning.
- Use designated wash areas, preferably covered, to prevent contact with stormwater. berm wash areas or use other measures to contain waste water.
- Use alternative washing and cleaning methods to reduce the potential for non-stormwater discharges. If possible, use "dry" cleaning methods, such as wiping down, rather than hosing vehicles or equipment.
- Never discharge wastewater to the storm drain. Discharge it to the sanitary sewer after contacting your local sewerage agency to find out if pre-treatment is required.
- Properly contain and dispose of cleanup materials (rags, towels, absorbent materials, etc.)
- Clean up spills immediately to minimize safety hazards and prevent discharge to the storm drain system.
- Train all employees. Your success depends on a well-trained staff.

ATTACHMENT G

Treatment Control BMP Certification for DPW Permitted Land Development Projects

After TCBMP construction, complete a TCBMP Certification form to verify with County staff that all constructed TCBMPs on the record plans match the approved TCBMPs in the most current SWMP. TCBMP Certification must be completed and verified for permit closure.



County of San Diego

DEPARTMENT OF PUBLIC WORKS

Treatment Control BMP Certification for DPW Permitted Land Development Projects

Permit Number _____ SWMP # _____

Project Name _____

Location / Address _____

Responsible Party for Construction Phase

Developer's Name: _____

Address: _____

City _____ State _____ Zip _____

Email Address: _____

Phone Number: _____

Engineer of Work: _____

Engineer's Phone Number: _____

Responsible Party for Perpetual Maintenance

Owner's Name(s)* _____

Address: _____

City _____ State _____ Zip _____

Email Address: _____

Phone Number: _____

* Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information of president at time of project closeout.

Maintenance Agreement No.: _____

Percent Impervious Before Construction: % _____

Percent Impervious After Construction: % _____

Proposed Disturbed Area: _____ Acres

Hydromodification Management:

Yes or No

Primary or Secondary Pollutants of Concerns (*check all that apply*)

- | | |
|--|---|
| <input type="checkbox"/> Sediment | <input type="checkbox"/> Nutrients |
| <input type="checkbox"/> Organic Compounds | <input type="checkbox"/> Trash and Debris |
| <input type="checkbox"/> Oxygen Demanding Substances | <input type="checkbox"/> Oil and Grease |
| <input type="checkbox"/> Bacteria and Viruses | <input type="checkbox"/> Pesticides |

Site Layout Strategies (*check all that apply*)

- | | |
|--|--|
| <input type="checkbox"/> Conserve Natural Areas | <input type="checkbox"/> Minimize Disturbance to Natural Areas |
| <input type="checkbox"/> Minimize and Disconnect Imp. Surfaces | <input type="checkbox"/> Minimize Soil Compaction |
| <input type="checkbox"/> Minimize erosion from slopes | |

Disperse Runoff from Impervious Surfaces to Pervious (*check all that apply*)

- | | |
|---|--|
| <input type="checkbox"/> Use of pervious surfaces | <input type="checkbox"/> Street and Road Design |
| <input type="checkbox"/> Parking Lot Design | <input type="checkbox"/> Driveway, Sidewalk, Bikepath Design |
| <input type="checkbox"/> Building Design | <input type="checkbox"/> Landscape Design |

Source BMPs (*check all that apply*)

- | | |
|--|---|
| <input type="checkbox"/> Storm Drain Inlets | <input type="checkbox"/> Interior Floor Drains |
| <input type="checkbox"/> Interior Parking Garages | <input type="checkbox"/> Indoor & Structural Pest Control |
| <input type="checkbox"/> Landscape/Outdoor Pesticide Use | <input type="checkbox"/> Pools, spas, etc. |
| <input type="checkbox"/> Food Service | <input type="checkbox"/> Refuse Areas |
| <input type="checkbox"/> Industrial Processes | <input type="checkbox"/> Outdoor Storage of Equipment and Materials |
| <input type="checkbox"/> Vehicle and Equipment Cleaning | <input type="checkbox"/> Vehicle/ Equipment Repair and Maintenance |
| <input type="checkbox"/> Fuel Dispensing Areas | <input type="checkbox"/> Loading Docks |
| <input type="checkbox"/> Fire Sprinkler Test Water | <input type="checkbox"/> Misc. drain or wash water |
| <input type="checkbox"/> Plazas, sidewalks, and parking lots | |

Treatment Control, Hydromodification and LID BMPs

BMP Identifier: (Identifier to match TCBMPs on TCBMP Table.)	Type	Record Plan Page for TCBMP	BMP Pollutant of Concern Efficiency (H,M,L)

(Add sheet for all additional BMPs)

The Maintenance Agreement has been recorded. Yes or No

I certify that the above items for this project are in substantial conformance with the approved plans. Yes or No

Please sign your name and seal.

[SEAL]

Engineer's Print Name: _____

Engineer's Signed Name: _____

Date: _____

Submittals Required with Certification:

- Copy of the final approved SWMP.
- Copy of the approved record plan showing Stormwater TCBMP Table and the location of each verified as-built TCBMP.
- Copy of the specification sheets for the verified proprietary TCBMPs
- Recorded Maintenance Agreement (Category 1 or 2 only)
- Photograph(s) of TCBMP(s)

COUNTY - OFFICIAL USE ONLY:

For PDCI:

PDCI Inspector: _____

Date Project has/expects to close: _____

Date Certification received from EOW: _____

DPW Inspector concurs that every noted BMP on the plan and the SWMP or SWMP Addendum is installed onsite through field verification and completed as certified: Yes
or No

PDCI Inspector's Signed Name: _____ Date: _____

FOR WPP:

Date Received from PDCI: _____

WPP Submittal Reviewer: _____

WPP Reviewer concurs that the provided TC-BMP information is acceptable to enter into the TC-BMP Maintenance verification inventory. Yes or No

WPP Reviewer's Signed Name: _____ Date: _____

ATTACHMENT H

HMP Study

(Contact County staff to determine if this should be a separate report from the Major SWMP)

ATTACHMENT I

Geomorphic Assessment

(Contact County staff immediately if you are planning to conduct a Geomorphic Assessment. A Geomorphic Assessment must be performed if the project is using a “Medium” low flow threshold of $0.3Q_2$ or a “High” low flow threshold of $0.5Q_2$.)

ATTACHMENT J

HMP Exemption Documentation (if applicable)

ATTACHMENT K

Addendum