Preliminary Water Quality Management Plan (PWQMP)

Project Name:
HB TRI
T.T.M. 19118
Entitlement No. 20-254, 20-003, 20-025, 20-006

Prepared for:
BONANNI DEVELOPMENT, INC.
5500 Bolsa Avenue, Suite 120
Huntington Beach, CA 92612

Prepared by:
Walden & Associates
2552 White Road, Suite B
Irvine, CA 92614
949-660-0110

Engineer Marcos F. Padilla **Registration No.** 80426

Project Owner's Certification			
Permit/Application No.	20-254, 20-003, 20-025, 20-006	Grading Permit No.	
Tract/Parcel Map No.	T.T.M. 19118	Building Permit No.	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			A.P.N. 159-281-01, 02, 03, 04 & 05

This Water Quality Management Plan (WQMP) has been prepared for Bonanni Development, Inc. by Walden & Associates. The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner: Ed Bonanni			
Title			
Company	Bonanni Development, Inc.		
Address	5500 Bolsa Avenue, Suite 120 Huntington Beach, CA 92612		
Email	ed@bonannidevelopment.com		
Telephone #	(714) 892-0123		
Signature		Date	

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Section I Discretionary Permit(s) and Water Quality Conditions

Project Information			
Permit/Application No.	20-254, 20-003, 20-025, 20-006	Tract/Parcel Map No.	T.T.M. 19118
Additional Information/ Comments:	Project is currently being processed for entitlements as Tentative Tract Map 19118.		

Water Quality Conditions	
Water Quality Conditions (list verbatim)	8. A Project Water Quality Management Plan (WQMP) conforming to the current Waste Discharge Requirements Permit for the County of Orange (Order No. R8-2009-0030) [MS4 Permit] prepared by a Licensed Civil Engineer, shall be submitted to the Department of Public Works for review and acceptance. The WQMP shall address Section XII of the MS4 Permit and all current surface water quality issues. 9. The project WQMP shall include the following: a. Discusses regional or watershed programs (if applicable). b. Addresses Site Design BMPs (as applicable) such as minimizing impervious areas, maximizing permeability, minimizing directly connected impervious areas, creating reduced or "zero discharge" areas, and conserving natural areas. c. Identifies selected Low Impact Development (LID) and Hydromodification (as applicable) BMPS. d. Incorporates the *Guidelines for Use of Dry*wel*l*s *in Stormwater Management Applications* (if applicable). e. Incorporates the applicable Routine Source and Structural Control BMPs as defined in the Drainage Area Management Plan. (DAMP) f. Incorporates GIS or GPS coordinates for all structural and LID BMPs. g. Describes the long-term operation and maintenance requirements for the Structural and Treatment Control BMPs, including maintenance of BMPs as shown on the landscape plans and are described in the WQMP. h. Identifies the entity that will be responsible for long-term operation, maintenance, repair and/or replacement of the Structural and Treatment

	Control BMPs. i. Describes the mechanism for funding the long-term operation and maintenance of all the Structural and Treatment Control BMPs. j. Includes an Operations and Maintenance (O&M) Plan for all structural and Treatment Control BMPs including anticipated maintenance costs. k. Vector Control Clearance letter from the Orange County Vector Control stating that they have reviewed the project WQMP and proposed BMPs. l. After incorporating plan check comments of Public Works; three final WQMPs (signed by the owner and the Registered Civil Engineer of record) shall be submitted to Public Works for acceptance. After acceptance, two copies of the final report shall be returned to applicant for the production of a single complete electronic copy of the accepted version of the WQMP on CD media that includes: i. The 11" by 17" Site Plan in .TIFF format (400 by 400 dpi minimum). ii. The remainder of the complete WQMP in .PDF format including the signed and stamped title sheet, owner's certification sheet, Inspection/Maintenance Responsibility sheet, appendices, attachments and all educational material. m. The applicant shall return one CD media (with a copy of the approved WQMP) to Public Works for the project record file. 10. Indicate the type and location of Water Quality Treatment Control Best Management Practices (BMPs) on the Grading Plan consistent with the Project WQMP. The WQMP shall follow the City of Huntington Beach; Project Water Quality Management Plan Preparation Guidance Manual dated June 2008. The WQMP shall be submitted with the first submittal of the Grading Plan.
Watershed-Based Plan Conditions	
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	No WIHMPs or TMDLS for Santa Ana River Reach 1.

Section II Project Description

II.1 Project Description

Description of Proposed Project				
Development Category:	Residential development.			
Project Area (ac): 1.8	Number of Dwelling Units: 33		SIC Code: N/A	
Narrative Project Description:	The site currently consists of De Guelle Glass Co. and open area. The site is bounded by Garfield Avenue to the north, Holly Lane to the west, and Main Street northeasterly. The project will consist of constructing 33 townhouses that range from 300 s.f. to 350 s.f. along with associated sewer, water, storm drain, curb, gutter, sidewalk and street improvements, on an 1.8-acre site. Landscaping will be implemented on the front, side and rear yards. The majority of the site will be conveyed to a proposed private storm drain system, where the water quality "first flush" flow of 0.33 cfs (obtained from the 85 percentile storm event of 0.25" of rainfall per hour over the subarea) will be directed through a MWS unit to pretreat and separate trash and eventually discharging into a the public storm drain system within Garfield Avenue.			
Project Area	Pervious		Impervious	
	Area (acres)	Percentage	Area (acres)	Percentage
Pre-Project Conditions	1.68	93	0.12	7
Post-Project Conditions	0.39	21	1.41	79
Drainage Patterns/Connections	The total 1.8 acre site currently surface drains in two directions. The site has two tributary areas; the first area, surface flows in a northwesterly direction towards Garfield Avenue and then along the southerly edge towards an existing catch basin. The second area, surface flows in a southeasterly direction towards Main Street and then along the westerly edge to an existing catch basin. The conveyed flow then drains in an easterly direction within an existing storm drain system and eventually discharges to the Huntington Beach Channel.			

II.2 Potential Stormwater Pollutants

Pollutants of Concern			
Pollutant	Underline One: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments insurance
Suspended-Solid/ Sediment	E	N	The major source of sediments is bare or poorly vegetated ground.
Nutrients	E	N	Primary sources of nutrients in urban runoff are fertilizers and eroded soils.
Heavy Metals	E	N	Sources of metals in the stormwater may include vehicle paints and motor oil.
Pathogens (Bacteria/Virus)	E	N	Sources of pathogens include wild bird and pet waste, garbage.
Pesticides	E	N	Excessive or improper application of a pesticide may result in runoff containing toxic levels of its active ingredient.
Oil and Grease	E	N	Oil & grease are usually associated with fluid leaking vehicles in the driveway.
Toxic Organic Compounds	E	N	
Trash and Debris	E	N	Trash and biodegradable organic matter are general waste products in residential areas.

II.3 Hydrologic Conditions of Concern

☒ No – Show map (See supporting Documents Section VI)

☐ Yes –

Drains ultimately into Huntington Beach Channel, which is a concrete lined channel. Project not located within potential area of erosion.

II.4 Post Development Drainage Characteristics

To comply with NPDES permit requirements, biotreatment BMP modular wetland system (MWS) units (MSW-L-8-12-V) manufactured by Bioclean Environmental has been used.

Under proposed conditions the entire site will drain to an on-site storm drain system which will outlet to a modular wetland system treatment unit. The flow after treatment will be directed to the public storm drain system within Garfield Avenue via a storm drain line with a new connection point. It will then be conveyed from the public Strom Drain system along Garfield Avenue and continue east and then south along Delaware and ultimately the Huntington Beach Channel (D01).

II.5 Property Ownership/Management

Ownership of the project will be held with Bonanni Development, Inc until a Home Owners Association (HOA) is established. Long term maintenance will be the responsibility of the (HOA).

Bonanni Development, Inc.

5500 Bolsa Ave. Suite 120

Huntington Beach, CA 92649

Ed Bonanni

Section III Site Description

III.1 Physical Setting

Planning Area/ Community Name	SP-9 Holly Seacliff Specific Plan
Location/Address	Garfield Avenue and Main Street
	Huntington Beach, CA
Land Use	Residential
Zoning	Medium Density Residential
Acreage	1.8
Predominant Soil Type	Silts and Clay

III.2 Site Characteristics

Precipitation Zone	0.71"(24 HR, 85th percentile)
Topography	Undeveloped and open area with minimum slope for drainage.
Drainage Patterns/Connections	The total 1.8 acre site currently surface drains in two directions. The site has two tributary areas; the first area, surface flows in a northwesterly direction towards Garfield Avenue and then along the southerly edge towards an existing catch basin. The second area, surface flows in a southeasterly direction towards Main Street and then along the westerly edge to an existing catch basin. The conveyed flow then drains in an easterly direction within an existing storm drain system and eventually discharges to the Huntington Beach Channel.
Soil Type, Geology, and Infiltration Properties	Class D Soil Type

Site Characteristics (continued)	
Hydrogeologic (Groundwater) Conditions	The static groundwater is considered to have existed at a depth of 30+. Perched water may be encountered.
Geotechnical Conditions (relevant to infiltration)	Groundwater is not expected to significantly impact infiltration design. Seasonal High Groundwater can be expected between 30'-40'.
Off-Site Drainage	None.
Utility and Infrastructure Information	Existing oil, water and storm drain servicing the lot will or have to be removed and abandoned.

III.3 Watershed Description

Receiving Waters	Santa Ana River-Huntington Beach Channel
303(d) Listed Impairments	None
Applicable TMDLs	None
Pollutants of Concern for the Project	Bacteria/Virus, Metals, Nutrients, Pesticides, Sediments, Trash & Debris, Oxygen demanding Substances, Oil and Grease
Environmentally Sensitive and Special Biological Significant Areas	Not applicable

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?	YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.		

Project Performance Criteria (continued)	
If HCOC exists, list applicable hydromodification control performance criteria	Not Applicable
List applicable LID performance criteria	"Priority projects must infiltrate, harvest and use, evapotranspire, or biotreat/filter, the 85th percentile, 24-hour storm event (Design capture Volume)". Based on the information above the site is designed for the LID criteria and storm water quality design flow. According to the LID BMPs hierarchy, on-site biotreatment will satisfy the performance criteria set fourth within the Santa Ana Region (NOC).
List applicable treatment control BMP performance criteria	The site will use a MWS unit as a treatment unit and to separate the trash.
Calculate LID design storm capture volume for Project.	**Residential Area** Ai = Impervious Area = 1.41 ac. At = Total Area = 1.8 ac. (Ai/At) * 100 = (1.41/1.8) * 100 = 79% Therefore C = 0.74 I = 0.71" DCV = C * I * At DCV = 0.74 * 0.71" * 1.8 ac. * (1ft/12in) * (43,560 ft^2/acre)= 3,433 ft^3

IV.2. SITE DESIGN AND DRAINAGE PLAN

Bioretention with Underdrains

The majority of the site will be conveyed into a proposed storm drain system, where the water quality "first flush" treatment for the site will be treated using a bioretention facility.

1 – Determine Design Flow rate. Use T_c = 5.0 min (From Hydrology)

Q = C * i * A

C = (0.75 * Imp %) +0.15 = (0.75 * 0.79) + 0.15 = 0.74

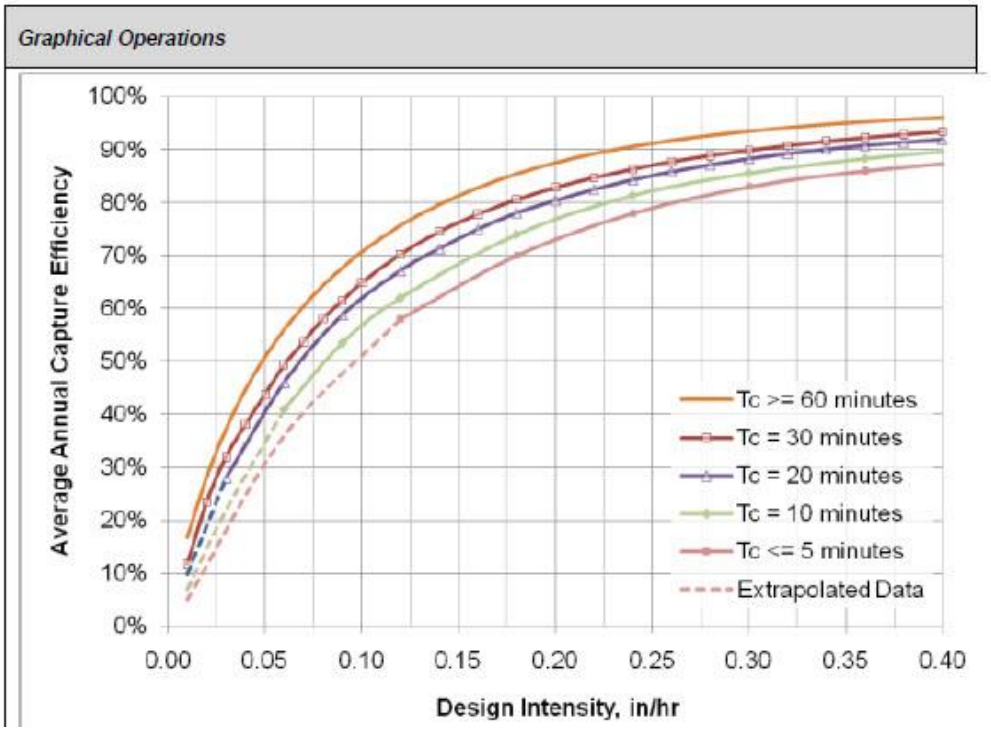
i = 0.25 (From Worksheet D)

Q = 0.74 * 0.25 * 1.80

Q = 0.33 cfs

Modular Wetland MWS-L-8-12-V treats 0.346

Worksheet D: Capture Efficiency Method for Flow-Based BMPs



IV.3 LID BMP SELECTION AND PROJECT CONFORMANCE ANALYSIS

IV.3.1 Hydrologic Source Controls

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☐
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐

IV.3.2 Infiltration BMPs

Identify infiltration BMPs to be used in project. If design volume cannot be met state why BMPs cannot be met

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Open bottomless area drain	☐
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐
Other:	☐

Due to the poor drainage conditions and historic infiltration rates, the use of infiltration BMP's would not be suitable to meet the sites entire design volume. Infiltration is not feasible due to site having Class "D" soil. See attached map.

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

Name	Included?
All HSCs; *See Section IV.3.1*	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

Evapotranspiration and rainwater harvest are not suitable in arid climates such as Southern California.

IV.3.4 Biotreatment BMPs

Name	Included?
Bioretention with underdrains	☒

Biotreatment BMPs have been selected for the project. Vegetated swales, filter strips, and detention basins were considered but were not found feasible because of site constranints.

IV.3.5 Hydromodification Control BMPs

BMP Name	BMP Description

IV.3.6 Regional/Sub-Regional LID BMPs

Regional/Sub-Regional LID BMPs
Not applicable

IV.3.7 Treatment Control BMPs

Treatment Control BMPs	
BMP Name	**BMP Description**

Not applicable.

IV.3.8 Non-structural Source Control BMPs

Non-Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**If not applicable, state brief reason**
		Included	**Not Applicable**	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☒	☐	
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	No Hazardous Materials
N6	Local Industrial Permit Compliance	☐	☒	No Industrial Permit
N7	Spill Contingency Plan	☐	☒	No Hazardous Materials
N8	Underground Storage Tank Compliance	☐	☒	No Underground Tanks
N9	Hazardous Materials Disclosure Compliance	☐	☒	No Hazardous Materials
N10	Uniform Fire Code Implementation	☐	☒	No Hazardous Materials
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☐	☒	No employees
N13	Housekeeping of Loading Docks	☐	☒	No Loading Docks
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	No Retail Gasoline Outlets

IV.3.9 Structural Source Control BMPs

Structural Source Control BMPs				
Identifier	**Name**	**Check One**		**If not applicable, state brief reason**
		Included	**Not Applicable**	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	No outdoor storage
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☐	☒	No trash and waste storage areas
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	No runoff over slopes
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☒	Not applicable
S6	Dock areas	☐	☒	No dock areas
S7	Maintenance bays	☐	☒	No maintenance bays
S8	Vehicle wash areas	☐	☒	No vehicle wash areas
S9	Outdoor processing areas	☐	☒	No outdoor processing areas
S10	Equipment wash areas	☐	☒	No equipment wash areas
S11	Fueling areas	☐	☒	No fueling areas
S12	Hillside landscaping	☐	☒	No hillside landscaping
S13	Wash water control for food preparation areas	☐	☒	No food preparation areas
S14	Community car wash racks	☐	☒	No community car wash racks

IV.4 ALTERNATIVE COMPLIANCE PLAN (IF APPLICABLE)

IV.4.1 Water Quality Credits

Description of Proposed Project				
Project Types that Qualify for Water Quality Credits (Select all that apply):				
☐Redevelopment projects that reduce the overall impervious footprint of the project site.	☐Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.	☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).		
☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).		☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned		☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).
☐Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.	☐ Developments in a city center area.	☐ Developments in historic districts or historic preservation areas.	☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.	☐In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.
Calculation of Water Quality Credits (if applicable)	Not Applicable			

IV.4.2 Alternative Compliance Plan Information

.

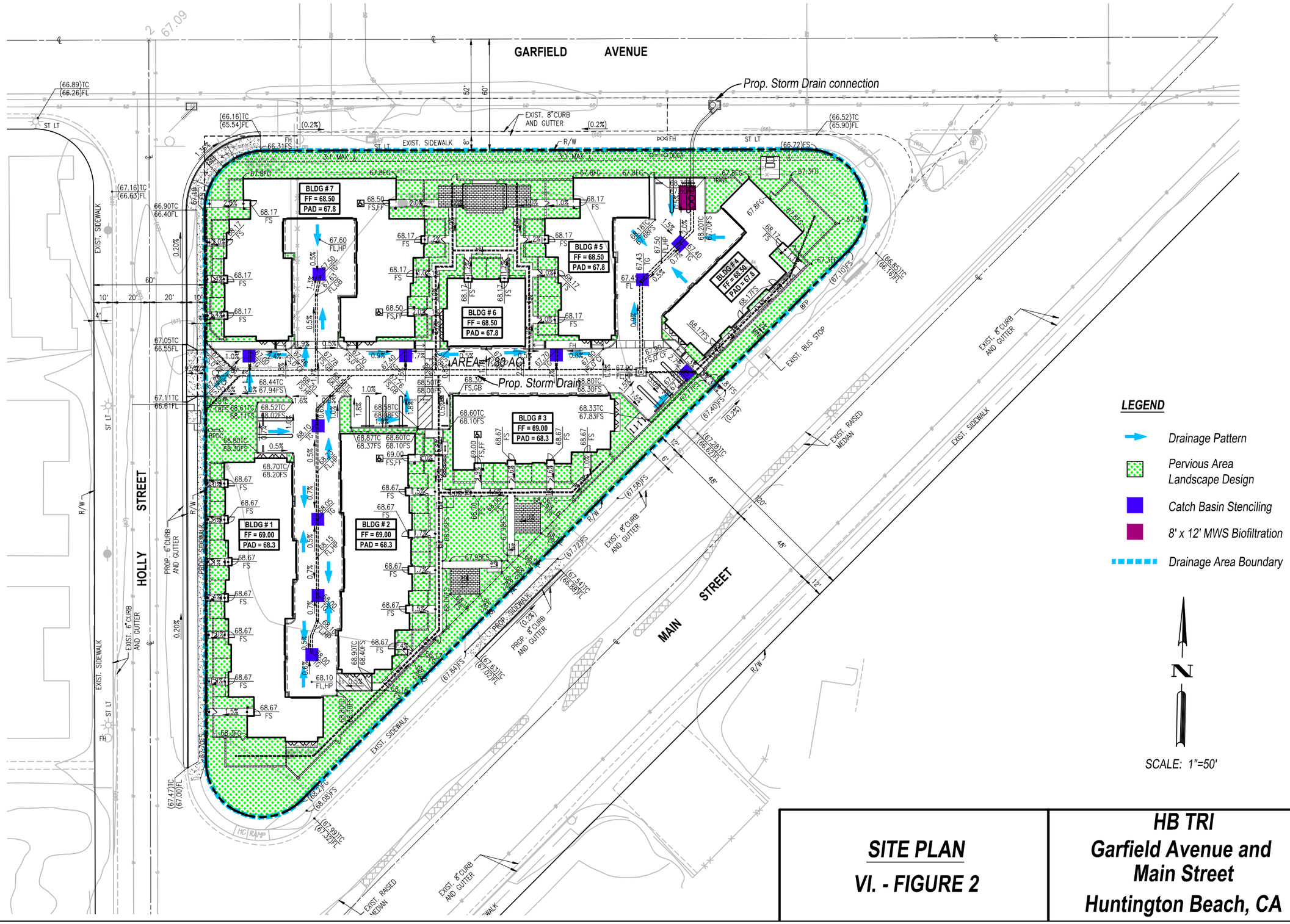
Not Applicable

Section V Inspection/Maintenance Responsibility for BMPs

See O&M Plan in Attachment A

Section VI Site Plan/Drainage Plan/Supporting Documents

VI.1 SITE PLAN AND DRAINAGE PLAN/BMP DETAILS/SUPPORTING DOCUMENTS



SITE PLAN

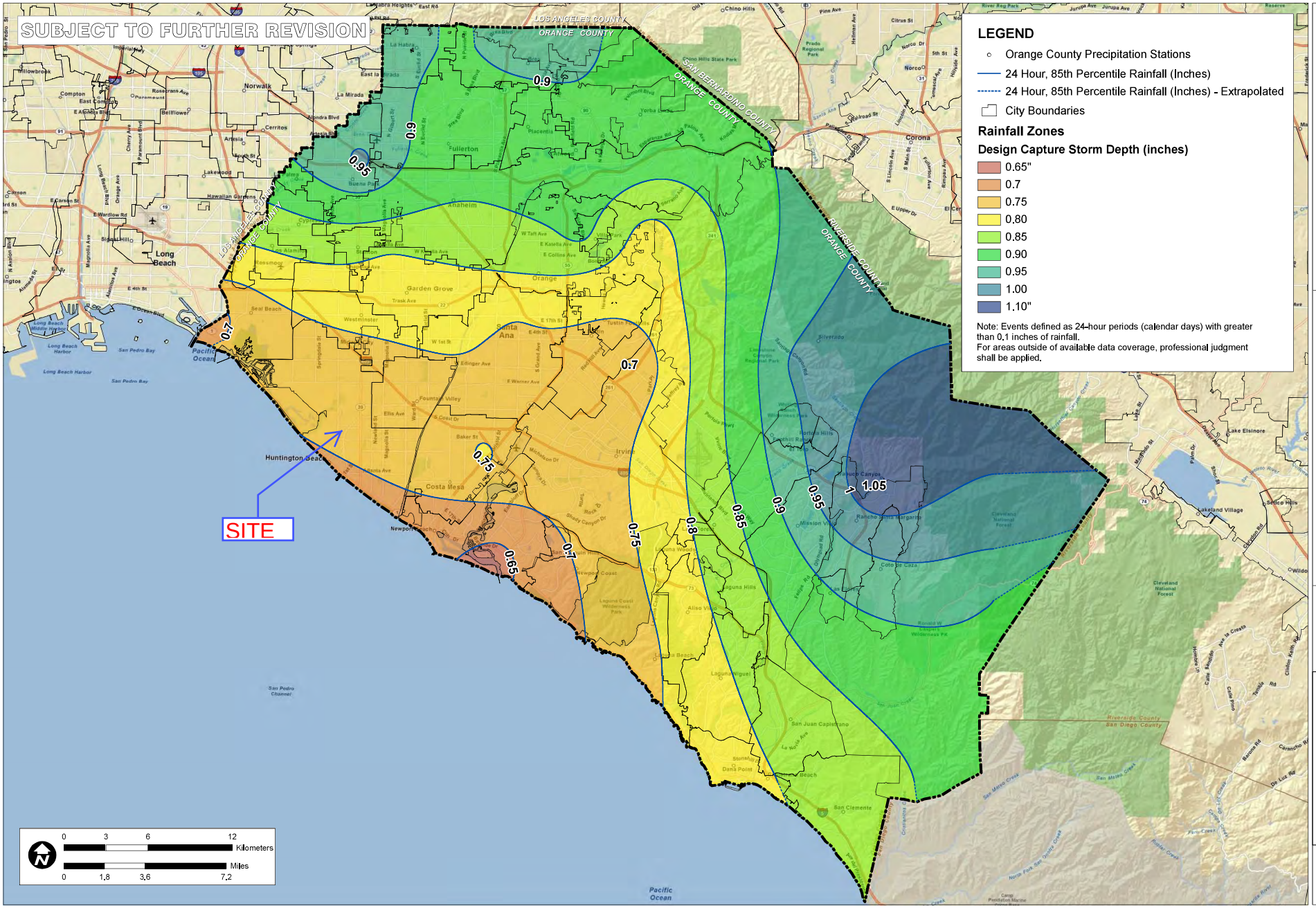
VI. - FIGURE 2

HB TRI

Garfield Avenue and Main Street

Huntington Beach, CA


NO DUMPING
THIS DRAINS TO OCEAN



TITLE
RAINFALL ZONES

JOB
ORANGE COUNTY TECHNICAL GUIDANCE DOCUMENT
CA
ORANGE CO.

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE
XVI-1

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Susceptibility

Potential Areas of Erosion, Habitat, & Physical Structure Susceptibility

Channel Type

- Earth (Unstable)
- Earth (Stabilized)
- Stabilized

Tidel Influence

<= Mean High Water Line (4.28')

Water Body

- Basin
- Dam
- Lake
- Reservoir

Forest Areas

Cleveland National Forest

Other Lands

Airport/Military

San Bernardino County

San Gabriel-Coyote Creek Watershed

CARBON CANYON

YORBA LINDA RESERVOIR

MILLER RETARDING BASIN

KRAEMER BASIN

ANAHEIM LAKE

WARNER BASIN

OLIVE HILLS

WALNUT CANYON RESERVOIR

FLETCHER RETARDING BASIN

VILLA PARK DAM

PETERS CANYON RESERVOIR

IRVINE LAKE

Riverside County

Anaheim Bay-Huntington Harbor Watershed

Santa Ana River Watershed

Seal Beach Naval Weapons Station

SITE

SOUTHPARK PUMP STATION

BARTLETT RETARDING BASIN

Newport Bay Watershed

John Wayne Airport

South Orange County

PRELIMINARY MAP - SUBJECT TO FURTHER REVISION

N

0 6,000 12,000 24,000 Feet

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TITLE

SUSCEPTIBILITY ANALYIS
SANTA ANA RIVER

JOB

ORANGE COUNTY
WATERSHED
MASTER PLANNING
ORANGE CO. CA

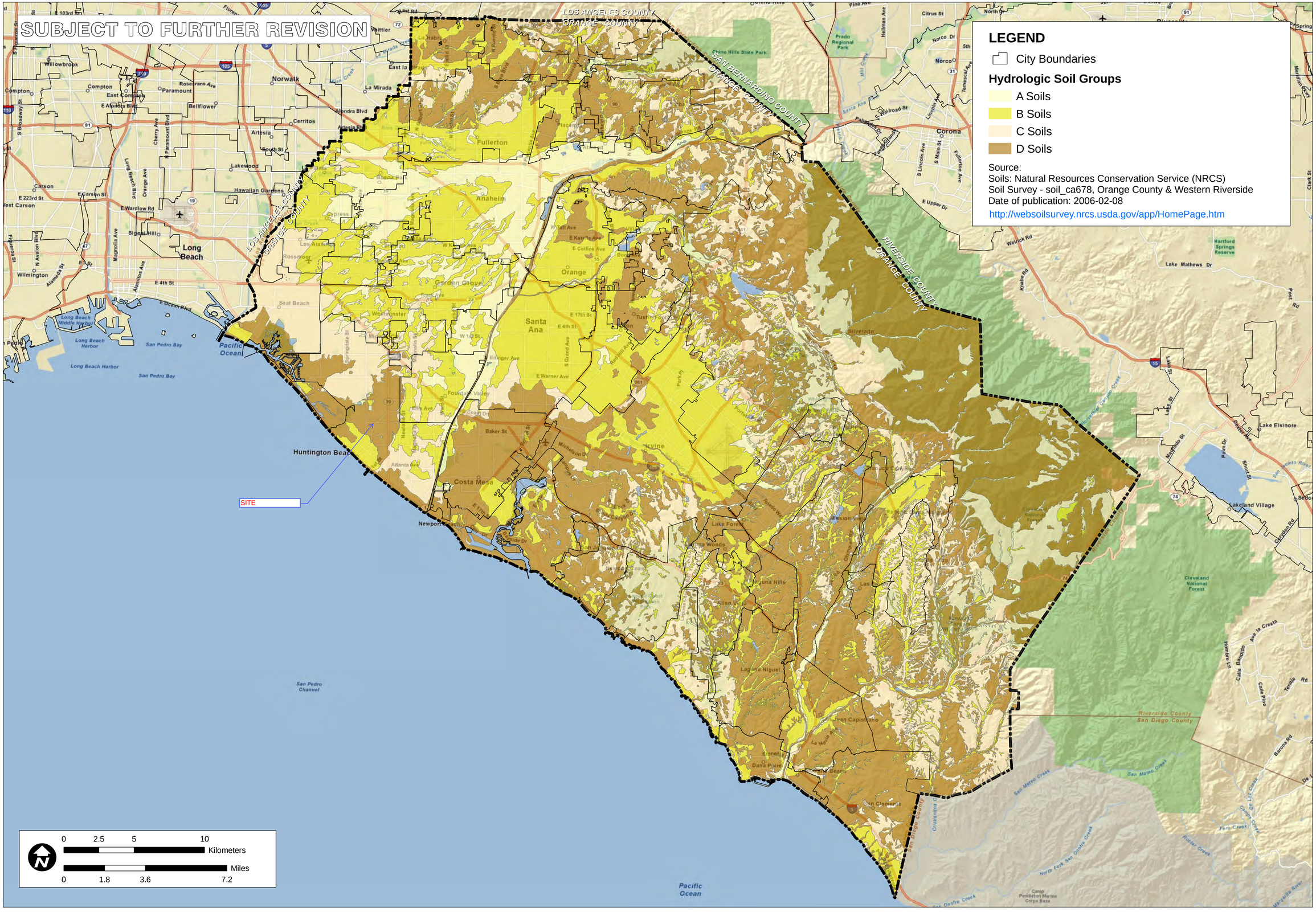
SCALE	1" = 6000'
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/30/10
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE

XVI-3c

SUBJECT TO FURTHER REVISION



LEGEND

City Boundaries

Hydrologic Soil Groups

- A Soils
- B Soils
- C Soils
- D Soils

Source:
Soils: Natural Resources Conservation Service (NRCS)
Soil Survey - soil_ca678, Orange County & Western Riverside
Date of publication: 2006-02-08
http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

TITLE
NRCS HYDROLOGIC SOILS GROUPS

JOB
ORANGE COUNTY INFILTRATION STUDY
ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE
XVI-2a

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SUBJECT TO FURTHER REVISION

LEGEND

- OCWD Groundwater Basin Protection Boundary
- City Boundaries

Infiltration Constraints

- 1 Constraint
- 2 Overlapping Constraints
- 3 Overlapping Constraints
- 4 Overlapping Constraints

Analysis Layers Included: 1. Hydrologic Soil Group D, 2. Landslide Hazard Zone, 3. Groundwater Protection Areas 4. Approximate Selinium Area, 5. Depth to Groundwater <= 5'

Note: Screening datasets are not exhaustive. The applicant should always conduct a review of available site-specific information relative to infiltration constraints as part of assessing the feasibility of stormwater infiltration.
Source;
Infiltration Constraint Analysis: PACE/Geosyntec

SITE

0 2.5 5 10 Kilometers

0 1.8 3.6 7.2 Miles

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TITLE: INFILTRATION ANALYSIS OVERLAPPING CONSTRAINT LOCATIONS

JOB: ORANGE COUNTY INFILTRATION STUDY — ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	95226-E

PACE Advanced Water Engineering

FIGURE XVI-2g

Section VII Educational Materials

Education Materials

Residential Material (http://www.ocwatersheds.com)	Check If Applicable	Business Material (http://www.ocwatersheds.com)	Check If Applicable
The Ocean Begins at Your Front Door	☐	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☐
Household Tips	☐	**Other Material**	**Check If Attached**
Proper Disposal of Household Hazardous Waste	☐		
Recycle at Your Local Used Oil Collection Center (North County)	☐	County Urban Storm Water Pollution Prevention Program	☒
Recycle at Your Local Used Oil Collection Center (Central County)	☐	Management Guidelines for Use of Fertilizers and Pesticides	☒
Recycle at Your Local Used Oil Collection Center (South County)	☐	EPA: When it Rains it Drains	☒
Tips for Maintaining a Septic Tank System	☐	EPA: Preventing Pollution through Efficient Water Use	☒
Responsible Pest Control	☐	Solution to Pollution – Twenty Ways	☒
Sewer Spill	☐	County Ordinance No. 3802	☒
Tips for the Home Improvement Projects	☐	County Ordinance No. 0-97-3987, Water Management and Urban Runoff	☒
Tips for Horse Care	☐	Notice of Transfer of Responsibility Form	☒
Tips for Landscaping and Gardening	☐		☐
Tips for Pet Care	☐		☐
Tips for Pool Maintenance	☐		☐
Tips for Residential Pool, Landscape and Hardscape Drains	☐		☐
Tips for Projects Using Paint	☐		☐

County Urban Storm Water Pollution Prevention Program

Orange County Storm Water Program Participants:

Anaheim Public Works/Engineering	(714) 765-5176
Brea Engineering	(714) 990-7666
Buena Park Public Works	(714) 562-3655
Costa Mesa Public Services	(714) 754-5248
Cypress Public Works	(714) 229-6740
Dana Point Public Works	(949) 248-3562
Fountain Valley Public Works	(714) 593-4400 x347
Fullerton Engineering Dept	(714) 738-6853
Garden Grove Public Works	(714) 741-5554
Huntington Beach Public Works	(714) 536-5432
Irvine Public Works	(949) 724-6315
La Habra Public Services	(562) 905-9792
La Palma Public Works	(714) 690-3310
Laguna Beach Public Works	(949) 497-0330
Laguna Hills Engineering	(949) 707-2600
Laguna Niguel Public Works	(949) 362-4337
Laguna Woods Public Works	(949) 452-0600
Lake Forest Public Works	(949) 461-3480
Los Alamitos Community Dev	(562) 431-3538 x301
Mission Viejo Public Works	(949) 470-3095
Newport Beach Public Works	(949) 644-3311
Orange Public Works	(714) 744-5551
Placentia Engineering	(714) 993-8131
Rancho Santa Margarita Public Works	(949) 635-1800
San Clemente Engineering	(949) 361-6118
San Juan Capistrano Engineering	(949) 493-1171
Santa Ana Public Works	(714) 647-3380
Seal Beach Engineering	(562) 431-2527 x318
Stanton Public Works	(714) 379-9222 x204
Tustin Public Works Engineering	(714) 573-3150
Villa Park Engineering	(714) 998-1500
Westminster Public Works Eng.	(714) 898-3311 x229
Yorba Linda Engineering	(714) 961-7170 x174
O. C. Storm Water Program	(714) 567-6363
O. C. Urban Runoff Plan Review	(714) 834-3526
24 Hour Water Pollution Problem Reporting Hotline	(714) 567-6363 or E-mail information to ashbyk@pfrd.co.orange.ca.us
American Oceans Campaign	www.americanoceans.org

Other Important Phone Numbers:

For Additional Brochures **(714) 567-6363**

For Recycling Tips www.ciwmb.ca.gov/wmprog.htm

*O. C. Household Hazardous Waste Information (714) 834-6752 or www.oc.ca.gov/IWMD

Chemical and Hazardous Material Spill Emergencies 911

Information on locations that accept used motor oil, California Integrated Waste Management Board **(800) 553-2962 or www.CIWMB.ca.gov**

Information on agriculture chemicals, pesticides and possible alternatives, O.C. Agriculture Commissioner **(714) 447-7100**

Information for industries regarding Hazardous Waste And Underground Storage Tank Requirements: O.C. Health Care Agency / Environmental Health Division/ Hazardous Materials Management Section **(714) 667-3700**

Do You Know Where The Water In Your Storm Drain Goes?

Orange County Urban Storm Water Pollution Prevention Program

Even if you live miles from the Pacific Ocean you may be polluting it without knowing it.

How Does Orange County's Storm Drain System Work?

Unlike the sewer system, which carries water from your indoor drains to wastewater treatment plants, the storm drain system releases untreated water into channels, rivers and ultimately the ocean.

To insure the safety and enjoyment of our environment, everyone's help is needed to keep the storm drain system free from harmful pollutants...

Did you know that one pint of motor oil can produce an oil slick of approximately one acre on the surface of water?

To The Ocean...

COMMON STORM DRAIN POLLUTANTS

HOME MAINTENANCE

- **Detergents, Cleaners and Solvents**
- **Oil and Latex Paint**
- **Swimming Pool Chemicals**
- **Outdoor Trash and Litter**

LAWN AND GARDEN

- **Pet and Animal Waste**
- **Pesticides, Insecticides, and Herbicides**
- **Clippings, Leaves and Soil**
- **Fertilizer**

AUTOMOBILE

- **Oil and Grease**
- **Radiator Fluids and Antifreeze**
- **Cleaning Chemicals**
- **Brake pad dust**

Things You Can Do To Protect The Water In Your Storm Drain System

Did you know that dumping anything in the storm drain system is illegal and harmful to the environment?

Before you let anything go into the gutter or the storm drain, stop and think!

HOUSEHOLD

Some household products , such as cleaners, insect spray and weed killers, can cause pollution if allowed to drain into a storm drain. Buy household products labeled "nontoxic" whenever possible. Clean up spills with an absorbent material such as kitty litter and check with your disposal carrier or a *household hazardous waste collection center *, for disposal recommendations.*

PAINT AND SOLVENTS

Clean water-based paints from rollers, pans and brushes in sinks that go into the sewer system. Use paint thinner to remove oil-based paint from brushes and rollers, then take used thinner and left over paint to a *household hazardous waste collection center* *, or keep the paint for touch ups, or give it to a friend.

AUTOMOTIVE

Keep your autos in good repair and watch for possible leaks. Take left over or used fluids to your *household hazardous waste collection center* * . Clean up leaks and spills with an absorbent material such as kitty litter and check with your disposal carrier or a *household hazardous waste collection center * for disposal recommendations.*

Storm drain water goes directly into channels and creeks...

SWIMMING POOL AND SPA

Water containing chlorine is harmful to aquatic life. Whenever possible, drain water into the sewer system. There are established guidelines on the amount of residual chlorine, acceptable ph range, coloration, filter media and acid cleaning wastes when draining into the storm drain system, and some areas may require a permit. Check with your city or call the county at 714-567-6363 for a copy of the guidelines.

LAWN AND GARDEN

Use a broom or rake to clean up yard debris and place in trash bins; lawn clippings and leaves should be placed in recycling containers if available - or better yet, leave your grass clippings on the lawn. Follow directions carefully when using pesticides and fertilizers; don't over water or use before a rain. Pesticides and fertilizers may adversely impact our waterways.

TRASH

Place trash and litter that cannot be recycled or reused in trash cans, call your city to find out if your city has a recycling program. Whenever possible, turn trash into useful products and buy recycled products.

Remember: *Reduce - Reuse -Recycle*

PET CARE

Pick-up pet waste as soon as possible and put it in the trash. Pet waste has harmful bacteria that can get into our waterways. Also, follow label directions for disposal on pet care products like flea shampoo, they can be toxic.

...and through wetlands and bays...

...to the ocean.

This brochure has been developed as part of the Orange County Storm Water Management Program. Participants include the County of Orange, local cities, and agencies listed in this brochure. You may contact one of them for additional brochures and information.

It's Up To You

Together, you and your neighbors can make a difference to keep gutters, storm drains and waterways clean. To learn more, contact your city or one of the program participants listed in this brochure.

Management Guidelines for Use of Fertilizers and Pesticides

COUNTY OF ORANGE

PUBLIC FACILITIES & RESOURCES DEPARTMENT

MANAGEMENT GUIDELINES FOR THE USE OF FERTILIZERS AND PESTICIDES

September 2000
(Revision to March 1993)

VICKI L. WILSON
Director

ORANGE COUNTY BOARD OF SUPERVISORS

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GLOSSARY

California Code of Regulations, Title 3, Division 6 (3 CCR)
The State of California Code regulating pesticides and pest control operations.

California Fertilizer Association (CFA)
An organization promoting progress in the fertilizer industry in the interest of an efficient and profitable agricultural community. Activities of CFA include developing and disseminating new information to its members and others; supporting production-oriented research programs to identify maximum yield systems for farmers; promoting argonomic topics at our schools, colleges and universities; and maintaining open communications among the industry, universities and other state and federal agencies.

Chemical Labels
As required by federal law, manufacturers of pesticides must provide chemical labels on the containers of all pesticides distributed. These labels include all necessary information on the chemical constituents of the pesticide, including recommendations and instructions for use, toxicity classification and the appropriate warning statements and emergency procedures in case of acute exposures. As required by state law, labels must be kept in good, readable condition and be attached to all pesticide containers at all times.

Drainage Area Management Plan (DAMP)
A document required under the municipal NPDES stormwater permits issued to the co-permittees by Santa Ana and San Diego Regional Water Quality Control Boards.

Equivalent Training
A term referring to public agency employees dealing with the application of pesticides who have not received a qualified applicator's license (QAL) from the State of California, but who has completed a training course in pesticide application offered by the County of Orange.

Eutrophication
A decrease in dissolved oxygen in a body of water to such an extreme extent that plant life is favored over animal life. For example, a lake that is overgrown in algae on the surface is likely in a state of eutrophication.

Integrated Pest Management
The trend in vegetation management that supports moving away from reliance on pesticides and toward an integrated approach of limited pesticide use with more environmentally friendly pest control techniques.

Maximum Extent Practicable (MEP)
MEP means taking into account equitable considerations of competing factors, including, but not limited to, the gravity of the problem, fiscal feasibility, public health risks, societal concern and social benefit.

Materials Data Safety Sheet (MSDS)
Similar to chemical labels and also required by federal law, these sheets should contain all information necessary for the safe handling of pesticides. They include chemical identifications, hazardous ingredients, physical data, fire and explosion data, health hazards, reactivity data, spill or leak cleanup procedures, special protection and special precautions.

National Pollutant Discharge Elimination System (NPDES)
The national program under the Clean Water Act for controlling discharges from point sources directly into Waters of the United States.

Permittee
A permittee to an NPDES permit that is responsible for permit conditions relating to the discharge for which it its operator. As used in the Stormwater Permit Implementation Agreement, permittees are the County of Orange, the 33 cities of Orange County and the Orange County Flood Control District.

Pest Control Advisor (PCA)
Certification obtained from the State of California after demonstrating adequate knowledge of pests, pesticides and the implications of pesticide use. A recommendation for pesticide use must be obtained from a PCA before public agencies may approve any pesticide applications.

Qualified Applicator's License (QAL)
A license obtained from the State of California after demonstrating adequate knowledge of the proper techniques for handling, storing, transporting and applying pesticides. Workers must obtain a QAL before being permitted to apply or supervise application of Category 1 pesticides.

Qualified Fertilizer Specialist
A person designated by the governing public agency who is knowledgeable of the proper techniques for handling, storing, transporting and applying fertilizers as defined in the Management Guidelines for Use of Fertilizers and Pesticides. This person shall be able to sample, inspect, test and make analyses of fertilizers that are in use or being considered for use in the agency's jurisdiction to such an extent to adequately determine their compliance with the management guidelines.

Restricted Materials Permit
A permit that must be acquired by any public agency before application of the pesticides listed as restricted by the State of California in the Code of Regulations ("CCR"), Title 3, Division 6. In Orange County, this permit must be obtained from the County Agricultural Commissioner.

State Code
In this report, referring to CCR, Title 3, Division 6, and noted as "3 CCR."

Storm Drain
Pipe or channel structure designed to convey only stormwater runoff for purposes of flood protection. Federal regulations use the term "storm sewer." Use of the word "sewer" for a stormwater conveyance structure should be discouraged, since the word "sewer" also includes sanitary sewers and combined sewers which carry human waste.

Toxicity Classification
The California Department of Food and Agriculture groups pesticides into three categories according to their toxicity or potential to cause injury to people. Category 1 pesticides are the most hazardous and their use is normally restricted, while Category 3 pesticides are the least toxic to people and are generally less hazardous.

EXECUTIVE SUMMARY

This document was prepared to establish guidelines for the management of fertilizers and pesticides. The main objective of these guidelines is to safeguard to "the maximum extent practicable"* against unnecessary discharges of fertilizers and pesticides into surface and groundwater systems and to establish safe and reasonable standards for handling those materials. The guidelines are based on state and federal laws, environmental policies and "best management practices" established by various public and private agencies. Through this document, it is envisaged that these practices will establish a set of uniform standards and procedures.

1.0 INTRODUCTION

1.1 Status of Fertilizer and Pesticide Use

Fertilizers and pesticides are a primary tool of vegetation management. Used properly, fertilizers provide important nutrient supplies for vegetation and agriculture, and pesticides help to protect those resources from potential harm.

Used improperly, fertilizers and pesticides can become an impairment to surface and groundwater supplies. Careless application, mixing, transportation, storage and disposal allow chemicals to enter surface and groundwater through runoff and infiltration; the same handling problems endanger human health through exposure to toxic chemicals; soil degradation often results from overuse and misuse of pesticides and fertilizers. Even under ideal conditions, there is still a high level of risk, and consequently, there is a need for considerable professional planning and management.

1.2 Management Options

Because of the risk involved in using fertilizers and pesticides, the development of management guidelines for use of fertilizers and pesticides is an essential element of the DAMP. These guidelines are designed not only to comply with the NPDES Stormwater Program, but also to minimize any threat to human health and environmental resources from improper use of fertilizers and pesticides. It is envisaged that consideration of these guidelines by the permittees will cause public agencies to re-evaluate their approach to using fertilizers and pesticides and move toward reducing dependence on them.

The guidelines that follow are intended for the use of the Permittees, although they may ultimately be used on a broader scale. They are based on the laws, management guidelines and "best management practices" established by other federal, state and local agencies. They recognize that the safe management of fertilizers and pesticides is a shared responsibility between the field worker and management. These guidelines address the concern for fertilizer and pesticide use at a basic level, and if followed, they should reasonably prevent environmental damage to the highest degree possible.

1.3 Definitions

For the purpose of these guidelines, fertilizers may be referred to as "nutrients" or "soil nutrients," and the term "pesticides" will encompass all herbicides, insecticides, fungicides and rodenticides. The California Food and Agricultural Code and the California Code of Regulations, Title 3 (3 CCR)*, constitute the laws and regulations referenced in this plan. They are referenced often and usually referred to as the "State Code."* Also, Permittees will be referred to as "public agencies," and employees working for these public agencies who handle fertilizers & pesticides will be referred to as "workers" or "public employees."

2.0 FERTILIZER MANAGEMENT

2.1 Definition and Scope of Guidelines

Fertilizers are nutrients applied to soil to provide a better growing environment for plants. The fertilizers most commonly in use in Southern California today are nitrogen- and phosphorus-based. Both leach into soils easily in the presence of water and have become a water quality concern, causing algal blooms and eutrophication* and, in some cases, causing levels to exceed federal drinking water standards.

However, fertilizers also play the important role of promoting vegetation growth that protects soil from erosion and enhances landscape aesthetics. Because there is a necessity for soil nutrients and because there is a potential for adverse effects on local waterways due to the loss of these nutrients through runoff and infiltration, management guidelines are necessary as a means of reducing the loss of fertilizers into water supplies.

2.2 General Considerations

2.2.1 State and Federal Law

Because most fertilizers are not as toxic as pesticides, state and federal lawmakers have not developed regulations for their use. Fertilizers are not usually considered an immediate danger to public health or safety. However, the California Fertilizer Association (CFA)*, a Sacramento-based organization, has developed complete management guidelines for fertilizer use and the State Department of Food and Agriculture has recommendations for use of nitrate-based fertilizers, both of which are available for consultation.

2.2.2 General Recommendations

1. Public agencies should periodically have soils tested before applying fertilizers to be certain that application is appropriate for and compatible with soil conditions. The samples should be analyzed by a qualified specialist for fertilizer applications*, and workers should follow the recommendations.

2. Public agencies should choose to use organic fertilizers such as compost, peat and mulch wherever possible to increase soil porosity and water retention.

3. Workers should apply only the minimum amount of fertilizer needed and incorporate it directly into the soil around the plant, where possible, to minimize potential surface runoff.

4. Workers should not apply fertilizers in the rain or on the same day that rain is expected.

5. Workers should immediately cleanup any spill of fertilizers.

6. Storage facilities should be covered and have impermeable foundations so that potential spills don't have the opportunity to runoff into surface water or leach into groundwater systems.

7. Fertilizers that may be carried by the wind should be stored in areas away from open loading spaces and entrances of storage warehouses.

8. Fertilizers should be securely covered in the vehicle before being taken to application sites so that none can spill or fly out during transport.

9. Use slow release fertilizers -- such as water soluble nitrogen fertilizers, coated fertilizers and fertilizers of limited solubility -- whenever possible to minimize the possibility of leaching.

2.3 Planning for Use of Fertilizers

2.3.1 Soil Testing

Most fertilizers travel quickly through water. Therefore, fertilizers will leach through soil and potentially contaminate groundwater more quickly after excess watering or irrigation, after heavy rains and where the water table is high. For this reason, soil testing is an important management technique to determine the safest fertilizer application rate.

The California Landscape Contractors Association (CLCA) has a complete list of organizations in Southern California that offer soil testing and analyzing for fertilizer use. To get a copy of that list, CLCA can be contacted at (916) 448-2522. If a reliable soil analyst is not already known, it is advisable for public agencies to consult CLCA and research a specialist who can make recommendations for fertilizer use.

2.3.2 Application Rates

The amount of fertilizer needed for different applications depends on a number of factors. For specific recommendations, a qualified specialist should be consulted. The following are some factors to be considered:

- The vegetation's ability to use fertilizer;
- The amount of nutrients already in the soil, including fertilizer that may still be present from a previous application;
- The amount of soil nutrients that will or can be obtained from natural processes;
- The expected loss of nutrients from the soil; and
- The temperature at the time of application.

2.3.3 Timing

For vegetation with different growth patterns, fertilizers should be applied at different times and in different quantities. The vegetation being managed should be researched and fertilizers applied only according to the amounts and at the time intervals recommended by a qualified specialist for fertilizer applications. This should minimize the waste of fertilizer and reduce any risk of water contamination.

2.4 Application Methods of Fertilizers

This section details the most common methods for application of fertilizers. These are not the only acceptable methods of fertilizer application. Every application has its own circumstances and variables to consider. A qualified fertilizer specialist should be consulted to recommend the most appropriate application method.

2.4.1 Banding of Fertilizer

Probably the most common and safest application method, this involves physically working small amounts of fertilizer into the soil in a band beneath and around the sides of a seed. It allows new roots to efficiently use the nutrients and minimizes potential nutrient loss to surface runoff. However, given the labor involved, banding may not be practical for most public agency fertilizer applications.

2.4.2 Foliar Fertilization

This is fertilizer applied in solution form that is absorbed through leaves and stems. The method can reduce nutrient leaching into the soil when applied correctly and can be performed at the same time as pesticides application to avoid spraying twice. In this case, the guidelines for pesticide applications must also apply.

2.4.3 Broadcast Application

By this method, dry or liquid fertilizer is uniformly spread over the soil surface. This is often done mechanically, an example being the "drop spreader" which is usually an inverted triangle hopper. The simplest of mechanical applicators, the drop spreader is commonly mounted on wheels and pushed by hand or pulled by vehicle to drop fertilizer out of the bottom of the triangle.

Other types of broadcast applicators include spray booms for liquid fertilization or "spinning disks" mounted on a moving vehicle that throw dry fertilizer into the air. It should be noted that these latter methods do not offer much control over fertilizer drift in adverse weather conditions.

2.4.4 Fertigation

Although not likely to be used by public agencies for fertilizer applications, this method is common among Californian farmers who incorporate fertilizers into irrigation water. The potential for nutrient leaching using this method, though, appears to be high.

2.5 Storage and Handling of Fertilizers

2.5.1 General Description

When stored and handled properly, fertilizers present no hazard to the users' health. Public employees responsible for the storage and handling of fertilizers should be aware that some fertilizers have properties that can result in dangerous chemical reactions if mixed with other substances or under unusual circumstances. For example, ammonium nitrate may become explosive if it becomes mixed in diesel fuel; a dehumidifier may be necessary for storage areas where sensitive fertilizers are stored. Also, because most fertilizers tend to be corrosive, concrete structures are preferred for fertilizer storage facilities.

2.5.2 Dry Fertilizer

In most cases, dry fertilizers are safe to store, transport and handle. However, because some fertilizers have unique, potentially dangerous properties, it is advisable for public agencies to consult a qualified fertilizer specialist for the safest storage and handling procedures for specific fertilizers.

2.5.3 Liquid Fertilizer

Fertilizers in liquid form are potentially more hazardous than dry fertilizer. Public employees responsible for storage and handling need to be aware of the specific properties of each liquid fertilizer in use, including corrosivity and tolerable temperature and pressure ranges. Protective equipment may be necessary for workers handling fertilizers such as sulfuric or phosphoric acid. A qualified fertilizer specialist should be consulted for recommending the safest handling and storage procedures for specific liquid fertilizers.

3.0 PESTICIDE MANAGEMENT

3.1 Definition and Scope of Guidelines

Pesticides are designed to kill or restrict the growth of plants and organisms, and thus, are potentially dangerous chemicals. Increasing scientific concern for their safe use and heightened public awareness of health concerns has led to more and more regulations in the United States at both the state and federal level. Pesticide use by public agencies often involves applications to keep flood control channels and roadways clear or to minimize health and safety hazards of disease-bearing rodents and insects. Any of these applications can drain into stormwater basins if not controlled properly. Although safety concerns and the cost of complying with new regulations have encouraged some public agencies to cut back on the use of pesticides, use is still common, and their management is therefore essential.

3.2 General Considerations

3.2.1 State and Federal Law

The California Department of Food and Agriculture and the federal Toxic Substances Control Act (TSCA) have set forth extensive rules and regulations that must be met by all public agencies. At an absolute minimum, public agencies must comply with these laws or be subject to the penalties described in the statutes.

3.2.2 Chemical Labels and Materials Safety Data Sheets (MSDS)

1. Without exception, chemical labels* provided by the manufacturer of each pesticide are the first source of recommendations and instructions for chemical use. Whenever a chemical is to be used by a worker or a contractor of a public agency, the user needs to be intimately familiar with the label instructions and requirements.

   As described in the State Code (Ch. 2, Subch. 1, Art. 10), the label must appear on the immediate container of the chemical and include, in prominent, bold type, the appropriate warning or caution statement according to its toxicity classification*. If a chemical is transferred to another container, a copy of the label should be transferred with it.

   Workers should never handle a container that doesn't have a warning label attached, and the supervisor in charge should be immediately advised of the situation. If a label is badly damaged, the supervisor should replace it.

2. Workers using pesticides should have readily available the Materials Safety Data Sheets (MSDS)* for each chemical they are using. Although the MSDS is a form that may vary in appearance for different chemicals, the information is the same, as required by law. Similar to the chemical labels, these sheets contain information necessary to handle each chemical safely, and all workers should be familiar with the information.

   MSDS sheets include chemical identifications, hazardous ingredients, physical data, fire and explosion data, health hazards, reactivity data, spill or leak cleanup procedures, special protection and special precautions.

3.2.3 General Recommendations

1. Public agencies should maintain a complete list of all chemicals and their uses.

2. Public agencies should thoroughly investigate and consider all alternatives to pesticide use.

3. Workers should use pesticides only according to label instructions.

4. Work crews should bring to the work site only the amount of chemical to be used during the application and use only the minimum amount the chemical necessary.

5. Workers should consider weather conditions that could affect application (for example, they shouldn't spray when winds are exceeding 5 mph, when raining or when rain is likely).

6. Workers should consider area drainage patterns (for example, they shouldn't apply near wetlands, streams and lakes or ponds unless it is for an approved maintenance activity).

7. Workers should consider soil conditions before applying pesticides (for example, they shouldn't apply to bare or eroded ground).

8. Workers should triple-rinse empty pesticide containers before disposal and use the leftover wash as spray.

9. Workers should never clean or rinse pesticide equipment and containers in the vicinity of storm drains*.

10. Pesticides should only be stored in areas with cement floors and in areas insulated from temperature extremes.

11. Workers should secure chemicals and equipment during transportation to prevent tipping or excess jarring in apart of the vehicle completely isolated from people, food and clothing.

12. Workers or their supervisors should inspect pesticide equipment, storage containers and transportation vehicles daily.

13. Public agencies should adopt a plan for dealing with potential accidents before they happen.

14. Workers should immediately clean up any chemical spill according to label instructions and notify the appropriate supervisors and agencies.

3.3 Planning for Use of Pesticides

3.3.1 Selection of Appropriate Pesticides

1. Pesticides are to be used only after recommendation from a state-licensed or certified pest control advisor.

2. Public agencies should also seek advice for appropriate pesticide use from the Orange County Agricultural Commission, from other professional pesticide handlers and/or through professional publications. The County Agricultural Commission can be contacted at (714) 447-7100.

3. A special effort should be made to limit use of restricted pesticides and all other Category One pesticides.

3.3.2 Certification, Licensing and Permitting

1. Pesticides are only to be applied by or under the direct supervision of an individual with a qualified applicators license (QAL)* for pesticide applications or by workers with equivalent training*.

2. Chemicals listed as "restricted" in the State of California may be used only under a restricted materials permit* (StateCode Ch. 2, Subch. 4) to be issued by the Orange County Agricultural Commission. The permit must be renewed annually for continued use. For more information, contact the Commission at (714) 447-7100.

3. All other guidelines concerning permits, licensing and certification requirements to be followed before pesticide application are detailed in the State Code, Chapter 3, Subchapter 1.

3.3.3 Employee Training

1. Public agency employees must know the information on the chemical label and its MSDS before using pesticides in any capacity. In addition, they should (a) know the immediate and long-term health hazards posed by chemicals to be used, the common symptoms of chemical poisoning and the ways poisoning could occur, and (b) know the safe work practices to be followed, including the appropriate protective clothing, equipment, mixing, transportation, storage, disposal and spill cleanup procedures that apply to the specific chemicals being used.

2. In addition to the training and annual continuing education required for licensing and certification (3 CCR, Ch. 3, Subch.3, Art. 2), public employees are encouraged to participate in continuing pesticide education programs whenever the programs are available.

3.3.4 Accident Mitigation

Public agencies using pesticides should have plans for dealing with potential accidents before they happen. These plans should consider:

1. Labels and MSDS Sheets -- All workers handling pesticides must be familiar with these instructions. The steps for accident mitigation are spelled out on chemical labels and MSDS sheets.

2. Spill Cleanup Kits -- Any time pesticides are being handled, there should be a cleanup kit on hand in case of an accident. This means there should always be a cleanup kit located in pesticide storage areas, on vehicles used to transport pesticides and on location where the chemicals are being applied. Although these kits may vary in what they contain depending on the chemical type and the situation, at a minimum they should include:

    - spill-control procedures
    - a five gallon drum with sealable lid
    - a dust pan and broom
    - a squeegee
    - a shovel
    - protective goggles, gloves, boots, coveralls
    - a tarp (for covering dry spills)
    - detergent and water (check label or MSDS for proper use)
    - barricade tape, florescent traffic safety cones or string to cordon off an area
    - large sponges, containment booms or some other absorbent material

3. Cleanup Procedures -- Spilled pesticides must be prevented from entering the local surface and/or groundwater supplies. Specific recommendations for spill cleanup should be available on each chemical label or MSDS. Specific recommendations for the sequence of procedures may also vary depending on the situation. However, generally, in case of a spill, the responsible worker(s) should:

   EVALUATE the accident and quickly determine the most immediate concerns (medical and/or environmental).

   CONTAIN OR CONTROL the spill.

   NOTIFY the supervisor in charge who should, in turn, notify the proper authorities. If contact cannot be made, dial 911.

   ISOLATE the area with fluorescent traffic safety cones, ropes or some other cordoning device to be sure that no one walks, wanders or drives through the spill area.

   CLEAN UP the spill as best as possible following label instructions and using the appropriate spill cleanup kit.

   EVALUATE any damage that may have occurred resulting from the spill (property damage, health damage, equipment damage, etc.) and make notes on all relevant details and circumstances before leaving the scene.

   PREPARE A COMPLETE REPORT detailing the incident immediately after leaving the scene upon returning to the work place and submit it to the immediate supervisor.

3.3.5 Emergency Medical Care

Accident situations requiring emergency medical care are likely to involve acute exposure to potentially toxic chemicals. Instructions for handling these exposures appear on the chemical label. Workers should:

1. Be aware of the symptoms of acute exposures for each chemical being used.

2. Have a predetermined strategy for dealing with exposure scenarios, including knowing (a) the label recommendations for dealing with acute exposures and (b) the nearest medical facility where emergency care is available.

3.3.6 Equipment and Equipment Maintenance

All equipment for the handling of pesticides should be inspected and cleaned by workers before each use to ensure that there are no problems that could lead to chemical leaks, spills or accidents during the day's work (State Code Ch. 3, Subch. 3, Art. 2).

3.3.7 Groundwater and Surface Water Protection

Similar to the discussion of leaching in fertilizer management, the main factors determining the rate at which pesticides enter groundwater and surface water systems are chemical mobility, solubility and persistence and the soil type. For example, potentially dangerous chemicals are likely to have a high solubility and an extremely long half-life, and they are not likely to be easily absorbed into the soil. Therefore, chemicals that decompose rapidly may be preferred. However, note that to choose a chemical that may need to be applied two or three times as often may not make sense from a transportation and application risk standpoint.

Because of these factors, regardless of the category of chemicals being used, pesticide advisors should always test the soil for compatibility with specific chemicals before recommending pesticides for a specific area.

Furthermore, because the effect of these uses is not always immediately apparent, public agencies should periodically test areas that could be particularly vulnerable to contamination or deterioration. The results of these tests should be kept on public record.

3.4 Application of Pesticides

3.4.1 Supervision

1. In cases where supervision of pesticide applications is required by the State Code, supervision must be handled by a state-licensed or certified pesticide applicator. For all other pesticide applications, supervision may be handled by workers with equivalent training.

2. Public agencies that contract pesticide applications should periodically inspect contracted work crews to be certain that contractors are following proper management guidelines. Public agencies handling their own applications should likewise inspect their work crews on a regular basis to ensure that safety standards are being met.

3.4.2 Proper Techniques

1. Read the label carefully and follow application instructions exactly. Be absolutely certain that the right chemical is being used for the right job before applying.

2. To prevent potentially harmful runoff, only the absolute minimum amount of pesticides should be used to ensure vegetation safety.

3. Recommendations for best weather conditions to prevent pesticide spray drift are outlined in State Code Chapter 2, Subchapter 4, Article 2.

3.4.3 User Safety and Protection

1. Public agencies should have on hand equipment for application of pesticides should include eye protection, gloves, respiratory gear and impervious full-body, chemical resistant clothing when called for by the chemical label.

2. Even when wearing respiratory gear or masks, when dealing with spray applications of pesticides, workers should avoid directly inhaling in the spray mist.

3. Workers should avoid working alone, especially at night.

4. Workers should clean equipment, clothing and self thoroughly after each application.

5. State laws regarding re-entry into fields that have recently been treated with pesticides should be followed (State Code Chapter 3, Subchapter 3, Article 3).

6. Public agencies are responsible for knowing and informing workers about the specific pesticides being used including how they are properly handled, the dangers involved and the proper training and safety procedures.

7. Public agencies are responsible for keeping updated records and a complete list of the pesticides being used in their jurisdiction. This should include the chemicals, amount in storage, amount of applications, dates and location of applications and pests controlled with each application.

8. Public agencies should keep all relevant label and MSDS information for each chemical updated and readily available at all times to workers handling the materials.

3.5 Storage, Disposal and Transportation

3.5.1 Proper Storage

1. Storage areas should be away from living areas and in a covered area that is well-insulated from temperature extremes; they should have a cement floor and good ventilation. Also, storage areas should be clearly marked according to state standards and be securely locked at all times when not in use.

2. Public agencies should ensure that chemical labels on pesticides being stored or used are kept in good condition and attached to all containers holding pesticides (State Code Ch. 3, Subch. 2, Art. 4).

3. Workers should ensure that storage equipment and containers are inspected daily for leaks or defects before being taken on the job. Containers should also be inspected and before storing at the end of the day.

3.5.2 Proper Disposal

1. Workers should make certain that chemical containers are triple-rinsed before disposal (State Code Ch. 3, Subch. 2)

2. It is recommended that cleaned containers be sent back to the manufacturer for recycling whenever possible. However, once triple-rinsed, most haulers will take them to most landfills.

3. Workers should use left over rinse water as spray.

4. Public agencies should ensure that surplus or out-of-date chemicals are given to a licensed hazardous waste hauler for disposal.

3.5.3 Safe Transportation Methods

1. Workers should ensure that all pesticides containers are tightly sealed and secured from tipping or excess jarring (State Code Ch. 3, Subch. 2, Art. 4).

2. Transportation compartments on vehicles should be isolated from the compartment carrying people, food and clothing and should be securely locked (State Code Ch. 3, Subch. 2, Art. 4).

3. Workers should transport only the amount of pesticide needed for the day to the site.

4. Workers should be certain that the appropriate chemical labels and MSDS sheets, a spill cleanup kit, the location of emergency medical care and a first aid kit are always brought along when transporting pesticides.

5. Public agencies should encourage all vehicles used for pesticide transportation to include radio communications for contacting help in case of a spill or some other emergency.

4.0 INTEGRATED PEST MANAGEMENT*

4.1 Background on Pesticide Use

For most of the last 50 years, the trend in vegetation management has been toward a greater reliance on pesticides. The result has been not only a tremendous increase in the use of many dangerous chemicals, but also an enormous increase in the number of pests that are resistant to the pesticides being produced. In essence, as more pesticides have been produced, more resistant strains of pests have evolved. Worse, recent studies have shown that the end result of this global trend has been no net gain in vegetation survival rates.

With these realizations becoming well known, vegetation managers are now moving away from their reliance on pesticides and toward an integrated approach that combines limited pesticides use with more environmentally-friendly pest control techniques.

4.2 Scope of Guidelines

For public agencies in Orange County, IPM practices should be preferred to the sole use of pesticides as the primary means of vegetation management. These techniques are designed to prevent overuse and to reduce reliance on them. IPM should be considered by all public agencies or their contractors before intensive use of pesticides.

The goal of IPM is not to eliminate all pests, but to keep their populations at a manageable number. Pesticides are part of IPM techniques, but they are used in small quantities and only after all other alternatives have been reviewed.

4.3 Alternatives to Pesticides

Some of the alternatives to pesticides that may be considered as part of an IPM program include:

1. Introduction of natural predators such as ladybugs, lacewings, garter snakes and toads. Also, some bacteria, viruses and insect parasites may be preferable to pesticides.

2. Selected removal or rotation of vegetation habitat to eliminate the breeding places of specific pests.

3. Weeding, hoeing and trapping manually. Pruning and thinning of trees is also an effective means of preventing epidemic tree insects and diseases.

Also, at certain times of the year and under certain environmental conditions, certain pests can be expected. Therefore, timely planting or well-timed use of small quantities of pesticides may avoid the need for some chemical use.

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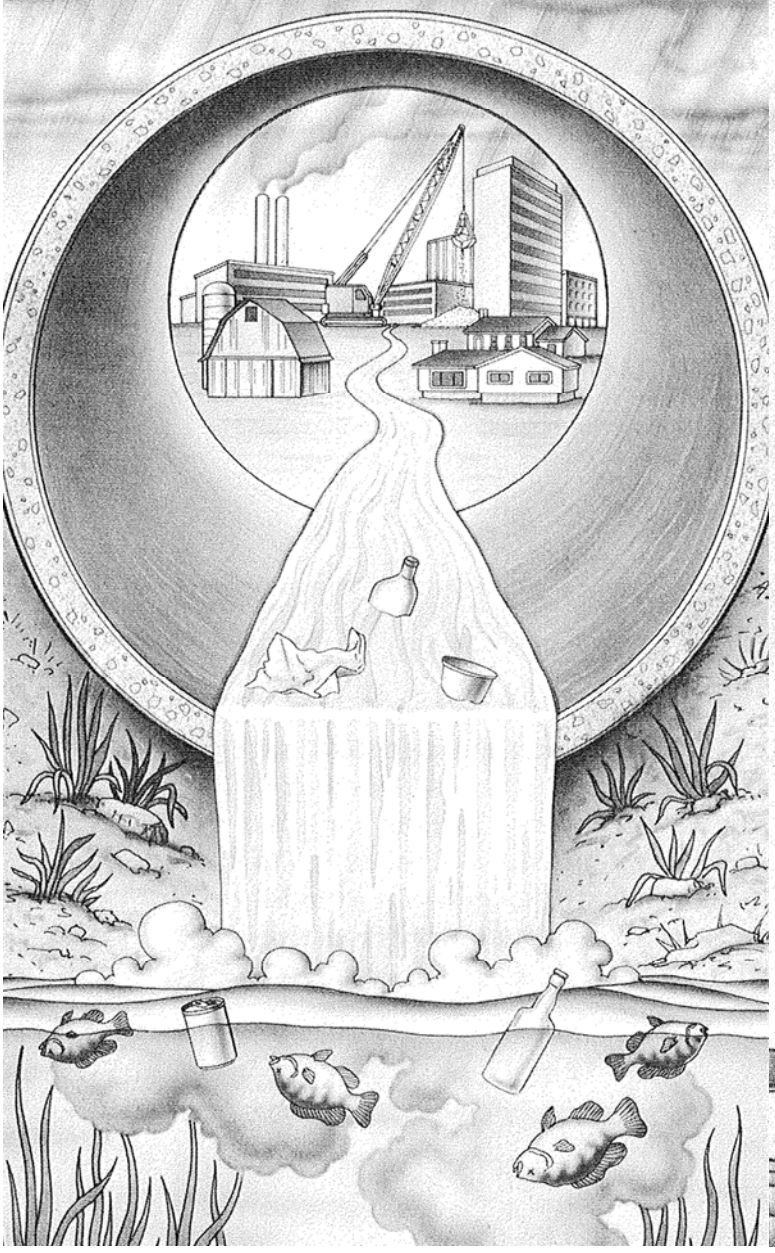
EPA: When it Rains it Drains

United States Environmental Protection Agency
August 1993
832-F-93-002
Office of Water
WH-547

EPA

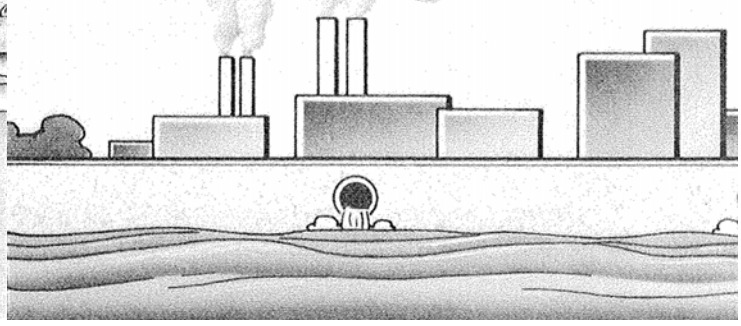
When It Rains, It Drains

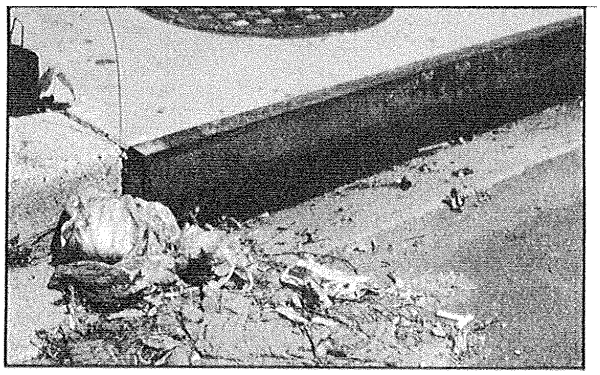
What Everyone Should Know About Storm Water



WHAT IS STORM WATER?

Storm water is water from precipitation that flows across the ground and pavement when it rains or when snow and ice melt. The water seeps into the ground or drains into what we call storm sewers. These are the drains you see at street corners or at low points on the sides of your streets. Collectively, the draining water is called storm water runoff and is a concern to us in commercial and industrial sites as well as your neighborhood because of the pollutants it carries.





Debris along street picked up by storm water.

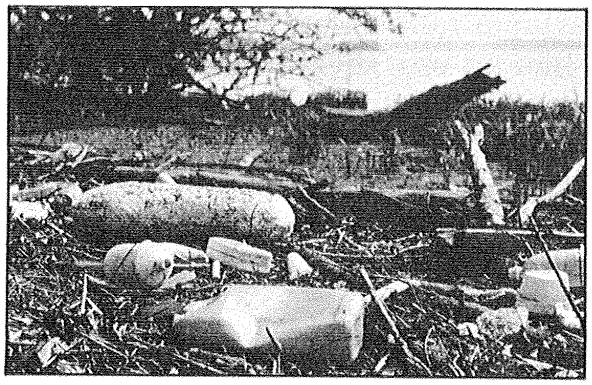
WHY IS STORM WATER A PROBLEM?

Storm water is a problem when it picks up debris, chemicals, and other pollutants as it flows or when it causes flooding and erosion of stream banks. The pollutants are deposited untreated into our waterways. The result can be the closing of our beaches; no swimming, fishing or boating; and injury to the plants and animals that live in or use the water.

WHAT ARE THESE POLLUTANTS? WHERE DO THEY COME FROM ? WHAT ARE SOME OF THEIR EFFECTS ON PLANTS, ANIMALS, AND HUMANS ?

The following information will answer these questions and let you know what you and your community can do to help recognize where there could be a problem and what to do to help solve it !

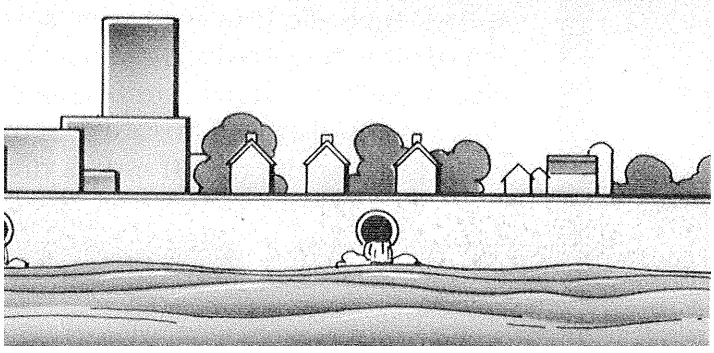
EPA has a storm water program that, with your help, can keep our rivers, lakes, streams, and oceans open to use and enjoyment, and healthy for plants and animals to live in.



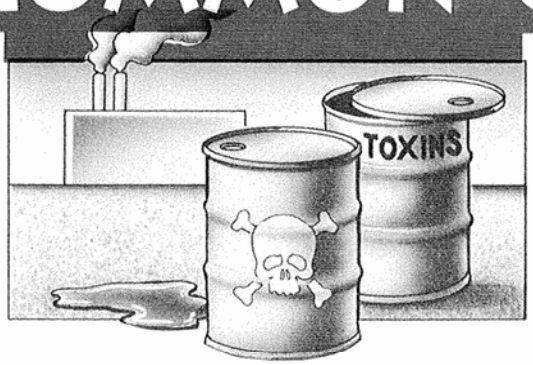
Debris washed up on the beach by storm water.

WHERE DOES THE STORM WATER GO AFTER IT DRAINS INTO STORM SEWERS?

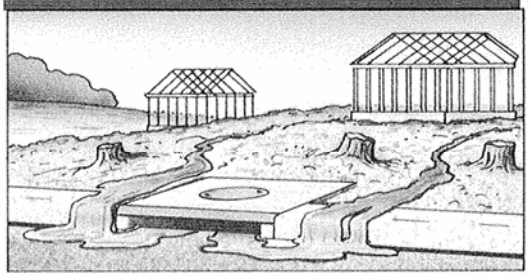
Storm water that does not seep into the ground, drains into systems of underground pipes or roadside ditches and may travel for many miles before being released into a lake, river, stream, wetland area, or coastal waters.



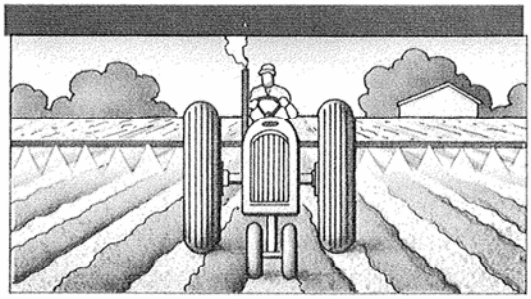
COMMON CONTRIBUTORS TO



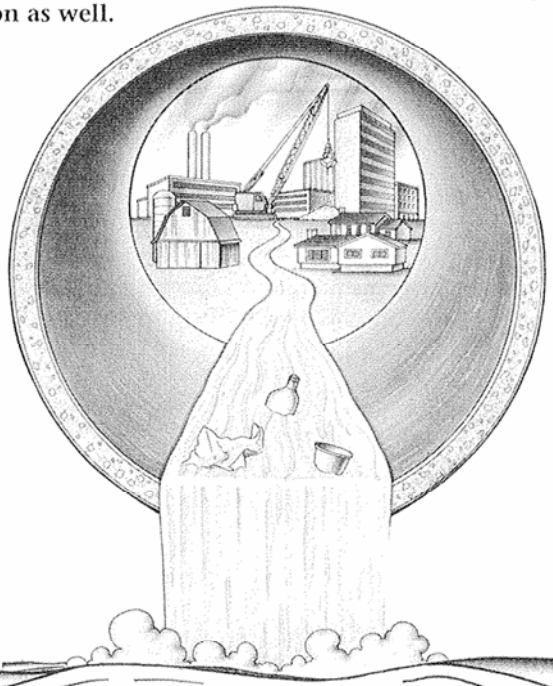
INDUSTRY – At industrial sites, chemical spills that contain toxic substances, smoke stacks that spew emissions, and uncovered or unprotected outdoor storage or waste areas can contribute pollutants to storm water runoff.



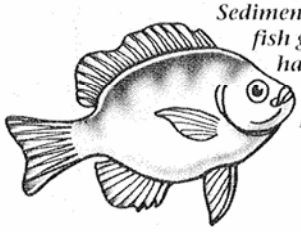
CONSTRUCTION – Waste from chemicals and materials used in construction can wash into our waterways during wet weather. Soil that erodes from construction sites can contribute to environmental degradation as well.



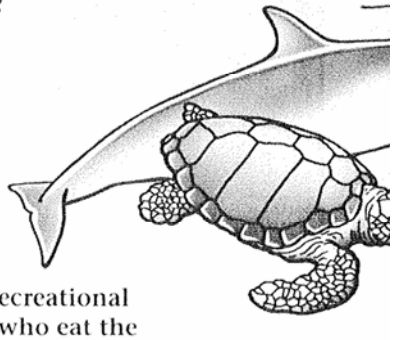
AGRICULTURE – Pesticides, fertilizers, and herbicides used in crop production can be toxic to aquatic life and can contribute to over-enrichment of the water, causing excess algae growth and oxygen depletion. Although storm water runoff from agricultural areas is not regulated under the EPA storm water permitting program, it is a nonpoint source of storm water pollution covered under other EPA programs.



WHAT ARE SOME OF THEIR EFFECTS ON PLANTS, ANIMALS, AND HUMANS?

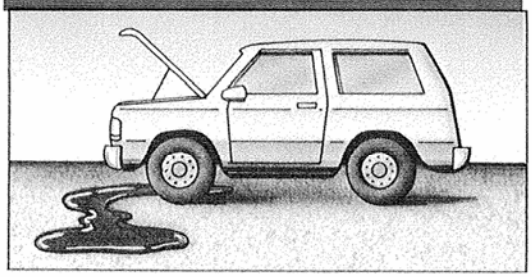


Sediment and other debris clog fish gills, damage fish habitat, and block the light needed for the plants to survive.

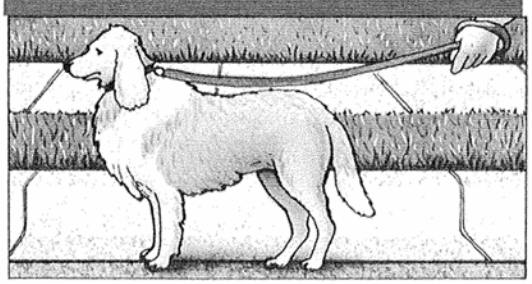


When polluted storm water runoff reaches our waterways, it can have many adverse effects on aquatic plant and animal life, other wildlife that use the water, humans who drink the water, use it for fishing, boating, swimming and other recreational activities, and on humans and animals who eat the contaminated fish and other seafood.

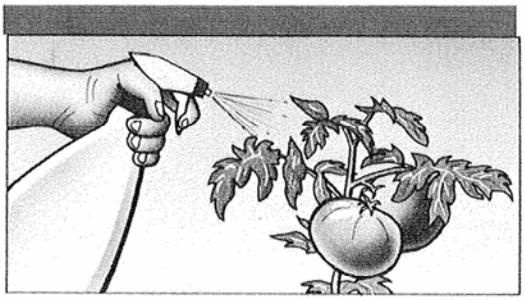
STORM WATER POLLUTION



HOUSEHOLD – Vehicles drip fluids (oil, grease, gasoline, antifreeze, brake fluids, etc.) onto paved areas where storm water runoff carries them through our storm drains and into our waterways.



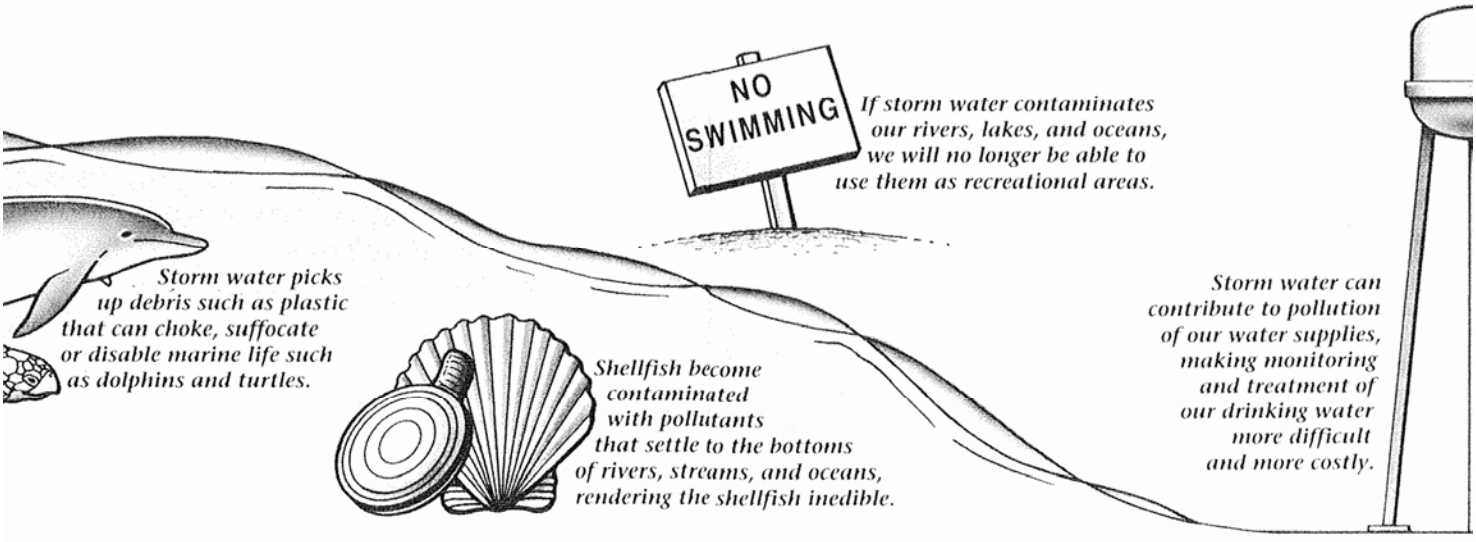
HOUSEHOLD – Pet wastes left on the ground get carried away by storm water, contributing harmful bacteria, parasites and viruses to our waterways.



HOUSEHOLD – Chemicals used to grow and maintain beautiful lawns and gardens, if not used properly, can run off into the storm drains when it rains or when we water our lawns and gardens.

OTHER COMMON HOUSEHOLD PRODUCTS THAT COULD CAUSE POLLUTION IF CARRIED OFF BY STORM WATER RUNOFF OR DUMPED DOWN STORM SEWERS:

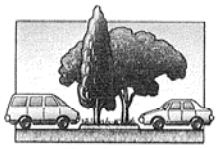
- Ammonia-based cleaners, drain cleaners
- Car care products such as detergents with phosphate and car waxes
- Paint, paint thinners, varnish, furniture refinishing products, paint brush cleaners
- Concrete or wood sealants
- Degreasers
- Chlorine bleaches and disinfectants (for swimming pools, etc.)



MUNICIPAL PROGRAM

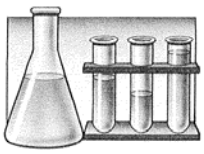
Here are some of the most important steps your community can take to control storm water pollution:

Prevent the release into the storm sewer system of hazardous substances such as used oil or household or yard chemicals

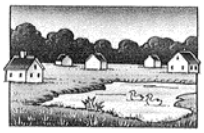


Make sure new commercial and residential developments include storm water management controls, such as reducing areas of paved surfaces to allow storm water to seep into the ground.

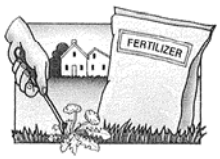
Promote practices such as street sweeping, limiting use of road salt, picking up litter, and disposing of leaves and yard wastes quickly.



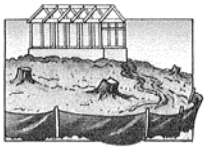
Collect samples of storm water from industrial sites to see whether pollutants are being released. If so, identify the type and quantity of pollutants being released.



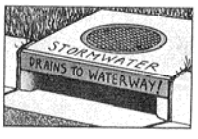
Design and institute flood control projects in a way that does not impair water quality.



Prevent runoff of excess pesticides, fertilizers, and herbicides by using them properly and efficiently. (Commercial, institutional, and residential landscapes can be designed to prevent pollution, conserve water, and look beautiful at the same time.)



Make sure that construction sites control the amount of soil that is washed off by rain into waterways.

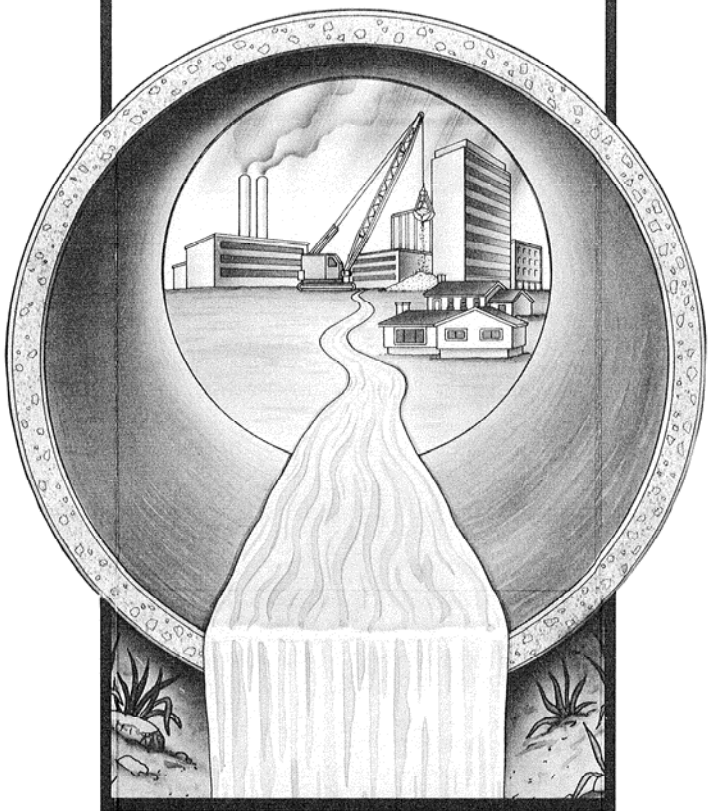


Promote citizen participation and public group activity to increase awareness and education at all levels. Encourage local collection pick-up days and recycling of household hazardous waste materials to prevent their disposal into storm drains.

MUNICIPAL SUCCESS STORY

A northwest city, recognizing the need for storm water management, set up a special water utility to oversee all local government storm water control activities and to raise the money for storm water projects. The city collects fees from citizens using the storm water sewer system and uses the funds to implement storm water programs. The program is still successfully providing funds for such varied purposes as flood control, maintenance of existing storm water controls, and public education.

We can agree that the best way to protect water quality is to avoid polluting it in the first place. EPA has a National Storm Water Permit Program that focuses on municipal and industrial pollution prevention to help control storm water pollution. This program involves issuing permits to certain municipalities and industries to control storm water pollution. Development of State and local storm water management programs can help to achieve the Clean Water Act goals of fishable and swimmable waters.



MUNICIPAL PROGRAM

Permits issued for municipal storm water systems allow communities to design storm water management programs that are suited for controlling pollutants in their own municipal systems. EPA hopes this flexibility will encourage community interest and participation in solving storm water runoff problems.

INDUSTRIAL PROGRAM

Most permits issued under the storm water program require development and use of a storm water pollution prevention plan. Such plans describe how the facility will prevent storm water from becoming polluted by making sure that:

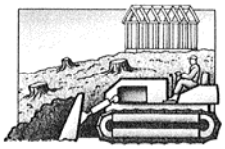
- Potential pollutants are not left outside uncovered
- Spills are prevented
- If spills occur, they are cleaned up right away
- There is no dumping of polluting substances into storm drains
- Grass and other vegetation is planted as quickly as possible after soils are disturbed

Some permits may require more extensive pollution control.

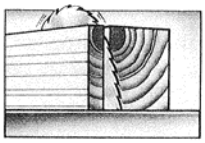
INDUSTRIAL PROGRAM

Storm water permits require many industrial facilities to prepare and implement storm water pollution prevention plans. Listed below are examples of industries and their pollution prevention activities.

Owners of construction sites that disturb 5 or more acres must develop a plan before beginning construction. The plan must limit the area of disturbed soil and provide controls — like sediment basins — to keep sediment from running off.

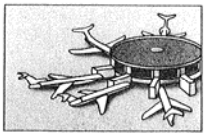


Operators of saw mills can reduce pollution by storing their materials and processing their products indoors; and removing any by-products from outdoor areas before these products come in contact with storm water runoff.

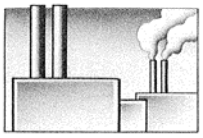


Operators of landfills should keep the storm water runoff from flowing over the pollutants and carrying them off the landfill site.

Airport employees can reduce storm water runoff pollution by using de-icing chemicals only in designated collection areas and by cleaning oil and grease spills from pavement immediately.

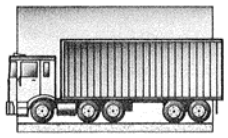


Chemical plant operators should develop spill prevention plans and use types of containers that do not rust or leak, eliminating exposure of materials to storm water runoff.

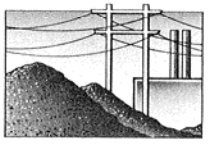


Owners of automobile junkyards should drain fluids from junked cars and properly dispose of hazardous chemicals.

Operators of trucking terminals should develop good housekeeping practices that clean up leaks and spills of oil and grease from the path of storm water runoff.



Power plant operators often store piles of coal and other fuels that have toxic components. Runoff from coal piles must be treated; other substances should be stored away from any possible contact with storm water runoff.



INDUSTRIAL SUCCESS STORY

A manufacturing facility located in a large midwestern city took an innovative approach to storm water management. Employees at a plant with a large fueling station noticed that during a rain storm, the runoff flowing into the city's storm sewer system had an oily sheen, caused by spilled fuel. To prevent future spills, the plant trained its drivers to avoid overfilling fuel tanks, laid down sawdust around the fueling station to absorb any accidental spills (the plant is careful not to wash the sawdust down the drain), and installed an oil/water separator to remove oil from the runoff before the runoff enters the storm drain.

WHAT CAN I DO TO HELP ?

First, become more aware of what may be causing storm water pollution in your area.

Second, help your municipality by:

1. Reporting to your local municipal officials -
   - Any dumping of inappropriate materials into storm water drains (such as oil, antifreeze).
   - Construction sites over 5 acres that do not have erosion or sediment controls.
2. Using good housekeeping practices with lawn care chemicals, oil, gasoline, pet wastes, etc.
3. Helping to start or participating in programs to recycle and safely dispose of used oil and household hazardous wastes and containers.
4. Telling others about pollution from storm water runoff and what they can do to help.

WHERE CAN I FIND OUT MORE INFORMATION?

Your EPA Regional Office
(Water Management Division)

1. EPA Region I (CT, ME, MA, NH, RI, VT)
   JFK Federal Bldg.; Boston, MA 02203
   617-565-3478
2. EPA Region II (NJ, NY, PR, VI)
   26 Federal Plaza; New York, NY 10278
   212-264-2513
3. EPA Region III (DE, MD, PA, VA, WV, DC)
   841 Chestnut Street; Philadelphia, PA 19107
   215-597-9410
4. EPA Region IV (AL, GA, FL, MS, NC, SC, TN, KY) 345 Courtland St., NE; Atlanta, GA 30365
   404-347-4450
5. EPA Region V (IL, IN, OH, MI, MN, WI)
   77 W. Jackson Blvd.; Chicago, IL 60604
   312-353-2145
6. EPA Region VI (AR, LA, OK, TX, NM)
   1445 Ross Ave., Suite 1200
   Dallas, TX 75202-2733
   214-655-7100
7. EPA Region VII (IA, KS, MO, NE)
   726 Minnesota Ave.; Kansas City, KS 66101
   913-551-7030
8. EPA Region VIII (CO, UT, WY, MT, ND, SD)
   999 18th St., Suite 500; Denver, CO 80202
   303-293-1542
9. EPA Region IX (AZ, CA, GM, HI, NV)
   75 Hawthorne Street; San Francisco, CA 94105
   415-744-2125
10. EPA Region X (AK, ID, OR, WA)
    1200 Sixth Ave.; Seattle, WA 98101
    206-553-1793

Other sources include:

- Storm Water Hotline (703) 821-4823
- State and Local Agencies

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EPA: Preventing Pollution through Efficient Water Use

United States Environmental Protection Agency
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EPA

Preventing Pollution Through Efficient Water Use

EPA

For more information on what you and your community can do to use water more efficiently, contact:

U.S. Environmental Protection Agency
Office of Water
401 M Street, S.W.
Washington, D.C. 20460

For more information on pollution prevention programs at U.S. EPA, contact:

U.S. Environmental Protection Agency
Office of Pollution Prevention
401 M Street, S.W.
Washington, D.C. 20460

How Efficient Water Use Helps Prevent Pollution

Other Reasons to Use Water Wisely

What Individuals Can Do

What Communities Can Do

How Efficient Water Use Helps Prevent Pollution

Using water more efficiently can help prevent pollution as well as protect and conserve our finite water resources. More efficient water use by you and your community has many other benefits.

Fewer Pollutants

- Using less water reduces the amount of wastewater discharged into our lakes, streams, rivers, and marine waters.
- The amount of pollutants wastewater carries can also be reduced, as treatment efficiency improves.
- Recycled process water can reduce pollutants from industry.
- More efficient irrigation can minimize runoff of agricultural pollutants and reduce the use of fertilizers and pesticides.

Protection of Aquatic Habitats

- Building fewer and smaller new water projects can help preserve wetlands, which naturally treat pollutants.
- Diverting less water preserves more streamflow to maintain a healthy aquatic environment.

Protection of Drinking Water Sources

- Less pumping of groundwater lowers the chance that pollutants will be drawn into a water supply well.
- With less water use, septic system performance can improve, reducing the risk of groundwater contamination.
- Highest quality water sources are preserved for drinking water by using treated wastewater for other uses.

Energy Conservation

- Efficient water use means less power needed to pump and treat water and wastewater.
- Less water use reduces the amount of energy required for heating hot water.
- Less energy demand results in fewer harmful by-products from power plants.

Other Reasons to Use Water Wisely

Preventing pollution is only one reason why using water efficiently makes sense. Here are a few more:

Money Saved

- Less water use results in fewer pumping and treatment costs.
- Saving money on water and wastewater operations frees money for meeting water quality, public health and water treatment goals.
- Water saved is also energy, and money, saved for you and your community.

Improved Reliability

- Water conservation provides a hedge against drought impacts.
- Improving water efficiency may be quicker and cheaper than developing a new supply.
- Reduced water use may extend the life of your water or wastewater facility.
- Reduced water use may increase the efficiency of wastewater treatment, and reduce overflows during storms.
- Communities which use water efficiently are better prepared to cope with effects of possible future climate change.

What Individuals Can Do

More efficient water use begins with individuals, in the home and place of work. Taking these and other steps, and encouraging others to do so, makes good economic as well as environmental sense.

In The Home

- Install a toilet dam or plastic bottle in your toilet tank.
- Install a water-efficient showerhead (2.5 gallons or less per minute).
- When you buy a new toilet, purchase a low flow model (1.6 gallons or less per flush).

Outdoors

- Water in the morning or evening, to minimize evaporation.
- Install a drip-irrigation watering system for valuable plants.
- Use drought-tolerant plants and grasses for landscaping, and reduce grass-covered areas.

At Work or School

- Adopt the same water-saving habits that are effective at home.
- Ask about installing water-efficient equipment and reducing outdoor water use.
- Encourage employers to explore the use of recycled "gray-water" or reclaimed wastewater.

What Communities Can Do

A water supplier or wastewater system operator (public or private) has cost-effective options to process and deliver water more efficiently. A community can do the same, and can foster ways to use water wisely.

Not all of these steps are expensive. The best choices vary by region and by community; start by asking if these are appropriate where you live and work.

A Water Supplier or Wastewater Processor Can:

- ☞ Identify who uses water, and reduce unaccounted-for water use.
- ☞ Find and repair leaking pipes.
- ☞ Consider a new pricing scheme which encourages conservation.
- ☞ Reduce excess pressure in water lines.
- ☞ Explore the reuse of treated wastewater for uses other than drinking water.
- ☞ Charge hookup fees which encourage more efficient water use in new buildings.
- ☞ Build water efficiency into future demand projections, facility planning, and drought planning.

A Community Can:

- ☞ Adopt plumbing and building codes that require water-efficient equipment and practices.
- ☞ Adopt a water-efficient landscaping ordinance to reduce the water used for golf courses and commercial landscapes.
- ☞ Retrofit older buildings with water-efficient equipment, starting with public buildings.
- ☞ Reduce municipal water use for landscaping and other uses.
- ☞ Conduct a public education campaign.
- ☞ Require developers to build in water efficiency measures.

Solution to Pollution-Twenty Ways

The Solution to Pollution - Begins with YOU!

Here are 20 WAYS that YOU can make a difference.

YOUR YARD

1. Apply pesticides and fertilizers carefully and sparingly. Do not apply chemicals if heavy rain is forecast.

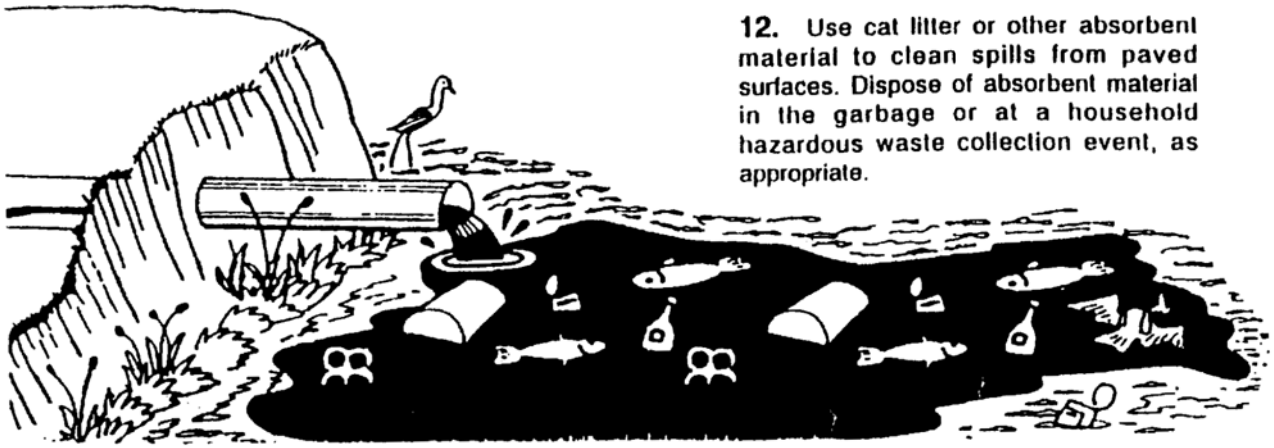
2. Use a broom, rather than a hose, to clean up garden clippings. Deposit leaves and clippings in a trash can or a compost pile.

3. Divert rainwater runoff from hard surfaces onto grass and permeable soil to help filter harmful substances.

4. Don't overwater your lawn and garden . . . water will only run into the street and storm drain.

5. Pick up animal waste and dispose of it in trash cans. Animal waste contains coliform bacteria and can spread serious diseases.

6. Control soil erosion. Prevent dirt and debris from washing into storm drains.



YOUR HOME

7. Use and dispose of household products carefully. Cleaning solutions and solvents often contain toxic elements.

8. Use non-hazardous cleaning substances such as baking soda, white vinegar or borax.

9. Take unwanted household hazardous materials to a Countywide Household Hazardous Waste collection event or other local collection programs.

10. When using water-based paints, clean brushes in a sink. Don't pour clean-up water down the storm drain. Dispose of oil-based products and solvents at a hazardous waste collection event.

11. Buy recycled products and recycle reusable materials. Many waste haulers provide curb-side service. Call yours for more information.

12. Use cat litter or other absorbent material to clean spills from paved surfaces. Dispose of absorbent material in the garbage or at a household hazardous waste collection event, as appropriate.

YOUR AUTO

13. Take used motor oil, antifreeze and other toxic solvents to collection centers.

14. Fix oil, radiator, and transmission leaks. Don't leave oil slicks to wash off in the rain.

15. Take your car to a car wash or wash your car on the grass. Don't just wash grimy road dirt down the driveway and into the storm drain.

16. Reduce polluting automotive emissions. Keep your car tuned, carpool, and use public transportation.

YOUR NEIGHBORHOOD

17. ***Never pour anything into a storm drain.***

18. Tell others how to prevent stormwater pollution. Don't let others pollute your water.

19. Report illegal dumping to local authorities.

20. Organize a stenciling campaign in your neighborhood. (Storm drain stencils remind us that there should be "only rain in the drain.") Call us for information on how to stencil.

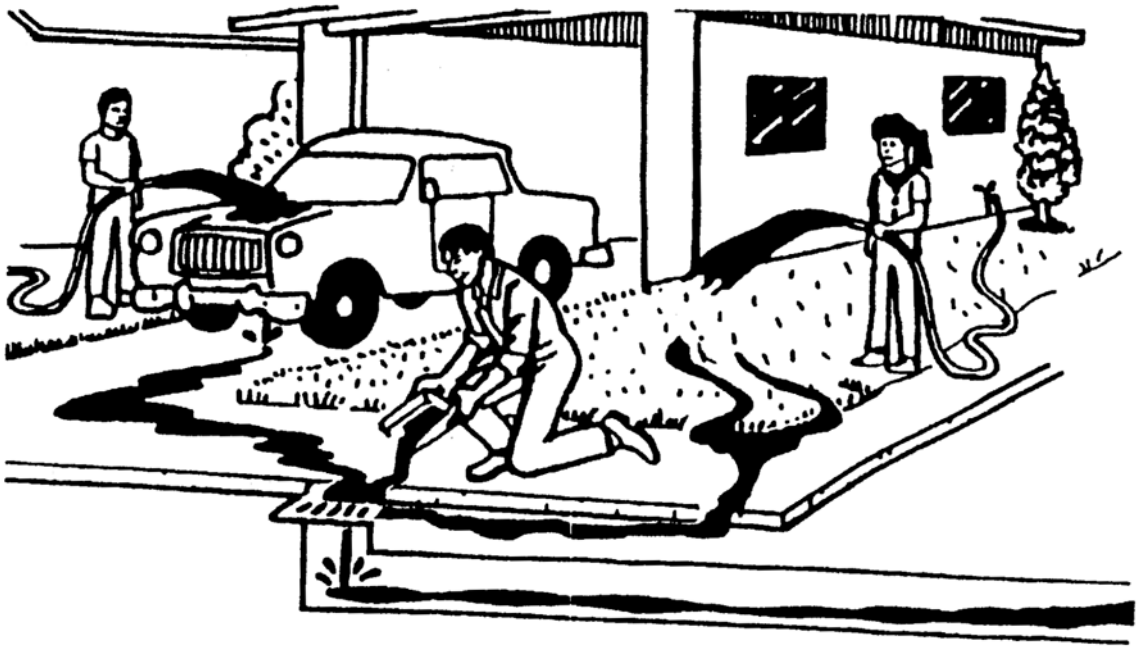
Twenty Ways to Protect Your Water

You Can Make A Difference!

Stormwater pollution . . . is fouling our water!

Every day, water from garden hoses, sprinklers and rainfall washes pollutants off roads and yards . . . right into neighborhood storm drains. Storm drains carry untreated water and pollutants ***directly*** *to our water resources.*

Some pollutants, such as grease and dirt from streets, reach the storm drains unintentionally. But, many pollutants like used motor oil, detergents, paints, and solvents, are carelessly dumped into the storm drains.



Polluted stormwater harms wildlife, jeopardizes the use of our rivers and lakes for recreation . . . and may eventually contaminate the water we drink!

County Ordinance No. 3802

ORDINANCE No. 3802

AN ORDINANCE OF THE COUNTY OF ORANGE, CALIFORNIA AMENDING VARIOUS PROVISIONS OF THE ZONING CODE REGARDING THE CONSERVATION OF WATER IN LANDSCAPING FOR COMMON AREAS OF MULTIFAMILY AND NON-RESIDENTIAL DEVELOPMENT

The Board of Supervisors of the County of Orange, California ordains as follows:

SECTION 1: Section 7-9-77.8(h) of the Codified Ordinances (R2 "Multifamily Dwellings" District Regulations) is hereby added to read as follows:

(h) Landscaping. For multifamily projects of five or more units and common areas of planned developments. Per section 7-9-132.2.

SECTION 2: Section 7-9-78.8(h) of the Codified Ordinances (R3 "Apartment" District Regulations) is hereby added to read as follows:

(h) Landscaping. For multifamily projects of five or more units and common areas of planned developments. Per section 7-9-132.2.

SECTION 3: Section 7-9-79.8(h) of the Codified Ordinances (R4 "Suburban Multifamily Residential" District Regulations) is hereby added to read as follows:

(h) Landscaping. For multifamily projects of five or more units and common areas of planned developments. Per section 7-9-132.2.

SECTION 4: Section 7-9-132.2 of the Codified Ordinances (Landscaping) is hereby amended to read as follows:

Section 7-9-132.2 Landscaping

Landscaping, consisting of trees, shrubs, vines, ground cover, turf or any combination thereof, shall be installed and maintained subject to the following standards:

(a) Boundary landscaping is required for a minimum depth equal to the required setback distance or ten (10) feet (whichever is less) along all property lines abutting streets except for the required street openings.

(b) Landscaping along all streets and boundaries shall be in compliance with Section 7-9-137.5, "Fences and walls."

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(c) Any landscaped area shall be separated from an adjacent parking or vehicular area by a wall or curb at least six (6) inches higher than the adjacent parking or vehicular area.

(d) Permanent watering facilities shall be provided for all landscaped areas.

(e) Required landscaping shall be maintained in a neat, clean and healthy condition. This shall include proper pruning, mowing of lawns, weeding, removal of litter, fertilizing and watering as needed and the replacement of plants when necessary.

(f) For projects with landscaping of more than one cumulative acre, a landscape and irrigation system plan shall be submitted and approved prior to the issuance of building permits (with implementation reports submitted and approved prior to the issuance of use and occupancy permits) to comply with criteria approved by Board of Supervisors' Water Conservation Resolution.

(g) In addition to other projects that may be subject to Section 7-9-132.2, the following projects shall be subject to these regulations regardless of the district, planned community or specific plan in which they are located: 1) Multifamily projects of five or more units; 2) Residential planned developments (common areas only); and 3) Commercial/Office/Industrial projects involving landscaping/irrigation of more than one cumulative acre.

SECTION 5. This Ordinance shall take effect and be in full force thirty (30) days from and after its passage and, before the expiration of fifteen (15) days after the passage thereof, shall be published once in the Saddleback Valley News, a newspaper published in the County of Orange, State of California, together with the names of the members of the Board of Supervisors voting for or against the same.

Chairman of the Board of Supervisors
of Orange County, California

SIGNED AND CERTIFIED THAT A COPY
OF THIS DOCUMENT HAS BEEN DELIVERED
TO THE CHAIRMAN OF THE BOARD

LINDA D. RUTH
Clerk of the Board of Supervisors
County of Orange, California

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, LINDA D. RUTH, Clerk of the Board of Supervisors, do hereby certify that at a regular meeting of the Board of Supervisors of Orange County, California, held on the 24th day of October, 19___, the foregoing ordinance containing five sections was passed and adopted by the following vote:

AYES: SUPERVISORS: HARRIETT M. WIEDER, GADDI H. VASQUEZ, ROGER R. STANTON, DON R. ROTH AND THOMAS F. RILEY

NOES: SUPERVISORS: NONE

ABSENT: SUPERVISORS NONE

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Board of Supervisors of the County of Orange, State of California, this 26th day of October, 1990.

DATED: October 26, 1990
PUBLISH: Saddleback Valley News
November 2, 1990

LINDA D. RUTH
Clerk of the Board of Supervisors
of Orange County, California

RESOLUTION OF THE BOARD OF SUPERVISORS
OF ORANGE COUNTY CALIFORNIA
OCTOBER 24, 1990

On motion of Supervisor Wieder, duly seconded and carried, the following Resolution was adopted:

WHEREAS, the County of Orange has an adopted General Plan and Comprehensive Zoning Code; and

WHEREAS, on June 5, 1990 this Board received Guidelines for conserving water utilized in landscape irrigation from the Water Conservation Task Force; and

WHEREAS, this Board supports the goals of conserving water in landscaping irrigation as identified by the Water Conservation Task Force members; and

WHEREAS, the State of California has received less than normal levels of precipitation for the past four years resulting in a common need to conserve available potable waters and encourage utilization of reclaimed water; and

WHEREAS, this Board has complied with the California Environmental Quality Act (CEQA), the CEQA Guidelines and the County environmental procedures by revieving and considering Negative Declaration IP 90-40 and has determined that the proposed program will not have a significant effect on the environment; and

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Resolution No. 90-1341
Public Haring-Zoning Code Amendment No. 90-5, Water Conservation Implementation Program
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WHEREAS, this Board has revieved the recommended criteria for the Water Conservation Implementation Program and has considered the EMA reports dated September 25, 1990 and the comments and responses received at the Planning Commission hearing.

NOW, THEREFORE, BE IT RESOLVED that this Board hereby approves this Resolution of Water Conservation Criteria for use in landscaping projects as identified in the Codified Ordinances of the County of Orange.

(1) Landscape and irrigation system plans required by Zoning Code section 7-9-132.2 shall be prepared and certified by a licensed landscape architect or licensed landscape contractor prior to the issuance of building permits and include but not be limited to:

(i) A site analysis study which includes evaluation of macro and micro climates, solar exposure, prevailing wind conditions, seasonal temperature patterns, soils and drainage, grade and slope analysis and street visibility;

(ii) utilization of the best available irrigation technology to maximize efficient use of water. This could include the use of historical evapo-transpiration rates, weather station (CIMIS) data, moisture sensors, rain shutoff devices, drip systems, multi-program electronic timers and matched output sprinkler heads;

(iii) project characteristics including visibility, adjacent development, activity and usage and focus area;

(iv) availability and special conditions for use of reclaimed water;

(v) consideration of planting zones or "hydrozones" to facilitate a zoned irrigation system;

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(vi) Landscaping plant palette selections utilizing potable water sources shall include low water using or drought-tolerant species.

(vii) A minimum of two inches (2") of mulched chip and fiber material shall be added to the soil surface after planting (slopes exceeding 25% from horizontal, 4 to 1, or areas planted with turf or full coverage ground cover are exempt).

(viii) The use of turf should not be included on slopes exceeding 25% (4 to 1) from horizontal or on areas where irrigation systems do not deliver 100% of their output to the turf and other landscape. Landscape project plans which include turf on slopes exceeding 25% shall include design features for the prevention of run-off.

(2) Implementation reports required by Zoning Code Section 7-9-132.2 shall include but not be limited to the submittal of the following prior to the issuance of use and occupancy permits:

(i) an Irrigation Management Report for each landscape irrigation system shall be prepared and certified by a licensed landscape architect or licensed landscape contractor prior to the issuance of final certificates of use and occupancy to identify appropriate long term use and maintenance of the system. This report shall include a watering schedule which incorporates the specific water needs of the plant material throughout the calendar year, a hardware component list for all materials used in the system and a recommendation of regular maintenance schedules for the irrigation system;

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(ii) certification by a licensed landscape architect or licensed landscape contractor that the irrigation system was installed in accordance with the certified plan and shall furnish said certification in writing prior to the issuance of final certificates of use and occupancy and the release of the financial security guaranteeing the landscape improvements to the Manager, Building Inspection Division;

(iii) a Certified Water Audit for the irrigation system prior to the issuance of final certificates of use and occupancy to verify that the irrigation design coverage and conservation goals are met. Subsequent water audits are recommended to be prepared each year.

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Chairman of the Board of Supervisors

SIGNED AND CERTIFIED THAT A COPY
OF THIS DOCUMENT HAS BEEN DELIVERED
TO THE CHAIRMAN OF THE BOARD

LINDA D. RUTH
Clerk of the Board of Supervisors
County of Orange, California

AYES: SUPERVISORS HARRIETT M. WIEDER, GADDI H. VASQUEZ, ROGER R STANTON, THOMAS F. RILEY, DON R. ROTH
NOES: SUPERVISORS NONE
ABSENT: SUPERVISORS NONE

STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

I, LINDA D. RUTH, Clerk of the Board of Supervisors of Orange County, California, hereby certify that the above and foregoing Resolution was duly and regularly adopted by the said Board at a regular meeting thereof held on the 24th day of October , 1990 and passed by a unanimous vote of said Board.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 24th day of October, 1990.

LINDA D. RUTH
Clerk of the Board of Supervisors
of Orange County, California

County Ordinance No. 0-97-3987 Water Management and Urban Runoff

ORDINANCE NO. O-97-3987

AN ORDINANCE ADDING DIVISION 13 TO TITLE 4 OF THE CODIFIED ORDINANCES OF THE COUNTY OF ORANGE RELATING TO STORM WATER MANAGEMENT AND URBAN RUNOFF

The Board of Supervisors of the County of Orange, California, does ordain as follows:

SECTION 1. Division 13 is hereby added to Title 4 of the Codified Ordinances of the County of Orange to read as follows:

Division 13

STORM WATER MANAGEMENT AND URBAN RUNOFF

ARTICLE 1. GENERAL PROVISIONS

Sec. 4-13-10. Adoption of the Water Quality Ordinance.

Pursuant to Article XI, Sec. 7 of the State Constitution, which authorizes the County to exercise the police power of the State by adopting regulations promoting the public health, public safety and general prosperity, and in compliance with the conditions of the National Pollution Discharge Elimination System Permit ("NPDES Permit"), there is hereby adopted a Water Quality Ordinance.

Sec. 4-13-20. Purpose.

The purpose of the Water Quality Ordinance is to prescribe regulations as mandated by the Clean Water Act [33 USC Sec. 1251 et seq., as amended] to effectively prohibit non-storm water discharges into the storm sewers and to reduce the discharge of pollutants. Human activities, such as agriculture, construction and the operation and maintenance of an urban infrastructure may result in undesirable discharges of pollutants and certain sediments, which may accumulate in local drainage channels and waterways and eventually may be deposited in the waters of the United States. This Ordinance will improve water quality by controlling the pollutants which enter the network of storm drains throughout Orange County.

Sec. 4-13-30. Definitions.

(a) "Authorized Inspector" shall mean the person designated by the Director of Public Facilities and Resources Department and persons designated by the Authorized Inspector as investigators and under his/her instruction and supervision, who are assigned to investigate compliance and detect violations of this Ordinance.

the amount of pollutants in such Discharge; and, Discharges authorized pursuant to federal or state laws or regulations.

In any action taken to enforce this Ordinance, the burden shall be on the Person who is the subject of such action to establish that a Discharge was within the scope of this Discharge Exception.

(h) "Domestic Sewage Exception" shall mean discharges which are exceptions to this Ordinance and excluded from the definition of Prohibited Discharge, as defined herein, including only:

Discharges composed entirely of accidental spills of untreated sanitary wastes (commonly called domestic sewage) and other wastes, but limited solely to wastes that are controlled by and are within publicly owned wastewater treatment system collection facilities, immediately prior to the accidental spill.

(i) "Enforcing Attorney" shall mean the District Attorney acting as counsel to the County or his/her designee, which person is authorized to take enforcement or other actions as described herein. For purposes of criminal prosecution, only the District Attorney or his/her designee shall act as the Enforcing Attorney.

(j) "EPA" shall mean the Environmental Protection Agency of the United States of America.

(k) "Hearing Officer" shall mean the person designated by the Director of the Public Facilities and Resources Department who shall preside at the administrative hearings authorized by this Ordinance and issue final decisions on matters raised therein.

(l) "Illicit Connection" shall mean any man-made conveyance or drainage system, pipeline, conduit, inlet or outlet, through which the Discharge of any Pollutant to the Storm Water Drainage System occurs or may occur. The term Illicit Connection shall not include Legal Nonconforming Connections or connections to the Storm Water Drainage System that are hereinafter authorized by the agency with jurisdiction over the system at the location at which the connection is made.

(m) "Invoice for Costs" shall mean the actual costs and expenses of the County, including but not limited to administrative overhead, salaries and other expenses recoverable under State law, incurred during any Inspection conducted pursuant to Article 2 of this Ordinance, or where a Notice of Noncompliance, Administrative Compliance Order or other enforcement option under Article 5 of this Ordinance is utilized to obtain compliance with this Ordinance.

(4) Petroleum and related hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants and grease).

(5) Animal wastes (such as, Discharge from confinement facilities, kennels, pens, and recreational facilities, including, stables, show facilities, and polo fields).

(6) Substances having a pH less than 6.5 or greater than 8.6, or unusual coloration, turbidity or odor.

(7) Waste materials and wastewater generated on construction sites and by construction activities (such as painting and staining; use of sealants and glues; use of lime; use of wood preservatives and solvents; disturbance of asbestos fibers, paint flakes or stucco fragments; application of oils, lubricants, hydraulic, radiator or battery fluids; construction equipment washing, concrete pouring and cleanup; use of concrete detergents; steam cleaning or sand blasting; use of chemical degreasing or diluting agents; and use of super chlorinated water for potable water line flushing).

(8) Materials causing an increase in biochemical oxygen demand, chemical oxygen demand or total organic carbon.

(9) Materials which contain base/neutral or acid extractable organic compounds.

(10) Those pollutants defined in Sec. 1362(6) of the Federal Clean Water Act; and

(11) Any other constituent or material, including but not limited to pesticides, herbicides, fertilizers, fecal coliform, fecal streptococcus or enterococcus, or eroded soils, sediment and particulate materials, in quantities that will interfere with or adversely affect the beneficial uses of the receiving waters, flora or fauna of the State.

(t) "Prohibited Discharge" shall mean any Discharge, which contains any Pollutant, from public or private property to (i) the Storm Water Drainage System; (ii) any upstream flow, which is tributary to the Storm Water Drainage System; (iii) any groundwater, river, stream, creek, wash or dry weather arroyo, wetlands area, marsh, coastal slough, or (iv) any coastal harbor, bay, or the Pacific Ocean. The term Prohibited Discharge shall not include Discharges allowable under the Discharge Exception.

(u) "Significant Redevelopment" shall mean the rehabilitation or reconstruction of public or private residential (whether single family, multi-unit or planned unit development), industrial, commercial, retail, or other non-residential structures, for which

property, which states a Legal Nonconforming Connection has been identified. The notice of a Legal Nonconforming Connection shall state the date of expiration of use under this Ordinance.

A reasonable extension of use may be authorized by the Director of Public Facilities and Resources Department or the Authorized Inspector upon consideration of the following factors:

(1) The potential adverse effects of the continued use of the connection upon the beneficial uses of receiving waters;

(2) The economic investment of the discharger in the Legal Nonconforming Connection; and

(3) The financial effect upon the discharger of a termination of the Legal Nonconforming Connection.

(c) A civil or administrative violation of Section 4-13-40(a) shall occur irrespective of the negligence or intent of the violator to construct, maintain, operate or utilize an Illicit Connection or to cause, allow or facilitate any Prohibited Discharge.

(d) If an Authorized Inspector reasonably determines that a Discharge, which is otherwise within the Discharge Exception, may adversely affect the beneficial uses of receiving waters, then the Authorized Inspector may give written notice to the owner of the property or facility that the Discharge Exception shall not apply to the subject Discharge following expiration of the thirty (30) day period commencing upon delivery of the notice. Upon expiration of the thirty (30) day period any such discharge shall constitute a violation of 4-13-40(a).

(e) If a request for an extension of use is denied, the owner or occupant of property on which a Legal Nonconforming Connection exists may request an administrative hearing, pursuant to the procedures set forth in Sections 4-13-70(f) through(j), for an extension of the period allowed for continued use of the connection.

ARTICLE 3. CONTROLS FOR WATER QUALITY MANAGEMENT

Section 4-13-50. New Development and Significant Redevelopment.

(a) All New Development and Significant Redevelopment within the unincorporated area of the County shall be undertaken in accordance with the DAMP, including but not limited to the Development Project Guidance.

(b) Prior to the issuance by the County of a grading permit, building permit or Non-residential Plumbing Permit for any New Development or Significant Redevelopment, the Public Facilities and Resources Department and/or Planning and Development Services

Sec. 4-13-51. Cost Recovery

The County shall be reimbursed by the project applicant for all costs and expenses incurred by the Public Facilities and Resources Department and/or Planning and Development Services Department in the review of New Development or Significant Redevelopment projects for compliance with the DAMP. The Public Facilities and Resources Department and/or Planning and Development Services Department may elect to require a deposit of estimated costs and expenses, and the actual costs and expenses shall be deducted from the deposit, and the balance, if any, refunded to the project applicant.

Sec. 4-13-52. Litter Control

No Person shall discard any waste material including but not limited to common household rubbish or garbage of any kind (whether generated or accumulated at a residence, business or other location), upon any public property, whether occupied, open or vacant, including but not limited to any street, sidewalk, alley, right-of-way, open area or point of entry to the Storm Water Drainage System.

ARTICLE 4. INSPECTIONS

Sec. 4-13-60. Scope of Inspections

(a) Right to Inspect. Prior to commencing any inspection as hereinbelow authorized, the Authorized Inspector shall obtain either the consent of the owner or occupant of the property or shall obtain an administrative inspection warrant or criminal search warrant.

(b) Entry to Inspect. The Authorized Inspector may enter property to investigate the source of any Discharge to any public street, inlet, gutter, storm drain or the Storm Water Drainage System located within the jurisdiction of the County of Orange.

(c) Compliance Assessments. The Authorized Inspector may inspect property for the purpose of verifying compliance with this Ordinance, including but not limited to (i) identifying products produced, processes conducted, chemicals used and materials stored on or contained within the property, (ii) identifying point(s) of discharge of all wastewater, process water systems and Pollutants, (iii) investigating the natural slope at the location, including drainage patterns and man-made conveyance systems, (iv) establishing the location of all points of discharge from the property, whether by surface runoff or through a storm drain system, (v) locating any Illicit Connection or the source of Prohibited Discharge, (vi) evaluating compliance with any permit issued pursuant to Article 6 hereof, and (vii) investigating the condition of any Legal Nonconforming Connection.

additional enforcement actions against the owner, occupant and/or Person.

(2) The Notice of Noncompliance shall state a compliance date that must be met by the owner, occupant and/or Person; provided, however, that the compliance date may not exceed ninety (90) days unless the Authorized Inspector extends the compliance deadline an additional period not exceeding ninety (90) days where good cause exists for the extension.

(b) Administrative Compliance Orders.

(1) The Authorized Inspector may issue an Administrative Compliance Order. The Administrative Compliance Order shall be delivered in accordance with Section 4-13-70(e) of this Ordinance. The Administrative Compliance Order may be issued to:

a. The owner or occupant of any property requiring abatement of conditions on the property that cause or may cause a Prohibited Discharge or an Illicit Connection in violation of this Ordinance;

b. The owner of property subject to terms, conditions or requirements imposed on a project in accordance with Section 4-13-50(a) to ensure adherence to those terms, conditions and requirements.

c. A permittee subject to the requirements of any permit issued pursuant to Article 6 hereof to ensure compliance with the terms, conditions and requirements of the permit.

d. Any Person responsible for an Illicit Connection or Prohibited Discharge.

(2) The Administrative Compliance Order may include the following terms and requirements:

a. Specific steps and time schedules for compliance as reasonably necessary to eliminate an existing Prohibited Discharge or to prevent the imminent threat of a Prohibited Discharge, including but not limited to a Prohibited Discharge from any pond, pit, well, surface impoundment, holding or storage area;

b. Specific steps and time schedules for compliance as reasonably necessary to discontinue any Illicit Connection;

c. Specific requirements for containment, cleanup, removal, storage, installation of overhead

shall be delivered in accordance with Section 4-13-70(e) of this Ordinance. An Invoice for Costs shall be immediately due and payable to the County for the actual costs incurred by the County in issuing and enforcing any notice or order.

(1) If any owner or occupant, permittee or any other Person subject to an invoice for costs fails to either pay the Invoice for Costs or appeal successfully the Invoice for Costs in accordance with Section 4-13-70(f), then the Enforcing Attorney may institute collection proceedings.

(e) Delivery of Notice. Any Notice of Noncompliance, Administrative Compliance Order, Cease and Desist Order or Invoice of Costs to be delivered pursuant to the requirements of this Ordinance shall be subject to the following:

(1) The notice shall state that the recipient has a right to appeal the matter as set forth in Sections 4-13-70(f) through (j) of this Ordinance.

(2) Delivery shall be deemed complete upon (a) personal service to the recipient; (b) deposit in the U.S. mail, postage pre-paid for first class delivery; or (c) facsimile service with confirmation of receipt.

(3) Where the recipient of notice is the owner of the property, the address for notice shall be the address from the most recently issued equalized assessment roll for the property or as otherwise appears in the current records of the County.

(4) Where the owner or occupant of any property cannot be located after the reasonable efforts of the Authorized Inspector, a Notice of Noncompliance or Cease and Desist Order shall be deemed delivered after posting on the property for a period of ten (10) business days.

(f) Administrative Hearing for Notices of Noncompliance, Administrative Compliance Orders, Invoices for Costs and Adverse Determinations. Except as set forth in Section 4-13-70(h), any Person receiving a Notice of Noncompliance, Administrative Compliance Order, a notice of Legal Nonconforming Connection, an Invoice for Costs, or any Person who is subject to any adverse determination made pursuant to this Ordinance, may appeal the matter by requesting an administrative hearing. Notwithstanding the foregoing, these administrative appeal procedures shall not apply to criminal proceedings initiated to enforce this Ordinance.

(g) Request for Administrative Hearing. Any person appealing a Notice of Noncompliance, an Administrative Compliance Order, a notice of Legal Nonconforming Connection, an Invoice for Costs or an adverse determination shall, within thirty (30) days of receipt thereof, file a written request for an administrative hearing, accompanied by an administrative hearing fee as established by

such owner, operator, permittee or Person pursuant to this Ordinance, the Authorized Inspector may request the Enforcing Attorney to obtain an abatement warrant or other appropriate judicial authorization to enter the property, abate the condition and restore the area. Any costs incurred by the County in obtaining and carrying out an abatement warrant or other judicial authorization may be recovered pursuant to Section 4-13-71(d).

Sec. 4-13-71. Nuisance

Any condition in violation of the prohibitions of this Ordinance, including but not limited to the maintenance or use of any Illicit Connection or the occurrence of any Prohibited Discharge, shall constitute a threat to the public health, safety and welfare, and is declared and deemed a nuisance pursuant to Government Code Section 38771.

(a) Court Order to Enjoin or Abate. At the request of the Director, Public Facilities and Resources Department or his/her designee, the Enforcing Attorney may seek a court order to enjoin and/or abate the nuisance.

(b) Notice to Owner and Occupant. Prior to seeking any court order to enjoin or abate a nuisance or threatened nuisance, the Director, Public Facilities and Resources Department or his/her designee, shall provide notice of the proposed injunction or abatement to the owner and occupant, if any, of the property where the nuisance or threatened nuisance is occurring.

(c) Emergency Abatement. In the event the nuisance constitutes an imminent danger to public safety or the environment, the Authorized Inspector may enter the property from which the nuisance emanates, abate the nuisance and restore any property affected by the nuisance. To the extent reasonably practicable, informal notice shall be provided to the owner and occupant prior to abatement. If necessary to protect the public safety or the environment, abatement may proceed without prior notice to or consent from the owner or occupant thereof and without judicial warrant.

(1) An imminent danger shall include, but is not limited to, exigent circumstances created by the dispersal of Pollutants, where the same presents a significant and immediate threat to the public safety or the environment.

(2) Notwithstanding the authority of the County to conduct an emergency abatement action, an administrative hearing pursuant to Section 4-13-70(h) hereinabove shall follow the abatement action.

(d) Reimbursement of Costs. All costs incurred by the County in responding to any nuisance, all administrative expenses and all other expenses, recoverable under State law, shall be recoverable

the Authorized Inspector or Enforcing Attorney to seek cumulative remedies, except that multiple monetary fines or penalties shall not be available for any single violation of this Ordinance.

Sec. 4-13-75. Citations

Pursuant to Penal Code Section 836.5, the Authorized Inspector shall have the authority to cause the arrest of any Person committing a violation of this Ordinance. The Person shall be released and issued a citation to appear before a magistrate in accordance with Penal Code Sections 853.5, 853.6, and 853.9, unless the Person demands to be taken before a magistrate. Following issuance of any citation the Authorized Inspector shall refer the matter to the Enforcing Attorney.

Each citation to appear shall state the name and address of the violator, the provisions of this Ordinance violated, and the time and place of appearance before the court, which shall be at least ten (10) business days after the date of violation. The Person cited shall sign the citation giving his or her written promise to appear as stated therein. If the Person cited fails to appear, the Enforcing Attorney may request issuance of a warrant for the arrest of the Person cited.

Sec. 4-13-76. Violations of Other Laws.

Any Person acting in violation of this Ordinance also may be acting in violation of the Federal Clean Water Act or the State Porter-Cologne Act and other laws and also may be subject to sanctions including civil liability. Accordingly, the Enforcing Attorney is authorized to file a citizen suit pursuant to Federal Clean Water Act Section 505(a), seeking penalties, damages, and orders compelling compliance, and other appropriate relief. The Enforcing Attorney may notify EPA Region IX, the Santa Ana or San Diego Regional Water Quality Control Boards, or any other appropriate state or local agency, of any alleged violation of this Ordinance.

Sec. 4-13-77. Injunctions

At the request of the Director, Public Facilities and Resources Department or his/her designee, the Enforcing Attorney may cause the filing in a court of competent jurisdiction, of a civil action seeking an injunction against any threatened or continuing noncompliance with the provisions of this Ordinance.

(a) Order for Reimbursement. Any temporary, preliminary or permanent injunction issued pursuant hereto may include an order for reimbursement to the County of all costs incurred in enforcing this Ordinance, including costs of inspection, investigation and monitoring, the costs of abatement undertaken at the expense of the County, costs relating to restoration of the environment and all other expenses as authorized by law.

facilities located on the property, identification of equipment or processes to be used on-site and other information as may be requested in order to determine the constituents, and quantities thereof, which may be discharged if permission is granted.

(3) Permit Issuance. The permit shall be granted or denied by the Director, Public Facilities and Resources Department or his/her designee, no later than sixty (60) days following the completion and acceptance of the application as determined by the Director, Public Facilities and Resources Department or his/her designee.

a. The applicant shall be notified in Person or by first-class mail, postage prepaid, of the action taken.

(4) Permit Conditions. The permit may include terms, conditions and requirements to ensure compliance with the objectives of this Ordinance and as necessary to protect the receiving waters, including but not limited to:

a. Identification of the Discharge location on the property and the location at which the Discharge will enter the Storm Water Drainage System;

b. Identification of the constituents and quantities thereof to be discharged into the Storm Water Drainage System;

c. Specification of pollution prevention techniques and structural or non-structural control requirements as reasonably necessary to prevent the occurrence of potential Discharges in violation of this Ordinance;

d. Requirements for self-monitoring of any Discharge;

e. Requirements for submission of documents or data, such as technical reports, production data, Discharge reports, self-monitoring reports and waste manifests; and

f. Other terms and conditions appropriate to ensure compliance with the provisions of this Ordinance and the protection of receiving waters.

(5) General Permit. In the discretion of the Director, Public Facilities and Resources Department or his/her designee, the permit may, in accordance with the conditions identified in Section 4-13-80(a)(4) hereinabove, be prepared as a general permit applicable to a specific category of activities. If a general permit is issued, any Person intending to Discharge

d. Any regulatory agency, including EPA or a Regional Water Quality Control Board having jurisdiction over the Discharge, notifies the County that the Discharge should be terminated.

(2) The Director, Public Facilities and Resources Department or his/her designee, may modify any permit when it is determined that:

a. Federal or state law requirements have changed in a manner that necessitates a change in the permit; or

b. The Permittee's Discharge or the circumstances under which the Discharge occurs have changed so that it is appropriate to modify the permit's terms, conditions or requirements; or

c. A change to the permit is necessary to ensure compliance with the objectives of this Ordinance or to protect the quality of receiving waters.

The Permittee, or in the case of a general permit, each Person who has filed an application pursuant to Section 4-13-80(a)(5), shall be informed of any change in the permit terms and conditions at least sixty (60) days prior to the effective date of the modified permit. In the case of a general permit issued pursuant to Section 4-13-80(a)(5)(a), any charge in the permit terms and conditions shall be published in a newspaper of general circulation within the County at least sixty (60) days prior to the effective date of the modified permit.

(3) The determination that a permit shall be denied, suspended, revoked or modified may be appealed by a permittee pursuant to the same procedures applicable to appeal of an Administrative Compliance Order hereunder. In the absence of a judicial order to the contrary, the Permittee may continue to discharge pending issuance of the final administrative decision by the Hearing Officer.

(c) Permit Enforcement.

(1) Penalties. Any violation of the terms, conditions and requirements of any permit issued by the Director, Public Facilities and Resources Department or his/her designee, shall constitute a violation of this Ordinance and subject the violator to the administrative, civil and criminal remedies available under this Ordinance.

(d) Compliance. Compliance with the terms, conditions and requirements of a permit issued pursuant to this Ordinance shall not relieve the Permittee from compliance with all federal, state and local laws, regulations and

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(c) Repeal of Prior Ordinance. The enactment of this Ordinance by County shall repeal the provisions of Article 3, Sections 4-3-148 through and including Section 4-3-190 of the Codified Ordinances of the County of Orange, enacted for the permitting of Discharges of industrial waste to ground or surface waters and no new Discharge permits shall be issued thereunder; provided however, that connection to Discharge under the terms and conditions of any individual Discharge permit issued prior to the date of enactment of the Water Quality Ordinance shall be allowed hereunder as a Legal Nonconforming Connection.

(d) Headings. Headings of the sections of this Ordinance are inserted for convenience only and shall have no effect in the application of this Ordinance.

ARTICLE 9. JUDICIAL REVIEW

Sec. 4-13-110. Procedure.

The provisions of Sections 1094.5 and 1094.6 of the Code of Civil Procedure set forth the procedure for judicial review of any act taken pursuant to this Ordinance. Parties seeking judicial review of any action taken pursuant to this Ordinance shall file such action within ninety (90) days of the occurrence of the event for which review is sought.

SECTION 2. This Ordinance shall take effect and be in full force thirty (30) days from and after its passage and, before the expiration of fifteen (15) days after the passage thereof, shall be published once in the Orange County Reporter, a newspaper published in the County of Orange, State of California, together with the names of the members of the Board of Supervisors voting for or against the same.

Notice of Transfer of Responsibility Form

Water Quality Management Plan
Notice of Transfer of Responsibility

Tracking No. Assigned by the City of Huntington Beach:_____

Submission of this Notice of Transfer of Responsibility constitutes notice to the City of Huntington Beach that responsibility for the Water Quality Management Plan ("WQMP") for the subject property identified below, and implementation of that plan, is being transferred from the Previous Owner (and his/her agent) of the site (or a portion thereof) to the New Owner, as further described below.

I. Previous Owner/Previous Responsible Party Information

Company/Individual Name		Contact Person	
Title			
Street Address		Title	
City	State	Zip	Phone

II. Information about Site Transferred

Name of Project (if applicable)			
Title of WQMP Applicable to Site:			
Planning Area (PA) and/or Tract Number(s) for Site	Lot Numbers (if Site is a portion of a tract)		
Date WQMP Prepared (and revised if applicable)			
Street Address of Site			
City	State	Zip	Phone

III. New Owner/New Responsible Party Information

Company/Individual Name		Contact Person	
Title			
Street Address		Title	
City	State	Zip	Phone

IV. Ownership Transfer Information

General Description of Site Transferred to New Owner	General Description of Portion of Project/Parcel Subject To WQMP Retained by Owner (if any)
Lot/Tract Numbers of Site Transferred to New Owner	
Remaining Lot/Tract Numbers Subject to WQMP Still Held by Owner (if any)	
Date of Ownership Transfer	

Note: When the Previous Owner is transferring a Site that is a portion of a larger project/parcel addresses by the WQMP, as opposed to the entire project/parcel addressed by the WQMP, the General Description of the Site transferred and the remainder of the project/parcel not transferred shall be set forth as maps attached to this notice. These maps shall show those portions of a project/parcel addressed by the WQMP that are transferred to the New Owner (the Transferred Site), those portions retained by the Previous Owner, and those portions previously transferred by Previous Owner. Those portions retained by Previous Owner shall be labeled "Previous Owner", and those portions previously transferred by Previous Owner shall be labeled as "Previously Transferred."

V. Purpose of Notice of Transfer

The purposes of this Notice of Transfer of Responsibility are: 1) to track transfer of responsibility for implementation and amendment of the WQMP when property to which the WQMP is applicable is transferred from the Previous Owner to the New Owner, and 2) to facilitate notification to a transferee of property subject to a WQMP that such New Owner is now the Responsible Party of record for the WQMP for those portions of the site that it owns.

VI. Certifications

A. Previous Owner

I certify under penalty of law that I am no longer the owner of the Transferred Site as described in Section II above. I have provided the New Owner with a copy of the WQMP applicable to the Transferred Site that the New Owner is acquiring from the Previous Owner.

Printed Name of Previous Owner Representative	Title
Signature of Previous Owner Representative	Date

B. New Owner

I certify under penalty of law that I am the owner of the Transferred Site, as described in Section II above, that I have been provided a copy of the WQMP, and that I have informed myself and understand the New Owner's responsibilities related to the WQMP, its implementation, and Best Management Practices associated with it. I understand that by signing this notice, the New Owner is accepting all ongoing responsibilities for implementation and amendment of the WQMP for the Transferred site, which the New Owner has acquired from the Previous Owner.

Printed Name of New Owner Representative	Title
Signature	Date

Attachment A – O & M Plan

Operations and Maintenance (O&M) Plan

Water Quality Management Plan
for

Residential Development

(HB TRI)

Garfield Avenue and Main Street

Tentative Tract Map 19118

Attachment A, Operations and Maintenance Plan

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Non-Structural Source Control BMPs			
	N1. Education for Property Owners, Tenants and Occupants The HOA shall also provide information to the homeowners on an annual basis via their regular newsletter pertaining to reminders and tips regarding prevention of stormwater pollution. The builder/developer shall provide educational material to each homebuyer regarding the prevention of stormwater pollution as part of the escrow process.	Provide education information to new owners, Tenants and occupants as needed. Continuous.	BONANNI DEVLOPMENT, INC. at initial sale & HOA for new owners thereafter
	N2. Activity Restrictions HOA restrictions to be determined (no car maintenance, car washing etc.)	Once HOA has been established, a set of restrictions will be generated.	HOA
	N3. Common Area Landscape Management The HOA shall provide or contract landscaping services to manage and maintain common landscape areas and to be in conformance with Guidelines for Use of Fertizers.	Manage landscaping in accordance with County of Orange Water Conservation Ordinance No. 3802 and with Management Guidelines for Use of Fertilizers and Pesticides. Monthly during regular maintenance.	Construction Superintendent during construction; HOA during post-construction;
	N4. BMP Maintenance Identify responsibility for implementation of each non-structural BMP and scheduled cleaning and/ or maintenance of all structural BMP facilities	BMP table.	HOA
	N11. Common Area Litter Control HOA may contract landscape firms to monitor and report violations by tenants/homeowners for investigation	Litter Maintenance. Continuous.	Construction Superintendent during construction; HOA during post-construction.
	N14. Common Area Catch Basin Inspection Records should be kept to document the annual maintenance	Inspection. Catch Basins will be inspected after major rain events and immediately prior to the start of the rainy season on October 1st.	HOA

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
	N15. Street Sweeping Private Streets and Parking Lots Streets and parking lots are the be swept as required by the governing jurisdiction	Sweeping. Street and Parking lot will be swept monthly at a minimum and immediately prior to the start of the rainy season on October 1st.	HOA
Structural Source Control BMPs			
	S1. Provide Storm Drain System Stenciling and Signage Storm drain stencils are highly visible source control messages placed directly adjacent to storm drain inlets	Repaint as necessary. Annually.	HOA
	S4. Use Efficient Irrigation Systems and Landscape Design Design and apply methods to reduce and minimize the runoff of excess irrigation water into the municipal storm drain system	Verify that runoff minimizing landscape design continues to function by checking that water sensors are functioning properly, that irrigation heads are adjusted properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather and day or night time temperatures. Verify that plants continue to be grouped according to similar water requirements in order to reduce excess irrigation runoff. Once a week, in conjunction with maintenance activities within common areas.	HOA

BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Low Impact Development BMPs		

BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Biotreatment BMP # 1 Bio Clean MWS	Regular inspection and maintenance are essential to assure a properly functioning stormwater system. A system should initially be inspected immediately after completion of the site's construction, and prior to passing responsibility over to the site's owner. Refer to Bioclean Guide for technical maintenance and operation details.	BONANNI DEVELOPMENT, INC.
Treatment Control BMPs		

Required Permits

No permits are required for the implementation, operation, and maintenance of the BMPs.

If no permits are required, a statement to that effect should be made.

Forms to Record BMP Implementation, Maintenance, and Inspection

The form that will be used to record implementation, maintenance, and inspection of BMPs is attached.

Recordkeeping

All records must be maintained for at least five (5) years and must be made available for review upon request.

RECORD OF BMP IMPLEMENTATION, MAINTENANCE, AND INSPECTION

Today's Date: _____

Name of Person Performing Activity (Printed): _____

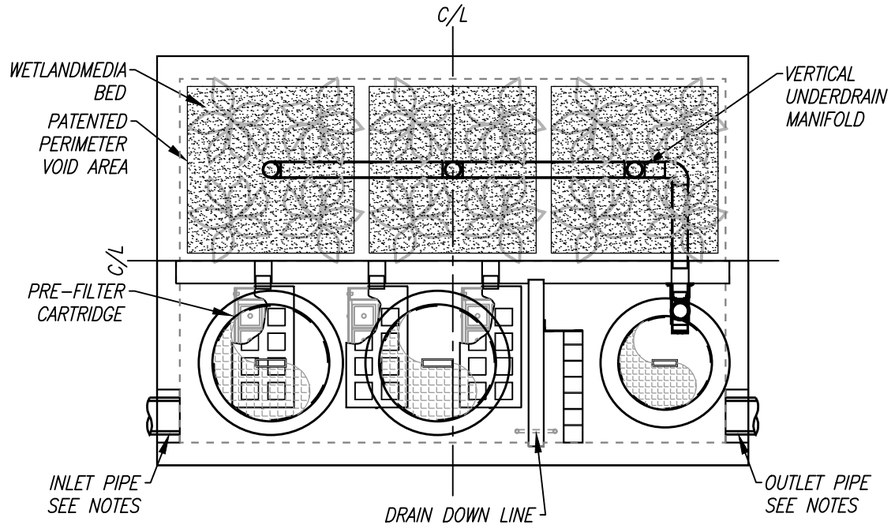
Signature: _____

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

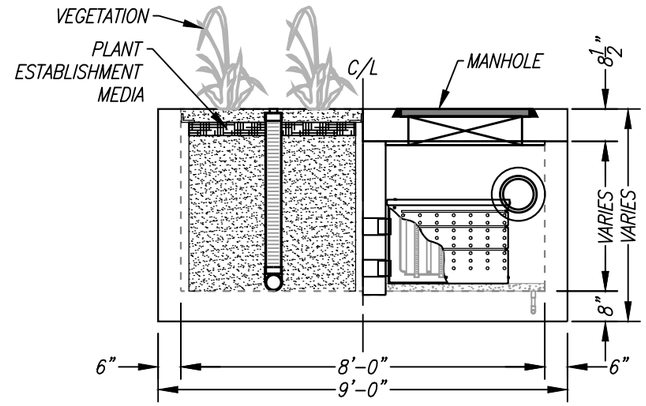
Attachment B – MWS Unit Model, Design Information and Operation/Maintenance Requirements

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.346	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	2EA ø30"	OPEN PLANTER	ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



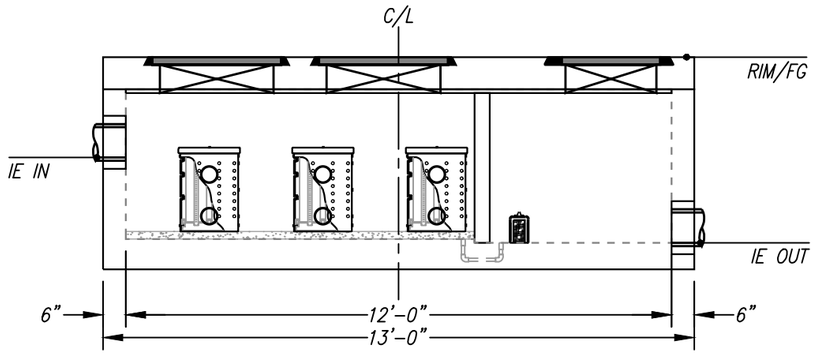
LEFT END VIEW

INSTALLATION NOTES

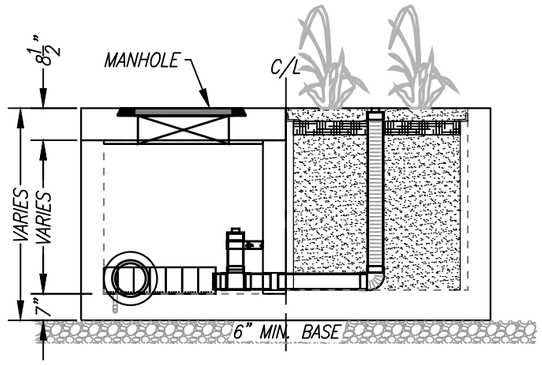
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.346
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MWS-L-8-12-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

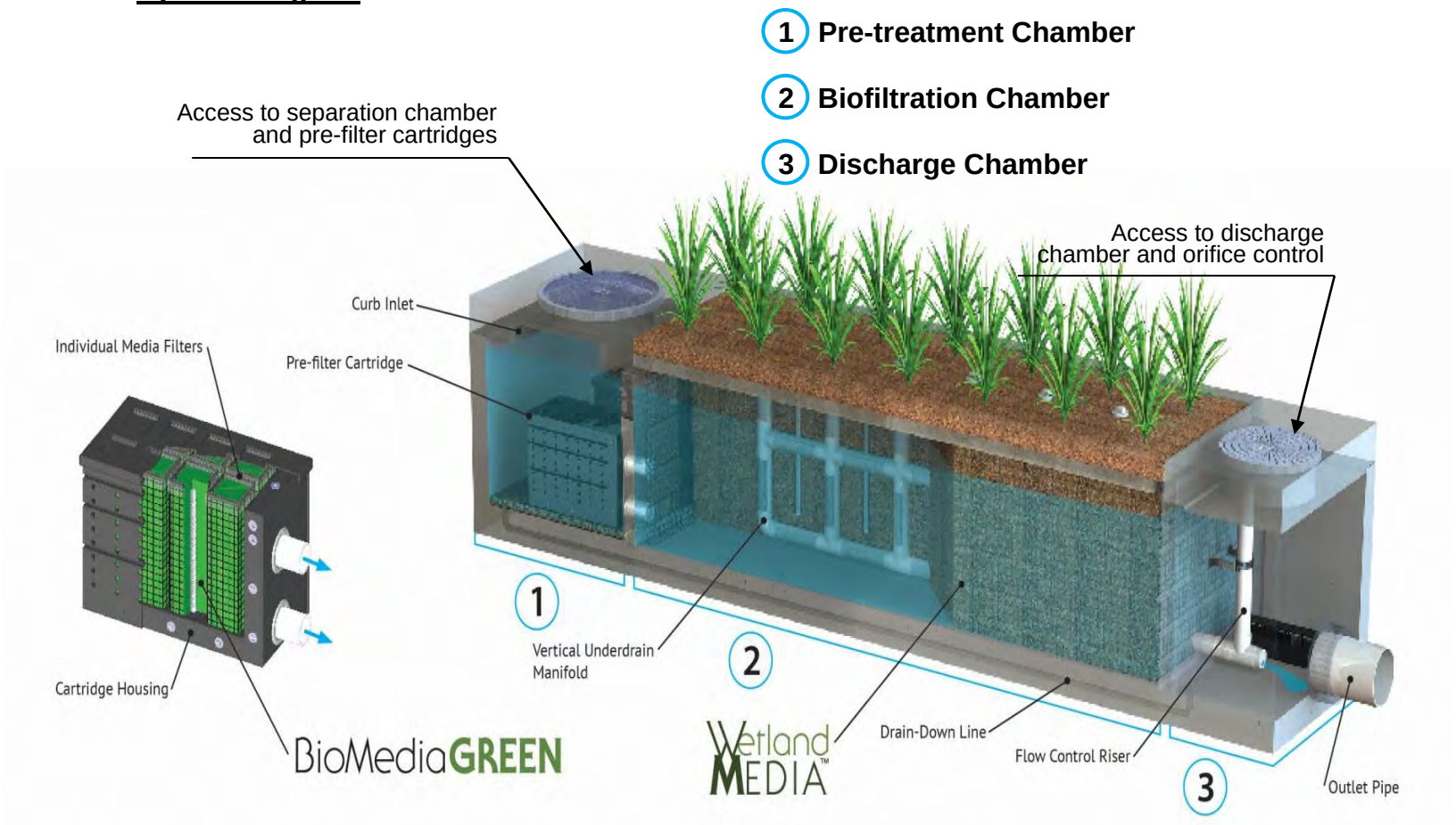
5/23/19 10:EF

Inspection Guidelines for Modular Wetland System - Linear

Inspection Summary

- Inspect Pre-Treatment, Biofiltration and Discharge Chambers – average inspection interval is 6 to 12 months.
    - (1*5 minute average inspection time*).
- NOTE: Pollutant loading varies greatly from site to site and no two sites are the same. Therefore, the first year requires inspection monthly during the wet season and every other month during the dry season in order to observe and record the amount of pollutant loading the system is receiving.

System Diagram



Inspection Overview

As with all stormwater BMPs inspection and maintenance on the MWS Linear is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. This is recommended because pollutant loading and pollutant characteristics can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding on roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance a BMP will exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.

Inspection Equipment

Following is a list of equipment to allow for simple and effective inspection of the MWS Linear:

- Modular Wetland Inspection Form
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.
- 7/16” open or closed ended wrench.
- Large permanent black marker (initial inspections only – first year)
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system.

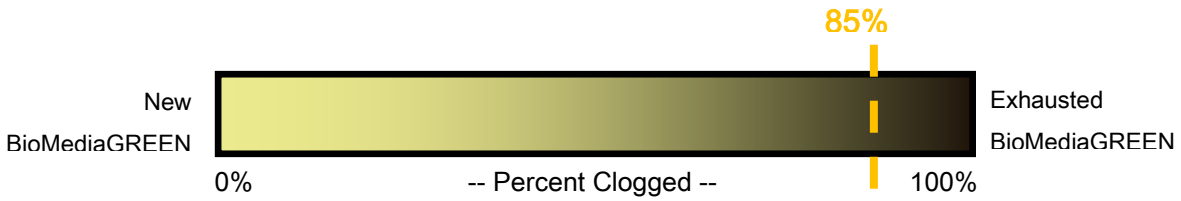
Inspection Steps

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the MWS Linear are quick and easy. As mentioned above the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a base for long term inspection and maintenance interval requirements.

The MWS Linear can be inspected though visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once these access covers have been safely opened the inspection process can proceed:

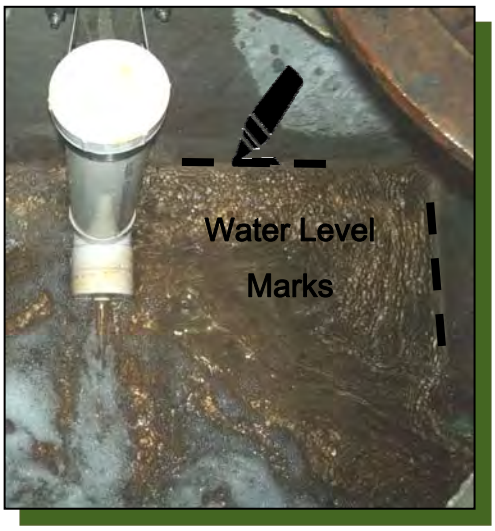
- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the system through the access hatches. If minimal light is available and vision into the unit is impaired utilize a flashlight to see inside the system and all of its chambers.
- Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, biofiltration chamber, discharge chamber or outflow pipe. Write down any observations on the inspection form.
- Through observation and/or digital photographs estimate the amount of trash, debris and sediment accumulated in the pre-treatment chamber. Utilizing a tape measure or measuring stick estimate the amount of trash, debris and sediment in this chamber. Record this depth on the inspection form.

- Through visual observation inspect the condition of the pre-filter cartridges. Look for excessive build-up of sediments on the cartridges, any build-up on the top of the cartridges, or clogging of the holes. Record this information on the inspection form. The pre-filter cartridges can further be inspected by removing the cartridge tops and assessing the color of the BioMediaGREEN filter cubes (requires entry into pre-treatment chamber – see notes above regarding confined space entry). Record the color of the material. New material is a light green in color. As the media becomes clogged it will turn darker in color, eventually becoming dark brown or black. Using the below color indicator record the percentage of media exhausted.



- The biofiltration chamber is generally maintenance free due to the system's advanced pre-treatment chamber. For units which have open planters with vegetation it is recommended that the vegetation be inspected. Look for any plants that are dead or showing signs of disease or other negative stressors. Record the general health of the plants on the inspection and indicate through visual observation or digital photographs if trimming of the vegetation is needed.
- The discharge chamber houses the orifice control structure, drain down filter and is connected to the outflow pipe. It is important to check to ensure the orifice is in proper operating conditions and free of any obstructions. It is also important to assess the condition of the drain down filter media which utilizes a block form of the BioMediaGREEN. Assess in the same manner as the cubes in the Pre-Filter Cartridge as mentioned above. Generally, the discharge chamber will be clean and free of debris. Inspect the water marks on the side walls. If possible, inspect the discharge chamber during a rain event to assess the amount of flow leaving the system while it is at 100% capacity (pre-treatment chamber water level at peak HGL). The water level of the flowing water should be compared to the watermark level on the side walls which is an indicator of the highest discharge rate the system achieved when initially installed. Record on the form is there is any difference in level from watermark in inches.

- NOTE: During the first few storms the water level in the outflow chamber should be observed and a 6” long horizontal watermark line drawn (using a large permanent marker) at the water level in the discharge chamber while the system is operating at 100% capacity. The diagram below illustrates where a line should be drawn. This line is a reference point for future inspections of the system:



Using a permanent marker draw a 6 inch long horizontal line, as shown, at the higher water level in the MWS Linear discharge chamber.

- Water level in the discharge chamber is a function of flow rate and pipe size. Observation of water level during the first few months of operation can be used as a benchmark level for future inspections. The initial mark and all future observations shall be made when system is at 100% capacity (water level at maximum level in pre-treatment chamber). If future water levels are below this mark when system is at 100% capacity this is an indicator that maintenance to the pre-filter cartridges may be needed.
- Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.

Maintenance Indicators

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges.
- Obstructions in the system or its inlet or outlet.
- Excessive accumulation of floatables in the pre-treatment chamber in which the length and width of the chamber is fully impacted more than 18”.

- Excessive accumulation of sediment in the pre-treatment chamber of more than 6” in depth.

- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pre-filter cartridges. The following chart shows photos of the condition of the BioMediaGREEN contained within the pre-filter cartridges. When media is more than 85% clogged replacement is required.

- Excessive accumulation of sediment on the BioMediaGREEN media housed within the drain down filter. The following photos show of the condition of the BioMediaGREEN contained within the drain down filter. When media is more than 85% clogged replacement is required.

- Overgrown vegetation.

- Water level in discharge chamber during 100% operating capacity (pre-treatment chamber water level at max height) is lower than the watermark by 20%.

Inspection Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

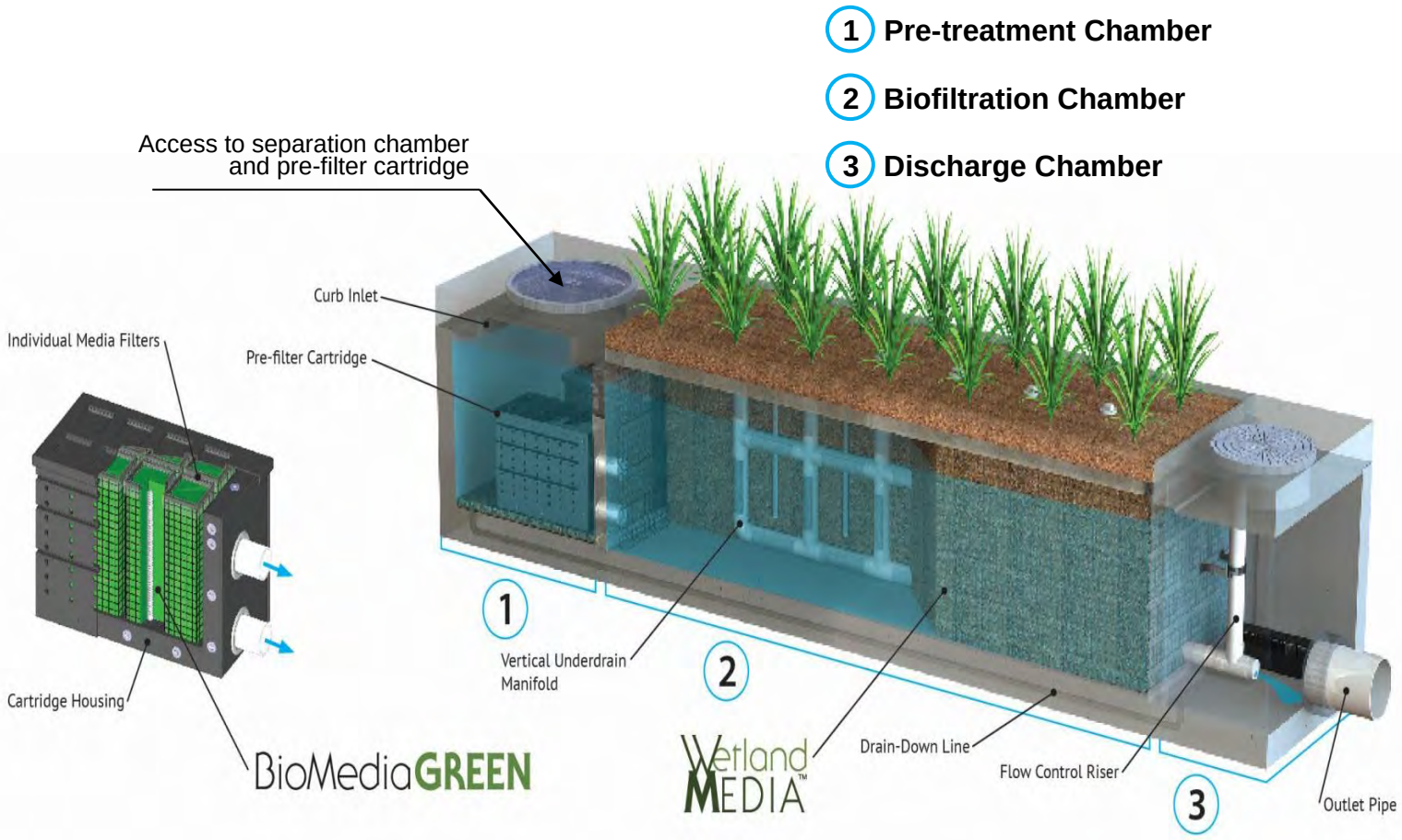
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Sediment from Pre-Treatment Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Pre-Filter Cartridge Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Overview

The time has come to maintain your Modular Wetland System Linear (MWS Linear). To ensure successful and efficient maintenance on the system we recommend the following. The MWS Linear can be maintained by removing the access hatches over the systems various chambers. All necessary pre-maintenance steps must be carried out before maintenance occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once traffic control has been set up per local and state regulations and access covers have been safely opened the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepare a pre-checks (OSHA, safety, confined space entry) are performed.

Maintenance Equipment

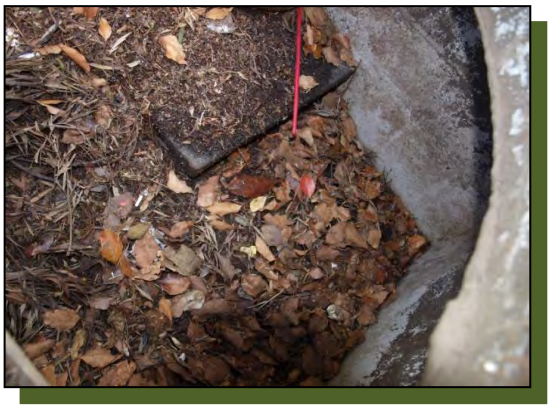
Following is a list of equipment required for maintenance of the MWS Linear:

- Modular Wetland Maintenance Form
- Manhole hook or appropriate tools to access hatches and covers
- Protective clothing, flashlight and eye protection.
- 7/16” open or closed ended wrench.
- Vacuum assisted truck with pressure washer.
- Replacement BioMediaGREEN for Pre-Filter Cartridges if required (order from manufacturer).

Maintenance Steps

1. Pre-treatment Chamber (bottom of chamber)

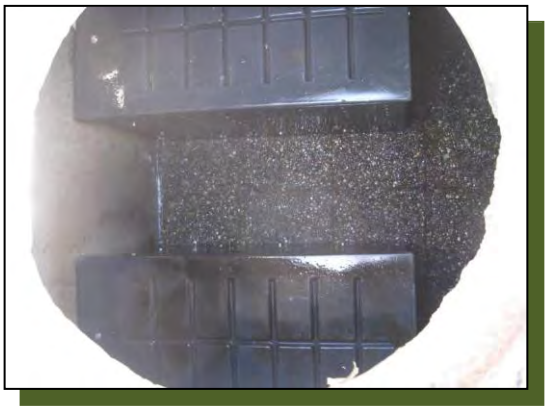
   A. Remove access hatch or manhole cover over pre-treatment chamber and position vacuum truck accordingly.
   B. With a pressure washer spray down pollutants accumulated on walls and pre-filter cartridges.
   C. Vacuum out Pre-Treatment Chamber and remove all accumulated pollutants including trash, debris and sediments. Be sure to vacuum the floor until pervious pavers are visible and clean.
   D. If Pre-Filter Cartridges require media replacement move onto step 2. If not, replace access hatch or manhole cover.



Removal of access hatch to gain access below.

Insertion of vacuum hose into separation chamber.

Removal of trash, sediment and debris.



Fully cleaned separation chamber.

2. Pre-Filter Cartridges (attached to wall of pre-treatment chamber)

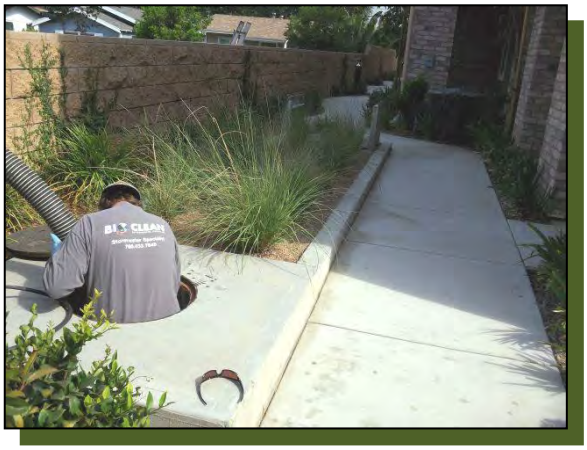
A. After finishing step 1 enter pre-treatment chamber.

B. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.

Pre-filter cartridges with tops on.

Inside cartridges showing media filters ready for replacement.

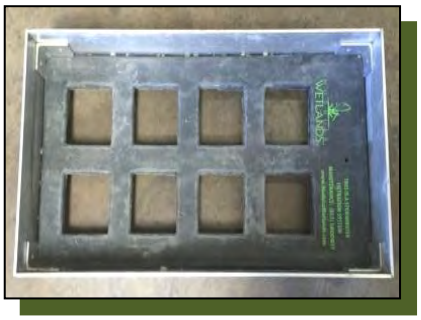
C. Place the vacuum hose over each individual media filter to suck out filter media.



Vacuuming out of media filters.

D. Once filter media has been sucked use a pressure washer to spray down inside of the cartridge and it's containing media cages. Remove cleaned media cages and place to the side. Once removed the vacuum hose can be inserted into the cartridge to vacuum out any remaining material near the bottom of the cartridge.

E. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. Utilize the manufacture provided refilling trey and place on top of cartridge. Fill trey with new bulk media and shake down into place. Using your hands slightly compact media into each filter cage. Once cages are full removed refilling trey and replace cartridge top ensuring bolts are properly tightened.



Refilling trey for media replacement.

Refilling trey on cartridge with bulk media.

F. Exit pre-treatment chamber. Replace access hatch or manhole cover.

3. Biofiltration Chamber (middle vegetated chamber)

A. In general, the biofiltration chamber is maintenance free with the exception of maintaining the vegetation. Using standard gardening tools properly trim back the vegetation to healthy levels. The MWS Linear utilizes vegetation similar to surrounding landscape areas therefore trim vegetation to match surrounding vegetation. If any plants have died replace plants with new ones:

4. Discharge Chamber (contains drain down cartridge & connected to pipe)

A. Remove access hatch or manhole cover over discharge chamber.

B. Enter chamber to gain access to the drain down filter. Unlock the locking mechanism and left up drain down filter housing to remove used BioMediaGREEN filter block as shown below:

C. Insert new BioMediaGREEN filter block and lock drain down filter housing back in place. Replace access hatch or manhole cover over discharge chamber.

Inspection Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Inspection Report
Modular Wetlands System

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ___/___/___ Time _____ AM / PM

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes:

2972 San Luis Rey Road, Oceanside, CA 92058 P (760) 433-7640 F (760) 433-3176

Maintenance Report

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

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