



TECHNICAL MEMORANDUM

Westside Lofts Preliminary Water Quality Management Plan

PREPARED FOR: City of Costa Mesa
PREPARED BY: Trevor Dodson, Fuscoe Engineering, Inc.
DATE: June 13, 2007

I. Introduction

This Preliminary Water Quality Management Plan (WQMP) has been prepared to provide specifications for the post-construction management of storm water runoff from the proposed project at Westside Lofts, 1640 Monrovia Avenue in the City of Costa Mesa, California.

This Preliminary WQMP provides an overview of the proposed development plan, identifies potential sources of storm water pollution of the land uses, and recommends appropriate Best Management Practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff. The intent of this Preliminary WQMP is to obtain conceptual approval from the City of the proposed Treatment Control BMPs. Further details on the proposed project, selected BMPs and associated maintenance, educational materials, and other measures to reduce pollutants will be provided in the Final WQMP.

II. Project and Site Description

The proposed Westside Lofts project site is a 6.8-acre parcel in the City of Costa Mesa, CA. The project site is bounded by Monrovia Avenue to the west and Babcock Street to the east, and is situated south of 17th Street and north of 16th Street. Under existing conditions, the project site consists of two large industrial buildings with several smaller buildings and associated parking. Surface runoff generally flows west to east towards Babcock Street. There are no existing storm drain facilities on the project site or in the adjoining streets. Babcock Street flows north from the site to 17th Street.

The project site does have some existing water quality issues. The site is a former aerospace industrial site. There are a few areas of solvent contamination that will be excavated and removed during the construction phase as complete remediation of the site specific contamination. Of

more concern is an extensive contaminated groundwater plume beneath the site that comes from an unknown off-site source. This plume is off-gassing and the vapors will need to be controlled by a vapor barrier, venting system beneath all structures. Due to this plume, it is not advisable to have any kind of BMP that uses infiltration. Infiltration devices have been eliminated from consideration on this site.

The proposed development is composed of two components, a residential component and an office component. The proposed development includes the demolition of all existing facilities including buildings and appurtenant parking.

Residential Component

The first element is 151 condominiums in a four story building configuration. A separate four level parking structure will be developed adjacent to the residential buildings, resulting in a "wrap" type product. The garage will contain approximately 253 parking stalls. Units will average 800 square feet in size. The architectural style of the project, both interior and exterior, will be a contemporary "loft type" design with average ceiling heights of 10 feet; open floor plans; and individual storage provided within each unit. The project will offer common recreational and clubhouse amenities, including a pool and fitness center. A trash compactor for the condominium project will be located outside at the southeast corner of the parking structure. Trash bins will be located inside the parking structure (fully covered) and will be wheeled out to the compactor for processing. The trash compactor area will be kept in a clean and neat condition and the area will be picked up thoroughly after each use.

In addition, there will be 5 custom lots available for live/work lofts on 4,000 sf lots. The lots will be sold to individuals who will be subject to constructing live/work lofts in accordance with specific architectural design standards. These lots will provide parking on site. Trash will be collected on an individual homeowner basis.

Office Component

The project consists of a total of 42,000 gross square feet of office/commercial space. There will be 6 individual for sale buildings. One of the buildings is a 2,000 square foot space allocated for restaurant use. Four of the buildings will be two stories in height and contain approximately 5,000 square feet each. The fifth office building will be 3-4 stories in height and have 19,500 square feet of building area. The fifth office building will have an adjacent parking garage sized for 6 cars. Parking for the office component will be an uncovered parking lot of approximately 167 spaces. Parking and drive aisles comprise 2.19 acres of the site. Trash facilities for the office component will be located within the parking lot, and will be properly designed per city standards to prevent run-on and run-off.

The project site may also feature a fountain and additional landscaping features currently in the conceptual design phase. Further details on the proposed residential units, landscaping, and other facilities will be provided in the Final WQMP. This project is a Priority Project.

The project site is located within the Newport Bay Watershed. The Newport Bay Watershed covers 13.2 square miles along the coast of central Orange County. It includes portions of Costa Mesa and Newport Beach. The East Costa Mesa, Santa Isabel, and other smaller channels drain into Newport Bay.

Runoff from the project site ultimately drains into Lido Channel of the Newport Bay. Based on the 2006 section 303(d) list published by the Santa Ana RWQCB, Upper and Lower Newport Bay is impaired for Chlordane, Copper, DDT, metals, PCBs and sediment toxicity. The sources of these pollutant stressors include urban runoff, agriculture, and unknown sources.¹

The types of project features listed below that are proposed for Westside Lofts are: (1) Attached Residential Development, (2) Detached Residential, (3) Office/Commercial and (4) Parking Lots. As a result, anticipated pollutants include: heavy metals, nutrients, pesticides, sediments, trash and debris, oil and grease, oxygen demanding substances and pathogens. Since metals are anticipated pollutants for the project site, and the ultimate receiving water body is listed as impaired for these pollutants, they are considered Priority Pollutants of Concern, as defined by the Countywide Model WQMP.

III. Best Management Practices (BMPs)

SITE DESIGN BMPs

Site design considerations to reduce the potential for impacts upon surface water and groundwater quality shall be incorporated into the Project's design. The following summarizes the Site Design BMPs incorporated into the proposed project. Further details will be provided in the Final WQMP.

- Impervious surfaces have been minimized by providing landscaped areas within and around the proposed residential units. Landscaping is also used to further disconnect impervious surfaces.
- Streets and sidewalks have been designed with minimum width requirements to minimize impervious surfaces.
- Structure parking for the condominium site further minimizes impervious surfaces.

SOURCE CONTROL BMPs

Routine source control BMPs are required to be incorporated in all new development and redevelopment projects unless not applicable. The following summarizes the Source Control BMPs incorporated into the proposed project. Further details will be provided in the Final WQMP.

- Tenant Education (N1)
- Activity Restrictions (N2)
- Common Area Landscape Management (N3)
- BMP Maintenance (N4)
- Common Area Litter Control (N11)
- Employee Training (N12)

¹ State Water Resources Control Board (SWRCB), Environmental Protection Agency. Revisions of the Clean Water Act Section 303(d) list of water quality limited segments, Staff Report 2003.

- Street Sweeping Private Streets and Parking Lots (N15)
- Proper Trash Storage Design
- Efficient Irrigation System and Landscape Design
- Pet Waste Stations
- Roof Drainage will be piped to Landscape Areas through Drainage Emitters

TREATMENT CONTROL BMPs

Prior to construction, 98% of the site is impervious and the runoff coefficient is 0.88. After completion, the entire site will be 78% impervious and the runoff coefficient will be 0.73.

Roof drains will drain to pop-up drainage emitters in vegetated areas where the discharge will sheet flow over grassy areas and thence into drive aisles.

Because there are no drainage facilities both within the project boundary and immediately downstream, the majority of project low-flow runoff will be treated on site by a trench drain or parkway drain media filter BMP system. High flows will bypass the filtration system and discharge onto Monrovia Avenue or Babcock Street, as under existing conditions. The treated low flows will discharge onto Monrovia Avenue or Babcock Street, as under existing conditions.

Because of existing groundwater conditions, it has been determined that infiltration is not a viable alternative for this site. Bio Clean Trench Drain Filters or Bio Clean "Hydrocarbon Type" Flume Filters will be the BMP of choice for this site. The media filter cartridges will use ZPG™ (a Zeolite, Perlite and GAC (Granulated Activated Carbon) blend). ZPG™ can remove pollutants such as particulates, organics, hydrocarbons and total suspended sediments, total nutrients and complexed and soluble metals. This proprietary BMP uses flow calculations for sizing of filters.

The following table reflects the area calculations used in the subsequent flow calculations.

AREA DESIGNATION	TOTAL AREA
Pavement	2.2
Landscape	1.5
Building Roof Areas	3.1
TOTAL	6.8

AREA DESIGNATION	TOTAL AREA-AC.
Area A – west to Monrovia Ave.	0.7
Area B – southernmost exit to Babcock Street	0.9
Area C – main access road exit to Babcock St.	3.0
Area D – Parking lot exit to Babcock St.	2.2
TOTAL	6.8

In accordance to the Countywide Model WQMP, the treatment BMP will be sized to treat the maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour for each hour of a storm event. This is termed the Stormwater Quality Design Flow. The Stormwater Quality Design Flow (SQDF), is thus determined by the following equation:

$$SQDF = C * I * A_{TOTAL PER AREA}$$

Where: C = coefficient of runoff (see Appendix 1) = 0.73
 I = 0.2 in/hr
 A_{TOTAL PER AREA} = total area to be treated

The calculations are provided in the table below.

AREA DESIGNATION	ACRES PER AREA	% IMPERVIOUS	"C"	I = 0.2 in/hr	Q(TREAT) C*I*A in cfs	FLUME FILTER TREATMENT CAPACITY in cfs	TRENCH DRAIN FILTER CAPACITY in cfs/ft	FEET OF TRENCH DRAIN REQUIRED	TREATED WATER in cfs
Area A	0.7	78	0.73	0.2	0.10	0.2	N/A	N/A	0.2
Area B	0.9	78	0.73	0.2	0.13	0.2	N/A	N/A	0.2
Area C	3.0	78	0.73	0.2	0.44	N/A	0.064	7.0	0.45
Area D	2.2	78	0.73	0.2	0.32	N/A	0.064	5.0	0.32
TOTAL	6.8				0.99				1.17

The total area treated is 6.8 acres. The number of Flume Filters required is two. 12 feet of Trench Drain filter is required. Therefore the design treatment of the areas is sufficient for this proprietary treatment. In accordance to the Countywide Model WQMP, the treatment BMPs will be sized to treat the 0.99 cfs flow. Filters are sized to treat 1.17 cfs.

IV. BMP Maintenance

It has been determined that Nexus Development shall assume all Source Control and Treatment Control BMP inspection and maintenance responsibilities for the Westside Lofts. Should the maintenance responsibility be transferred at any time during the operational life of Westside Lofts, such as when an HOA or POA is formed for a project, a formal notice of transfer shall be

submitted to the City of Costa Mesa at the time responsibility of the property subject to this WQMP is transferred. Further details on BMP maintenance activities and responsibilities will be provided in the Final WQMP.

TREATMENT CONTROL BMP MAINTENANCE

Pop-up emitters will be maintained by Nexus Development through their building maintenance and landscape contractors on a monthly basis.

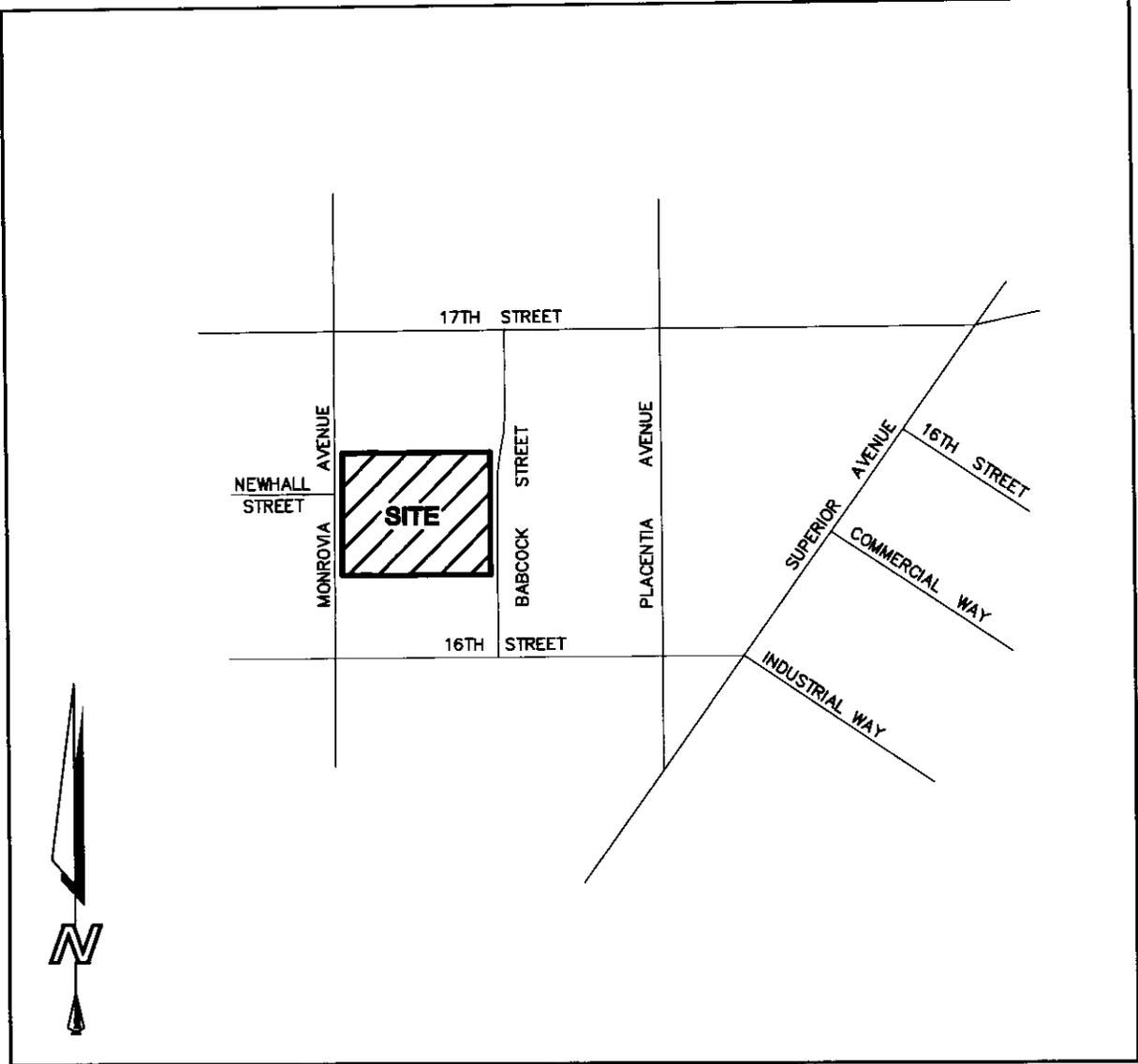
The trench and flume filters will be inspected prior to the rainy season, before October first, and at least twice during the rainy season, October through April. Filter socks with media will be replaced as indicated by visual inspection and per the manufacturer's recommendations (usually at least annually.) A zeolite, perlite and granulated activated charcoal mixture will be used as filter media (ZPG™ or approved equal.)

FIGURES AND ATTACHMENTS

Figure 1	Vicinity Map
Figure 2	Water Quality Management Plan
Attachment 3	Table A-1 County DAMP
Attachment 4	Tables – CEQA Guidance, Model WQMP
Attachment 5	ESA MAP
Attachment 6	BMP Fact Sheets

Attachment 1

Vicinity Map

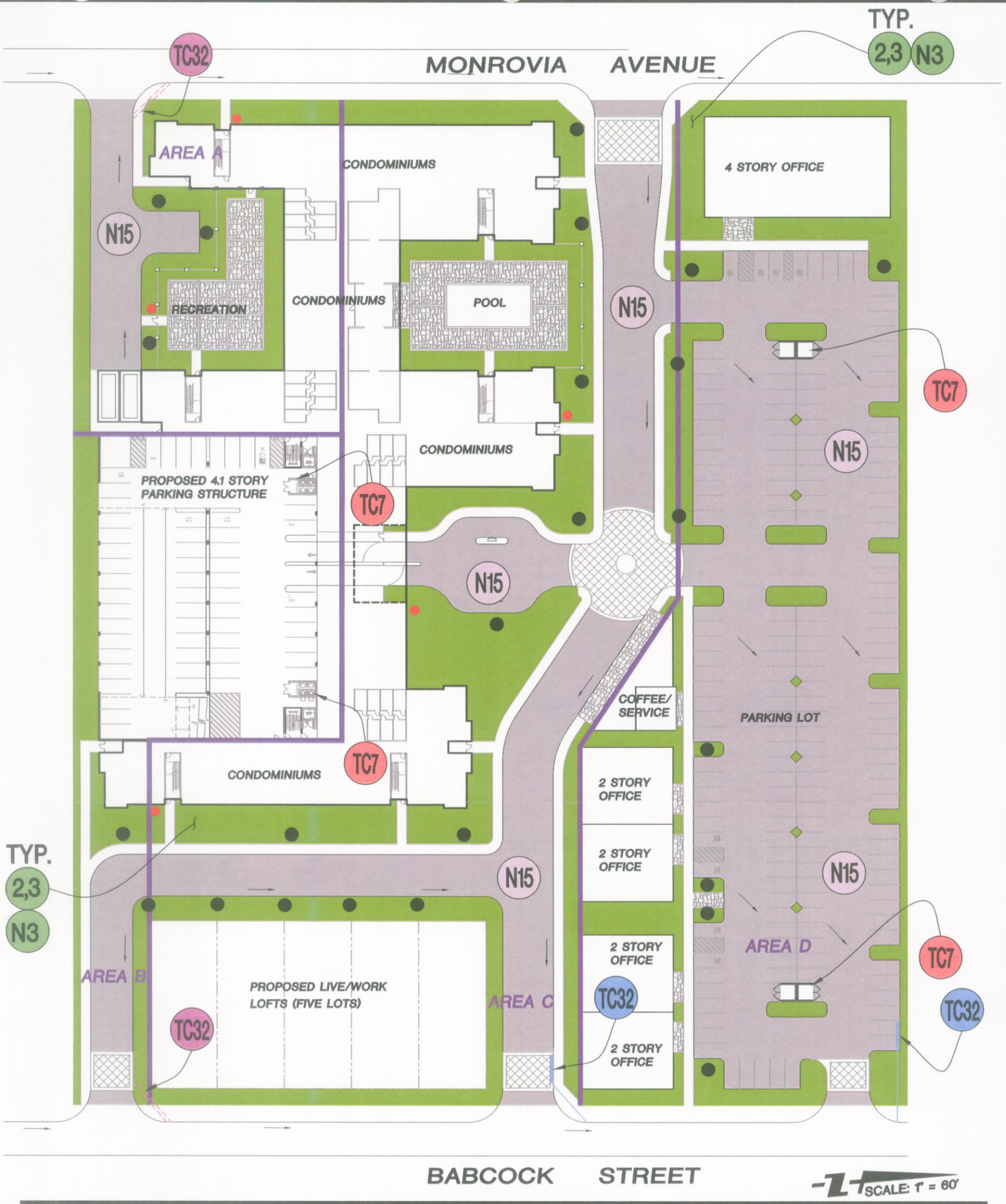


VICINITY MAP

N.T.S.

Attachment 2

Water Quality Management Plan



BMP LEGEND

- | | | | | | | | | |
|-------------|--|----------------------------|-----------|--|------------------------------------|------------|--|--------------------------|
| TC7 | | TRASH ENCLOSURE | 2 | | EFFICIENT IRRIGATION | N15 | | PAVEMENT SWEEPING |
| TC32 | | FLUME FILTER W/ ZPG | 3 | | RUNOFF MINIMIZING LANDSCAPE DESIGN | | | |
| TC32 | | TRENCH DRAIN FILTER W/ ZPG | N3 | | LANDSCAPE MANAGEMENT | | | PET WASTE STATION |
| | | | | | | | | POP-UP DRAINAGE EMITTERS |

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WATER QUALITY MANAGEMENT PLAN

**1640 MONROVIA AVENUE
COSTA MESA, CALIFORNIA**

SHEET **1** OF **1**

Attachment 3

Table A-1 County DAMP

Table A-1

C Values Based on Impervious/Pervious Area Ratios

% Impervious	% Pervious	C
0	100	0.15
5	95	0.19
10	90	0.23
15	85	0.26
20	80	0.30
25	75	0.34
30	70	0.38
35	65	0.41
40	60	0.45
45	55	0.49
50	50	0.53
55	45	0.56
60	40	0.60
65	35	0.64
70	30	0.68
75	25	0.71
80	20	0.75
85	15	0.79
90	10	0.83
95	5	0.86
100	0	0.90

Attachment 4

Table 7.I-2 Exhibit 7.I CEQA Guidance

Table 7.I-3 Exhibit 7.I CEQA Guidance

Table 7.II-4 Exhibit 7.II Model WQMP

Table 7.1-2
 Summary of the 1998 303(d) Listed Water Bodies and Associated Pollutants of Concern for Orange County

Region	Water Body	Watershed	Pollutant											
			Pathogens / Coliforms	Metals	Nutrients	Pesticides	Organic Compounds	Sediment / Siltation	Salinity	TDS	Chlorides			
Region 8 Santa Ana	Anaheim Bay	C		X		X								
	Huntington Harbor	C	X	X		X								
	Santiago Creek, Reach 4	E								X	X	X	X	X
	Silverado Creek	E	X								X	X	X	X
	San Diego Creek, Reach 1	F		X	X	X			X					
	San Diego Creek, Reach 2	F		X	X				X					
	Newport Bay, Upper	G	X	X	X	X			X					
	Newport Bay, Lower	G	X	X	X	X	X		X					
Region 9 San Diego	Laguna Beach, Pacific Ocean	I	X											
	Aliso Creek, Pacific Ocean	J	X											
	Aliso Creek, Mouth of Orange	J	X											
	Aliso Creek, Lower One Mile	J	X											
	Dana Point, Pacific Ocean	K	X											
	San Juan Creek, Mouth	L	X											
	Lower San Juan, Pacific Ocean	L	X											
	San Juan Creek, Lower	L	X											
	San Clemente	M	X											

Step 4: Characterize the potential water quality impacts

New development and significant redevelopment can be expected to generate potential pollutants in stormwater discharges. **Table 7.I-3** provides a summary of potential pollutants generated by land use type. This table can be used to identify the anticipated pollutants to be generated by a proposed project. Compare the list of pollutants for which the receiving water(s) are impaired (303(d) listed) and for which a TMDL exists or is proposed. Also, consider other applicable Regional Board Directives for a receiving water, as well as specific narrative and numeric Water Quality Objectives for the receiving water outlined in the Basin Plan. Where a proposed project is expected to generate specific pollutants that are regulated by a TMDL, Directive or other water quality objectives, then a potential impact to receiving water quality may be expected but may be shown to not to exist after focused analysis during the CEQA process.

Table 7.I-3 Anticipated and Potential Pollutants Generated by Land Use Type

Priority Project Categories	General Pollutant Categories								
	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	A	A			A	A	A	A	A
Attached Residential Development	A	A			A	P ⁽¹⁾	P ⁽²⁾	P	A
Commercial/Industrial Development >100,000 ft ²	P ⁽¹⁾	P ⁽¹⁾		P ⁽²⁾	A	P ⁽⁵⁾	A	P ⁽³⁾	P ⁽⁵⁾
Automotive Repair Shops			A	A ⁽⁴⁾⁽⁵⁾	A		A		
Restaurants					A	A	A	A	
Hillside Development >5,000 ft ² in SDRWQCB	A	A			A	A	A		A
Hillside Development >10,000 ft ² in SDRWQCB	A	A			A	A	A		A
Parking Lots	P ⁽¹⁾	P ⁽¹⁾	A		A	P ⁽¹⁾	A		P ⁽¹⁾
Streets, Highways & Freeways	A	P ⁽¹⁾	A	A ⁽⁴⁾	A	P ⁽⁵⁾	A		

A = 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.

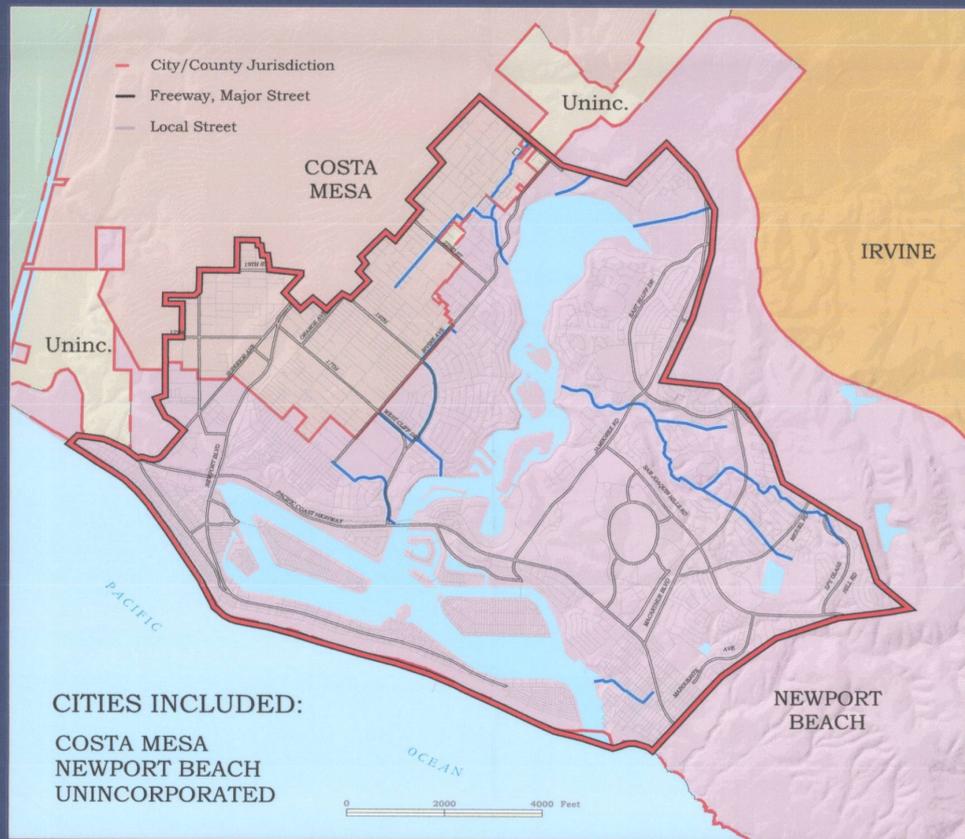
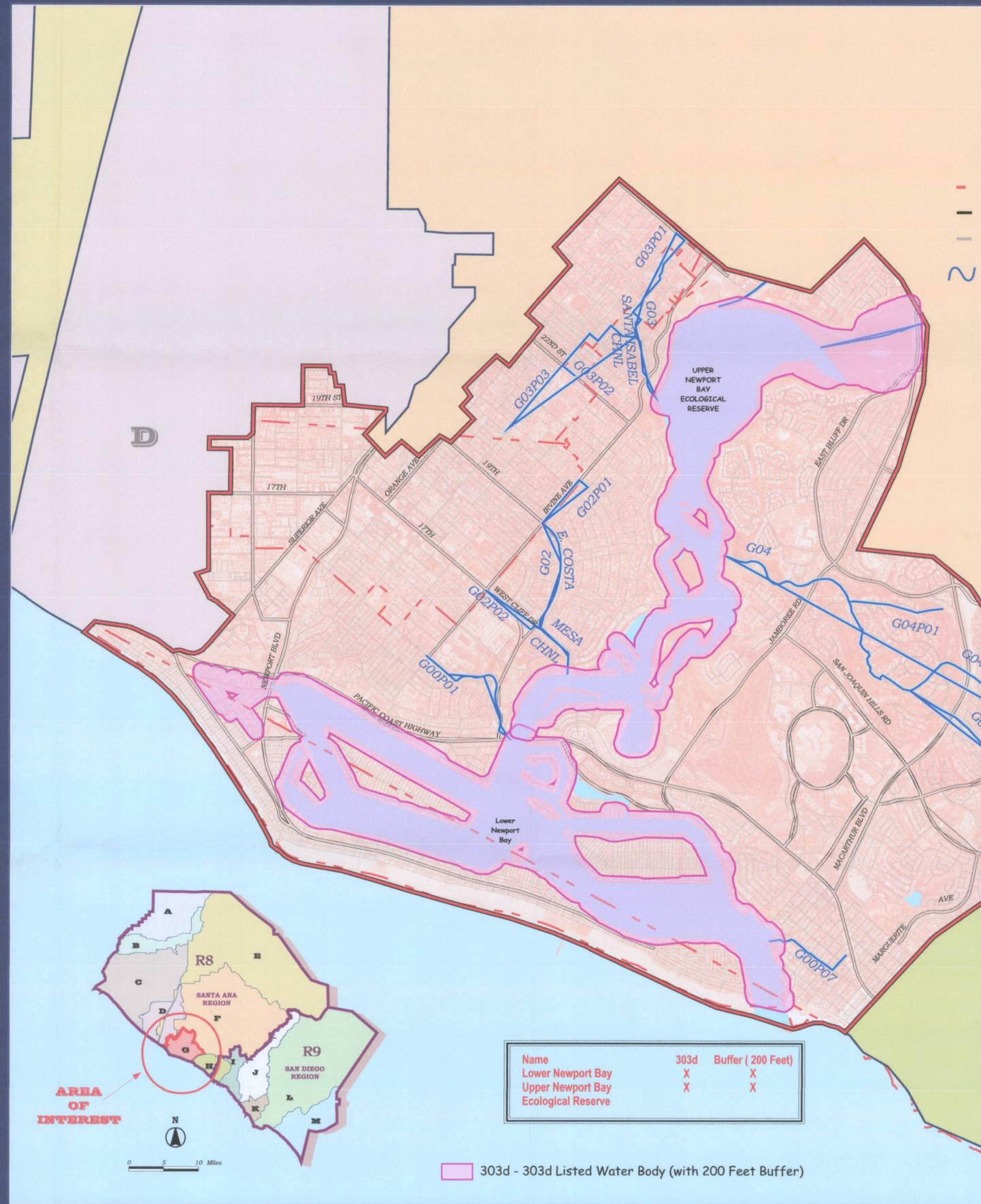
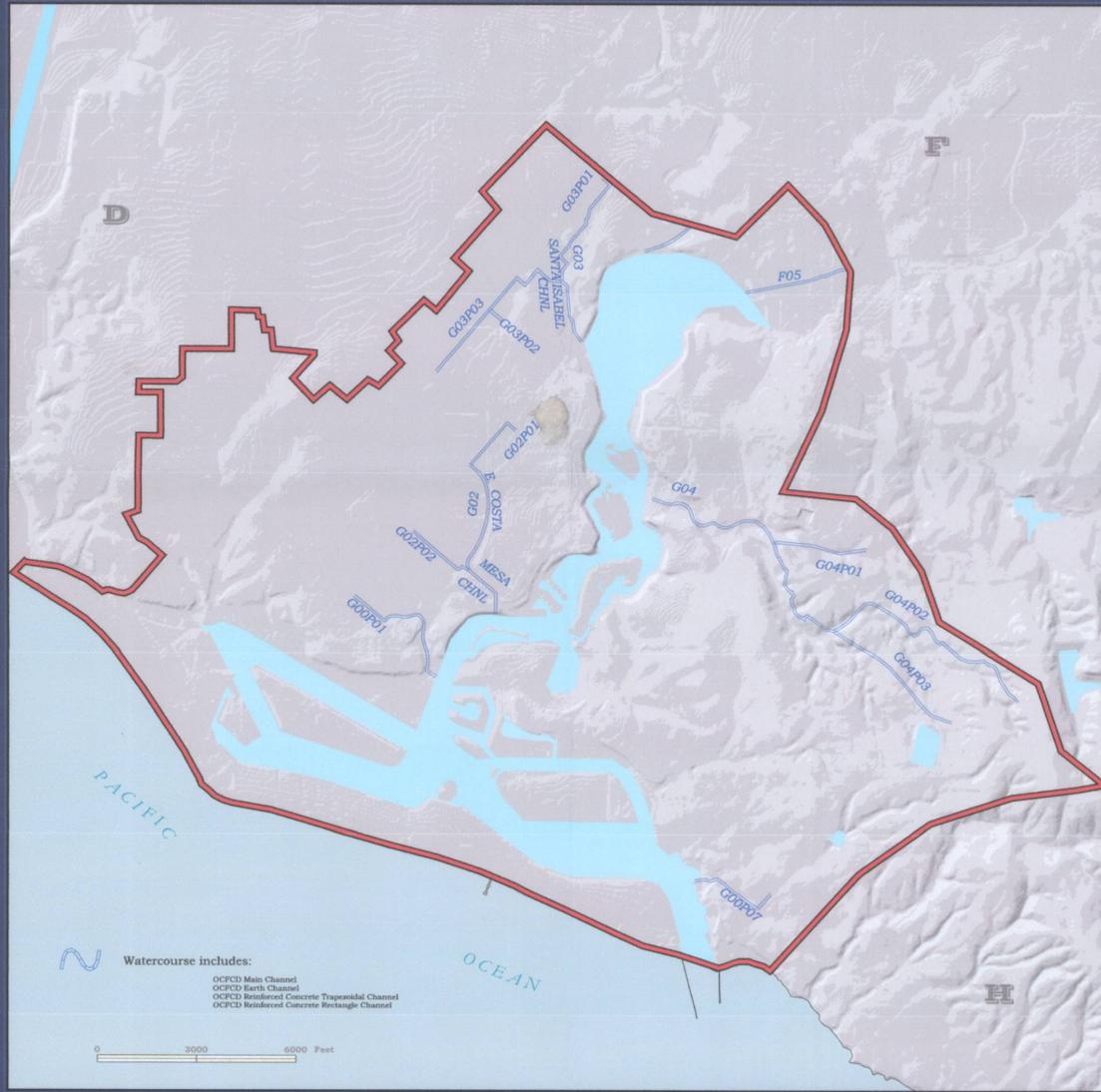
**Table 7.II-4
Source Control and Site Design Stormwater BMP Selection Matrix**

Priority Project Category	Source Control BMPs ⁽¹⁾	Requirements Applicable to Individual Project Features (or Priority Project Categories) ⁽²⁾									Site Design BMPs ⁽³⁾
		Loading Dock Areas	Maintenance Bays	Vehicle Wash Areas	Outdoor Processing Areas	Equipment Wash Areas	Fueling Areas	Hillside Landscaping	Washwater Controls for Food Preparation Areas	Community Car Wash Racks	
Detached Residential Development	R							R N/A			C
Attached Residential Development	R							R N/A	R N/A		C
Commercial/Industrial Development >100,000 ft ²	R	R	R	R	R	R	R	R	R		C
Automotive Repair Shop	R	R	R	R		R	R				C
Restaurants	R	R				R		R N/A	R		C
Hillside Development >5,000 ft ² in SDRWQCB	R							R			C
Hillside Development >10,000 ft ² in SARWQCB	R							R			C
Parking Lots	R							R N/A			C
Streets, Highways & Freeways	R							R			C

R = Required; select BMPs as required from the applicable steps in Section 7.II-3.3.2 or equivalent.
C = Incorporate in site design, as appropriate.
(1) Required for all projects regardless of priority. Refer to Section 7.II-3.3.2.
(2) Priority project categories must apply specific stormwater BMP requirements, where applicable. Projects are subject to the requirements of all Priority Project categories that apply.
(3) Refer to Section 7.II-3.3.1.

Attachment 5

ESA Map



**WATERSHED G:
EAST COSTA MESA - NEWPORT BEACH
ENVIRONMENTALLY SENSITIVE AREAS
COUNTY OF ORANGE, CALIFORNIA 10025 AC**

Attachment 6

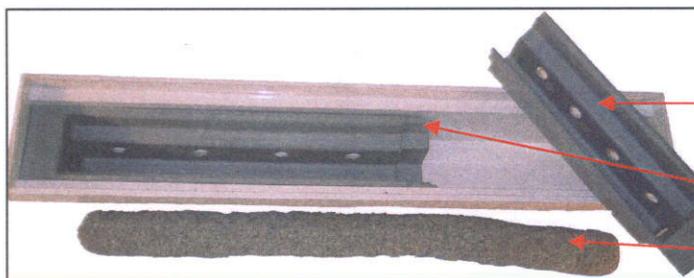
BMP FACT SHEETS

Trench Drain Filter



- Bio Clean Trench Drain Filter is especially designed for high levels of hydrocarbon, oils and grease. It will also capture trash, litter, sediments and organics. The medium is both absorbent and adsorbent attracting hydrocarbon to the polymer service for adsorption.

- For use in Standard Trench Drains
- Ideal for Gas Stations and Maintenance Yards
- Captures Hydrocarbon (Oil and Grease)
- Easy Maintenance and Replacement of Hydrocarbon Booms
- Also Captures Trash and Litter
- Treats Entire Flow
- Manufactured from Marine Grade Fiberglass with UV Protection
- Available in 4 Foot Sections
- The Flow Rate is 0.064cfs per foot. For Instance, a 10 foot long trench filter will flow 0.64cfs.



• Marine Grade High Durability UV Protected Fiberglass

• Custom Manufactured for Exact Fit

• Hydrocarbon Boom

SPECIFICATIONS

Trench Drain Filter

I. Specifications

Coverage: The Trench Drain Filter provides full coverage of trench drains, at rated flows, is conveyed to the filter. The filter will retain all windblown and swept debris entering the drain. The Trench Drain Filter is located directly beneath the trench drain grate for direct service/access from the surface. The filter is made to direct water flow from the trench grate through the filter media before entering the trench unit.

Non-Corrosive Materials: All components of the filter system, including mounting hardware, fasteners, support brackets, filtration material, and support frame are constructed of non-corrosive materials. The frame is manufactured of marine grade fiberglass, gel coated for UV protection. No polypropylene, monofilament netting or fabrics shall be used.

Durability: Filter (excluding oil absorbent media) and support structures are of proven durability, with an expected service life of 10 to 15 years. The filter and mounting structures are of sufficient strength to support water, sediment, and debris loads when the filter is full, with no slippage, breaking, or tearing. All filters are warranted for a minimum of five (5) years.

Oil Absorbent Media: The Filter is fitted with Bio Sorb, an absorbent media for removal of petroleum hydrocarbons from influent, and so placed in the filter assembly to treat influent at rated flow. Absorbent media is easily replaceable in the filter, without the necessity of removing fixed mounting brackets or mounting hardware.

Filter Bypass: Water will not bypass the filter inlet contact surfaces at low flows.

Pollutant Removal Efficiency: The filter is designed to capture high levels of trash and litter, grass and foliage, sediments, hydrocarbons, grease and oil. The filtered flow maximum capacity is 0.064 cfs per foot.

Filter Media Replacement: Removal and replacement of the booms containing the absorbent media is accomplished without the necessity of removing mounting bolts, support frames, etc.

Filter Removal: The filter is readily removable from the trench drain for maintenance or replacement without the necessity of removing mounting bolts, support frames, etc.

II. Installation

Installation: The filter will be securely installed in the trench drain, with contact surfaces sufficiently joined together so that no filter bypass can occur at low flow. All anchoring devices and fasteners are installed within the interior of the drain inlet.

Installation Notes:

1. Bio Clean Environmental Services, Inc. inlet filter inserts shall be installed pursuant to the manufacturer's recommendations and the details on this sheet.
2. Inlet filter insert shall provide coverage of entire trench inlet opening
3. The Trench Filter is installed by lifting the grate and inserting the filter so the filter lip sits underneath the grate. The filter is manufactured so the sections overlap each other for easy installation.

III. Maintenance

Maintenance: The filter is designed to allow for the use of manual or vacuum removal of captured materials in the filter structure. The filter is serviceable manually or by centrifugal compressor vacuum units without causing damage to the filter during normal cleaning and maintenance. Filters can be cleaned easily by simply removing the grate to expose access to the filter. The hydrocarbon booms then are removed and the trash and debris can be removed from the structure. At each cleaning, new hydrocarbon booms should be installed by placing in the filter.

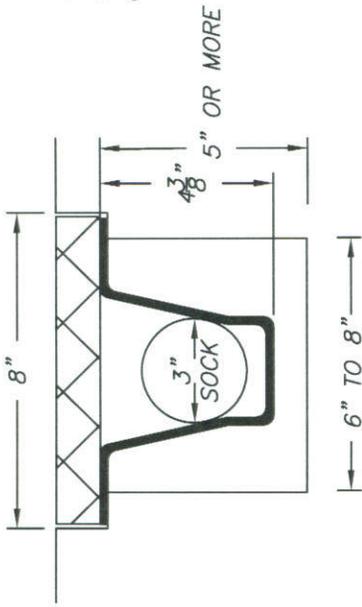
Maintenance Notes:

1. Bio Clean Environmental Services Inc. recommends cleaning and debris removal maintenance a minimum of four times per year, and replacement of hydrocarbon booms a minimum of twice per year.
2. Following maintenance and/or inspection, the maintenance operator shall prepare a maintenance/inspection record. The record shall include any maintenance activities performed, amount and description of debris collected, and condition of filter.
3. The owner shall retain the maintenance/inspection record for a minimum of five years from the date of maintenance. These records shall be made available to the governing municipality for inspection upon request at any time.
4. For maintenance and cleaning remove grate to gain access to inlet filter insert. Where possible the maintenance should be performed from the ground surface. Note: entry into an underground stormwater vault such as an inlet vault requires certification in confined space training.
5. Remove all trash, debris, organics, and sediments collected by the inlet filter insert.
6. Evaluation of the hydrocarbon boom shall be performed at each cleaning. If the boom is filled with hydrocarbons and oils it should be replaced.
7. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
8. The hydrocarbon boom is classified as hazardous material and will have to be picked up and disposed of as hazardous waste. Hazardous material can only be handled by a certified hazardous waste trained person (minimum 24-hour hazwoper).



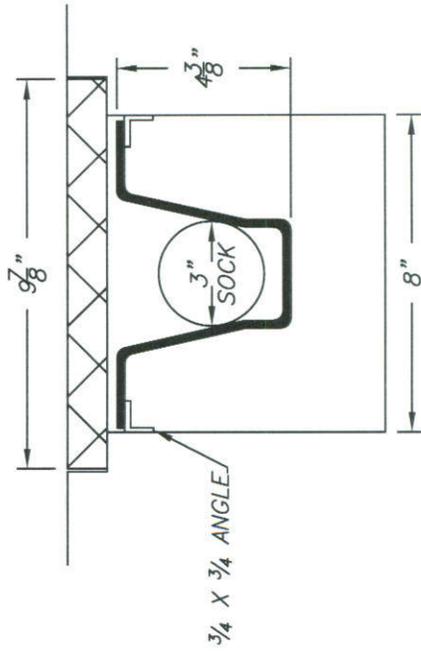
P O Box 869, Oceanside, CA 92049
(760) 433-7640 Fax (760) 433-3176
www.biocleanenvironmental.net

TRENCH GRATE FILTER MODEL # 4.5 - 8

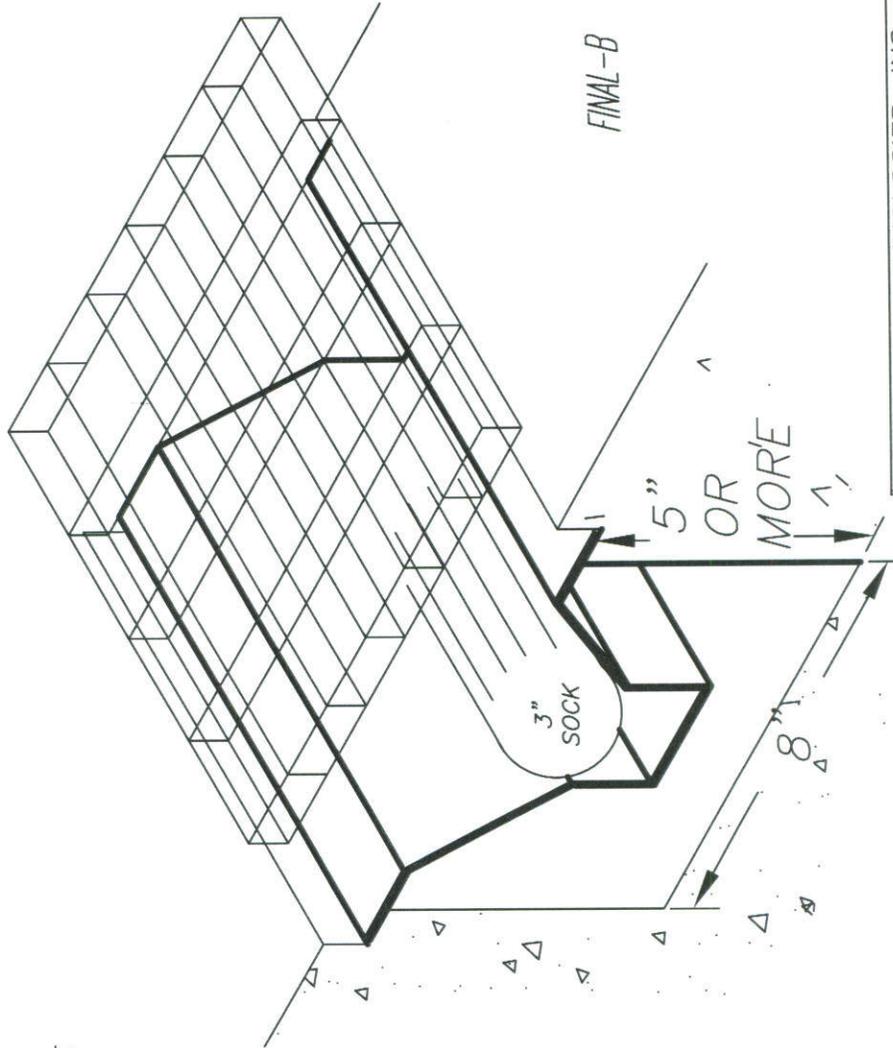


TO INSTALL SIMPLY REMOVE GRATE
PLACE IN INLET FILTER AND REINSTALL
GRATE TO ITS ORIGINAL LOCATION

FOR ODD SIZE TRENCHES FLANGES CAN
BE CUT WITH ALMOST ANY SKILL
SAW WITH CARBIDE BLADE



TO INSTALL THE MODEL 4.5-8 IN A SMALLER OPENING SUCH AS SHOWN
INSTALL 3/4" ANGLE WITH 1/4" DRIVE PINS, PLACE IN INLET FILTER
AND REINSTALL GRATE TO ITS ORIGINAL LOCATION



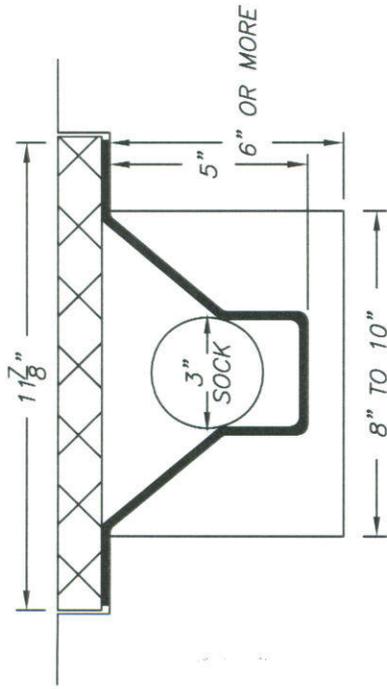
SUNTREE TECHNOLOGIES, INC.
798 CLEARLAKE RD, SUITE #12
COCOA, FL. 32922

TRENCH GRATE FILTER

DATE: 04/24/07 SCALE: SF = 17.5

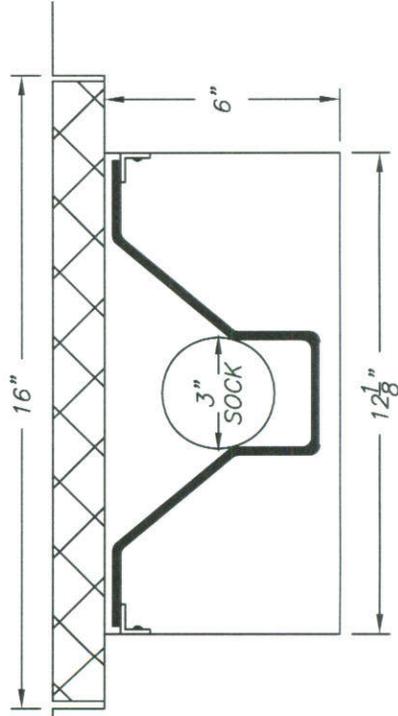
DRAFTER: N R B UNITS = INCHES

TRENCH GRATE FILTER MODEL # 5-12

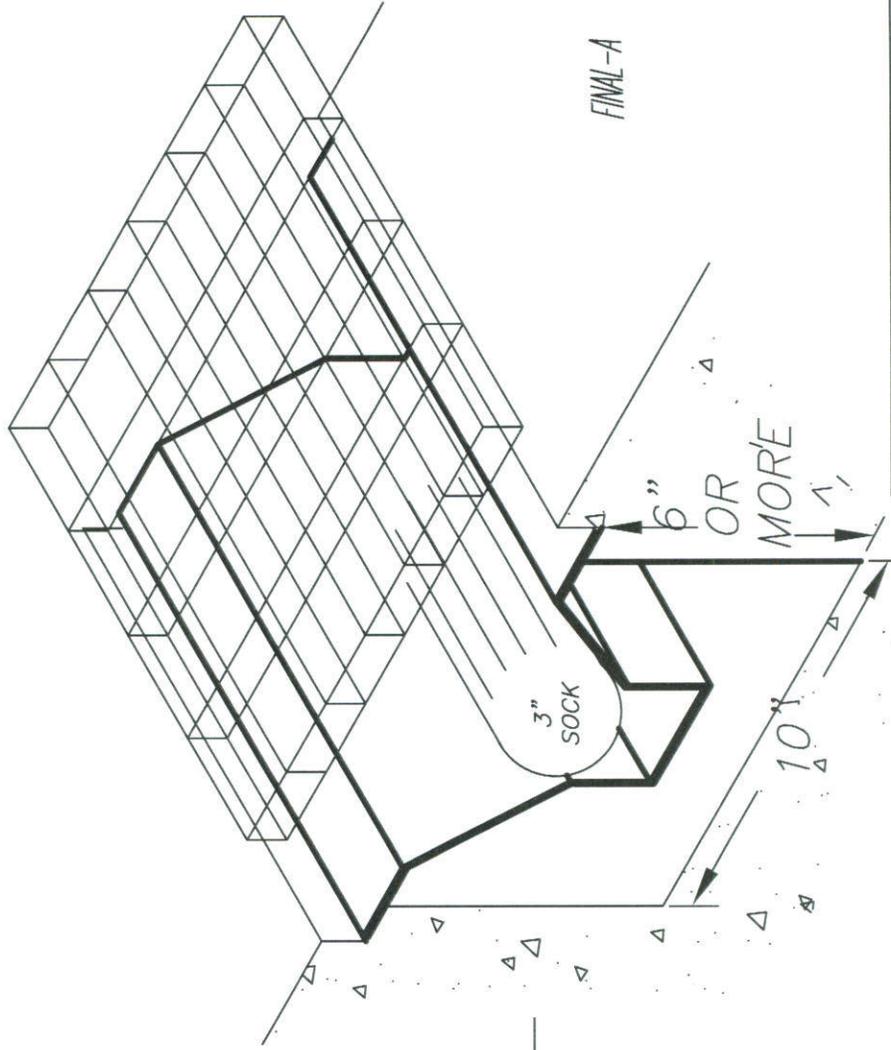


TO INSTALL SIMPLY REMOVE GRATE
PLACE IN INLET FILTER AND REINSTALL
GRATE TO ITS ORIGINAL LOCATION

FOR ODD SIZE TRENCHES FLANGES CAN
BE CUT WITH ALMOST ANY SKILL
SAW WITH CARBIDE BLADE



TO INSTALL THE MODEL 5-12 IN A WIDER OPENING SUCH AS SHOWN
INSTALL 3/4" ANGLE WITH 1/4" DRIVE PINS, PLACE IN INLET FILTER
AND REINSTALL GRATE TO ITS ORIGINAL LOCATION



SUNTREE TECHNOLOGIES, INC. 798 CLEARLAKE RD., SUITE #2 COCOA, FL. 32922	
TRENCH GRATE FILTER	
DATE: 04/24/07	SCALE: SF = 17.5
DRAFTER: N R B	UNITS = INCHES

FLUME FILTER

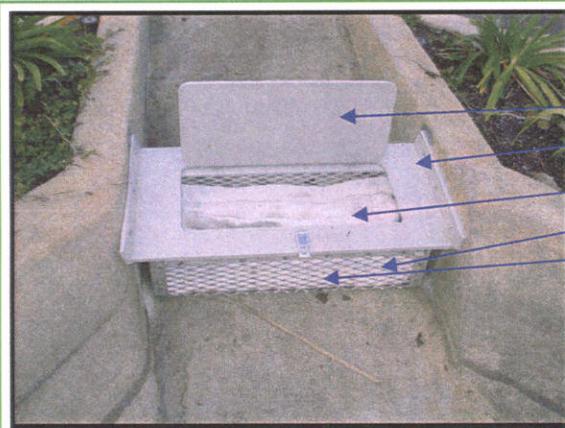
A Stormwater Pollution Control Device

FLUME FILTER - Hydrocarbon Type



- Captures Trash & Litter
- Captures Hydrocarbons
- Captures Grass & Leaves
- Various Sizes Available
- Custom Configurations
- Easy to Maintain
- Heavy Duty Construction

FLUME FILTER - Trash Type



- Easy Access for Cleaning
- Durable- Fiberglass for Strength
- Storm Booms – For Filtering Hydrocarbons
- Mesh Screen – For Filtering out Sediments
- Diamond Plate for Strength and Filtering Large Debris

SPECIFICATIONS

Flume Filter/Boom Box

I. Specifications

Coverage: The Flume Filter provides full coverage of flume such that all influent, at rated flows, is conveyed to the filter. The filter will retain all windblown and swept debris entering the flume or channel.

Non-Corrosive Materials: All components of the filter system, including mounting hardware, fasteners, support brackets, filtration material, and support frame are constructed of non-corrosive materials: 316 stainless steel, aluminum and starboard. Fasteners are stainless steel. Primary filter screen is ¾" flattened expanded aluminum metal and 316 stainless steel welded 10 x 10 mesh screen.

Durability: The Flume Filter is constructed of an all starboard frame and stainless steel screens backed by ¾" flattened expanded aluminum metal. Filter (excluding oil absorbent media) and support structures are of proven durability, with an expected service life of 10 to 15 years. The filter and mounting structures are of sufficient strength to support water, sediment, and debris loads when full without breaking, or tearing. All filters are warranted for a minimum of five (5) years.

Oil Absorbent Media: The Flume Filter is fitted with an absorbent media for removal of petroleum hydrocarbons from influent, and so placed in the filter assembly to treat influent at rated flow. Absorbent media is easily replaceable in the filter, without the necessity of removing fixed mounting brackets or mounting hardware. Hydrocarbon media is placed in the bottom of the filter unit. The hydrocarbon media encompasses the total bottom area of the unit and lie horizontal for maximum absorption. No polypropylene, monofilament netting or fabrics shall be used in the product.

Overflow Protection: The Flume Filter is designed so that it does not inhibit storm flows entering the flume/channel or obstruct flow through the flume/channel during peak storm flows.

Filter Bypass: Water will not bypass the filter at low flows, nor bypass through contact surfaces(hydrocarbon boom) at low flows.

Pollutant Removal Efficiency: The Flume Filter is designed to capture high levels of trash and litter, grass and foliage, sediments, hydrocarbons, grease and oil. The filter has a multistage filtration system, which incorporates durable screen and steel mesh filtering.

Filter Maintenance: The Flume filter is readily serviceable without removing. To service, open the top hatch, clean and inspect and/or replace hydrocarbon booms.

II. Installation

Installation: The Flume Filter will be securely installed within the flume/channel, with contact surfaces sufficiently joined together so that no filter bypass can occur at low flow. All anchoring devices and fasteners are installed within the interior of the flume/channel.

Installation Notes:

1. Bio Clean Environmental Services, Inc. Flume Filter shall be installed pursuant to the manufacturer's recommendations and the details on this sheet.
2. Flume Filter shall provide coverage of entire flume/channel opening to direct all flow through the filter.
3. Attachments to flume/channel walls shall be made of non-corrosive hardware.
4. Place filter in flume/channel, attach the scribe strips to the filter with pop rivets, and then attach the same scribe strips with concrete drive pins to the side of the flume/channel.
5. Place hydrocarbon booms in bottom of unit in a horizontal manner.
6. Close lid and latch when applicable.

III. Maintenance

Maintenance: The Flume filter is readily serviceable without removing. To service, open the top hatch, clean and inspect and replace hydrocarbon booms as per the following procedure:

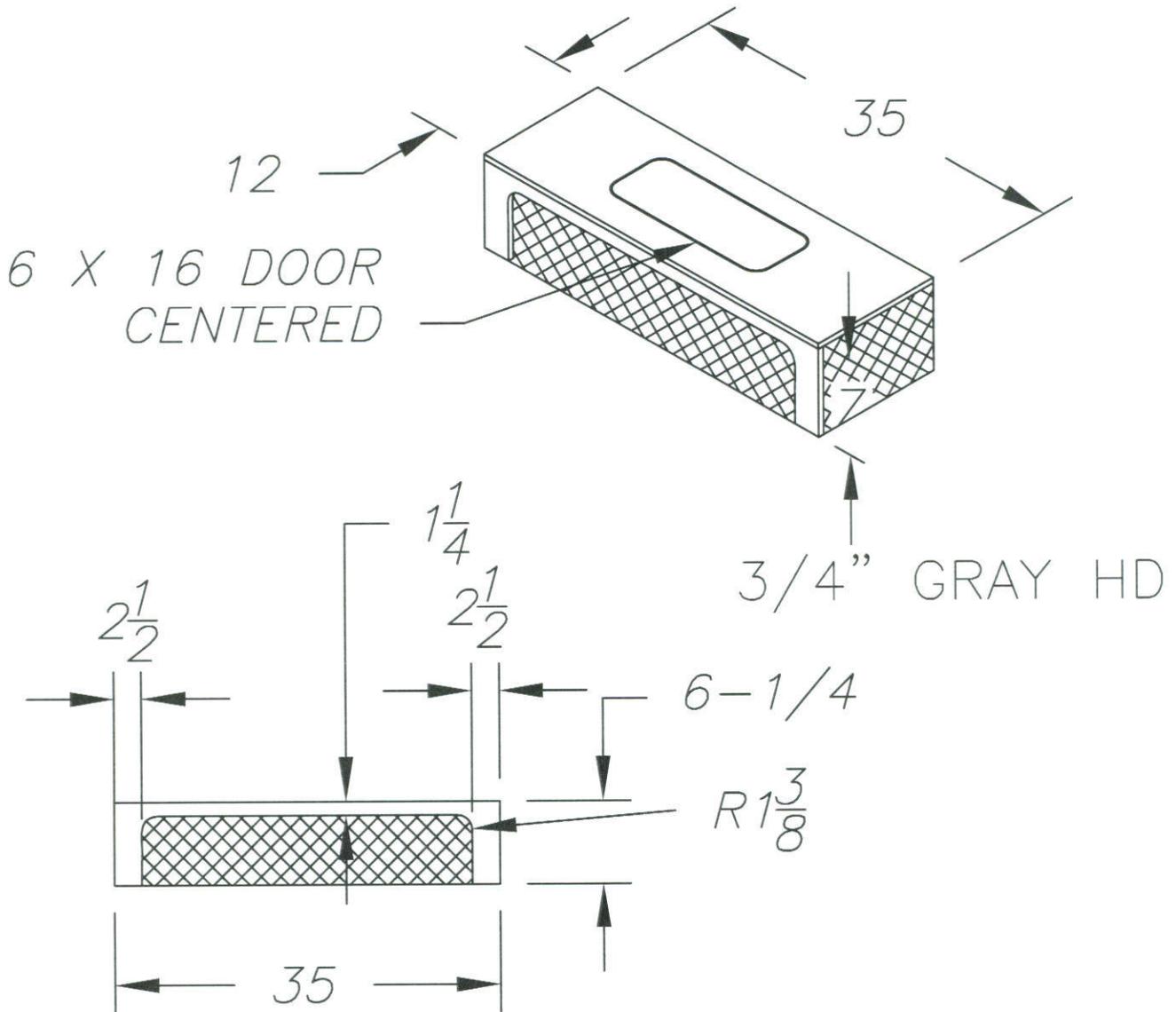
Maintenance Notes:

1. Bio Clean Environmental Services, Inc. recommends cleaning and debris removal maintenance a minimum of four times per year, and replacement of hydrocarbon booms a minimum of twice per year.
2. Following maintenance and/or inspection, the maintenance operator shall prepare a maintenance/inspection record. The record shall include any maintenance activities performed, amount and description of debris collected, and condition of filter.
3. The owner shall retain the maintenance/inspection record for a minimum of five years from the date of maintenance. These records shall be made available to the governing municipality for inspection upon request at any time.
4. Remove all trash, debris, organics, and sediments collected in front of the filter, then open the lid and remove trash and debris within the filter.
5. Evaluation of the hydrocarbon boom shall be performed at each cleaning. If the boom is filled with hydrocarbons and oils it should be replaced. Remove hydrocarbon booms and replace.
6. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
7. The hydrocarbon boom is classified as hazardous material and will have to be picked up and disposed of as hazardous waste. Hazardous material can only be handled by a certified hazardous waste trained person (minimum 24-hour hazwoper).



P O Box 869, Oceanside, CA 92049
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BIO CLEAN FLUME FILTER – MEDIA TYPE
SAN DIEGO REGIONAL STANDARD-35"



5 YEAR MANUFACTURERS WARRANTY

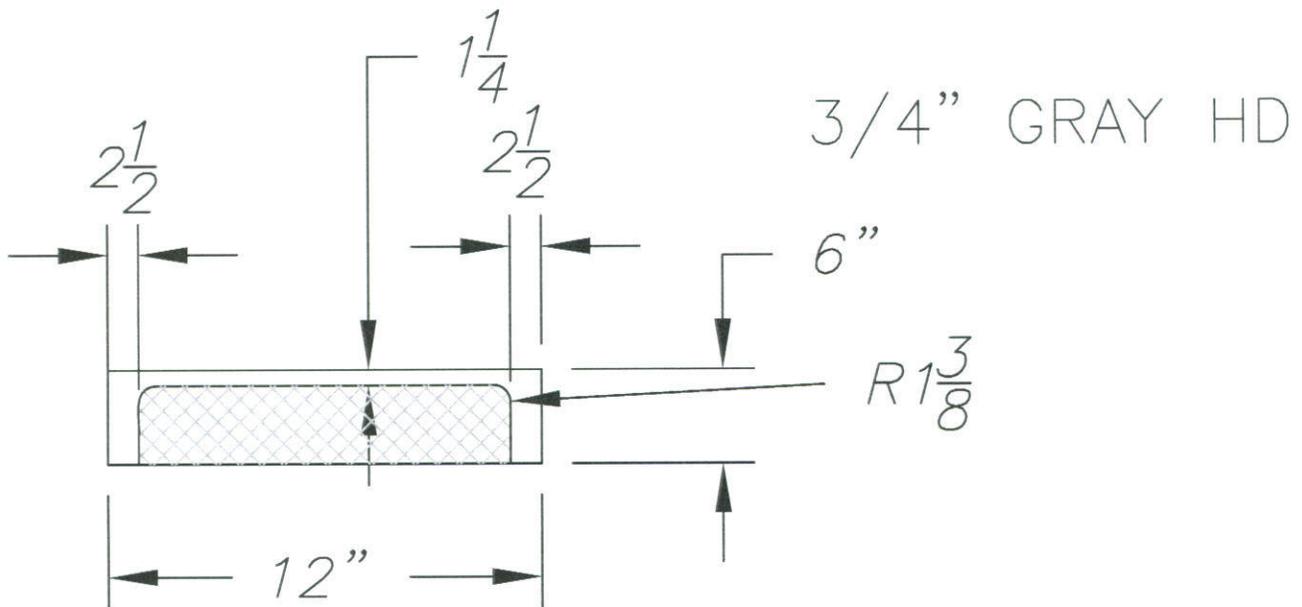
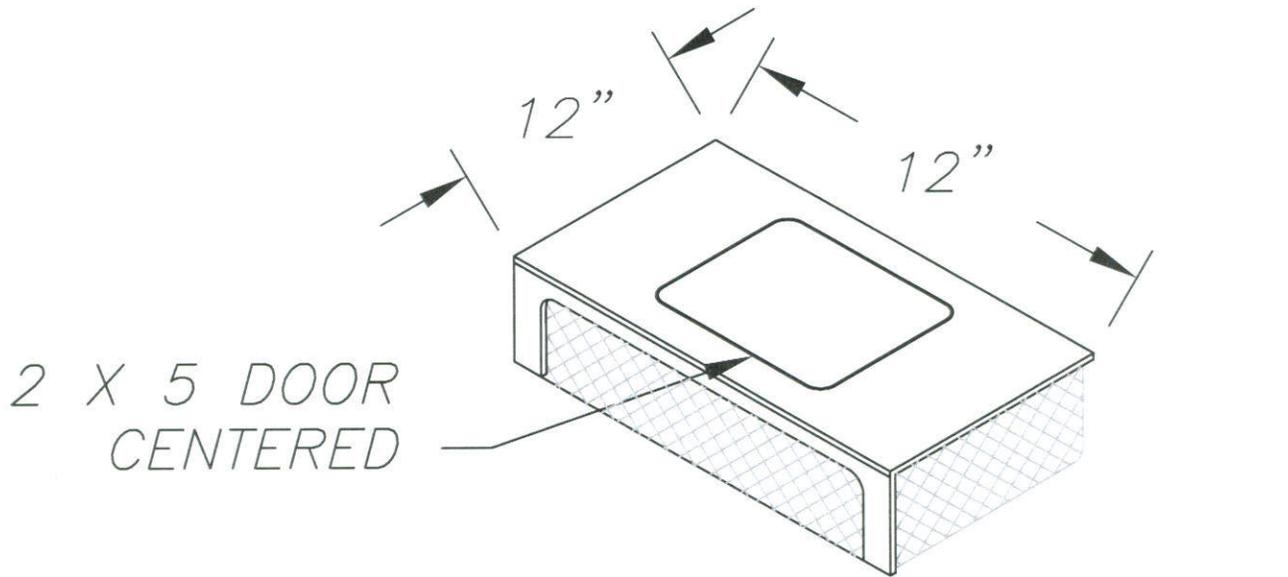
PATENTED

ALL FILTER SCREENS ARE STAINLESS STEEL

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

BIO CLEAN ENVIRONMENTAL SERVICES P.O. BOX 869, OCEANSIDE, CA 92049 TEL. 760-433-7640 FAX. 760-433-3176 Email: info@biocleanenvironmental.net		PROJECT:	
FLUME BOOM BASKET SYSTEM		REVISIONS:	DATE:
DATE: 12/12/05	SCALE: SF = 15	REVISIONS:	DATE:
DRAFTER: N.R.B.	UNITS = INCHES	REVISIONS:	DATE:

BIO CLEAN FLUME FILTER – MEDIA TYPE
SAN DIEGO REGIONAL STANDARD – 12”



5 YEAR MANUFACTURERS WARRANTY

PATENTED

ALL FILTER SCREENS ARE STAINLESS STEEL

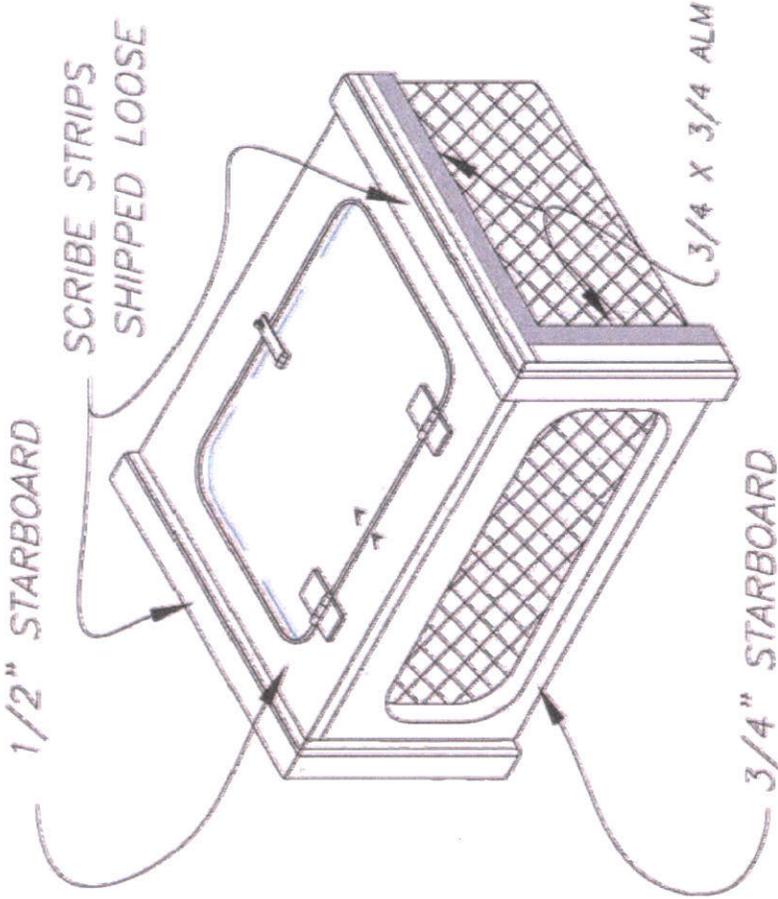
EXCLUSIVE CALIFORNIA DISTRIBUTOR:
BIO CLEAN ENVIRONMENTAL SERVICE
P.O. BOX 869, OCEANSIDE, CA. 92049
TEL. 760-433-7640 FAX: 760-433-3176
Email: info@biocleanenvironmental.net

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

SUNTREE TECHNOLOGIES 798 CLEARLAKE RD. SUITE #2 COCOA FL. 32922 TEL. 321-637-7552 FAX 321-637-7554		PROJECT:
FLUME BOOM BASKET SYSTEM		REVISIONS: DATE:
DATE: 12/12/05	SCALE: SF = 15	REVISIONS: DATE:
DRAFTER: N.R.B.	UNITS = INCHES	REVISIONS: DATE:

Bio Clean Environmental Services, Inc.

FLUME, BOOM BASKET & COVER

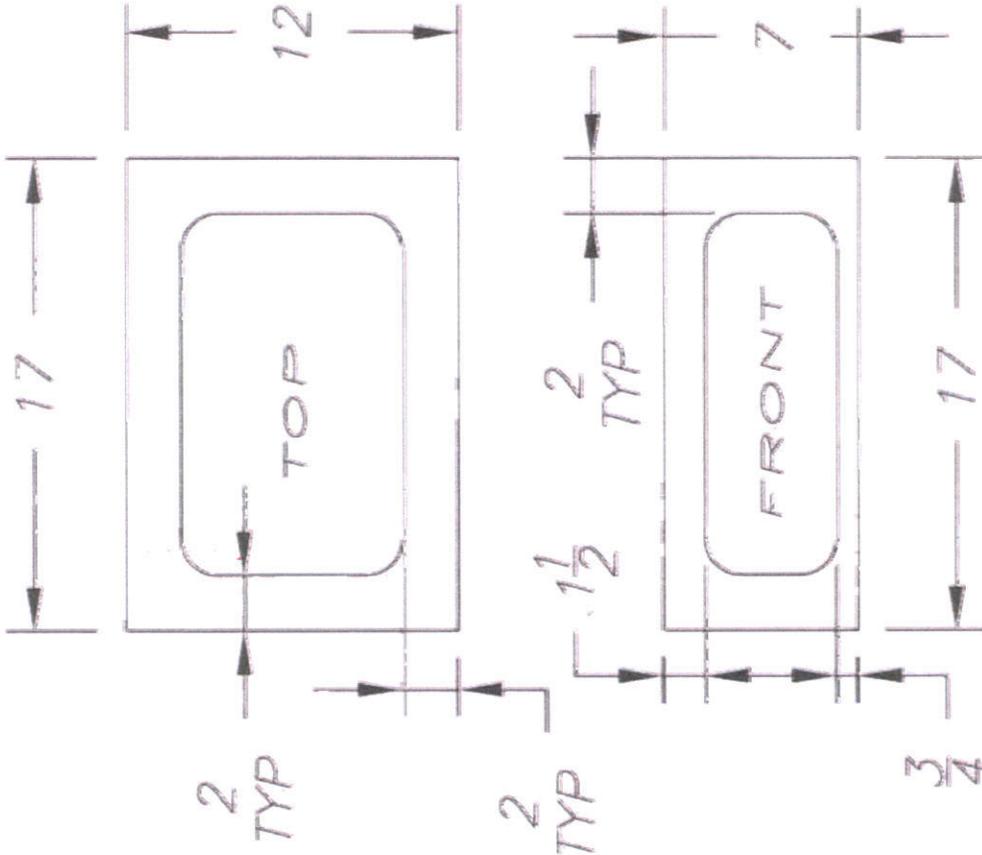


FLUME BASKET COVER

NOTE:

PLACE UNIT IN FLUME AND MARK CONCRETE FOR MOUNTING ANGLES. INSTALL ANGLES, THEN PLACE UNIT ON MOUNTING ANGLES AND INSTALL WITH 2" X #8 SCREWS, THEN INSTALL SCRIBE STRIPS, IF NECESSARY, TO COVER GAPS.

Manufactured for Suntree Technologies



Treatment Flow Rate - 0.26 CFS per

Linear Foot

(Assumes 50% Screen Blockage)

This Filter is Available in Sizes ranging from 12" to 60"

ZPG™ (Zeolite, Perlite, GAC blend)

Suggested For:

- Sediments
- Oil and grease
- Total nutrients
- Complexed and soluble metals
- Anthropogenic organic contaminants
- Ammonia



Description

This proprietary blend of zeolite, perlite, and granular activated carbon media is used to provide an alternative for CSF media for installations where leaf media cannot be used.

Perlite is a natural, volcanic ash, similar in composition to glass and similar in appearance to pumice. The multicellular nature of expanded perlite is the key to its excellent ability to trap sediments and adsorb oil and grease. The coarse texture of the expanded perlite provides a high sediment and oil and grease storage capacity. It also provides excellent removal of total non-dissolved nutrients that are locked within the leaves and other organic solids that it traps.

GAC is a widely accepted water filtration media used for the removal of organic compounds. The high carbon content and porous nature of GAC accounts for its excellent ability to remove organic compounds through adsorption, particularly anthropogenic organic contaminants

The term "zeolite" defines a family of both natural and synthetic, hydrous aluminosilicate materials with a highly porous mineral matrix that holds "light", alkali metal cations (typically calcium and magnesium). The usefulness of zeolite in water treatment is due to its ability to use a cation exchange reaction that removes other cations such as zinc, copper, lead, and ammonia from water. In the cation exchange reaction, the "light" metal cations in the zeolite matrix are displaced by the "heavier" metal cations, such as copper, in the water. The zeolite used in conjunction with the StormFilter is clinoptilolite, which has a cation exchange capacity (CEC) of approximately 100 meq/100g. Unlike synthetic metals removal media, naturally-inert Clinoptilolite makes an excellent metals removal media option when CSF media cannot be used.