

Water Quality Technical Report

FOR:
PRELIMINARY GRADING PLANS FOR

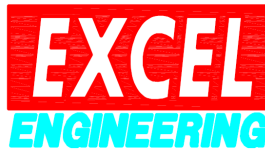
*990 North Broadway
Escondido, CA 92026*

Preparation Date: May 31, 2013
Revision: June 30, 2014

Prepared for:

*Pacific Chasse Partners, LLC
501 Santa Monica Blvd., Suite 312
Santa Monica, CA 90401*

Prepared by:
ROBERT D. DENTINO

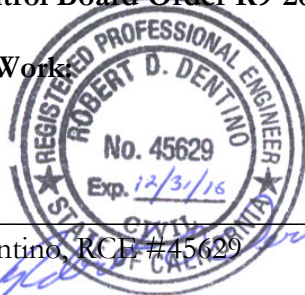


LAND PLANNING • ENGINEERING • SURVEYING

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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.

Engineer of Work:



Robert D. Dentino, RCE #45629

7-22-2015

Date

PROJECT / APPLICANT INFORMATION

Project Name:	Centerpointe 78
Applicant:	Lars Andersen
Applicant's Address:	<i>30220 Rancho Viejo Road, Suite B San Juan Capistrano, CA 92675</i>
Plan Prepare By (<i>Leave blank if same as applicant</i>):	Excel Engineering. 440 State Place, Escondido CA 92029
Date:	May 31, 2013
Revision Date (If applicable):	July 4, 2014 July 22, 2015

PROJECT SETTING

Project Name, Location and Description

The existing condition is an abandoned automobile dealership property which consists of office buildings, car garages, retaining walls, asphalt parking lots, concrete gutters, and minimal vegetation. The project site is approximately 3.69 acres, bounded on the west by residential housing, north by Lincoln Avenue, North Broadway on the east, and an earthen swale and Highway 78 to the south. The site consists of parcels in a rectangular shape, located north of Highway 78, in the City of Escondido.

Existing Site Features and Conditions

Topographically the site is relatively flat; vegetation on-site is on the perimeter of the property and generally consists of some grass, bushes, and trees. The storm water flows in two directions; most of the water flows north toward the driveways and remaining amount flows south into an existing gutter and curb inlet. Since this site is a fully developed site, there is no natural resource need to be preserved.

Opportunities and Constraints for Stormwater Control

The purposes of this project are to develop a multi retail center that consists of a market and restaurant and to improve the drainage system of the area. The purpose of this study is to analyze proposed facilities associated with this project to ensure that downstream or offsite properties will not be adversely affected by our projects proposed development.

Due to the flat and fully developed existing site, constraints such as minimal sufficiency of hydraulic head, low infiltration rate and no existing private stormdrain was encountered. Wastes generated by a parking lot development are anticipated. These include, but are not limited to the following: oil spills, nutrients, metals, Oxygen demanding substances, trash, and fertilizer. No natural resources need to be protected in this project since the existing condition is fully developed.

This project proposed a better drainage facility with storm water treatment. For water quality purposes, bio-retention facilities are utilized in this project to ensure the targeted constituents are treated. Due to the site constraints, Basin E (12,918 sf) will not be able to be captured by the bioretention, therefore we use Bioclean flume filter to solve this problem.

PRIORITY DEVELOPMENT PROJECT DETERMINATION

Table 1 Priority Development Project Determination

Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	A	Housing subdivisions of 10 or more dwelling units. Examples: single-family homes, multi-family homes, condominiums, and apartments.
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	B	Commercial—greater than one acre. 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 <input checked="" type="checkbox"/>	C	Heavy industry—greater than one acre. Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.).
Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	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 <input checked="" type="checkbox"/>	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 <input checked="" type="checkbox"/>	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 <input checked="" type="checkbox"/>	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 <input checked="" type="checkbox"/>	No <input type="checkbox"/>	H	Parking lots 5,000 square feet or more or with 15 or more parking spaces and potentially exposed to urban runoff.
Yes <input type="checkbox"/>	No <input checked="" 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 <input checked="" type="checkbox"/>	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.
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PROJECT STORMWATER QUALITY DETERMINATION

Total Project Site Area 3.69 (Acres)
 Estimated amount of disturbed acreage: 3.69 (Acres)
 WDID: _____
 A. Total size of project site: 3.69 (Acres)
 B. Total impervious area (including roof tops) before construction 3.37 (Acres)
 C. Total impervious area (including roof tops) after construction 3.08 (Acres)
 Calculate percent impervious before construction: B/A = 91 %
 Calculate percent impervious after construction: C/A = 84 %

Table 2: Project Specific Stormwater Analysis

QUESTIONS / ANSWERS	
1.	Please provide a brief description of the project. <i>The subject site has an approximate area of 3.69 acres to develop a multi retail center that consists of a market and restaurant, and to improve the drainage system of the area. The purpose of this study is to analyze proposed facilities associated with this project to ensure that downstream or offsite properties will not be adversely affected by our projects proposed development.</i>
2.	Describe the current and proposed zoning and land use designation. <i>The current land use is a car lot designated as commercial general.</i>
3.	Describe the pre-development and post-development topography of the project. (Show on Plan) <i>Pre-Development:</i> <i>Topographically the site is relatively flat; vegetation on-site is on the perimeter of the property and generally consists of some grass, bushes, and trees. The storm water flows into two directions; most of the water flows north toward the driveways and remaining amount flows south into an existing gutter and curb inlet.</i> <i>Post-Development:</i> <i>The finishing surface on this site will be asphalt pavement and overall level is higher than that of existing. Bio-retention facilities are utilized in this project to ensure the targeted constituents are treated.</i>
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. <i>Based on Appendix A hydrologic soil map classifications in San Diego County Hydrology manual, the site is classified as soil type D. Ground water or seepage was encountered in the subsurface explorations done by soil engineer. There is no soil infiltration BMP proposed in this project.</i>

5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.
<i>Escondido Creek HA (904.6) is listed as a 303(d): DDT, Enterococcus, Fecal Coliform, Manganese, Phosphate, Selenium, Sulfates, Total Dissolved Solids, Total Nitrogen as N, and Toxicity.(source:2010- 303(d) list CA waterboards)</i>	
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.
<i>There is no known High Risk Areas (municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limit.</i>	
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.
<i>There is no specific TMDL determination for this watershed.</i>	
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.
<i>The average yearly rainfall for the project area is 15.1 inches. The rainfall for a 6 hour 50-year flood frequency storm is 2.75 inches, and a 24 hour 50 year flood frequency storm is 5.75 inches.</i>	
9.	Determine the soil classification, permeability, erodibility, and depth to groundwater for Treatment BMP consideration.
<i>The project area consists of soil group D. The soil investigation report stated that the site soils are mostly silty to clayey plastic deposits with very low permeability. The project property consists of nearly level to very gently sloping ground surfaces, therefore erodibility is not an issue. The average historic high groundwater level is 10 feet below existing ground surfaces. Bioretention with underdrain is proposed for this project. (No infiltration bioretention is proposed)</i>	
10.	Determine contaminated or hazardous soils within the project area.
<i>There are no known contaminated or hazardous soils within the project area.</i>	
11.	Determine if this project is within the environmentally sensitive areas as defined on the maps in Appendix A of the <i>City of Escondido Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects</i> .
<i>The project is not within an environmentally sensitive area.</i>	
12.	Determine if this is an emergency project.
<i>No, This project is not classified as an emergency project.</i>	

CHANNELS & DRAINAGES

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

Table 3. Project Specific Stormwater Analysis

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES go to 6.
3.	Will the project discharge to unlined channels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES go to 6.
4.	Will the project increase potential sediment load of downstream flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES go to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 12.
12.	Provide other design principles that are comparable and equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 13.
13.	End				

Table 3 Comments:

This project does not include any channel work

TEMPORARY CONSTRUCTION BMPs

Please check the construction BMPs that may be used. The BMPs selected are those that will be implemented during construction of the project. The applicant is responsible for the placement and maintenance of the BMPs selected.

- | | |
|---|--|
| <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 checked="" 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 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.

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.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqd_mdls.pdf	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

HYDRO MODIFICATION DETERMINATION

This project is exempted for Hydromodification because the project does not increase impervious area. Exhibit I and Exhibit II are provided on Attachment B to demonstrate the differential between Post-Development impervious area and Pre-Development pervious area. A flowchart HMP applicability determination is provided on the next page.

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

	QUESTION	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?	✓		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?			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 Q10, and extends to the Pacific Ocean, San Diego Bay, a tidally-influenced area, an exempt river reach or reservoir?			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?			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?			If NO, continue to 6. If YES, go to 7.
6.	Project is required to manage hydromodification impacts.			Reference Appendix G "Hydromodification Management Plan" of the County SUSMP.
7.	Project is not required to manage hydromodification impacts.			Hydromodification Exempt. Keep on file.

This project is exempted for Hydromodification Management Plan because the project does not increase unmitigated flows to any outlet.

The Pre-Project impervious area is 146,797 sqft and the post-project impervious area is 134,540 sqft. Table below is the difference between the Pre-Project and the Post-Project Peak flows.

	2 Year Storm		50 Year Storm	
	Pre	Post	Pre	Post
Q Peak runoff (cfs)	6.718	4.674	12.283	7.955

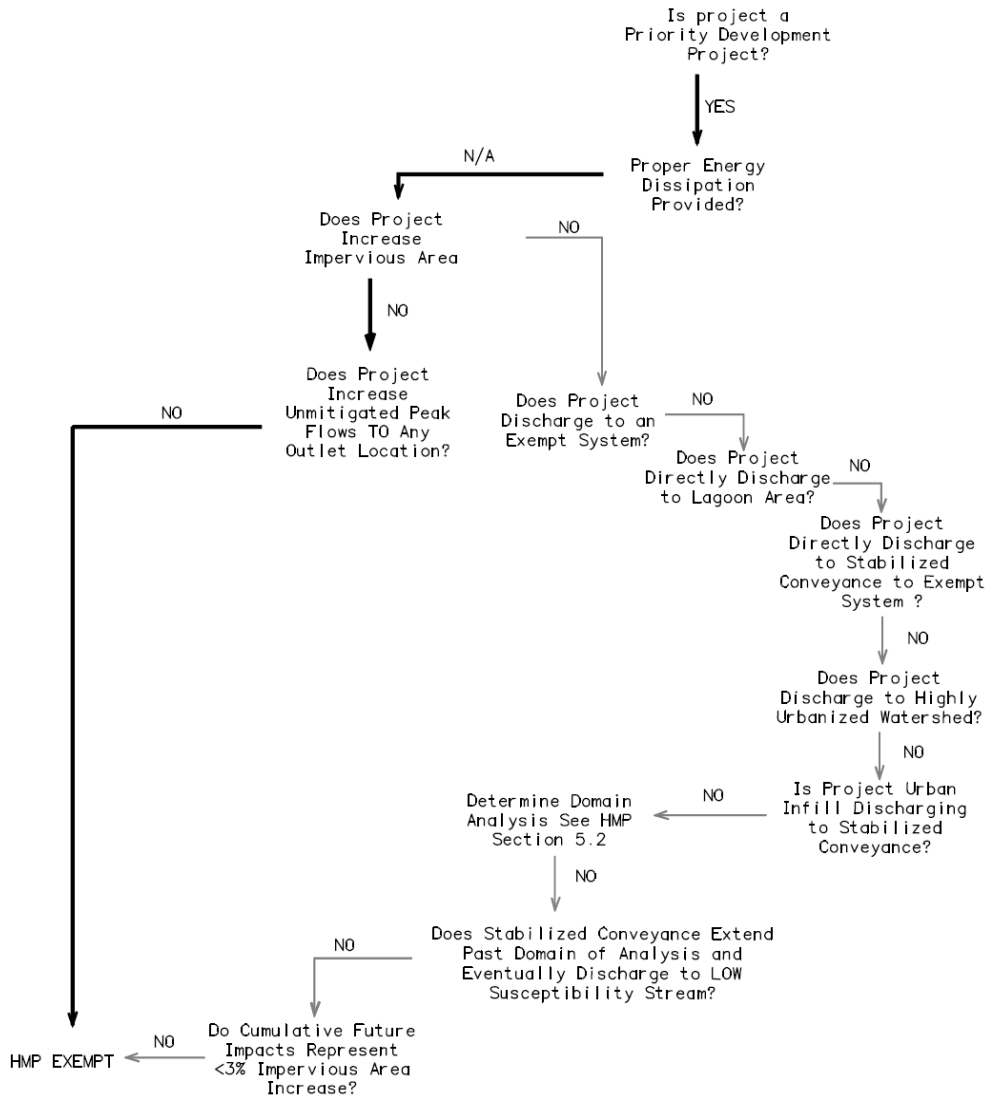
HYDROMODIFICATION EXEMPTION

CENTERPOINTE 78 WATER QUALITY AND HYDROMODIFICATION DESIGN APPROACH

THIS SITE WAS PREVIOUSLY USED AS A CAR DEALERSHIP. THE SITE IS 95% PAVED OR OCCUPIED BY BUILDINGS. THE NEW DEVELOPEMENT PROPOSES A GROCERY STORE AND A DRIVE THROUGH EATERY. THE SITE WILL BE PVAED WITH SOME IMPERVIOUS AREAS AS LANDSCAPING AND RUNOFF TREATMENT AREAS. THE DEVEOLPEMNT WILL CREATE MORE IMPERVIOUS AREAS THAN EXISTING CONDITIONS.

IN ACCORDANCE WITH FIGURE 1-1 FROM THE COUNTY SUSMP, THIS PROJECT IS EXEMPT FROM HYDROMODIFICATION.

HYDROMODIFICATION EXEMPTION FLOW-CHART



SOURCE: FIGURE 1-1 HMP APPLICABILITY DETERMINATION

**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 checked="" type="checkbox"/> Carlsbad 904
<input 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

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

Number	Name
904.62	Escondido HSA

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

SURFACE WATERS that each project discharge point proposes to discharge to. List the impairments identified in Table 7.

Surface Waters (rivers, creeks, stream, etc.)	Hydrologic Unit Basin Number	Impairment(s) listed [303(d) listed waters or waters with established TMDLs]	Distance to Project
Escondido Creek	904.6	Listed	2700 ft

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

GROUND WATERS

GROUND WATERS	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
None																

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

+ Excepted from Municipal **X** Existing Beneficial Use **0** 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		

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 Attachment C.

Table 7. Project Pollutants of Concern

Pollutant Category	Anticipated (X)	Potential (P)	Surface Water Impairments
Sediments		√	Not listed
Nutrients		√	Not listed
Heavy Metals	√		Not listed
Organic Compounds			Not listed
Trash & Debris	√		Not listed
Oxygen Demanding Substances	√		Not listed
Oil & Grease	√		Not listed
Bacteria & Viruses	√		Not listed
Pesticides		√	Not listed

Summary:

Based on 2010 CWA section 303(d) list, Primary Pollutants of concern are not found therefore the secondary pollutants of concern are:

1. Sediment
2. Nutrients
3. Heavy metals
4. Organic Compounds
5. Trash and debris
6. Oxygen demanding substances
7. Oil and grease
8. Pesticides

LID AND SITE DESIGN STRATEGIES

LOW IMPACT DEVELOPMENT

Integrated Management Practices or Alternative to integrated LID design

This project utilizes bio-retention facilities to treat the storm water. Most of the run-off is directed to and to be treated at integrated management practices area.

Optimize the site layout

The project design includes bio-retention facilities adjacent to paved areas to transport surface drainage. With only 84% of proposed impervious surface, this project has optimized the amount pervious area by limiting overall coverage of asphalt pavement.

Disperse Runoff to Adjacent pervious areas

The lawn or garden is depressed 3" below surrounding walkways and driveways to provide functional landscape design element so that an inch of rainfall will soak into the soil and produce no runoff.

Drainage Management Areas (DMAs)

The project area is divided into individual Drainage Management Areas based on grade breaks.

I. Self-treating Areas:

All roof downspouts in this area are draining to landscape and then directed to storm drain.

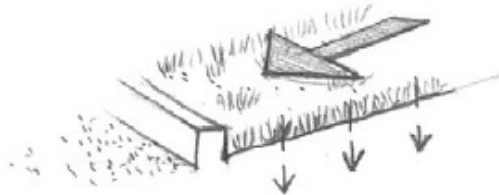


FIGURE 4-1. Self-treating areas are entirely pervious and drain directly off-site or to the storm drain system.

II. Self-retaining Areas:

The self-retaining turfs/landscapes are made with berm or depress the grade into a concave cross section so that these areas will retain the first inch of rainfall.

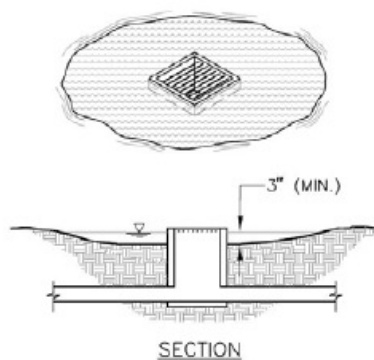


FIGURE 4-2. Self-retaining areas. Berm or depress the grade to retain at least an inch of rainfall and set inlets of any area drains at least 3 inches above low point to allow ponding.

III. Areas draining to self-retaining areas

The runoff from the impervious areas (A/C pavement) are directed to lawn areas since the impervious areas must be directed to and dispersed within the pervious area, and this areas are designed to retain an inch of rainfall without flowing off-site.

IV. Areas draining to IMPs

The site is designed so that only impervious pavement drains into IMPs; this step is important to make the design more efficient, simpler and helps to protect IMPs from becoming clogged by sediment.

Table 8. LID and Site Design

1. Conserve natural Areas, Soils, and Vegetation
<input 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 checked="" type="checkbox"/> Other. Description: not many trees exist. New trees will be planted see Landscape drawing
2. Minimize Disturbance to Natural Drainages
<input type="checkbox"/> Set-back development envelope from drainages
<input checked="" 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-County LID Handbook 2.2.4
<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 (landscaped areas)
<input checked="" type="checkbox"/> Collect & re-use upper soil layers of development site containing organic materials
<input type="checkbox"/> Other. Description:
5. Drain Runoff from Impervious Surfaces to Pervious Areas-County LID Handbook 2.2.5
LID Street & Road Design
<input checked="" type="checkbox"/> Curb-cuts to landscaping

<input checked="" type="checkbox"/>	Rural Swales
<input type="checkbox"/>	Concave Median
<input type="checkbox"/>	Cul-de-sac Landscaping Design
<input type="checkbox"/>	Other. Description:
LID Parking Lot Design	
<input type="checkbox"/>	Permeable Pavements
<input checked="" type="checkbox"/>	Curb-cuts to landscaping
<input type="checkbox"/>	Other. Description:
LID Driveway, Sidewalk, Bike-path Design	
<input type="checkbox"/>	Permeable Pavements
<input checked="" type="checkbox"/>	Pitch pavements toward landscaping
<input type="checkbox"/>	Other. Description:
LID Building Design	
<input type="checkbox"/>	Cisterns & Rain Barrels
<input checked="" type="checkbox"/>	Downspout to swale
<input type="checkbox"/>	Vegetated Roofs
<input type="checkbox"/>	Other. Description:
LID Landscaping Design	
<input checked="" type="checkbox"/>	Soil Amendments
<input type="checkbox"/>	Reuse of Native Soils
<input checked="" type="checkbox"/>	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 checked="" type="checkbox"/>	Minimize cut and fill areas to reduce slope lengths
<input checked="" 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 checked="" type="checkbox"/>	Rounding and shaping slopes to reduce concentrated flow
<input type="checkbox"/>	Collect concentrated flows in stabilized drains and channels
<input type="checkbox"/>	Other. Description:

SOURCE CONTROL BMP's

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. Permanent and Operational source control measures

Potential source of runoff pollutants	Permanent Source control BMPs	Operational source control BMPs
1. On-site storm drain inlets	Mark inlets with the words "NO DUMPING!"	<ul style="list-style-type: none"> ▪ Maintain periodically repaint or replace inlet markings ▪ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains".
2. Landscape/ Outdoor Pesticide Use	See attachment B for: <ul style="list-style-type: none"> ▪ locations of native trees to be undisturbed ▪ Self-retaining landscape areas ▪ Storm water treatment facilities 	<ul style="list-style-type: none"> ▪ Maintain landscaping using minimum or no pesticides. ▪ Apply building & grounds maintenance as specified on SC-41 CA BMP handbooks. ▪ IPM information will be provided for the new owners, lessees and operators.
3. Plazas, sidewalks, and parking lots		<ul style="list-style-type: none"> ▪ 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. Wash water containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.
4. Trash enclosure	<ul style="list-style-type: none"> ▪ Roof/awnings shall be provided ▪ Trash storage pad is paved ▪ Trash container is walled ▪ A sign will be posted on or near dumpsters with the words "Do not dump hazardous material here" or similar. 	<ul style="list-style-type: none"> ▪ Adequate number of receptacles shall be provided. ▪ Receptacles will be inspected regularly; repair or replace leaky receptacles. ▪ Receptacles will be covered all the time. ▪ Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. ▪ Inspect and pick up litter daily and clean up spills immediately.

LID AND TREATMENT CONTROL SELECTION

<p>Will this project be utilizing the unified LID design procedure as described in chapter 4 of the City of Escondido SUSMP? <i>(If yes, please document in Attachment D following the steps in Chapter 4 of the County SUSMP)</i></p>	
(Yes)	No
<p>If the project is not utilizing the unified LID design procedure, please describe how the alternative treatment facilities will comply with applicable LID criteria, storm water treatment criteria, and hydromodification management criteria.</p>	
<p>90% of the total area is treated by Bioretention with underdrain pipe and comply with the City of Escondido unified LID design procedure. However, the 10 % area of the project will be treated by alternative treatment facilities. The DMA map on Attachment B shows Basin E (12,918 SF) is treated by a 36-inch BioClean Flume Filter located at the southwest of project site.</p>	

- 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	<input checked="" type="checkbox"/>	X	X	
Nutrients	<input checked="" type="checkbox"/>		X	X
Heavy Metals	<input checked="" type="checkbox"/>		X	
Organic Compounds	<input checked="" type="checkbox"/>		X	
Trash & Debris	<input checked="" type="checkbox"/>	X		
Oxygen Demanding	<input checked="" type="checkbox"/>		X	
Bacteria	<input checked="" type="checkbox"/>		X	
Oil & Grease	<input checked="" type="checkbox"/>		X	
Pesticides	<input checked="" type="checkbox"/>		X	

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. Groups of Pollutants and Relative Effectiveness of Treatment

Pollutants of Concern	Bioretention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Constructed Wetlands	Infiltration Facilities or Practices (LID)	Media Filters	High-rate biofilters	High-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	Med
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low	Low

*Shaded columns are the selected BMP type of treatment

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

Table 12. Project LID And TC-BMPS

Bioretention Facilities (LID)	
<input checked="" type="checkbox"/>	Bioretention area
<input type="checkbox"/>	Flow-through Planter
<input type="checkbox"/>	Cistern with Bioretention Facility
Settling Basins (Dry Ponds)	
<input type="checkbox"/>	Extended/dry detention basin with grass/vegetated lining
<input type="checkbox"/>	Extended/dry detention basin with impervious lining
Infiltration Facilities or Practices (LID)	
<input type="checkbox"/>	Infiltration basin
<input type="checkbox"/>	Dry well
<input type="checkbox"/>	Infiltration trench
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)
<input checked="" type="checkbox"/>	Other: BioClean Flume Filter
High-rate Biofilters	
<input type="checkbox"/>	Tree-pit-style unit
<input type="checkbox"/>	Other _____
High-rate Media Filters	
<input type="checkbox"/>	Vault-based filtration unit with replacable cartridges
<input type="checkbox"/>	Other _____
Hydrodynamics Separator Systems	
<input type="checkbox"/>	Swirl Concentrator
<input type="checkbox"/>	Cyclone Separator
Trash Racks	
<input type="checkbox"/>	Catch Basin Insert
<input type="checkbox"/>	Catch Basin Insert with Hydrocarbon boom
<input type="checkbox"/>	Other _____
Self-treating or Self-Retaining Areas (LID)	
<input type="checkbox"/>	Pervious Pavements
<input type="checkbox"/>	Vegetated Roofs
<input type="checkbox"/>	Other _____

⁽¹⁾ Must be designed per SUSMP “Vegetated Swales” design criteria for LID credit (p. 65).

CONSTRUCTION PLAN WQTR CHECKLIST FOR CENTERPOINTE 78 PROJECT

SUSMP PAGE #	BMP DESCRIPTION	SEE PLAN SHEET #S
	Bioretention	
	Bioclean flume filter	

- | |
|--|
| <ol style="list-style-type: none"> 1. Bio-retention with underdrain mechanism is the best choice because it’s relatively inexpensive, easy to maintain and provide great level of treatment. 2. Bioclean flume filter is chosen because the infeasibility of using bioretention on some DMAs such as low infiltration rate, lack of the recommended depth for surface ponding retention. |
|--|

OPERATION AND MAINTENANCE

The Stormwater permit requires the City to verify that all treatment and flow control facilities are adequately maintained. Facilities installed as part of this project will be verified for effectiveness and proper performance.

Responsible Party for Long-term 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.

Name: TBD
Company Name: Pacific Chasse Partners, LLC
Phone Number: 310-393-4141
Street Address: 501 Santa Monica Blvd, Suite 312
City/State/Zip: Santa Monica, CA 90401
Email Address: MTB@pdpllc.net

If the current owner transfers its interest in the subject property/project, the current owner shall notify the successor in interest in writing of its responsibility to implement this WQTR and maintain post-construction Best Management Practices (BMPs) in perpetuity. The current owner shall provide the Department of Public Works, Watershed Protection Program with a copy of the signed notification, including the name, address, and contact information of the successor.

BMP MAINTENANCE SCHEDULE

TYPE	DESCRIPTION	OWNER SHIP	MAINTENANCE AGREEMENT	MAINTENANCE FREQUENCY
Bio-retention	Per city of Escondido SUSMP	Private	Pacific Chasse Partners, LLC	Biannual health evaluation of the trees and shrubs and subsequent removal of any dead or diseased vegetation. Mulch replacement every 2 to 3 years, prior to wet season.
BioClean-flume filter	A Stormwater pollution control device design to capture high level of trash, organics, and hydrocarbons. (attachment B)	Private	Pacific Chasse Partners, LLC	4 times annually. Hydrocarbon boom should be replaced a minimum of twice per year or as needed.

Maintenance Frequency and Method

Bio-retention Facility

- The primary maintenance requirement for bioretention areas is that of inspection and repair or replacement of the treatment area's components. Generally, this involves routine periodic maintenance that is required of landscaped area.
- Routine maintenance should include a biannual health evaluation of the trees and shrubs and subsequent removal of any dead or diseased vegetation.
- Diseased vegetation should be treated as needed using preventive and low-toxic measure to the extent possible.
- Routine inspections for areas of standing water within the BMP and corrective measures to restore proper infiltration rate are necessary to prevent creating mosquito and other vector habitat.
- Mulch replacement is suggested when erosion is evident. The entire area may require mulch replacement every 2 to 3 years, which should be done prior to the start of the wet season.

BioClean Flume Filter

- Cleaning and debris removal maintenance is recommended a minimum of four times per year and replacement of hydrocarbon booms a minimum of twice per year.
- 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.
- 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 City for inspection upon request at any time.
- 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.
- 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.
- Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
- 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).

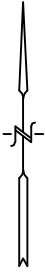
ATTACHMENTS

Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	LID , Source Control, TC-BMP Exhibit	X	
C	Drainage Management Area (DMA) Maps, Sizing Design Calculations and BMP/IMP Design Details	X	
D	Geotechnical Certification Sheet		X
E	Maintenance Plan	X	
F	Addendum		X

ATTACHMENT 'A'
PROJECT LOCATION MAP

THOMAS & BROS. 2008
PAGE 1110 D-7



DIXON
RESERVOIR

VALLEY CTR RD

E EL NORTE PKY
E LINCOLN AVE

NORTH BROADWAY

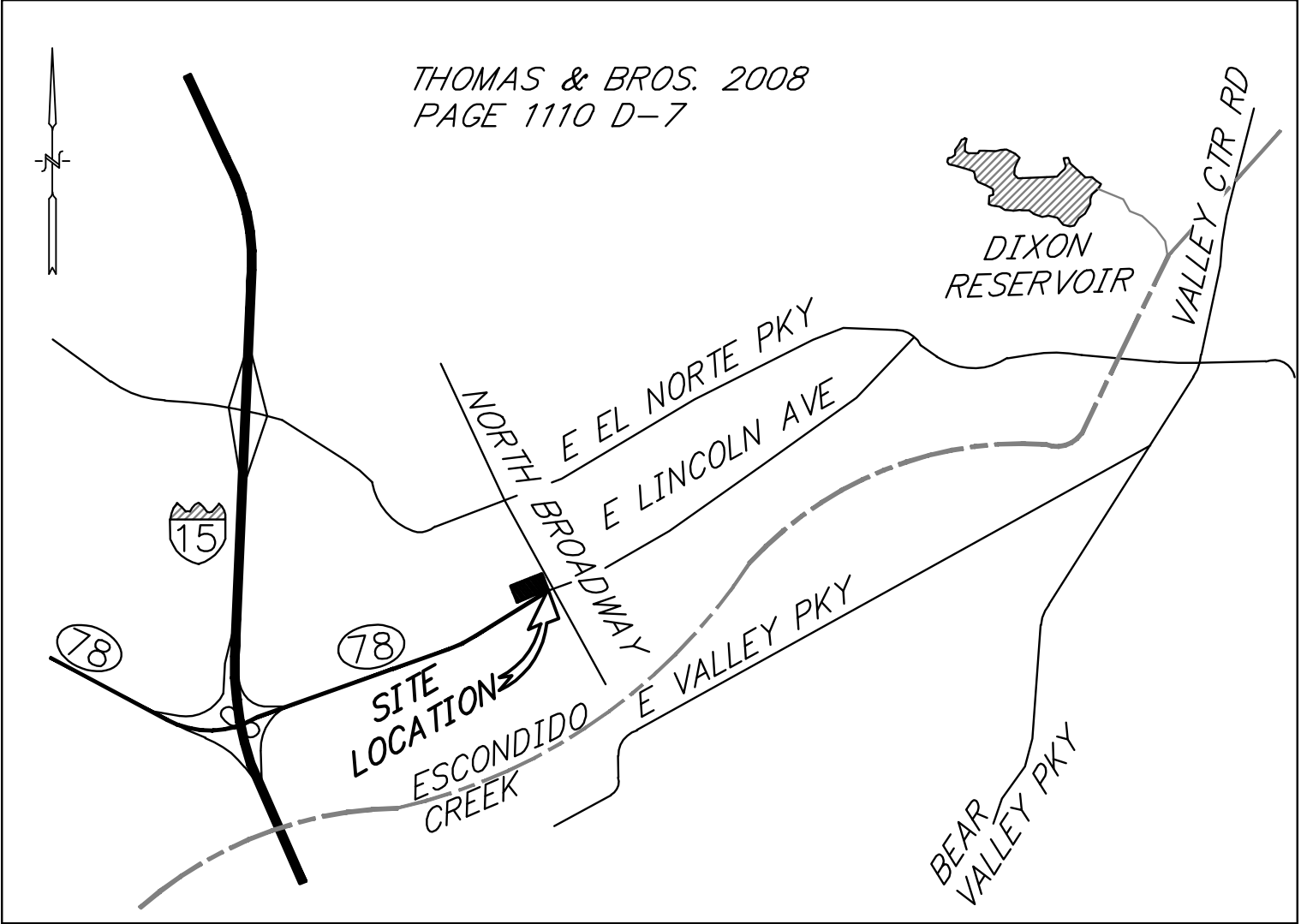
E VALLEY PKY

BEAR
VALLEY PKY



SITE
LOCATION

ESCONDIDO
CREEK

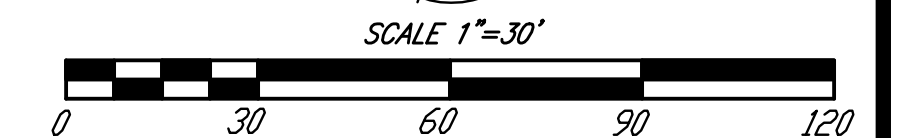
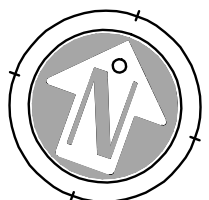
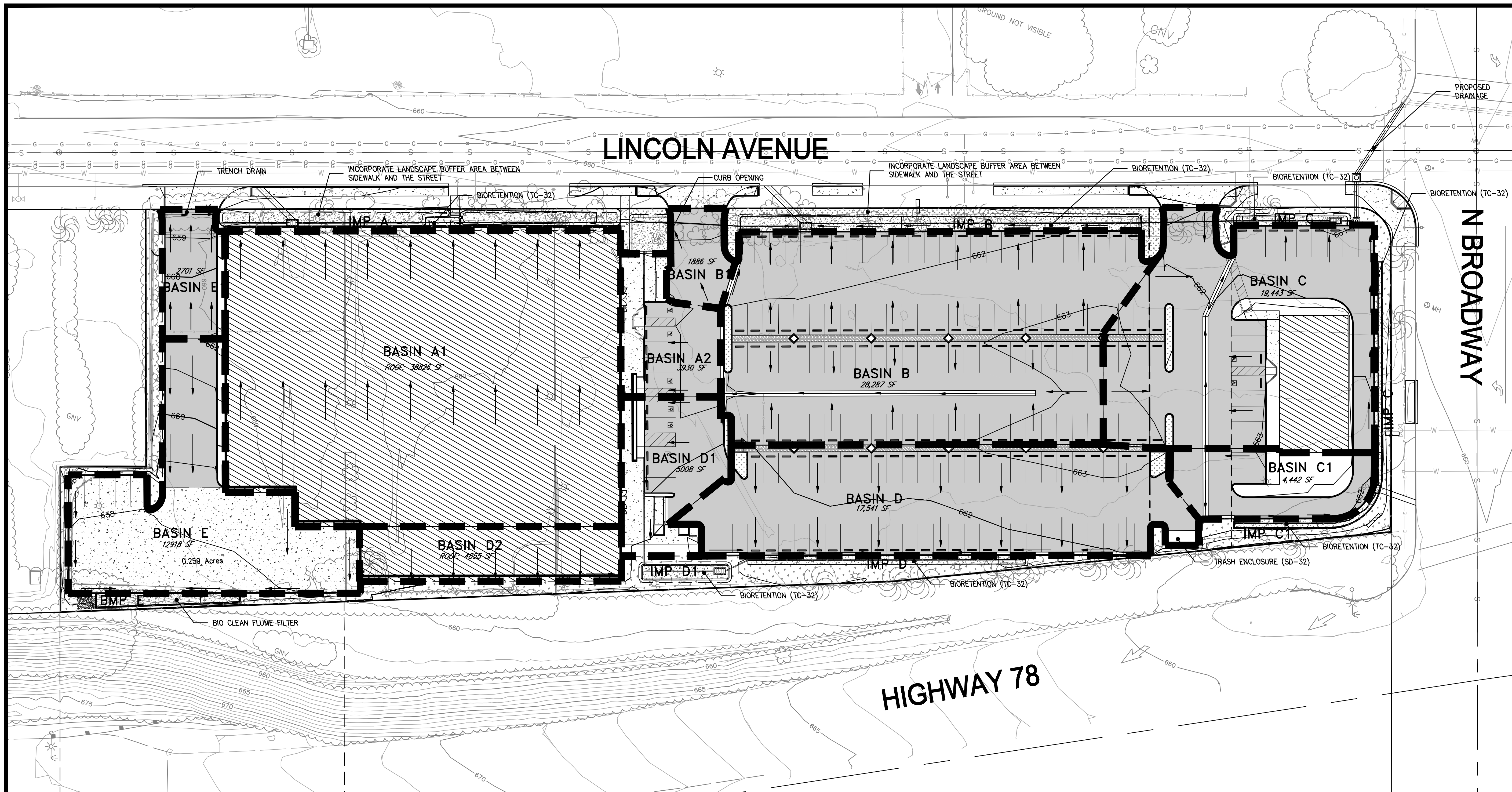


ATTACHMENT 'B'
LID, SOURCE CONTROL AND TC-BMP EXHIBIT

(SEE ATTACHMENT C)

ATTACHMENT 'C'

DRAINAGE MANAGEMENT AREA (DMA) MAPS, SIZING DESIGN CALCULATIONS AND
BMP/IMP DETAILS



LEGEND - ABBREVIATIONS:

- INDICATES DMA BOUNDARY.
- FLOW LINE
- IMPERVIOUS AREAS**
- [Pattern] A/C PAVEMENT
- [Pattern] PCC PAVEMENT
- [Pattern] ROOF
- PERVIOUS AREAS**
- [Pattern] LANDSCAPE AREAS
- [Pattern] BIORETENTION

ENGINEER OF WORK
EXCEL ENGINEERING
 LAND PLANNING ENGINEERING SURVEYING
 440 STATE PLACE, ESCONDIDO, CA 92029
 PH (760)745-8118 FAX (760)745-1890

Robert D. Dentino 07-15-2015
 ROBERT D. DENTINO DATE
 RCE: 45629 EXP: 12/31/16



DESCRIPTION

THE EXISTING CONDITION IS A COMMERCIAL LOT AND CONSISTS OF A DEVELOPED AUTOMOBILE DEALERSHIP. THIS PROPERTY CURRENTLY IS NO LONGER OPERATING (ABANDONED). THE NEW DEVELOPMENT WILL INCLUDE COMPLETE DEMOLITION AND REMOVAL OF EXISTING SITE STRUCTURES AND IMPROVEMENTS, AND CONSTRUCTION OF A LARGE GROCERY STORE AND THREE SMALLER COMMERCIAL BUILDINGS, WITH THE ASSOCIATED PAVING AND LID STORMWATER TREATMENT CONTROL.

THE SOIL GROUP FOR THIS SITE IS "D" OR LOW INFILTRATION RATE AND THE GROUNDWATER DEPTHS RANGING FROM 13 TO 21 FEET.

SITE DESIGN BMPs

- DELAY RAINFALL RUNOFF TIME:**
- BIORETENTION FACILITY BIORETENTION FACILITIES TEMPORARILY STORES AND ALLOWS RUN OFF TO PERCOLATE AND FILTER THE POLLUTANTS THROUGH THE BIORETENTION AREA MEDIA.
 - MINIMIZING IMPERVIOUS AREAS
 - INCORPORATE LANDSCAPE BUFFER AREA BETWEEN SIDEWALK AND STREET.
 - MINIMIZE DCIAs
 - DIRECTING ROOF STORM WATER TO LANDSCAPE AREA AND THEN TO BIORETENTION FACILITY PRIOR TO THE STORMDRAIN.

DMA AREAS: TABLE 1. DRAINAGE MANAGEMENT AREAS

DMA NAME	AREA (FT ²)	AREA (ACRES)	SURFACE TYPE	TREATED AREA
BASIN A1	38,826	0.89	ROOF	100%
BASIN A2	39,30	0.09	A/C PAVEMENT	100%
BASIN B	28,287	0.65	A/C PAVEMENT	100%
BASIN C	19,443	0.45	ROOF, CONCRETE AND A/C	100%
BASIN D	17,541	0.40	A/C PAVEMENT	100%
BASIN D1	5,008	0.115	A/C PAVEMENT	100%
BASIN D2	4,855	0.112	ROOF	100%
BASIN E	12,918	0.30	CONCRETE PAVEMENT	100%
IMP A	1,733	0.04	BIORETENTION	100%
IMP B	19,32	0.044	BIORETENTION	100%
IMP C	778	0.018	BIORETENTION	100%
IMP C1	504	0.012	BIORETENTION	100%
IMP D	808	0.019	BIORETENTION	100%
IMP D1	399	0.009	BIORETENTION	100%
TC-BMP E	519	0.012	BIO CLEAN FLUME FILTER	100%
BASIN E1	2,701	0.062	CONCRETE PAVEMENT	100%
BASIN B1	1,886	0.043	A/C PAVEMENT	100%
BASIN C1	4,442	0.102	A/C PAVEMENT	100%
PERVIOUS	14,026	0.322	LANDSCAPED SURFACE	100%
TOTAL	160,536 SF	3.69 AC		100%

PROJECT SITE AREA: 3.69 AC.
 TOTAL DRAINAGE MANAGEMENT AREAS=TOTAL PROJECT AREA,
 THEREFORE ALL PROJECT AREAS ARE ACCOUNTED FOR.
 NOTE: ALL PERVIOUS AREAS IN THIS PROJECT WILL BE LANDSCAPED

TREATMENT CONTROL BMPs

- BIORETENTION**
- POLLUTANT TYPES THAT ARE EXPECTED:
- SEDIMENT, NUTRIENTS, TRASH, METALS, BACTERIA, ORGANICS
 - OIL AND GREASE

TABLE 2. AREAS DRAIN TO TC-BMP BIORETENTION

BASIN	DMA AREA (SF)	C	DMA AREA X RUNOFF FACTOR	IMP SIZING FACTOR	Minimum Area req'd (sq.ft.)	Area Provided (sq.ft.)	IMP NAME
BASIN A1,A2,B1,E1	47,343	1.00	47,343	0.04	1,894	2,597	IMP A
BASIN B	28,270	1.00	28,270	0.04	1,132	1,932	IMP B
BASIN C	19,428	1.00	19,428	0.04	778	788	IMP C
BASIN C1	4,443	1.00	4,443	0.04	177	504	IMP C1
BASIN D	17,555	1.00	17,555	0.04	702	808	IMP D
BASIN D1 & D2	9,844	1.00	9,844	0.04	395	399	IMP D1
BASIN E*	12,937	1.00	12,937	0.04	517	519	BMP E

MINIMUM AREA OF THE BIORETENTION FACILITY IS DETERMINED BY MULTIPLYING THE PRODUCT OF THE DMA AREA TIMES THE DMA RUNOFF FACTOR WITH THE IMP SIZING FACTOR.
 C= DMA RUNOFF FACTOR 1 FOR A CONSERVATIVE ASSUMPTION AND TO COMPLY WITH 4% RULE OF THUMB
 *MINIMUM AREA WAS DETERMINED IN THE SAME MANNER AS IF A BIORETENTION FACILITY WAS PROPOSED. HOWEVER IN THIS CASE, TWO 5' BIO CLEAN FLUME FILTERS WILL BE INSTALLED IN THE AREA THAT WAS DETERMINED FOR A PROPOSED BIORETENTION FACILITY.

ANTICIPATED POLLUTANTS REMOVAL EFFICIENCY

POLLUTANTS	BIORETENTION	FLUME FILTER
SEDIMENT	HIGH	HIGH
NUTRIENTS	MEDIUM	MEDIUM-HIGH
TRASH	HIGH	HIGH
METALS	HIGH	MEDIUM-HIGH
BACTERIA	HIGH	MEDIUM-HIGH
OIL AND GREASE	HIGH	HIGH
ORGANICS	HIGH	HIGH
OXYGEN DEMANDING	HIGH	MEDIUM-HIGH

BIO CLEAN ENVIRONMENTAL SERVICE PO BOX 869 OCEANSIDE CA 92046
 (760)433-7640, www.biocleanenvironmental.com, www.modularwetlands.com

TABLE 3. AREA DRAINS TO ALTERNATIVE TREATMENT CONTROL BMP

BASIN	DMA AREA (AC)	C	DMA AREA X RUNOFF FACTOR	WQ INTENSITY	FLOW RATE (CFS)	TREATMENT FLOW (CFS)	BMP NAME
BASIN E	0.259	1.00	0.259	0.20	0.052	0.78	BIOCLEAN

SEE WATER QUALITY TECHNICAL REPORT FOR PRODUCT'S DETAIL AND INSTALLATION.

SOURCE CONTROL BMPs

- TRASH STORAGE AREA IS PAVED WITH CONCRETE AND DESIGNED NOT TO ALLOW RUN-ON FROM ADJOINING AREAS, WALLED AND CONTAINS A ROOF OR AWNING.
- PRIVATE PARKING SWEEPING SHALL BE NO LESS THAN THE FREQUENCY OF STREET SWEEPING BY THE CITY OF ESCONDIDO ON PUBLIC STREETS.
 - PARKING AREA TO BE SWEEP BI-MONTHLY
 - SWEEP PRIOR TO THE RAINING SEASON
- DRAINAGE FACILITY INSPECTION AND MAINTENANCE:
 - INSPECTION AND MAINTENANCE GENERALLY INVOLVES ROUTINE PERIODIC MAINTENANCE SIMILAR TO LANDSCAPE AREAS.
- STENCILING AND SIGNAGE:
 - PROVIDE LABEL OF ALL STORM DRAIN INLETS AND CATCH BASINS WITHIN THE PROJECT AREA WITH PROHIBITIVE LANGUAGE SUCH AS: "NO DUMPING/ ONLY RAIN IN THE DRAIN"

**CENTERPOINTE 78
 DRAINAGE MANAGEMENT AREAS (DMAs) MAP,
 TREATMENT CONTROL BMP CALCULATIONS
 AND SOURCE CONTROL**

APN 229-121-08, 09, 10, 11,
 12, 13, 14, 15

SITE ADDRESS: 990 NORTH BROADWAY
 ESCONDIDO, CA 92026



ATTACHMENT 'D'

Geotechnical Certification Sheet

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

Date

ATTACHMENT 'E'

MAINTENANCE PLAN

The following is a general outline for to create your project specific Maintenance Plan.

I. Inspection, Maintenance Log and Self-Verification Forms (Examples are provided in Appendix F of the San Diego County SUSMP)

II. Updates, Revisions and Errata

III. Introduction

A. Narrative overview describing the site; drainage areas, routing, and discharge points; and treatment facilities.

IV. Responsibility for Maintenance

A. General

(1) Name and contact information for responsible individual(s).

(2) Organization chart or charts showing organization of the maintenance function and location within the overall organization.

(3) Reference to Operation and Maintenance Agreement (if any). A copy of the agreement should be attached.

(4) Maintenance Funding

(1) Sources of funds for maintenance

(2) Budget category or line item

(3) Description of procedure and process for ensuring adequate funding for maintenance

B. Staff Training Program

C. Records

D. Safety

V. Summary of Drainage Areas and Stormwater Facilities

A. Drainage Areas

41

(1) Drawings showing pervious and impervious areas (copied or adapted from initial SWMP).

(2) Designation and description of each drainage area and how flow is routed to the corresponding facility.

B. Treatment and Flow-Control Facilities

(1) Drawings showing location and type of each facility

(2) General description of each facility (Consider a table if more than two facilities)

(1) Area drained and routing of discharge.

(2) Facility type and size

VI. Facility Documentation

A. "As-built" drawings of each facility (design drawings in the draft Plan)

B. Manufacturer's data, manuals, and maintenance requirements for pumps, mechanical or electrical equipment, and proprietary facilities (include a "placeholder" in the draft plan for information not yet available).

C. Specific operation and maintenance concerns and troubleshooting

VII. Maintenance Schedule or Matrix

A. Maintenance Schedule for each facility with specific requirements for:

- (1) Routine inspection and maintenance
- (2) Annual inspection and maintenance
- (3) Inspection and maintenance after major storms

B. Service Agreement Information

Assemble and make copies of your maintenance plan. One copy must be submitted to the County, and at least one copy kept on-site. Here are some suggestions for formatting the maintenance plan:

- Format plans to 8½" x 11" to facilitate duplication, filing, and handling.
- Include the revision date in the footer on each page.
- Scan graphics and incorporate with text into a single electronic file. Keep the electronic file backed-up so that copies of the maintenance plan can be made if the hard copy is lost or damaged.

INSPECTION/MAINTENANCE CHECK LIST SAMPLE:

Inspection and Maintenance Checklist
Private BMP's

Today's Date: _____

Signature of Person Performing Inspection: _____

Print Name of Person: _____

BMP Name: Bio-retention Facility _____

Frequency: _____

Comments:

Observed Items:

BMP Name	Frequency	Comments	Observed
Educate Occoupants	Every September		
Irrigation System	Every other Month		
Landscape Maintenance	Monthly		
Litter Control	As needed		
Parking Lot Sweeping	As needed		
Dumpster	Weekly		
Catch basin Insert	Every 2 months until end of rainy season		
Roof drain			
CB stenciling			

List actions taken and comments below:

INSPECTION/MAINTENANCE CHECK LIST SAMPLE:

Inspection and Maintenance Checklist
Private BMP's

Today's Date: _____

Signature of Person Performing Inspection: _____

Print Name of Person: _____

BMP Name: BioClean Flume Filter

Frequency: _____

Comments:

Observed Items:

BMP Name	Frequency	Comments	Observed
Educate Occoupants	Every September		
Irrigation System	Every other Month		
Landscape Maintenance	Monthly		
Litter Control	As needed		
Parking Lot Sweeping	As needed		
Dumpster	Weekly		
Catch basin Insert	Every 2 months until end of rainy season		
Roof drain			
CB stenciling			

List actions taken and comments below:

ATTACHMENT 'F'

ADDENDUM

Media Flume Filter

PROVEN STORMWATER TREATMENT TECHNOLOGY



Overview

The Bio Clean Media Flume Filter is a stormwater pollution control device designed to capture high levels of trash, organics and hydrocarbons. Available with various sorptive media, these filters provide full coverage and easily fits in any drainage flume, channel or culvert.

Its horizontal flow design allows it to treat sheet flows and other surface flows with no vertical drop from entry to discharge. A perfect solution for flat projects.

The Media Flume Filter is designed specifically for removing hydrocarbons and other contaminants from sheet flows. It contains a series of media booms that absorb oils & grease, and other various contaminants from the passing runoff. The booms are easily replaced through a top hatch.

Available in various sizes and custom made to fit any size or shape flume, channel or culvert. All components are extremely durable and backed by a 5 year warranty.

Advantages

- Easy Maintenance
- Quick Installation
- 5 Year Warranty
- Customized Configurations and Sizes



Performance

- 83% Removal of Oils & Grease
- 87% Removal of Total Petroleum Hydrocarbons (TPH)
(Tested with BioSorb Hydrocarbon Absorbent)

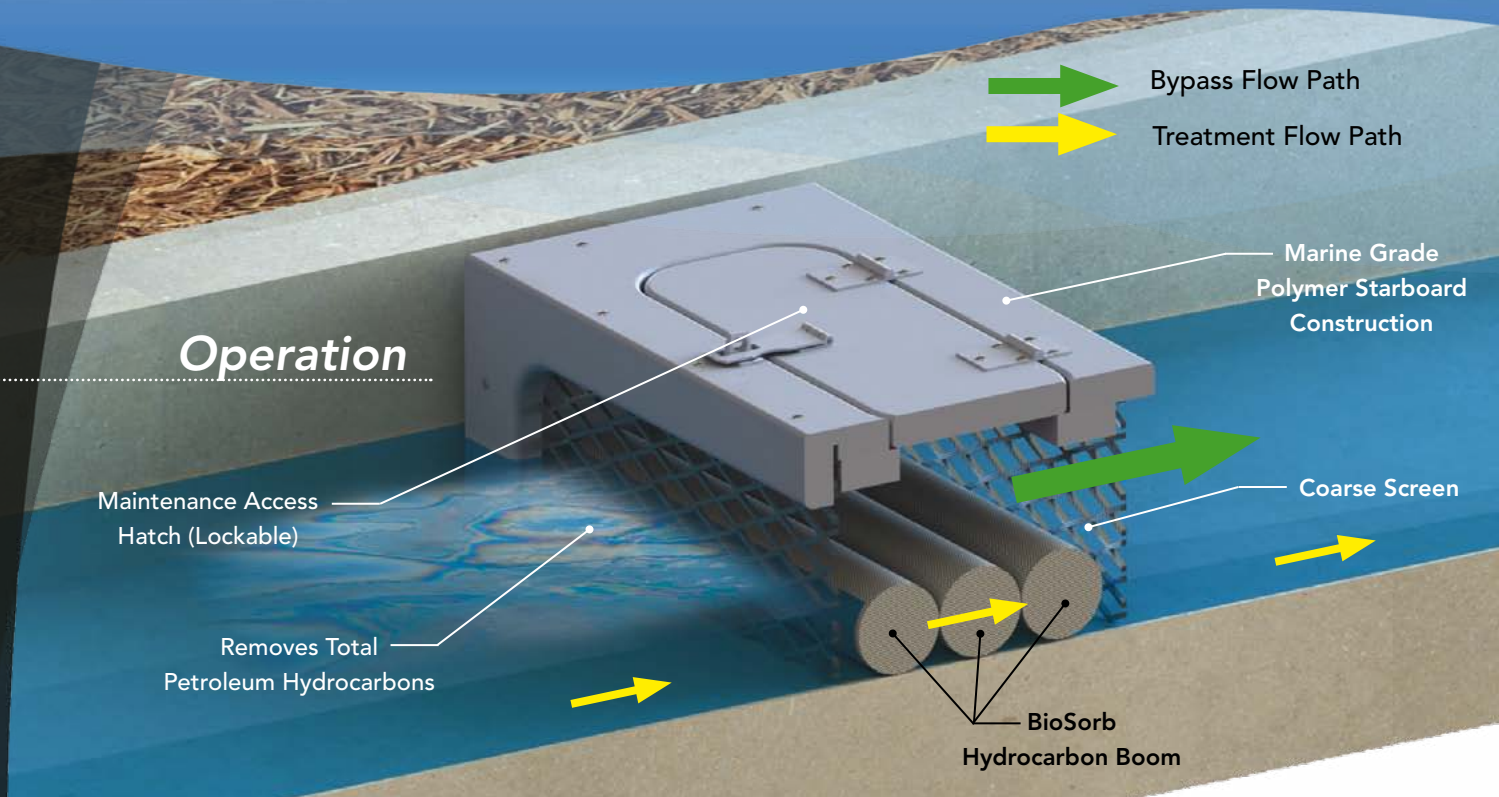
Available with Other Media (perlite, activated charcoal, alumina) for Removal of Various Pollutants

Specifications

Model #	Filter Width (inches)	Treatment Flow Rate (CFS)
BC-MFF-12	12	0.26
BC-MFF-18	18	0.39
BC-MFF-24	24	0.52
BC-MFF-36	36	0.78
BC-MFF-48	48	1.04
BC-MFF-60	60	1.3

Media Flume Filter

PROVEN STORMWATER TREATMENT TECHNOLOGY



Application

- Concrete Flumes
- Culverts
- Sidewalk Under Drains



Access Hatch for Easy Media Replacement

Adaptable to Rectangular or Curved Bottom Drainage Channels

Installation & Maintenance

See our website for installation & maintenance manuals at www.BioCleanEnvironmental.com

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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 $\frac{3}{4}$ " 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 $\frac{3}{4}$ " 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.

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. Debris accumulated in front of the filter should be swept up and disposed of appropriately. The filter's front screen should be inspected and cleaned if necessary to maintain proper flow through the filter. This screen can easily be cleaned by brushing of its surface with a broom. To service the media booms, open the top hatch, clean and inspect and/or replace hydrocarbon booms.

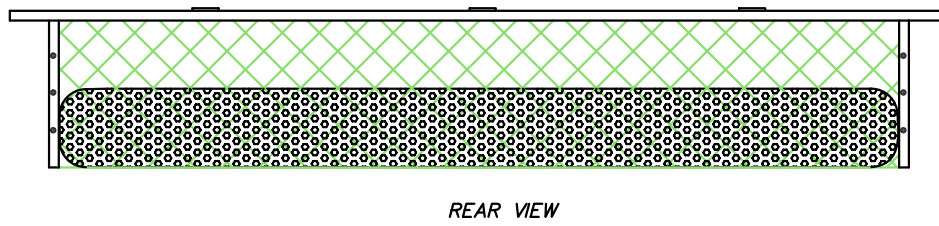
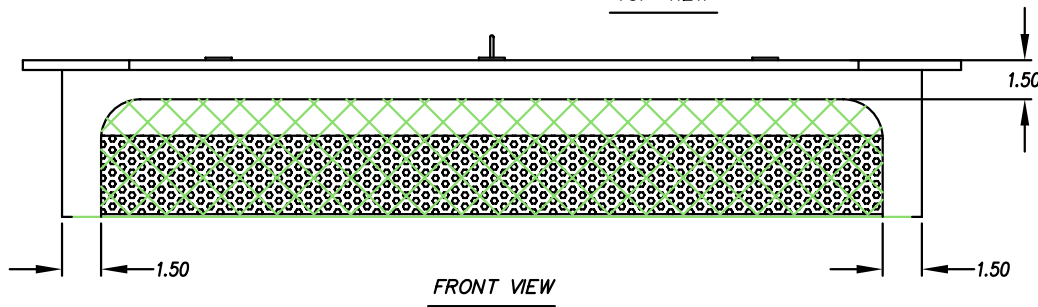
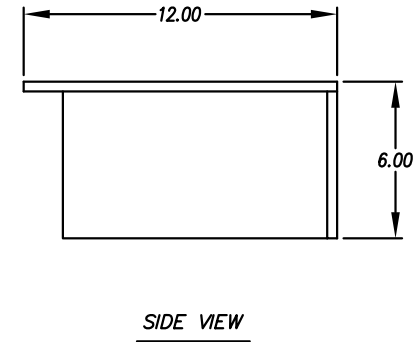
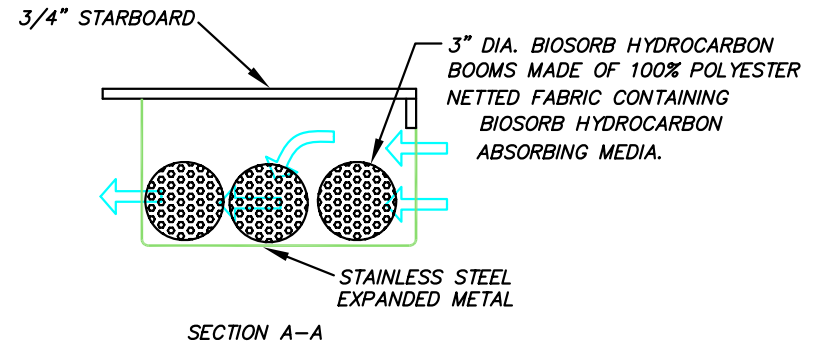
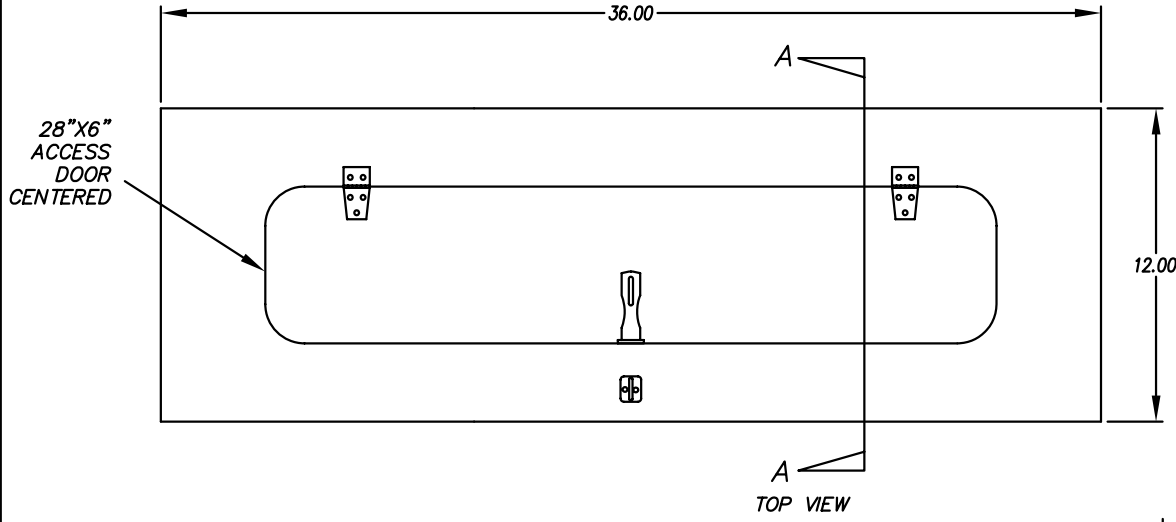
Maintenance Notes:

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).



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BIO CLEAN FLUME FILTER – 36 INCH – MEDIA TYPE



5 YEAR MANUFACTURERS WARRANTY
PATENTED

ALL FILTER SCREENS ARE STAINLESS STEEL

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EMAIL: info@biocleanenvironmental.net



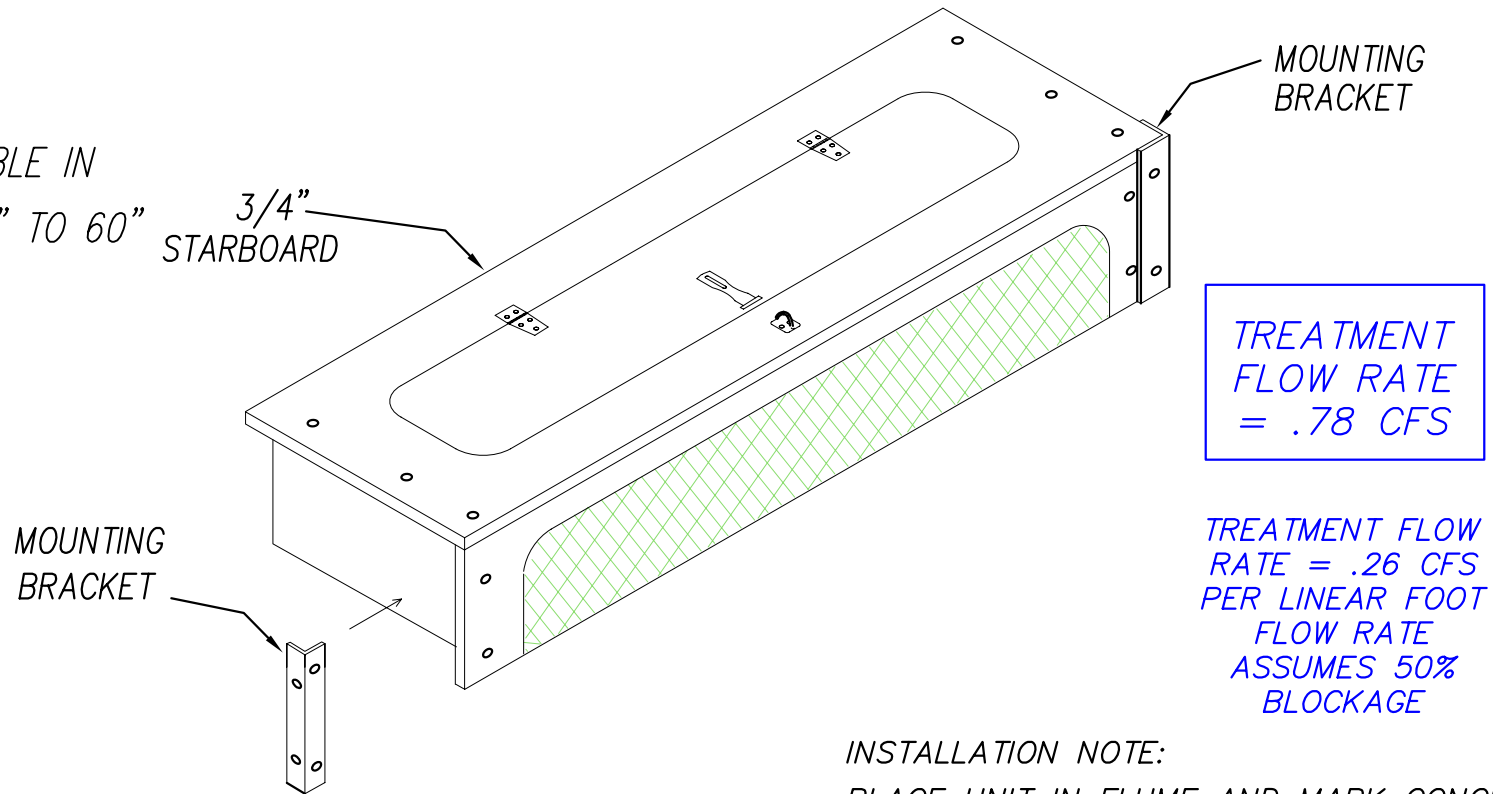
SIZE	FSCM NO.	DWG NO.	BIO CLEAN FLUME FILTER 36" – MEDIA TYPE	REV
SCALE	N. T. S.	SHEET		1 OF 2

TREATMENT
 FLOW RATE
 = .78 CFS

TREATMENT FLOW
 RATE = .26 CFS
 PER LINEAR FOOT
 FLOW RATE
 ASSUMES 50%
 BLOCKAGE

BIO CLEAN FLUME FILTER – 36 INCH – MEDIA TYPE

THIS FILTER IS AVAILABLE IN SIZES RANGING FROM 12" TO 60"



TREATMENT FLOW RATE = .78 CFS

TREATMENT FLOW RATE = .26 CFS PER LINEAR FOOT
FLOW RATE ASSUMES 50% BLOCKAGE

INSTALLATION 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.

THE BIOSORB MATERIAL IS MADE OF A PROPRIETARY POLYMER BASED BEADS. THE MATERIAL IS USUALLY CONTAINED WITHIN BOOMS OR POUCHES. THE BOOMS AND POUCHES ARE MADE OF 100% POLYESTER NETTED FABRIC WITH SIEVE OPENINGS 1mm, OPEN AREA RATIO IS APPROXIMATELY 67%.

THE BIOSORB AND NETTING ARE OF SUFFICIENT STRENGTH TO SUPPORT WATER, SEDIMENT, AND DEBRIS LOADS WHEN THE MEDIA IS AT MAXIMUM ABSORPTION CAPACITY, WITH NO SLIPPAGE, BREAKING, OR TEARING. THE BIOSORB HAS BEEN TESTED THROUGH RIGOROUS FLOW AND LOADING CONDITIONS.

THE BIOSORB IS DESIGNED TO CAPTURE HIGH LEVELS OF HYDROCARBONS INCLUDING BUT NOT LIMITED TO OILS AND GREASE, GASOLINE, DIESEL, AND PAHS. THE GRANULE NATURE OF THE MATERIAL, WITH APPROXIMATELY 2000MM SIZED GRANULES ALSO HAS THE PHYSICAL ABILITY TO BLOCK AND FILTER TRASH AND LITTER, GRASS AND FOLIAGE, AND SEDIMENTS.

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SCALE	N. T. S.			SHEET 2 OF 2