Appendix G

Hydrology Study and Low-Impact Development Plan

HYDROLOGY STUDY
FOR

Mazda Site
2539 E. Garvey North
West Covina, CA 91791

Prepared For:
Bentley Real Estate
1932 E. Garvey South
West Covina, CA 91719
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Prepared by:
MFKessler
One Venture, Ste. 130
Irvine, CA 92618
(949) 339-5330

January 2020

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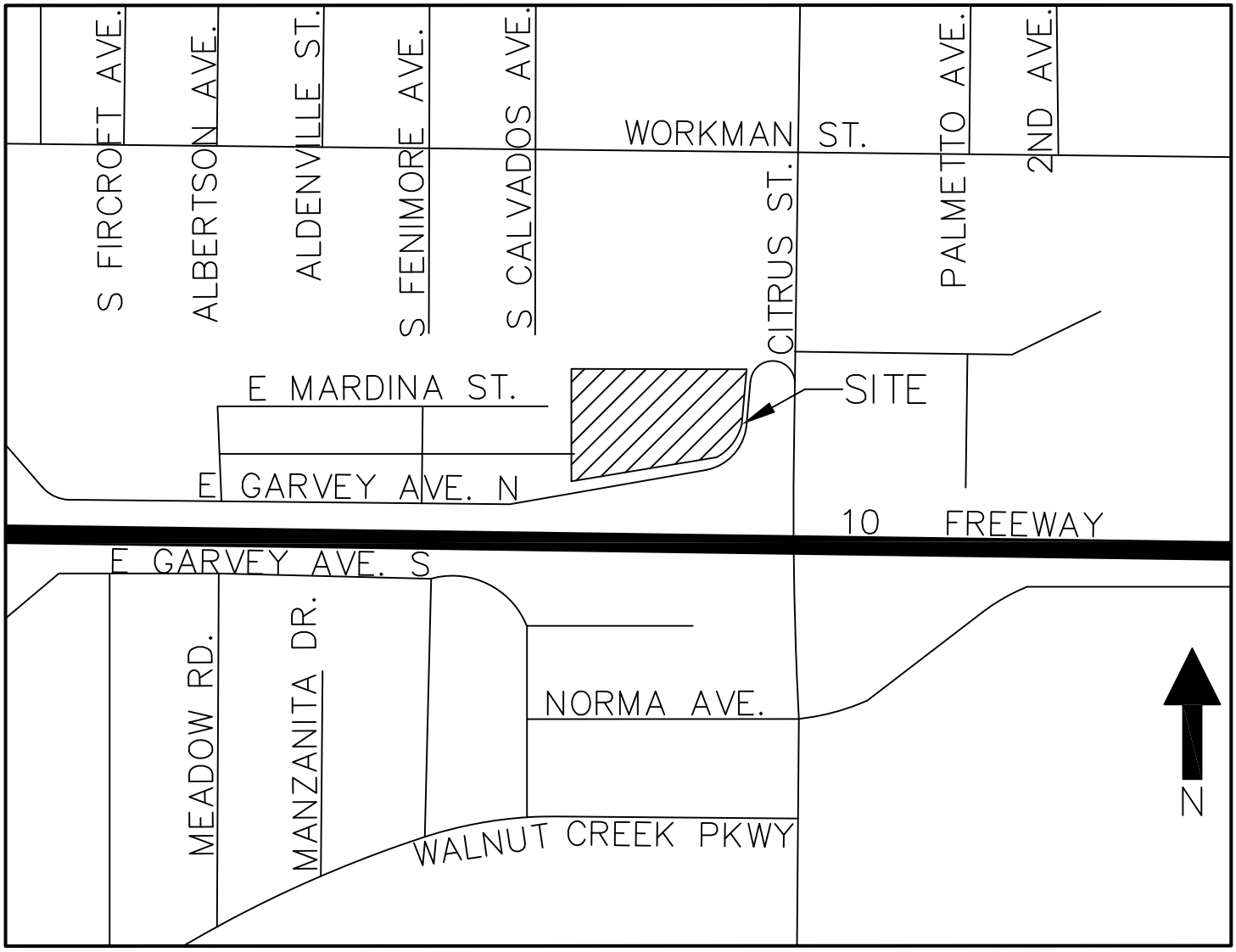
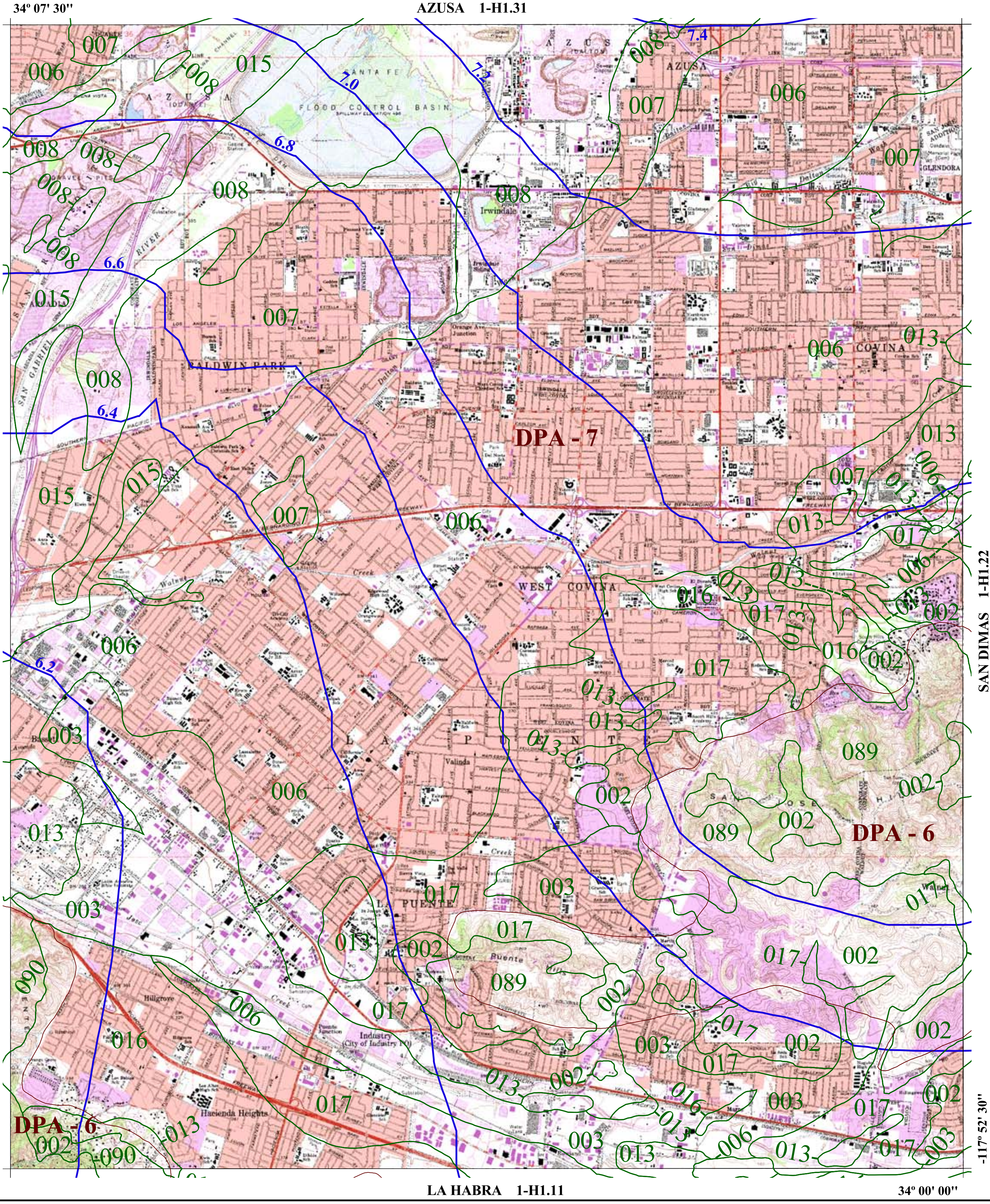
I. VICINITY MAP



VICINITY MAP

N.T.S.

II. SOIL AND RAINFALL MAPS



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

N S E W

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

BALDWIN PARK
50-YEAR 24-HOUR ISOHYET

1-H1.21

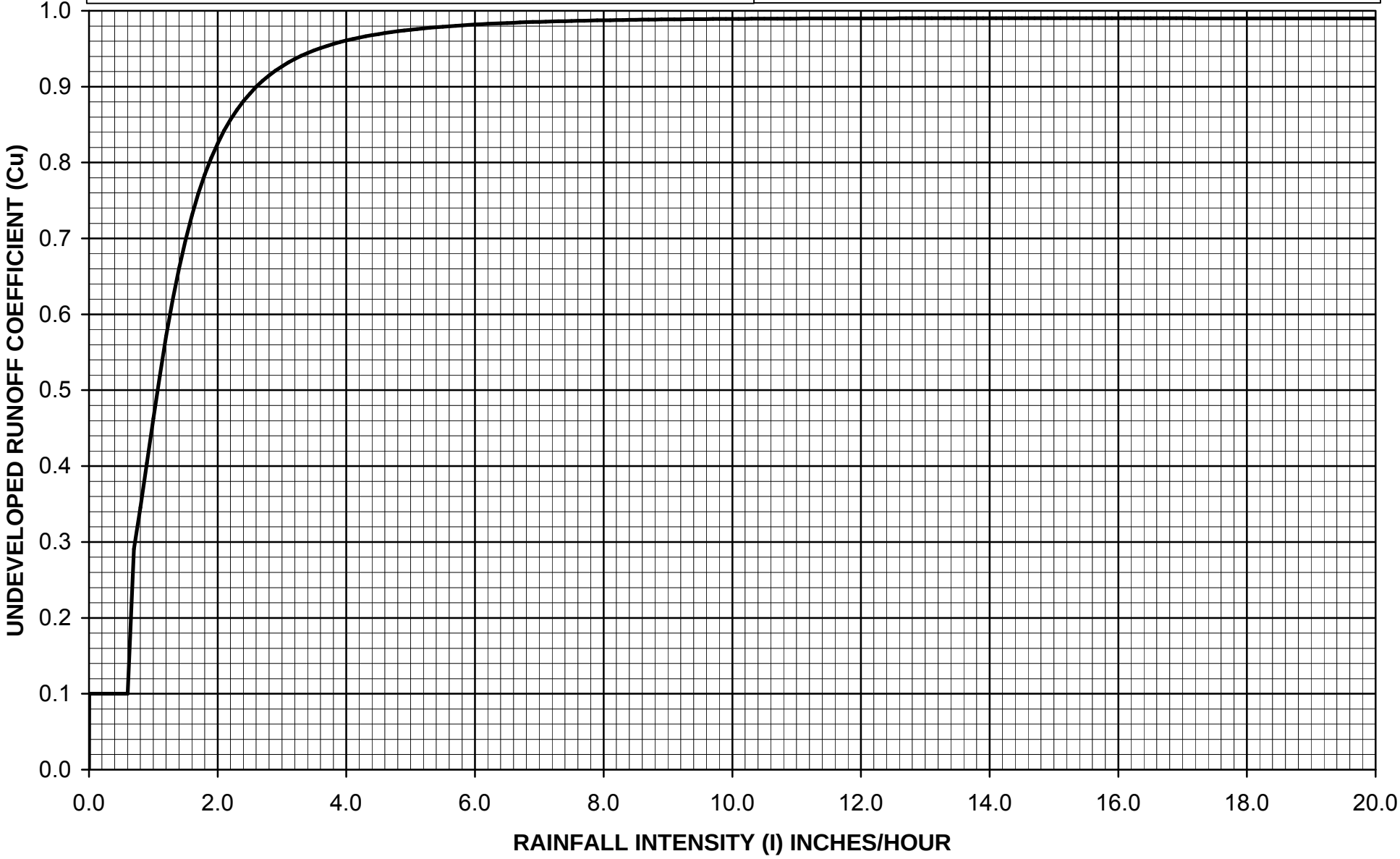
LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

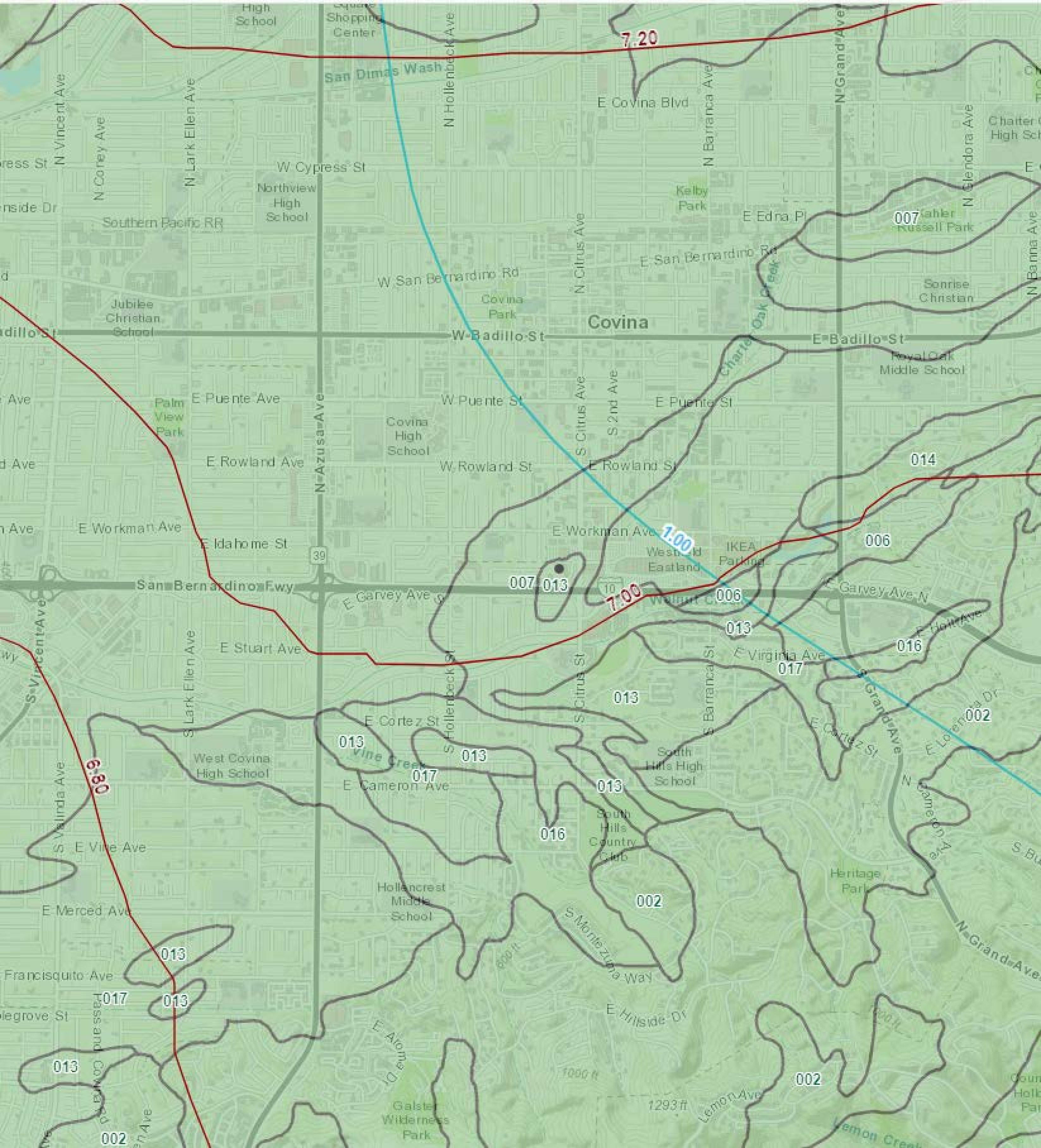
$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 013





7.20
San Dimas Wash
E Covina Blvd
W Cypress St
Northview High School
Southern Pacific RR
Kelby Park
E Edna Pl
007
Kahler Russell Park
E San Bernardino Rd
W San Bernardino Rd
Covina Park
Sonrise Christian
Jubilee Christian School
Covina
W Badillo St
E Badillo St
Royal Oak Middle School
Charter Oak Creek
E Puente Ave
W Puente St
E Puente St
Palm View Park
Covina High School
E Rowland Ave
W Rowland St
E Rowland St
014
E Workman Ave
E Idahome St
1.00
Westfield Eastland
IKEA Parking
006
San Bernardino Fwy
E Garvey Ave
007
013
7.00
E Garvey Ave N
E Holt Ave
E Stuart Ave
E Virginia Ave
016
017
6.80
E Cortez St
West Covina High School
Vine Creek
E Cameron Ave
South Hills High School
South Hills Country Club
002
016
E Vine Ave
Hollencrest Middle School
Heritage Park
E Merced Ave
S Montezuma Way
N Grand Ave
E Francisquito Ave
E Hillside Dr
E Aroma Dr
1000 ft
1293 ft
Lemon Ave
Galster Wilderness Park
Lemon Creek
N Vincent Ave
N Corey Ave
N Lark Ellen Ave
N Azusa Ave
N Hollenbeck Ave
N Citrus Ave
S Citrus Ave
S 2nd Ave
N Barranca Ave
S Barranca St
N Grand Ave
S Grand Ave
N Glendora Ave
S Vincent Ave
S Valinda Ave
S Lark Ellen Ave
S Hollenbeck St
S Citrus St
E Cortez St
E Lorencita Dr
N Cameron Ave

III. DISCUSSION

III. DISCUSSION

Introduction

The purpose of the attached analysis is to determine the existing and proposed storm water discharge flow for the project. The project is located at 2539 E. Garvey North in the City of West Covina, California.

This hydrology report will calculate the 2, 10, 25, and 50-year storm water runoff for this location

Existing Conditions

The existing 3.67 acres site is located at 2539 E. Garvey North in the City of West Covina. The project is currently an existing car dealership which houses structures and a parking lot with two driveway approaches. The site is bordered by the 10 freeway to the south, residential to the west and commercial to the north and east. Site is 98% impervious and currently surface flows from the north east portion of the site, down towards the south west, flowing out into the V-Gutter on Garvey Ave.

Project Description

The site is proposed to be redeveloped as a commercial project to house various new structures and a parking lot. All site runoff will be directed into area drain systems which will route runoff through storage/biofiltration treatment systems. After being treated, system will then outlet offsite onto Garvey Ave.

Calculations provided on this report are based on the entire site drainage area. The site is being divided into 3 separate drainage areas. The total from the 3 DMA's add up to provide us with the total Q for the site. The proposed site condition will be approximately 95% impervious.

Hydrology and Calculation Methodology

This study will determine the amount of stormwater run-off generated from the project in the existing and developed conditions.

The hydrology study was performed in accordance with the requirements of the LA County Hydrology Manual. The rational method was utilized to develop the 2, 10, 25, and 50-year storm event and flows. The site drainage area is all calculated for the entirety of the site. The area is analyzed for acreage, impervious cover, and time of concentration according to the Rational Method.

The flows, expressed in cubic feet per second (cfs), are presented at the project outfall.

Conclusion

The results from this hydrology and hydraulic analysis demonstrate the following:

- The drainage design for the Project has been designed to meet the County of Los Angeles Hydrology Standards.
- Calculations were derived using the LA County Hydrology Manual Rational Method and HydroCalc model.
- Per FEMA FIRM Map Number 06037C1700F Panel 1700 of 2350, revised 09/26/2008, the subject site is located in FEMA ZONE X described as areas of 0.2% annual chance of flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

A table of pre- and post-construction flows can be seen in the table below:

Condition	2-YR Flow (cfs)	10-YR Flow (cfs)	25-YR Flow (cfs)	50-YR Flow (cfs)
Pre-Developed Condition	3.40	7.48	9.73	11.81
Post-Developed Condition	3.34	7.47	9.74	11.80
Percent Change	1.78%	0.13%	0.10%	0.08%

It can be seen that flows from the site will have minimal to no change from pre-development condition to post-developed condition.

Therefore, no adverse effects are anticipated on downstream water bodies.

IV. 2, 25, & 50-YEAR HYDROLOGY CALCULATIONS – EXISTING AND DEVELOPED CONDITION

Peak Flow Hydrologic Analysis

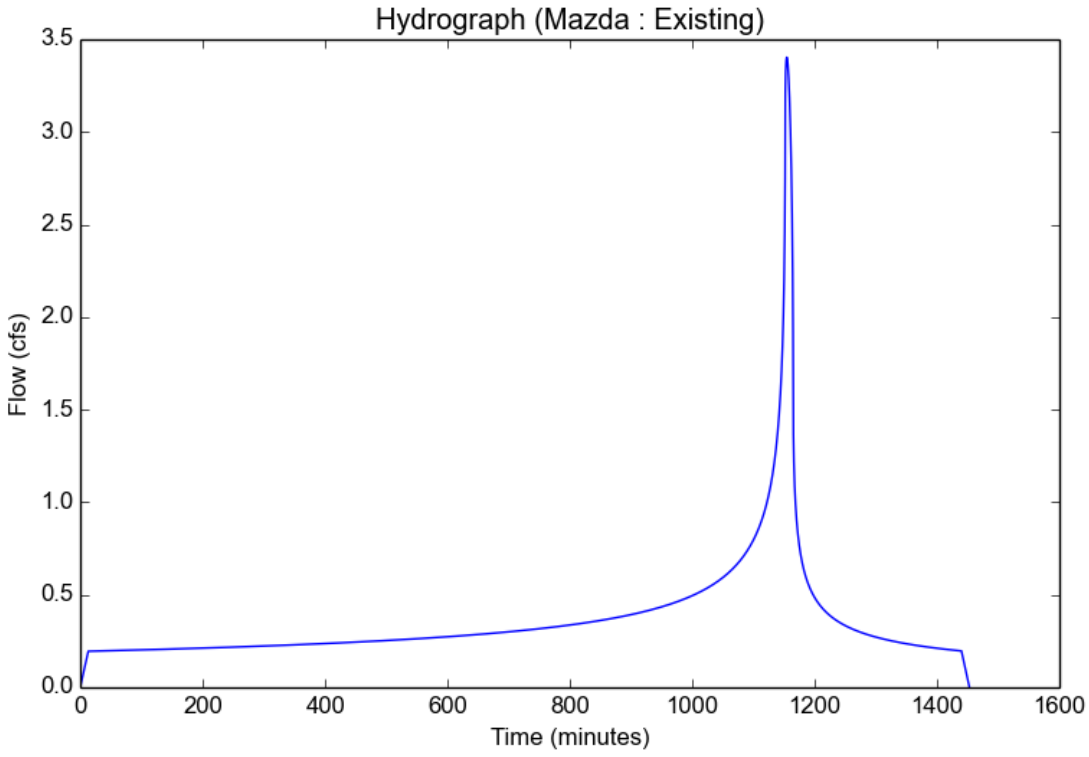
File location: P:/204-006/Reports/Hydrology/2x.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda
Subarea ID	Existing
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.98
Soil Type	2
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.709
Peak Intensity (in/hr)	1.0315
Undeveloped Runoff Coefficient (Cu)	0.729
Developed Runoff Coefficient (Cd)	0.8966
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	3.4034
Burned Peak Flow Rate (cfs)	3.4034
24-Hr Clear Runoff Volume (ac-ft)	0.7304
24-Hr Clear Runoff Volume (cu-ft)	31815.2703



Peak Flow Hydrologic Analysis

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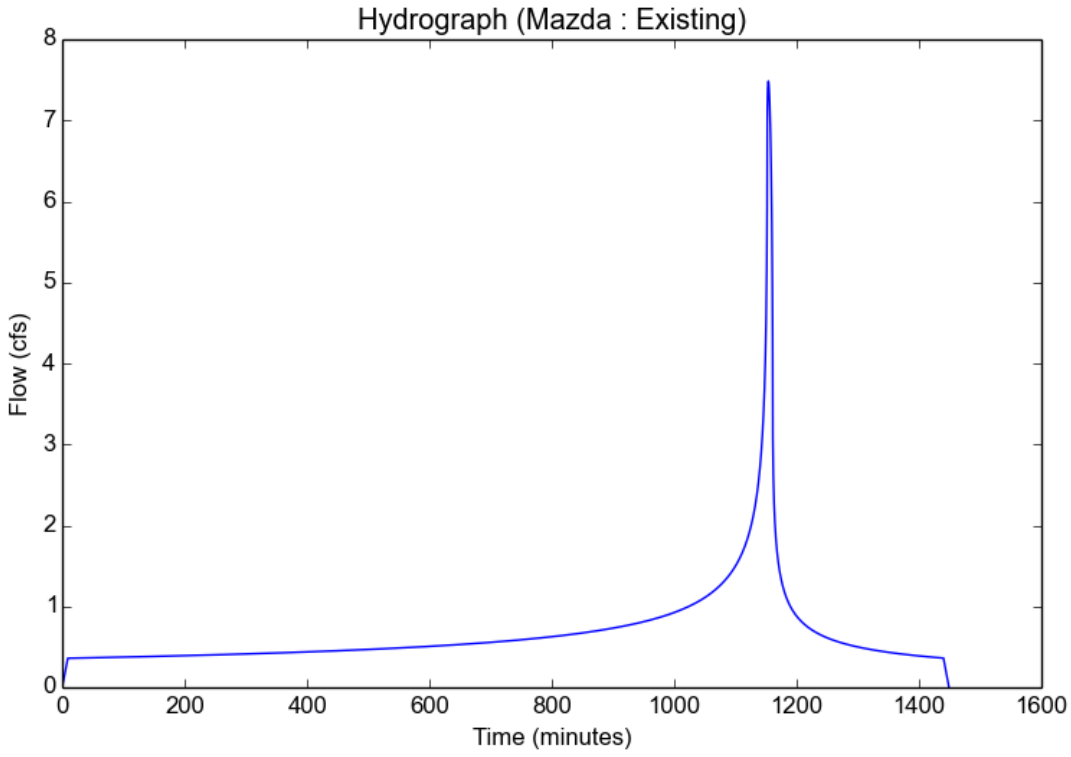
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda
Subarea ID	Existing
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.98
Soil Type	2
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.998
Peak Intensity (in/hr)	2.2622
Undeveloped Runoff Coefficient (Cu)	0.851
Developed Runoff Coefficient (Cd)	0.899
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	7.4841
Burned Peak Flow Rate (cfs)	7.4841
24-Hr Clear Runoff Volume (ac-ft)	1.3514
24-Hr Clear Runoff Volume (cu-ft)	58866.7816



Peak Flow Hydrologic Analysis

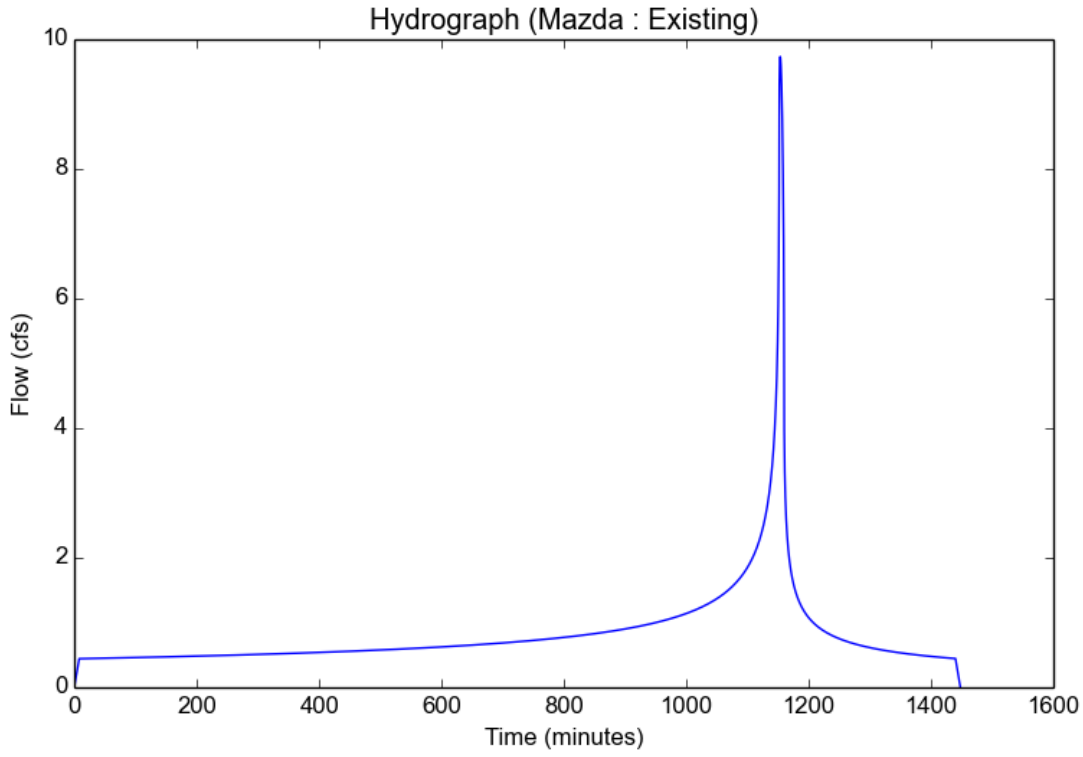
File location: P:/204-006/Reports/Hydrology/25x.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda
Subarea ID	Existing
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.98
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.146
Peak Intensity (in/hr)	2.9401
Undeveloped Runoff Coefficient (Cu)	0.881
Developed Runoff Coefficient (Cd)	0.8996
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	9.7334
Burned Peak Flow Rate (cfs)	9.7334
24-Hr Clear Runoff Volume (ac-ft)	1.6642
24-Hr Clear Runoff Volume (cu-ft)	72491.9861



Peak Flow Hydrologic Analysis

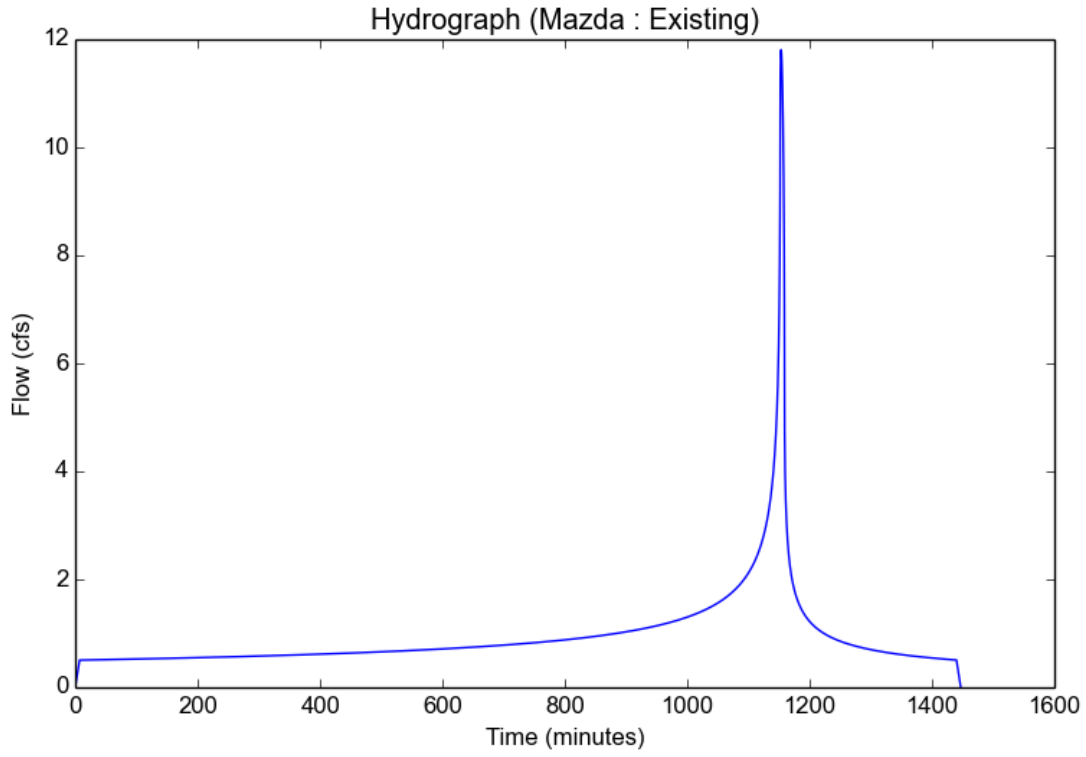
File location: P:/204-006/Reports/Hydrology/50x.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda
Subarea ID	Existing
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.98
Soil Type	2
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.0
Peak Intensity (in/hr)	3.5655
Undeveloped Runoff Coefficient (Cu)	0.8973
Developed Runoff Coefficient (Cd)	0.8999
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	11.8083
Burned Peak Flow Rate (cfs)	11.8083
24-Hr Clear Runoff Volume (ac-ft)	1.8972
24-Hr Clear Runoff Volume (cu-ft)	82640.3215



Peak Flow Hydrologic Analysis

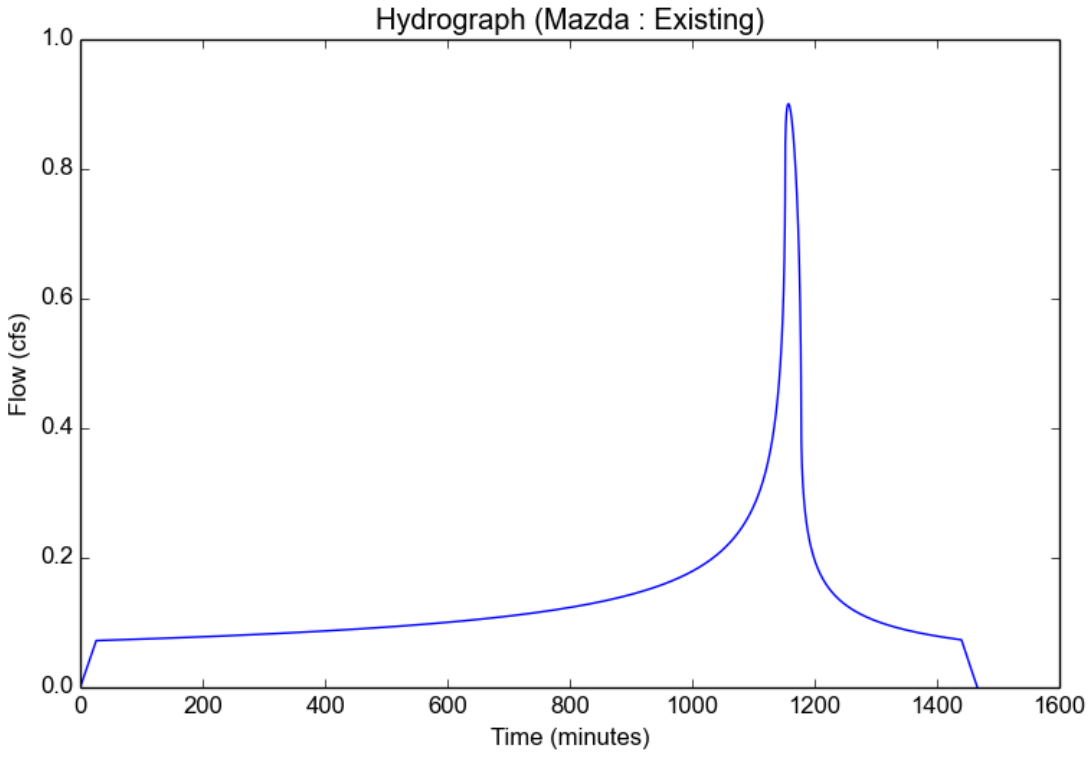
File location: P:/204-006/Reports/Hydrology/85x.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda
Subarea ID	Existing
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.98
Soil Type	2
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2749
Undeveloped Runoff Coefficient (Cu)	0.4078
Developed Runoff Coefficient (Cd)	0.8902
Time of Concentration (min)	26.0
Clear Peak Flow Rate (cfs)	0.9005
Burned Peak Flow Rate (cfs)	0.9005
24-Hr Clear Runoff Volume (ac-ft)	0.2691
24-Hr Clear Runoff Volume (cu-ft)	11720.3534



Peak Flow Hydrologic Analysis

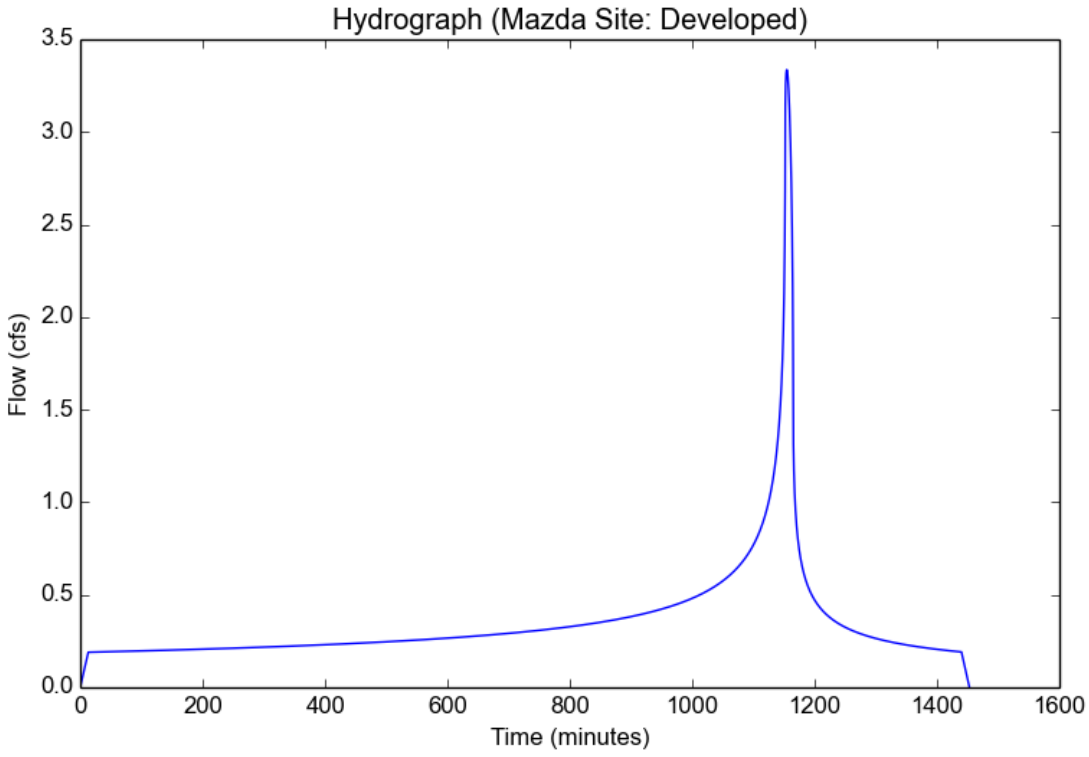
File location: P:/204-006/Reports/Hydrology/2d.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda Site
Subarea ID	Developed
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	2-yr
Fire Factor	0
LID	False

Output Results

Modeled (2-yr) Rainfall Depth (in)	2.709
Peak Intensity (in/hr)	1.0315
Undeveloped Runoff Coefficient (Cu)	0.4775
Developed Runoff Coefficient (Cd)	0.8789
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	3.3362
Burned Peak Flow Rate (cfs)	3.3362
24-Hr Clear Runoff Volume (ac-ft)	0.7096
24-Hr Clear Runoff Volume (cu-ft)	30910.5161



Peak Flow Hydrologic Analysis

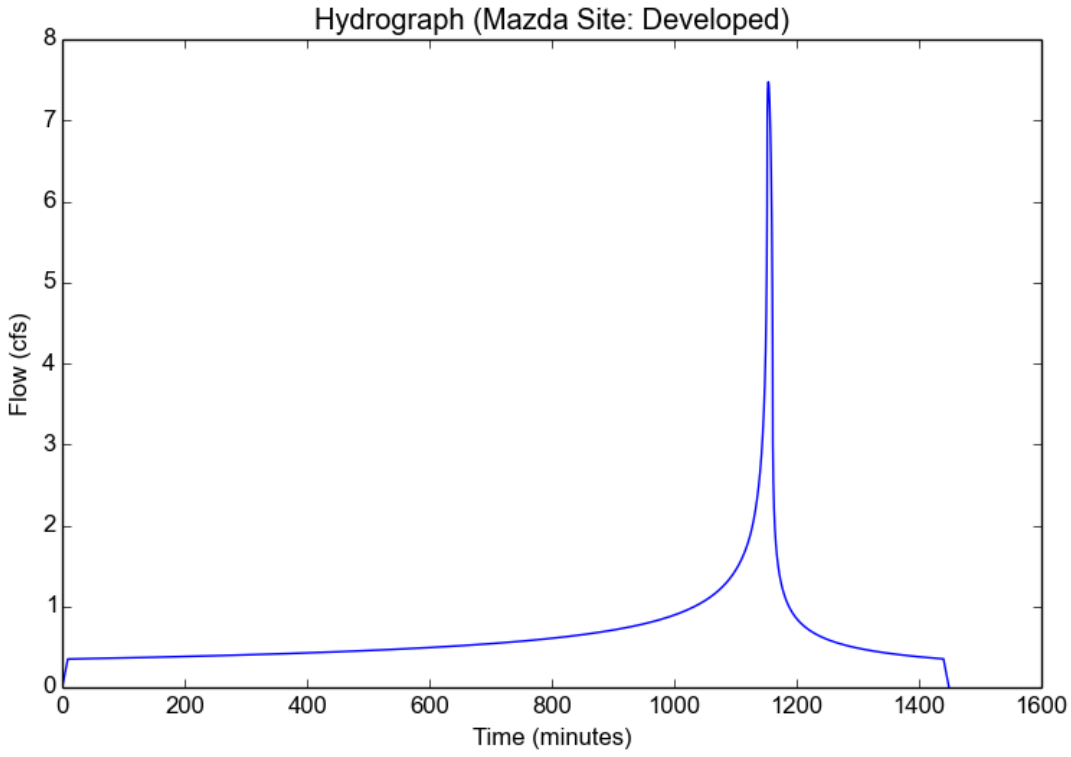
File location: P:/204-006/Reports/Hydrology/10d.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda Site
Subarea ID	Developed
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	10-yr
Fire Factor	0
LID	False

Output Results

Modeled (10-yr) Rainfall Depth (in)	4.998
Peak Intensity (in/hr)	2.2622
Undeveloped Runoff Coefficient (Cu)	0.8597
Developed Runoff Coefficient (Cd)	0.898
Time of Concentration (min)	9.0
Clear Peak Flow Rate (cfs)	7.4755
Burned Peak Flow Rate (cfs)	7.4755
24-Hr Clear Runoff Volume (ac-ft)	1.3125
24-Hr Clear Runoff Volume (cu-ft)	57172.3803



Peak Flow Hydrologic Analysis

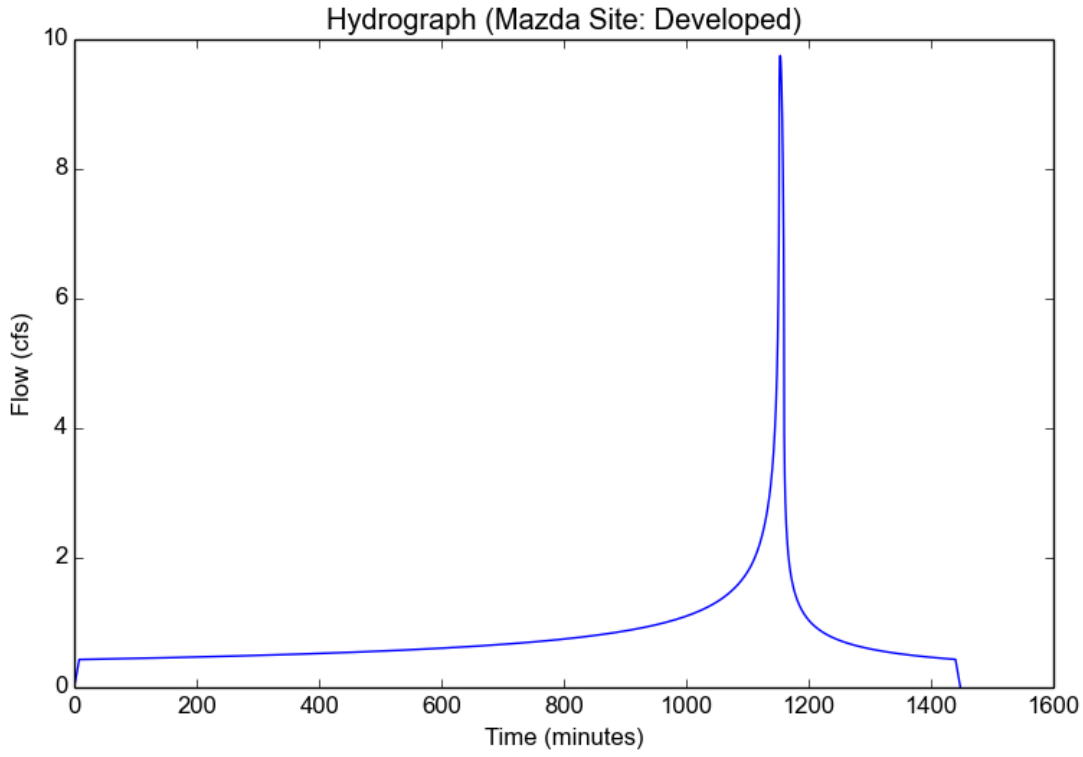
File location: P:/204-006/Reports/Hydrology/25d.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda Site
Subarea ID	Developed
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.146
Peak Intensity (in/hr)	2.9401
Undeveloped Runoff Coefficient (Cu)	0.9225
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	9.7376
Burned Peak Flow Rate (cfs)	9.7376
24-Hr Clear Runoff Volume (ac-ft)	1.6157
24-Hr Clear Runoff Volume (cu-ft)	70379.7251



Peak Flow Hydrologic Analysis

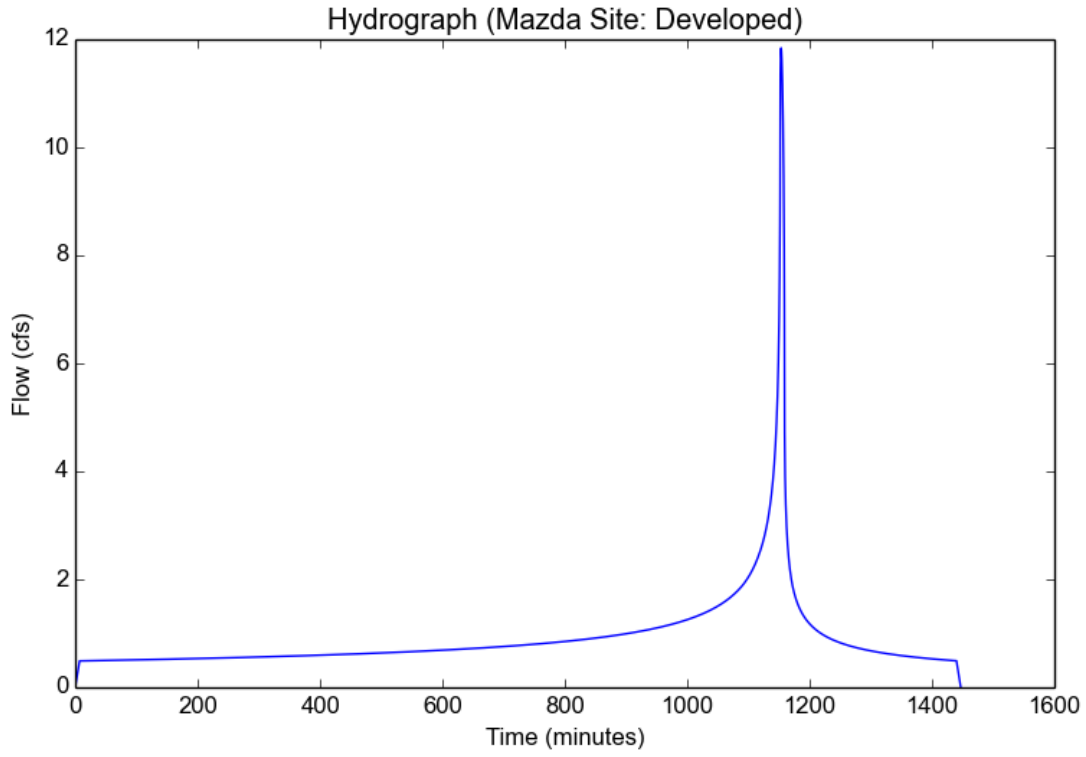
File location: P:/204-006/Reports/Hydrology/50d.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda Site
Subarea ID	Developed
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	7.0
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.0
Peak Intensity (in/hr)	3.5655
Undeveloped Runoff Coefficient (Cu)	0.949
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	11.809
Burned Peak Flow Rate (cfs)	11.809
24-Hr Clear Runoff Volume (ac-ft)	1.8416
24-Hr Clear Runoff Volume (cu-ft)	80221.3713



Peak Flow Hydrologic Analysis

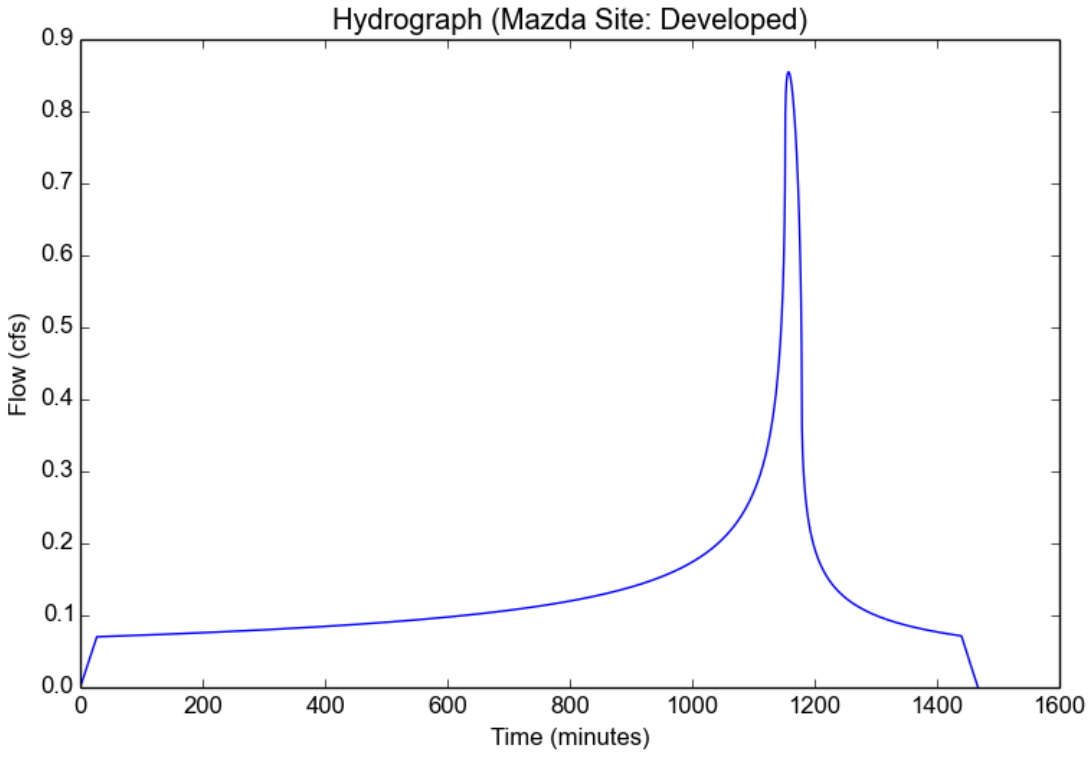
File location: P:/204-006/Reports/Hydrology/85d.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda Site
Subarea ID	Developed
Area (ac)	3.68
Flow Path Length (ft)	597.0
Flow Path Slope (vft/hft)	0.01
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.2701
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.86
Time of Concentration (min)	27.0
Clear Peak Flow Rate (cfs)	0.8547
Burned Peak Flow Rate (cfs)	0.8547
24-Hr Clear Runoff Volume (ac-ft)	0.2616
24-Hr Clear Runoff Volume (cu-ft)	11393.3857



V. TREATMENT & SIZING CALCULATIONS

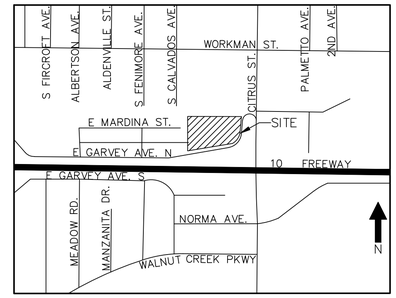
2539 E. Garvey North, West Covina, CA

Infiltration StormTank Sizing Calculation:

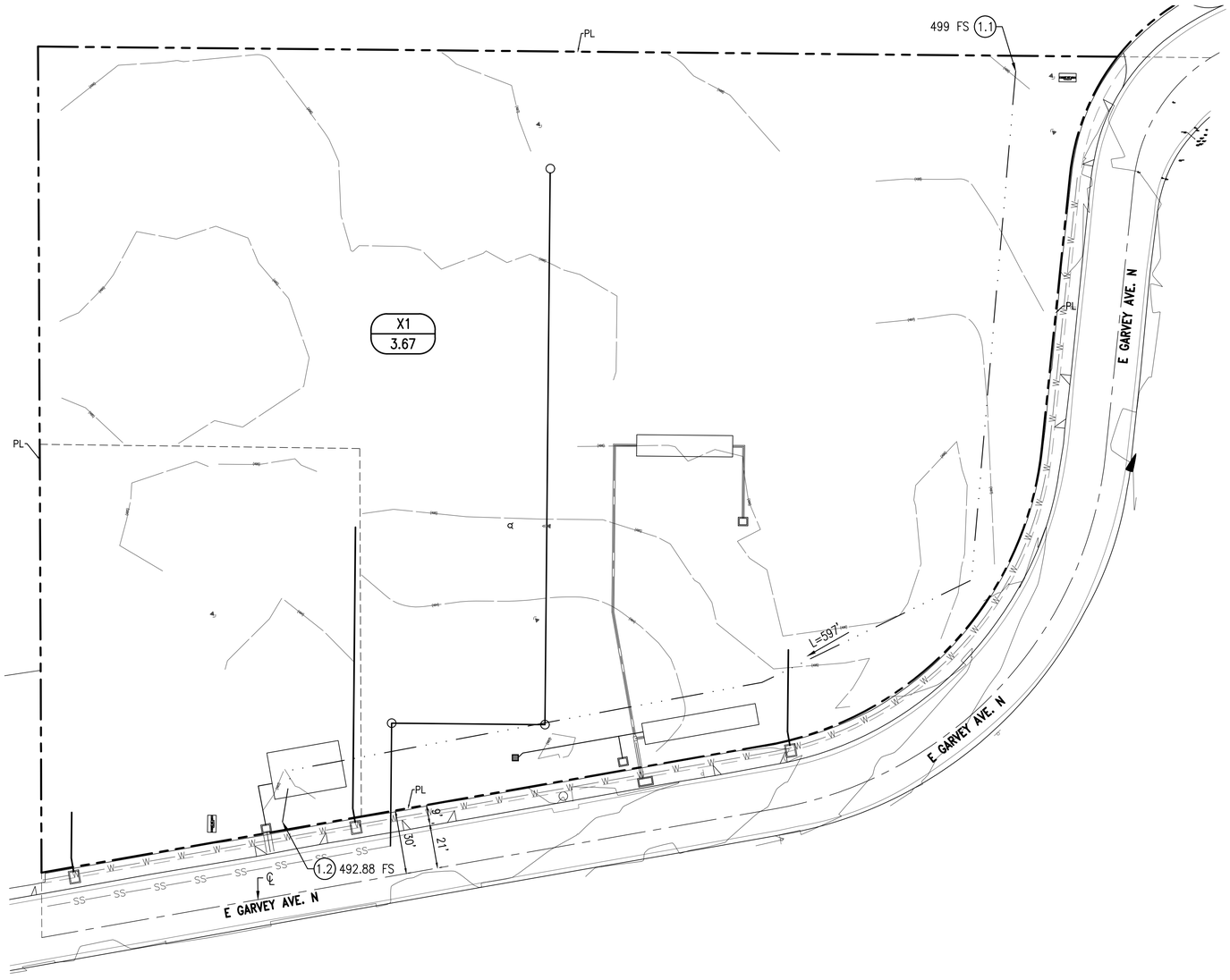
	DMA 1	DMA 2	DMA 3
Area of Site (ac)	1.54	0.97	1.16
SWQDv (cf)	4,767	3,003	3,591
Storage Dimension-length, l (ft)	***47***	***45***	***54***
Storage Dimension-width, w (ft)	***15***	***10***	***10***
Storage Dimension-height, d (ft)	***6***	***6***	***6***
Gravel Width-side, lg (ft)	0.5	0.5	0.5
Gravel Width-top,wg (ft)	1.0	1.0	1.0
Gravel Width-bot,dg (ft)	1.0	1.0	1.0
Actual Storage Volume,V (cf)	**4784**	**3104**	**3718**

VI. HYDROLOGY MAP-EXISTING AND DEVELOPED CONDITIONS

EXISTING CONDITIONS
HYDROLOGY EXHIBIT
2539 E GARVEY NORTH



VICINITY MAP
N.T.S.



FLOOD NOTE:
PROJECT IS LOCATED IN ZONE X
PER FEMA MAP# 06037C1980F

SITE

SOIL TYPE:		013
50 YR-24 HR RAINFALL:		7.0 IN.
85TH PERCENTILE RAINFALL:		1.0 IN.

PRE DEVELOPMENT:

PERVIOUS AREA	=	0.7 AC. (2%)
IMPERVIOUS AREA	=	3.35 AC. (98%)

$Q_{25YR24HR}$	= 3.40	CFS
$Q_{50YR24HR}$	= 7.48	CFS
$Q_{100YR24HR}$	= 9.73	CFS
$Q_{500YR24HR}$	= 11.81	CFS
$V_{85TH\%}$	= 11720	CF

LEGEND:

- X1 / 3.68 AC — SUB-AREA NUMBER / ACREAGE
- MAJOR-AREA BOUNDARY PROPERTY LINE
- SUB-AREA BOUNDARY
- FLOW PATH
- (X) NODE

OFFSITE FLOW NOTE:
THERE ARE NO OFFSITE FLOWS DISCHARGING THROUGH THE SITE IN EXISTING OR PROPOSED CONDITIONS.

REGISTERED PROFESSIONAL ENGINEER
ALI MONSHIZADEH
C67674
EXP. 06/30/2021
CIVIL
STATE OF CALIFORNIA

PLAN PREPARED BY:
MFKessler
Civil Engineering, Land Planning, Surveying
ONE VENTURE, SUITE 130
IRVINE, CA 92618
(949) 339-5330
MFKESSLER.COM

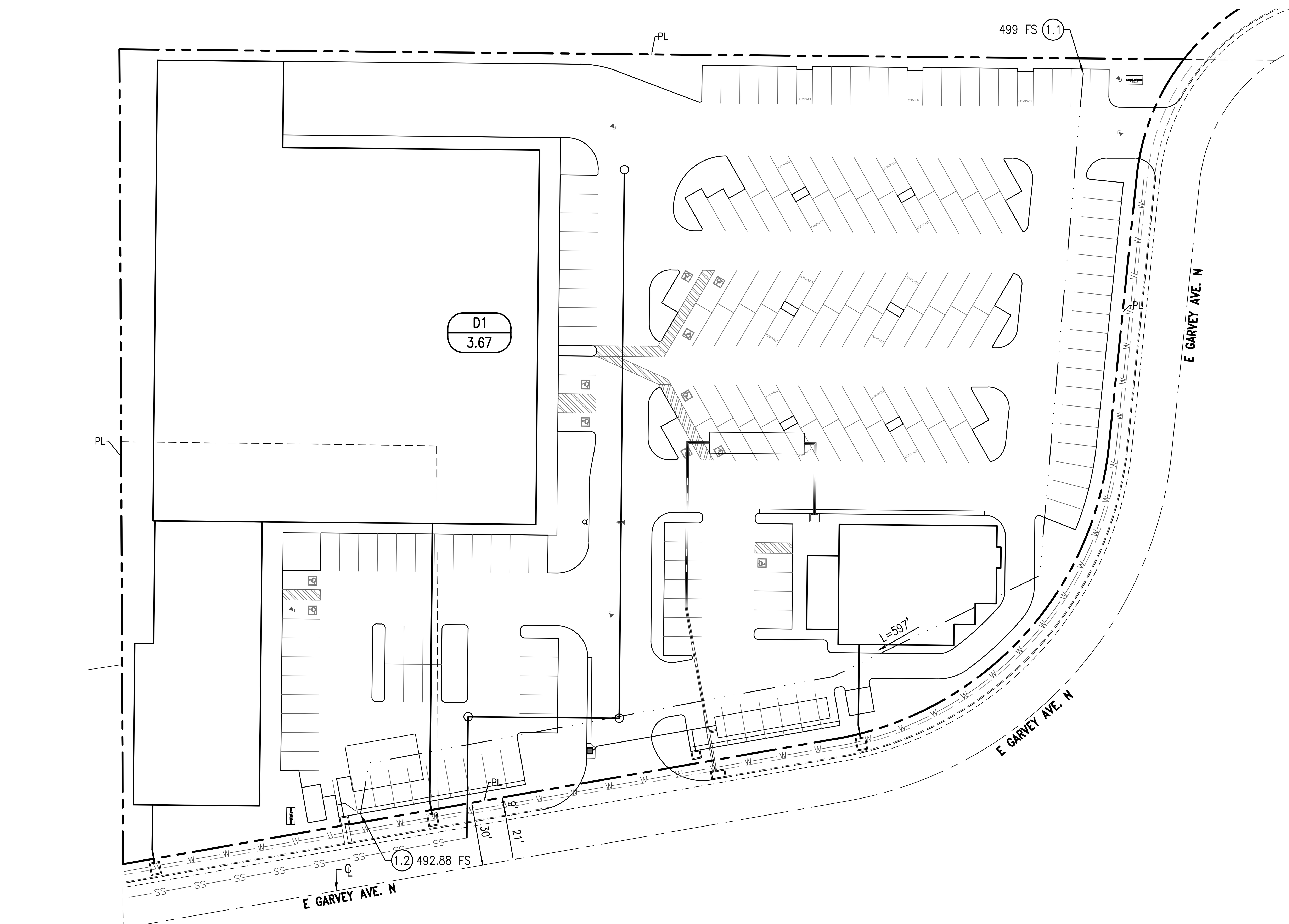
CITY OF WEST COVINA

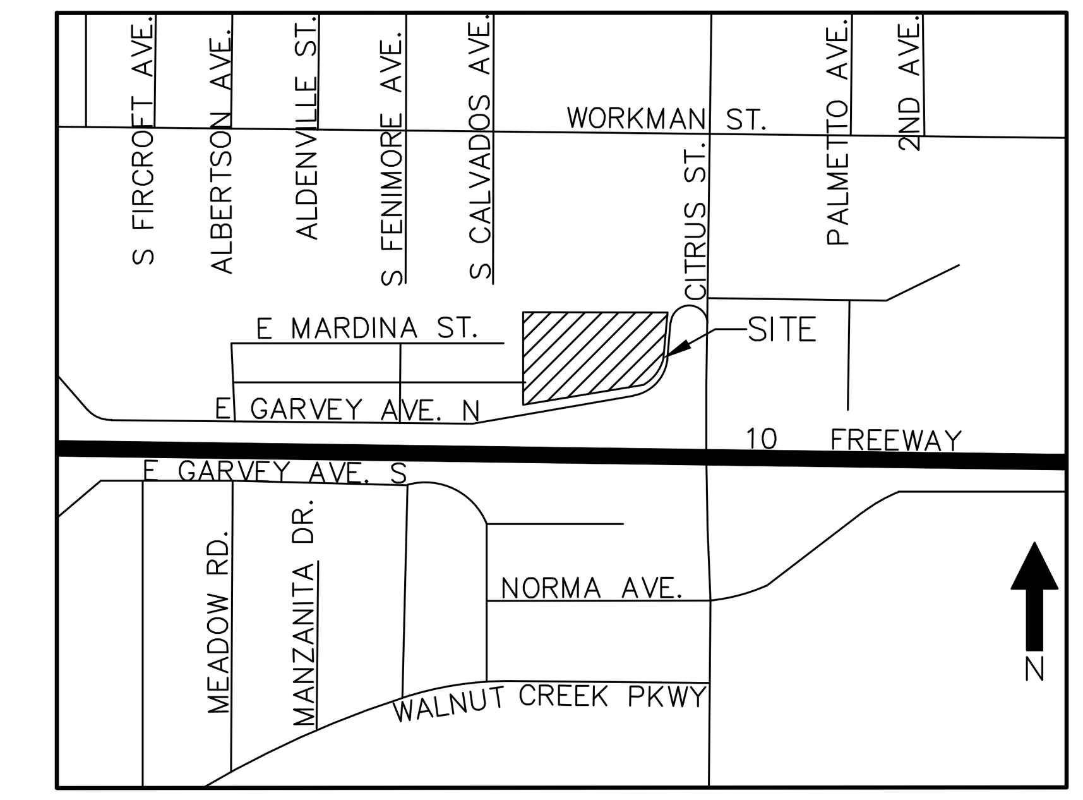
EXISTING CONDITIONS
2539 E. GARVEY NORTH
WEST COVINA, CALIFORNIA

SHEET
1 OF 1

PROJ: 214-006
DWG: P:\2014\006\dwg\Sheets\SCH-HY-PRE.dwg Jun 30, 2020 - 8:59:56am

DEVELOPED CONDITIONS HYDROLOGY EXHIBIT 2539 E GARVEY NORTH





VICINITY MAP
N.T.S.

FLOOD NOTE:

PROJECT IS LOCATED IN ZONE X
PER FEMA MAP# 06037C1980F

SITE

SOIL TYPE:		013	
50 YR-24 HR RAINFALL:		7.0 IN.	
85TH PERCENTILE RAINFALL:		1.0 IN.	
PRE DEVELOPMENT:			
PERVIOUS AREA	=	0.19 AC. (5%)	
IMPERVIOUS AREA	=	3.48 AC. (95%)	
$Q_{2YR-24HR}$	=	3.34	CFS
$Q_{10YR-24HR}$	=	7.47	CFS
$Q_{25YR-24HR}$	=	9.74	CFS
$Q_{50YR-24HR}$	=	11.80	CFS
$V_{85TH\,\%}$	=	11393	CF

LEGEND:

- D1 — SUB-AREA NUMBER
- 3.68 AC — ACREAGE
- MAJOR-AREA BOUNDARY PROPERTY LINE
- SUB-AREA BOUNDARY
- FLOW PATH
- (X) NODE

OFFSITE FLOW NOTE:
THERE ARE NO OFFSITE FLOWS DISCHARGING THROUGH THE SITE IN EXISTING OR PROPOSED CONDITIONS.

1" = 30'
0 7.5 15 30

REGISTERED PROFESSIONAL ENGINEER ALI MONSHIZADEH C67674 EXP. 06/30/2021 CIVIL STATE OF CALIFORNIA

PLAN PREPARED BY:
MFKessler
Civil Engineering, Land Planning, Surveying
ONE VENTURE, SUITE 130
IRVINE, CA 92618
(949) 339-5330
MFKESSLER.COM

CITY OF WEST COVINA

DEVELOPED CONDITIONS
2539 E. GARVEY NORTH
WEST COVINA, CALIFORNIA

SHEET
1 OF 1

Low Impact Development

Property Address:
2539 E. Garvey North
West Covina, CA 91791

Prepared by:
MFKessler
1 Venture
Irvine, CA 92618
(949) 339-5330
Contact: Ali Monshizadeh P.E.

LID Preparation Date:
May 2020

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Owner/Developer
Approval and Certification
Of the
Low Impact Development

Project Name: **(Mazda Site)**

Project Number: (204-006)

Project Address: **2539 E. Garvey North**

This Low Impact Development (LID) for the Mazda Site development has been prepared for Bentley Real Estate; by MFKessler. It is intended to comply with the requirements of the City of West Covina Conditions of Approval for development of the subject site.

The undersigned is authorized to approve implementation of provisions of this plan as appropriate and will strive to have the plan carried out by successors consistent with the County of Los Angeles LID requirements and the intent of the NPDES storm water requirements.

"I certify under penalty of law that this document and all attachments were prepared under my jurisdiction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathered the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Owner/Developer Signature Date

Owner/Developer's Name and Title Telephone Number

CERTIFICATION

This Low Impact Development Plan (LID) has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer (Engineer) attests to the technical information contained herein and the engineering data upon which the following design, recommendations, conclusions and decisions are based. The selection, sizing, and preliminary design of stormwater treatment and other control measures in this report meet the requirements and subsequent amendments.

_____ _____

Ali Monshizadeh [DATE]
REGISTERED CIVIL ENGINEER

Section 200

A. Contact Information/List of Responsible Parties

The property contact information is:

Bentley Real Estate
1932 E. Garvey South
West Covina, CA 91719
Contact: Jeff Tuck
(626) 974-7690

The property owner shall have primary responsibility and significant authority for the implementation, maintenance, and inspection of the property BMPs. Duties of the Owner include but are not limited to:

- Implementing all elements of the LID, including but not limited to:
  - Implementation of prompt and effective erosion and sediment control measures
  - Implementing all non-storm water management, and materials and waste management activities, such as: monitoring, discharges, general site clean-up; vehicle and equipment cleaning, spill control; ensuring that no materials other than storm water are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems, etc.
- Pre-storm inspections
- Storm event inspections
- Post-storm inspections
- Routine inspections as described in the LID
- Ensuring elimination of all unauthorized discharges
- The Owner shall be assigned authority to mobilize crews in order to make immediate repairs to the control measures.
- Coordinate all the necessary corrections/repairs are made immediately, and that the project always complies with the LID.
- Managing and report any Illicit Connections or Illegal Discharges.

Section 300

A. References

The following documents are made a part of this LID by reference:

- Project plans and specifications for Grading and Utilities, prepared by MFKessler, 1 Venture Suite 130, Irvine, CA 92618
- California Stormwater BMP Handbook – Construction, January 2015
- California Stormwater BMP Handbook – New Development and Redevelopment, January 2003
- The Los Angeles County MS4 Permit (Order R4)
- The Los Angeles County LID Manual 2014

Section 400 – Body of LID

A. Objectives

This Low Impact Development (LID) has four main objectives:

1) Identify all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with daily use / activity (storm water discharges) from the property site.
2) Identify non-storm water discharges.
3) Identify, construct, implement and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the property site.
4) Develop a maintenance schedule for BMPs designed to reduce or eliminate pollutants.

B. Project Background and Description

Existing Conditions: The site is currently an existing car dealership which houses structures and a parking lot. The site is 98% impervious and drains out into Garvey Ave.

	Existing	Proposed
Impervious Area (%)	98	95
85th % Volume (CF)	11,711	11,393
85th % Q (cfs)	1.12	1.06

(Proposed Conditions: The site is proposed to be redeveloped as a commercial project to house various new structures and a parking lot. The entire DCV will be infiltrated on site in underground storm tanks. Overflow will outlet into the public storm drain on Garvey Ave.

See Calculations in Appendix A.

BMP TYPE	PROPOSED SIZE
Underground Infiltration Tank	Per LID Exhibit

C. Vicinity Map

The subject project is located on E. Garvey Ave. North bounded a residential tract to the West of the site and a car dealership to the North.

Please refer to Figure 1 & 2 for Vicinity and Location maps.

D. Existing Site Drainage Condition

The existing site currently does not have any treatment measures implemented and drains from the North to the South of the site, draining out to E. Garvey Ave. North.

E. LID Project Types, Characteristics, & Activities

This proposed development is subject to the City of West Covina requirement for LID implementation. The project is a designated project per section 2.1 of the LA County LID Standards; *All development projects equal to one acre or greater of disturbed area and adding more than 10,000 square feet of impervious surface area;*
Therefore, the project is subject to treating the entirety of DCV.

F. Pollutant Source Identification and BMP Selection

The following is a list of materials to be used in the daily construction activities at the project site, which will potentially contribute to pollutants, other than sediment, to storm water runoff. Control Practices for each activity are identified below:

- Vehicle fluids, including oil, grease, petroleum, and coolants from personal vehicles
- Landscaping materials and wastes (topsoil, plant materials, herbicides, fertilizers, mulch, pesticides)
- General trash debris and litter

Expected pollutants of concern for the proposed project post construction included, oils and grease, suspended solids, metals, gasoline, pesticides, pathogens, nutrients, and trash and liter.

The Best Management Practices (BMPs) that have been selected for implementation on this project are detailed in the following sections.

G. Source Control BMPs

Project proponents shall implement Site Design concepts that achieve each of the following:

- Minimize Urban Runoff
- Minimize Impervious Footprint
- Conserve Natural Areas
- Minimize Directly Connected Impervious Areas (DCIAs)

Table-1: Design BMPs

BMP	TECHNIQUE	INCLUDED? YES	INCLUDED? NO	BRIEF DESCRIPTION OF METHOD
SD-10	Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)	X		
	Maximize Tree Areas by Planting Additional Vegetation (DCIAs) (C-Factor Reduction)	X		Plant trees near impervious areas
	Control and Treat Flows in Landscaping and/or Other Controls Prior to Reaching Existing Natural Drainage Systems. (Runoff Volume Reduction)	X		Direct roof drains into landscape features when applicable

Table - 2: Source Control BMPs

BMP	BMP DESCRIPTION	CHECK ONE: INCLUDED?	CHECK ONE: NOT APPLICABLE	IF NOT APPLICABLE, STATE BRIEF REASON
	Non-Structural Source Control BMPs:			
	Education for Leasers, Operators, Occupants, or Employees	X		
	Activity Restrictions (CC&Rs)	X		

BMP	BMP DESCRIPTION	CHECK ONE		IF NOT APPLICABLE, STATE BRIEF REASON
		INCLUDED?	NOT APPLICABLE	
SD-12	Efficient Irrigation System and Landscape Maintenance	X		
SD-32	Common Area Litter Control	X		
SE-7	Street Sweeping Private Streets and Parking Lots	X		
	Drainage Facility Inspection and Maintenance	X		
	Structural Source Control BMPs:			
SD-13	MS4 Stenciling and Signage			
SD-12	Landscape and Irrigation System Design	X		
SD-10	Protect Slopes and Channels	X		
SD-30	Provide Community Car Wash Racks		X	
	Proper Site Design:			
SD-30	Fueling Areas		X	
SD-33	Air/Water Supply Area Drainage		X	
SD-32	Trash Storage Areas	X		
SD-31	Loading Docks		X	
SD-31	Maintenance Bays		X	

BMP	BMP DESCRIPTION	CHECK ONE		IF NOT APPLICABLE, STATE BRIEF REASON
		INCLUDED?	NOT APPLICABLE	
SD-33	Vehicle and Equipment Wash Areas		X	
SD-35	Outdoor Material Storage Areas		X	
SD-36	Outdoor Work Areas or Processing Areas		X	
	Provide Wash Water Controls for Food Preparation Areas		X	

All BMP's to be accessible for inspection by City personnel during regular business hours.

Non-Structural Measures

Non-structural BMPs are generally managerial, educational, inspection and/ or maintenance oriented. These items consist of educating employees and occupants, developing and implementing Owner guidelines, implementing BMPs and enforcing Code requirements. Non-structural BMPs used for this project are summarized below:

Education for Employees and Occupants

Practical informational materials will be provided to owners, occupants and employees on general good housekeeping practices that contribute to protection of storm water quality. Among other things, these materials will describe the use of chemicals (including household type) that should be limited to the property, with no discharge of specified wastes via hosing or other direct discharge to gutters, catch basins and storm drains.

The property owner will provide these materials. Thereafter, such materials will be available through the property owner education program.

This program must be maintained, enforced, and updated periodically by the property owner. Educational materials including, but not limited to, the materials included in the Appendix section of this plan will be made available to the employees and contractors of the property owner.

Activity Restrictions
Car washing will not be permitted on the subject site. Material storage will not be allowed outside the individual unit.

Common Area Landscape Management
Management programs will be designed and established by the property owner, who will maintain the common areas within the project site. These programs will include how to mitigate the potential dangers of fertilizer and pesticide usage (refer to the Maintenance and Frequency Table).

Ongoing maintenance will be consistent with the State of California Model Water-Efficient Landscape Ordinance.

Fertilizer and pesticide usage shall be consistent with County Management Guidelines for use of Fertilizers and Pesticides.

BMP Maintenance
The property owner(s) will be responsible for implementing each of the BMPs detailed in this plan. The property owner will also be responsible for cleaning and maintaining the BMPs on a regular basis. Maintenance operations should be logged in Appendix G.

Uniform Fire Code Implementation
The property owner will comply with this Code.

Common Area Litter Control
The property owners and the contracted maintenance company will perform required common area litter control

Employee Training
A training program will be established as it would apply to future employees(Landscape), contractors, and leasers of the property owner to inform and train in maintenance activities regarding the impact of dumping oil, paints, solvents, or other potentially harmful chemicals into storm drains; the proper use of fertilizers and pesticides in landscaping maintenance practices; and the impacts of littering and improper water disposal.

Catch Basin Inspection
The property owner will maintain the drainage systems, including catch basins and culverts. The property owner is required to have catch basins inspected and, if necessary, cleaned prior to the storm season, no later than October 15th each year prior to the “first flush” storm. These duties may be contracted out to the landscape maintenance firm hired by the property owner. Please see Appendix E for maintenance program. Maintenance operations should be logged in Appendix G.

Street Sweeping Private Streets and Parking Lots
The property owner shall clean the surface of pavement surfaces by mechanized methods one time a month. Public streets will be swept by City.

H. Structural BMPs

Structural BMPs shall be installed by the developer/ owner, through the construction and development of the project, for instance; slope planting and irrigation systems shall be designed by licensed landscape architects and installed by qualified contractors to specifications and standards of Los Angeles County. The structural BMPs used for this project are summarized below:

With this project we anticipate sediment runoff during construction, on-site trash, and the potential of on-site automobile oil. To mitigate these pollutants, we propose the structural best management practices listed.

Brentwood Storm Tank
The project will implement three underground infiltration tanks to treat the design capture volume as shown on the LID exhibit withing the report for each lot on site. All stormwater on site will be captured in area drains throughout the site and all area drains will be routed through the infiltration basin prior to being outlet into the V-gutter on E. Garvey Ave. North.

Efficient Irrigation
As part of the design of all common area landscape irrigation shall employ water conservation principals, including, but not limited to, such provisions as water sensors, programmable irrigation times (for short cycles), etc., will be used. Such common areas will be maintained by the property owner.

Runoff-Minimizing Landscape Design
As part of the design of all common area landscape areas, similar planting material with similar water requirements will be used in order to reduce excess irrigation runoff and promote surface filtration. Such common areas will be maintained by the property owner/HOA.

Car Wash Racks
No car wash rack or area will be provided, therefore, washing of vehicles by employees on the property will not be allowed.

Trash Container (Dumpster) Areas
Trash enclosures are provided at an on-site location and will be maintained regularly by the property owner. All proposed trash enclosures will be surrounded by walls to minimize transport of trash and liter. Trash enclosure drainage will be directed to pervious pavement areas.

Self Contained Washing
Self-contained washing of vehicles by employees or clients on the property will not be allowed.

Outdoor Material Storage Areas
Outdoor material storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Outdoor Storage by homeowners on the property will not be allowed.

Catch Basin Stenciling
Phrase "No Dumping – Drains to Ocean" or equally effective phrase to be stenciled on catch basins to alert the public to the destination of pollutants discharged into storm water. This stenciling will be inspected and re-stenciled on a periodic basis by the property owner. Please see Figure five (5) for maintenance frequency.

Inlet trash Racks
No inlet trash racks are proposed for this project.

I. BMP Maintenance, Inspection, and Repair

Inspections will be conducted as follows:

- Annually prior to the start of the rainy season
- Every (1) month during rainy season
- At any other time(s) or intervals of time specified in the contract documents

An inspection form shall be completed at least once per year prior to the start of the rainy season. This inspection check-sheet (see Appendix G) shall always be included in this report and kept onsite. The check-sheet should be filled out completely and clearly indicate any BMPs that need repair or maintenance. These repairs and/ or maintenance procedures shall be carried out at the soonest possible time.

A legible log shall be kept on site to record the inspection of the stormwater pollution abatement control measures. The record must contain the following information: (i) type of maintenance activities or source-control practices; (ii) date the activities are completed; and (iii) the name of the operator performing the activities. During transfer of ownership/operation of the facility, the current owner must notify the new owner/operator of the BMPs and the associated maintenance activities that also transfer to the new owner/operator of the property. See Appendix G.

J. Inspection, Maintenance, and Responsibility for BMPs

The following tables show the lists of the post-construction BMPs (routine non-structural and structural), the required ongoing maintenance, the inspection and maintenance frequency, the inspection criteria, and the entity or party responsible for implementation, maintenance, and/or inspection.

Table-4: Non-Structural BMP Maintenance Responsibility/Frequency Matrix

BMP	RESPONSIBILITY	FREQUENCY
Leaser/ Occupant Education, Activity Restrictions	The property owner will provide educational materials.	Continuous. Maintenance/ Educational materials to be provided to leasers/ occupants at the time they lease the apartment and updates provided by the property owner as they occur.
Common Area Landscape Management	The property owner through its landscape maintenance contractor	Monthly during regular maintenance and use with management guidelines for use of fertilizers and pesticides.
BMP Maintenance	The property owner through its landscape maintenance contractor	Inspection to check for trash and/or biomass collection to ensure landscaping drainage is adequate. Inspection to occur bi-annually and/or before and after rain events.
Title 22 CC&R Compliance	Property Owner will provide directions to tenants	Upon lease.
Litter Control by Sweeping	The property owner through its landscape maintenance contractor.	Daily inspection of trash receptacles to ensure that lids are closed and pick up any excess trash on the ground, noting trash disposal violations to the property owner for remediation.
Employee Training	The property owner will train the landscape contractors after construction.	Monthly for maintenance personnel and employees to include the educational materials contained in the approved LID.

Table-5: Structural BMP Maintenance Responsibility/Frequency Matrix

BMP	RESPONSIBILITY	FREQUENCY
Common Area Efficient Irrigation	The property owner through its landscape contractors after construction	Once a week, in conjunction with maintenance activities. 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.
Common Are Catch Basin Inspection	The property owner through its landscaping contractors	Once a week in conjunction with maintenance activities to ensure drainage of catch basin is not obstructed.
Common Area Runoff Efficient Landscape Design	The property owner through its landscaping contractors	Once a week in conjunction with maintenance activities and prior to finalizing any replanting schemes. Verify that plants continue to be grouped according to similar water requirements in order to reduce excess irrigation runoff.
Trash Storage Areas	Property Owner	Monthly to ensure trash enclosures are properly covered.
Underground Stormtank	The property owner providing maintenance	Bi-annually or per manufactures recommendations.

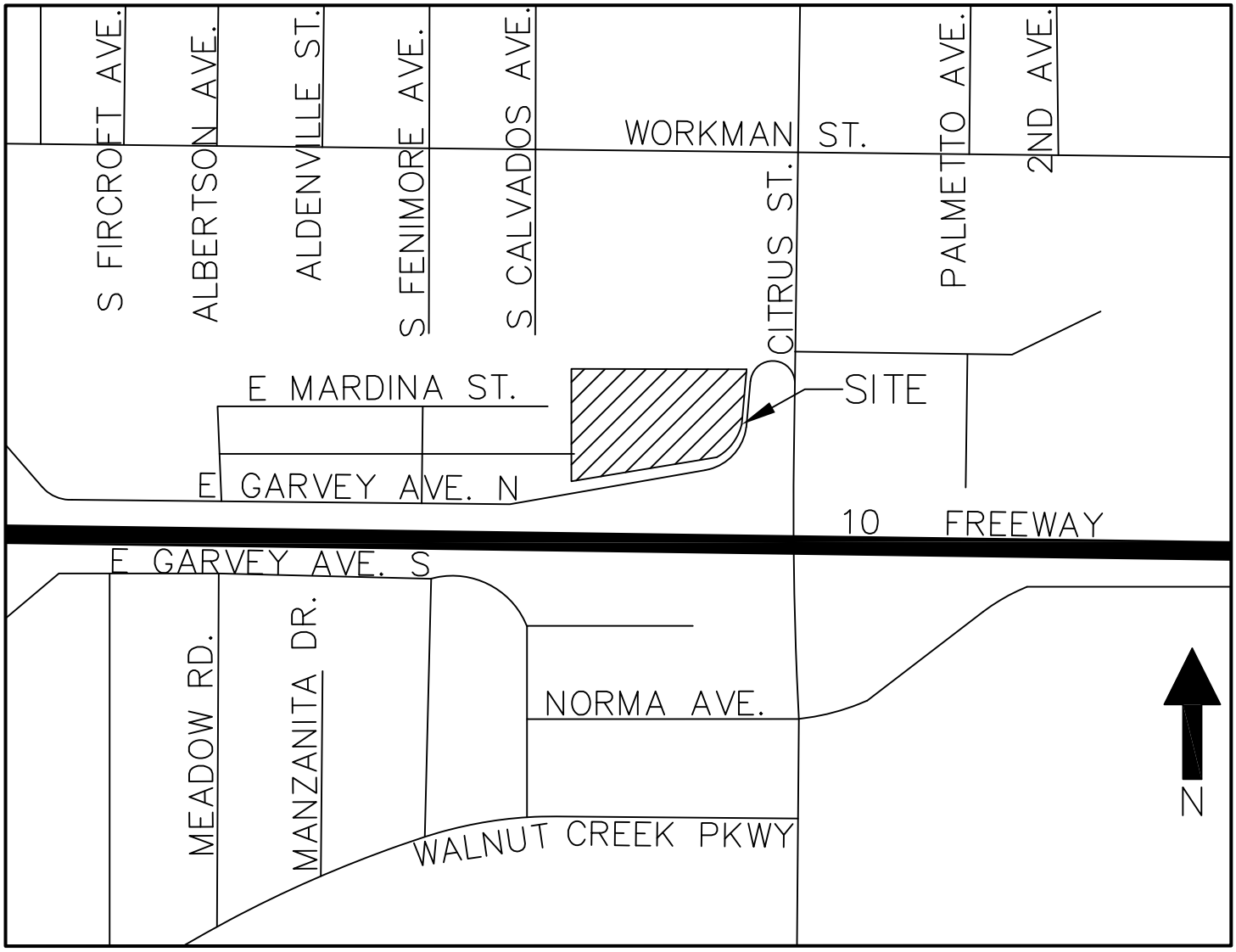
K. Operation/Maintenance Funding after Project Completion

The post-construction BMPs as described above will be funded and maintained by:

Bentley Real Estate
1932 E. Garvey South
West Covina, CA 91719
Contact: Jeff Tuck
(626) 974-7690

- Maintenance requirements and responsibilities for the property will be listed in the Maintenance Contract for this project and will always be the responsibility of the property owner.
- The owner is aware of the maintenance responsibility of the proposed BMP. A funding mechanism is in place to maintain the BMP at the frequency stated in the LID plan.

Figure -1: Project Vicinity Map



VICINITY MAP

N.T.S.

Figure -2: Project Location Map

(2539 E. Garvey North)

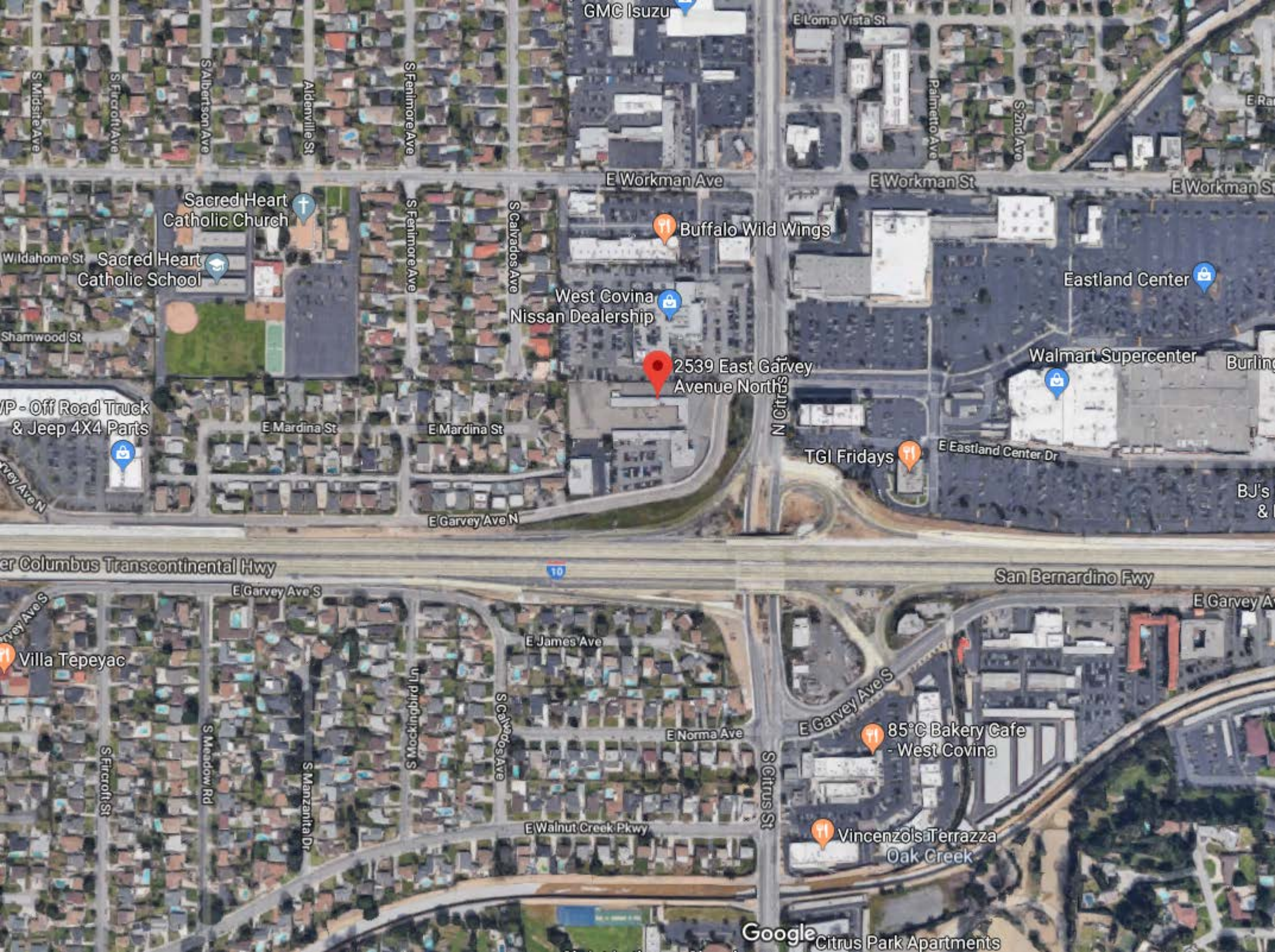
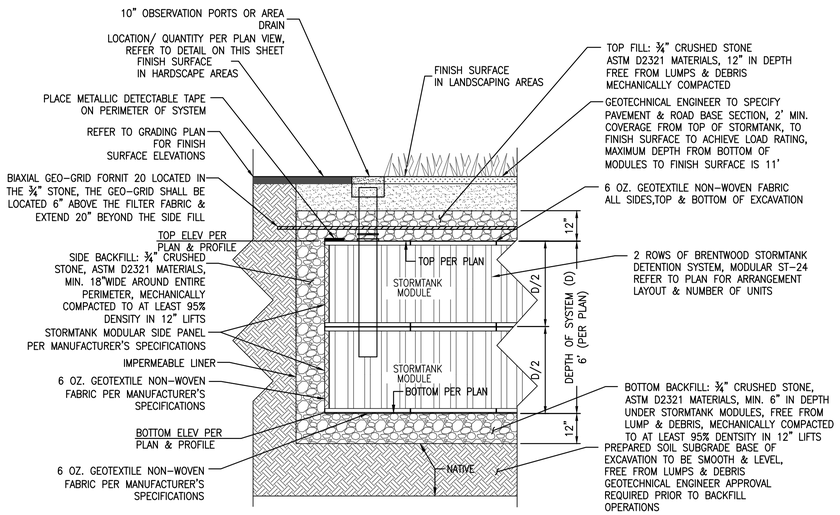

GMC Isuzu
E Loma Vista St
S Midsite Ave
S Fircroft Ave
S Albertson Ave
Aldenville St
S Fenimore Ave
Palmetto Ave
S 2nd Ave
E Workman Ave
E Workman St
Sacred Heart Catholic Church
Buffalo Wild Wings
Wildahome St
Sacred Heart Catholic School
S Calvados Ave
West Covina Nissan Dealership
Eastland Center
Shamwood St
2539 East Garvey Avenue North
Walmart Supercenter
N Citrus
P - Off Road Truck & Jeep 4X4 Parts
E Mardina St
E Mardina St
TGI Fridays
E Eastland Center Dr
E Garvey Ave N
er Columbus Transcontinental Hwy
10
San Bernardino Fwy
E Garvey Ave S
Villa Tepeyac
E James Ave
S Kingbird Dr
S Meadow Rd
S Manzanita Dr
E Norma Ave
E Garvey Ave S
85°C Bakery Cafe - West Covina
S Citrus St
E Walnut Creek Pkwy
Vincenzo's Terrazza Oak Creek
Google
Citrus Park Apartments

Figure -3:
LID Plan Exhibit

LID EXHIBIT
MAZDA SITE



W1 **BRENTWOOD UNDERGROUND STORAGE SYSTEM**
NOT TO SCALE

DMA 1
SOIL TYPE: 013
50 YR-24 HR RAINFALL: 7.0 IN.
85TH PERCENTILE RAINFALL: 1.0 IN.

POST DEVELOPMENT:
PERVIOUS AREA = 0.08 AC. (5%)
IMPERVIOUS AREA = 1.46 AC. (95%)

$Q_{25YR-24HR}$ = 1.88 CFS
$Q_{100YR-24HR}$ = 4.13 CFS
$Q_{250YR-24HR}$ = 5.08 CFS
$Q_{500YR-24HR}$ = 5.79 CFS
$V_{85TH\%}$ = 4768 CF

DMA 2
SOIL TYPE: 013
50 YR-24 HR RAINFALL: 7.0 IN.
85TH PERCENTILE RAINFALL: 1.0 IN.

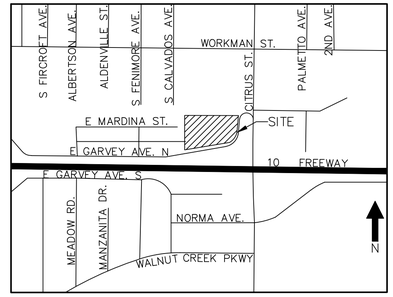
POST DEVELOPMENT:
PERVIOUS AREA = 0.05 AC. (5%)
IMPERVIOUS AREA = 0.92 AC. (95%)

$Q_{25YR-24HR}$ = 1.19 CFS
$Q_{100YR-24HR}$ = 2.60 CFS
$Q_{250YR-24HR}$ = 3.20 CFS
$Q_{500YR-24HR}$ = 3.64 CFS
$V_{85TH\%}$ = 3003 CF

DMA 3
SOIL TYPE: 013
50 YR-24 HR RAINFALL: 7.0 IN.
85TH PERCENTILE RAINFALL: 1.0 IN.

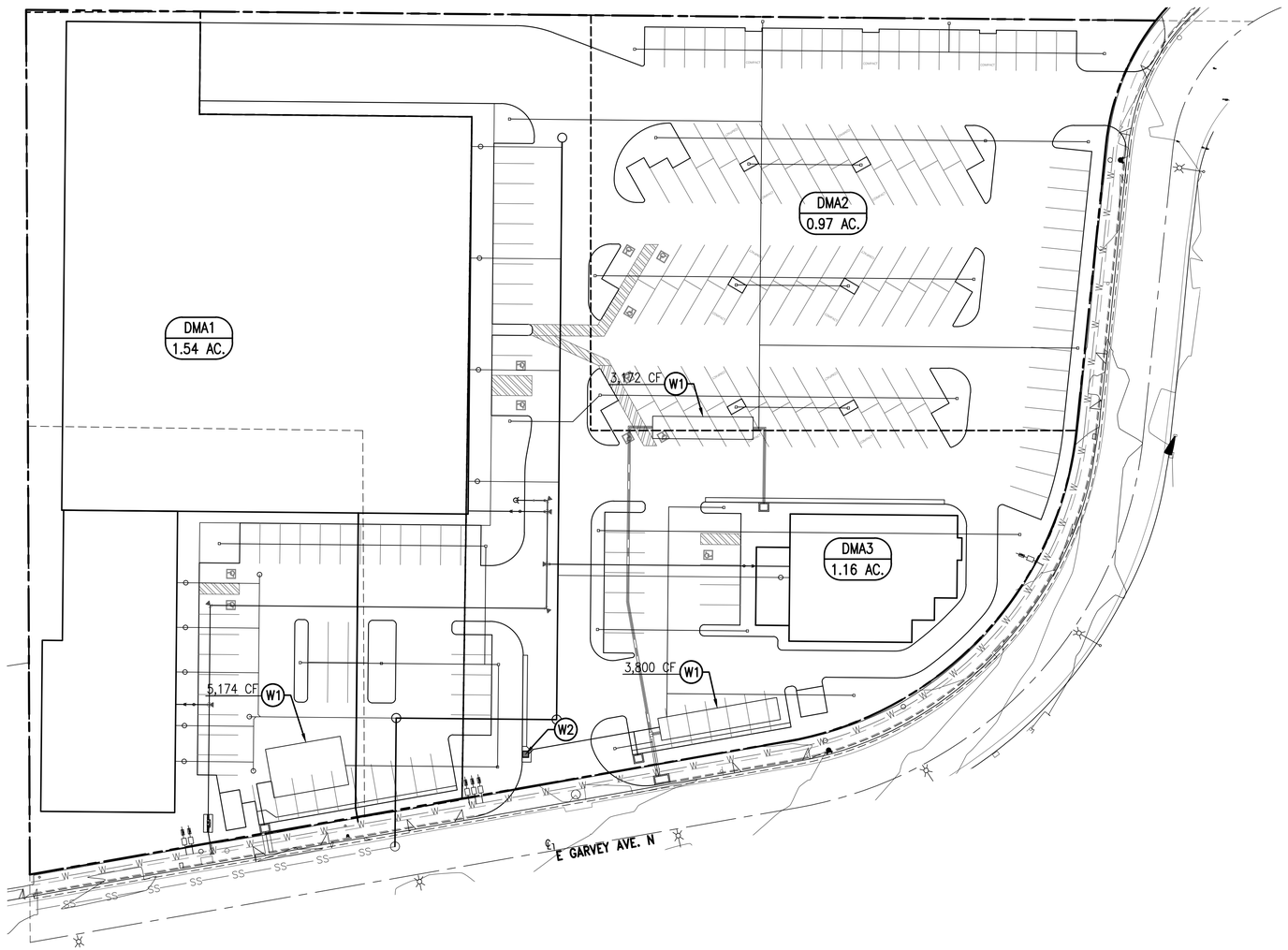
POST DEVELOPMENT:
PERVIOUS AREA = 0.06 AC. (5%)
IMPERVIOUS AREA = 1.10 AC. (95%)

$Q_{25YR-24HR}$ = 1.42 CFS
$Q_{100YR-24HR}$ = 3.11 CFS
$Q_{250YR-24HR}$ = 3.83 CFS
$Q_{500YR-24HR}$ = 4.36 CFS
$V_{85TH\%}$ = 3591 CF



VICINITY MAP
N.T.S.

AREA IDENTIFIER	DMA1	DMA2	DMA3
SWQDv (CF)	4767	3003	3591
VOLUME PROVIDED (CF)	5174	3172	3800



BEST MANAGEMENT PRACTICES NOTES:

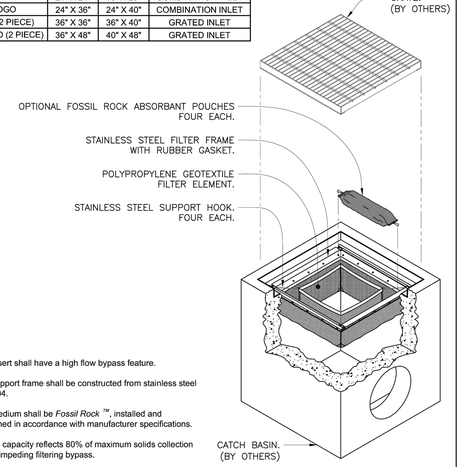
W1 — INSTALL BRENTWOOD STORMTANK TO INFILTRATE THE V85TH%.

W2 — INSTALL KRISTAR FLOGARD PLUS CATCH BASIN FILTER INSERT, FLOGARD TRASH AND DEBRIS GUARD OR APPROVED EQUAL.

FG-0001

SPECIFIER CHART

MODEL	INLET ID	GRATE OD	COMMENTS
FF-12D	12" X 12"	15" X 15"	GRATED INLET
FF-16D	16" X 16"	18" X 18"	GRATED INLET
FF-18D	18" X 18"	20" X 20"	GRATED INLET
FF-1836SD	18" X 36"	18" X 40"	GRATED INLET
FF-1836DGO	18" X 36"	18" X 40"	COMBINATION INLET
FF-24D	24" X 24"	26" X 26"	GRATED INLET
FF-2436SD	24" X 36"	24" X 40"	GRATED INLET
FF-24DGO	24" X 24"	18" X 26"	COMBINATION INLET
FF-2436DGO	24" X 36"	24" X 40"	COMBINATION INLET
FF-36D (2 PIECE)	36" X 36"	36" X 40"	GRATED INLET
FF-3648D (2 PIECE)	36" X 48"	40" X 48"	GRATED INLET



NOTES:
1. Filter insert shall have a high flow bypass feature.
2. Filter support frame shall be constructed from stainless steel Type 304.
3. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.
4. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.

Inlet Filtration

FloGard®
Catch Basin Insert Filter
Grated Inlet Style

Oldcastle® Stormwater Solutions
7501 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph. 800.579.8819 | oldcastlestormwater.com

DRAWING NO.	REV	ECO	DRN	DATE
FG-0001	E	ECO-0142 JPR 7/13/16	JPR	12/18/06

SHEET 1 OF 2

W2 **FLOGARD PLUS CATCH BASIN INSERT**
NOT TO SCALE

1" = 30'
0 7.5 15 30

REGISTERED PROFESSIONAL ENGINEER ALI MONSHIZADEH C67674 EXP. 06/30/2021 CIVIL STATE OF CALIFORNIA

PLAN PREPARED BY:
MFKessler
Civil Engineering. Land Planning. Surveying.
ONE VENTURE, SUITE 130
IRVINE, CA 92618
(949) 339-5330
MFKESSLER.COM

CITY OF WEST COVINA

LID EXHIBIT
MAZDA SITE
2539 E. GARVEY NORTH

SHEET 1 OF 1

PROJ: 204-006 Dwg: P:\204-006\Dwg\Sheets\LID-LID.dwg By: arunner May 18, 2020 - 10:35:51am

Figure -4: Impaired Waters

Water Body	303(d) listed contaminants
Walnut Creek Wash:	Benthic Community Effects, Indicator Bacteria, pH
San Gabriel River Reach 3	Indicator Bacteria
San Gabriel River Reach 2	Cyanide, Lead, Temperature
San Gabriel River Reach 1	pH, Temperature
San Gabriel River Estuary	Copper, Dioxin, Indicator Bacteria
San Pedro Bay	Chlordane, PCBs, Total DDT, Toxicity

Appendix A: Calculations

2539 E. Garvey North, West Covina, CA

Infiltration StormTank Sizing Calculation:

	DMA 1	DMA 2	DMA 3
Area of Site (ac)	1.54	0.97	1.16
SWQDv (cf)	4,767	3,003	3,591
Storage Dimension-length, l (ft)	***47***	***45***	***54***
Storage Dimension-width, w (ft)	***15***	***10***	***10***
Storage Dimension-height, d (ft)	***6***	***6***	***6***
Gravel Width-side, lg (ft)	0.5	0.5	0.5
Gravel Width-top,wg (ft)	1.0	1.0	1.0
Gravel Width-bot,dg (ft)	1.0	1.0	1.0
Actual Storage Volume,V (cf)	**4784**	**3104**	**3718**

Peak Flow Hydrologic Analysis

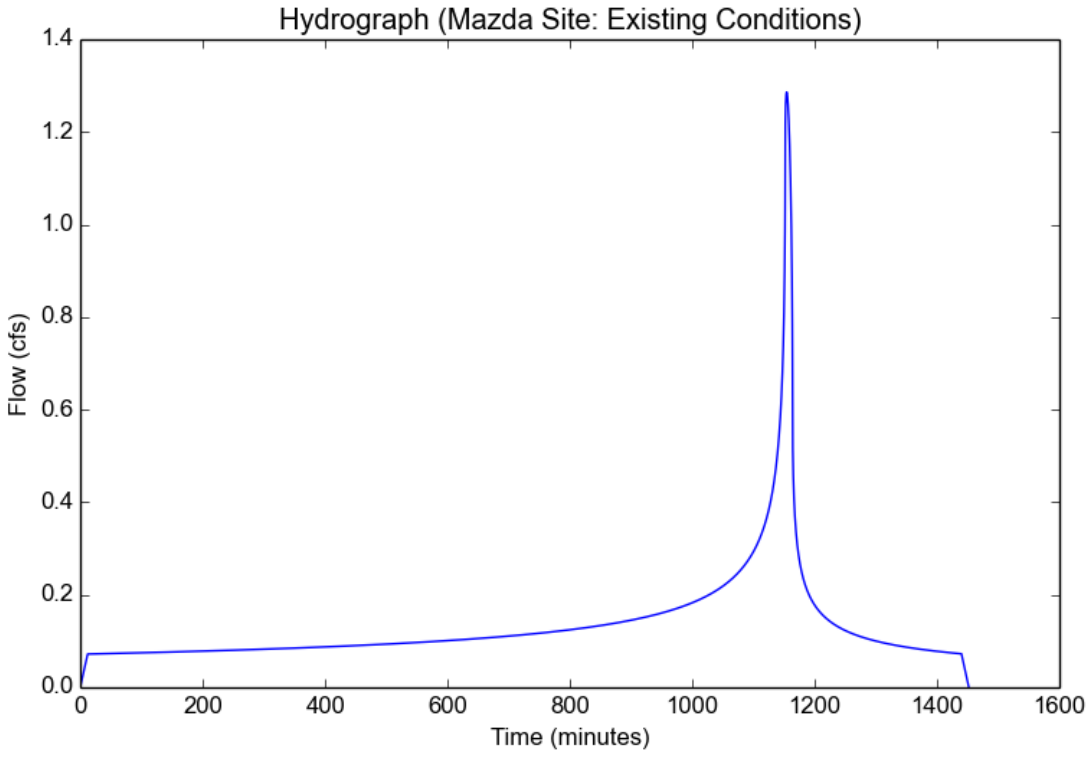
File location: P:/204-006/Reports/Hydrology/HydroCalc/x85.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda Site
Subarea ID	Existing Conditions
Area (ac)	3.68
Flow Path Length (ft)	200.0
Flow Path Slope (vft/hft)	0.02
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.98
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3954
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.884
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	1.2862
Burned Peak Flow Rate (cfs)	1.2862
24-Hr Clear Runoff Volume (ac-ft)	0.2689
24-Hr Clear Runoff Volume (cu-ft)	11711.2533



Peak Flow Hydrologic Analysis

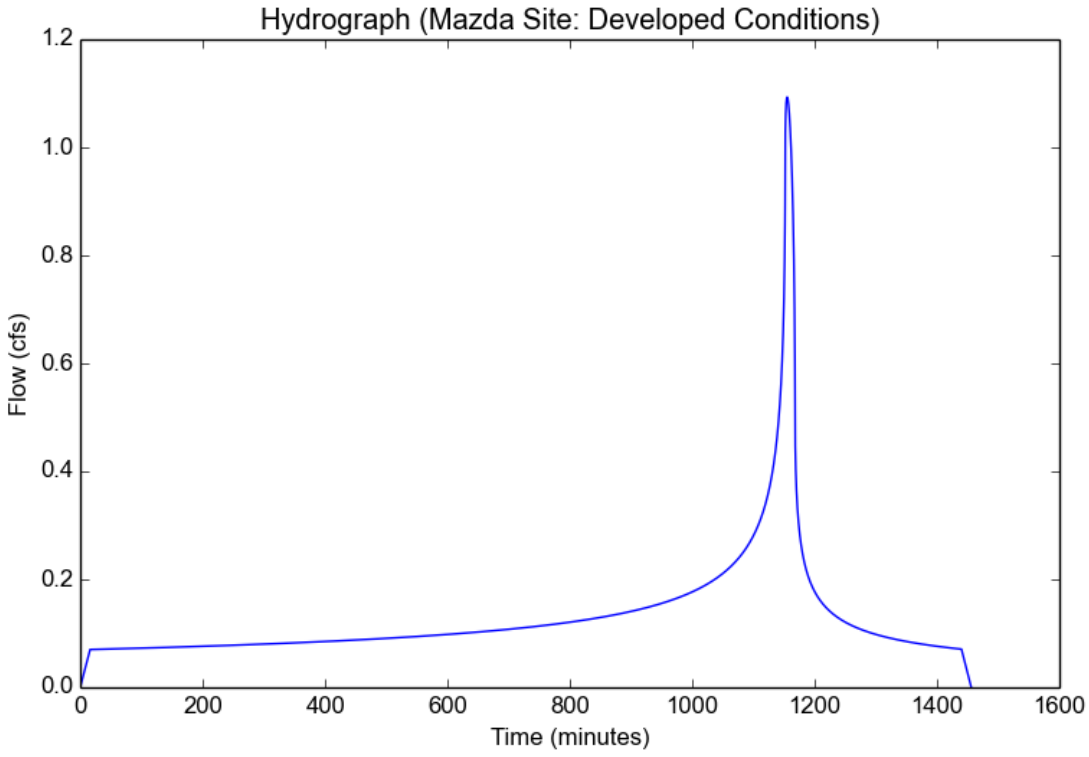
File location: P:/204-006/Reports/Hydrology/HydroCalc/d85.pdf
Version: HydroCalc 1.0.2

Input Parameters

Project Name	Mazda Site
Subarea ID	Developed Conditions
Area (ac)	3.68
Flow Path Length (ft)	310.0
Flow Path Slope (vft/hft)	0.02
85th Percentile Rainfall Depth (in)	1.0
Percent Impervious	0.95
Soil Type	13
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

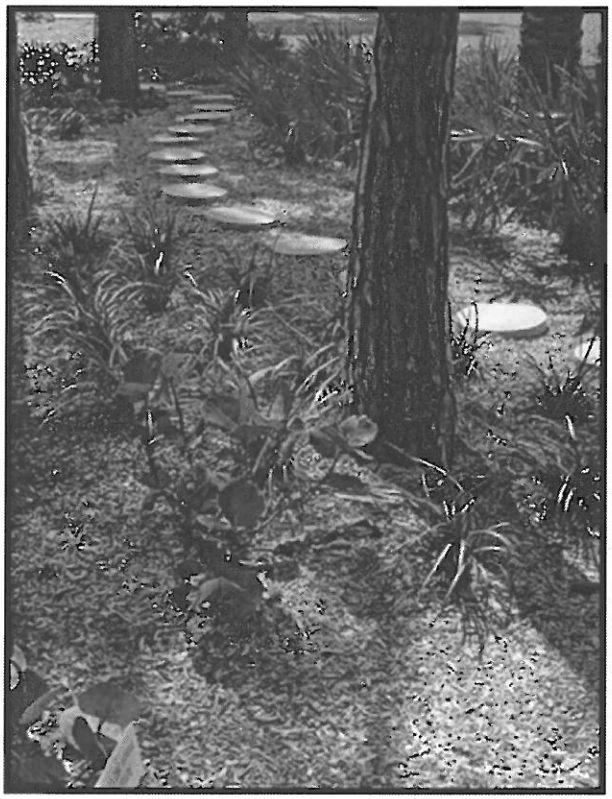
Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	1.0
Peak Intensity (in/hr)	0.3454
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.86
Time of Concentration (min)	16.0
Clear Peak Flow Rate (cfs)	1.093
Burned Peak Flow Rate (cfs)	1.093
24-Hr Clear Runoff Volume (ac-ft)	0.2616
24-Hr Clear Runoff Volume (cu-ft)	11393.3169



Appendix B: Site BMPs

Site Design & Landscape Planning SD-10



Design Objectives

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

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

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

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

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

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

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

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

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

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

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

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

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

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

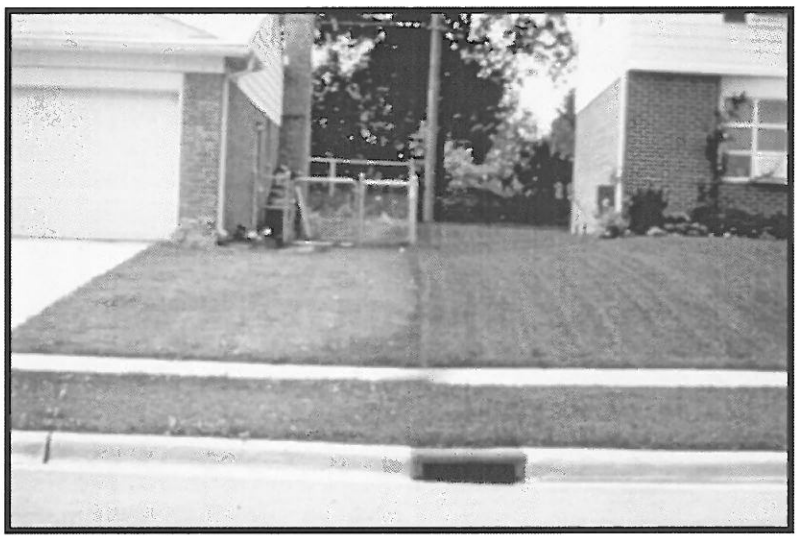
Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12



Design Objectives

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

Description

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

Approach

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

Suitable Applications

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

Design Considerations

Designing New Installations

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

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

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

Redeveloping Existing Installations

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

Other Resources

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

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

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

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

Storm Drain Signage SD-13

Design Objectives

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

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

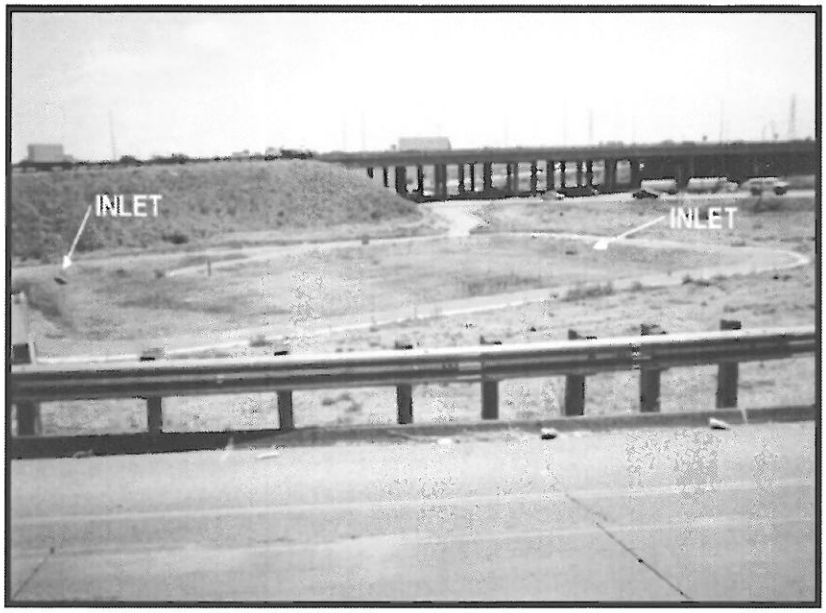
A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

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

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

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

Infiltration Basin TC-11



Design Considerations

- Soil for Infiltration
- Slope
- Aesthetics

Targeted Constituents

☑	Sediment	■
☑	Nutrients	■
☑	Trash	■
☑	Metals	■
☑	Bacteria	■
☑	Oil and Grease	■
☑	Organics	■

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually exfiltrates through the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

California Experience

Infiltration basins have a long history of use in California, especially in the Central Valley. Basins located in Fresno were among those initially evaluated in the National Urban Runoff Program and were found to be effective at reducing the volume of runoff, while posing little long-term threat to groundwater quality (EPA, 1983; Schroeder, 1995). Proper siting of these devices is crucial as underscored by the experience of Caltrans in siting two basins in Southern California. The basin with marginal separation from groundwater and soil permeability failed immediately and could never be rehabilitated.

Advantages

- Provides 100% reduction in the load discharged to surface waters.
- The principal benefit of infiltration basins is the approximation of pre-development hydrology during which a

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significant portion of the average annual rainfall runoff is infiltrated and evaporated rather than flushed directly to creeks.

- If the water quality volume is adequately sized, infiltration basins can be useful for providing control of channel forming (erosion) and high frequency (generally less than the 2-year) flood events.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Infiltration basins require a minimum soil infiltration rate of 0.5 inches/hour, not appropriate at sites with Hydrologic Soil Types C and D.
- If infiltration rates exceed 2.4 inches/hour, then the runoff should be fully treated prior to infiltration to protect groundwater quality.
- Not suitable on fill sites or steep slopes.
- Risk of groundwater contamination in very coarse soils.
- Upstream drainage area must be completely stabilized before construction.
- Difficult to restore functioning of infiltration basins once clogged.

Design and Sizing Guidelines

- Water quality volume determined by local requirements or sized so that 85% of the annual runoff volume is captured.
- Basin sized so that the entire water quality volume is infiltrated within 48 hours.
- Vegetation establishment on the basin floor may help reduce the clogging rate.

Construction/Inspection Considerations

- Before construction begins, stabilize the entire area draining to the facility. If impossible, place a diversion berm around the perimeter of the infiltration site to prevent sediment entrance during construction or remove the top 2 inches of soil after the site is stabililized. Stabilize the entire contributing drainage area, including the side slopes, before allowing any runoff to enter once construction is complete.
- Place excavated material such that it can not be washed back into the basin if a storm occurs during construction of the facility.
- Build the basin without driving heavy equipment over the infiltration surface. Any equipment driven on the surface should have extra-wide ("low pressure") tires. Prior to any construction, rope off the infiltration area to stop entrance by unwanted equipment.
- After final grading, till the infiltration surface deeply.
- Use appropriate erosion control seed mix for the specific project and location.

Performance

As water migrates through porous soil and rock, pollutant attenuation mechanisms include precipitation, sorption, physical filtration, and bacterial degradation. If functioning properly, this approach is presumed to have high removal efficiencies for particulate pollutants and moderate removal of soluble pollutants. Actual pollutant removal in the subsurface would be expected to vary depending upon site-specific soil types. This technology eliminates discharge to surface waters except for the very largest storms; consequently, complete removal of all stormwater constituents can be assumed.

There remain some concerns about the potential for groundwater contamination despite the findings of the NURP and Nightingale (1975; 1987a,b,c; 1989). For instance, a report by Pitt et al. (1994) highlighted the potential for groundwater contamination from intentional and unintentional stormwater infiltration. That report recommends that infiltration facilities not be sited in areas where high concentrations are present or where there is a potential for spills of toxic material. Conversely, Schroeder (1995) reported that there was no evidence of groundwater impacts from an infiltration basin serving a large industrial catchment in Fresno, CA.

Siting Criteria

The key element in siting infiltration basins is identifying sites with appropriate soil and hydrogeologic properties, which is critical for long term performance. In one study conducted in Prince George's County, Maryland (Galli, 1992), all of the infiltration basins investigated clogged within 2 years. It is believed that these failures were for the most part due to allowing infiltration at sites with rates of less than 0.5 in/hr, basing siting on soil type rather than field infiltration tests, and poor construction practices that resulted in soil compaction of the basin invert.

A study of 23 infiltration basins in the Pacific Northwest showed better long-term performance in an area with highly permeable soils (Hilding, 1996). In this study, few of the infiltration basins had failed after 10 years. Consequently, the following guidelines for identifying appropriate soil and subsurface conditions should be rigorously adhered to.

- Determine soil type (consider RCS soil type 'A, B or C' only) from mapping and consult USDA soil survey tables to review other parameters such as the amount of silt and clay, presence of a restrictive layer or seasonal high water table, and estimated permeability. The soil should not have more than 30% clay or more than 40% of clay and silt combined. Eliminate sites that are clearly unsuitable for infiltration.

- Groundwater separation should be at least 3 m from the basin invert to the measured ground water elevation. There is concern at the state and regional levels of the impact on groundwater quality from infiltrated runoff, especially when the separation between groundwater and the surface is small.

- Location away from buildings, slopes and highway pavement (greater than 6 m) and wells and bridge structures (greater than 30 m). Sites constructed of fill, having a base flow or with a slope greater than 15% should not be considered.

- Ensure that adequate head is available to operate flow splitter structures (to allow the basin to be offline) without ponding in the splitter structure or creating backwater upstream of the splitter.

- Base flow should not be present in the tributary watershed.

Secondary Screening Based on Site Geotechnical Investigation

- At least three in-hole conductivity tests shall be performed using USBR 7300-89 or Bouwer-Rice procedures (the latter if groundwater is encountered within the boring), two tests at different locations within the proposed basin and the third down gradient by no more than approximately 10 m. The tests shall measure permeability in the side slopes and the bed within a depth of 3 m of the invert.

- The minimum acceptable hydraulic conductivity as measured in any of the three required test holes is 13 mm/hr. If any test hole shows less than the minimum value, the site should be disqualified from further consideration.

- Exclude from consideration sites constructed in fill or partially in fill unless no silts or clays are present in the soil boring. Fill tends to be compacted, with clays in a dispersed rather than flocculated state, greatly reducing permeability.

- The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move in the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Additional Design Guidelines

(1) Basin Sizing - The required water quality volume is determined by local regulations or sufficient to capture 85% of the annual runoff.

(2) Provide pretreatment if sediment loading is a maintenance concern for the basin.

(3) Include energy dissipation in the inlet design for the basins. Avoid designs that include a permanent pool to reduce opportunity for standing water and associated vector problems.

(4) Basin invert area should be determined by the equation:

$$A = \frac{WQV}{kt}$$

where A = Basin invert area (m^2)

WQV = water quality volume (m^3)

k = 0.5 times the lowest field-measured hydraulic conductivity (m/hr)

t = drawdown time (48 hr)

(5) The use of vertical piping, either for distribution or infiltration enhancement shall not be allowed to avoid device classification as a Class V injection well per 40 CFR146.5(e)(4).

Maintenance

Regular maintenance is critical to the successful operation of infiltration basins. Recommended operation and maintenance guidelines include:

- Inspections and maintenance to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.
- Observe drain time for the design storm after completion or modification of the facility to confirm that the desired drain time has been obtained.
- Schedule semiannual inspections for beginning and end of the wet season to identify potential problems such as erosion of the basin side slopes and invert, standing water, trash and debris, and sediment accumulation.
- Remove accumulated trash and debris in the basin at the start and end of the wet season.
- Inspect for standing water at the end of the wet season.
- Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.
- Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of the basin.
- If erosion is occurring within the basin, revegetate immediately and stabilize with an erosion control mulch or mat until vegetation cover is established.
- To avoid reversing soil development, scarification or other disturbance should only be performed when there are actual signs of clogging, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a very light tractor.

Cost

Infiltration basins are relatively cost-effective practices because little infrastructure is needed when constructing them. One study estimated the total construction cost at about $2 per ft (adjusted for inflation) of storage for a 0.25-acre basin (SWRPC, 1991). As with other BMPs, these published cost estimates may deviate greatly from what might be incurred at a specific site. For instance, Caltrans spent about $18/ft^3 for the two infiltration basins constructed in southern California, each of which had a water quality volume of about 0.34 ac.-ft. Much of the higher cost can be attributed to changes in the storm drain system necessary to route the runoff to the basin locations.

Infiltration basins typically consume about 2 to 3% of the site draining to them, which is relatively small. Additional space may be required for buffer, landscaping, access road, and fencing. Maintenance costs are estimated at 5 to 10% of construction costs.

One cost concern associated with infiltration practices is the maintenance burden and longevity. If improperly maintained, infiltration basins have a high failure rate. Thus, it may be necessary to replace the basin with a different technology after a relatively short period of time.

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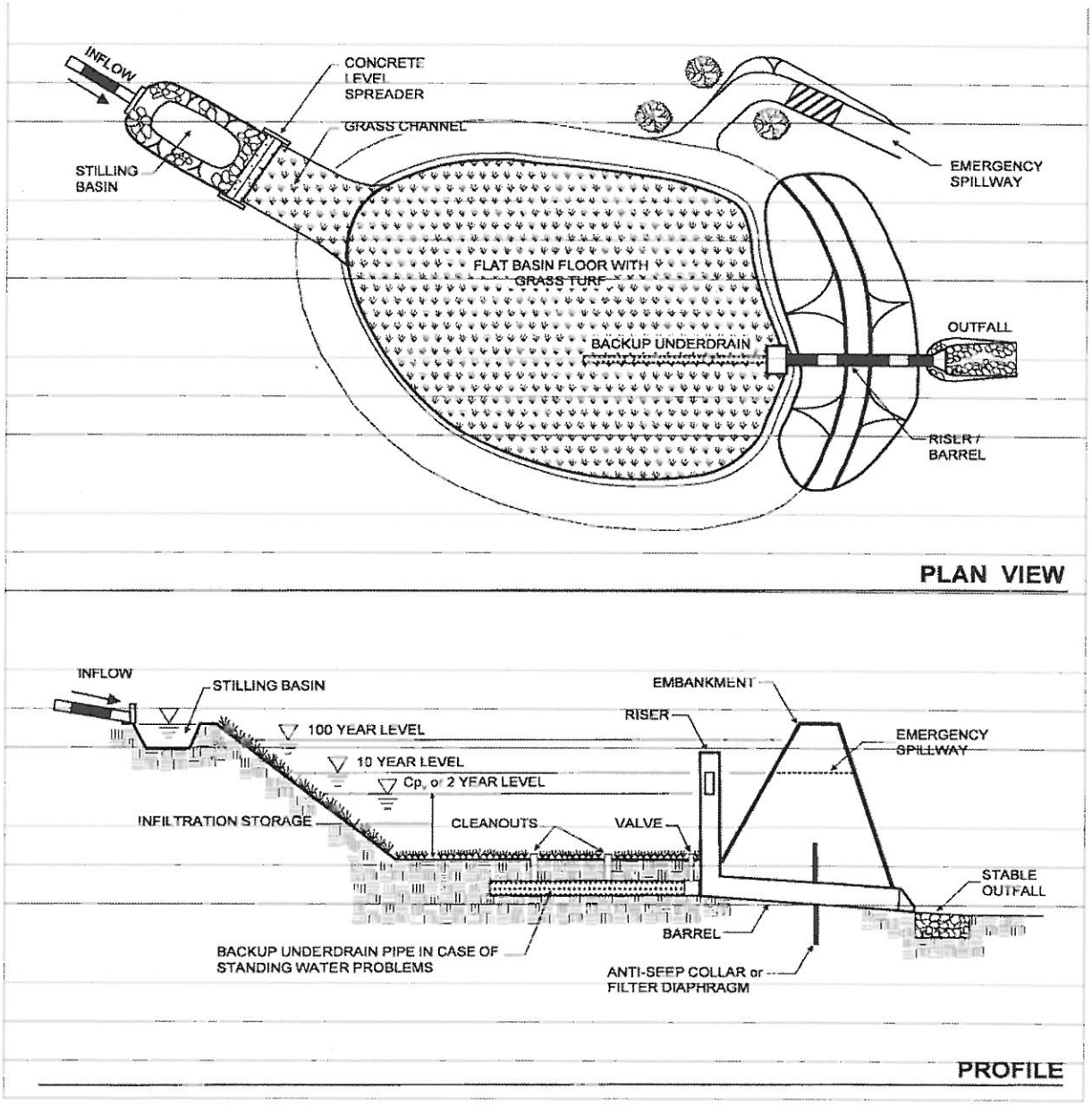
INFLOW
CONCRETE LEVEL SPREADER
GRASS CHANNEL
STILLING BASIN
EMERGENCY SPILLWAY
FLAT BASIN FLOOR WITH GRASS TURF
OUTFALL
BACKUP UNDERDRAIN
RISER / BARREL
PLAN VIEW
INFLOW
STILLING BASIN
EMBANKMENT
RISER
100 YEAR LEVEL
10 YEAR LEVEL
Cp, or 2 YEAR LEVEL
EMERGENCY SPILLWAY
INFILTRATION STORAGE
CLEANOUTS
VALVE
STABLE OUTFALL
BARREL
BACKUP UNDERDRAIN PIPE IN CASE OF STANDING WATER PROBLEMS
ANTI-SEEP COLLAR or FILTER DIAPHRAGM
PROFILE

Appendix C: Geotechnical Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Los Angeles County, California, Southeastern Part

September 4, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,050 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Los Angeles County, California, Southeastern Part
Survey Area Data: Version 5, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 16, 2014—Jul 2, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1002	Urban land-Palmview-Tujunga complex, 0 to 5 percent slopes	1.7	47.4%
1138	Urban land-Azuvina-Montebello complex, 0 to 5 percent slopes	1.9	52.6%
Totals for Area of Interest		**3.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Los Angeles County, California, Southeastern Part

1002—Urban land-Palmview-Tujunga complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2pt3t
Elevation: 240 to 1,990 feet
Mean annual precipitation: 15 to 30 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Urban land: 45 percent
Palmview and similar soils: 25 percent
Tujunga and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Alluvial fans

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Frequency of flooding: Rare

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Palmview

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Discontinuous human-transported material over alluvium derived from granite

Typical profile

^A - 0 to 5 inches: fine sandy loam
^Au - 5 to 15 inches: fine sandy loam
2C1 - 15 to 45 inches: fine sandy loam
2C2 - 45 to 55 inches: fine sandy loam
2C3 - 55 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained

Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Tujunga

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Discontinuous human-transported material over alluvium derived from granite

Typical profile

^Au - 0 to 6 inches: sandy loam
2C1 - 6 to 35 inches: loamy sand
2C2 - 35 to 72 inches: loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Typic xerorthents, sandy substratum

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

San emigdio

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

1138—Urban land-Azuvina-Montebello complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2pt42
Elevation: 70 to 1,420 feet
Mean annual precipitation: 14 to 23 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 355 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Urban land: 45 percent
Azuvina and similar soils: 25 percent
Montebello and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Fan remnants

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Azuvina

Setting

Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Parent material: Discontinuous human-transported material over old alluvium derived from granite

Typical profile

^A1 - 0 to 5 inches: loam
^A2 - 5 to 14 inches: loam
2Bt1 - 14 to 24 inches: clay loam
2Bt2 - 24 to 43 inches: sandy clay loam
2BCt1 - 43 to 57 inches: loam
2BCt2 - 57 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Montebello

Setting

Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Human-transported material over alluvium derived from granite

Typical profile

^A - 0 to 4 inches: silt loam
^C - 4 to 34 inches: clay loam
2Bt1 - 34 to 53 inches: loam
2Bt2 - 53 to 79 inches: loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: High (about 10.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Palmview

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Pachic argixerolls, fine

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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Appendix D:
"NO DUMPING – DRAINS TO OCEAN" Stencil Example

Appendix E: General Education Materials

Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids in the street or gutter. Take them to your local auto parts store, gas station or repair shop, or a household hazardous waste Roundup for recycling.

1(888)CLEAN LA
www.888CleanLA.com

...not automotive fluids.

Car Care Tips:

You can keep your car running smoothly and efficiently, and at the same time help prevent stormwater pollution by taking these easy steps...

- When changing vehicle fluids — motor oil, transmission, brake and radiator fluids — drain them into separate drip pans to avoid spills. Do not combine these fluids. Do not dispose of these fluids in the street, gutter or garbage. It is illegal.
- If a spill occurs, use kitty litter, sawdust or cornmeal for cleanup. Do not hose or rinse with water.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visitwww.888CleanLA.com for the location of an auto parts store or gas station that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Regularly check and maintain your car to keep it running safely and efficiently. Water runoff from streets, parking lots and driveways picks up oil and grease drippings, asbestos from brake linings, zinc from tires and organic compounds and metals from spilled fuels and carries them to the ocean.

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Storm Drains are for Rain...

More than 80,000 dog owners walk their dogs each month and repeatedly leave disease-causing animal waste laying on the ground. Dog waste washes from the ground and streets into storm drains, and flows straight to the ocean — untreated.

Remember to bring a bag and clean up after your dog.

...they're not pooper scoopers.

1(888)CLEAN LA
www.888CleanLA.com

Dog Owner Tips:

Dog owners can help solve the stormwater pollution problem by taking these easy steps...

- Clean up after your dog every single time.
- Take advantage of the complimentary waste bags offered in dispensers at local parks.
- Ensure you always have extra bags in your car so you are prepared when you travel with your dog.
- Carry extra bags when walking your dog and make them available to other pet owners who are without.
- Teach children how to properly clean up after a pet. Encourage them to throw the used bags in the nearest trash receptacle if they are away from home.
- Put a friendly message on the bulletin board at the local dog park to remind pet owners to clean up after their dogs.
- Tell friends and neighbors about the ill effects of animal waste on the environment. Encourage them to clean up after pets as well.

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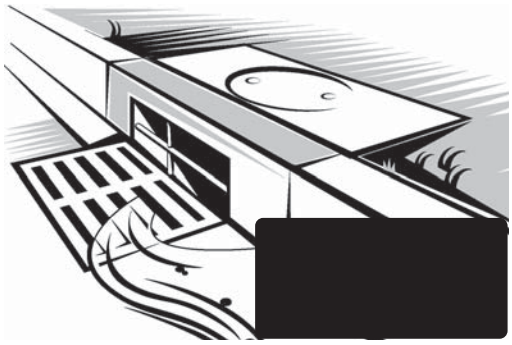
Storm Drains are for Rain...

More than 390,000 times each month, lawns and gardens throughout LA County are overwatered. This can cause fertilizers and pesticides on grass and plants to flow into storm drains and to the ocean, untreated — harming the environment.

Please use fertilizers and pesticides wisely, not before a rain, and water carefully.

...not fertilizer.



1(888)CLEAN LA
www.888CleanLA.com

Fertilizing Tips:

Fertilizers contain toxic chemicals that are harmful to people and the environment. You can keep your lawn and garden green and, at the same time, solve the pollution problem by taking these easy steps.

- Do not over-fertilize and do not fertilize near ditches, gutters or storm drains.
- Follow the directions on the label carefully.
- Do not overwater after fertilizing. Overflow water and your fertilizer will run into the street, down the storm drain and into the ocean.
- Do not fertilize before a rain.
- Store fertilizers and chemicals in a covered area and in sealed containers to prevent runoff.
- Do not blow, sweep, hose or rake leaves or other yard trimmings into the street, gutter or storm drain.

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COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

AND THE SANITATION DISTRICTS OF
LOS ANGELES COUNTY

YOUR HOUSEHOLD HAZARDOUS WASTE GUIDE

Your Guide to Household Hazardous waste

IN LOS ANGELES COUNTY

1-888-CLEAN-LA
www.888CleanLA.com

PROJECT Pollution PREVENTION

phone numbers

Los Angeles County Environmental Hotline **1-888-CLEAN-LA (1-888-253-2652) www.888CleanLA.com**

Information on Household Hazardous Waste Collection Events, certified used motor oil recycling centers, recycling, composting and other County environmental programs. Residents can report illegal dumping into the storm drain system.

Los Angeles Deptartment of Health Services **1-800-427-8700 www.ladhs.org**

Los Angeles County Fire Department Health & Hazardous Materials Division **323-890-4089 www.lacofd.org**

Information on waste management and regulatory compliance.

County Sanitation Districts of Los Angeles County **1-800-238-0172 www.lacsd.org**

Information on wastewater treatment and solid waste facilities, water reuse, industrial waste, and Household Hazardous Waste Collection Events.

Los Angeles City Residential and Small Business HHW Program **1-800-98-TOXIC (1-800-988-6942)**

Information on upcoming Household Hazardous Waste Collection Events, certified used motor oil recycling centers and hazardous waste collection from qualifying small businesses.

City of Los Angeles Stormwater Hotline **1-800-974-9794 www.lastormwater.org**

Report abandoned waste, accidental spills, clogged catch basins, illegal dumping, and illicit discharges into the streets or storm drain system.

California Environmental Protection Agency (CAL/EPA) **916-445-3846 www.calepa.ca.gov**

Information on CAL/EPA and how to safeguard California's natural environment — air, water, and land.

California Integrated Waste Management Board (CIWMB) **916-341-6000 www.ciwmb.ca.gov**

Information on waste reduction programs, recycling centers, composting and grasscycling.

Earth's 911 **800-CLEAN-UP (1-800-253-2687) www.1800cleanup.org**

Information on environmental programs nationwide.

Los Angeles Regional Drug & Poison Information Center **1-800-8-POISON (1-800-876-4766) www.calpoison.org**

24-hour emergency information on poison contact including swallowing, eye or skin irritation, inhalation, animal or insect bites, food or drug reactions, and pet exposure.

National Inhalant Prevention Coalition (NIPC) **1-800-269-4237 www.inhalants.org**

Information on toxic products that are used as inhalants.

National Office of Housing and Urban Development (HUD) **1-800-HUDS-FHA 1-800-483-7342 www.hud.gov/consumer/hhhchild.cfm**

Tips on making your home safe and healthy.

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YOUR HOUSEHOLD HAZARDOUS WASTE GUIDE

What is household hazardous waste?

Household hazardous waste is any product labeled: toxic, poison, corrosive, flammable, combustible or irritant that is to be disposed of.

A typical home can contain a vast array of household hazardous products used for cleaning, painting, beautifying, lubricating and disinfecting the house, yard, workshop and garage.

The chemical-based household products from a single home may seem insignificant; but, when millions of homes across Los Angeles County use similar products — handling, storing and disposing of them improperly — the combined effect becomes a major problem. The health and safety of people and animals, as well as the health of our communities and the environment is endangered when these types of products are discarded in household garbage, sinks or storm drains.

The health and safety of our families, neighborhoods and environment is threatened when household hazardous waste is stored or disposed of improperly.

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The following are examples of household hazardous products that may be found in and around your home:

Lawn/Garden-Care Products

Bug spray
Fertilizer
Pesticide/insecticide
Fungicide
Herbicide
Weed killer

Paint and Paint-Related Products

Latex/water-based paint
Oil-based paint
Turpentine paint stripper
Rust remover
Paint thinner
Varnish

Automotive Fluids and Batteries

Used motor oil and filters
Gasoline and diesel fuel
Kerosene
Auto body repair products
Windshield washer solution
Antifreeze
Brake and transmission fluid
Lead acid batteries
Metal polish with solvent

Beauty Products and Medicines

Alcohol-based lotions
Isopropyl alcohol
Medicine
Nail polish and nail polish remover
Hair relaxers, dyes and permanents
Products in aerosol cans

Household Cleaners

Ammonia-based cleaners
Oven and drain cleaners
Floor care products
Aerosol cleaners
Window cleaners
Furniture polish
Metal polishes and cleaners
Tub, tile and toilet bowl cleaners

Miscellaneous

Fluorescent lights
Mercury thermometers
Photographic chemicals
Lighter fluid
Shoe polish
Fiberglass epoxy
Swimming pool chemicals
Moth balls
Glue
Mercury batteries

For more information about the date and location of Household Hazardous Waste Collection Events and certified used motor oil recycling centers, please contact:

1-888-CLEAN-LA
www.888CleanLA.com

PROJECT Pollution PREVENTION

County of Los Angeles
Department of Public Works
and the Sanitation Districts of
Los Angeles County

Dangers of improper disposal

When used, stored and disposed of according to label directions, most household products like cleaners, beauty products, medicines, auto fluids, paint and lawn care products pose little hazard to people or to the environment.

Improper disposal of HHW includes throwing it in the trash, pouring it on the ground, flushing down the toilet, sink or drain, or pouring it in the gutter or storm drain.

However, these products may become dangerous and hazardous when used, stored or disposed of carelessly.

When thrown in with the regular trash, household hazardous waste can injure sanitation workers. In addition, the hazardous waste will end up in landfills not intended or permitted for those type of wastes which could in turn impact groundwater.

When poured on the ground, household hazardous waste may seep into and contaminate our groundwater and/or the ocean we swim in.

When flushed down a toilet, sink or drain, household hazardous waste goes through the sewage system to treatment plants not equipped to handle hazardous waste. At treatment plants, hazardous waste interferes with the biological treatment process by killing bacteria and contaminating the effluent that runs into the ocean and the biosolids which cannot then be reused as fertilizer.

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When hazardous waste is thrown on the street, it goes down storm drains leading into our area waterways, impacting the Pacific Ocean, our lakes, and our local beaches.

The illegal dumping of hazardous waste carries a minimum fine of $5,000 per day per violation up to $100,000 per day per violation and imprisonment.

Section 25189.5,
Health & Safety Code.

Improper use, storage and disposal of household hazardous products can potentially harm our families, children, and pets, pollute our neighborhoods and contaminate our ground, water and air.

Poisoning Prevention Tips:

- Keep all hazardous products in their original containers and out-of-reach of children. Medicines should have child-resistant caps.
- Install child safety latches on all drawers or cabinets containing harmful products.
- Store harmful products away from food.
- Keep original labels on all containers, read and follow directions carefully.
- Keep syrup of ipecac on hand and have the Poison Control Center number on the telephone.

To report illegal dumping, call 1-888-CLEAN-LA.

For more information about the date and location of Household Hazardous Waste Collection Events and certified used motor oil recycling centers, please contact:

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County of Los Angeles
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YOUR HOUSEHOLD HAZARDOUS WASTE GUIDE

Safe use, storage, and disposal practices

Many of the products found in our homes are toxic. They can cause serious human and animal health and environmental problems if used, stored and disposed of improperly. The simple practices listed below can help keep your family, home, neighborhood and environment safe.

Do's

Dispose of household hazardous waste properly by taking it to a Collection Event scheduled near you. Call 1-888-CLEAN-LA for more information.

- Think carefully before buying a product. Do you really need it? Do you already have something similar?
- Buy just enough to do the job.
- Look for a non-hazardous or less hazardous substitute.
- Read the label and follow use, storage and disposal directions carefully. Watch for signal words such as *caution*, *warning*, *poison* or *danger*. If directions are unclear, contact the manufacturer or dealer before using.
- Keep all chemical products and waste out of reach of children and animals.
- Keep leftover products in original labeled containers so that you can refer to directions for use and proper disposal.
- Share unused products with others if each product is in its original container with a label.
- Dispose of household hazardous waste properly by taking it to a Collection Event scheduled near you.
- Locate auto repair shops and gas stations that recycle used motor oil, antifreeze and batteries.
- Completely finish products in containers before disposal. Clean, empty containers can be put in the trash. (Note: Some cities will even recycle empty paint cans and aerosol containers.)
- Triple rinse all containers of water-soluble materials. Use rinse water according to label directions.

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Don’ts

- Do not dump leftover products into the street, storm drains or ground. It is illegal.
- Do not burn used or leftover products or product containers. Burning may produce toxic fumes and contribute to air pollution.
- Do not bury leftover products or containers in your yard or garden.
- Do not reuse pesticide or other chemical containers for other purposes.
- Do not mix chemical products or wastes.
- Do not put any household hazardous waste in the trash or sink.
- Do not repackage chemical products in containers that are normally used for food products or soft drinks. Children have died from drinking chemicals stored in soft drink and juice bottles.
- Do not store corrosives, flammables and poisons together. Separate these containers.
- Never mix household hazardous materials. Dangerous reactions can occur.
- Do not smoke, eat or drink when handling household hazardous products.

The illegal dumping of hazardous waste carries a minimum fine of $5,000 per day per violation up to $100,000 per day per violation and imprisonment.

Section 25189.5,
Health & Safety Code.

To report illegal dumping, call 1-888-CLEAN-LA.

For a list of alternative products or for more information about the date and location of Household Hazardous Waste Collection Events and certified used motor oil recycling centers, please contact:

1-888-CLEAN-LA
www.888CleanLA.com

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County of Los Angeles
Department of Public Works
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Los Angeles County

YOUR HOUSEHOLD HAZARDOUS WASTE GUIDE

Events for collecting household hazardous waste

A Household Hazardous Waste Collection Event, operated by the County of Los Angeles Department of Public Works and the Los Angeles County Sanitation Districts, is a one-day, drive-through event where residents are invited to a specific location to drop off their household hazardous waste.

FREE HHW Collection Events are held WEEKLY in Los Angeles County.

Collection events are scheduled in different areas throughout the County. They are free, open to the public and are usually held on a Saturday from 9 a.m. to 3 p.m. No appointment is needed.

The City of Los Angeles operates collection events which service over 20 different areas each year within the City of Los Angeles. All residents in the County are invited to dispose of their household hazardous waste at these events. They are free and usually operated Friday through Saturday (occasionally Thursday through Saturday) from 9 a.m. to 3 p.m.

Additionally, certain cities have set up their own collection events for city residents. Call your city for more information, or our hotline at 1-888-CLEAN-LA for the location and date of any of the collection events near you or look up the schedule on the Internet at www.888CleanLA.com.

What Happens to Household Hazardous Waste Collected by the County?

Most of the paint is reused for the County's anti-graffiti program. Motor oil is recycled/ reused

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as lubricants, marine diesel fuel, supplemental fuel and tar by-products such as asphalt cover and re-refined motor oil. Miscellaneous solvents are reused as supplemental fuel in the manufacture of cement.

Household hazardous waste that cannot be recycled or reused is carefully packed into special drums for disposal.

Preparing Household Hazardous Waste for a Collection Event

- Pack household hazardous waste in a cardboard box so that it does not spill during transport. Be prepared to leave your containers.
- Put like chemicals together. Separate unlike chemicals.
- Label materials that are not in their original containers.
- Make sure containers are not leaking and lids are tightly sealed.
- Put your box of household hazardous waste in the trunk of your car, away from passengers during transport.
- At the collection site, trained personnel will ask you to remain in your car while they remove the household hazardous waste from your trunk.

Certified Used Oil Collection Centers

Many private businesses like gas stations, auto parts stores and auto repair shops participate in used motor oil recycling programs. In Los Angeles County there are more than 650 such locations.

County Household Hazardous Waste Collection Events will NOT accept:

- **Radioactive waste**
- **Ammunition**
- **Explosives**
- **Infectious/medical waste**
- **Compressed gas cylinders**
- **Business/commercial waste**

For more information about the date and location of Household Hazardous Waste Collection Events and certified used motor oil recycling centers, please contact:

1-888-CLEAN-LA
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YOUR HOUSEHOLD HAZARDOUS WASTE GUIDE

How to reduce HHW

One way to reduce the generation of **household hazardous waste** and prevent potential pollution is to find nonhazardous or less hazardous alternative products. This will help protect the health of your family, neighbors and the environment.

What You Can Do to Reduce Household Hazardous Waste

As you make your choices about the use of hazardous and nonhazardous products, remember that the decisions you make affect the way manufacturers design products.

- Use products containing hazardous materials and fertilizers sparingly or use a nonhazardous alternative.
- Before purchasing a product, read the label carefully to make sure it will do what you want it to do. Once you buy something you are also legally responsible for disposing of it properly.
- Buy just what you need to do the job. Use it up. Give leftovers to a friend, neighbor, business or charity that can use them up. Excess pesticide might be offered to a greenhouse or garden center.
- Select water-based products over solvent-based products when available (e.g., paint, glue, shoe polish).
- Avoid aerosol sprays. Choose the pump spray or other alternatives.
- Be smart when you apply pesticides or fertilizers. Do not apply before a rain. Not only will you lose most of the pesticides or fertilizer through runoff, but you also will be harming the environment. Do not overwater after application. Read the label. Do not apply more than is recommended.
- Have a professional change your motor oil. For a few dollars more,

The most common household products involved in poisonings are: prescription and non-prescription drugs, cleaning agents, plants and cosmetics.

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you not only save yourself time and energy, but it's more likely that the used motor oil collected is recycled.

- Dispose of household hazardous waste according to the directions on the container, or at a Household Hazardous Waste Collection Event, a used motor oil recycling center, auto parts store or service station. Call 1-888-CLEAN-LA or check the Internet at www.888CleanLA.com for the location of an event or facility near you.
- Ask for re-refined motor oil for your vehicle. Re-refined oil is oil that has been recycled and then reprocessed so it is as good or better than virgin oil. By using re-refined motor oil, you are closing the loop and saving natural resources.

Consumer Choices

We can easily reduce the amount and toxicity of waste in and around our homes, and at the same time save money.

- Careful planning can help avoid the need for many potentially toxic products; and
- Careful shopping will allow us to find products that can be recycled, reused or be disposed of safely.

Many sources of household hazardous waste can be replaced with other products that are safer, cheaper and equally effective.

Careful planning and shopping lend themselves to source reduction – meaning reducing the amount of hazardous materials entering the household as well as reducing the toxicity of the waste generated.We can do this by shopping thoughtfully, reading labels and looking for non-hazardous or less hazardous products.

For information on alternative products or more information about the date and location of Household Hazardous Waste Collection Events and certified used motor oil recycling centers, please contact:

1-888-CLEAN-LA
www.888CleanLA.com

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YOUR HOUSEHOLD HAZARDOUS WASTE GUIDE

What are alternative products?

Alternative Cleaning Products

Try these easy alternatives to minimize household hazardous products. Most of these products are very common and are found in most household cabinets:

Kitchen

Spray Disinfectant Cleaner

½ cup borax

1 gallon hot water

Dissolve borax in hot water. Wipe down areas to be disinfected.

Abrasive Cleaner for Counter Tops

Sprinkle baking soda or borax, add juice of 1⁄2 lemon and scrub.

Drain Cleaner/Opener

1⁄4 cup vinegar

1⁄4 cup baking soda

Mix ingredients and pour mixture down drain. Let stand for a few minutes and rinse with boiling water.

Oven Cleaner

Mix equal parts of castille soap, borax and water. Let mixture set for 20 minutes and scrub with mixture of baking soda and salt

Window Wash

Juice from one fresh lemon

2 cups water or club soda

1 teaspoon cornstarch

Mix all ingredients and pour into plastic spray bottle. Shake well.

Bathroom

Bathtub/Sink Stains

Scrub with paste made from cream of tartar and hydrogen peroxide.

Soap Film on Fiberglass Surface

Apply baking soda with damp cloth, rub and rinse off residue well.

Soap Film/Mildew on Shower Curtains

Pour full-strength vinegar on the shower curtain to remove soap film and mildew.

Shower-Door Track Cleaning

Pour full-strength vinegar into the track, let soak for a few minutes, rinse.

Toilet Lime Deposit Removal

Pour full strength white vinegar in the bowl, let sit for several hours. Scrub with sturdy brush.

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Other recipes

Spot Remover

Club Soda

Pour on fresh spots and stains to remove wine and foods from clothing, carpets and liners.

Water Spot Furniture Polish

Toothpaste (not gel)

Baking Soda

Pecan

Apply equal parts of toothpaste and baking soda with soft, damp cloth. Rinse out the cloth and wipe off any residue. When the finish is smooth, buff with a clean soft cloth. Restore color and shine by rubbing the spot with the meat of a half pecan, then buff.

Dark Wood Furniture Polish

1 tsp. lemon oil

Juice of one lemon

1 tsp. brandy or whisky

1 tsp. water

Mix and apply with soft cloth. Must be made fresh each time.

Unscented Wood Polish

3 parts olive oil

1 part vinegar

Mix and apply with soft cloth.

Pet Stains

Soak stained area in warm soapy water. Sponge with equal parts of water and white vinegar. Blot dry.

Pest Repellent

Dog House Flea Repellent

Wash dog house with salt water. Scatter fresh pine needles or cedar shavings under your pet's sleeping pad. Keep bedding clean.

Insecticide

Mix dishwashing liquid and water and spray on infected area.

Ant Repellant

Option 1:

Sprinkle cucumber peelings near ant infestations.

Option 2:

Sprinkle red chili powder, cream of tartar powder, salt or sage near ant infestations.

Visit www.888CleanLA.com for more alternative product recipes.

For information about how to dispose of household hazardous waste please contact:

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and the Sanitation Districts of
Los Angeles County

Upon 72 hours notice, the Department can provide program information and publications in alternate formats or make other accommodations for people with disabilities. To request accommodations ONLY, or for more ADA information, please contact our departmental ADA Coordinator at (626) 458-4081 or TDD (626) 282-7829, Monday through Thursday, from 7:00 a.m. to 5:30 p.m.

HOUSEHOLD HAZARDOUS WASTE FACT SHEETS

The following fact sheets provide detailed information on Household Hazardous Waste and related issues – how to define it, potential health and environmental risks, proper disposal methods, the use of nontoxic, alternative products…and more.

Please use this information as:

- **A quick reference source** to enhance the HHW efforts already ongoing in your city

- **Materials for community outreach and media relations** – they can be reproduced and distributed through your existing community and media outreach channels by accompanying news releases, PSAs, op-eds and letters to the editor. They may also be disseminated to local community-based organizations for insertion in their newsletters or used as information sheets at local community events. And don't forget to include them in your own city bulletins!

How to use these fact sheets:

- These fact sheets are designed to be used independently – each fact sheet has a slightly different focus, yet they all contain core information – such as how to find a Roundup by calling 888-CLEAN-LA or visiting www.888CLEANLA.com.

- Feel free to incorporate your city logo and/or the Project Pollution logo (included in this manual) and use these fact sheets in their current format.

- These materials will also be available shortly on www.888CLEANLA.com. We will notify you when these materials are up on the site for you to download.

Fact sheets provided include:

- What is household hazardous waste?
- Toxic products – dangers of improper storage, management and disposal
- How to dispose of HHW properly
- Make your home a Toxic Free Home – source reduction tips and recipes for nontoxic alternatives to hazardous household products
- Helpful activity-specific tips about safe storage/disposal, source reduction and alternative products and practices
- The stormwater pollution and household hazardous waste connection
- What children should know about household hazardous waste
- Home hazardous product survey for parents and children
- Household hazardous waste and the dangers of inhalant abuse

What is Household Hazardous Waste?

Many people are surprised to learn that Household Hazardous Waste (HHW) extends beyond the more "obvious" items – used motor oil and paint – and includes such daily household products as window cleaners, glue and nail polish. HHW is any toxic product located within the home that poses a threat to public health and environmental safety when handled, stored and/or disposed of improperly. While safe for you to use properly, we must remember that these same products are considered *Hazardous Waste* when we're ready to dispose of the leftover products.

Unusable or unwanted household chemicals that are considered Household Hazardous Waste can easily be identified by carefully reading product labels and checking for any of these key words:

- Caution, Warning or Danger – try to buy products labeled "caution" whenever possible
- Toxic – poisonous or lethal when ingested, touched and or inhaled, even in small quantities
- Corrosive – acids or bases which deteriorate the surface of other materials and/or living tissues by chemical reaction
- Flammable – chemicals that ignite easily

Examples of Household Hazardous Products include:

Paint & Paint-Related Products	Lawn/Garden-Care Products	Beauty Products & Medicines
Turpentine paint stripper	Pesticide/insecticide	Products in aerosol cans
Latex/water-based paint	Weed killer	Alcohol-based lotions
Oil-based paint	Snail killer	Nail polish remover
Rust remover	Bug spray	Isopropyl alcohol
Paint thinner	Fungicide	Expired medicine
Varnish	Herbicide	Hair relaxers
	Fertilizer	Depilatories
		Deodorizers
		Nail polish
Household Cleaners	**Automotive Fluids & Batteries**	**Miscellaneous**
Ammonia-based cleaners	Windshield washer solution	Cell phone rechargeable batteries
Tub & tile cleaners	Auto body repair products	Swimming pool chemicals
Toilet bowl cleaners	Metal polish with solvent	Photographic chemicals
Floor care products	Fuel oil and other oils	Mercury thermometers
Aluminum cleaners	Lead acid batteries	Dry cleaning solvents
Window cleaners	Transmission fluid	Mercury vapor lights
Aerosol cleaners	Brake fluid	Mercury batteries
Copper cleaners	Antifreeze	Fluorescent lights
Furniture polish	Diesel fuel	Fiberglass epoxy
Metal polishes	Motor oil	Lighter fluid
Oven cleaners	Kerosene	Shoe polish
Drain cleaners	Gasoline	Moth balls
	Car wax	Glue

Toxic Products -- Dangers of Improper Storage, Management and Disposal

If you're like most people, you've stored your leftover paint, motor oil, household cleaners and pesticides in a corner or on a shelf in your garage, neglecting it for months -- even years -- at a time. But what you may not know is that these leftover products are potentially dangerous to your family, neighbors, garden and even your pets!

Protect your family:

Each year, a staggering one out of ten children is injured at home from household hazardous chemicals – through inhalation, absorption or contact with the eyes or skin. Handle toxic products with care by following these helpful tips:

DO:

- Follow directions carefully and use only recommended portions
- Store in tightly sealed containers in cool, dry locations
- Store in original container
- Store out of reach of children in locked cupboard

DO NOT:

- Do not repackage chemical products in containers normally used for food products or soft drinks – *Children have died from drinking chemicals stored in soft drink and juice bottles*
- Do not store corrosives, flammables and poisons together – separate these containers
- Do not mix chemical products or wastes – *dangerous reactions can occur*

Do NOT dispose of Household Hazardous Waste the WRONG WAY...

- Do NOT Throw in the Household Garbage:
  Dumping household hazardous waste into garbage bins is dangerous -- *and illegal.* When thrown in with regular trash, household chemicals can cause fires or explosions, injuring sanitation workers and go into landfills not permitted or intended for hazardous waste – where the toxic chemicals could seep into the groundwater -- contaminating our environment.

- Do NOT Dump in Household Toilets, Sinks & Drains:
  When flushed down a toilet, sink or drain, household hazardous waste goes through the sewage system to treatment plants not equipped to handle hazardous waste. At treatment plants, hazardous waste interferes with the treatment process by killing bacteria and contaminating the effluent that runs into the ocean and the sludge which is reused as fertilizer.

- Do NOT Pour in Storm Drains:
  Household hazardous waste illegally dumped into storm drains contaminates our waterways and ocean, significantly affecting our quality of life in Los Angeles County. Many people don't realize that whenever litter, debris, motor oil, paints, fertilizers, pesticides and animal droppings end up in the storm drain system, these contaminants mix with millions of gallons of rainwater and flow untreated into LA County's lakes, rivers and the Pacific Ocean -- causing beach closures, disruption of aquatic life and health hazards for swimmers.

DO Dispose of Your Household Hazardous Waste the RIGHT WAY…

- Household Hazardous Waste Collection Events
  Collection events are held at various sites throughout Los Angeles County and provide residents the opportunity to dispose of their unused toxic products quickly, conveniently and free of charge. They are open to all residents and are usually held on a Saturday from 9am to 3pm.

- Call 1-888-CLEAN-LA or visit www.888CLEANLA.com to find the date and location of a free HHW collection event near you.

- Additionally, some cities provide permanent HHW collection sites that accept unused toxic products from residents of that specific city during defined hours of operations. Call your city for more information about permanent HHW collection facilities.

How to Prepare

- Bring any unused chemicals that may be hazardous
- Keep the waste in its original container
- Make sure the container is not leaking
- Bring the items in a sturdy box that can be left behind
- Do not bring explosives, ammunition, tires, bio-medical waste or radioactive material
- There is a limit of 15 gallons or 125 pounds per vehicle

How to Dispose of Household Hazardous Waste Properly...

❖ Household Hazardous Waste Roundups

HHW collection events are held at various sites throughout Los Angeles County and provide residents the opportunity to dispose of their unused toxic products quickly, conveniently and free of charge. They are open to all residents and are usually held on a Saturday from 9am to 3pm. Additionally, some cities provide permanent HHW collection sites that accept unused toxic products from residents of that specific city during defined hours of operations.

❖ How to prepare:

- Bring any unused chemicals that may be hazardous (latex/oil-based paint, used motor oil, leftover fertilizer, etc.) in a sturdy box
- Make sure the container is not leaking
- Do not mix products together – *dangerous reactions can occur*
- Do not bring explosives, ammunition, tires or radioactive materials

➢ Call 1-888-CLEAN-LA or visit www.888CLEANLA.com for the location and date of a Household Hazardous Waste Roundup near you or call your city for more information about permanent HHW collection facilities.

Dangers of Improper -- *and illegal* -- Disposal...

❖ Household Garbage

Dumping household hazardous waste into garbage bins is dangerous -- *and illegal.* When thrown in with regular trash, household chemicals can cause fires or explosions, injuring sanitation workers and go into landfills not permitted or intended for hazardous waste – where the toxic chemicals could seep into the groundwater -- contaminating our environment.

❖ Household Toilets, Sinks & Drains

When flushed down a toilet, sink or drain, household hazardous waste goes through the sewage system to treatment plants not equipped to handle hazardous waste. At treatment plants, hazardous waste interferes with the treatment process by killing bacteria and contaminating the effluent that runs into the ocean and the sludge which is reused as

❖ Storm Drains

Household hazardous waste illegally dumped into storm drains contaminates our waterways and ocean, significantly affecting our quality of life in Los Angeles County. Many people don't realize that whenever litter, debris, motor oil, paints, fertilizers, pesticides and animal droppings end up in the storm drain system, these contaminants mix with millions of gallons of rainwater and flow untreated into LA County's lakes, rivers and the Pacific Ocean -- causing beach closures, disruption of aquatic life and health hazards for swimmers.

Make Your Home a Toxic.Free.Home.

Take these easy steps to reduce hazardous products in your homes…

- Make an effort to buy products that are water-based, less hazardous and non-toxic
- Buy only the amount you need to do the job
- Avoid aerosol sprays -- choose the pump spray or other alternatives
- USE IT UP -- or give leftovers to a neighbor, business or charity that can use them up
- Be smart when you apply pesticides or fertilizers. Do not apply before a rain -- not only will you lose most of the pesticides or fertilizer through runoff, but you'll also be harming the environment. Also, do not overwater after application. Read the label -- do not apply more than is recommended

Dispose of Your Household Hazardous Waste the RIGHT WAY…

- Household Hazardous Waste Collection Events
  HHW collection events are held at various sites throughout Los Angeles County and provide residents the opportunity to dispose of their unused toxic products quickly, conveniently and free of charge. They are open to all residents and are usually held on a Saturday from 9am to 3pm. Additionally, some cities provide permanent HHW collection sites that accept unused toxic products from residents of that specific city during defined hours of operations.

- Call 1-888-CLEAN-LA or visit www.888CLEANLA.com for the location and date of an upcoming Roundup or call your city for more information about permanent HHW collection facilities.

  How to Prepare
  - Bring any unused materials that may be hazardous
  - Keep the waste in its original container
  - Make sure the container is not leaking
  - Bring the items in a sturdy box that can be left behind
  - Do not bring explosives, ammunition, tires, bio-medical waste or radioactive material
  - There is a limit of 15 gallons or 125 pounds per vehicle

Try these easy and less-toxic alternatives
to minimize household hazardous waste...

KITCHEN

Spray Disinfectant Cleaner

1 teaspoon sodium lauryl sulfate
1 teaspoon borax
2 tablespoons white vinegar
2 cups hot water
¼ teaspoon eucalyptus essential oil
¼ teaspoon lavender essential oil
3 drops tea tree essential oil
Mix all ingredients together and stir until dry ingredients dissolve. Pour into spray bottle for use. Do not use on glass.

Brass/Copper Tarnish Remover

Salt
Flour
White vinegar
Mix together equal parts salt and flour, then add white vinegar to make a paste. Rub into the stain. Repeat if necessary.

Window Wash

Juice from one fresh lemon
2 cups water or club soda
½ teaspoon peppermint essential oil
1 teaspoon cornstarch
Mix all ingredients and pour into plastic spray bottle. Shake well.

Metal Cleaner

Fresh squeezed juice of 2 lemons
1/3 cup baking soda
1 teaspoon fine salt
6 tablespoons clay powder
Mix all ingredients together until pasty. Add water or more clay if needed. Rub paste onto metal with extremely fine steel wool and allow to sit for fifteen minutes. Wash off with a sponge and clear water. Polish metal with a soft cloth. Do not use on aluminum.

Dish Detergent

½ cup clay powder
2 tablespoons lime essential oil
24 cups sodium lauryl sulfate
6 cups baking soda
Mix clay powder and essential oil. Then, in a two-gallon pail or container, combine with the baking soda and sodium lauryl sulfate. Mix well. For liquid soap: add 18 cups boiling water and stir until powder is dissolved.

Abrasive Cleaner

1 cup fine-grade pumice
½ cup clay powder
2 tablespoons grapefruit essential oil
¼ cup baking soda
1/3 cup sodium lauryl sulfate
½ cup boiling water
Mix all ingredients. Apply with a damp sponge or cloth and scrub.

Glassware/Crystal Spot Removal

Dip spotted glassware into water to which a splash of vinegar has been added, dry with lint-free dishcloth.

Silver Polish

Rub with paste of baking soda and water.

Stainless Steel Water Spots

Rub area with clean soft cloth dampened with white vinegar. Wipe dry to avoid spots.

BATHROOM

Bathtub/Sink Stains

Scrub with paste made from cream of tartar and hydrogen peroxide.

Soap Film on Fiberglass Surface

Apply baking soda with damp cloth, rub and rinse off residue well.

Soap Film/Mildew on Shower Curtains

Pour full-strength vinegar on the shower curtain to remove soap film and mildew.

Shower-Door Track Cleaning

Pour full-strength vinegar into the track, let soak for a few minutes, rinse.

Toilet Lime Deposit Removal

Pour full strength white vinegar in the bowl, let sit for several hours. Scrub with sturdy brush.

Toilet Bowl Cleaner

½ teaspoon sodium lauryl sulfate
2 tablespoons baking soda
2 tablespoons vinegar
1 teaspoon orange essential oil
1 teaspoon grapefruit essential oil
2 cups water
Mix all ingredients. Vinegar and baking soda will foam when mixed. Let mixture stand for 10 minutes before pouring into a spray bottle.

PETS

Dog House Flea Repellant

Wash dog houses with salt water. Scatter fresh pine needles or cedar shavings under your pet's sleeping pad. Keep bedding clean.

Pet Stains

Soak stained area in warm soapy water. Sponge with equal parts of water and white vinegar. Blot dry.

Flea Collar

2 tablespoons peppermint essential oil
½ cup plus 2 tablespoons rosemary essential oil
2 tablespoons white cedar essential oil
¼ cup citronella essential oil
2 tablespoons eucalyptus essential oil
Soak a natural fiber rope in mixture and let dry for several hours. Tie around pet's neck.

Flea Shampoo

2 cups boiling water
½ cup sodium lauryl sulfate
¼ cup white vinegar
2 tablespoons peppermint essential oil
½ cup plus 2 tablespoons rosemary essential oil
2 tablespoons white cedar essential oil
¼ cup citronella essential oil
2 tablespoons eucalyptus essential oil
Mix water and sodium lauryl sulfate together until completely dissolved. Cool. Mix vinegar and remaining ingredients and add to sodium lauryl sulfate mixture.

PEST REPELLANT

Mice Repellant

Stuff all cracks around gas and water pipes with steel wool to keep mice out.

Ant Repellant
Sprinkle cucumber peelings near ant infestations.

Anti-Insect Air Spritzer
2 cups vodka
1 tablespoon citronella essential oil
1 tablespoon eucalyptus essential oil
1 teaspoon geranium essential oil
1 teaspoon rosemary essential oil
1 teaspoon orange essential oil
1 teaspoon lemon essential oil
Mix all ingredients and shake well. Mist into air to keep bugs away.

Body Bug Repellant
2 tablespoons citronella essential oil
2 tablespoons rosemary essential oil
2 tablespoons geranium essential oil
2 tablespoons eucalyptus essential oil
½ cup olive oil
Mix all oils together. Dab on clothing and skin. Avoid eyes and mouth.

SPOT REMOVERS

Club Soda
Pour on fresh spots and stains to remove wine and foods from clothing, carpets and linens.

Double Duty Spot Cleaner
1 tablespoon tangerine essential oil (or other citrus oil)
4 tablespoons glycerin
2 tablespoons borax
1 teaspoon sodium lauryl sulfate
Mix essential oil with glycerin; add remaining ingredients.

FURNITURE POLISH

Lemon Scented Polish
1 teaspoon lemon oil
2 cups mineral oil
Mix and apply with soft cloth.

Dark Wood Polish
1 teaspoon olive oil
Juice of one lemon
1 teaspoon brandy or whiskey
1 teaspoon water
Mix and apply with soft cloth. Must be made fresh each time.

Unscented Polish
3 parts olive oil
1 part vinegar
Mix and apply with soft cloth.

Oak Furniture Polish
1 quart of beer
1 tablespoon sugar
2 tablespoons beeswax
Boil beer with sugar and beeswax. When cool, wipe mixture on wood, allow to dry and polish with a soft cloth.

Heat Blemish/Scratch Remover
Rub in mayonnaise and wipe off. Buff with clean cloth.

Water Spot Treatment Polish
Toothpaste (not gel)
Baking soda
Pecan
Apply equal parts toothpaste and baking soda with a soft, damp cloth. Rinse out the cloth and wipe off any residue. When the finish is smooth, buff with a clean soft cloth. Restore color and shine by rubbing the spot with the meat of half a pecan, then buff.

BEAUTY PRODUCTS

Hair Dye Alternatives
Lighten hair:
1 tablespoon lemon juice
1 gallon warm water
Rinse hair with mixture.
Darken hair:
Rinse hair with strong black tea or black coffee.
Red tones:
Rinse with strong tea of rosehips or cloves, or use strong black coffee.

Cover gray:
½ cup dried sage
2 cups water
Boil sage for thirty minutes, then steep for several hours. Apply tea to hair after it cools. Allow to dry, then rinse and dry hair again. Apply weekly until you have the shade you want and then monthly to maintain color.

Hair Shampoo Alternatives

Everyday shampoo:
Castile bar soap
Water
¼ cup olive oil, almond oil or avocado oil
½ cup distilled water
Grate castile bar soap and mix it with water in a blender or food processor. Blend 1 cup of castile liquid with olive oil, avocado or almond oil and distilled water.

Dandruff remedy:
Wet hair and rub in a handful of dry baking soda, then rinse.

Jewelry Cleaning

Rub a small amount of toothpaste on jewelry with finger, rinse well and polish with a soft cloth.

Skin Freshener/Soother
Add pulp-free aloe vera juice to water in a spray bottle and spritz arms, legs, back and face.

PAINTS/REMOVERS

Enamel Paint Drips/Spill Remover

Wipe up spills and drips with a soft wet towel lathered with pumice soap (the sooner the better).

Removing Paint from Skin

Rub with mineral oil. Wash with soap and water.

Arts & Crafts Paints

½ cup cornstarch
2 cups cold water
Food coloring
Mix cornstarch and water in a saucepan. Bring the mixture to boil and continue to boil until it thickens. Let cool slightly. Pour into jars and color each with food coloring.

MISCELLANEOUS HOME MAINTENANCE

Homemade Glues

Option 1:
6 tablespoons gum arabic
1 cup water
½ cup plus 2 tablespoons natural glycerin
Dissolve gum arabic in water, add glycerin, and mix well. Apply to both surfaces with a toothpick or tongue depressor. Hold together for 5 minutes. Make fresh batch each time.

Option 2:
4 tablespoons wheat flour
6 tablespoons cold water
1 ½ cups boiling water
Blend flour into enough cold water to make a smooth paste. Boil water and stir into flour mixture until mixture is translucent. Use when cold.

Option 3:
3 tablespoons cornstarch
4 tablespoons cold water
2 cups boiling water
Blend cornstarch and cold water to make a smooth paste. Stir paste into boiling water, continue to stir until mixture becomes translucent. Use when cold.

Option 4:
4 tablespoons wheat flour
6 tablespoons cold water
1 ½ cups boiled water
Blend wheat flour and water to make a smooth paste. Boil 1 ½ cups water and stir in paste, cooking over very low heat for about 5 minutes. Use when cold.

Removing Grease Spots from Walls

Make a paste of baking soda and water. Apply thick pate to the grease stain and let it dry. Brush the residue off with a soft brush or cloth.

Car Wash Soap

3 cups grated castile soap
½ cup sodium lauryl sulfate
3 cups boiling water
1 tablespoon borax
1 tablespoon balsam fir essential oil

Dissolve castile soap and sodium lauryl sulfate in boiling water; add borax and essential oil and mix well.

Upholstery Cleaner and Rug Shampoo

4 cups water
1 cup white vinegar
3 tablespoons sodium lauryl sulfate
2 teaspoons baking soda
1/8 teaspoon lavender essential oil
1/8 teaspoon ginger essential oil
Mix all ingredients together and fill a handheld rug/upholstery shampoo bottle half full. Shake the bottle vigorously and shampoo furniture using small circular motions. Scrub sudsy area well.

Laundry Soap

¼ cup clay powder
2-3 tablespoons essential oil of choice
13 cups borax
12 cups baking soda
4 cups sodium lauryl sulfate
Mix clay powder and essential oil. Add remaining ingredients and mix well in a 2-3 gallon pail. Use 1/8 cup of laundry powder per load.

Household Hazardous Waste can be DANGEROUS!
Here are a few helpful hints to BE SAFE...

Hazardous Waste is any toxic product located within the home that poses a threat to public health and environmental safety when handled, stored and disposed of improperly. Toxic products can be dangerous to our family's health if not handled properly – here are some tips on safe storage, ways to reduce the amount of household hazardous waste in your home, and proper disposal methods.

How to Handle Hazardous Waste

- Follow directions carefully and use only recommended portions
- Store in tightly sealed containers in cool, dry locations
- Store in original container
- Store out of reach of children in locked cupboard
- Do not reuse pesticide or other chemical containers for other purposes
- Do not repackage chemical products in containers normally used for food products or soft drinks – *Children have died from drinking chemicals stored in soft drink and juice bottles*
- Do not store corrosives, flammables and poisons together – separate these containers
- Do not mix chemical products or wastes – *dangerous reactions can occur*
- Do not smoke, eat or drink when handling household hazardous products
- Use indoor faucets to clean all applicators (paint brushes, cloths, etc.) -- *water from outdoor faucets runs into the street and storm drains, heading out to the ocean, untreated*

How to Reduce the Amount of Hazardous Waste in your Home

- Purchase only needed quantities
- When possible, purchase products that are water-based, less hazardous and non-toxic
- Use products up before purchasing new products
- Share unused products with your neighbors/friends
- Safely dispose of all unused toxic products at Household Hazardous Waste Roundups

Remember These Important Tips When...

- Maintaining Your Car
  - NEVER hose off engine cleaner -- degreasers or tire cleaners. The run-off goes into the storm drains, leading directly into the ocean
  - When changing car fluids, use a drip pan to catch spills. If a spill does occur, apply absorbent materials, such as kitty litter, and dispose of it at a Roundup

    - When disposed of improperly, used motor oil is a major contributor to pollution. There are many locations in Los Angeles County to recycle your oil, oil filters and other automotive fluids. For locations call 1-888-CLEAN-LA or visit www.888CLEANLA.com
- Using Paint and Paint Products
    - Buy water-based latex paint. It does not contain the harsh solvents of oil-based paint, and brushes can be cleaned using water
    - NEVER rinse paint brushes off using outdoor water faucets
    - If you have leftover paint, share it with neighbors or donate to graffiti cleanup organizations
    - NEVER throw paint or paint products in the trash, down the sink or toilet, or down the storm drains -- dispose of it properly by taking it to a HHW Roundup

How to Dispose of Household Hazardous Waste Properly

Participate in a FREE Household Hazardous Waste Collection Event! Collection events are held at various sites throughout Los Angeles County and provide residents the opportunity to dispose of their unused toxic products (leftover paint, used motor oil, fertilizer, etc.) quickly, conveniently and free of charge.

Some of the items you can bring to a collection event include: lighter fluid, nail polish remover, transmission fluid, antifreeze, motor oil, latex and oil-based paints, paint thinner, stains/varnishes, solvents, hazardous cleaning products, herbicides and pesticides, pool chemicals, hairspray, aerosol products, and expired medicine.

As you prepare your Household Hazardous Waste for disposal at a Roundup, follow these guidelines:

- Bring any unused chemicals that may be hazardous
- Keep the waste in its original container
- Make sure the container is not leaking
- Bring items in a sturdy box that can be left behind
- Don't bring explosives, ammunition, tires, bio-medical waste or radioactive materials

For more information about Household Hazardous Waste collection events, Roundup schedules and alternative disposal methods, call 1-888-CLEAN-LA (1-888-253-2652) or look on the Internet at www.888CLEANLA.com

The Stormwater Pollution and Household Hazardous Waste Connection

What is Stormwater Pollution?

Stormwater pollution occurs when litter, trash, debris, motor oil, paints, fertilizers, pesticides and animal droppings end up on the roadways and in the gutters. These contaminants mix with millions of gallons of rainwater, flow untreated into Los Angeles County's lakes, rivers and the Pacific Ocean, and can create health risks for children, kill marine life, and contribute to neighborhood flooding and beach closures.

What is Household Hazardous Waste?

Household Hazardous Waste is any chemical located within the home that poses a threat to public health and environmental safety when handled, stored and/or disposed of improperly. Products that can be found in your home, garage and garden area and can easily be identified by carefully reading product labels and checking for any of these key words: *toxic, poison, reactive, corrosive, flammable, combustible* or *irritant.* Examples include latex/oil-based paint, used motor oil, fertilizers, pesticides and

So what's the connection?

When people dispose of their household hazardous waste improperly by dumping it on the ground, in the street or down the storm drains -- *illegally* -- these toxic contaminants flow into our waterways, ending up in the ocean, untreated -- endangering the health of our families and environment.

Follow these guidelines to help prevent stormwater pollution:

- DON'T LITTER – throw your trash in a waste basket where it belongs
- Use, store and dispose of all household hazardous products properly
- Dispose of all leftover toxic products at monthly Household Hazardous Waste collection events. Call 1-888-CLEAN-LA or log onto **www.888CLEANLA.com** for more information and to find the date and location of a Roundup near you
- Make it a practice to purchase non-toxic or less-toxic products for home and garden use
- Use pesticides, herbicides and fertilizers sparingly. Do not apply any chemicals to the lawn or garden before a rain storm or watering
- Conserve water by not overwatering lawns
- Use yard trimmings and leaves as compost. This keeps debris off the streets and out of storm drains, *and* supplies gardens with valuable nutrients
- Dispose of all pet waste in trash cans
- All used motor oil can be recycled. Take your used motor oil to a certified used motor oil recycling center. For a location near you, call 1-888-CLEAN-LA or log onto **www.888CLEANLA.com**

KIDS – BE SAFE! Help keep your home a Toxic.Free.Home!

If you're not careful, products in your home can make you sick...

Poisons are all around us -- bleach, drain cleaner, nail polish remover, perfume, laundry detergent and glue are all toxic products that can make us sick if they're not handled properly.

REMEMBER:

DO NOT touch...
DO NOT taste...
DO NOT smell...

- ...any household products – unless you ask a grown-up you know.

- Make sure you understand warning labels on products in your home. Any product marked Warning, Caution, Danger, Poison, Toxic, Reactive, Corrosive or Flammable should NOT be handled by children and must be placed out of reach

- Little kids can't read -- when you're with your younger brothers and sisters, make sure dangerous cleaners are kept out of reach

- Little kids can't tell the difference between medicine and candy -- all medicine, even vitamins, should be locked up, safe from little hands

- Help keep your home and yard safe for family and pets -- keep fertilizer and bug spray out of reach

If you have a poison emergency and there is no help, call 9-1-1 or the California Poison Control System emergency hotline at 1-800-876-4766.

Help keep your home a Toxic.Free.Home. Ask your parents to get rid of leftover toxic products the RIGHT WAY by taking them to a Household Hazardous Waste Collection Event. It's free and easy, but most importantly, it helps keep our communities and environment safe and clean. Tell your parents to call 1-888-CLEAN-LA, or visit the Internet at www.888CLEANLA.com, to learn how to dispose of household hazardous waste without endangering our health.

Parents: Is Your Home a Toxic.Free.Home?

Potentially hazardous products are hiding all around your home that you may not even be aware of... nail polish and nail polish remover, glue, insect repellent, deodorizers and household cleaners are all safe to use when handled properly, but when these products are handled improperly or get into the hands of children, they can be very dangerous – *even lethal*.

Each year, millions of people are accidentally poisoned in their own homes. Although accidental poisonings happen to adults, the majority of poisonings happen to young children under the age of six years. 90% of poisonings happen in the home. Over 75% of the poisonings are accidental and most happen to children between the ages of six months to five years. Most of these accidental poisonings can be prevented with a little care -- don't let your child, your pet or yourself become a victim!

Take this simple survey to find out more about the household hazardous products that exist in your home -- and find out how you can properly dispose of household hazardous waste to make your home a Toxic.Free.Home.

- Look under your kitchen sink. What types of products are under there?

  ⇒ If any of the following products exist – your cupboard should be locked, or equipped with a child-safety device, to prevent children from accidentally handling toxic chemicals:

Ammonia	Carpet & upholstery cleaners
Cleaning fluid	Cleansers & scouring powders
Drain cleaner	Furniture polish
Metal cleaners	Oven cleaner
Rust remover	Powder & liquid detergents
Vitamins	

- Does your bedroom contain toxic products?

  ⇒ You may not be aware that these products must be kept out of reach from children and pets as well:

Cologne	Perfume
Cosmetics	Medications

- When was the last time you cleaned out the toxic products in your garage, basement or workshop?

  ⇒ Leftover hazardous products should be disposed of properly – by taking them to a Household Hazardous Waste collection event. Call 1-888-CLEAN-LA or visit

www.888CLEANLA.com to find a Roundup date and location near you and take your unused toxic products:

Antifreeze	Adhesives/glues
Car Wax	Fertilizer
Gasoline & oil	Kerosene
Latex/oil-based paint	Lighter fluid
Lime, cement, mortar	Lead acid batteries
Paint thinner/remover	Transmission fluid
Turpentine	Used motor oil
Windshield washer solution	

❖ What about under the bathroom sink or in the medicine cabinet?

⇒ Toxic products in the bathroom? You bet! Make sure these products are safely stored and out of your child's reach:

Aftershave	Bath oil
Deodorizers	Depilatories
Hair dyes/relaxers	Isopropyl alcohol
Medicine	Nail polish
Nail polish remover	Permanent wave solution
Room deodorizers	Rubbing alcohol
Shaving lotion	Toilet bowl cleaner

❖ Have you peaked in your closets, attic and storage places lately?

⇒ Kids will find things in the tiniest spaces – and will put *anything* in their mouths! Watch out for these toxic products lying around:

Moth balls & sprays	Rat/mouse poison
Insecticides	Batteries
Cigarette lighters	

❖ Dispose of your household hazardous waste the RIGHT WAY!

⇒ Now that you've successfully completed our household hazardous products survey and safely stored your products out of reach from children and pets, gather up the leftover toxic products that are ready to be thrown out and place them in a sturdy box. Make sure they're not leaking – and never mix products together.

❖ Take your toxic products to a Household Hazardous Waste Collection Event.

Now you're ready to take your box of household hazardous waste to a Countywide Roundup! Roundups are one-day, drive-through collection events scheduled in different areas throughout the County where residents can take their household hazardous waste. They are free, open to the public and are usually held on a

Saturday from 9am to 3pm. It's that easy! Additionally, some cities provide permanent HHW collection sites that accept unused toxic products from residents of that specific city during defined hours of operations.

❖ To find a Collection Event near you...

➢ Call 1-888-CLEAN-LA or visit the Internet at www.888CLEANLA.com for the location and date of the next Roundup near you **or call your city for more information about permanent HHW collection facilities.**

⇒

❖ Thanks for helping the County of Los Angeles to keep our communities healthy and our environment clean!

⇒ By properly disposing of your leftover toxic products, you're not only reducing the amount of hazardous waste in your home – protecting your family's health – but also protecting the environment from toxic contaminants entering our landfills, sewers and storm drains!

CAUTION!

INHALING TOXIC PRODUCTS CAN BE DANGEROUS!

You already know that toxic products exist in your home – household cleaners, air fresheners and furniture polish under the kitchen sink, motor oil, varnish and leftover latex and oil-based paint in the garage – but did you know that many of these products are being used by children to "get high?"

Inhalant use occurs when children abuse common household products such as glue, paint, air fresheners, correction fluid or markers to "catch a buzz."

Take a look at these alarming statistics:

- A 1998 nationwide survey of students indicates that 20.5% of eighth graders have used inhalants compared to 22.2% who have used marijuana/hashish
- Chronic inhalant users can suffer severe and permanent brain damage; some die the first time they try it; other possible risks include loss of consciousness and irreversible damage to the liver, kidneys and bone marrow
- Inhalants are a "gateway" drug often leading to other illicit substance abuse. They are often the first substance young people try because they are legal, easy to obtain and difficult to detect
- More than 1,000 common, useful and legal household, office and classroom products can be used to "get high"
- Because the chemicals in inhalants enter the lungs in such high concentrations, they have a more formidable toxic profile than other types of abused drugs
- Every year kids die from inhalant use, but many parents and educators remain ignorant of this silent epidemic

Be on the lookout for signs of use:

- Problems in school – failing grades, chronic absences and general apathy
- Paint or stains on body, clothing, rags or bags
- Spots or sores around the mouth; red or runny eyes or nose; chemical breath odor; drunk, dazed or dizzy appearance; nausea, loss of appetite; anxiety, excitability, irritability
- Missing abusable household items

THE KEY TO PREVENTING INHALANT ABUSE IS EDUCATION

Make your home a Toxic.Free.Home. and help prevent inhalant abuse:

- Buy smart! Purchase non-toxic/less-hazardous products and only what you need. Avoid products labeled "danger," "warning," "do not ingest," "corrosive," "flammable," or "toxic"
- Store properly! Use safety locks on all cabinets and store all poisonous household and chemical products out of sight and reach of children and pets
- Use it up! Finish all unused products and recycle the containers or donate leftover products to a neighbor or community group
- Dispose properly! Don't throw unused products in the trash, in the storm drain or down the drain. Dispose of HHW properly at free, convenient HHW Collection Events. For information on an upcoming HHW Roundup in your area, call 1-888-CLEAN-LA or visit www.888CLEANLA.com
- Educate your family! Talk with children about the potential dangers associated with HHW products. Educate your children *before* they educate themselves

For More Information…

- About safe use and management of HHW and the Toxic.Free.Home. campaign, contact the Los Angeles County Department of Public Works at 1-888-CLEAN-LA or visit www.888CLEANLA.com
- On inhalants and the National Inhalant Prevention Coalition, call 800-269-4237
- On poison prevention, contact the California Poison Control Center at 800-876-4766 or the American Association of Poison Control Centers at www.aapcc.org

Simple. Smart.Steps.

Know Your HHW.

Household **H**azardous **W**aste **(HHW)** is any product labeled: toxic, poison, corrosive, flammable, combustible or irritant that is disposed of.

Buy Smart.

Purchase non-toxic/less hazardous products and only what you need.

Store Properly.

Keep products out of reach of children and pets. Toxic products are poisonous — don't put your family's health and safety at risk!

Use It Up.

Finish all unused products and recycle the containers or donate leftover products to a neighbor or community group.

Dispose Properly.

Dispose of HHW properly at a FREE Los Angeles County Roundup near you!

Protect Our Communities.

NEVER throw HHW into your household garbage, toilets or sinks; never dump on the ground or pour down the storm drains – it's illegal – and HHW can seep into the groundwater, waterways and oceans, causing contamination of our drinking water, causing beach closures and posing health hazards to swimmers.

Help keep Los Angeles County healthy and clean!

Find out how to reduce household hazardous waste and what alternative products are available on the reverse side of this flyer.

Toxic.Free.Home.

Call or log on to find an HHW collection event near you!

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

1-888-CLEAN-LA
www.888CLEANLA.com

PROJECT Pollution PREVENTION

SANITATION DISTRICTS OF LOS ANGELES COUNTY

Printed on recycled paper with 20% post-consumer content.

How to Reduce Use of Hazardous Products:

One way to reduce the potential concerns associated with **household hazardous waste** is to use nonhazardous or less hazardous products, and when it is necessary to use a hazardous product, always be safe and smart. Protect the health of your family, neighbors and the environment.

What You Can Do to Reduce Household Hazardous Waste

As you make your choices about the use of hazardous and nonhazardous products, remember that the decisions consumers make affect the way manufacturers design products.

- Use products containing hazardous materials sparingly or use a non hazardous/less hazardous alternative.
- Before purchasing a product, read the label carefully to make sure it will do what you want it to do. Once you buy something you are also legally responsible for disposing of it properly.
- Buy just what you need to do the job. Use it up. Give leftovers to a friend, neighbor, business or charity that can use them up. Excess pesticide might be offered to a greenhouse or garden center.
- Select water-based products over solvent-based products when available (e.g., paint, glue, shoe polish).
- Avoid aerosol sprays. Choose the pump spray or other alternatives.
- Be smart when you apply pesticides or fertilizers. Do not apply before a rain. Not only will you lose most of the pesticides or fertilizer through runoff, but you also will be harming the environment. Do not overwater after application. Read the label. Do not apply more than is recommended.
- Have a professional change your motor oil. For a few dollars more, you not only save yourself time and energy, but it's more likely that the used motor oil collected is recycled.
- Dispose of household hazardous wastes according to the directions on the container, or at a household hazardous waste collection event (Countywide Roundup or a local collection event), a used motor oil recycling center, auto parts store or service station. Call 1-888-CLEAN-LA or check the Internet at www.888CLEANLA.com for the location of an event or facility near you.

Consumer Choices

We can easily reduce the amount and toxicity of waste in and around our homes, and at the same time save money.

- Careful planning can help avoid the need for many potentially toxic products;
- Careful shopping will allow us to find products that can be recycled, reused or be disposed of safely.

Many sources of household hazardous waste can be replaced with other products that are safer, cheaper and equally effective.

Careful planning and shopping lend themselves to source reduction – meaning reducing the amount of hazardous wastes entering the household as well as reducing the toxicity of that waste. The less waste that comes in, the less that goes out. We can do this by shopping thoughtfully, reading labels and looking for non-hazardous or less hazardous products.

What are Alternative Products?

Alternative Cleaning Products

Try these easy alternatives to minimize household hazardous products. Most of these products are very common and are found in most household cabinets:

KITCHEN

Spray Disinfectant Cleaner

1 teaspoon sodium lauryl sulfate

1 teaspoon borax

2 tablespoons white vinegar

2 cups hot water

¼ teaspoon eucalyptus essential oil

¼teaspoon lavender essential oil

3 drops tea tree essential oil

Mix all ingredients together and stir until dry ingredients dissolve. Pour into spray bottle for use. Do not use on glass.

Dish Detergent

½ cup clay powder

2 tablespoons lime essential oil

24 cups sodium lauryl sulfate

6 cups baking soda

Mix clay powder and essential oil. Then, in a two-gallon pail or container, combine with the baking soda and sodium lauryl sulfate. Mix well. For liquid soap: add 18 cups boiling water and stir until powder is dissolved.

Abrasive Cleaner

1 cup fine-grade pumice

½ cup clay powder

2 tablespoons grapefruit essential oil

¼ cup baking soda

⅓ cup sodium lauryl sulfate

½ cup boiling water

Mix all ingredients. Apply with a damp sponge or cloth and scrub.

Brass/Copper Tarnish Remover

Salt , flour and white vinegar

Mix together equal parts salt and flour, then add white vinegar to make a paste. Rub into the stain. Repeat if necessary.

Window Wash

Juice from one fresh lemon

2 cups water or club soda

½ teaspoon peppermint essential oil

1 teaspoon cornstarch

Mix all ingredients and pour into plastic spray bottle. Shake well.

BATHROOM

Bathtub/Sink Stains

Scrub with paste made from cream of tartar and hydrogen peroxide.

Soap Film on Fiberglass Surface

Apply baking soda with damp cloth, rub and rinse off residue well.

Soap Film/Mildew on Shower Curtains

Pour full-strength vinegar on the shower curtain to remove soap film and mildew.

Shower-Door Track Cleaning

Pour full-strength vinegar into the track, let soak for a few minutes, rinse.

Toilet Lime Deposit Removal

Pour full strength white vinegar in the bowl, let sit for several hours. Scrub with sturdy brush.

Toilet Bowl Cleaner

½ teaspoon sodium lauryl sulfate

2 tablespoons baking soda

2 tablespoons vinegar

1 teaspoon orange essential oil

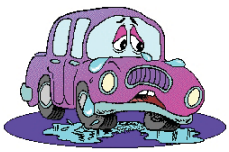
1 teaspoon grapefruit essential oil

2 cups water

Mix all ingredients. Vinegar and baking soda will foam when mixed. Let mixture stand for 10 minutes before pouring into a spray bottle.

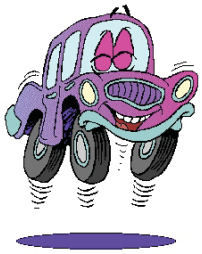
Visit www.888cleanla.com for more alternative product recipes.

Do you have "leaky" car syndrome? Cure It!
You are contributing to storm water pollution!

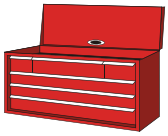


Cars with oil, radiator, transmission, brake, power steering or gear oil leaks are a hazard to our water resources. These toxins drip onto the ground and are washed into storm drains with any source of water. These toxic fluids contaminate our ocean, lakes and ground water.

If your car is experiencing leaky car syndrome, please cure it as soon as possible. Not only will your car appreciate it, but it will prevent your contribution to our storm water pollution problem.



You have the tools for success. Simply keep your vehicles in good running order to prevent leaks. Not only will your car run better but you'll be doing yourself, your neighborhood and your city - a great service.



RECYCLE YOUR USED OIL

When changing your own oil - Be Cautious! Used oil is one of the largest sources of storm water pollution we have! Make a difference - Recycle your oil at one of our used oil collection centers. Call 1 (888) CLEAN-UP for used oil collection center locations.

If your oil has anything else in it, such as radiator fluid or carburetor cleaner, it is contaminated. Call 1 (888) CLEAN-UP for the location of a Household Hazardous Waste Facility.

RECICLE SU ACEITE USADO

Tenga mucho cuidado cuando cambia el aceite de su auto! El aceite usado es unos de los principales contribuyentes de la contaminación del agua pluvial. Haga la diferencia- Recicle su aceite usado en unos de nuestros centros de colección. Llame al 1 (888) CLEAN-UP para un centro de aceite usado.

Su aceite usado esta contaminado si contiene anticongelante, limpiador de carburador u otros químicos. Llame al 1 (888) CLEAN-UP para encontrar un local que acepte desperdicios peligrosos de domicilio.

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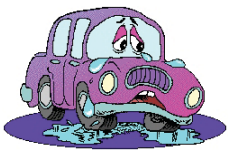

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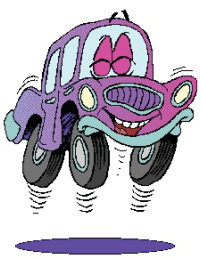

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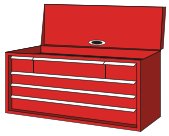

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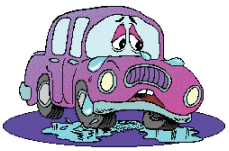
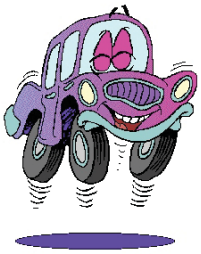
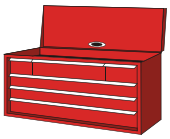
Tiene su carro problema de goteras? Arreglelo!
Si no, usted esta contrbuyendo a la contaminación de agua pluvial!



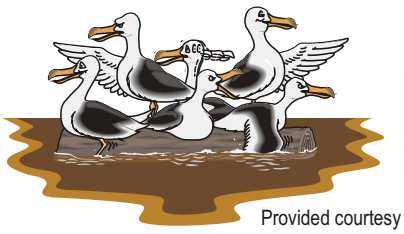
Carros que gotean aceite de motor, o líquidos del radiador y transmisión, frenos, y volante hidráulico pueden dañar a nuestros recursos de agua. Estos tóxicos caen al al suelo y son desechados a los desagües pluviales. Estos tóxicos contaminan nuestro oceano, lagos y agua subterránea.

Si su automóvil está goteando, por favor arréglelo lo más pronto posible. Su carro no solo se lo va a agradecer, pero también usted estaría impidiendo su contribución a la contaminación de agua pluvial.





Usted tiene la capacidad para salir adelante. Simplemente mantenga su vehículo en buenas condiciones para prevenir goteras de líquidos tóxicos. Con mantenimiento regular su carro corera mejor y le estaria haciendo un favor a su vecindad y su ciudad.



PROJECT Pollution PREVENTION

Provided courtesy of Hunter-Kennedy & Associates Inc.

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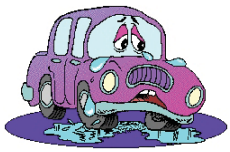
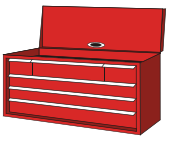
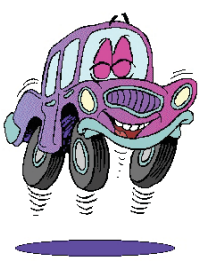
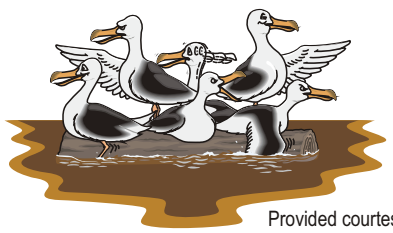








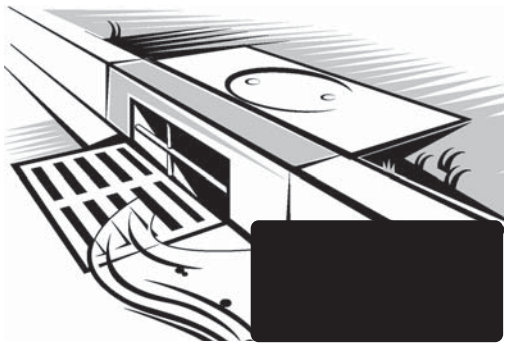
Storm Drains are for Rain...

More than 130,000 times each month, L.A. County residents wash their dirty paint brushes under an outdoor faucet. This dirty rinse water flows into the street, down the storm drain and to the ocean, untreated.

Wash water-based paint brushes in the sink and take old paint and paint-related products to a household hazardous waste Roundup.

1(888)CLEAN LA
www.888CleanLA.com

...not paint.



Painting Tips:

All paints and solvents contain toxic chemicals that can be dangerous to people and harmful to the environment. Please handle these products carefully by taking these easy steps.

- Never dispose of paint or paint-related products in the gutters or storm drains. This is called illegal dumping. Take them to a household hazardous waste Roundup. Call 1(888)CLEAN LA or visit www.888CleanLA.com to locate a Roundup near you.
- Buy only what you need. Reuse leftover paint for touch-ups or donate it to a local graffiti paint-out program. Recycle or use up excess paint.
- Clean water-based paint brushes in the sink.
- Oil-based paints should be cleaned with thinner that can be reused. Set the used thinner aside in a closed jar to settle-out paint particles.
- Store paints and paint-related products in rigid, durable and watertight containers with tight-fitting covers.

Printed on recycled paper

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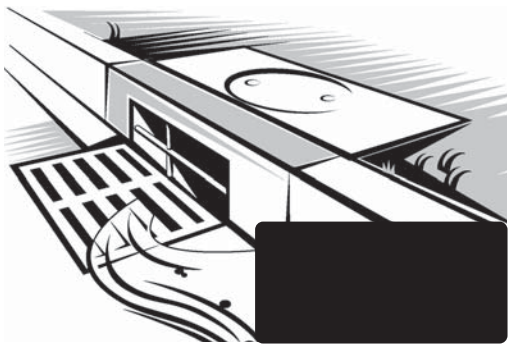

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Storm Drains are for Rain...

More than 200,000 times each month, lawns and gardens throughout LA County are sprayed with pesticides. Overwatering or rain causes pesticides on leaves and grass to flow into the storm drain and to the ocean — untreated.

Please use pesticides wisely, not before a rain, and water carefully.

...not pesticides.

1(888)CLEAN LA
www.888CleanLA.com

Pesticide Tips:

You can keep your lawn and garden green and at the same time solve the pollution problem by taking these easy steps...

- Never dispose of lawn or garden chemicals in storm drains. This is called illegal dumping. Take them to a household hazardous waste roundup. Call 1(888)CLEAN LA or visit www.888CleanLA.com to locate a roundup or collection facility near you.
- More is not better. Use pesticides sparingly. "Spot" apply, rather than "blanket" apply.
- Read labels! Use only as directed.
- Use non-toxic products for your garden and lawn whenever possible.
- If you must store pesticides, make sure they are in a sealed, water-proof container that cannot leak.
- When watering your lawn, use the least amount of water possible so it doesn't run into the street and carry pesticide chemicals with it. Don't use pesticides before a rain storm. You will not only lose the pesticide, but also will be harming the environment.

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Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids, recyclable products, or household hazardous wastes into the street or gutter. Take them to your local auto repair station, recycling center or a household hazardous waste roundup.

...they're not recycling centers.

1(888)CLEAN LA
www.888CleanLA.com

Recycling Tips:

You can help keep your community clean, protect our area waterways and make the beaches safe for ocean swimmers by putting recyclable materials where they belong — at a recycling center or household hazardous waste roundup. Never throw or pour anything into the streets or gutters...

- When changing vehicle fluids – transmission, hydraulic and motor oil, brake and radiator fluid – drain them into a drip pan to avoid spills. Do not combine these fluids. Do not dispose of them in the street, gutter or in the garbage. It is illegal.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of a center that recycles these fluids, or for the location of a local household hazardous waste Roundup.
- Other materials that should be taken to a household hazardous waste Roundup are: paint and paint-related materials, household cleaners, batteries, pesticides and fertilizers, pool chemicals, and aerosol products.
- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.

Printed on recycled paper

PROJECT Pollution PREVENTION

Storm Drains are for Rain...

More than 50% of the automotive oil sold to do-it-yourself oil changers is not recycled. There are more than 600 State-certified used oil collection centers within Los Angeles County.

Never dispose of automotive fluids, recyclable products, or household hazardous wastes into the street or gutter. Take them to your local auto repair station, recycling center or a household hazardous waste roundup.

...they're not recycling centers.

1(888)CLEAN LA
www.888CleanLA.com

Recycling Tips:

You can help keep your community clean, protect our area waterways and make the beaches safe for ocean swimmers by putting recyclable materials where they belong — at a recycling center or household hazardous waste roundup. Never throw or pour anything into the streets or gutters...

- When changing vehicle fluids – transmission, hydraulic and motor oil, brake and radiator fluid – drain them into a drip pan to avoid spills. Do not combine these fluids. Do not dispose of them in the street, gutter or in the garbage. It is illegal.
- Recycle all used vehicle fluids. Call 1(888)CLEAN LA or visit www.888CleanLA.com for the location of a center that recycles these fluids, or for the location of a local household hazardous waste Roundup.
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- Aluminum, glass, plastic and newspapers should be placed in your curbside recycling bin or taken to a local recycling center.

Printed on recycled paper

PROJECT Pollution PREVENTION

What is Smart Gardening?

Smart Gardening is an easy way to get a great looking yard while conserving water, energy and resources. You will also save time and money, all while doing something that helps make Malibu a nicer place to live.

How can I be a Smart Gardener?

- **Bag, compost or recycle grass, tree limbs, leaves and other yard waste.** Soggy yard waste is a major contributor to clogged storm drains, street and neighborhood flooding.
- **Make sure you "grasscycle."** Grasscycling is a helpful waste prevention activity in which grass clippings are left on the lawn after mowing, enabling the nutrients to return into the soil. Nearly 20 percent of the waste buried in landfills is from our yards – like grass and tree trimmings.
- **Don't overwater your lawn.** Excess water will carries contaminants through the stormdrain system to the ocean, untreated.
- **Be smart when you apply pesticides or fertilizers.** Do not apply pesticides or fertilizers before it rains. Not only will you lose most of the chemicals but you will also harm the environment.
- **Use native plants.** Native plants benefit the environment because they are naturally drought-resistant, more resistant to natural pests and diseases, and are better suited to provide natural cover and habitat for native wildlife.

Share these tips with your landscaper!

For more Smart Gardening tips, log on to www.888CleanLA.com or visit your local Smart Gardening demonstration center at:

Gates Canyon Park
25801 Thousand Oaks Boulevard
Calabasas

NON-TOXIC PESTICIDE RECIPES:

Here are a couple of recipes for non-toxic sprays that are sure to keep the bugs away!

Hot Pepper Spray

1. Boil 2 or 3 very hot peppers, 1/2 onion and 1 clove garlic in water.
2. Steep for two days and strain. (*This spray will not damage indoor or outdoor plants and can be frozen for future use.*)

Soap Sprays

- Liquid soaps: Mix 2 tbsp. of soap per quart of water.
- Dry soaps: Mix 4 tbsp. per quart of water. (Use only pure soap, as detergents will damage your plants.)

Be sure to rinse the plants with fresh water after pests have been controlled!

City of Malibu
Clean Water Program
23815 Stuart Ranch Rd.
Malibu, CA 90265
www.ci.malibu.ca.us

PROJECT Pollution PREVENTION

Get Smart...

...about Gardening

Appendix F: Operations & Maintenance (O&M) Plan

RECORDING REQUESTED BY
AND MAIL TO:

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
900 S. FREMONT AVENUE, 3RD FLOOR
ALHAMBRA, CA 91803-1331

Space above this line is for Recorder's use

COVENANT AND AGREEMENT
REGARDING THE MAINTENANCE OF LOW IMPACT DEVELOPMENT (LID) & NATIONAL POLLUTANTS DISCHARGE ELIMINATION SYSTEM (NPDES) BMPs

The undersigned, _____ ("Owner"), hereby certifies that it owns the real property described as follows ("Subject Property"), located in the County of Los Angeles, State of California:

LEGAL DESCRIPTION

ASSESSOR'S ID # 8453-015-030, 020 TRACT NO._____ LOT NO._____

ADDRESS: 2539 E. Garvey North

West Covina, CA

Owner is aware of the requirements of the County of Los Angeles' Green Building Standards Code, Title 31, Section 4.106.4 and Section 5.106.2 (LID), and National Pollutant Discharge Elimination System (NPDES) permit. The following post-construction BMP features have been installed on the Subject Property:

- □ Porous pavement
- □ Cistern/rain barrel
- □ Infiltration trench/pit
- □ Bioretention or biofiltration
- □ Rain garden/planter box
- □ Disconnect impervious surfaces
- □ Dry Well
- □ Storage containers
- □ Landscaping and landscape irrigation
- □ Green roof
- ☒ Other Brentwood Stormtank
  Flogard Plus Catch Basin Insert

The location, including GPS x-y coordinates, and type of each post-construction BMP feature installed on the Subject Property is identified on the site diagram attached hereto as Exhibit 1.

Owner hereby covenants and agrees to maintain the above-described post-construction BMP features in a good and operable condition at all times, and in accordance with the LID/NPDES Maintenance Guidelines, attached hereto as Exhibit 2.

Owner further covenants and agrees that the above-described post-construction BMP features shall not be removed from the Subject Property unless and until they have been replaced with other post-construction BMP features in accordance with County of Los Angeles' Green Building Standards Code, Title 31 and NPDES permit.

Owner further covenants and agrees that if Owner hereafter sells the Subject Property, Owner shall provide printed educational materials to the buyer regarding the post-construction BMP features that are located on the Subject Property, including the type(s) and location(s) of all such features, and instructions for properly maintaining all such features.

Owner makes this Covenant and Agreement on behalf of itself and its successors and assigns. This Covenant and Agreement shall run with the Subject Property and shall be binding upon owner, future owners, and their heirs, successors and assignees, and shall continue in effect until the release of this Covenant and Agreement by the County of Los Angeles, in its sole discretion.

Owner(s):

By:_____ Date:_____

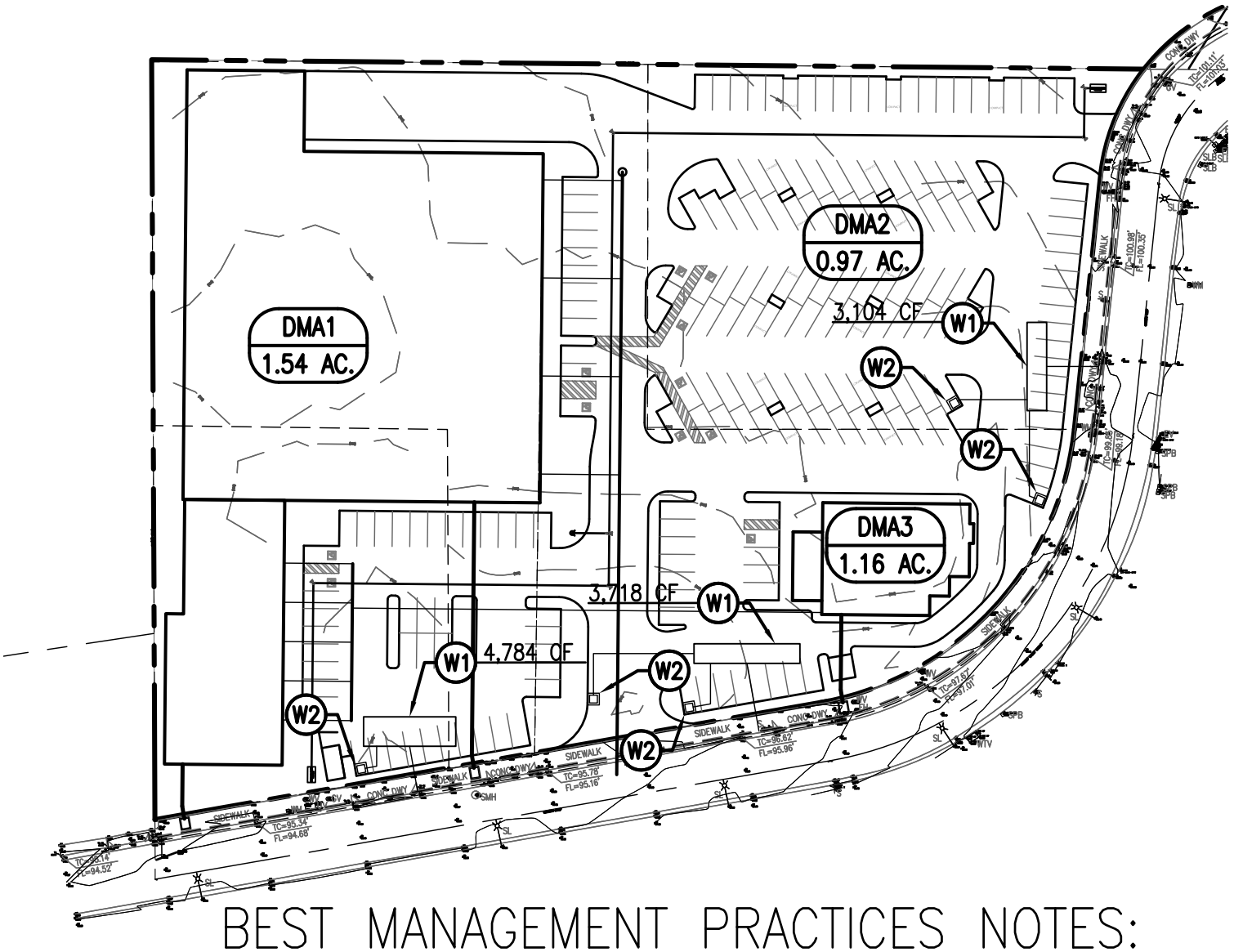
By:_____ Date:_____

(PLEASE ATTACH NOTARY)

REFERENCE

PLAN CHECK NO.: _____ DISTRICT OFFICE NO.:_____

ATTACHMENTS



BEST MANAGEMENT PRACTICES NOTES:

(W1) — INSTALL BRENTWOOD STORMTANK INFILTRATION SYSTEM PER DETAIL.

34.072603, −117.892035, 34.072750, −117.891427, 34.073210, −117.890866

(W2) — INSTALL FLOGARD PLUS CATCH BASIN INSERT.

34.072557, −117.892068, 34.072677, −117.891945, 34.072609, −117.891748, 34.073180, −117.890978, 34.073027, −117.890795

1" = 80'

0 20 40 80

PLAN PREPARED BY:

ONE VENTURE, SUITE 130
IRVINE, CA 92618
(949) 339−5330
MFKESSLER.COM

REGISTERED PROFESSIONAL ENGINEER
ALI MONSHIZADEH
C67674
EXP. 06/30/2021
CIVIL
STATE OF CALIFORNIA

EXHIBIT 1

BMP COORDINATE MAP

2539 E. GARVEY NORTH
WEST COVINA, CA 91719

STORMTANK® Module

Maintenance Guidelines

General:

The StormTank™ Stormwater Storage Module is a component in a stormwater collection system, providing storage for the detention or infiltration of runoff. No two systems are the same; with varying shapes, sizes and configurations. Some include pre-treatment to remove sediment and/or contaminants prior to entering the storage area and some do not. Systems without pre-treatment require greater attention to system functionality and may require additional maintenance.

In order to sustain system functionality Brentwood offers the following general maintenance guidelines.

Precautions:

1. Prior to & During Construction - Siltation prevention of the stormwater system.
   a. Conform to all local, state and federal regulations for sediment and erosion control during construction.
   b. Install site erosion and sediment BMP's (Best Management Practices) required to prevent siltation of the stormwater system.
   c. Inspect and maintain erosion and sediment BMP's during construction.
2. Post Construction - Prior to commissioning the StormTank™ system.
   a. Remove and properly dispose of construction erosion and sediment BMP's per all local, state and federal regulations. Care should be taken during removal of the BMP's as not to allow collected sediment or debris into the stormwater system.
   b. Flush the StormTank™ system to remove any sediment or construction debris immediately after the BMP's removal. Follow the maintenance procedure outlined.

Inspections:

Follow all local, state, and federal regulations regarding stormwater BMP inspection requirements.

Brentwood Industries makes the following recommendations:

1. Frequency
   a. During the first service year a visual inspection should be completed during and after each major rainfall event, in addition to semi-annually, to establish a pattern of sediment and debris buildup.

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MFKESSLER.COM

EXHIBIT 2

MAINT. GUIDELINES

2539 E. GARVEY NORTH
WEST COVINA, CA 91719

i. Each stormwater system is unique and multiple criteria can affect maintenance frequency such as:
   a) System Design: pre-treatment/no-pretreatment, inlet protection, stand alone device.
   b) Surface Area Collecting From: hardscape, gravel, soil.
   c) Adjacent Area: soil runoff, gravel, trash.
   d) Seasonal Changes: fall-leaves, winter-salt/cinders.

b. Second year plus; establish an annual inspection frequency based on the information collected during the first year. At a minimum an inspection should be perform semi-annually.

c. Seasonal change; regional areas affected by seasonal change (spring, summer, fall, winter) may require additional inspections at the change of seasons in addition to semi-annually.

2. Inspect:
   a. Inspection ports.
   b. Inflow and outflow points including the inlet/manhole and pipes.
   c. Discharge area.

3. Identify and Report maintenance required:
   a. Sediment and debris accumulation.
   b. System backing up.
   c. Flow rate change.

Maintenance Procedures:

1. Conform to all local, state and federal regulations.
2. Determine if maintenance is required. If a pre-treatment device is installed, follow manufacturer recommendations.
3. Using a vacuum pump truck evacuate debris from the inflow and outflow points.
4. Flush the system with clean water forcing debris from the system. Take care to avoid extreme direct water pressure when flushing the system.
5. Repeat steps 3 and 4 until no debris is evident.

These maintenance guidelines were written by Brentwood Industries, Inc. with the express purpose of providing helpful hints. These guidelines are no to be construed as the only Brentwood approved methods for StormTank™ system maintenance or the final authority in system maintenance. Check with the stormwater system owner/project engineer for their contract/specification requirements and or recommendations. Contact your local StormTank™ distributor or Brentwood Industries for additional technical support if required.

PLAN PREPARED BY:

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STATE OF CALIFORNIA

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EXHIBIT 2.1

MAINT. GUIDELINES

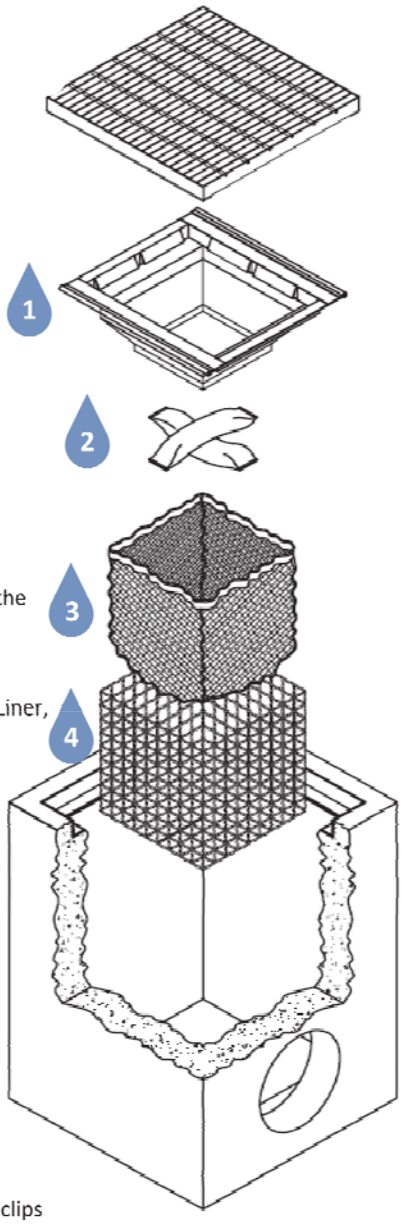
2539 E. GARVEY NORTH
WEST COVINA, CA 91719

FloGard Plus Replacement and Repair

Parts of the FloGard Plus Inlet Filter-

1. FloGard Stainless Steel Support Frame
2. Fossil Rock Absorbent Pouches
3. Liner
4. GeoGrid Support Basket & Cable

* Grate and Basin NOT INCLUDED



Disassembly:

1. Clear FloGard of any existing debris by hand or vacuum.
2. Unclip and remove the Fossil Rock pouches from the inside Liner.
3. Lift the FloGard from the catch basin.
4. Using a slotted screw driver, carefully pry open the metal tabs holding the GeoGrid and Cable in place. Separate the GeoGrid and Liner from the FloGard frame.
5. Unclip the Liner from the inside of the GeoGrid. If you are reusing the Liner, rinse thoroughly with water and inspect for tears. (If torn, mend with stainless steel wire or replace the Liner).
6. Rinse and inspect the GeoGrid Basket and the reinforcing cable. (If torn, mend with stainless steel wire or replace the GeoGrid).
7. Rinse and inspect the Stainless Steel FloGard frame.

Reassembly:

1. Fully expand the GeoGrid Basket and orient to the FloGard frame. Hook cable and GeoGrid to the FloGard frame metal tabs and close the tabs using slotted screwdriver. Move around the FloGard until all tabs are closed and GeoGrid is secured to the Frame.
2. Expand and orient the Liner, locating the clips at each corner and side. Push the Liner through the center of the FloGard frame and secure the clips to the GeoGrid Basket close to the top support cable. Push the Liner to expand inside of the basket.
3. Clip new Fossil Rock Rubberizer pouches to the inside of the Liner.
4. Lower FloGard back into the basin, replace grate.

PLAN PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

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(949) 339-5330
MFKESSLER.COM

EXHIBIT 2.2

MAINT. GUIDELINES

2539 E. GARVEY NORTH
WEST COVINA, CA 91719

Attachment I

Operations and Maintenance (O&M) Plan

Low Impact Development
For
2539 E. Garvey North
West Covina, CA 91791

Bentley Real Estate
1932 E. Garvey South
West Covina, CA 91719
Contact: Jeff Tuck
(626) 974-7690

December 2019

Exhibit 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 and Maintenance Responsibility
Non-Structural Source Control BMPs			
Yes	**Education for Property Tenants, and Occupants** This will be addressed through educational materials. All included materials provide ways of mitigating stormwater pollution in everyday activities associated with residents as well as employees of the property management company and their sub-contractors. Practical informational materials are provided to residents, occupants, or tenants to increase the public's understanding of stormwater quality, sources of pollutants, and what they can do to reduce pollutants in stormwater.	The distribution of these materials will be the responsibility of the Owner at the time of the leasing signing or home purchase per property Owner, tenant or occupant.	Owner
Yes	**Activity Restriction (CC&Rs)** Covenant, Conditions & Restrictions for the development are to be established within the appropriate documents which prohibit activities that can result in discharges of pollutants.	The distribution of these materials will be the responsibility of the Owner at the time of the leasing signing or home purchase per property Owner, tenant or occupant.	Owner
Yes	**Common Area Landscaped Management** Specific practices are followed and ongoing maintenance is conducted to minimize erosion and over-irrigation, conserve water, and reduce pesticide and fertilizer applications.	Landscape maintenance should be practiced at least once per week or to the desire of the Owner. Overall landscape care should be inspected monthly.	The Owner will maintain or hire professionals to manage the upkeep of the project's landscaped areas.
Yes	**BMP Maintenance** In order to ensure adequate and comprehensive BMP implementation, all responsible parties are identified for implementing all non-structural and structural BMPs, cleaning, inspection, and other maintenance activities are specified including responsible parties for conducting such activities.	2 Inspections/ Cleanings per year per manufacturer's specifications starting on or near October 1st (before the rainy season)	Owner (During the first year, a contract between the Owner and manufacturer will be established for inspections. Afterwards, the BMP can be inspected by a Owner chosen maintenance supplier)
Yes	**Title 22 CCR Compliance** Hazardous waste is managed properly through compliance with applicable Title 22 regulations. Hazardous materials or wastes will be generated, handled, transported, or disposed of in association with the project,	The distribution of these materials will be the responsibility of the Owner at the time of the leasing signing	Owner

	measures are taken to comply with applicable local, state, and federal regulation to avoid harm to humans and the environment.	or home purchase per property Owner, tenant or occupant or at the initial hiring on an employee.	
Yes	**Common Area Litter Control** The proposed project will have various trash receptacles located near the common areas. Trash management and litter control procedures are specified within this report, including responsible parties, and implemented to reduce pollution of drainage water.	It will be the responsibility of the Owner to empty and maintain the upkeep of these areas on a weekly basis.	Owner
Yes	**Employee/ Tenant Training** Practical informational materials and/or training are provided to employees at the initial time of hiring by the Owner to increase their understanding of stormwater quality, sources of pollutants, and their responsibility for reducing pollutants in stormwater.	The distribution of these materials will be the responsibility of the Owner at the initial hiring of the employee/ tenant.	Owner
No	**N13. Housekeeping of Loading Docks**		
No	**Common Area Catch Basin Inspection** In order to ensure adequate and comprehensive BMP implementation, all responsible parties are identified for implementing all non-structural and structural BMPs, cleaning, inspection, and other maintenance activities are specified including responsible parties for conducting such activities.	Common inspection should occur weekly or prior to any significant storm events by method of clearing any trash/ debris from the catch basin.	Owner
Yes	**Street Sweeping Private Streets and Parking Lots** Regular sweeping is conducted to reduce pollution of drainage water.	City's Street Sweeping Services or approved Private Company on a weekly basis	Owner
No	**Retail Gasoline Outlets**		
Structural Source Control BMPs			
No	**Provide Storm Drain System Stenciling and Signage** Catch Basin Stenciling and Signage will be placed on all on-site catch basins to the satisfaction of the City Engineer.	Stenciling and Signage should be implemented prior to construction completion by the Contractor. Any defacement of the signage should be addressed immediately by the Owner.	Owner
No	**Design and Construct Outdoor Material Storage Areas to Reduce Pollutant Introduction**		
Yes	**Use Efficient Irrigation Systems and Landscape Design**	Efficient irrigation and landscaping should be implemented prior to	The Owner will maintain or hire professionals to manage

	Site efficient irrigation and landscaping has been implemented by the project's landscape architect to the satisfaction of the City Engineer and Planning Department.	construction completion by the Contractor. The Owner will be responsible for the upkeep. Irrigation piping, timers, and landscaped areas should be inspected at least 4 times per year by the Owner or a professional landscaper.	the upkeep of the project's landscaped
No	**Protect Slopes and Channels and Provide Energy Dissipation**		
No	**Loading Docks**		
No	**Maintenance Bays**		
No	**Vehicle Wash Areas**		
No	**Outdoor Processing Areas**		
No	**Equipment Wash Areas**		
No	**Fueling Areas**		
Yes	**Trash Storage Areas**	It will be the responsibility of the Owner to empty and maintain the upkeep of these areas on a weekly basis.	Owner
No	**Hillside Landscaping**		
No	**Wash Water Controls for Food Preparation Areas**		
Treatment Control BMPs			
Yes	**Brentwood Stormtank**	Maintenance shall be conducted twice per year or per recommendation of manufacturer.	Owner

Required Permits

This section must list any permits required for the implementation, operation, and maintenance of the BMPs. Possible examples are:

- No required permits are needed for the implementation, operation, and maintenance of the previously listed BMPs.

Forms to Record the BMP Implementation, Maintenance, and Inspection

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

Recordkeeping

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

Today's Date: _____

Name of Person Performing Activity: _____
(Printed)

Signature: _____

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