Storm Water Management Plan For Priority Projects (Major SWMP)

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 Name:	Frances Knoll Subdivision
Permit Number (Land Development Projects):	TM 5482 RPL 1
Work Authorization Number **(CIP only)**:	
Applicant:	Spinali Family Trust
Applicant's Address:	1858 Hillsdale Road
Plan Prepare By (*Leave blank if same as applicant*):	Lintvedt, McColl and Associates
Date:	October 14, 2009
Revision Date (If applicable):	

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9424) 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
	YES	NO	
	X		October 1, 2009

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.

PROJECT DESCRIPTION

Please provide a brief description of the project in the following box. Please include:

- Project Location
- Project Description
- Physical Features (Topography)
- Surrounding Land Use
- Proposed Project Land Use
- Location of dry weather flows (year-round flows in streams, or creeks) within project limits, if applicable.

The project is located on the north side of Hillsdale Road in the County of San Diego. The project is approximately 400' west of the intersection of Vista Grande and Hillsdale Road.

The project's site is 4.0 acres in size. It consists of 2 parcels. The development proposes to subdivide the 2 parcels into 5 single-family lots with a private road and an open space lot. The single-family lots will have a minimum area of one half acre.

The majority of the land is undeveloped. There is an existing house located at the front of the property. Drainage from the site is separated by a ridge with approximately 30% of the site flowing to the east and 70% flowing to the west in sheet flow patterns. The slope of the land that drains to the west is generally mild ranging from 3% to 10%, whereas the slope of the land that drains to the east range from 5% to 20%. The land has scattered vegetation. Both sub-basins ultimately drain to a concrete-lined open channel at the easterly side of Valhalla High School approximately 1200 feet downstream.

There is an elementary school to the north and a mobile home park to the west. There are residential homes to the east and south of the property.

The source of dry weather flows within the project limits is irrigation of vegetation. There are no known streams or creeks within the site.

PRIORITY DEVELOPMENT PROJECT DETERMINATION

Please check the box that best describes the project. Does the project meet one of the following criteria?

Table 1

PRIORITY DEVELOPMENT PROJECT	YES	NO
Redevelopment that creates or adds at least 5,000 net square feet of additional impervious surface area	X	
Residential development of more than 10 units		X
Commercial developments with a land area for development of greater than 1 acre		X
Heavy industrial development with a land area for development of greater than 1 acre		X
Automotive repair shop(s)		X
Restaurants, where the land area for development is greater than 5,000 square feet		X
Hillside development, in an area with known erosive soil conditions, where there will be grading on any natural slope that is twenty-five percent or greater, if the development creates 5,000 square feet or more of impervious surface		X
Environmentally Sensitive Areas (ESA): 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.		X
Parking Lots 5,000 square feet or more or with 15 parking spaces or more and potentially exposed to urban runoff		X
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater	X	
Retail Gasoline Outlets (RGO) that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.		X

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered Priority Development Projects. Parking lots, buildings and other structures associated with utility projects are subject to the WPO requirements if one or more of the criteria above are met.

If you answered **NO** to all the questions, then **STOP**. Please complete a Minor SWMP for your project.
If you answered **YES** to any of the questions, please continue.

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management issues.

Table 2

	QUESTIONS	YES	NO	Information
1.	Will the proposed project disturb 50 or more acres of land? (Including all phases of development)		X	If YES, continue to 2. If NO, go to 6.
2.	Would the project site discharge directly into channels that are concrete-lined or significantly hardened such as with riprap, sackcrete, etc, downstream to their outfall into bays or the ocean?			If NO, continue to 3. If YES, go to 6.
3.	Would the project site discharge directly into underground storm drains discharging directly to bays or the ocean?			If NO, continue to 4. If YES, go to 6.
4.	Would the project site discharge directly to a channel (lined or un-lined) and the combined impervious surfaces downstream from the project site to discharge at the ocean or bay are 70% or greater?			If NO, continue to 5. If YES, go to 6.
5.	Project is required to manage hydromodification impacts.			Hydromodification Management Required as described in Section 67.812 b(4) of the WPO.
6.	Project is not required to manage hydromodification impacts.	X		Hydromodification Exempt. Keep on file.

An exemption is potentially available for projects that are required (No. 5. in Table 2 above) to manage hydromodification impacts: The project proponent may conduct an independent geomorphic study to determine the project's full hydromodification impact. The study must incorporate sediment transport modeling across the range of geomorphically-significant flows and demonstrate to the County's satisfaction that the project flows and sediment reductions will not detrimentally affect the receiving water to qualify for the exemption.

STORMWATER QUALITY DETERMINATION

The following questions provide a guide to collecting information relevant to project stormwater quality issues. Please provide the following information in a printed report accompanying this form.

Table 3

	QUESTIONS	COMPLETED	NA
1.	Describe the topography of the project area.	X	
2.	Describe the local land use within the project area and adjacent areas.	X	
3.	Evaluate the presence of dry weather flow.	X	
4.	Determine the receiving waters that may be affected by the project throughout all phases of development through completion (i.e., construction, long-term maintenance and operation).	X	
5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	X	
6.	Determine if there are any High Risk Areas (which is defined by the presence of municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limits.	X	
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.	X	
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	X	
9.	Determine the soil classification, permeability, erodibility, and depth to groundwater for Treatment BMP consideration.	X	
10.	Determine contaminated or hazardous soils within the project area.	X	
11.	Determine if this project is within the environmentally sensitive areas as defined on the maps in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects.*	X	
12.	Determine if this is an emergency project.	X	

Answers to Stormwater quality determination:

1. The majority of the land is undeveloped. There is an existing house located at the front of the property. Drainage from the site is separated by a ridge with approximately 30% of the site flowing to the east and 70% flowing to the west in sheet flow patterns. The slope of the land that drains to the west is generally mild ranging from 3% to 10%, whereas the slope of the land that drains to the east range from 5% to 20%. The land has scattered vegetation. Both sub-basins ultimately drain to a concrete-lined open channel at the easterly side of Valhalla High School approximately 1200 feet downstream.

2. The site is 4.0 acres in area. The land is composed of 2 parcels. The parcel closest to Hillsdale Road has an existing house that will be demolished. The development proposes 5 single-family lots with half-acre minimum area, an open space lot and a private road. There is an elementary school to the north and a mobile home park to the west. There are residential homes to the east and south of the property

3. Dry weather flows consist of flows from irrigation of vegetation.

4. The project is located in the Hillsdale HAS (909.22) of the Sweetwater Watershed 909.00. The receiving water body is San Diego Bay and is located approximately 15 miles westerly of the project.

5. There are no 303(d) impaired water and no Regional Board Special requirements within the project limits.

6. There are no High Risk Areas within the project limits.

7. There are no Regional Board Special requirements within the project limits.

8. The climate in the San Diego County is characterized by temperatures ranging from 50 degree F to 70 degree F except during the late summer and early fall where it reaches 100 degree F or higher. The annual precipitation in the San Diego County is less than 12 inches. Rainfall usually occurs during the months of December to March.

9. There is no soils report available at this stage of permit processing. The soil classification and permeability of the soil will be taken into account in the use of pervious pavement in the private road and driveways during final engineering.

10. There are no contaminated or hazardous soils within the project area.

11. The project is not within an environmentally sensitive area.

12. This is not an emergency project.

WATERSHED

Please check the watershed(s) for the project.

☐ San Juan 901	☐ Santa Margarita 902	☐ San Luis Rey 903	☐ Carlsbad 904
☐ San Dieguito 905	☐ Penasquitos 906	☒ San Diego 907	☒ Sweetwater 909
☐ Otay 910	☐ Tijuana 911	☐ Whitewater 719	☐ Clark 720
☐ West Salton 721	☐ Anza Borrego 722	☐ Imperial 723	

Please provide the hydrologic sub-area and number(s)

Number	Name
909.22	Hillsdale HSA

Please provide the beneficial uses for Inland Surface Waters and Ground Waters. Beneficial Uses can be obtained from the Water Quality Control Plan for the San Diego Basin, which is available at the Regional Board office or at http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

SURFACE WATERS	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Inland Surface Waters	7.12	O		X					X	X		X		X	X	
Ground Waters	7.12	X	X	X	X											

*** Excepted from Municipal**

X Existing Beneficial Use
0 Potential Beneficial Use

POLLUTANTS OF CONCERN

Using Table 4, 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 4. Anticipated and Potential Pollutants Generated by Land Use Type

General Pollutant Categories									
PDP Categories	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 ft2	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		

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.

Note: If other monitoring data that is relevant to the project is available. Please include as Attachment C.
The pollutants of concern are highlighted in blue above.

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.

- ☒ Silt Fence
- ☒ Fiber Rolls
- ☒ Street Sweeping and Vacuuming
- ☒ Storm Drain Inlet Protection
- ☒ Stockpile Management
- ☒ Solid Waste Management
- ☒ Stabilized Construction Entrance/Exit
- ☐ Dewatering Operations
- ☐ Vehicle and Equipment Maintenance
- ☐ Desilting Basin
- ☒ Gravel Bag Berm
- ☒ Sandbag Barrier
- ☒ Material Delivery and Storage
- ☒ Spill Prevention and Control
- ☒ Concrete Waste Management
- ☒ Water Conservation Practices
- ☒ Paving and Grinding Operations

☒ 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.

Table 5

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.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqt mdls.pdf		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?			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?			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?			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.			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 shows to the County official's satisfaction that advanced treatment is not required

Now that the need for treatment BMPs has been determined, other information is needed to complete the SWMP.

SITE DESIGN

To minimize stormwater impacts, site design measures must be addressed. The following checklist provides options for avoiding or reducing potential impacts during project planning. If YES is checked, it is assumed that the measure was used for this project.

Table 6

		OPTIONS	YES	NO	N/A
1.		Has the project been located and road improvements aligned to avoid or minimize impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?		X	
2.		Is the project designed to minimize impervious footprint?	X		
3.		Is the project conserving natural areas where feasible?		X	
4.		Where landscape is proposed, are rooftops, impervious sidewalks, walkways, trails and patios be drained into adjacent landscaping?	X		
5.		For roadway projects, are structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?			X
6.		Can any of the following methods be utilized to minimize erosion from slopes:			
	6.a.	Disturbing existing slopes only when necessary?	X		
	6.b.	Minimize cut and fill areas to reduce slope lengths?	X		
	6.c.	Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?		X	
	6.d.	Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?		X	
	6.e.	Rounding and shaping slopes to reduce concentrated flow?		X	
	6.f.	Collecting concentrated flows in stabilized drains and channels?	X		

LOW IMPACT DEVELOPMENT (LID)

Each numbered item below is a LID requirement of the WPO. Please check the box(s) under each number that best describes the Low Impact Development BMP(s) selected for this project.

Table 7

1. Conserve natural Areas, Soils, and Vegetation-County LID Handbook 2.2.1
☐ Preserve well draining soils (Type A or B)
☐ Preserve Significant Trees
☐ Other. Description:
☒ 1. The project's site is in Soil Type C. Top soil with organic materials will be reused when found in the site.
2. Minimize Disturbance to Natural Drainages-County LID Handbook 2.2.2
☐ Set-back development envelope from drainages
☐ Restrict heavy construction equipment access to planned green/open space areas
☐ Other. Description:
☒ 2. Not feasible. State Reason: The development consists of the construction of road and building pads that will disturb the natural drainage patterns. It will maintain the same drainage basin areas.
3. Minimize and Disconnect Impervious Surfaces (see 5) -County LID Handbook 2.2.3
☐ Clustered Lot Design
☒ Items checked in 5?
☐ Other. Description:
☐ 3. Not feasible. State Reason:
4. Minimize Soil Compaction-County LID Handbook 2.2.4
☐ Restrict heavy construction equipment access to planned green/open space areas
☐ Re-till soils compacted by construction vehicles/equipment
☒ Collect & re-use upper soil layers of development site containing organic materials
☐ Other. Description:
☐ 4. Not feasible. State Reason:
5. Drain Runoff from Impervious Surfaces to Pervious Areas-County LID Handbook 2.2.5
LID Street & Road Design
☐ Curb-cuts to landscaping

☐ Rural Swales
☐ Concave Median
☐ Cul-de-sac Landscaping Design
☒ Other. Description: Pervious pavement for roads
LID Parking Lot Design
☐ Permeable Pavements
☐ Curb-cuts to landscaping
☐ Other. Description: N/A
LID Driveway, Sidewalk, Bike-path Design
☒ Permeable Pavements
☒ Pitch pavements toward landscaping
☐ Other. Description:
LID Building Design
☐ Cisterns & Rain Barrels
☒ Downspout to swale
☐ Vegetated Roofs
☐ Other. Description:
LID Landscaping Design
☐ Soil Amendments
☒ Reuse of Native Soils
☒ Smart Irrigation Systems
☐ Street Trees
☐ Other. Description:
☐ 5. Not feasible. State Reason:

CHANNELS & DRAINAGES

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

Table 8

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?				If YES go to 6.
3.	Will the project discharge to unlined channels?				If YES go to. 6.
4.	Will the project increase potential sediment load of downstream flow?				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?				If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.				Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.				Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.				Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.				Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.				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.				Continue to 12.
12.	Provide other design principles that are comparable and equally effective.				Continue to 13.
13.	End				

SOURCE CONTROL

Please complete the following checklist for Source Control BMPs. If the BMP is not applicable for this project, then check N/A only at the main category.

Table 9

BMP			YES	NO	N/A
1.	**Provide Storm Drain System Stenciling and Signage**				
	1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: "NO DUMPING – DRAINS TO _____") and/or graphical icons to discourage illegal dumping.	X		
	1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.			X
2.	**Design Outdoors Material Storage Areas to Reduce Pollution Introduction**				X
	2.a.	This is a detached single-family residential project. Therefore, personal storage areas are exempt from this requirement.	X		
	2.b.	Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.			
	2.c.	The storage area shall be paved and sufficiently impervious to contain leaks and spills.			
	2.d.	The storage area shall have a roof or awning to minimize direct precipitation within the secondary containment area.			
3.	**Design Trash Storage Areas to Reduce Pollution Introduction**				X
	3.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,			
	3.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.			
4.	**Use Efficient Irrigation Systems & Landscape Design**				
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.				
	4.a.	Employing rain shutoff devices to prevent irrigation after precipitation.	X		
	4.b.	Designing irrigation systems to each landscape area's specific water requirements.	X		

	4.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.	X		
	4.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.	X		
5.	**Private Roads**				

		BMP	YES	NO	N/A
	The design of private roadway drainage shall use at least one of the following				
	5.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.			
	5.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.			
	5.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.			
	5.d.	Other methods that are comparable and equally effective within the project. Use of permeable pavement and BIOCLEAN curb inlet filter.	X		
6.	**Residential Driveways & Guest Parking**				
	The design of driveways and private residential parking areas shall use one at least of the following features.				
	6.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.		X	
	6.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.	X		
	6.c.	Other features which are comparable and equally effective.			
7.	**Dock Areas**				X
	Loading/unloading dock areas shall include the following.				
	7.a.	Cover loading dock areas, or design drainage to preclude urban run-on and runoff.			
	7.b.	Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.			
	7.c.	Other features which are comparable and equally effective.			
8.	**Maintenance Bays**				X
	Maintenance bays shall include the following.				
	8.a.	Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.			

	8.b.	Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.			
	8.c.	Other features which are comparable and equally effective.			
9.	**Vehicle Wash Areas**				X
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.				
	9.a.	Self-contained; or covered with a roof or overhang.			
	9.b.	Equipped with a clarifier or other pretreatment facility.			
	9.c.	Properly connected to a sanitary sewer.			
	9.d.	Other features which are comparable and equally effective.			

	BMP		YES	NO	N/A
10.	**Outdoor Processing Areas**				X
	Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the County shall adhere to the following requirements.				
	10.a.	Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system following appropriate treatment in accordance with conditions established by the applicable sewer agency.			
	10.b.	Grade or berm area to prevent run-on from surrounding areas.			
	10.c.	Installation of storm drains in areas of equipment repair is prohibited.			
	10.d.	Other features which are comparable or equally effective.			
11.	**Equipment Wash Areas**				X
	Outdoor equipment/accessory washing and steam cleaning activities shall be.				
	11.a.	Be self-contained; or covered with a roof or overhang.			
	11.b.	Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate			
	11.c.	Be properly connected to a sanitary sewer.			
	11.d.	Other features which are comparable or equally effective.			
12.	**Parking Areas**				X
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.				
	12.a.	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.			

	12.b.	Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.			
	12.c.	Other design concepts that are comparable and equally effective.			
13.	**Fueling Area**				X
	Non-retail fuel dispensing areas shall contain the following.				
	13.a.	Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.			
	13.b.	Paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.			
	13.c.	Have an appropriate slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff.			

		BMP	**YES**	**NO**	**N/A**
	13.d.	At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.			

Please list other project specific Source Control BMPs in the following box. Write **N/A** if there are none.

Roofs will be made of bituminous materials that do not generate pollutants and therefore, do not need runoff treatment. Downspouts from the roofs will drain into landscaped areas.

Driveways will be made of pervious brick pavers or equivalent to minimize impervious surfaces.

TREATMENT CONTROL

To select a structural treatment BMP using Treatment Control BMP Selection Matrix (Table 10), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 4). Any pollutants identified by Table 4, which are also causing a Clean Water Act section 303(d) impairment of the receiving waters of the project, shall be considered primary pollutants of concern. Priority projects that are anticipated to generate a primary pollutant of concern shall select a single or combination of stormwater BMPs from Table 10, which **maximizes pollutant removal** for the particular primary pollutant(s) of concern.

Priority development projects that are **not** anticipated to generate a pollutant for which the receiving water is CWA 303(d) impaired shall select a single or combination of stormwater BMPs from Table 10, which are effective for pollutant

removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard.

Table 10. Treatment Control BMP Selection Matrix

Pollutants of Concern	Bioretention Facilities (LID)*	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)*	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro -dynamic Devices
Coarse Sediment and Trash	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
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low

*Additional information is available in the County of San Diego LID Handbook.

NOTES ON POLLUTANTS OF CONCERN:

In Table 11, Pollutants of Concern are grouped as gross pollutants, pollutants that tend to associate with fine particles, and pollutants that remain dissolved.

Table 11

Pollutant	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	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	

Bacteria		X	
Oil & Grease		X	
Pesticides		X	

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality treatment volume or flow values for the selected project Treatment BMP(s). Guidelines for design calculations are located in Chapter 5, Section 4.3, Principle 8 of the County SUSMP. Label outfalls on the BMP map. The Water Quality peak rate of discharge flow (Q_{WQ}) and the Water Quality storage volume (V_{WQ}) is dependent on the type of treatment BMP selected for the project.

Outfall	**Tributary Area (acres)**	**Q_{WQ} (cfs)**	**V_{WQ} (ft^3)**

See Attachments E-1 and E-2 for calculations of water quality discharge flow.

Please check the box(s) that best describes the Treatment BMP(s) selected for this project.

Biofilters
☐ Bioretention swale
☒ Vegetated filter strip
☐ Stormwater Planter Box (open-bottomed)
☐ Stormwater Flow-Through Planter (sealed bottom)
☐ Bioretention Area
☐ Vegetated Roofs/Modules/Walls
Detention Basins
☐ Extended/dry detention basin with grass/vegetated lining

☐ Extended/dry detention basin with impervious lining
Infiltration Basins
☐ Infiltration basin
☐ Infiltration trench
☐ Dry well
☐ Permeable Paving
☐ Gravel
☒ Permeable asphalt
☒ Pervious concrete
☒ Unit pavers, ungrouted, set on sand or gravel
☐ Subsurface reservoir bed
Wet Ponds or Wetlands
☐ Wet pond/basin (permanent pool)
☐ Constructed wetland
Filtration
☒ Media filtration Sand filtration
Hydrodynamic Separator Systems
☐ Swirl Concentrator
☐ Cyclone Separator
Trash Racks and Screens

Include Treatment Datasheet as Attachment E. The datasheet should include the following:	**COMPLETED**	**NO**
1. Description of how treatment BMP was designed. Provide a description for each type of treatment BMP.	YES	
2. Engineering calculations for the BMP(s)	YES	

Please describe why the selected treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a detailed explanation.

BIOCLEAN Curb inlet Basket will be installed in the curb inlet at Hillsdale Road to filter pollutants generated by a portion of the private road that has a slope of more than 5%. This treatment BMP is utilized because of limitation in space for a grass bio swale.

Permeable Asphalt Pavement will be used to filter pollutants generated by a portion of the private road that has slopes of less than 5%.

Driveways will be made of pervious concrete, unit pavers or equal and will be designed to drain to vegetated strips.

Roofs will be made of non-bituminous materials that will not generate pollutants. Downspouts will drain to landscaped areas.

MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project. Guidelines for each category are located in Chapter 5, Section 5.2 of the County SUSMP.

CATEGORY	SELECTED	
	YES	NO
First	X	
Second[1]		
Third[1]		
Fourth	X	

Note:
Projects in Category 2 or 3 may choose to establish or be included in a Stormwater Maintenance Assessment District for the long-term maintenance of treatment BMPs.

ATTACHMENTS

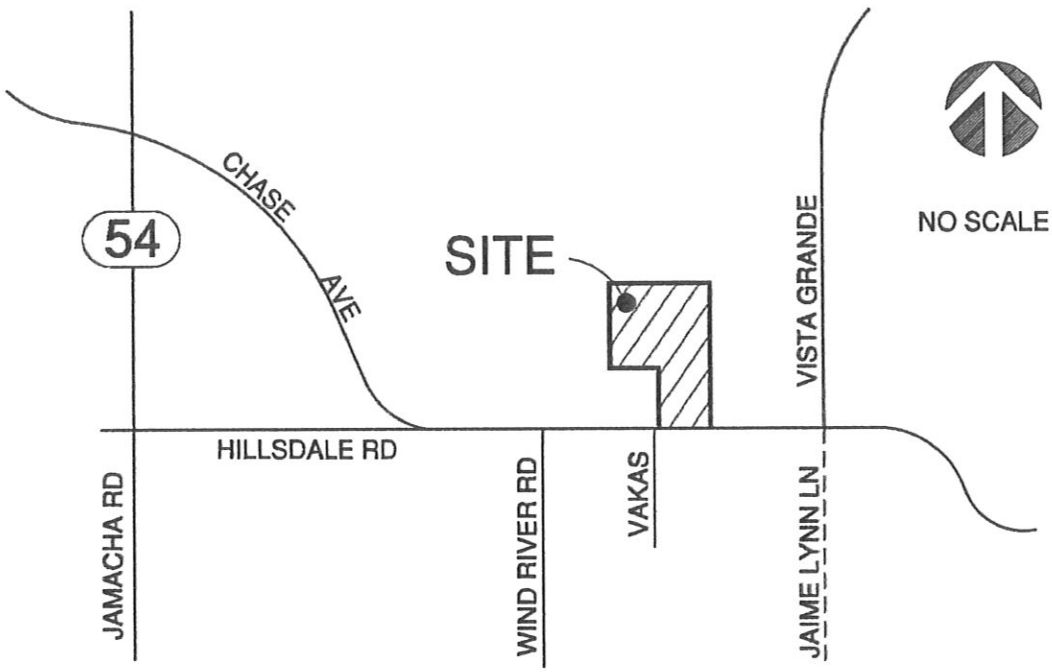
Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Vicinity Map	Yes	
B	Project Site Map	Yes	
C	Relevant Monitoring Data	N/A	
D	LID and Treatment BMP Location Map-	Yes	
	Construction BMP Location Map		
E	Treatment BMP Datasheets	Yes	
	BIOCLEAN curb inlet basket Brochure		
	Runoff Volume Calculations for Detention		
	Detention Facility Map		
F	Operation and Maintenance Program for Treatment BMPs	Yes	
G	Fiscal Resources		No

H	Certification Sheet	Yes	
I	Addendum		No

Note: Attachments A and B may be combined.

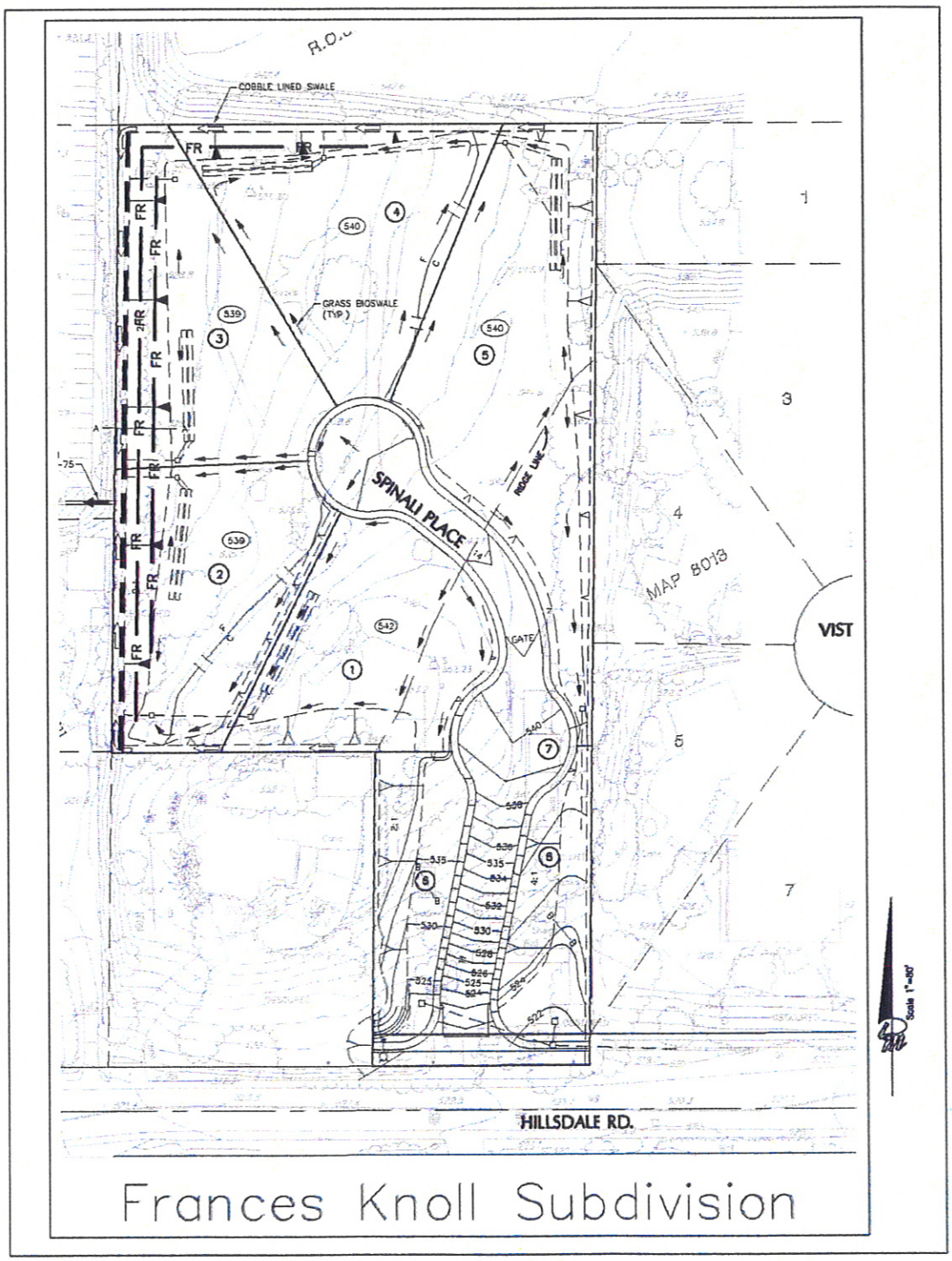
ATTACHMENT A



VICINITY MAP

ATTACHMENT B

PROJECT SITE MAP



ATTACHMENT C

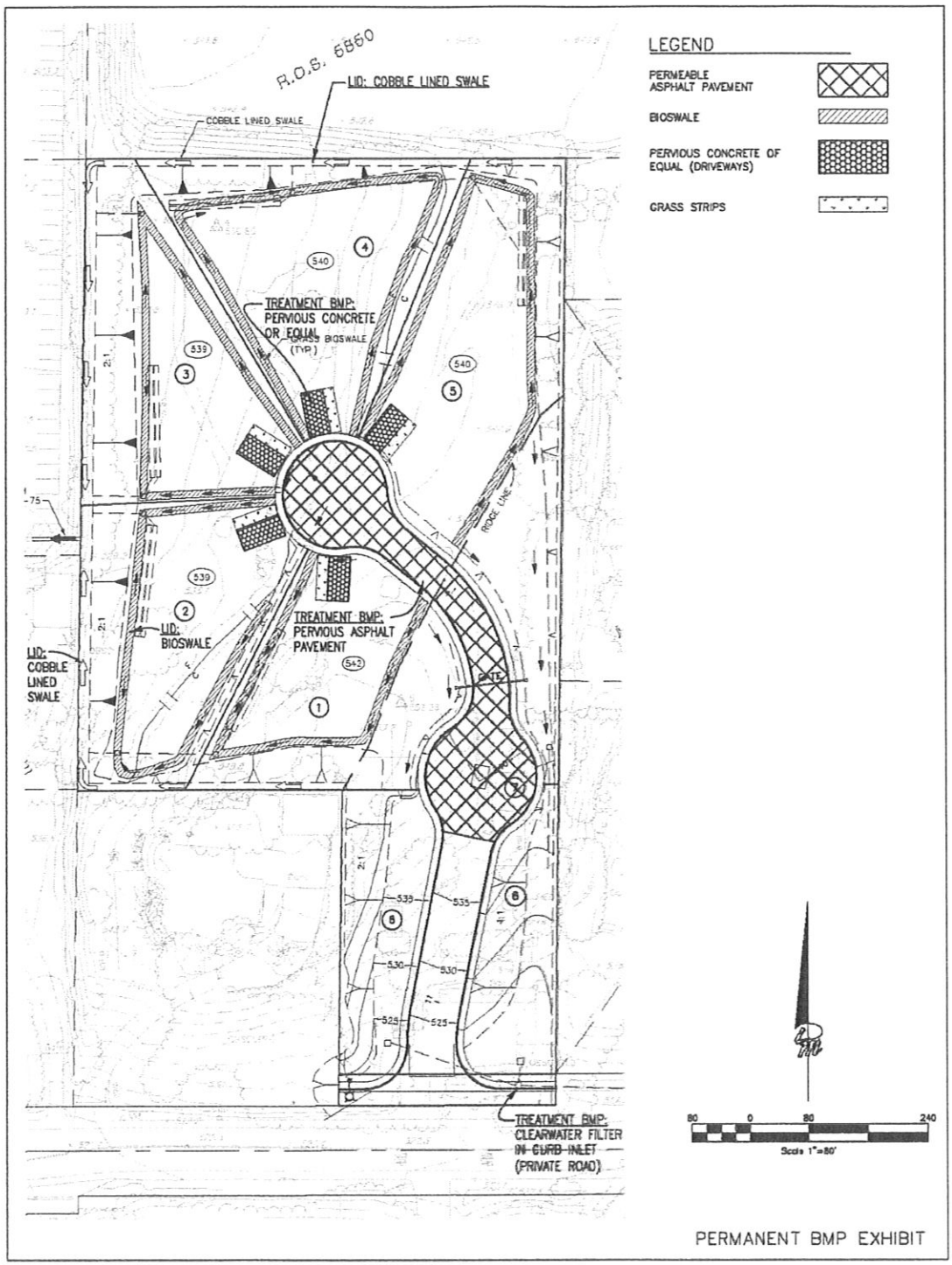
RELEVANT MONITORING DATA

(NOTE: PROVIDE RELEVANT WATER QUALITY MONITORING DATA IF AVAILABLE.)

N/A

ATTACHMENT D

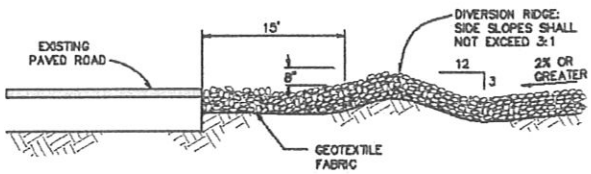
LID AND TREATMENT BMP LOCATION MAP



PERMANENT BMP EXHIBIT

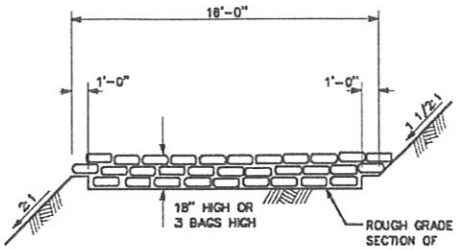
ATTACHMENT D-1

CONSTRUCTION BMP LOCATION MAP

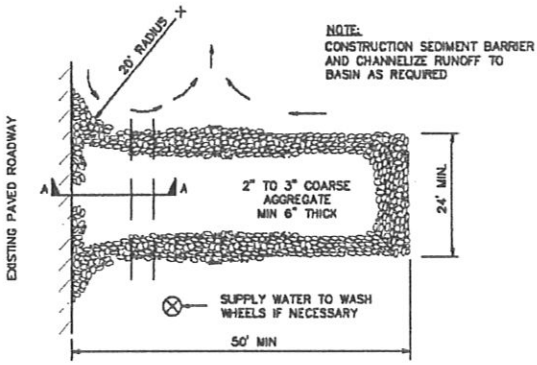


SECTION A–A

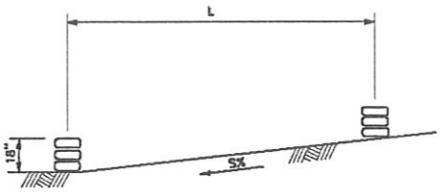
DIVERSION RIDGE REQUIRED WHERE GRADE EXCEEDS 2%



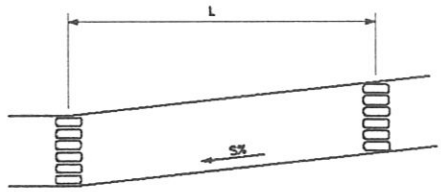
SECTION



PLAN



PROFILE



PLAN VIEW

GRAVEL CONSTRUCTION (TEMPORARY)

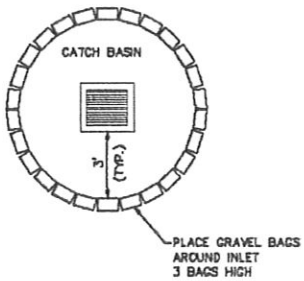
A/1

NO SCALE

PROVIDE GRAVEL BAG CHECK DAMS ON UNPAVED STREETS AS FOLLOWS:

GRADIENT OF STREET (S%)	INTERVAL BETWEEN CHECK DAMS (L)
LESS THAN 3%	100 FEET
3% TO 8%	50 FEET
OVER 8%	25 FEET

ALL CHECK DAMS SHALL BE 18 INCHES HIGH AND THE WIDTH OF THE GRADED DRIVEWAY. SEE DETAILS THIS SHEET.

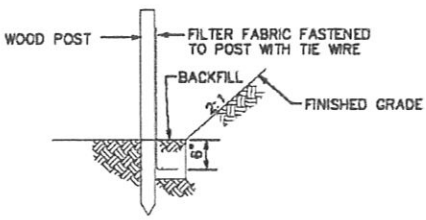


C/1 GRAVEL BAGS @ CATCH BASIN

NO SCALE

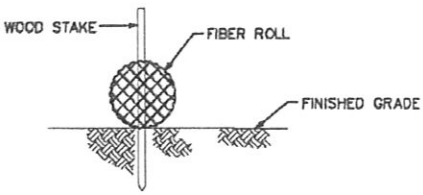
B/1 GRAVEL BAGS - STREET

NO SCALE



D/1 SILTATION FENCE (TEMPORARY)

NO SCALE

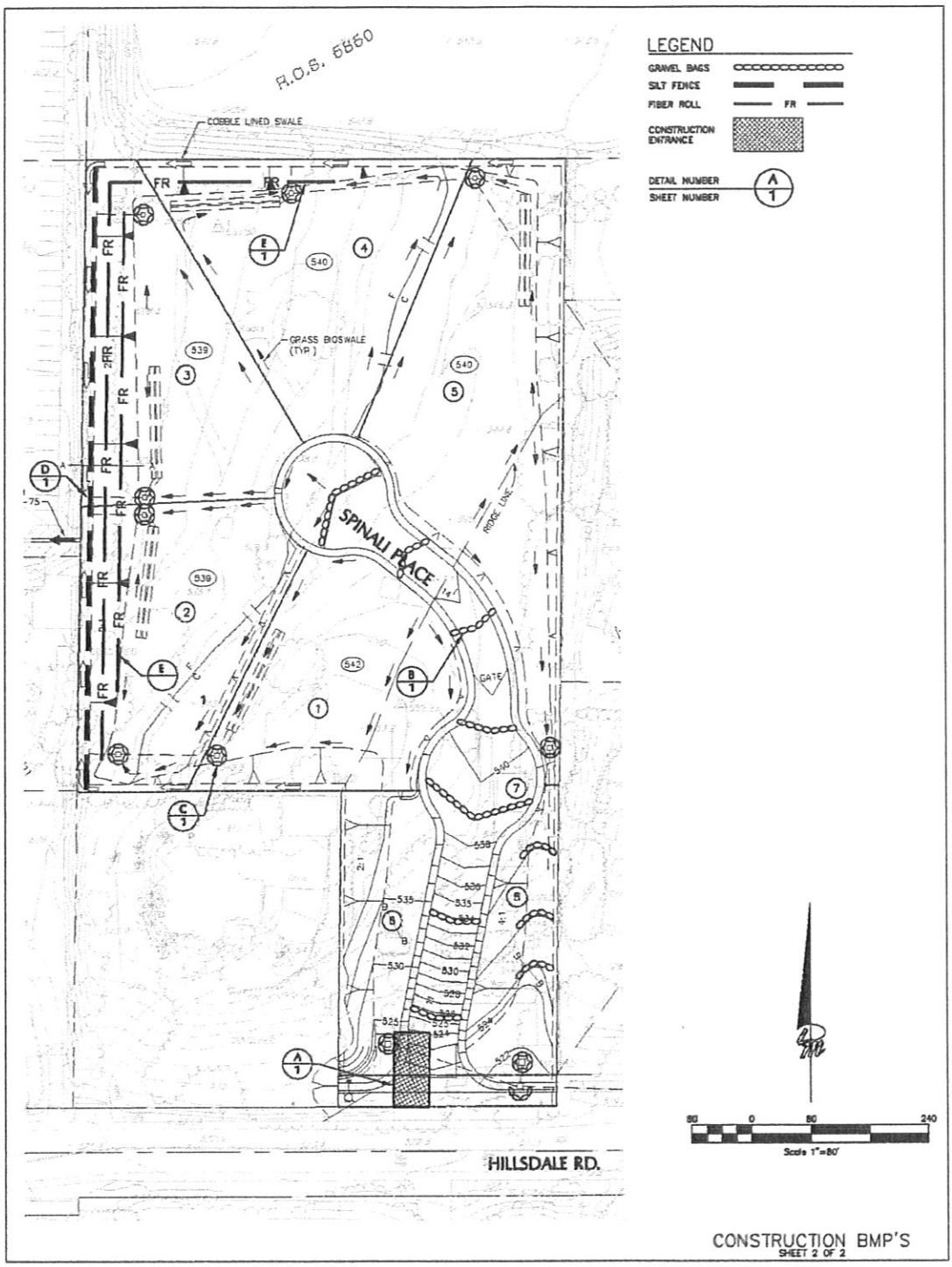


E/1 FIBER ROLLS

NO SCALE

CONSTRUCTION BMP'S

SHEET 1 OF 2



CONSTRUCTION BMP'S
SHEET 2 OF 2

ATTACHMENT E-1

TREATMENT BMP DATASHEET

*(**NOTE:** POSSIBLE SOURCE FOR DATASHEETS CAN BE FOUND AT WWW.CABMPHANDBOOKS.COM. INCLUDE ENGINEERING CALCULATIONS FOR SIZING THE TREATMENT BMP.)*

Street Runoff Treatment – Private Road with slopes of 5% or more

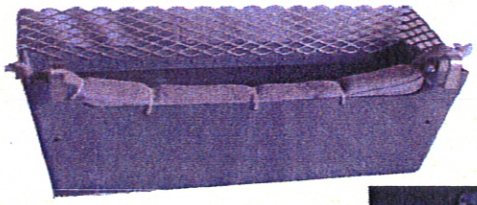
Area of asphalt pavement = 0.2 acres, I=0.2 inch/hr, C=0.95

Q=(0.95)(.2)(.2)=0.04 cfs

See attachment E-2 for the BIOCLEAN Curb Inlet Basket specifications.

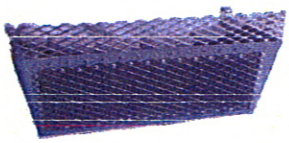
CURB INLET BASKET

w/ Easy Maintenance Shelf System



Extreme Durability—
Constructed from:

- Heavy Duty UV Protected Marine Grade Fiberglass
- High Grade Stainless Steel Hardware and Screens

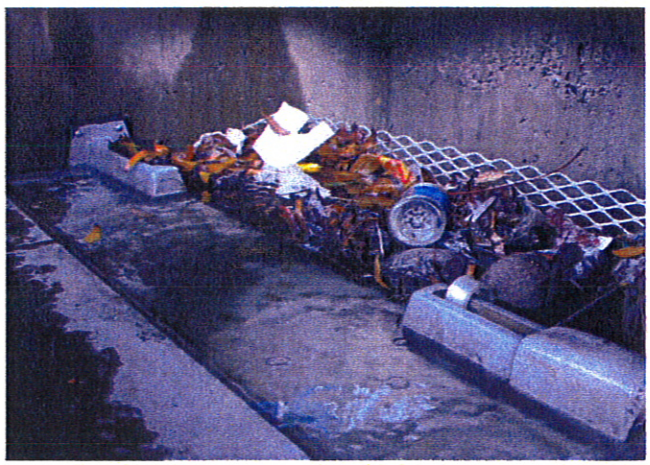


"Highest Rated Catch Basin Insert"

(The Efficiency of Storm Drain Filters in Removing Pollutants from Urban Road Runoff Report, University of Hawaii, Dept of Oceanography, Honolulu, Hawaii, 2005).

5 Year Unlimited Warranty on Construction

Ask Our Competition if They Have a Warranty Like This. Then Give us a Call.



The Easiest Filter to Clean and Install

- Maintenance and Cleaning Crews Throughout Southern California Appreciate the User Friendly Design of Our Filters.

BIO CLEAN ENVIRONMENTAL SERVICES. INC.™

"The Stormwater Standard"
P O Box 869, Oceanside, CA 92049
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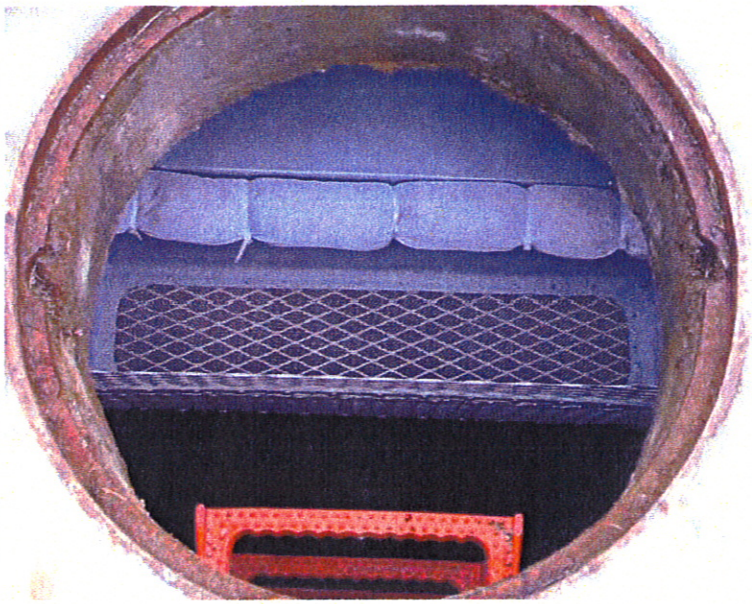
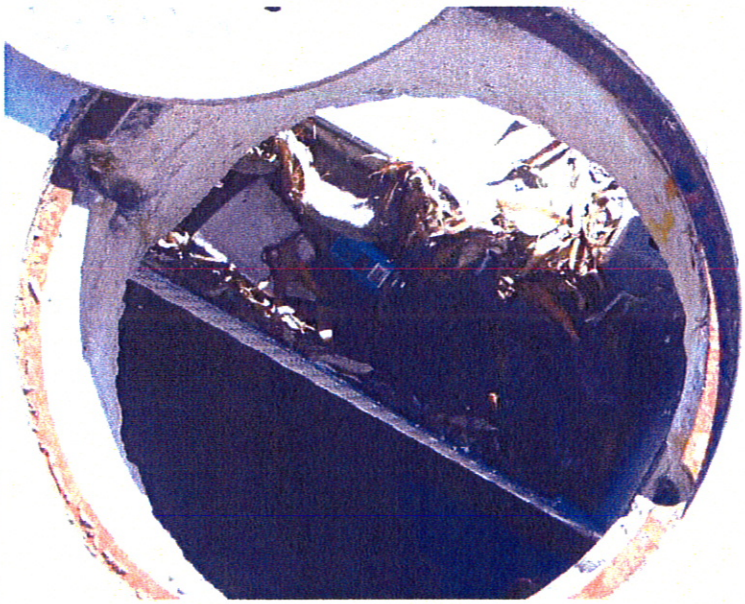
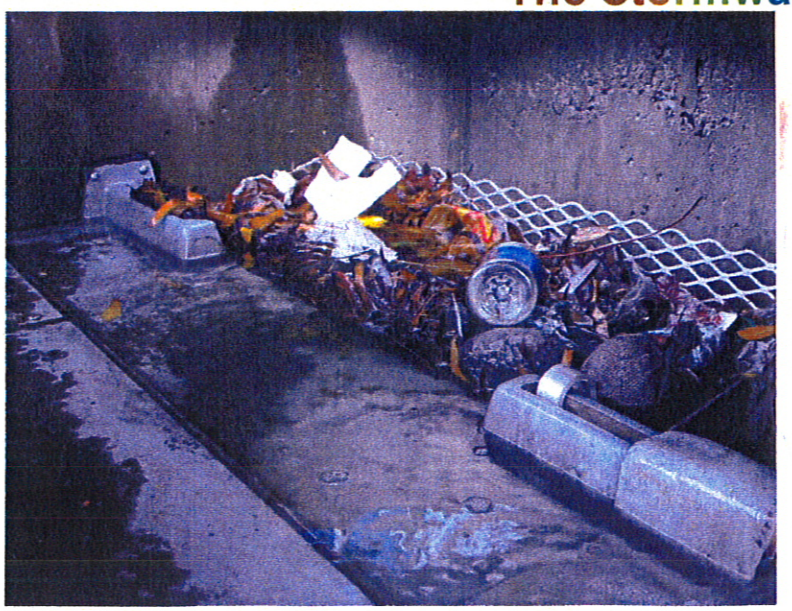
www.biocleanenvironmental.net



BIO CLEAN
ENVIRONMENTAL SERVICES. INC.™



"The Stormwater Standard"



CALIFORNIA CURB SHELF BASKET WATER CLEANSING SYSTEM
SAN DIEGO REGIONAL STANDARD CURB INLET

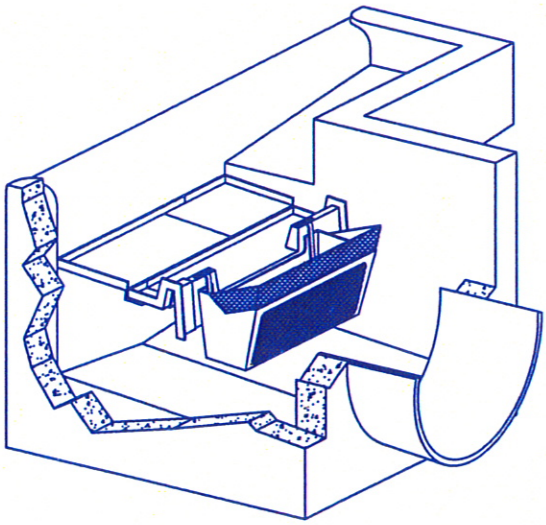


FIGURE 1
DETAIL OF PARTS

WIDTH OF INLET WILL VARY

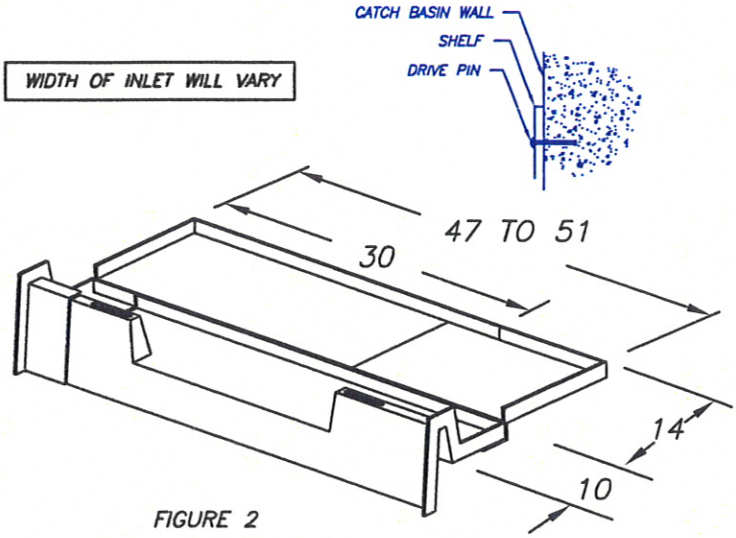


FIGURE 2
DETAIL OF INSTALLATION

REMOVABLE BASKET CATCHES EVERYTHING AND MAY BE REMOVED THROUGH MANHOLE WITHOUT ENTRY.

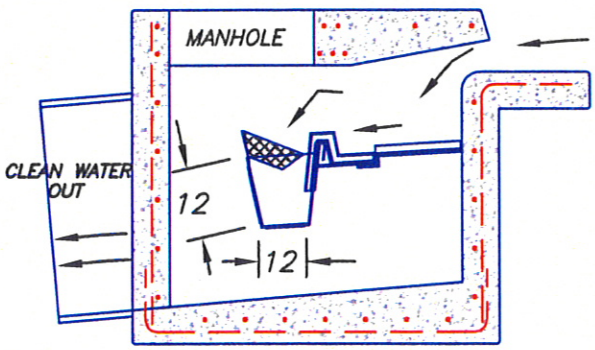


FIGURE 3
DETAIL OF PROCESS

FLOW RATES per 3 FT. Basket				
$Q = SO * c_d * A\sqrt{2 * g * h}$		c_d = Coefficient of Discharge = .67		
	SO	$A(ft^2)$	h (ft)	$Q\ (\frac{ft^3}{s})$
Coarse Screen	.62	.84	0.146	1.06
Med Screen	.56	1.36	0.75	3.53
Fine Screen	.68	1.02	1.167	4.01
TOTAL				8.6

The above flow rates are based on unobstructed screens.

NOTES:

1. SHELF SYSTEM PROVIDES FOR ENTIRE COVERAGE OF INLET OPENING SO TO DIVERT ALL FLOW TO BASKET.
2. SHELF SYSTEM MANUFACTURED FROM MARINE GRADE FIBERGLASS, GEL COATED FOR UV PROTECTION.
3. SHELF SYSTEM ATTACHED TO THE CATCH BASIN WITH NON-CORROSIVE HARDWARE.
4. FILTRATION BASKET STRUCTURE MANUFACTURED OF MARINE GRADE FIBERGLASS, GEL COATED FOR UV PROTECTION.
5. FILTRATION BASKET FINE SCREEN AND COARSE CONTAINMENT SCREEN MANUFACTURED FROM STAINLESS STEEL.
6. FILTRATION BASKET HOLDS BOOM OF ABSORBENT MEDIA TO CAPTURE HYDROCARBONS. BOOM IS EASILY REPLACED WITHOUT REMOVING MOUNTING HARDWARE.
7. FILTRATION BASKET LOCATION IS DIRECTLY UNDER MANHOLE FOR EASY MAINTENANCE.

BOX MANUFACTURED FROM MARINE GRADE FIBERGLASS & GEL COATED FOR UV PROTECTION

5 YEAR MANUFACTURERS WARRANTY

PATENTED

ALL FILTER SCREENS ARE STAINLESS STEEL

EXCLUSIVE CALIFORNIA DISTRIBUTOR:
BIO CLEAN ENVIRONMENTAL SERVICE

TEL. 760-433-7640 FAX:760-433-3176
Email: info@biocleanenvironmental.net

SUNTREE QUALITY PRODUCTS ARE BUILT FOR EASY CLEANING AND ARE DESIGNED TO BE PERMANENT INFRASTRUCTURE AND SHOULD LAST FOR DECADES.

CURB INLET BASKET SYSTEM		PROJECT:
		REVISIONS: DATE:
		REVISIONS: DATE:
		REVISIONS: DATE:
DATE: 04/12/04	SCALE: SF = 15	REVISIONS: DATE:
DRAFTER: N.R.B.	UNITS = INCHES	REVISIONS: DATE:

Bio Clean Environmental Services, Inc.

Curb Inlet Baskets - Maintenance

Curb Inlet Baskets » Maintenance

"The Easiest Filter to Clean" - The Bio Clean Curb Inlet Basket with shelf system makes maintenance quick and easy. Being the only filter available with this shelf system, it allows the basket to be positioned directly under the manhole for easy access.

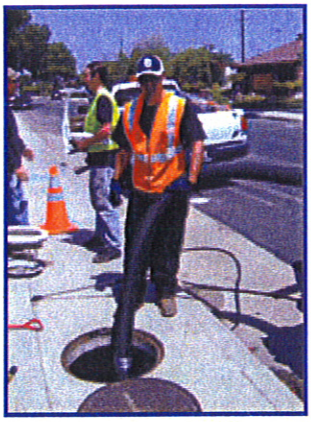
In 2003, the City and County of Honolulu, Hawaii hired the state university to evaluate the various brands of curb type catch basin filters. After initial evaluation, the top four filters where chosen for a long term field study. Following are the results of that field study relating to time required to clean and maintain each type of filter. The differences are substantial.

HIGHLIGHT: The Bio Clean Curb Inlet Basket has the quickest service time. Only 15 minutes on average. SEE REPORT.

company	product	Service time
Bio clean environmental	curb inlet basket with shelf system	Only 15 minutes
kristar	flogard plus	60 minutes
AbTech	Ultra Urban	30 minutes
hydrocompliance	Hydro Kleen	105 minutes

Step 1 - Remove manhole and insert vacuum hose.

Step 2 - Vacuum out basket located directly under the manhole. Easy maintenance makes for happy maintenance crews.



DOWNLOADS

Hawaii Report Summary - Independent third party

MORE DOWNLOADS

Brochure - Standard basket with shelf system

Brochure - High capacity basket with shelf system

Specifications - Applies to all curb inlet basket filters

Product Details

DrawingsPerformanceMaintenanceProject Profiles

Product Video

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Bio Clean Environmental Services, Inc.

Curb Inlet Baskets - Performance

Curb Inlet Baskets » Performance

The Curb Inlet Basket is able to address a wide array of pollutants, including but not limited to the following:

- Trash and Debris
- Sediments
- Total suspended solids (TSS)
- Oxygen demanding substances
- Nutrients
- Metals
- Oils and grease including various hydrocarbons

HIGHLIGHT: TSS removal down to a 100 micron particle size is 93% for the Curb Inlet Basket.

REPORTS

USC Testing Highlights - Independent third party

Hawaii Report Summary - Independent third party

MORE DOWNLOADS

Brochure - Standard basket with shelf system

Brochure - High capacity basket with shelf system

Specifications - Applies to all curb inlet basket filters

Product Details

DrawingsPerformanceMaintenanceProject Profiles

Product Video

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ATTACHMENT E-3
RUNOFF VOLUME CALCULATIONS FOR DETENTION

Basin A:

Area = 2.9 acres
Runoff Coefficient: Existing Conditions =0.30; Proposed Conditions = 0.42
10 year; 24 hour precipitation = 3"

V (existing) = 2.9(43560)(0.30)(3/12)= 9474 Cu. Ft.
V (proposed) = 2.9(43560)(0.42)(3/12) = 13,264 Cu. Ft.

Additional Volume of runoff = 3790 Cu. Ft = 40% increase

Area of Catchment = 88933 s.f (Refer to Attachment E-2)

Use "C"= 0.42

V=88933(0.41)(3/12) = 9338 Cu. Ft.

Actual percentage of detention = 3790/9338 = 40.6%

Use Lot size = 25,000 S.F.

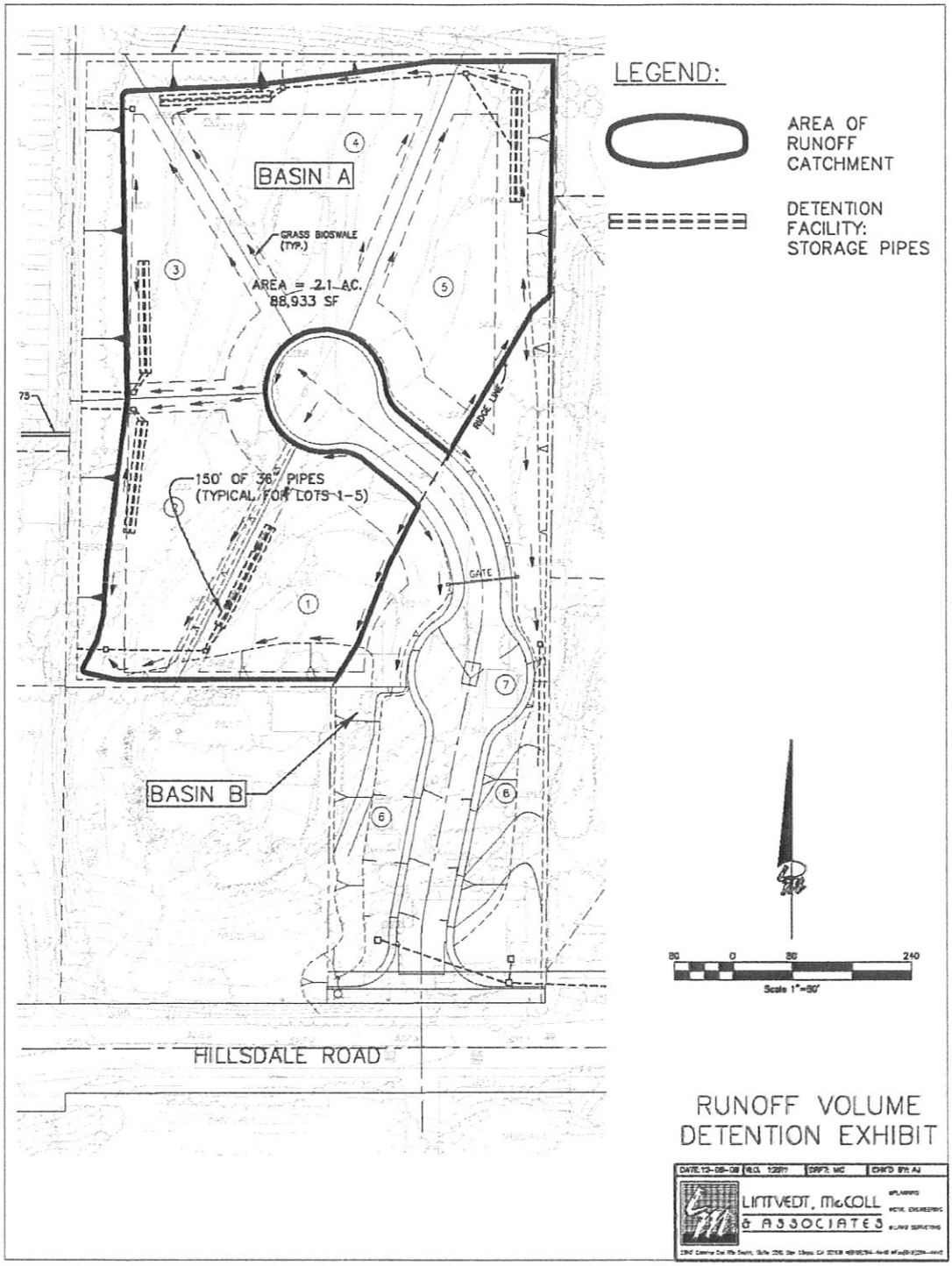
Volume detained on each lot = 25000(.42)(3/12)(.406) = 1066 Cu. Ft.

L=1066/Area of pipe=1066/3.14(1.5)(1.5)=150 LF (36" PIPE)

USE 150' OF 36" PIPE FOR DETENTION ON LOTS 1-5

ATTACHMENT E-4

DETENTION FACILITY MAP


LEGEND:
AREA OF RUNOFF CATCHMENT
DETENTION FACILITY: STORAGE PIPES
BASIN A
GRASS BIOSWALE (TYP.)
AREA = 2.1 AC.
88,933 SF
150' OF 36" PIPES (TYPICAL FOR LOTS 1-5)
RIDGE LINE
GATE
BASIN B
HILLSDALE ROAD
80 0 80 240
Scale 1"=80'
RUNOFF VOLUME DETENTION EXHIBIT
LINTVEDT, McCOLL & ASSOCIATES

ATTACHMENT F

OPERATION AND MAINTENANCE PROGRAM FOR TREATMENT BMPS

The BIO CLEAN Curb Inlet Basket installed in the curb inlet in Hillsdale Road will be maintained by the County of San Diego and the permeable asphalt pavement in the private road will be maintained by the Homeowners' Association.

The pervious concrete (or equal) driveways, grass strips and bioswales will be maintained by the individual homeowners.

The cost for maintenance of the BIO CLEAN Curb Inlet Basket is $300.00 twice a year. It includes removal of debris and replacement of the hydrocarbon absorption boom.

The cost of maintaining the grass strips and bioswales which includes mowing and removal of trash and debris is approximately $100.00 per month for each individual homeowners.

ATTACHMENT G

FISCAL RESOURCES

ATTACHMENT H

CERTIFICATION SHEET

This Stormwater Management Plan has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

Patricia M McColl 10-14-09

Date

REGISTERED PROFESSIONAL ENGINEER
PATRICIA M. McCOLL
No. 36873
Exp. 6-30-2010
CIVIL
STATE OF CALIFORNIA

ATTACHMENT I

ADDENDUM