CITY OF FOUNTAIN VALLEY
WQMP
Water Quality Management Plan (WQMP)

Project Name:

GUADALUPE MANOR

17103 MAGNOLIA STREET

FOUNTAIN VALLEY, CA 92708

APN: 167-391-24

Prepared for:

OUR LADY OF GUADALUPE

17103 MAGNOLIA STREET

FOUNTAIN VALLEY, CA 92708

Prepared by:

Waber Consultants, Inc.

19210 SOUTH VERMONT AVENUE, SUITE 115

GARDENA, CA 90248

(424) 244-2464

OCTOBER 2022

Project Owner's Certification			
Planning Application No. (If applicable)	GPA22-01	Grading Permit No.	PP570; ZMA435; CUP1911
Tract/Parcel Map and Lot(s) No.		Building Permit No.	
Address of Project Site and APN (If no address, specify Tract/Parcel Map and Lot Numbers)			17103 Magnolia St., Fountain Valley, CA 92708 APN: 167-391-24

This Water Quality Management Plan (WQMP) has been prepared for Our Lady of Guadalupe by Waber Consultants, Inc. The WQMP is intended to comply with the requirements of the County of Orange NPDES Stormwater Program requiring the preparation of the plan.

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

Owner: Julia Moore			
Title	Owner		
Company	**Our Lady of Guadalupe**		
Address	17103 Magnolia Street, Fountain Valley, CA 92708		
Email			
Telephone #			
I understand my responsibility to implement the provisions of this WQMP including the ongoing operation and maintenance of the best management practices (BMPs) described herein.			
Owner Signature		Date	

Preparer (Engineer):			
Title	Mahir Waber, Principal	PE Registration #	C69050
Company	Waber Consultants, Inc.		
Address	19210 S Vermont Ave., Suite 115, Gardena, CA 90248		
Email	mwaber@waberconsultants.com		
Telephone #	424-344-2464		

I hereby certify that this Water Quality Management Plan is in compliance with, and meets the requirements set forth in, Order No. R8-2009-0030/NPDES No. CAS618030, of the Santa Ana Regional Water Quality Control Board.

Preparer Signature	[redacted]	Date	10/21/2022
Place Stamp Here			

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Attachments

Section I Permit(s) and Water Quality Conditions of Approval or Issuance

Provide discretionary or grading/building permit information and water quality conditions of approval, or permit issuance, applied to the project. If conditions are unknown, please request applicable conditions from staff. *Refer to Section 2.1 in the Technical Guidance Document (TGD) available on the OC Planning website (ocplanning.net).*

Project Infomation			
Permit/Application No. (If applicable)	GPA22-01	Grading or Building Permit No. (If applicable)	PP570; ZMA435; CUP1911
Address of Project Site (or Tract Map and Lot Number if no address) and APN	17103 Magnolia St., Fountain Valley, CA 92708 APN: 167-391-24		
Water Quality Conditions of Approval or Issuance			
Water Quality Conditions of Approval or Issuance applied to this project. (Please list verbatim.)	N/A		
Conceptual WQMP			
Was a Conceptual Water Quality Management Plan previously approved for this project?	No		

Watershed-Based Plan Conditions	
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	Santa Ana River, Reach 1; Pacific Ocean

Section II Project Description

II.1 Project Description

Provide a detailed project description including:

- Project areas;
- Land uses;
- Land cover;
- Design elements;
- A general description not broken down by drainage management areas (DMAs).

Include attributes relevant to determining applicable source controls. *Refer to Section 2.2 in the Technical Guidance Document (TGD) for information that must be included in the project description.*

Description of Proposed Project	
Development Category (From Model WQMP, Table 7.11-2; or -3):	6. Parking lots 5,000 square feet or more including associated drive aisle, and potentially exposed to urban stormwater runoff. A parking lot is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. 9. All significant redevelopment projects, where significant redevelopment is defined as the addition or replacement of 5,000 or more square feet of impervious surface on an already developed site. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety. The redevelopment resulted in the addition or replacement of less than 50 percent of the impervious area on-site and the existing development was not subject to WQMP requirement, the numeric sizing criteria discussed in **Section 7.II-2.0** only applies to the addition or replacement area.

Project Area (ft^2): 35,483	Number of Dwelling Units: ___29___		SIC Code: __8361__	
Project Area	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	21,317 sq ft (0.49 ac)	60%	14,166 sq ft (0.32 ac)	40%
Post-Project Conditions	7,497 sq ft (0.17 ac)	21%	27,986 sq ft (0.63 ac)	79%
Drainage Patterns/Connections	The existing site is relatively flat and sheet flows in a generally southernly direction within a v-gutter towards a catch basin. The runoff eventually drains into the municipal storm drainage system that eventually drains into Santa Ana River, Reach 1 and then to the Pacific Ocean. For the proposed site, runoff will sheet flow towards a trench drain or drain inlets which will eventually drain to the proposed Modular Wetland System (MWS). MWS will connect to an existing catch basin located around the southern property line. Drainage will flow into Santa Ana River, Reach 1 and then to the Pacific Ocean.			

Narrative Project Description: (Use as much space as necessary.)	The study area is located at 17103 Magnolia Street in Fountain Valley. The existing site is currently occupied by parking area, drive aisle and landscape area. The site is bounded by commercial building to the north, Magnolia Street to the east and residential houses to the west and south. The existing site flows in a generally southernly direction to a catch basin. Guadalupe Manor is a proposed commercial redevelopment project with construction of 2 two-story buildings, drive aisles, parking, and landscape areas. The proposed runoff will sheet flow towards a trench drain or drain inlets which will eventually drain to the proposed Modular Wetland System (MWS). MWS will connect to an existing catch basin located around the southern property line. The existing catch basin is connected to municipal storm drain line that will flow into Santa Ana River, Reach 1 and then to the Pacific Ocean. Modular Wetland System has been selected for this project site. The measured infiltration rate was found to be 0.19 in/hr per soil infiltration report prepared by GeoMat Testing Laboratories, Inc. Per Table 2.7: Infiltration BMP Feasibility Worksheet, infiltration is not presumed to be feasible for the entire DCV.

II.2 Potential Stormwater Pollutants

Determine and list expected stormwater pollutants based on land uses and site activities. *Refer to Section 2.2.2 and Table 2.1 in the Technical Guidance Document (TGD) for guidance.*

Pollutants of Concern			
Pollutant	Check One for each: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	E ☒	N ☐	Sediment will mainly be generated by erosion of disturbed soils.
Nutrients	E ☒	N ☐	Nutrients will mainly be generated by erosion of disturbed soils.
Heavy Metals	E ☒	N ☐	Heavy Metals will mainly be generated parking lots.
Pathogens (Bacteria/Virus)	E ☒	N ☐	Pathogens will mainly be generated by pavement runoff.
Pesticides	E ☒	N ☐	Pesticides will mainly be generated by landscape maintenance areas
Oil and Grease	E ☒	N ☐	Oil and Grease will mainly be generated by parking areas.
Toxic Organic Compounds	E ☒	N ☐	Toxic Organic Compounds will mainly be generated by landscape maintenance areas
Trash and Debris	E ☒	N ☐	Trash and Debris includes various waste materials that are typically found throughout the urban landscape

II.3 Hydrologic Conditions of Concern

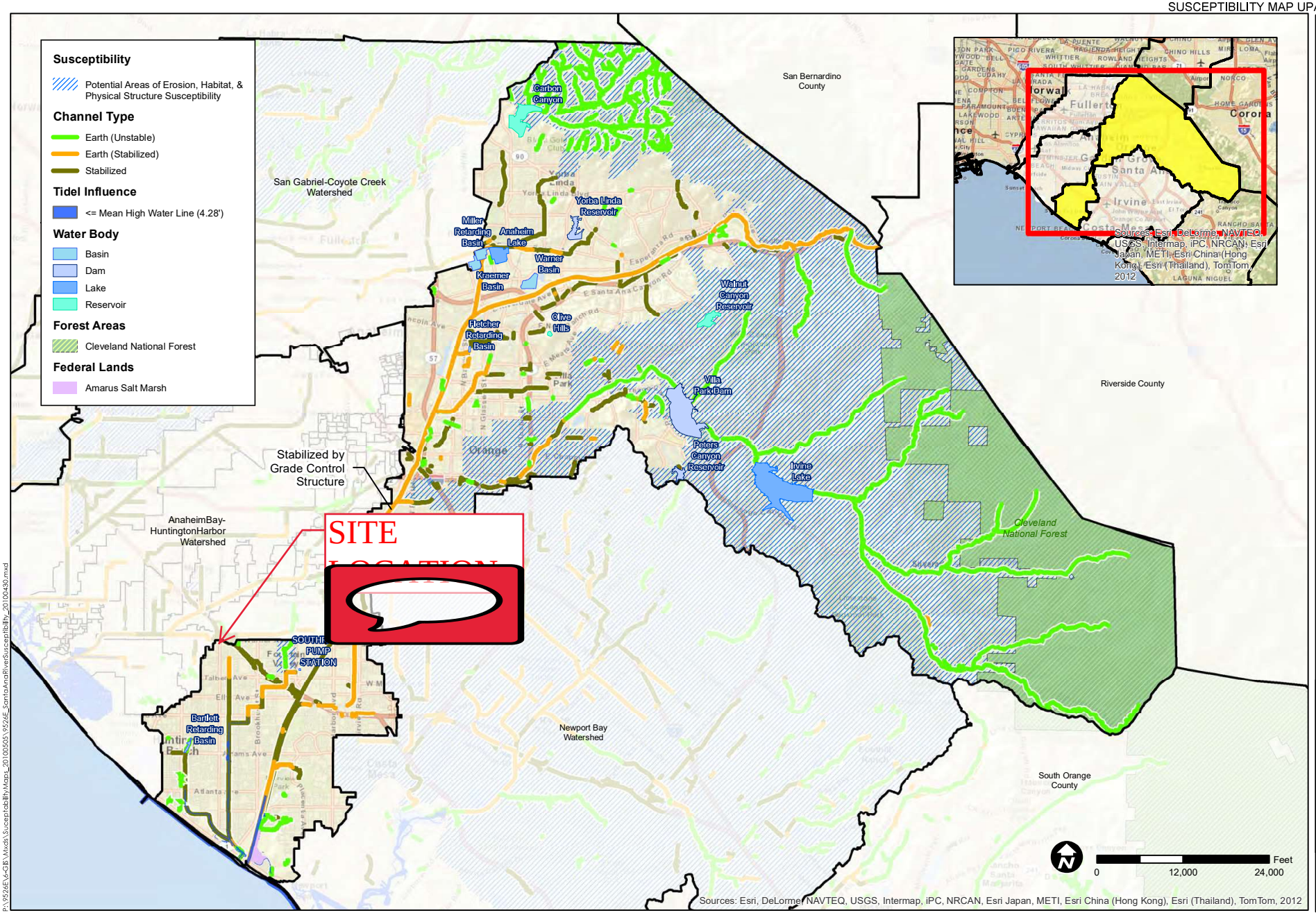
Determine if streams located downstream from the project area are potentially susceptible to hydromodification impacts. *Refer to Section 2.2.3.1 in the Technical Guidance Document (TGD) for North Orange County or Section 2.2.3.2 for South Orange County.*

☒ No – Show map

☐ Yes – Describe applicable hydrologic conditions of concern below. *Refer to Section 2.2.3 in the Technical Guidance Document (TGD).*

s

SUSCEPTIBILITY MAP UPATE (FEB 2013)



TITLE: SUSCEPTIBILITY ANALYIS SANTA ANA RIVER

JOB: ORANGE COUNTY WATERSHED MASTER PLANNING — ORANGE CO., CA

SCALE	DESIGNED	DRAWING	CHECKED	DATE	JOB NO.
1" = 12000'	TH	TH	BWC	04/30/13	9526-E

PACE Advanced Water Engineering

FIGURE 3

P:\9526E\vb<GB\Mxds\Susceptability\Maps_20100505\9526E_SantaAnaRiverSusceptibility_20100430.mxd

II.4 Post Development Drainage Characteristics

Describe post development drainage characteristics. *Refer to Section 2.2.4 in the Technical Guidance Document (TGD).*

For the proposed site, runoff will sheet flow towards a trench drain or drain inlets which eventually drain to the proposed Modular Wetland System (MWS). MWS will connect to an existing catch basin located around the southern property line. Drainage will flow into Santa Ana River, Reach 1 and then to the Pacific Ocean.

Modular Wetland System has been selected for this project site. The measured infiltration rate was found to be 0.19 in/hr per soil infiltration report prepared by GeoMat Testing Laboratories, Inc. Per Table 2.7: Infiltration BMP Feasibility Worksheet, infiltration is not presumed to be feasible for the entire DCV.

II.5 Property Ownership/Management

Describe property ownership/management. *Refer to Section 2.2.5 in the Technical Guidance Document (TGD).*

Our Lady of Guadalupe is the project owner and the responsible entity for operation and maintenance of the proposed stormwater drainage system and BMPs. **Our Lady of Guadalupe** will be responsible for long term maintenance of the stormwater facilities onsite.

Section III Site Description

III.1 Physical Setting

Fill out table with relevant information. *Refer to Section 2.3.1 in the Technical Guidance Document (TGD).*

Name of Planned Community/Planning Area (if applicable)	Guadalupe Manor
Location/Address	17103 Magnolia Street
	Fountain Valley, CA 92708
General Plan Land Use Designation	Commercial
Zoning	C1 – Local Business
Acreage of Project Site	0.81 ac
Predominant Soil Type	Silt and clay.

III.2 Site Characteristics

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.2 in the Technical Guidance Document (TGD).*

Site Characteristics	
Precipitation Zone	0.75
Topography	Relatively flat. Slopes in a generally west direction
Drainage Patterns/Connections	The existing site is relatively flat and sheet flows in a generally southernly direction within a v-gutter towards a catch basin. The runoff eventually drains into the municipal storm drainage system that eventually drains into Santa Ana River, Reach 1 and then to the Pacific Ocean. For the proposed site, runoff will sheet flow towards a trench drain or drain

	inlets which will eventually drain to the proposed Modular Wetland System (MWS). MWS will connect to an existing catch basin located around the southern property line. Drainage will flow into Santa Ana River, Reach 1 and then to the Pacific Ocean. Modular Wetland System has been selected for this project site. The measured infiltration rate was found to be 0.19 in/hr per soil infiltration report prepared by GeoMat Testing Laboratories, Inc. Per Table 2.7: Infiltration BMP Feasibility Worksheet, infiltration is not presumed to be feasible for the entire DCV.
Soil Type, Geology, and Infiltration Properties	Soil Type D
Hydrogeologic (Groundwater) Conditions	Per percolation report prepared by GeoMat Testing Laboratories, Inc. and dated November 09, 2021, groundwater was not encountered to a depth of 5 feet below existing ground surface. However, nearest historic groundwater is reported to be 5 feet below the existing grade.
Geotechnical Conditions (relevant to infiltration)	Modular Wetland System has been selected for this project site. The measured infiltration rate was found to be 0.19 in/hr per soil infiltration report prepared by GeoMat Testing Laboratories, Inc. Per Table 2.7: Infiltration BMP Feasibility Worksheet, infiltration is not presumed to be feasible for the entire DCV.
Off-Site Drainage	N/A
Utility and Infrastructure Information	Water and sewer lines to serve existing and proposed buildings.

III.3 Watershed Description

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.3 in the Technical Guidance Document (TGD).*

Receiving Waters	Santa Ana River, Reach 1
303(d) Listed Impairments	None
Applicable TMDLs	Fecal Coliform

Pollutants of Concern for the Project	Sediment, Nutrients, Pathogens, Pesticides, Oil and Grease, Trash and Debris
Environmentally Sensitive and Special Biological Significant Areas	None. Site is not directly adjacent or discharging directly into an ESA.

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

Describe project performance criteria. Several steps must be followed in order to determine what performance criteria will apply to a project. These steps include:

- If the project has an approved WIHMP or equivalent, then any watershed specific criteria must be used and the project can evaluate participation in the approved regional or sub-regional opportunities. (Please ask your assigned planner or plan checker regarding whether your project is part of an approved WIHMP or equivalent.)
- Determine applicable hydromodification control performance criteria. *Refer to Section 7.II-2.4.2.2 of the Model WQMP.*
- Determine applicable LID performance criteria. *Refer to Section 7.II-2.4.3 of the Model WQMP.*
- Determine applicable treatment control BMP performance criteria. *Refer to Section 7.II-*3.2.2 *of the Model WQMP.*
- Calculate the LID design storm capture volume for the project. *Refer to Section 7.II-2.4.3 of the Model WQMP.*

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

<table>
<tr><th colspan="2">Project Performance Criteria</th></tr>
<tr><td>If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)</td><td>N/A</td></tr>
<tr><td>List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)</td><td>MWS, design flow rate from the 2-year storm event.</td></tr>
<tr><td>List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)</td><td>LID performance criteria have been met through MWS. Sizing of treatment control BMP(s) are based on the design flow rate from the 2-year storm event.</td></tr>
<tr><td>Calculate LID design storm capture volume for Project.</td><td>DCV – Area 1
<table><tr><td></td><td>Area 1</td></tr><tr><td>Design Capture Storm Depth</td><td>0.75</td></tr><tr><td>Total Acreage</td><td>0.81</td></tr><tr><td>Pervious Acreage</td><td>0.17</td></tr><tr><td>Imperviousness</td><td>0.791</td></tr><tr><td>Runoff Coefficient</td><td>0.743</td></tr><tr><td>DCV (ft^3)</td><td>1,648.4</td></tr></table>Reference Attachment C for calculation.</td></tr>
</table>

IV.2. Site Design and Drainage

Describe site design and drainage including

- A narrative of site design practices utilized or rationale for not using practices;
- A narrative of how site is designed to allow BMPs to be incorporated to the MEP
- A table of DMA characteristics and list of LID BMPs proposed in each DMA.
- Reference to the WQMP "BMP Exhibit."
- Calculation of Design Capture Volume (DCV) for each drainage area.
- A listing of GIS coordinates for LID and Treatment Control BMPs.

Refer to Section 2.4.2 in the Technical Guidance Document (TGD).

For the proposed site, runoff will sheet flow towards a trench drain or drain inlets which will eventually drain to the proposed Modular Wetland System (MWS). MWS will connect to an existing catch basin located around the southern property line. Drainage will flow into Santa Ana River, Reach 1 and then to the Pacific Ocean.

Modular Wetland System has been selected for this project site. The measured infiltration rate was found to be 0.19 in/hr per soil infiltration report prepared by GeoMat Testing Laboratories, Inc. Per Table 2.7: Infiltration BMP Feasibility Worksheet, infiltration is not presumed to be feasible for the entire DCV.

IV.3 LID BMP Selection and Project Conformance Analysis

Each sub-section below documents that the proposed design features conform to the applicable project performance criteria via check boxes, tables, calculations, narratives, and/or references to worksheets. *Refer to Section 2.4.2.3 in the Technical Guidance Document (TGD) for selecting LID BMPs and Section 2.4.3 in the Technical Guidance Document (TGD) for conducting conformance analysis with project performance criteria.*

IV.3.1 Hydrologic Source Controls (HSCs)

If required HSCs are included, fill out applicable check box forms. If the retention criteria are otherwise met with other LID BMPs, include a statement indicating HSCs not required.

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

IV.3.2 Infiltration BMPs

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

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

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with infiltration BMPs. If not, document how much can be met with infiltration and document why it is not feasible to meet the full volume with infiltration BMPs.

N/A

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, describe any evapotranspiration and/or rainwater harvesting BMPs included.

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

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with evapotranspiration and/or rainwater harvesting BMPs in combination with infiltration BMPs. If not, document below how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with these BMP categories.

N/A

IV.3.4 Biotreatment BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, and/or evapotranspiration and rainwater harvesting BMPs, describe biotreatment BMPs included. Include sections for selection, suitability, sizing, and infeasibility, as applicable.

Name	Included?
Bioretention with underdrains	☐
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☒
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with infiltration, evapotranspiration, rainwater harvesting and/or biotreatment BMPs. If not, document how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with these BMP categories.

Modular Wetland System has been selected for this project site. The measured infiltration rate was found to be 0.19 in/hr per soil infiltration report prepared by GeoMat Testing Laboratories, Inc. Per Table 2.7: Infiltration BMP Feasibility Worksheet, infiltration is not presumed to be feasible for the entire DCV.

DCV calculations are based on Orange County TGD Worksheet B: Simple Design Capture Volume Sizing Method. See Attachment C: Calculations.

DCV – Area 1

	Area 1
Design Capture Storm Depth	0.75
Total Acreage	0.81
Pervious Acreage	0.17
Imperviousness	0.791
Runoff Coefficient	0.743
DCV (ft^3)	1,648.4

Design Flow Rate

Total Acreage	0.81
Pervious Acreage	0.17
Imperviousness	0.791
Runoff Coefficient	0.74
i_{design} (in)	0.13
Q_{design} (cfs)	0.079

IV.3.5 Hydromodification Control BMPs

Describe hydromodification control BMPs. *See Section 5 of the Technical Guidance Document (TGD).* Include sections for selection, suitability, sizing, and infeasibility, as applicable. Detail compliance with Prior Conditions of Approval (if applicable).

Hydromodification Control BMPs	
BMP Name	**BMP Description**
N/A	

IV.3.6 Regional/Sub-Regional LID BMPs

Describe regional/sub-regional LID BMPs in which the project will participate. *Refer to Section 7.II-2.4.3.2 of the Model WQMP.*

Regional/Sub-Regional LID BMPs
N/A

IV.3.7 Treatment Control BMPs

Treatment control BMPs can only be considered if the project conformance analysis indicates that it is not feasible to retain the full design capture volume with LID BMPs. Describe treatment control BMPs including sections for selection, sizing, and infeasibility, as applicable.

Treatment Control BMPs	
BMP Name	**BMP Description**
N/A	

IV.3.8 Non-structural Source Control BMPs

See Section 6.2 of the Technical Guidance Document for the descriptions of Non-structural Source Control BMPs.

Technical Guidance Document:
https://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/oc_permit.html
-> "Technical Guidance Document (Based on 5/19/2011 Approval Letter)"

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

IV.3.9 Structural Source Control BMPs

See Section 6.2 of the Technical Guidance Document for the descriptions of Structural Source Control BMPs.

Technical Guidance Document:
https://www.waterboards.ca.gov/santaana/water_issues/programs/stormwater/oc_permit.html
-> "Technical Guidance Document (Based on 5/19/2011 Approval Letter)"

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

IV.4 Alternative Compliance Plan (If Applicable)

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the WQMP.*

IV.4.1 Water Quality Credits

Determine if water quality credits are applicable for the project. *Refer to Section 3.1 of the Model WQMP for description of credits and Appendix VI of the Technical Guidance Document (TGD) for calculation methods for applying water quality credits.*

<table>
<tr><th colspan="5">Description of Proposed Project</th></tr>
<tr><td colspan="5">Project Types that Qualify for Water Quality Credits (Select all that apply):</td></tr>
<tr><td colspan="2">☐Redevelopment projects that reduce the overall impervious footprint of the project site.</td><td colspan="2">☐Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.</td><td>☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).</td></tr>
<tr><td colspan="2">☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).</td><td colspan="2">☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned</td><td>☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).</td></tr>
<tr><td>☐Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.</td><td>☐ Developments in a city center area.</td><td>☐ Developments in historic districts or historic preservation areas.</td><td>☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.</td><td>☐In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.</td></tr>
</table>

Calculation of Water Quality Credits (if applicable)	N/A

IV.4.2 Alternative Compliance Plan Information

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the Model WQMP.*

N/A

Section V Inspection/Maintenance Responsibility for BMPs

Fill out information in table below. Prepare and attach an Operation and Maintenance Plan. Identify the funding mechanism through which BMPs will be maintained. Inspection and maintenance records must be kept for a minimum of five years for inspection by the regulatory agencies. *Refer to Section 7.II 4.0 in the Model WQMP.*

BMP Inspection/Maintenance			
BMP	**Reponsible Party(s)**	**Inspection/ Maintenance Activities Required**	**Minimum Frequency of Activities**
N.1 Education for Property Owners, Tenants and Occupants	Our Lady of Guadalupe	An awareness program will be established to inform all the employees of the impacts of dumping oil, antifreeze, paints, solvents or other potentially harmful chemicals into storm drain; the proper use (e.g., application methods, frequencies and precautions) and management of fertilizers, pesticides and herbicides in landscaping maintenance practices; the impacts of littering and improper water disposal.	Our Lady of Guadalupe shall conduct orientation during the first four weeks of startup and as on-going.
N.2 Activity Restrictions	Our Lady of Guadalupe	Our Lady of Guadalupe shall conduct daily management of business activities. Our Lady of Guadalupe will conduct orientation during the first four	Daily management.

		weeks of startup and as on-going. Each business activity is restricted under the City of Fountain Valley guidance.	
N.3 Common Area Landscape	Our Lady of Guadalupe	Landscape will be designed by a landscape architect & maintained by Our Lady of Guadalupe thru its landscape contractor. The timer to control the irrigation system will be set accordingly with the season to avoid irrigation and overflow to the drainage system. <u>Herbicide and Pesticide Management</u> Herbicide and pesticide management programs will be designed to mitigate the potential occurrence of acute toxicity concentrations (arising from accidental spills) and chronic toxicity concentrations (arising from long-term use of herbicides). Specific management practices that will be implemented to control spills will include the following: During transport, herbicides, pesticides, additives, and application equipment are secured to prevent tipping or excess jarring and are carried in a part	Owner, through a contracted landscaper, shall inspect landscape area at least once a month.

		of the vehicle totally isolated form people, food, and clothing. Only the amount of herbicide or pesticide needed for the day's use is to be brought to the site. During use, equipment to store, transport, mix, or apply herbicides and pesticides is inspected daily for leaks. Accident preplanning is done. In the unlikely event of a spill, the spill is contained and cleaned up and the appropriate agencies and people are promptly notified. Pesticides will be used only after recommendation from a State-licensed pest control adviser. Pesticides will only be applied by or under the direct supervision of a State-licensed or certified pesticide applicator or by workers with equivalent training. <u>Fertilizer Management</u> The development of proper fertilizer management will be a key element of the plan. Maintenance guidelines for fertilizer application	

		and maintenance will include: Soil testing and fertilizer recommendation will be conducted by a qualified specialist. Water landscaped areas after fertilizing, but do not allow water to run off into streets. Immediately clean up any fertilizer spilled on paved areas. Dispose of excess fertilizer at a household hazardous waste collection center. Use of compost, peat, and mulch where applicable.	
N.4 BMP Maintenance	Our Lady of Guadalupe	In addition to the community awareness program, Our Lady of Guadalupe through its site and landscape maintenance contractors will be responsible for inspection and maintenance activities in landscape areas. Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the maintenance contractors hired by Our Lady of Guadalupe The site maintenance	Each BMPs shall be inspected per required frequency of BMP suggested in the Maintenance Responsibility / Frequency Matrix included in this table.

		manager will maintain and inspect non-structural and structural BMPs on the site at least once a month.	
N.5 Title 22 CCR Compliance	Our Lady of Guadalupe	The owner shall be responsible to comply with Title 22 of the California Code of Regulations and relevant sections of the California Health & Safety Code regarding hazardous waste management.	Ongoing.
N.7 Spill Contingency Plan	Our Lady of Guadalupe	The owner shall be responsible for preparing a Spill Contingency Plan. A Spill Contingency Plan will detail preparation and responses to spills of hazardous materials.	Ongoing.
N.9 Hazardous Materials Disclosure Compliance	Our Lady of Guadalupe	The owner shall be responsible to comply with Permittee ordinances typically enforced by fire protection agencies regarding, health care agencies and/or other appropriate agencies for the management of hazardous materials.	Ongoing.
N.10 Uniform Fire Code Implementation	Our Lady of Guadalupe	Our Lady of Guadalupe shall be responsible to comply with the local Fire Code enforced by fire protection agency.	Ongoing.

N.11 Common Area Litter Control	Our Lady of Guadalupe	Our Lady of Guadalupe through site maintenance contractor shall implement litter control procedures and management in the landscape and parking lot areas in order to prevent and reduce pollution of storm water runoff on a weekly basis. Waste containers located outside shall be provided with spill prevention features and emptied on a regular basis, but as a minimum on a weekly basis.	Waste containers located outside shall be provided with spill prevention features and emptied on a regular basis, but as a minimum on a weekly basis.
N.12 Employee Training	Our Lady of Guadalupe	Our Lady of Guadalupe shall conduct an employee training program and shall inform and train employees engaged in maintenance activities regarding the impacts of dumping oil, antifreeze, paints, solvents or other potentially harmful chemicals into storm sewer; the proper use (e.g., application methods, frequencies and precautions) and management of fertilizers, pesticides and herbicides in landscaping maintenance practice; the impacts of littering an improper water disposal. The proposed and existing buildings are	Employee training program shall be conducted on an ongoing basis and during the first month of startup period. This WQMP shall be a reference to be used for the program and an annual review of the provisions of the WQMP shall be done by each employee.

		used for mixed commercial uses and the proposed project site is currently owned by Our Lady of Guadalupe If there are any changes of ownership on the site, a new owner shall be responsible once the ownership is transferred. Further guidance and information can be referred to BMPs	
N.14 Common Area Catch Basin Inspection	Our Lady of Guadalupe	Our Lady of Guadalupe shall perform common area catch basin inspection.	Quarterly and after each rainfall event
N.15 Street Sweeping Private Streets and Parking Lots	Our Lady of Guadalupe	Our Lady of Guadalupe though its site maintenance contractor shall provide vacuum sweeping of parking lots on a weekly basis. In addition, the sweeping program will be intensified prior to the start of the rainy season around October 15 of every year to minimize water pollution during the "first flush" storm.	Weekly, prior to start of the rainy season in October 15th.
S.1 Provide storm drain stenciling and signage	Our Lady of Guadalupe	Inspect storm drain stencils.	At least three times per year.

S.3 Design and construct trash and waste storage areas to reduce pollution introduction	Our Lady of Guadalupe	Inspect for clogging at drain inlets.	Quarterly at least three times per year.
S.4 Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	Our Lady of Guadalupe	Inspect irrigation system for proper function.	Equipment-water sensors, irrigation heads and timing-inspection on a monthly basis.
Modular Wetland System	Our Lady of Guadalupe	Inspect for accumulated sediment and trash. Installation is to be inspected and cleaned periodically by a recommended professional.	Quarterly and after each rainfall event.

Section VI BMP Exhibit (Site Plan)

VI.1 BMP Exhibit (Site Plan)

Include a BMP Exhibit (Site Plan), at a size no less than 24" by 36," which includes the following minimum information:

- Insert in the title block (lower right hand corner) of BMP Exhibit: the WQMP Number (assigned by staff) and the grading/building or Planning Application permit numbers
- Project location (address, tract/lot number(s), etc.)
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Delineate the area being treated by each structural BMP
- GIS coordinates for LID and Treatment Control BMPs
- Drainage connections
- BMP details
- Preparer name and stamp

Please do not include any areas outside of the project area or any information not related to drainage or water quality. The approved BMP Exhibit (Site Plan) shall be submitted as a plan sheet on all grading and building plan sets submitted for plan check review and approval. The BMP Exhibit shall be at the same size as the rest of the plan sheets in the submittal and shall have an approval stamp and signature prior to plan check submittal.

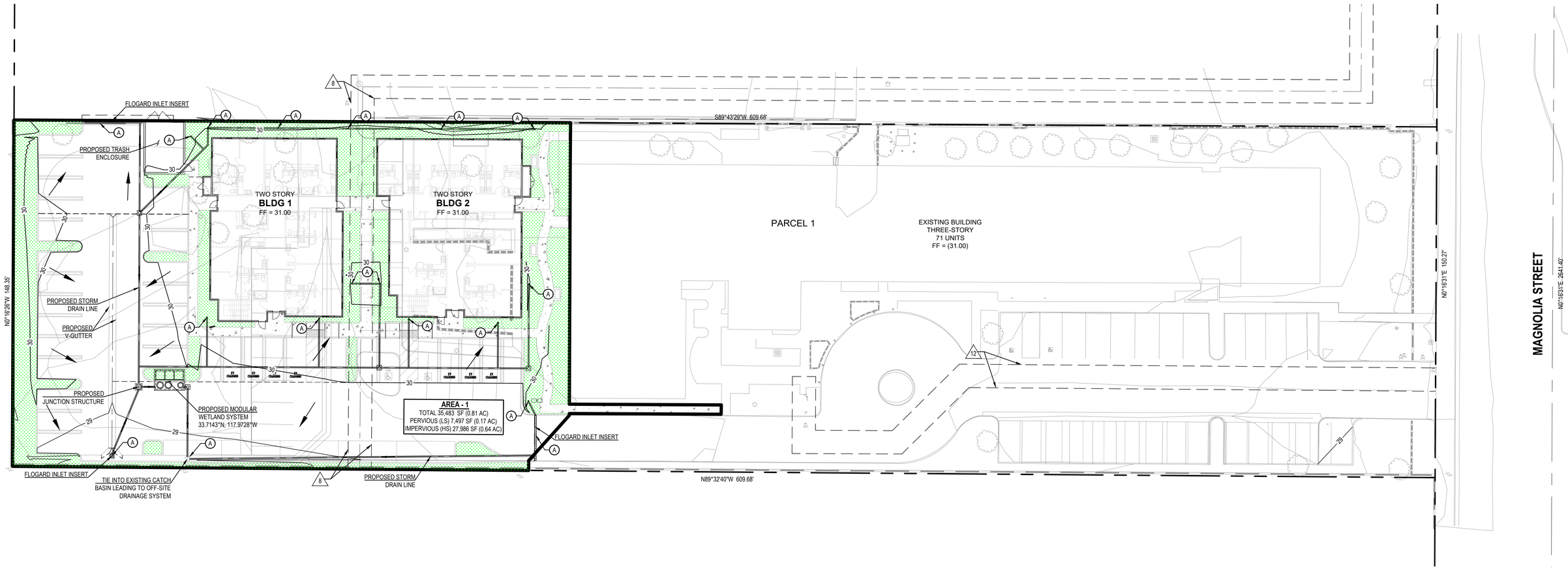
VI.2 Submittal and Recordation of Water Quality Management Plan

Following approval of the Final Project-Specific WQMP, three copies of the approved WQMP (including BMP Exhibit, Operations and Maintenance (O&M) Plan, and Appendices) shall be submitted. In addition, these documents shall be submitted in a PDF format.

PRELIMINARY WQMP
GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

LEGEND:

- PROPOSED PERVIOUS AREA
- PROPOSED IMPERVIOUS AREA
- DRAINAGE BOUNDARY
- (A) STENCIL "NO DUMPING" SIGN
- SURFACE FLOW PATH
- STORM DRAIN FLOW PATH



EASEMENT LEGEND:

- 8 — 10' SEWER EASEMENT
- 12 — 10" WATER EASEMENT 89-460048 O.R.

20' 10' 0 20' 40'
SCALE: 1" = 20'

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REVISIONS

DATE	△	DESCRIPTION

BENCHMARK
DESCRIPTION:

DESCRIBED BY OCS 2002 - FOUND 3 3/4" OCS ALUMINUM BENCHMARK DISK STAMPED "1D-93-87 RESET FEB 1987", SET IN THE NORTHWEST CORNER OF A 5 FT. BY 5 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED 6 FT.NORTH OF THE NORTHERLY CURB AND 104 FT. EAST OF THE END OF MERLE CIRCLE. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

BASIS OF BEARINGS
THE BEARING OF N89°32' 38" W FOR THE CENTERLINE OF WARNER AVENUE AS SHOWN ON A MAP OF TRAGT No 4696 RECORDED IN MISCELLANEOUS MAP BOOK 13, PAGES 41 AND 43 RECORDS OF ORANGE COUNTRY, CALIFORNIA.

Waber Consultants INC
PLANNING CIVIL ENGINEERING SURVEYING
19210 S. VERMONT AVE., SUITE 115, GARDENA, CA 90248
P (424) 344-2464 F (562) 372-3282

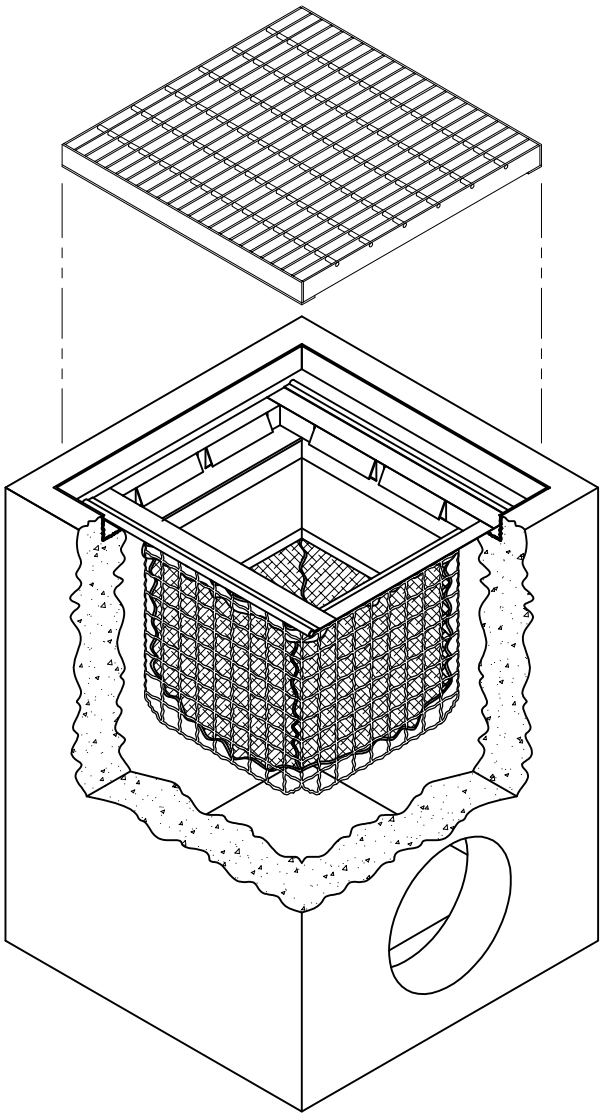
PRELIMINARY WQMP

GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

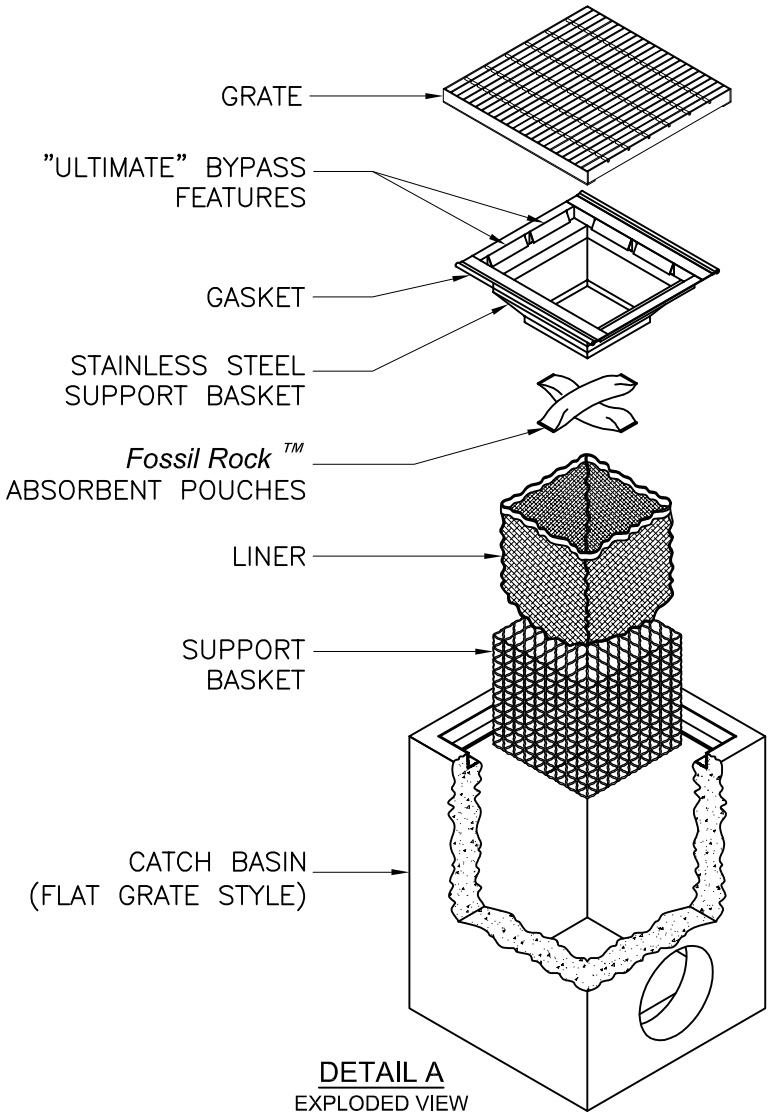
JOB NO. 21041
DATE: 2/24/2022
SHEET 3 OF 5 SHEETS

W:\21-041 OUR LADY OF GUADALUPE\DWG\21041-04WQMPDT.dwg Feb 24, 2022 - 11:58am

FGP-0001



FloGard® FILTER
-INSTALLED INTO CATCH BASIN-



DETAIL A
EXPLODED VIEW

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.

U.S. PATENT # 6,00,023 & 6,877,029

Inlet Filtration

FloGard®

Catch Basin Insert Filter

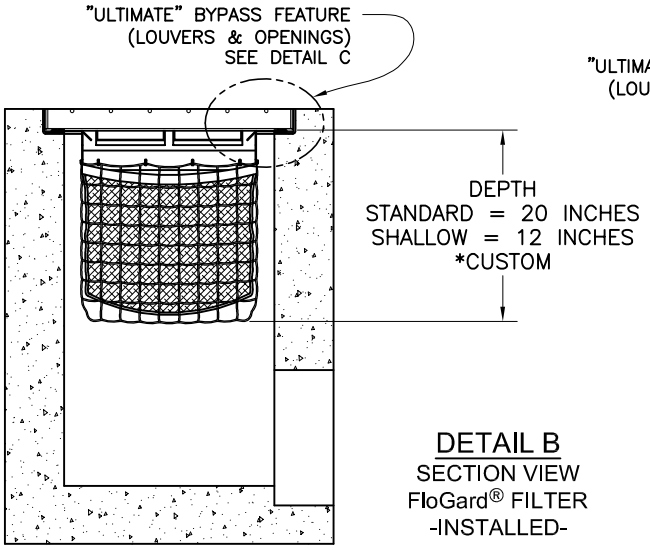
Grated Inlet Style

Oldcastle® Stormwater Solutions

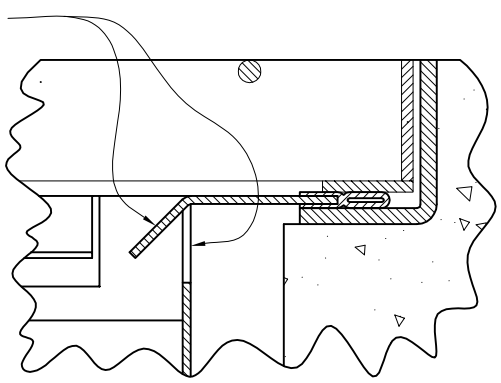
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

DRAWING NO.	REV	ECO	DATE	
FGP-0001	G	ECO-0142 JPR 7/13/16	JPR 11/3/06	SHEET 1 OF 2

U.S. PATENT # 6,00,023 & 6,877,029



DETAIL B
SECTION VIEW
FloGard® FILTER
-INSTALLED-



DETAIL C
"ULTIMATE"
BYPASS FEATURES

* MANY OTHER STANDARD & CUSTOM SIZES & DEPTHS AVAILABLE UPON REQUEST.

SPECIFIER CHART

MODEL NO. STANDARD DEPTH	STANDARD & SHALLOW DEPTH (Data In these columes Is the same for both STANDARD & SHALLOW versions)			STANDARD DEPTH -20 Inches-		MODEL NO. SHALLOW DEPTH	SHALLOW DEPTH -12 Inches-	
	INLET ID Inside Dimension (inch x inch)	GRATE OD Outside Dimension (inch x inch)	TOTAL BYPASS CAPACITY (cu. ft. / sec.)	SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)		SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)
FGP-12F	12 X 12	12 X 14	2.8	0.3	0.4	FGP-12F8	.15	.25
FGP-16F	16 X 16	16 X 19	4.7	0.8	0.7	FGP-16F8	.45	.4
FGP-18F	18 X 18	18 X 20	4.7	0.8	0.7	FGP-18F8	.45	.4
FGP-1824F	16 X 22	18 X 24	5.0	1.5	1.2	FGP-1824F8	.85	.7
FGP-1836F	18 X 36	18 X 40	6.9	2.3	1.6	FGP-1836F8	1.3	.9
FGP-2024F	18 X 22	20 X 24	5.9	1.2	1.0	FGP-2024F8	.7	.55
FGP-21F	22 X 22	22 X 24	6.1	2.2	1.5	FGP-21F8	1.25	.85
FGP-24F	24 X 24	24 X 27	6.1	2.2	1.5	FGP-24F8	1.25	.85
FGP-2430F	24 X 30	26 X 30	7.0	2.8	1.8	FGP-2430F8	1.6	1.05
FGP-2436F	24 X 36	24 X 40	8.0	3.4	2.0	FGP-2436F8	1.95	1.15
FGP-2448F	24 X 48	26 X 48	9.3	4.4	2.4	FGP-2448F8	2.5	1.35
FGP-28F	28 X 28	32 X 32	6.3	2.2	1.5	FGP-28F8	1.25	.85
FGP-30F	30 X 30	30 X 34	8.1	3.6	2.0	FGP-30F8	2.05	1.15
FGP-36F	36 X 36	36 X 40	9.1	4.6	2.4	FGP-36F8	2.65	1.35
FGP-3648F	36 X 48	40 X 48	11.5	6.8	3.2	FGP-3648F8	3.9	1.85
FGP-48F	48 X 48	48 X 54	13.2	9.5	3.9	FGP-48F8	5.45	2.25
FGP-SD24F	24 X 24	28 X 28	6.1	2.2	1.5	FGP-SD24F8	1.25	.85

Inlet Filtration

FloGard®

Catch Basin Insert Filter

Grated Inlet Style

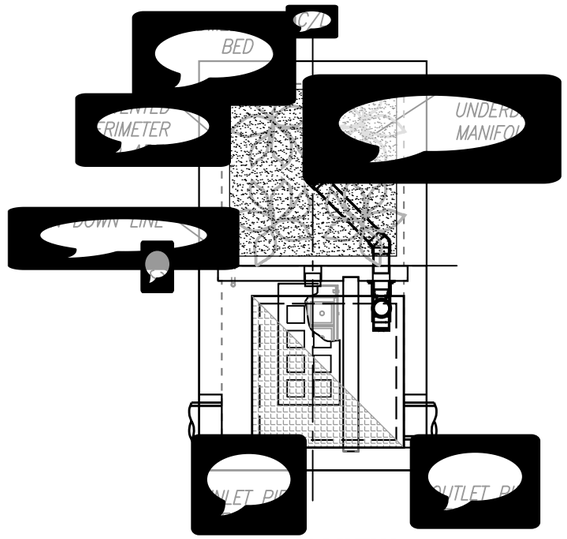
Oldcastle® Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

DRAWING NO.	REV	ECO	DATE	
FGP-0001	G	ECO-0142 JPR 7/13/16	JPR 11/3/06	SHEET 2 OF 2

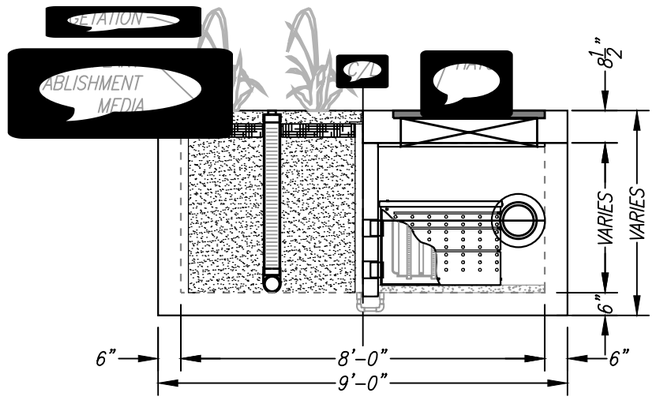
SITE SPECIFIC DATA

[redacted]			
[redacted]			
[redacted]			
[redacted]			
[redacted]			
[redacted]		[redacted]	
[redacted]		0.115	
[redacted]			OFFLINE
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]			
[redacted]	N/A	N/A	N/A
[redacted]			
	[redacted]	[redacted]	[redacted]
[redacted]			
[redacted]	PEDESTRIAN		
[redacted]	[redacted]	OPEN PLANTER	[redacted]
[redacted]			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



LEFT END VIEW

INSTALLATION NOTES

1. [redacted]
   - ALLED ON LEVEL BASE. MA
   - A MINIMUM 6" LEVEL ROCK BASE UNLE
   - ECT ENGINEER. CONTRACTOR IS RESPONSIBLE
   - T ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
   - ACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNE
   - . ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE O
   - RETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVE
   - OW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER
   - S SHALL BE SEALED WATER TIGHT PER MANUFAC
   - CONNECTION DETAIL.
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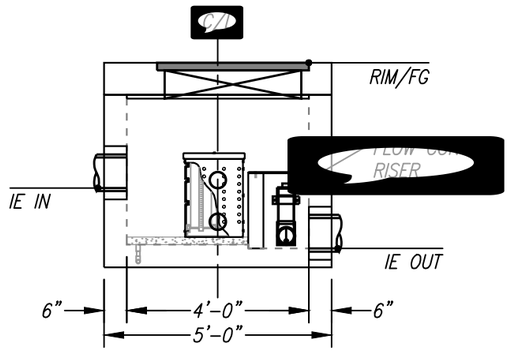
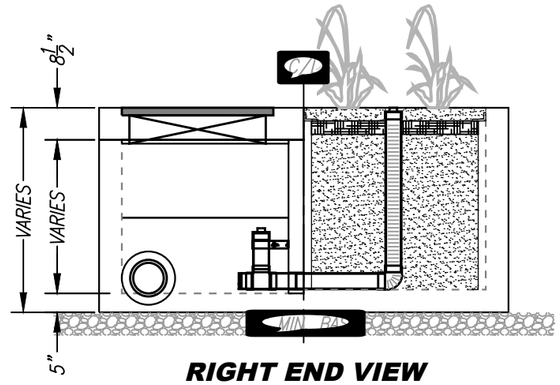
   - HATCHES. CONTRACTOR TO
   - CH FINISHER
   - PLIED AN



ELEVATION VIEW



RIGHT END VIEW

GENERAL NOTES

- [redacted]
- ENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SU
- FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT PIPE

[redacted]	0.115
[redacted]	3.4
[redacted]	2.0
[redacted]	1.0

MODULAR WETLANDS

Bio Clean
A Forterra Company

MWS-L-4-8-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

GeoMat Testing Laboratories, Inc.

Soil Engineering, Environmental Engineering, Materials Testing, Geology

November 9, 2021

Project No. 21255-01

TO: Irwin Partners Architects
245 Fischer Avenue< Suite B-2
Costa Mesa, California 92626

SUBJECT: Basic Shallow Soil Infiltration Testing Report, Proposed Multi Family Development, 17103 Magnolia Street, APN 167-391-24, Extension of Guadalupe Manor Apartments, Fountain Valley, California

In accordance with your authorization, GeoMat Testing Laboratories, Inc. (GeoMat) is pleased to present our Basic Shallow Soil Infiltration Testing Report for proposed multi-family development at 17103 Magnolia Street, Fountain Valley, California. This report is in fulfillment of our proposal dated October 26, 2021 and your subsequent authorization. The accompanying report presents a summary of our findings, recommendations and limitation of work for the proposed site development.

This report provides a summary of the geotechnical engineering services conducted to support evaluation of the feasibility of infiltration in the upper five feet from existing ground surface, at the subject site. The purpose of our services was to complete four insitu infiltration tests utilizing the percolation testing procedure in boreholes to evaluate the feasibility of infiltration for disposal of stormwater runoff following the falling head method.

If you should have any questions regarding this report, please do not hesitate to call our office. We appreciate this opportunity to be of service.

Submitted for GeoMat Testing Laboratories, Inc.

REGISTERED PROFESSIONAL ENGINEER
HAYTHAM NABILSI
GE 2375
EXP. 12/31/22
GEOTECHNICAL
STATE OF CALIFORNIA

Haytham Nabilsi, GE 2375
Project Engineer
haytham@geomatlabs.com

Art Martinez
Staff Engineer
art@geomatlabs.com

Distribution: (3) Addressee

TABLE OF CONTENTS

1 INTRODUCTION

1.1 SCOPE OF WORK

GeoMat Testing Laboratories, Inc. was retained to provide geotechnical engineering services to support the project. Our scope of work consisted of the following specific tasks:

- Drill and conduct four infiltration tests utilizing the shallow boring percolation testing per the Orange County requirements.
- Complete laboratory testing of selected soil samples.
- Complete data analysis.
- Preparation of this report.

1.2 EXISTING SITE CONDITIONS

The subject site is located on the west side of Magnolia Street, approximately 600 feet south of the Magnolia Street and Warner Avenue intersection, in the City of Fountain Valley, California. Access on site is from Magnolia Street which is a paved road with existing concrete curb and gutter improvements. The geographical relationship of the site and surrounding vicinity is shown on the Site Location Map, Figure 1.

There is an existing three story building onsite with associated AC paved parking spaces and drive lanes, concrete flatwork, and landscape. More specially, the area proposed for the infiltration facility is currently used as landscape and sitting area.

1.3 PROPOSED DEVELOPMENT

According to the provided Preliminary Site Plan, prepared by Waber Consultants, Inc., the site is proposed for two new 2-story apartment buildings and associated paved parking spaces and drive lanes, concrete flatwork, and landscaping.

1.4 FIELD WORK

A CME-45 mobile drill rig equipped with 6-inch hollow stem augers was used to drill the test holes. A 4-inch-diameter perforated PVC casing wrapped with filter fabric was placed in the boreholes. Gravel was placed around the bottom portion of the pipe for stability of the borehole. Gravel was also placed in the bottom of the borehole.

1.5 LABORATORY TESTING

Percent passing 200 sieve was performed on select soil samples obtained from the exploratory borehole for the purpose of classification. The soil classifications are in conformance with the Unified Soil Classifications System (USCS) and can be found in Appendix C of this report.

2 SUMMARY OF GEOTECHNICAL CONDITIONS

2.1 GEOLOGIC FINDINGS

Topographically, the site is relatively flat with no abrupt major grade changes. Based on the Geologic Map of the San Bernardino and Santa Ana 30'x60' quadrangles (USGS, Open-File Report OF-2006-1217) the site is located in an area mapped as young alluvial-fan deposits (Qyf). Alluvium is weathered bedrock material and sediments that have been eroded from natural slopes and deposited in generally flat lying areas.

2.2 SUBSURFACE FINDINGS

The subsurface material encountered at the tested locations boring location is briefly described below. Detailed descriptions are provided in the Borehole Logs (Appendix B).

Based on exploratory boreholes, the site is generally underlain by silts and clays (USCS "ML" and "CL"). A thin layer of silty sand (USCS "SM") was encountered at seven feet below ground surface. Material at 12 feet below ground surface was wet. No free water seepage was noted during drilling.

2.3 GROUNDWATER

Groundwater study is not within the scope of this work. Groundwater was not encountered in any of our test boreholes excavated to a maximum depth of 5 feet below existing ground surface. According to the CDMG, Seismic Hazard Report for the Anaheim and Newport Beach Quadrangle, highest historical groundwater levels at the site is around 5 feet below ground surface.

Please note that the potential for rain or irrigation water locally seeping through from elevated areas and showing up near grades cannot be precluded. Our experience indicates that surface or near-surface groundwater conditions can develop in areas where groundwater conditions did not exist prior to site development, especially in areas where a substantial increase in surface water infiltration results from landscape irrigation. Fluctuations in perched water elevations are likely to occur in the future due to variations in precipitation, temperature, consumptive uses, and other factors including mounding of perched water over bedrock. Mitigation for nuisance shallow seeps moving from elevated lower areas will be needed if encountered. These mitigations may include subdrains, horizontal drains, toe drains, french drains, heel drains or other devices.

3 INFILTRATION TESTING

Infiltration tests were conducted for the upper four to five feet from existing ground surface. The infiltration testing was performed in general accordance with the guidelines published in the Orange County Technical Guidance Document (TGD). The following table summarizes the result of the infiltration feasibility study. Refer to Appendix F for field infiltration test data.

The boreholes were presoaked prior to the percolation testing. Presoaking was conducted using five-gallon water bottles. Testing was conducted from a fixed reference point for until a stabilized infiltration rate was achieved. The measurements were taken by filling up the test hole with water and allowing the water to percolate. The drop of water level was recorded.

3.1 INFILTRATION TEST RESULTS

The following summarizes the result of the infiltration feasibility study.

Test No.	Test Depth Below Ground Surface (in)	Adjusted Infiltration Rate (in/hr)
P-1	60	0.34
P-2	60	0.29
P-3	60	0.19
P-4	48	0.19

The raw percolation rate is the rate of water infiltration in the horizontal and vertical direction. This percolation rate is adjusted using the “Porchet Method” to obtain the adjusted water infiltration rate in the vertical direction only.

3.1.1 Safety Factor

Design factor of safety of no less than 2.0 shall be applied to the observed infiltration rate to compute the design infiltration rate for sizing BMPs; a typical design factor of safety should typically be higher. In our opinion, high concern may be considered for soil texture, site variability and historical groundwater.

4 CONCLUSIONS

- In our opinion, no significant water infiltration should be expected.
- The test results may be utilized when the bottom of the infiltration system will be located within the native alluvial soil observed/tested. Should this system be located in the undocumented fill or a different soil type, the infiltration characteristics will be different than those observed during the infiltration testing. The infiltration rate recommended above is based on the assumption that only clean water will be introduced to the subsurface profile. Any fines, debris, or organic materials could significantly impact the infiltration rate.
- Filter fabric should be used whenever aggregates are placed against native soils. Only washed aggregates are allowed.
- Infiltration water should not be allowed to saturate pavement and concrete structures subgrade soils. Infiltration should not be allowed in fill areas.
- Please note that soils in infiltration areas should not be subject to compaction during construction.
- The proposed system by the civil engineer should be constructed and maintained in accordance with manufacturer guidelines.
- Free water seepage was not encountered during drilling the exploratory boring conducted up to 15 feet below ground surface.

5 RECOMMENDATIONS

An important consideration for infiltration facilities is that, during construction, great care must be taken not to reduce the infiltrative capacity of the soil in the facility through compaction by heavy equipment or by using the infiltration area as a sediment trap.

Infiltration facilities should be constructed late in the site development after soils (that might erode and clog the units) have been stabilized or should be protected (by flagging) until site work is completed.

Infiltration facilities should be sited with the following guidelines:

INFILTRATION FACILITY MINIMUM SETBACKS	
Setback From	Minimum Distance
Property Lines and Public Right of Way	5 feet
Structures	15 feet or within a 1:1 plane drawn up from the bottom of foundation
Slopes	H/2, 5 feet minimum (H: is slope height)
Private drinking water wells	100 feet

Ferrous metal pipes should be protected from potential corrosion by bituminous coating, etc. We recommend that all utility pipes be nonmetallic and/or corrosion resistant. Recommendations should be verified by soluble sulfate and corrosion testing of soil samples obtained from specific locations during construction.

If applicable, 4- to 6-inch diameter observation well(s), with locking cap, extending vertically into the system's bottom is suggested as an observation point. Observation well(s) should be checked regularly and after large storm event. Once performance stabilizes, frequency of monitoring may be reduced.

GeoMat Testing Laboratories should observe the subgrade of excavation. Additional laboratory testing including but not limited to grain size analysis, sand equivalent, sulfate content, etc. should be conducted during construction.

The use of on-site storm water infiltration systems carries a risk of creating adverse geotechnical conditions. Increasing the moisture content of the soil can cause the soil to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. Overlying structures and pavements in the infiltration areas could potentially be damaged due to saturation of subgrade soils. It should also be noted that utility trenches which happen to collect storm water can also serve as conduits to transmit storm water toward the structure, depending on the slope of the utility trench. Therefore, consideration should also be given to the proposed locations of underground utilities which may pass near the proposed infiltration systems.

6 LIMITATION OF INFILTRATION SYSTEMS

This report has been prepared as an instrument of service for use by the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, structural engineer, and/or civil engineer.

The reproduction and distribution of this report must be authorized by the client. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between trench locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

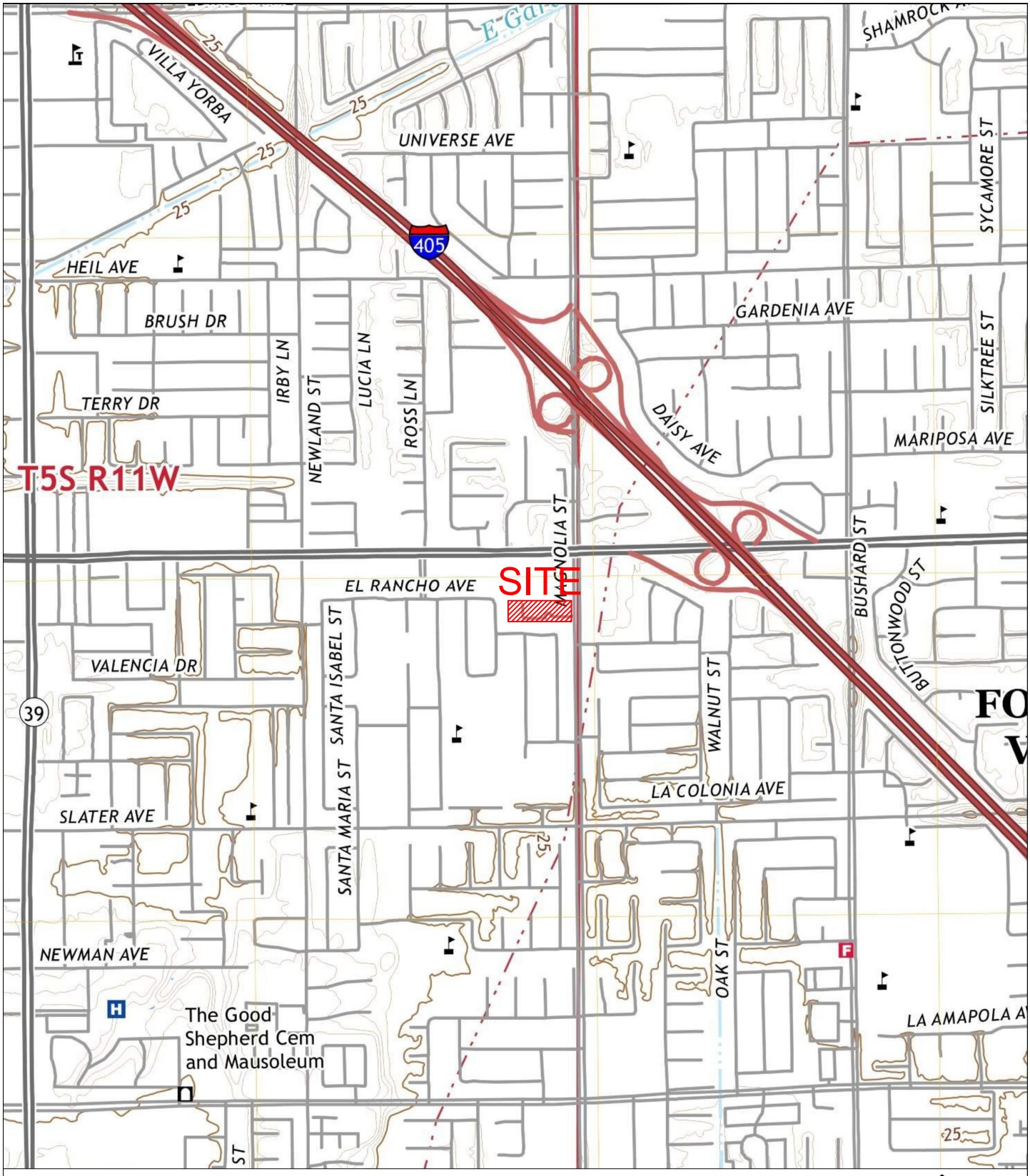
The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

7 USE OF THIS REPORT

This report was prepared for the exclusive use of the owner and design team for specific application to the proposed site. The use by others, or for the purposes other than intended, is at the user's sole risk.

The findings, conclusions, and recommendations presented herein are based on our understanding of the project and on subsurface conditions observed during our site work. Within the limitations of scope, schedule, and budget, the conclusions and recommendations presented in this report were prepared in accordance with generally accepted geotechnical engineering principles and practices in the area at the time the report was prepared. We make no other warranty either expressed or implied.

We appreciate this opportunity to provide geotechnical services on this project and look forward to assisting the Project Team as the design progresses. If you have any questions or comments regarding the information contained in this report, or if we may be of further services, please call us at (951) 688-5400.



USGS, THE NATIONAL MAP, US TOPO, NEWPORT BEACH, 2018

ALL LOCATIONS ARE APPROXIMATE

0 0.5 1.0 2.0

APPROXIMATE SCALE (MILES)

geomat

GeoMat Testing Laboratories, Inc.
9980 Indiana Avenue, Suite 14,
Riverside, California

DWN BY:	AM
CHK'D BY:	MN
DATUM:	--
PROJECTION:	--
SCALE:	1" = 1/4 MILE
REV. NO.:	--

PROJECT: PRELIMINARY SOIL INFILTRATION REPORT
17103 MAGNOLIA STREET
FOUNTAIN VALLEY, CALIFORNIA

TITLE: SITE LOCATION MAP

DATE: NOVEMBER 2021

PROJECT NO.: 21255-01

FIGURE NO.: Figure 1

PRELIMINARY SITE PLAN
GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

LEGEND

R/W OR P/L

EASEMENT LINE

SETBACK LINE

SITE STATISTICS:

ADDRESS	17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708
APN	167-391-24
ZONING	LOCAL BUSINESS
SITE / LOT AREA	91,503 SF TOTAL AREA
BUILDINGS:	
BLDG 1 - 2 STORY	4,340 SF
BLDG 2 - 2 STORY	4,547 SF
BLDG 1 & 2 SECOND STORY AREA	9,376 SF
TOTAL BUILT UP AREA	18,263 SF
TOTAL LOT COVERAGE	8,887 SF
OPEN SPACE REQUIRED (300 sf/ unit)	= 15% x 91,503 = 13,756 REQ'D 28,479 SF / 29.0% PROVIDED
BUILDINGS TO BE TYPE VA SPRINKLERED	
PARKING:	
EXISTING PARKING	25
RELOCATED	21
NEW	13
TOTAL PARKING	59 STALLS PROVIDED
TOTAL REQUIRED PARKING	58

PROJECT SCOPE:
CONSTRUCTION OF TWO 2 STORY APARTMENT BUILDINGS

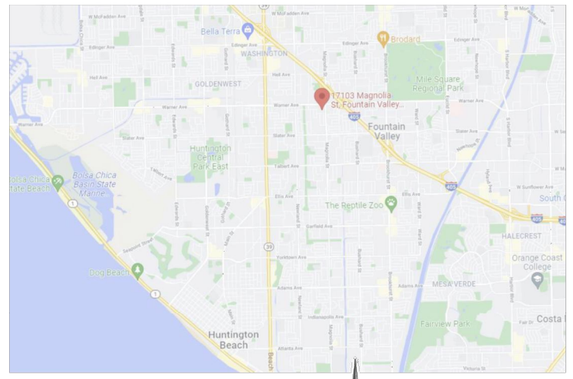
EXPLORATORY BOREHOLE LOCATION MAP
BASIC SOIL INFILTRATION TEST REPORT
17103 MAGNOLIA STREET
FOUNTAIN VALLEY, CALIFORNIA

PREPARED BY:	DATE: NOVEMBER 2021	PLATE 1
geomat GeoMat Testing Laboratories, Inc. 9980 Indiana Avenue, Suite 14, Riverside, California	DRAWN BY: AM CHECKED BY: HMN PROJECT NO.: 21255-01 SCALE: 1" = 50' (11"x17")	

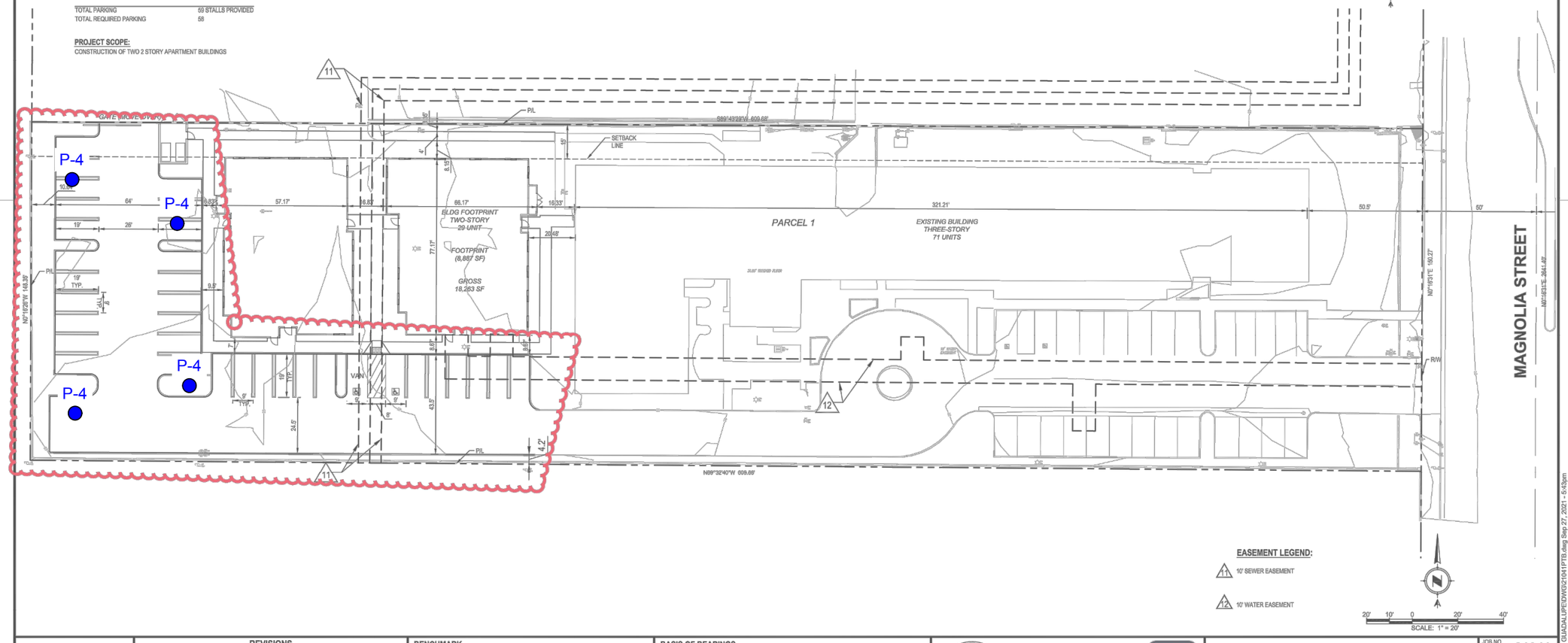
LEGEND:

P-4 INFILTRATION TEST

ALL LOCATIONS ARE APPROXIMATE



VICINITY MAP
SCALE 1" = 1 MILE



EASEMENT LEGEND:

11 10' SEWER EASEMENT

12 10' WATER EASEMENT

SCALE: 1" = 20'

DIG ALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REVISIONS

DATE	△	DESCRIPTION

BENCHMARK
DESCRIPTION:
48FT SOUTH OF C/L ALESSANDRO BLVD., 48FT EAST OF C/L PERRIS BLVD., 34FT NORTH OF ECR TO STRIP MALL, 76FT SOUTH OF BCR TO WALLGREENS. 1FT EAST OF SIDEWALK, SET 3" BRASS DISK IN CONC. FLUSH WITH SIDEWALK STAMPED LS 8136, M-79 RESET 2009.
ELEVATION 1563.092 FEET (NGVD 29).

BASIS OF BEARINGS
THE CENTERLINE OF ALESSANDRO BOULEVARD SHOWN AS N 89° 33' 15" W, ON TRACT MAP NO. 10056, AS FILED IN BOOK 102, PAGES 07 THROUGH 73 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, WAS USED AS THE BASIS OF BEARINGS.

REGISTERED PROFESSIONAL ENGINEER — AMIR R. WABER — No. C69050 Exp. 6/30/22 — CIVIL — STATE OF CALIFORNIA

Waber Consultants INC
PLANNING CIVIL ENGINEERING SURVEYING
19210 S. VERMONT AVE., SUITE 113, GARDENA, CA 90248
P (424) 544-2660 F (562) 372-3283

PRELIMINARY SITE PLAN
GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

JOB NO. 21041
DATE: 9/27/2021
SHEET 1 OF 4 SHEETS

W:\21-041 OUR LADY OF GUADALUPE\DWG\21041PTB.dwg Sep 27, 2021 - 5:43pm

APPENDIX A

SELECTED REFERENCES

GeoMat Testing Laboratories, Inc.
Geotechnical Engineering
Engineering Geology
Material Testing

Inland Empire
9980 Indiana Ave, Suite 14
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Office (951) 688-5400

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Office (310) 337-9400

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REFERENCES

Waber Consultants, Preliminary Site Plan, Guadalupe manor, 17103 Magnolia Street, Fountain Valley, Sheet 1, Plan Not Dated.

Morton, D.M. and Miller, F.K., 2006, Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California, U.S. Geological Survey, Open-File Report OF-2006-1217, 1:100,000.

CDMG, Seismic Hazard Zone Report for the Anaheim and Newport Beach 7.5-Minute Quadrangles, Orange County, California, 1997

CDMG, Earthquake Zones of Required Investigation, Newport Beach 7.5-Minute Quadrangles, Orange County, California, 1997

Technical guidance Document (TGD) for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans (WQMPs) in South Orange County, September 28, 2017.

APPENDIX B

BOREHOLE LOGS

GeoMat Testing Laboratories, Inc.
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CONSISTENCY OF COHESIVE SOILS

Descriptor	Unconfined Compressive Strength (tsf)	Pocket Penetrometer (tsf)	Torvane (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	0.25 - 0.50	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	0.50 - 1.0	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	1.0 - 2.0	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	2.0 - 4.0	1.0 - 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS

Descriptor	SPT N60 - Value (blows / foot)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Descriptor	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE

Descriptor		Size
Boulder		> 12 inches
Cobble		3 to 12 inches
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. 40 Sieve
Silt and Clay		Passing No. 200 Sieve

PLASTICITY OF FINE-GRAINED SOILS

Descriptor	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CEMENTATION

Descriptor	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND - SILT MIXTURES
			SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Dual symbols are used to indicate gravels or sand with 5-12% fines and soils with fines classifying as CL-ML. Symbols separated by a slash indicate borderline soil classifications.

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KEY TO LOG OF BORING

APPENDIX B

PROJECT:	17103 Magnolia Street Fountain Valley, California	**Log of Boring**	**B-1**	Longitude: Latitude: Elevation:	
Project No.	**21255-01**	Location:	**See Plate 1**	Borehole Logged by:	MHN
Excavating Co. / Rig:	**GeoMat/CME 45**	Date Started:	**11/20/2021**	Depth to Groundwater:	N/A ft
Method:	**Hollow-Stem Auger**	Date Finished:	**11/20/2021**	Depth to Bedrock:	N/A ft
Hammer Weight / Drop:	**140 lbs./30-inches**	Hammer Type:	**Automatic**	Total Depth of Borehole:	15 ft

Depth (ft)	Type	Sample	Blows / 6"	SPT "N" Value	Symbol	Classification (USCS)	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Fines Content (%)	Pocket Pen (tsf)	Liquid Limit	Plastic Limit	Plast. Index
							SAMPLES / LABORATORY TEST DATA							
5						SC	**SANDY SILT** Dark brown, fine grained, moist	13		61				
							SILTY SAND Medium brown, fine uniformly grained, mosit	14		43				
10							**SANDY SILTY CLAY** Dark brown, moist, slightly cohesvie	28		68				
15							**SANDY CLAY** Dark brown, moderately cohesive, trace of fine sand, wet	35		70				
20														
25														
30														
35														
40														
45														
50														

LOG LEGEND

- Bedrock/Formation
- Gravels
- Clean Sands
- Silty Sands
- Silts
- Clayey Sands
- Clays
- Bulk "Grab" Sample (B)
- Modified California Ring (R)
- Standard Penetration (S)
- Modified Dames & Moore (D)
- ▽ Groundwater (Groundwater (During Drillin
- ▼ Groundwater (Groundwater (Stabilized)
- D Disturbed Sarr Disturbed Sample
- N No Sample Re No Sample Recovery

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APPENDIX C

LABORATORY TESTING

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LABORATORY TEST RESULTS

Bulk Sample	% Passing #200 Sieve	% Moisture Content	VISUAL CLASSIFICATION
0-6’	61	13	Sandy Silt
7’-8’	43	14	Silty Sand
8’-12’	68	28	Sandy Silty Clay
12’-15’	70	35	Sandy Clay

APPENDIX D

FIELD INFILTRATION TEST DATA

GeoMat Testing Laboratories, Inc.
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Engineering Geology
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Los Angeles, California 90045
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geomatlabs.com

BORING PERCOLATION TEST P-1

Project Name:	17103 Magnolia Street, Fountain Valley, CA	Depth of Hole (in):	60
Project No.:	21255-01	Borehole Diameter (in):	6
Project Location:	17103 Magnolia Street, Fountain Valley, CA	Test Refill Water Column Height, [d1] (in):	15
Drillied/Augered by:	MN	Pre-Soaked/Tested by:	MN
Drilling/Augering Date(s):	11/6/2021	Pre-Soak/Testing Date(s):	11/6 and 11/7

PRESOAKING:

Pre-soaking shall be used with this procedure. Invert a full 5 gallon bottle (more if necessary) of clear water supported over the hole so that the water flow into the hole holds constant at a level at least 5 times the hole's radius above the gravel at the bottom of the hole. Testing may commence after all of the water has percolated through the test hole or after 15 hours has elapsed since initiating the pre-soak.

SANDY SOIL DETERMINATION:

Test hole shall be carefully filled with water to a depth equal to at least 5 times the hole's radius (H/r>5) above the gravel at the bottom of the test hole prior to each test interval.

A) In sandy soils, when 2 consecutive measurements show that 6 inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Measurements shall be taken with a precision of 0.25 inches or better. The drop that occurs during the final 10 minutes is used to calculate the percolation rate. Field data must show the two 25 minute readings and the six 10 minute readings.

B) In non-sandy soils, the percolation rate measurement shall be made on the day following initiation of the pre-soak as described in Item #5 above. From a fixed reference point, measure the drop in water level over a 30 minute period for at least 6 hours, refilling after every 30 minute reading. Measurements shall be taken with a precision of 0.25 inches or better. The total depth of hole must be measured at every reading to verify that collapse of the borehole has not occurred. The drop that occurs during the final reading is used to calculate the percolation rate.

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	SANDY SOIL CRITERIA MET?
SANDY SOIL TESTING CRITERIA						NO
						NO

TRIAL NO.	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	AVERAGE WETTED DEPTH (in)	SURFACE AREA OF SECTION (in^2)	VOLUME OF PERCOLATED WATER (in^3)	MEASURED INFILTRATION RATE (in/hr)
1	0:00:00	0:30:00	45	47.50	2.50	13.75	287.46	70.69	0.49
	0:30:00	30.00							
2	0:00:00	0:30:00	45	47.00	2.00	14.00	292.17	56.55	0.39
	0:30:00	30.00							
3	0:00:00	0:30:00	45	46.88	1.88	14.06	293.35	53.01	0.36
	0:30:00	30.00							
4	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
5	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
6	0:00:00	0:30:00	45	46.88	1.88	14.06	293.35	53.01	0.36
	0:30:00	30.00							
7	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
8	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
9	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
10	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
11	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
12	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							

MEASURED INFILTRATION RATE* = **0.34** **in/hr**

BORING PERCOLATION TEST P-2

Project Name:	17103 Magnolia Street, Fountain Valley, CA	Depth of Hole (in):	60
Project No.:	21255-01	Borehole Diameter (in):	6
Project Location:	17103 Magnolia Street, Fountain Valley, CA	Test Refill Water Column Height, [d1] (in):	15
Drillied/Augered by:	MN	Pre-Soaked/Tested by:	MN
Drilling/Augering Date(s):	11/6/2021	Pre-Soak/Testing Date(s):	11/6 and 11/7

PRESOAKING:

Pre-soaking shall be used with this procedure. Invert a full 5 gallon bottle (more if necessary) of clear water supported over the hole so that the water flow into the hole holds constant at a level at least 5 times the hole's radius above the gravel at the bottom of the hole. Testing may commence after all of the water has percolated through the test hole or after 15 hours has elapsed since initiating the pre-soak.

SANDY SOIL DETERMINATION:

Test hole shall be carefully filled with water to a depth equal to at least 5 times the hole's radius (H/r>5) above the gravel at the bottom of the test hole prior to each test interval.

A) In sandy soils, when 2 consecutive measurements show that 6 inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Measurements shall be taken with a precision of 0.25 inches or better. The drop that occurs during the final 10 minutes is used to calculate the percolation rate. Field data must show the two 25 minute readings and the six 10 minute readings.

B) In non-sandy soils, the percolation rate measurement shall be made on the day following initiation of the pre-soak as described in Item #5 above. From a fixed reference point, measure the drop in water level over a 30 minute period for at least 6 hours, refilling after every 30 minute reading. Measurements shall be taken with a precision of 0.25 inches or better. The total depth of hole must be measured at every reading to verify that collapse of the borehole has not occurred. The drop that occurs during the final reading is used to calculate the percolation rate.

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	SANDY SOIL CRITERIA MET?
SANDY SOIL TESTING CRITERIA						NO
						NO

TRIAL NO.	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	AVERAGE WETTED DEPTH (in)	SURFACE AREA OF SECTION (in^2)	VOLUME OF PERCOLATED WATER (in^3)	MEASURED INFILTRATION RATE (in/hr)
1	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
2	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
3	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
4	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
5	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
6	0:00:00	0:30:00	45	46.75	1.75	14.13	294.52	49.48	0.34
	0:30:00	30.00							
7	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
8	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
9	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
10	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
11	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
12	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							

MEASURED INFILTRATION RATE* = **0.29** **in/hr**

BORING PERCOLATION TEST P-3

Project Name:	17103 Magnolia Street, Fountain Valley, CA	Depth of Hole (in):	60
Project No.:	21255-01	Borehole Diameter (in):	6
Project Location:	17103 Magnolia Street, Fountain Valley, CA	Test Refill Water Column Height, [d1] (in):	15
Drillied/Augered by:	MN	Pre-Soaked/Tested by:	MN
Drilling/Augering Date(s):	11/6/2021	Pre-Soak/Testing Date(s):	11/6 and 11/7

PRESOAKING:

Pre-soaking shall be used with this procedure. Invert a full 5 gallon bottle (more if necessary) of clear water supported over the hole so that the water flow into the hole holds constant at a level at least 5 times the hole's radius above the gravel at the bottom of the hole. Testing may commence after all of the water has percolated through the test hole or after 15 hours has elapsed since initiating the pre-soak.

SANDY SOIL DETERMINATION:

Test hole shall be carefully filled with water to a depth equal to at least 5 times the hole's radius (H/r>5) above the gravel at the bottom of the test hole prior to each test interval.

A) In sandy soils, when 2 consecutive measurements show that 6 inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Measurements shall be taken with a precision of 0.25 inches or better. The drop that occurs during the final 10 minutes is used to calculate the percolation rate. Field data must show the two 25 minute readings and the six 10 minute readings.

B) In non-sandy soils, the percolation rate measurement shall be made on the day following initiation of the pre-soak as described in Item #5 above. From a fixed reference point, measure the drop in water level over a 30 minute period for at least 6 hours, refilling after every 30 minute reading. Measurements shall be taken with a precision of 0.25 inches or better. The total depth of hole must be measured at every reading to verify that collapse of the borehole has not occurred. The drop that occurs during the final reading is used to calculate the percolation rate.

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	SANDY SOIL CRITERIA MET?
SANDY SOIL TESTING CRITERIA						NO
						NO

TRIAL NO.	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	AVERAGE WETTED DEPTH (in)	SURFACE AREA OF SECTION (in^2)	VOLUME OF PERCOLATED WATER (in^3)	MEASURED INFILTRATION RATE (in/hr)
1	0:00:00	0:30:00	45	47.00	2.00	14.00	292.17	56.55	0.39
	0:30:00	30.00							
2	0:00:00	0:30:00	45	47.00	2.00	14.00	292.17	56.55	0.39
	0:30:00	30.00							
3	0:00:00	0:30:00	45	47.00	2.00	14.00	292.17	56.55	0.39
	0:30:00	30.00							
4	0:00:00	0:30:00	45	47.00	2.00	14.00	292.17	56.55	0.39
	0:30:00	30.00							
5	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
6	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
7	0:00:00	0:30:00	45	46.50	1.50	14.25	296.88	42.41	0.29
	0:30:00	30.00							
8	0:00:00	0:30:00	45	46.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
9	0:00:00	0:30:00	45	46.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
10	0:00:00	0:30:00	45	46.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
11	0:00:00	0:30:00	45	46.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
12	0:00:00	0:30:00	45	46.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							

MEASURED INFILTRATION RATE* = **0.19** **in/hr**

BORING PERCOLATION TEST P-4

Project Name:	17103 Magnolia Street, Fountain Valley, CA	Depth of Hole (in):	48
Project No.:	21255-01	Borehole Diameter (in):	6
Project Location:	17103 Magnolia Street, Fountain Valley, CA	Test Refill Water Column Height, [d1] (in):	15
Drillied/Augered by:	MN	Pre-Soaked/Tested by:	MN
Drilling/Augering Date(s):	11/6/2021	Pre-Soak/Testing Date(s):	11/6 and 11/7

PRESOAKING:

Pre-soaking shall be used with this procedure. Invert a full 5 gallon bottle (more if necessary) of clear water supported over the hole so that the water flow into the hole holds constant at a level at least 5 times the hole's radius above the gravel at the bottom of the hole. Testing may commence after all of the water has percolated through the test hole or after 15 hours has elapsed since initiating the pre-soak.

SANDY SOIL DETERMINATION:

Test hole shall be carefully filled with water to a depth equal to at least 5 times the hole's radius (H/r>5) above the gravel at the bottom of the test hole prior to each test interval.

A) In sandy soils, when 2 consecutive measurements show that 6 inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Measurements shall be taken with a precision of 0.25 inches or better. The drop that occurs during the final 10 minutes is used to calculate the percolation rate. Field data must show the two 25 minute readings and the six 10 minute readings.

B) In non-sandy soils, the percolation rate measurement shall be made on the day following initiation of the pre-soak as described in Item #5 above. From a fixed reference point, measure the drop in water level over a 30 minute period for at least 6 hours, refilling after every 30 minute reading. Measurements shall be taken with a precision of 0.25 inches or better. The total depth of hole must be measured at every reading to verify that collapse of the borehole has not occurred. The drop that occurs during the final reading is used to calculate the percolation rate.

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	SANDY SOIL CRITERIA MET?
SANDY SOIL TESTING CRITERIA						NO
						NO

TRIAL NO.	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH WATER DROP (in)	AVERAGE WETTED DEPTH (in)	SURFACE AREA OF SECTION (in^2)	VOLUME OF PERCOLATED WATER (in^3)	MEASURED INFILTRATION RATE (in/hr)
1	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
2	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
3	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
4	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
5	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
6	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
7	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
8	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
9	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
10	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
11	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							
12	0:00:00	0:30:00	33	34.00	1.00	14.50	301.59	28.27	0.19
	0:30:00	30.00							

MEASURED INFILTRATION RATE* = **0.19** **in/hr**

Section VII Educational Materials

Refer to the Orange County Stormwater Program (ocwatersheds.com) for a library of materials available. Please only attach the educational materials specifically applicable to this project. Other materials specific to the project may be included as well and must be attached.

Education Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☐
Household Tips	☒	**Other Material**	**Check If Attached**
Proper Disposal of Household Hazardous Waste	☒		
Recycle at Your Local Used Oil Collection Center (North County)	☐		☐
Recycle at Your Local Used Oil Collection Center (Central County)	☐		☐
Recycle at Your Local Used Oil Collection Center (South County)	☐		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☐		☐
Sewer Spill	☐		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☒		☐
Tips for Pool Maintenance	☐		☐
Tips for Residential Pool, Landscape and Hardscape Drains	☐		☐
Tips for Projects Using Paint	☐		☐

Attachment A: Educational Materials

Do your part to prevent water pollution in our creeks, rivers, bays and ocean.

Clean beaches and healthy creeks, rivers, bays, and ocean are important to Orange County. However, many common household activities can lead to water pollution if you're not careful.

Remember the Water in Your Storm Drain is Not Treated BEFORE It Enters Our Waterways

Litter, oil, chemicals and other substances that are left on your yard or driveway can be blown or washed into storm drains that flow to the ocean. Over-watering your lawn and washing your car can also flush materials into the storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated.

You would never pour soap, fertilizers or oil into the ocean, so don't let them enter streets, gutters or storm drains. Follow the easy tips in this brochure to help prevent water pollution.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while performing everyday household activities. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

GENUINE RECYCLED PAPER
50% PRE-CONSUMER AND 15% POST-CONSUMER

RECYCLE USED OIL

Help Prevent Ocean Pollution:

Household Tips

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Pollution Prevention

Household Activities

- **Do not rinse spills with water!** Sweep outdoor spills and dispose of in the trash. For wet spills like oil, apply cat litter or another absorbent material, then sweep and bring to a household hazardous waste collection center (HHWCC).
- Securely cover trash cans.
- Take household hazardous waste to a household hazardous waste collection center.
- Store household hazardous waste in closed, labeled containers inside or under a cover.
- Do not hose down your driveway, sidewalk or patio. Sweep up debris and dispose of in trash.
- Always pick up after your pet. Flush waste down the toilet or dispose of in the trash.
- Bathe pets indoors or have them professionally groomed.

Household Hazardous Wastes include:

- ▲ **Batteries**
- ▲ **Paint thinners, paint strippers and removers**
- ▲ **Adhesives**
- ▲ **Drain openers**
- ▲ **Oven cleaners**
- ▲ **Wood and metal cleaners and polishes**
- ▲ **Herbicides and pesticides**
- ▲ **Fungicides/wood preservatives**
- ▲ **Automotive fluids and products**
- ▲ **Grease and rust solvents**
- ▲ **Thermometers and other products containing mercury**
- ▲ **Fluorescent lamps**
- ▲ **Cathode ray tubes, e.g. TVs, computer monitors**
- ▲ **Pool and spa chemicals**

Gardening Activities

- Follow directions on pesticides and fertilizers, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Water your lawn and garden by hand to control the amount of water you use. Set irrigation systems to reflect seasonal water needs. If water flows off your yard and onto your driveway or sidewalk, your system is over-watering.
- Mulch clippings or leave them on the lawn. If necessary, dispose in a green waste container.
- Cultivate your garden often to control weeds.

Washing and Maintaining Your Car

- Take your car to a commercial car wash whenever possible.
- Choose soaps, cleaners, or detergents labeled "non-toxic," "phosphate free" or "biodegradable." Vegetable and citrus-based products are typically safest for the environment, **but even these should not be allowed into the storm drain.**
- Shake floor mats into a trash can or vacuum to clean.
- Do not use acid-based wheel cleaners and "hose off" engine degreasers at home. They can be used at a commercial facility, which can properly process the washwater.
- **Do not dump washwater onto your driveway, sidewalk, street, gutter or storm drain.** Excess washwater should be disposed of in the sanitary sewers (through a sink, or toilet) or onto an absorbent surface like your lawn.
- Use a nozzle to turn off water when not actively washing down automobile.
- Monitor vehicles for leaks and place pans under leaks. Keep your car well maintained to stop and prevent leaks.
- Use cat litter or other absorbents and sweep to remove any materials deposited by vehicles. Contain sweepings and dispose of at a HHWCC.
- Perform automobile repair and maintenance under a covered area and use drip pans or plastic sheeting to keep spills and waste material from reaching storm drains.
- **Never pour oil or antifreeze in the street, gutter or storm drains.** Recycle these substances at a service station, HHWCC, or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.ciwmb.ca.gov/UsedOil.

For locations and hours of Household Hazardous Waste Collection Centers in Anaheim, Huntington Beach, Irvine and San Juan Capistrano, call (714)834-6752 or visit www.oclandfills.com.

Do your part to prevent water pollution in our creeks, rivers, bays and ocean.

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, not properly disposing of household hazardous waste can lead to water pollution. Batteries, electronics, paint, oil, gardening chemicals, cleaners and other hazardous materials cannot be thrown in the trash. They also must never be poured or thrown into yards, sidewalks, driveways, gutters or streets. Rain or other water could wash the materials into the storm drain and eventually into our waterways and the ocean. In addition, hazardous waste must not be poured in the sanitary sewers (sinks and toilets).

NEVER DISPOSE OF HOUSEHOLD HAZARDOUS WASTE IN THE TRASH, STREET, GUTTER, STORM DRAIN OR SEWER.

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To Report Illegal Dumping of Household Hazardous Waste call 1-800-69-TOXIC

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline 1-877-89-SPILL** (1-877-897-7455)**.**

For emergencies, dial 911.

RECYCLE USED OIL

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Proper Disposal of Household Hazardous Waste

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

ORANGE COUNTY

Pollution Prevention

Leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients are considered to be "household hazardous waste" or "HHW." HHW can be found throughout your home, including the bathroom, kitchen, laundry room and garage.

WHEN POSSIBLE, USE NON-HAZARDOUS OR LESS-HAZARDOUS PRODUCTS.

Disposal of HHW down the drain, on the ground, into storm drains, or in the trash is illegal and unsafe.

Proper disposal of HHW is actually easy. Simply drop them off at a Household Hazardous Waste Collection Center (HHWCC) for free disposal and recycling. Many materials including anti-freeze, latex-based paint, motor oil and batteries can be recycled. Some centers have a "Stop & Swap" program that lets you take partially used home, garden, and automobile products free of charge. There are four HHWCCs in Orange County:

Anaheim:.....1071 N. Blue Gum St
Huntington Beach:.....17121 Nichols St
Irvine:..... 6411 Oak Canyon
San Juan Capistrano:... 32250 La Pata Ave

Centers are open Tuesday-Saturday, 9 a.m.-3 p.m. Centers are closed on rainy days and major holidays. For more information, call **(714) 834-6752** or visit **www.oclandfills.com.**

Common household hazardous wastes

- Batteries
- Paint and paint products
- Adhesives
- Drain openers
- Household cleaning products
- Wood and metal cleaners and polishes
- Pesticides
- Fungicides/wood preservatives
- Automotive products (antifreeze, motor oil, fluids)
- Grease and rust solvents
- Fluorescent lamps
- Mercury (thermometers & thermostats)
- All forms of electronic waste including computers and microwaves
- Pool & spa chemicals
- Cleaners
- Medications
- Propane (camping & BBQ)
- Mercury-containing lamps
- Television & monitors (CRTs, flatscreens)

Tips for household hazardous waste

- Never dispose of HHW in the trash, street, gutter, storm drain or sewer.
- Keep these materials in closed, labeled containers and store materials indoors or under a cover.
- When possible, use non-hazardous products.
- Reuse products whenever possible or share with family and friends.
- Purchase only as much of a product as you'll need. Empty containers may be disposed of in the trash.
- HHW can be harmful to humans, pets and the environment. Report emergencies to 911.

The Ocean Begins at Your Front Door

Follow these simple steps to help reduce water pollution:

Household Activities

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbent material, sweep and dispose of in the trash. Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products and cathode ray tubes, like TVs and computer monitors, to a Household Hazardous Waste Collection Center (HHWCC).
- For a HHWCC near you call (714) 834-6752 or visit www.oclandfills.com.
- Do not hose down your driveway, sidewalk or patio to the street, gutter or storm drain. Sweep up debris and dispose of it in the trash.

Automotive

- Take your vehicle to a commercial car wash whenever possible. If you wash your vehicle at home, choose soaps, cleaners, or detergents labeled non-toxic, phosphate- free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater from vehicle washing to drain into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewer (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor your vehicles for leaks and place a pan under leaks. Keep your vehicles well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste oil collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800cleanup.org.

Pool Maintenance

- Pool and spa water must be dechlorinated and free of excess acid, alkali or color to be allowed in the street, gutter or storm drain.
- When it is not raining, drain dechlorinated pool and spa water directly into the sanitary sewer.
- Some cities may have ordinances that do not allow pool water to be disposed of in the storm drain. Check with your city.

Landscape and Gardening

- Do not over-water. Water your lawn and garden by hand to control the amount of water you use or set irrigation systems to reflect seasonal water needs. If water flows off your yard onto your driveway or sidewalk, your system is over-watering. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.
- Follow directions on pesticides and fertilizer, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Take unwanted pesticides to a HHWCC to be recycled. For locations and hours of HHWCC, call (714) 834-6752 or visit www.oclandfills.com.

Trash

- Place trash and litter that cannot be recycled in securely covered trash cans.
- Whenever possible, buy recycled products.
- Remember: Reduce, Reuse, Recycle.

Pet Care

- Always pick up after your pet. Flush waste down the toilet or dispose of it in the trash. Pet waste, if left outdoors, can wash into the street, gutter or storm drain.
- If possible, bathe your pets indoors. If you must bathe your pet outside, wash it on your lawn or another absorbent/permeable surface to keep the washwater from entering the street, gutter or storm drain.
- Follow directions for use of pet care products and dispose of any unused products at a HHWCC.

Common Pollutants

Home Maintenance

- Detergents, cleaners and solvents
- Oil and latex paint
- Swimming pool chemicals
- Outdoor trash and litter

Lawn and Garden

- Pet and animal waste
- Pesticides
- Clippings, leaves and soil
- Fertilizer

Automobile

- Oil and grease
- Radiator fluids and antifreeze
- Cleaning chemicals
- Brake pad dust

The Ocean Begins at Your Front Door

Never allow pollutants to enter the street, gutter or storm drain!

Did You Know?

- Most people believe that the largest source of water pollution in urban areas comes from specific sources such as factories and sewage treatment plants. In fact, the largest source of water pollution comes from city streets, neighborhoods, construction sites and parking lots. This type of pollution is sometimes called “non-point source” pollution.
- There are two types of non-point source pollution: stormwater and urban runoff pollution.
- Stormwater runoff results from rainfall. When rainstorms cause large volumes of water to rinse the urban landscape, picking up pollutants along the way.
- Urban runoff can happen any time of the year when excessive water use from irrigation, vehicle washing and other sources carries trash, lawn clippings and other urban pollutants into storm drains.

Where Does It Go?

- Anything we use outside homes, vehicles and businesses – like motor oil, paint, pesticides, fertilizers and cleaners – can be blown or washed into storm drains.
- A little water from a garden hose or rain can also send materials into storm drains.
- Storm drains are separate from our sanitary sewer systems; unlike water in sanitary sewers (from sinks or toilets), water in storm drains is not treated before entering our waterways.

Sources of Non-Point Source Pollution

- Automotive leaks and spills.
- Improper disposal of used oil and other engine fluids.
- Metals found in vehicle exhaust, weathered paint, rust, metal plating and tires.
- Pesticides and fertilizers from lawns, gardens and farms.
- Improper disposal of cleaners, paint and paint removers.
- Soil erosion and dust debris from landscape and construction activities.
- Litter, lawn clippings, animal waste, and other organic matter.
- Oil stains on parking lots and paved surfaces.

The Effect on the Ocean

Non-point source pollution can have a serious impact on water quality in Orange County. Pollutants from the storm drain system can harm marine life as well as coastal and wetland habitats. They can also degrade recreation areas such as beaches, harbors and bays.

Stormwater quality management programs have been developed throughout Orange County to educate and encourage the public to protect water quality, monitor runoff in the storm drain system, investigate illegal dumping and maintain storm drains.

Support from Orange County residents and businesses is needed to improve water quality and reduce urban runoff pollution. Proper use and disposal of materials will help stop pollution before it reaches the storm drain and the ocean.

For More Information

Orange County Stormwater Program

California Environmental Protection Agency
www.calepa.ca.gov

- **Air Resources Board**
  www.arb.ca.gov
- **Department of Pesticide Regulation**
  www.cdpr.ca.gov
- **Department of Toxic Substances Control**
  www.dtsc.ca.gov
- **Integrated Waste Management Board**
  www.ciwmb.ca.gov
- **Office of Environmental Health Hazard Assessment**
  www.oehha.ca.gov
- **State Water Resources Control Board**
  www.waterboards.ca.gov

Earth 911 - Community-Specific Environmental Information 1-800-cleanup or visit www.1800cleanup.org

Health Care Agency's Ocean and Bay Water Closure and Posting Hotline
(714) 433-6400 or visit www.ocbeachinfo.com

Integrated Waste Management Dept. of Orange County (714) 834-6752 or visit www.oclandfills.com for information on household hazardous waste collection centers, recycling centers and solid waste collection

O.C. Agriculture Commissioner
(714) 447-7100 or visit www.ocagcomm.com

Stormwater Best Management Practice Handbook
Visit www.cabmphandbooks.com

UC Master Gardener Hotline
(714) 708-1646 or visit www.uccemg.com

The Orange County Stormwater Program has created and moderates an electronic mailing list to facilitate communications, take questions and exchange ideas among its users about issues and topics related to stormwater and urban runoff and the implementation of program elements. To join the list, please send an email to ocstormwaterinfo-join@list.ocwatersheds.com

Aliso Viejo	(949)	425-2535
Anaheim Public Works Operations	(714)	765-6860
Brea Engineering	(714)	990-7666
Buena Park Public Works	(714)	562-3655
Costa Mesa Public Services	(714)	754-5323
Cypress Public Works	(714)	229-6740
Dana Point Public Works	(949)	248-3584
Fountain Valley Public Works	(714)	593-4441
Fullerton Engineering Dept.	(714)	738-6853
Garden Grove Public Works	(714)	741-5956
Huntington Beach Public Works	(714)	536-5431
Irvine Public Works	(949)	724-6315
La Habra Public Services	(562)	905-9792
La Palma Public Works	(714)	690-3310
Laguna Beach Water Quality	(949)	497-0378
Laguna Hills Public Services	(949)	707-2650
Laguna Niguel Public Works	(949)	362-4337
Laguna Woods Public Works	(949)	639-0500
Lake Forest Public Works	(949)	461-3480
Los Alamitos Community Dev.	(562)	431-3538
Mission Viejo Public Works	(949)	470-3056
Newport Beach, Code & Water Quality Enforcement	(949)	644-3215
Orange Public Works	(714)	532-6480
Placentia Public Works	(714)	993-8245
Rancho Santa Margarita	(949)	635-1800
San Clemente Environmental Programs	(949)	361-6143
San Juan Capistrano Engineering	(949)	234-4413
Santa Ana Public Works	(714)	647-3380
Seal Beach Engineering	(562)	431-2527 x317
Stanton Public Works	(714)	379-9222 x204
Tustin Public Works/Engineering	(714)	573-3150
Villa Park Engineering	(714)	998-1500
Westminster Public Works/Engineering	(714)	898-3311 x446
Yorba Linda Engineering	(714)	961-7138
Orange County Stormwater Program	(877)	897-7455

Orange County 24-Hour
Water Pollution Problem Reporting Hotline
1-877-89-SPILL (1-877-897-7455)

On-line Water Pollution Problem Reporting Form
www.ocwatersheds.com

Printed on Recycled Paper

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

UCCE Master Gardener Hotline:
(714) 708-1646

To report a spill,
call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
1-877-89-SPILL (1-877-897-7455)**.**

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Tips for Landscape & Gardening

The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.

- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.

- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu**.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim:	1071 N. Blue Gum St.
Huntington Beach:	17121 Nichols St.
Irvine:	6411 Oak Canyon
San Juan Capistrano:	32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.oclandfills.com

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Pet waste and pet care products can be washed into the storm drains that flow to the ocean. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never put pet waste or pet care products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

To report a spill,
call the
Orange County 24-Hour Water Pollution Problem Reporting Hotline
1-877-89-SPILL (1-877-897-7455).

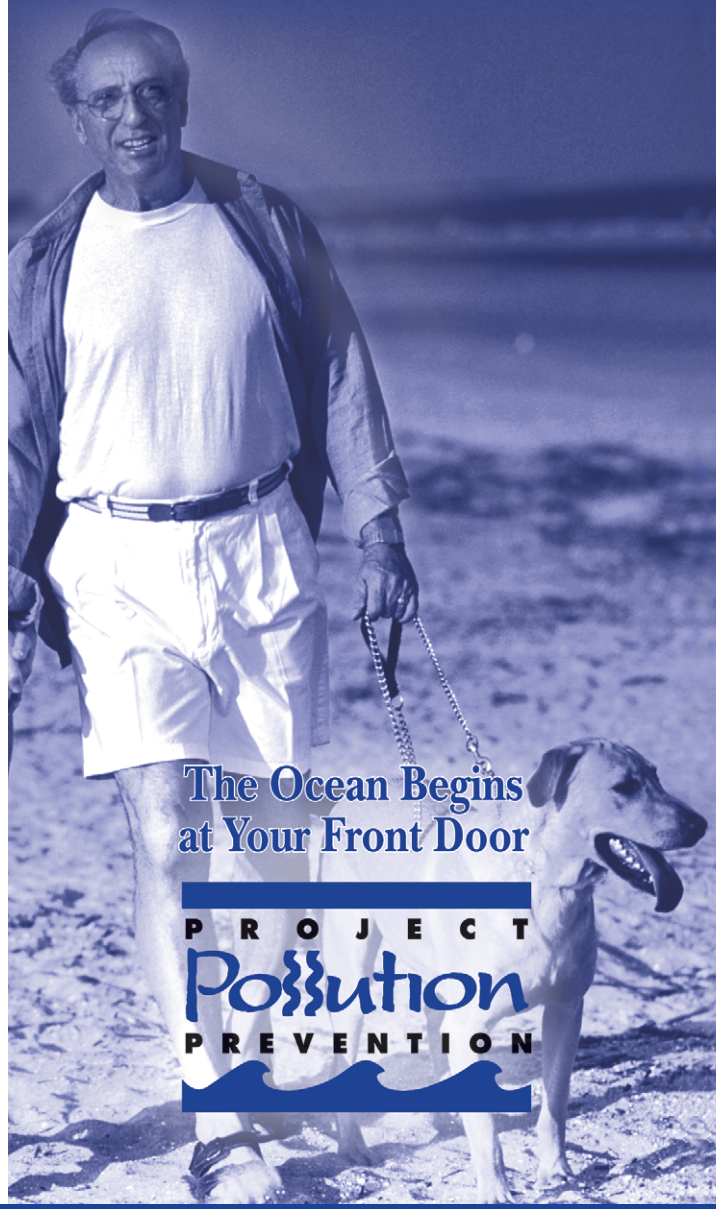
For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while caring for your pet. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Tips for Pet Care



Tips for Pet Care

Never let any pet care products or washwater run off your yard and into the street, gutter or storm drain.

Washing Your Pets

Even biodegradable soaps and shampoos can be harmful to marine life and the environment.

- If possible, bathe your pets indoors using less-toxic shampoos or have your pet professionally groomed. Follow instructions on the products and clean up spills.

- If you bathe your pet outside, wash it on your lawn or another absorbent/ permeable surface to keep the washwater from running into the street, gutter or storm drain.

Flea Control

- Consider using oral or topical flea control products.

- If you use flea control products such as shampoos, sprays or collars, make sure to dispose of any unused products at a Household Hazardous Waste Collection Center. For location information, call **(714) 834-6752**.

Why You Should Pick Up After Your Pet

It's the law! Every city has an ordinance requiring you to pick up after your pet. Besides being a nuisance, pet waste can lead to water pollution, even if you live inland. During rainfall, pet waste left outdoors can wash into storm drains. This waste flows directly into our waterways and the ocean where it can harm human health, marine life and the environment.

As it decomposes, pet waste demands a high level of oxygen from water. This decomposition can contribute to killing marine life by reducing the amount of dissolved oxygen available to them.

Have fun with your pets, but please be a responsible pet owner by taking care of them and the environment.

- Take a bag with you on walks to pick up after your pet.

- Dispose of the waste in the trash or in a toilet.

PROJECT Pollution PREVENTION

Attachment B: Infiltration Feasibility Worksheet

Table 2.7: Infiltration BMP Feasibility Worksheet

	Infeasibility Criteria	*Yes*	*No*
1	**Would Infiltration BMPs pose significant risk for groundwater related concerns?** Refer to Appendix VII (Worksheet I) for guidance on groundwater-related infiltration feasibility criteria.		X
Provide basis: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Would Infiltration BMPs **pose significant risk of increasing risk of geotechnical hazards that cannot be mitigated to an acceptable level**? (Yes if the answer to any of the following questions is yes, as established by a geotechnical expert): • The BMP can only be located less than 50 feet away from slopes steeper than 15 percent • The BMP can only be located less than eight feet from building foundations or an alternative setback. • A study prepared by a geotechnical professional or an available watershed study substantiates that stormwater infiltration would potentially result in significantly increased risks of geotechnical hazards that cannot be mitigated to an acceptable level.		X
Provide basis: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
3	Would infiltration of the DCV from drainage area **violate downstream water rights**?		X
Provide basis: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Table 2.7: Infiltration BMP Feasibility Worksheet (continued)

	Partial Infeasibility Criteria	***Yes***	***No***
4	Is proposed infiltration facility **located on HSG D soils** or the site geotechnical investigation identifies presence of soil characteristics which support categorization as D soils?	X	
Provide basis: Boring logs show the site is underlain by silts and clays. Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
5	Is **measured infiltration rate below proposed facility less than 0.3 inches per hour**? This calculation shall be based on the methods described in Appendix VII.	X	
Provide basis: The measured infiltration rate was found to be 0.19 in/hr per soil infiltration report prepared by GeoMat Testing Laboratories, Inc. Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
6	Would **reduction of over predeveloped conditions cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes or increased discharge of contaminated groundwater to surface waters?**		X
Provide citation to applicable study and summarize findings relative to the amount of infiltration that is permissible: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
7	Would **an increase in infiltration over predeveloped conditions cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes or increased discharge of contaminated groundwater to surface waters?**		X
Provide citation to applicable study and summarize findings relative to the amount of infiltration that is permissible: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Table 2.7: Infiltration BMP Feasibility Worksheet (continued)

Infiltration Screening Results (check box corresponding to result):		
8	Is there substantial evidence that infiltration from the project would result in a significant increase in I&I to the sanitary sewer that cannot be sufficiently mitigated? (See Appendix XVII) Provide narrative discussion and supporting evidence: Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.	
9	If any answer from row 1-3 is yes: infiltration of any volume is **not feasible** within the DMA or equivalent. Provide basis: Summarize findings of infeasibility screening	
10	If any answer from row 4-7 is yes, infiltration is **permissible but is not presumed to be feasible for the entire DCV.** Criteria for designing biotreatment BMPs to achieve the maximum feasible infiltration and ET shall apply. Provide basis: Measured infiltration rate is 0.19 in/hr. Summarize findings of infeasibility screening	X
11	If all answers to rows 1 through 11 are no, infiltration of the full DCV is potentially feasible, BMPs must be designed to infiltrate the full DCV to the maximum extent practicable.	

Attachment C: Calculations

DCV CALCULATIONS **Project 21-041**

17103 MAGNOLIA AVENUE, FOUNTAIN VALLEY

Worksheet B: Simple Design Capture Volume Sizing Method

DCV - Area 1

Step 1: Determine the design capture storm depth used for calculating volume

Enter design capture storm depth from Figure III.1, d (inches)

d = 0.75 in

Enter the effect of provided HSCs, d_{HSC} (inches)

d_{HSC} = 0.00 in (If d_{HSC} > d, d_{HSC} = 0.85 inches)

Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches), d - d_{HSC}

$d_{remainder}$ = 0.75 in

Step 2: Calculate the DCV

Enter Project area tributary to BMP(s), A (acres)

A = 35,483 sf = 0.815 acres

Enter Pervious Area

A = 7,414 sf = 0.170 acres

Enter Project Imperviousness, imp (unitless)

imp = 0.791

Calculate runoff coefficient, C = (0.75 x imp) + 0.15

C = 0.743

Calculate runoff volume, V_{design} = (C x $d_{remainder}$ x A x 43560 x (1/12)), cubic-feet

V_{design} = 1,648.39 ft^3

2-YR FLOW CALCULATIONS **Project 21-041**

17103 MAGNOLIA AVENUE, FOUNTAIN VALLEY

Worksheet D: Capture Efficiency Method for Flow-Based BMPs

Design Flowrate

Step 1: Calculate the design flowrate

Enter Project area tributary to BMP(s), A (acres)

A = 35,483 sf = 0.815 acres

Enter Pervious Area

A = 7,414 sf = 0.170 acres

Enter Project Imperviousness, imp (unitless)

imp = 0.791

Calculate runoff coefficient, C = (0.75 x imp) + 0.15

C = 0.74 in

Calculate design flowrate, Q_{design} = (C x i_{design} x A) Where i_{design} = 0.13 in/hr NOAA ATLAS 14

Q_{design} = 0.079 cfs

Attachment D: O&M

Operations and Maintenance (O&M) Plan

Water Quality Management Plan
for

GUADALUPE MANOR

17103 MAGNOLIA STREET

Fountain Valley, CA 92708

APN: 167-391-24

Exhibit A, Operations and Maintenance Plan

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance and Schedule	Person or Entity with Operation & Maintenance Responsibility	Frequency
Yes	**N1. Education for Property Owners, Tenants and Occupants**	An awareness program will be established to inform all the employees of the impacts of dumping oil, antifreeze, paints, solvents or other potentially harmful chemicals into storm drain; the proper use (e.g., application methods, frequencies and precautions) and management of fertilizers, pesticides and herbicides in landscaping maintenance practices; the impacts of littering and improper water disposal. Owner shall conduct orientation during the first four weeks of start-up and as on-going.	*Our Lady of Guadalupe*	Our Lady of Guadalupe shall conduct orientation during the first four weeks of startup and as on-going.
Yes	**N2. Activity Restriction**	The owner shall conduct daily management of business activities. The owner will conduct orientation during the first four weeks of startup and as on-going. Each business activity is restricted under the City of Fountain Valley guidance.	*Our Lady of Guadalupe*	Daily management.

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance and Schedule	Person or Entity with Operation & Maintenance Responsibility	Frequency
Yes	**N3. Common Area Landscape Management**	Landscape will be designed by a landscape architect & maintained by the owner thru its landscape contractor. The timer to control the irrigation system will be set accordingly with the season to avoid irrigation and overflow to the drainage system. Herbicide and pesticide management programs will be designed to mitigate the potential occurrence of acute toxicity concentrations (arising from accidental spills) and chronic toxicity concentrations (arising from long-term use of herbicides). The development of proper fertilizer management, soil testing and fertilizer application and maintenance will be conducted by a qualified specialist.	*Our Lady of Guadalupe*	Owner, through a contracted landscaper, shall inspect landscape area at least once a month.

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance and Schedule	Person or Entity with Operation & Maintenance Responsibility	Frequency
Yes	**N4. BMP Maintenance**	In addition to the community awareness program, the owner through its site and landscape maintenance contractors will be responsible for inspection and maintenance activities in landscape areas. Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the maintenance contractors hired by the owner. The site maintenance manager will maintain and inspect non-structural and structural BMPs on the site at least once a month.	*Our Lady of Guadalupe*	Each BMPs shall be inspected per required frequency of BMP suggested in the Maintenance Responsibility / Frequency Matrix included in this table.
Yes	**N5. Title 22 CCR Compliance**	The owner shall be responsible to comply with Title 22 of the California Code of Regulations and relevant sections of the California Health & Safety Code regarding hazardous waste management.	*Our Lady of Guadalupe*	Ongoing.
No	**N7. Spill Contingency Plan**	N/A	*N/A*	
No	**N8. Underground Storage Tank Compliance**	N/A	*N/A*	
Yes	**N9. Hazardous Materials Disclosure Compliance**	N/A	*N/A*	
Yes	**N10. Uniform Fire Code Implementation**	The owner shall be responsible to comply with the local Fire Code enforced by fire protection agency.	*Our Lady of Guadalupe*	Ongoing.

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance and Schedule	Person or Entity with Operation & Maintenance Responsibility	Frequency
Yes	**N11. Common Area Litter Control**	The owner through site maintenance contractor shall implement litter control procedures and management in the landscape and parking lot areas in order to prevent and reduce pollution of storm water runoff on a weekly basis. Waste containers located outside shall be provided with spill prevention features and emptied on a regular basis, but as a minimum on a weekly basis.	*Our Lady of Guadalupe*	Waste containers located outside shall be provided with spill prevention features and emptied on a regular basis, but as a minimum on a weekly basis.
Yes	**N12. Employee Training**	The owner shall conduct an employee training program and shall inform, and train employees engaged in maintenance activities regarding the impacts of dumping oil, antifreeze, paints, solvents or other potentially harmful chemicals into storm sewer; the proper use (e.g., application methods, frequencies and precautions) and management of fertilizers, pesticides and herbicides in landscaping maintenance practice; the impacts of littering an improper water disposal. The proposed and existing buildings are used for mixed commercial uses and the proposed project site is currently owned by the owner. If there are any changes of ownership on the site, a new owner shall be responsible once the ownership is transferred. Further guidance and information can be referred to BMPs.	*Our Lady of Guadalupe*	Employee training program shall be conducted on an ongoing basis and during the first month of startup period. This WQMP shall be a reference to be used for the program and an annual review of the provisions of the WQMP shall be done by each employee.

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance and Schedule	Person or Entity with Operation & Maintenance Responsibility	Frequency
No	**N13. Housekeeping of Loading Docks**	N/A	N/A	Quarterly and after each rainfall event
Yes	**N14. Common Area Catch Basin Inspection**	The owner shall perform common area catch basin inspection.	*Our Lady of Guadalupe*	Weekly, prior to start of the rainy season in October 15th.
Yes	**N15. Street Sweeping Private Streets and Parking Lots**	The owner though its site maintenance contractor shall provide vacuum sweeping of parking lots on a weekly basis. In addition, the sweeping program will be intensified prior to the start of the rainy season around October 1 of every year to minimize water pollution during the "first flush" storm.	*Our Lady of Guadalupe*	*Weekly*
No	**N16. Retail Gasoline Outlets**	N/A	*N/A*	
Yes	**S1. Provide Storm Drain System Stenciling and Signage**	Inspect storm drain stencils.	*Our Lady of Guadalupe*	Equipment-water sensors, irrigation heads and timing-inspection on a monthly basis.
No	**S2. Design and Construct Outdoor Material Storage Areas to Reduce Pollutant Introduction**	N/A	N/A	

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance and Schedule	Person or Entity with Operation & Maintenance Responsibility	Frequency
Yes	**S3. Design and Construct Trash and Waste Storage Areas to Reduce Pollutant Introduction**	Trash storage areas are designed to reduce pollutant introduction. All trash container areas shall be paved with an impervious surface and have solid roofing to prevent direct precipitation. Connection of trash area drains to the municipal storm drain system is prohibited.	*Our Lady of Guadalupe*	*Trash storage areas are to be maintained on a weekly basis.*
Yes	**S4. Use Efficient Irrigation Systems & Landscape Design**	Inspect irrigation system for proper function.	*Our Lady of Guadalupe*	*Daily*
Yes	**S5. Protect Slopes and Channels and Provide Energy Dissipation**	N/A	N/A	
No	**S6. Loading Docks**	N/A	N/A	
No	**S7. Maintenance Bays**	N/A	N/A	
No	**S8. Vehicle Wash Areas**	N/A	*N/A*	
No	**S9. Outdoor Processing Areas**	N/A	N/A	
No	**S10. Equipment Wash Areas**	N/A	N/A	
No	**S11. Fueling Areas**	N/A	N/A	
No	**S12. Hillside Landscaping**	N/A	N/A	

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance, and Inspection Procedures	Implementation, Maintenance and Schedule	Person or Entity with Operation & Maintenance Responsibility	Frequency
No	**S13. Wash Water Controls for Food Preparation Areas**	N/A	N/A	
No	**S14. Community Car Wash Racks**	N/A	*N/A*	
Treatment Control BMPs (i.e. Filter Inserts, Media Filter, etc.)				
No	**Treatment Control BMP # 1** Not Applicable	N/A	N/A	
LID BMPs (i.e. Infiltration, Biotreatment, etc.)				
Yes	**BMP # 1** Biofiltration Modular Wetland System	Inspect for accumulated sediment and trash. Installation is to be inspected and cleaned periodically by a recommended professional.	*Our Lady of Guadalupe*	Quarterly and after each rainfall event.

Required Permits

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

- Permits for connection to sanitary sewer
- Encroachment permits

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

Storm Drain "No Dumping" Stencil

STENCIL AT EVERY DRAIN INLET

Forms to Record BMP Implementation, Maintenance, and Inspection

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

Recordkeeping

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

Responsible Party

The owner is aware of the maintenance responsibilities of the proposed BMPs. A funding mechanism is in place to maintain the BMPs at the frequency stated in the WQMP. The contact information for the entity responsible is below:

Name: _____

Company: _____

Title: _____

Address 1: _____

Address 2: _____

Phone Number: _____

Email: _____

RECORD OF BMP IMPLEMENTATION, MAINTENANCE, AND INSPECTION

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

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

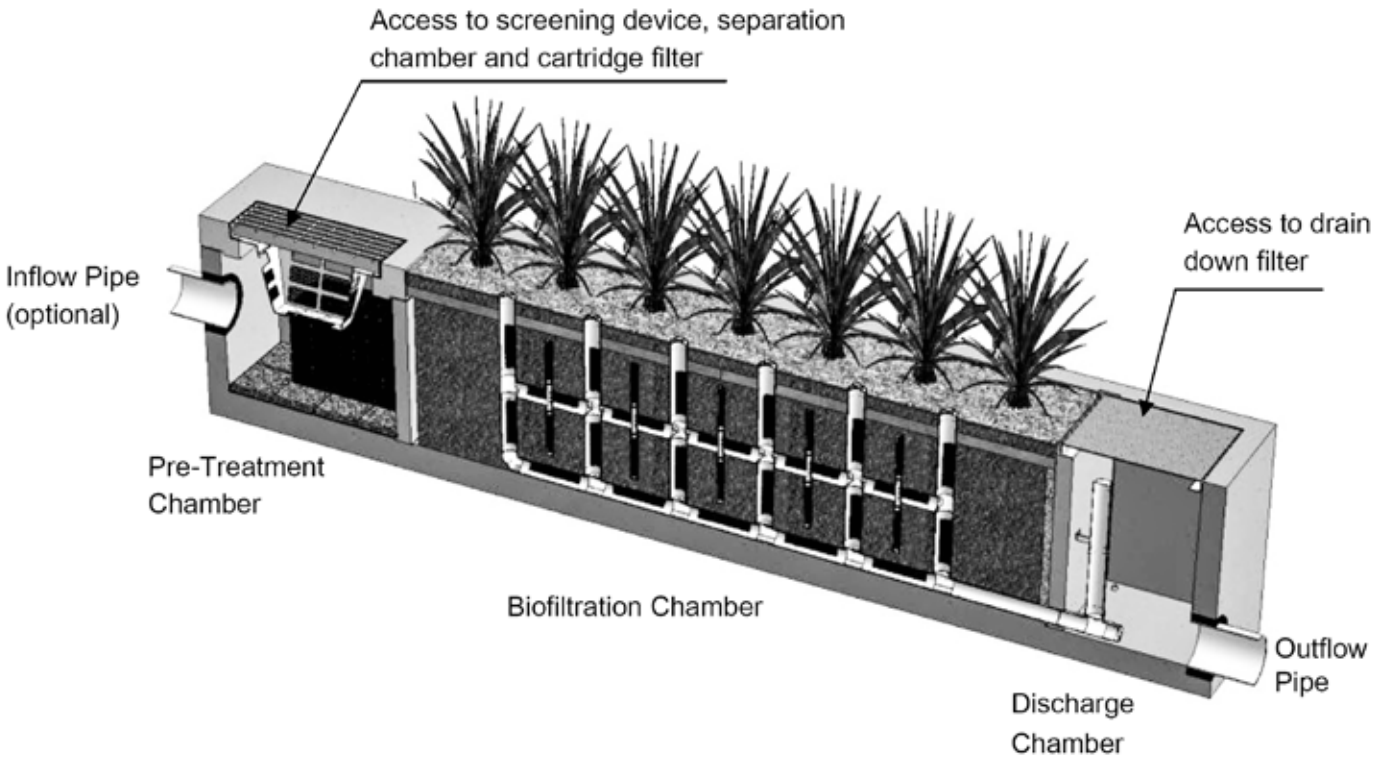
CONTECH®
ENGINEERED SOLUTIONS

Modular Wetlands® Linear
Operation & Maintenance Manual

MODULAR WETLANDS®

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - *(5 minute average service time).*
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - *(10 minute average service time).*
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - *(10-15 minute per cartridge average service time).*
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - *(5 minute average service time).*
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - *(Service time varies).*



System Diagram

Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre- Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer, spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber. Entry into chambers may require confined space training based on state and local regulations.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/ inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

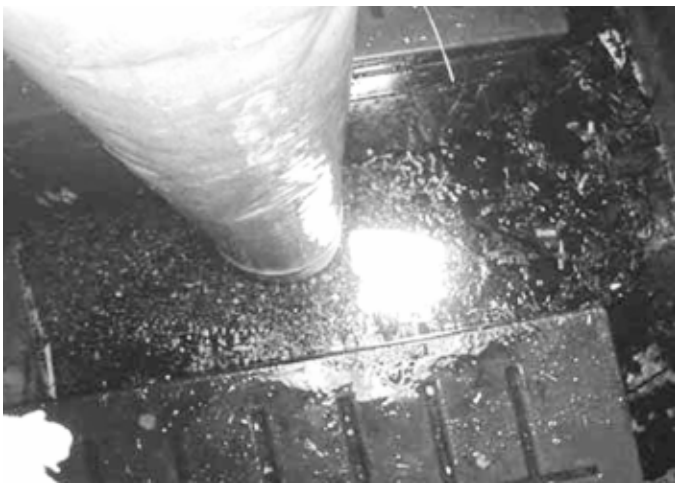
Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.



Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

CONTECH® ENGINEERED SOLUTIONS

Inspection Report
Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

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

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

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

Weather Condition _____ Additional Notes _____

Inspection Checklist

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

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

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

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

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____

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Cleaning and Maintenance Report
Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

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

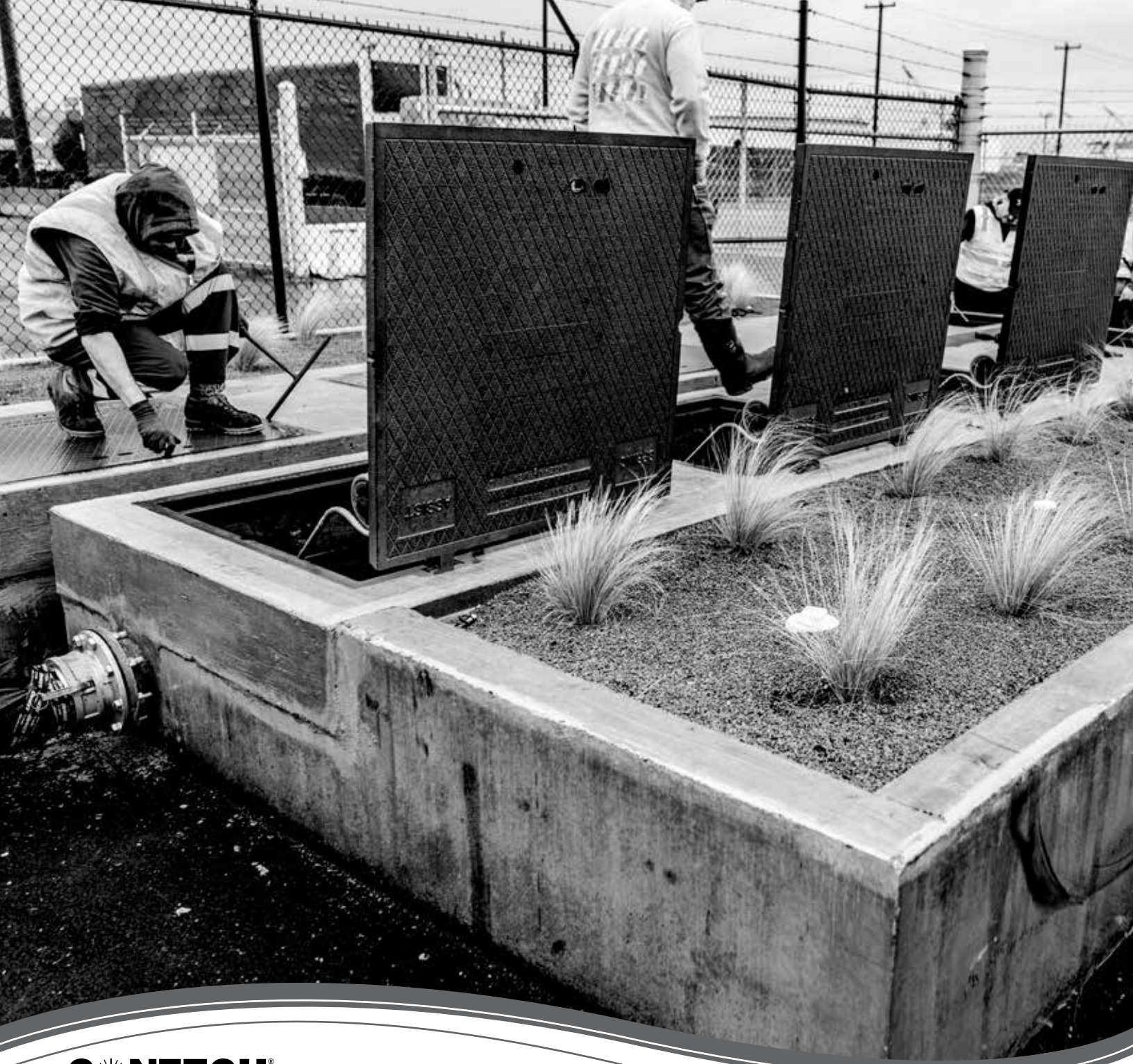
For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

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

Weather Condition _____ Additional Notes _____

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

Comments:



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SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

Modular Wetlands Maintenance Guide 08/22

Attachment E: TGD BMP Fact Sheets

BIO-7: Proprietary Biotreatment

Proprietary biotreatment devices are devices that are manufactured to mimic natural systems such as bioretention areas by incorporating plants, soil, and microbes engineered to provide treatment at higher flow rates or volumes and with smaller footprints than their natural counterparts. Incoming flows are typically filtered through a planting media (mulch, compost, soil, plants, microbes, etc.) and either infiltrated or collected by an underdrain and delivered to the storm water conveyance system. Tree box filters are an increasingly common type of proprietary biotreatment device that are installed at curb level and filled with a bioretention type soil. For low to moderate flows they operate similarly to bioretention systems and are bypassed during high flows. Tree box filters are highly adaptable solutions that can be used in all types of development and in all types of soils but are especially applicable to dense urban parking lots, street, and roadways.

Also known as:

- *Catch basin planter box*
- *Bioretention vault*
- *Tree box filter*

Proprietary biotreatment
Source: http://www.americastusa.com /index.php/filterra/

Feasibility Screening Considerations

- Proprietary biotreatment devices that are unlined may cause incidental infiltration. Therefore, an evaluation of site conditions should be conducted to evaluate whether the BMP should include an impermeable liner to avoid infiltration into the subsurface.

Opportunity Criteria

- Drainage areas of 0.25 to 1.0 acres.
- Land use may include commercial, residential, mixed use, institutional, and subdivisions. Proprietary biotreatment facilities may also be applied in parking lot islands, traffic circles, road shoulders, and road medians.
- Must not adversely affect the level of flood protection provided by the drainage system.

OC-Specific Design Criteria and Considerations

☐ Frequent maintenance and the use of screens and grates to keep trash out may decrease the likelihood of clogging and prevent obstruction and bypass of incoming flows.

☐ Consult proprietors for specific criteria concerning the design and performance.

☐ Proprietary biotreatment may include specific media to address pollutants of concern. However, for proprietary device to be considered a biotreatment device the media must be capable of supporting rigorous growth of vegetation.

☐ Proprietary systems must be acceptable to the reviewing agency. Reviewing agencies shall have the discretion to request performance information. Reviewing agencies shall have the discretion to deny the use of a proprietary BMP on the grounds of performance, maintenance considerations, or other relevant factors.

☐ In right of way areas, plant selection should not impair traffic lines of site. Local jurisdictions may also limit plant selection in keeping with landscaping themes.

Computing Sizing Criteria for Proprietary Biotreatment Device

- Proprietary biotreatment devices can be volume based or flow-based BMPs.
- Volume-based proprietary devices should be sized using the Simple Design Capture Volume Sizing Method described in **Appendix III.3.1** or the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs described in **Appendix III.3.2**.
- The required design flowrate for flow-based proprietary devices should be computed using the Capture Efficiency Method for Flow-based BMPs described in **Appendix III.3.3)**.

In South Orange County, the provided ponding plus pore volume must be checked to demonstrate that it is greater than 0.75 of the remaining DCV that this BMP is designed to address. Many propretary biotreatment BMPs will not be able to meet the definition of "biofiltration" that applies in South Orange County. See Section III.7 and Worksheet SOC-1.

Additional References for Design Guidance

- Los Angeles Unified School District (LAUSD) Stormwater Technical Manual, Chapter 4: **http://www.laschools.org/employee/design/fs-studies-and-reports/download/white_paper_report_material/Storm_Water_Technical_Manual_2009-opt-red.pdf?version_id=76975850**
- Los Angeles County Stormwater BMP Design and Maintenance Manual, Chapter 9: **http://dpw.lacounty.gov/DES/design_manuals/StormwaterBMPDesignandMaintenance.pdf**
- Santa Barbara BMP Guidance Manual, Chapter 6: **http://www.santabarbaraca.gov/NR/rdonlyres/91D1FA75-C185-491E-A882-49EE17789DF8/0/Manual_071008_Final.pdf**

HYDROLOGY REPORT

For

GUADALUPE MANOR

17103 MAGNOLIA STREET

FOUNTAIN VALLEY, CA 92708

APN: 167-391-24

Prepared For:

OUR LADY OF GUADALUPE

17103 MAGNOLIA STREET

FOUNTAIN VALLEY, CA 92708

Prepared By:

Waber Consultants, Inc.

19210 SOUTH VERMONT AVENUE, SUITE 115

GARDENA, CA 90248

(424) 344-2464

JULY 2022

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Tables

Appendices

1.0 Scope

Hydrologic calculations to evaluate surface runoff associated with 2-, 25- and 100-year hypothetical design storm frequencies from the tributary drainage areas were performed based on the latest *Orange County Flood Control District* (OCFCD) rational method. Hydrologic parameters used in the analysis, such as rainfall and soil classification are presented in the *Orange County Hydrology Manual* (Hydrology Manual).

.

2.0 Project Description

2.1. Existing Conditions

The subject property is located at 17103 Mongolia Street in Fountain Valley, California. The site is a relatively flat property, and it is 0.8-acres in size. The property is bounded by commercial building to the north, Mongolia Street to the east and residential houses to the west and south.

The existing project site is currently occupied by parking area, drive aisle and landscape area. The existing site slopes and sheet flows in a generally southernly direction to a catch basin.

2.2. Proposed Conditions

The proposed project consists of construction of a 2 new two-story buildings, drive aisles, parking and landscape areas.

The proposed project is considered a Priority Development Project and permanent BMPs are required for treatment of storm water runoff. A separate Water Quality Management Plan (WQMP) has been prepared addressing the treatment of storm water runoff requirements via proprietary biotreatment.

For the proposed site, runoff will sheet flow towards the trench drain or drain inlets. The runoff will eventually drain to the proposed Modular Wetland System (MWS). MWS will connect to an existing catch basin located around the southern property line.

3.0 Hydrology

3.1 Methodology

The hydrologic calculations to determine the 2-, 25- and 100-year peak flow rates were performed using the criteria in the *Orange County Flood Control District and Orange County Hydrology Manual*. The Rational Method is an empirical computation procedure for developing a peak runoff rate (discharge) for storms of a specific recurrence interval. Rational Method equations are based on the assumption that the peak flow rate is directly proportional to the drainage area, rainfall intensity, and a loss rate coefficient, which describes the effects of land use and soil type. The Rational Method flow rates were computed by generating a hydrologic "link-node" model, which divides the area into drainage subareas. Please see Appendix A for hydrology calculations.

3.2 Areas

Hydrology Maps are included in Appendix C of this report delineating the drainage subareas. Areas are provided in the maps in both square feet (SF) and acres (AC). AC units are used in the rational method calculations. Hydrology Maps are provided in Appendix C of this report.

3.3 Soil

When making estimates of storm water runoff it is assumed that infiltration is a loss for the storm event under consideration. The major affecting infiltration is the nature of the soil itself. Per soil report prepared by GeoMat Testing Laboratories, Inc., the site is underlain by Soil Type D. Therefore, Soil Type D was selected for the hydrology analysis.

3.4 Maximum Loss Rates

The maximum loss rates F_p (in/hr) is a function of soil group and values are provided in Table C.2 of the Hydrology Manual. The maximum loss rates selected from Table C.2 applies to the pervious area fraction of the watershed and it is 0.20 for Soil Group D. The maximum loss rate, Fm, for a catchment is based on pervious area fraction and is provided in Equation C.7 of the Hydrology Manual.

3.5 Time of Concentration

The Time of Concentration (T_c) is the time required for runoff to flow from the most remote part of the drainage area to the point of interest. The T_c (minutes) is based on slope and runoff coefficient and it was obtained using the nomograph in Figure D-1 of the Hydrology Manual, and it is included in Appendix B of this report for reference.

3.6 Rainfall Intensity

The rainfall intensity is the rainfall in inches per hour (in/hr) for a duration equal to the T_c for a selected storm frequency. Intensity is dependent on precipitation and T_c. The time-averaged

rainfall intensity for the 2, 25 and 100-year storm events were obtained from the point precipitation frequency estimates using NOAA Atlas 14. Intensities are provided as part of the hydrology calculations in Appendix A. NOAA Atlas 14 for the project site location is included in Appendix B.

3.7 Hydrology

The peak rate runoff flow of the proposed site increases due to increase in impervious areas including roofs, drive aisles, private street, and sidewalks. However, runoff is mitigated by implementation of proprietary biotreatment as a permanent BMPs. The existing and proposed flows were calculated using the Rational Method based on the site conditions discussed in Sections 2.1 and 2.2, respectively.

3.7.1 Existing Hydrology

The entire existing site is relatively flat and sheet flows in a generally southerly direction towards the catch basin. Runoff from the site eventually drains into the municipal storm drainage system that eventually drains into Santa Ana River, Reach 1, and then to the Pacific Ocean. The existing flow for the different storm frequencies is outlined in Table 1 below.

Table 1 – Summary of Existing Flow

Storm Event	Q (cfs)
2-yr	1.22
25-yr	2.50
100-yr	3.31

3.7.2 Proposed Hydrology

Runoff will sheet flow towards the trench drain or drain inlets. The runoff will eventually drain to the proposed Modular Wetland System (MWS). MWS will connect to an existing catch basin located around the southern property line. The area and the discharge point of the area is identified in the Proposed Hydrology Map. Flow for the proposed area is outlined in Table 2 below:

Table 2 – Summary of Proposed Flows

Subarea	Q (cfs)			Area	
	2-year	25-year	100-year	(sf)	(ac)
Area 1	1.05	2.11	2.77	29,795	0.684
Area 2	0.19	0.39	0.52	5,074	0.116
Total	**1.24**	**2.50**	**3.29**	**34,869**	**0.80**

4.0 Conclusion

The overall drainage patterns in the proposed condition are similar to the existing condition in terms of the overall drainage direction. The proposed drainage patterns are shown on the attached Hydrology Maps. The area accounts for the ridges in the roof areas as well as the ground surfaces including the drive aisles, parking spaces, and landscape areas.

Due to increase in impervious areas, the proposed site generates more flow than the existing condition. Table 3 below summarizes the flows of the existing and proposed site.

Table 3 - Pre- and Post-Construction Flows

Storm Event	Existing Q (cfs)	Proposed Q (cfs)
2-yr	1.22	1.24
25-yr	2.50	2.50
100-yr	3.31	3.29

Because of the new development, we have an increase in the impervious areas thus increasing the storm water runoff flow. As part of the WQMP requirements, the proposed storm drain runoff flow is mitigated by proprietary biotreatment of the calculated DCV. DCV calculations are included in the WQMP report.

As part of the storm drain system, a Modular Wetland System is required to be constructed to collect all storm drain water and treat and mitigate the required runoff volume before leaving the site per the current OC TGD, Regional Water Quality Control Board, and MS4 Permit requirements. The proposed storm drain system will eventually drain into an existing catch basin located around the southern property line.

Appendix A – Hydrology Calculations

HYDROLOGY CALCULATIONS
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

Existing Area

$Q = 0.9*(I(t)-F_m)*A$

Where
Q = proposed peak flows, cfs
A = total area, acres
A_p = pervious area, acres
a_p = ratio of pervious area over total area
I(t) = rainfall intensity, in/hr
F_m = estimation of catchment maximum loss rate, in/hr

A = 34,869 sf = 0.80 acres

A_p = 20,882 sf = 0.48 acres

a_p = 0.60

T_c = 6.1 min

Where
T_c = duration, min
I(t) = rainfall intensity, in/hr

I_2 = 1.81 in/hr
I_{25} = 3.59 in/hr
I_{100} = 4.72 in/hr

NOAA ATLAS 14

$F_m = a_p*F_p$

Where
F_m = estimation of catchment maximum loss rate, in/hr
a_p = ratio of pervious area over total area
F_p = maximum effective pervious area loss rate, in/hr
(0.20 according to Soil Group D, Table C.2)

F_m = 0.12 in/hr

Q_2 = 1.22 cfs
Q_{25} = 2.50 cfs
Q_{100} = 3.31 cfs

HYDROLOGY CALCULATIONS
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

AREA 1

$Q = 0.9*(I(t)-F_m)*A$ Where Q = proposed peak flows, cfs
A = total area, acres
A_p = pervious area, acres
a_p = ratio of pervious area over total area
I(t) = rainfall intensity, in/hr
F_m = estimation of catchment maximum loss rate, in/hr

A = 29,795 sf = 0.684 acres

A_p = 4,976 sf = 0.114 acres

a_p = 0.17

T_c = 6.7 min Where T_c = duration, min
I(t) = rainfall intensity, in/hr

I_2 = 1.74 in/hr NOAA ATLAS 14
I_{25} = 3.46 in/hr
I_{100} = 4.54 in/hr

$F_m = a_p*F_p$ Where F_m = estimation of catchment maximum loss rate, in/hr
a_p = ratio of pervious area over total area
F_p = maximum effective pervious area loss rate, in/hr
(0.20 according to Soil Group D, Table C.2)

F_m = 0.03 in/hr

Q_2 = 1.05 cfs
Q_{25} = 2.11 cfs
Q_{100} = 2.77 cfs

HYDROLOGY CALCULATIONS
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

AREA 2

$Q = 0.9*(I(t)-F_m)*A$ Where Q = proposed peak flows, cfs
A = total area, acres
A_p = pervious area, acres
a_p = ratio of pervious area over total area
I(t) = rainfall intensity, in/hr
F_m = estimation of catchment maximum loss rate, in/hr

A = 5,074 sf = 0.116 acres

A_p = 2,307 sf = 0.053 acres

a_p = 0.45

T_c = 4.9 min Where T_c = duration, min
I(t) = rainfall intensity, in/hr

I_2 = 1.93 in/hr NOAA ATLAS 14
I_{25} = 3.83 in/hr
I_{100} = 5.03 in/hr

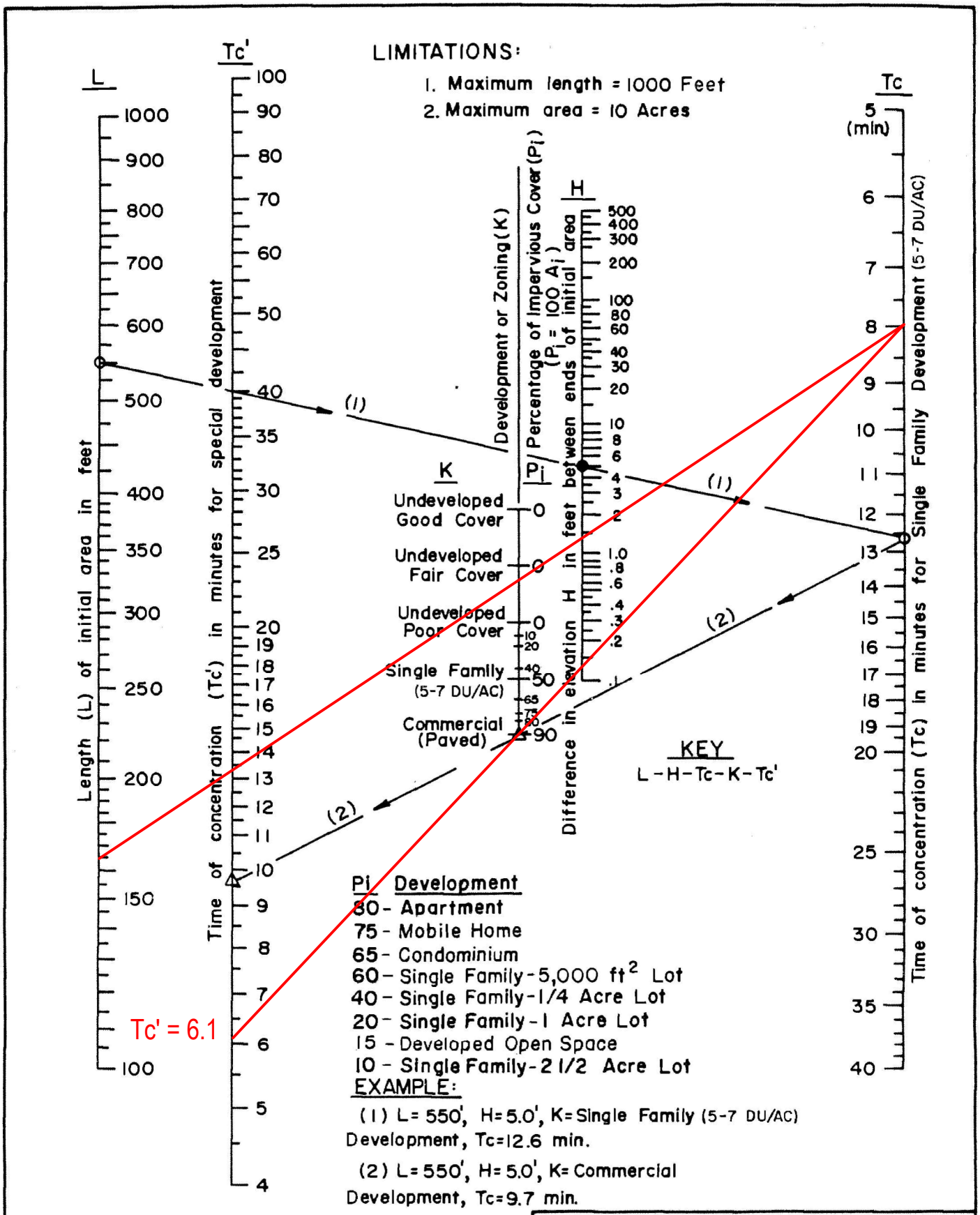
$F_m = a_p*F_p$ Where F_m = estimation of catchment maximum loss rate, in/hr
a_p = ratio of pervious area over total area
F_p = maximum effective pervious area loss rate, in/hr
(0.20 according to Soil Group D, Table C.2)

F_m = 0.09 in/hr

Q_2 = 0.19 cfs
Q_{25} = 0.39 cfs
Q_{100} = 0.52 cfs

Appendix B – Reference Figures and Tables

EXISTING AREA 1

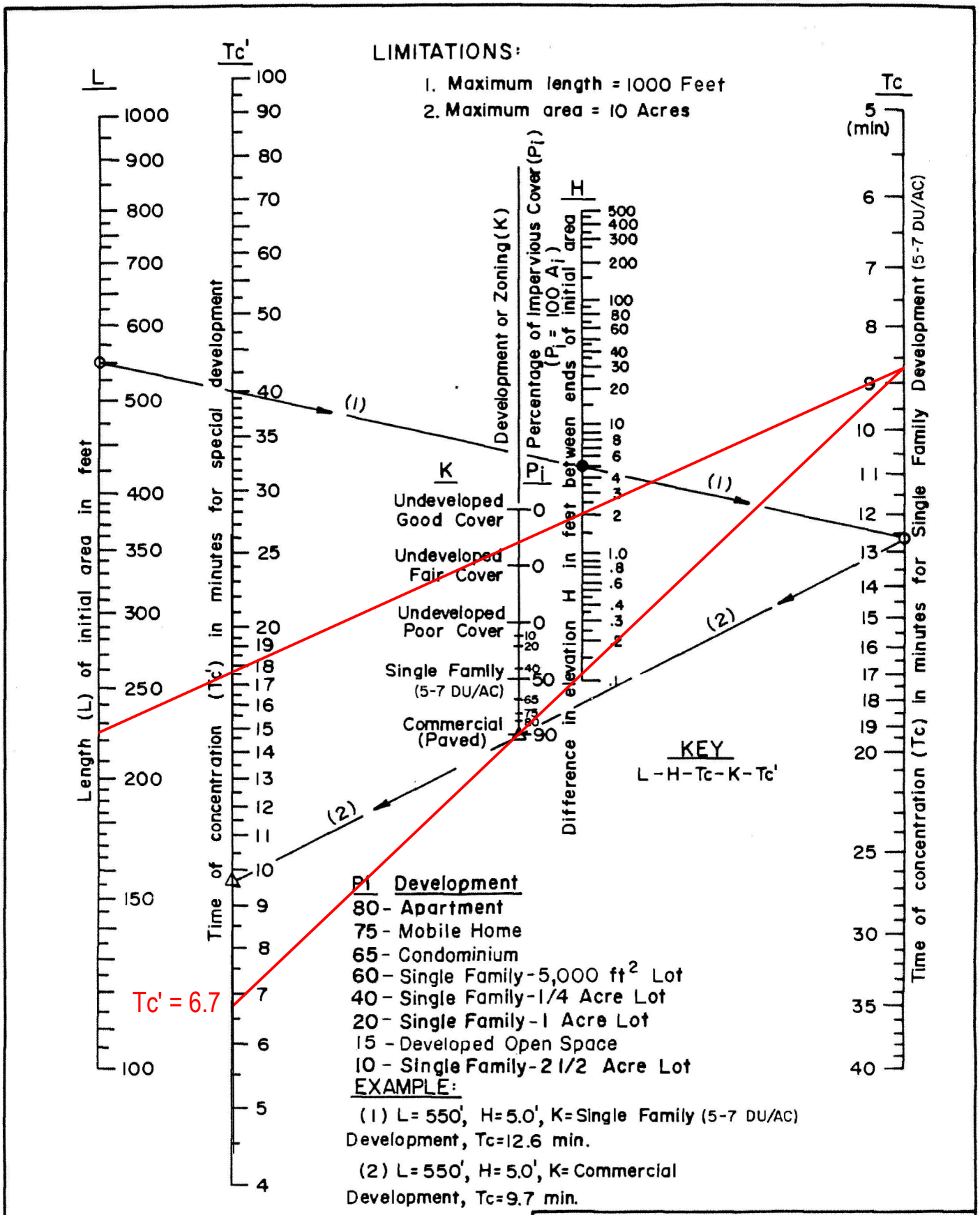


ORANGE COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

Figure D-1

PROPOSED AREA 1

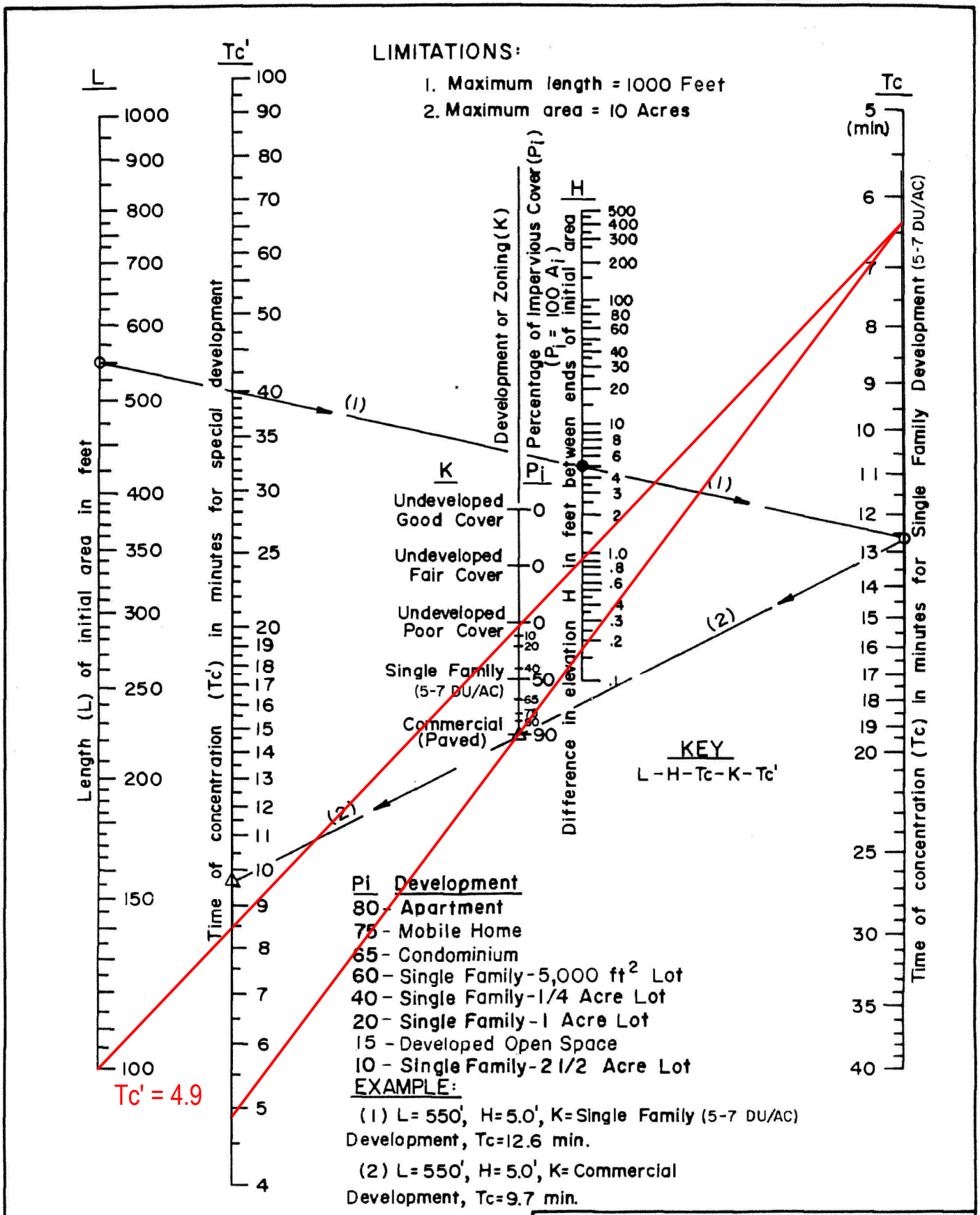


ORANGE COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

Figure D-1

PROPOSED AREA 2



ORANGE COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

Figure D-1

NOAA Atlas 14, Volume 6, Version 2
Location name: Fountain Valley, California, USA*
Latitude: 33.7143°, Longitude: -117.9728°
Elevation: 30.27 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.46** (1.22-1.75)	**1.93** (1.62-2.32)	**2.56** (2.14-3.10)	**3.08** (2.56-3.77)	**3.83** (3.06-4.84)	**4.42** (3.44-5.71)	**5.03** (3.83-6.67)	**5.68** (4.19-7.76)	**6.58** (4.64-9.41)	**7.31** (4.98-10.8)
10-min	**1.04** (0.876-1.26)	**1.38** (1.16-1.66)	**1.84** (1.53-2.21)	**2.21** (1.83-2.69)	**2.74** (2.19-3.47)	**3.16** (2.47-4.09)	**3.60** (2.74-4.78)	**4.07** (3.01-5.56)	**4.72** (3.33-6.74)	**5.24** (3.56-7.77)
15-min	**0.844** (0.708-1.02)	**1.11** (0.932-1.34)	**1.48** (1.24-1.79)	**1.78** (1.48-2.18)	**2.21** (1.77-2.80)	**2.55** (1.99-3.30)	**2.90** (2.21-3.86)	**3.28** (2.42-4.48)	**3.80** (2.69-5.44)	**4.22** (2.88-6.26)
30-min	**0.584** (0.490-0.702)	**0.770** (0.646-0.928)	**1.02** (0.856-1.24)	**1.23** (1.02-1.51)	**1.53** (1.22-1.94)	**1.77** (1.38-2.28)	**2.01** (1.53-2.67)	**2.27** (1.68-3.11)	**2.63** (1.86-3.77)	**2.92** (1.99-4.34)
60-min	**0.403** (0.338-0.485)	**0.532** (0.446-0.641)	**0.706** (0.590-0.854)	**0.852** (0.706-1.04)	**1.06** (0.845-1.34)	**1.22** (0.952-1.58)	**1.39** (1.06-1.84)	**1.57** (1.16-2.14)	**1.82** (1.28-2.60)	**2.02** (1.37-2.99)
2-hr	**0.290** (0.243-0.348)	**0.380** (0.318-0.458)	**0.501** (0.419-0.606)	**0.602** (0.499-0.734)	**0.744** (0.594-0.940)	**0.856** (0.668-1.11)	**0.972** (0.740-1.29)	**1.10** (0.809-1.50)	**1.27** (0.896-1.81)	**1.41** (0.957-2.08)
3-hr	**0.237** (0.199-0.285)	**0.310** (0.260-0.374)	**0.409** (0.342-0.494)	**0.491** (0.406-0.598)	**0.605** (0.484-0.765)	**0.695** (0.543-0.899)	**0.790** (0.601-1.05)	**0.889** (0.657-1.22)	**1.03** (0.726-1.47)	**1.14** (0.776-1.69)
6-hr	**0.164** (0.138-0.198)	**0.215** (0.180-0.259)	**0.282** (0.236-0.341)	**0.338** (0.280-0.412)	**0.416** (0.333-0.526)	**0.478** (0.374-0.618)	**0.543** (0.413-0.720)	**0.611** (0.451-0.835)	**0.706** (0.498-1.01)	**0.782** (0.532-1.16)
12-hr	**0.105** (0.088-0.127)	**0.138** (0.115-0.166)	**0.181** (0.151-0.219)	**0.218** (0.180-0.265)	**0.269** (0.215-0.340)	**0.309** (0.241-0.400)	**0.351** (0.267-0.466)	**0.396** (0.292-0.541)	**0.458** (0.324-0.655)	**0.508** (0.346-0.753)
24-hr	**0.069** (0.061-0.079)	**0.090** (0.080-0.105)	**0.120** (0.106-0.139)	**0.145** (0.126-0.169)	**0.179** (0.152-0.216)	**0.207** (0.171-0.255)	**0.236** (0.191-0.297)	**0.266** (0.210-0.345)	**0.309** (0.234-0.417)	**0.344** (0.251-0.479)
2-day	**0.042** (0.037-0.048)	**0.055** (0.049-0.064)	**0.074** (0.065-0.086)	**0.089** (0.078-0.104)	**0.111** (0.094-0.134)	**0.128** (0.106-0.158)	**0.146** (0.119-0.185)	**0.166** (0.131-0.215)	**0.193** (0.146-0.260)	**0.214** (0.157-0.299)
3-day	**0.031** (0.027-0.036)	**0.042** (0.037-0.048)	**0.056** (0.049-0.065)	**0.068** (0.059-0.079)	**0.085** (0.072-0.102)	**0.098** (0.081-0.120)	**0.112** (0.090-0.141)	**0.127** (0.100-0.164)	**0.147** (0.111-0.198)	**0.164** (0.120-0.228)
4-day	**0.025** (0.022-0.029)	**0.034** (0.030-0.039)	**0.046** (0.040-0.053)	**0.056** (0.049-0.065)	**0.070** (0.059-0.084)	**0.081** (0.067-0.099)	**0.092** (0.075-0.116)	**0.104** (0.082-0.135)	**0.121** (0.092-0.164)	**0.135** (0.099-0.189)
7-day	**0.016** (0.014-0.019)	**0.022** (0.019-0.026)	**0.030** (0.026-0.035)	**0.036** (0.032-0.043)	**0.046** (0.039-0.055)	**0.053** (0.044-0.065)	**0.061** (0.049-0.077)	**0.069** (0.055-0.090)	**0.081** (0.061-0.109)	**0.090** (0.066-0.126)
10-day	**0.012** (0.011-0.014)	**0.017** (0.015-0.019)	**0.023** (0.020-0.026)	**0.028** (0.024-0.032)	**0.035** (0.029-0.042)	**0.040** (0.034-0.050)	**0.046** (0.038-0.059)	**0.053** (0.042-0.069)	**0.062** (0.047-0.084)	**0.069** (0.051-0.097)
20-day	**0.007** (0.006-0.008)	**0.010** (0.009-0.012)	**0.014** (0.012-0.016)	**0.017** (0.015-0.020)	**0.021** (0.018-0.026)	**0.025** (0.021-0.031)	**0.029** (0.023-0.036)	**0.033** (0.026-0.042)	**0.038** (0.029-0.052)	**0.043** (0.032-0.060)
30-day	**0.006** (0.005-0.007)	**0.008** (0.007-0.009)	**0.011** (0.009-0.012)	**0.013** (0.012-0.015)	**0.017** (0.014-0.020)	**0.020** (0.016-0.024)	**0.023** (0.018-0.028)	**0.026** (0.020-0.033)	**0.030** (0.023-0.041)	**0.034** (0.025-0.048)
45-day	**0.004** (0.004-0.005)	**0.006** (0.005-0.007)	**0.008** (0.007-0.010)	**0.010** (0.009-0.012)	**0.013** (0.011-0.016)	**0.015** (0.013-0.019)	**0.018** (0.014-0.022)	**0.020** (0.016-0.026)	**0.024** (0.018-0.032)	**0.027** (0.020-0.037)
60-day	**0.004** (0.003-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.009** (0.008-0.010)	**0.011** (0.009-0.014)	**0.013** (0.011-0.016)	**0.015** (0.012-0.019)	**0.017** (0.014-0.022)	**0.020** (0.015-0.027)	**0.023** (0.017-0.032)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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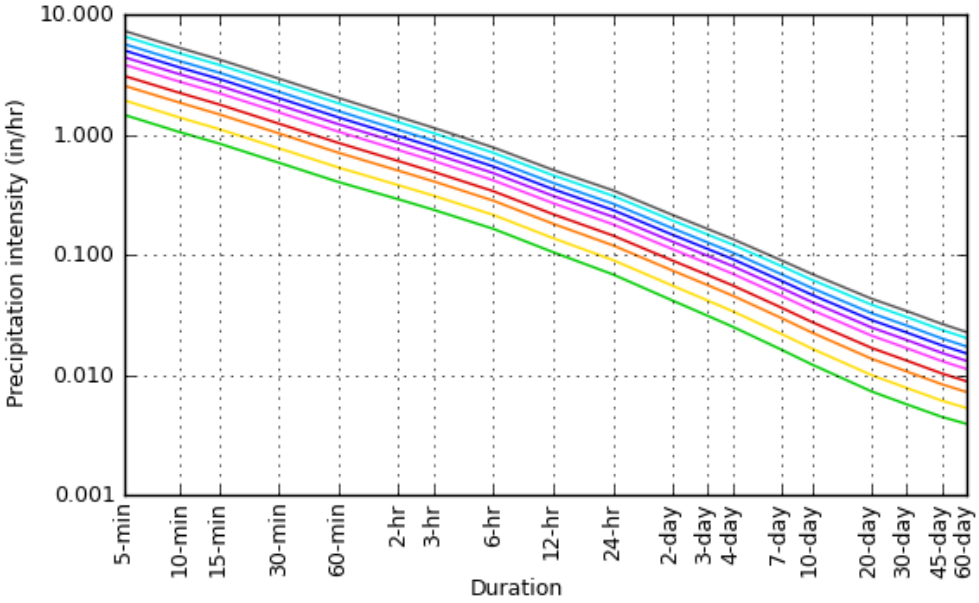
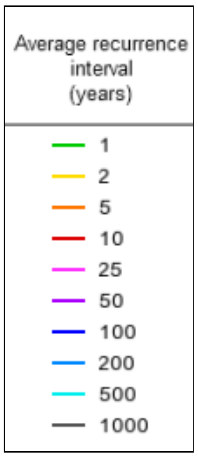
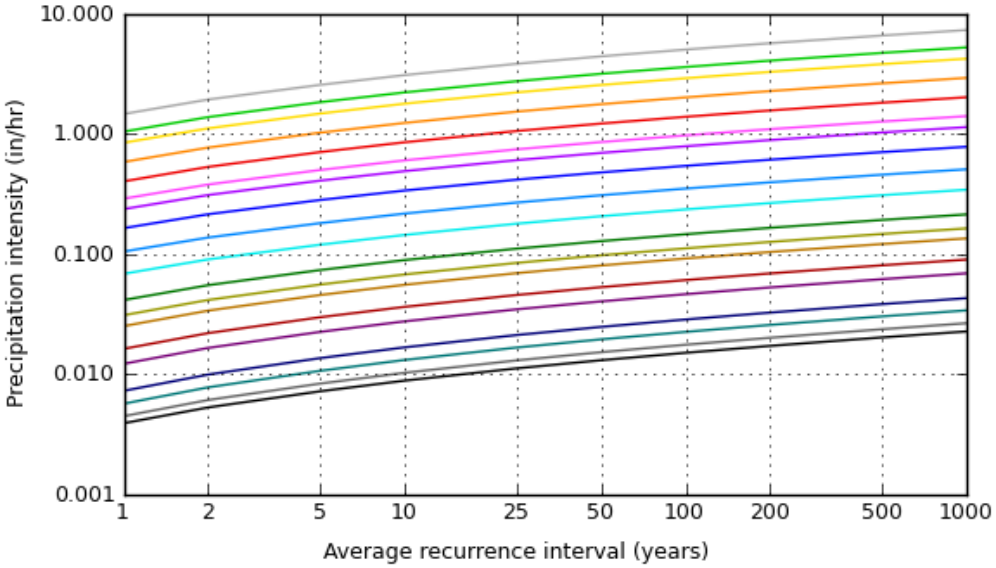
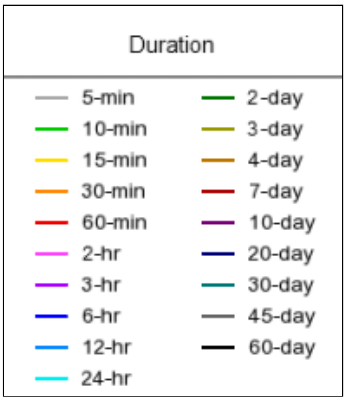
PF graphical

PDS-based intensity-duration-frequency (IDF) curves
Latitude: 33.7143°, Longitude: -117.9728°









NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Nov 23 02:07:44 2021

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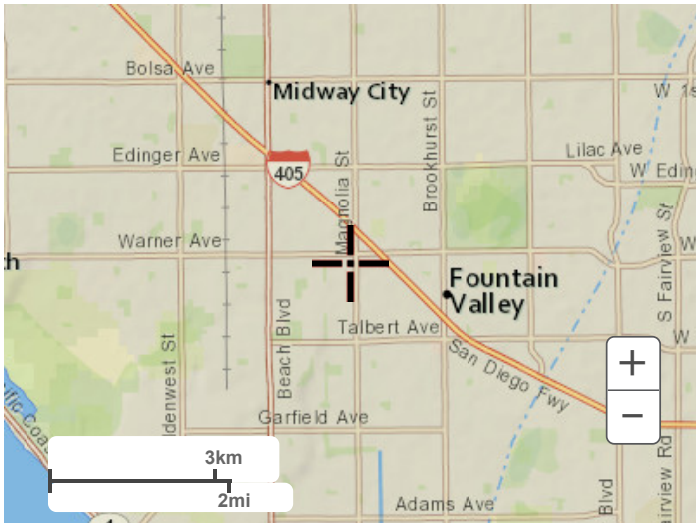
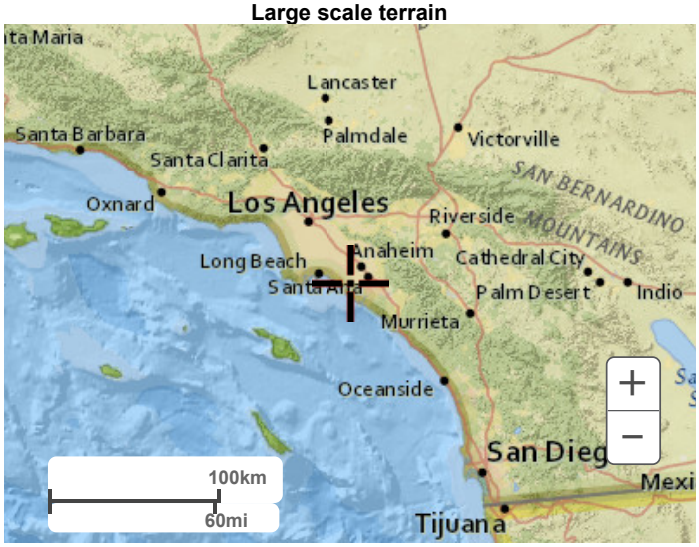
Maps & aerials

Small scale terrain



Large scale terrain



Large scale map

Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Appendix C – Hydrology Maps

EXISTING HYDROLOGY MAP
GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

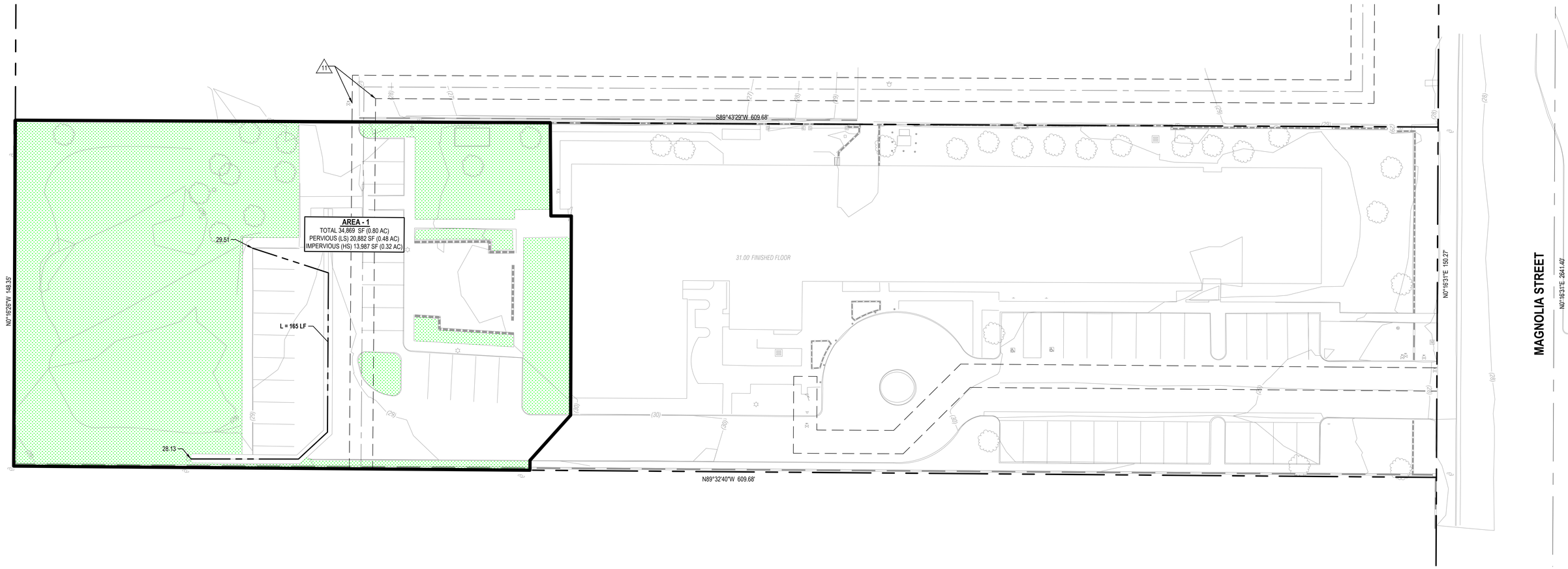
LEGEND:

PERVIOUS AREA

IMPERVIOUS AREA

DRAINAGE BOUNDARY

FLOW PATH



EASEMENT LEGEND:

11 10' SEWER EASEMENT

20' 10' 0 20' 40'

SCALE: 1" = 20'

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

REVISIONS

DATE	△	DESCRIPTION

BENCHMARK

DESCRIPTION:

DESCRIBED BY OCS 2002 - FOUND 3 3/4" OCS ALUMINUM BENCHMARK DISK STAMPED "1D-93-87 RESET FEB 1987", SET IN THE NORTHWEST CORNER OF A 5 FT. BY 5 FT. CONCRETE CATCH BASIN. MONUMENT IS LOCATED 6 FT.NORTH OF THE NORTHERLY CURB AND 104 FT. EAST OF THE END OF MERLE CIRCLE. MONUMENT IS SET LEVEL WITH THE SIDEWALK.

BASIS OF BEARINGS

THE BEARING OF N89°32' 38" W FOR THE CENTERLINE OF WARNER AVENUE AS SHOWN ON A MAP OF TRAGT No.4696 RECORDED IN MISCELLANEOUS MAP BOOK 13, PAGES 41 AND 43 RECORDS OF ORANGE COUNTRY, CALIFORNIA.

Waber Consultants INC
PLANNING CIVIL ENGINEERING SURVEYING
19210 S. VERMONT AVE., SUITE 115, GARDENA, CA 90248
P (424) 344-2464 F (562) 372-5282

EXISTING HYDROLOGY MAP

GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

JOB NO. 21041

DATE: 7/15/2022

SHEET 1 OF 2 SHEETS

W:\21-041 OUR LADY OF GUADALUPE\DWG\21041-01HDEX.dwg Jul 15, 2022 - 6:20pm

PROPOSED HYDROLOGY MAP
GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

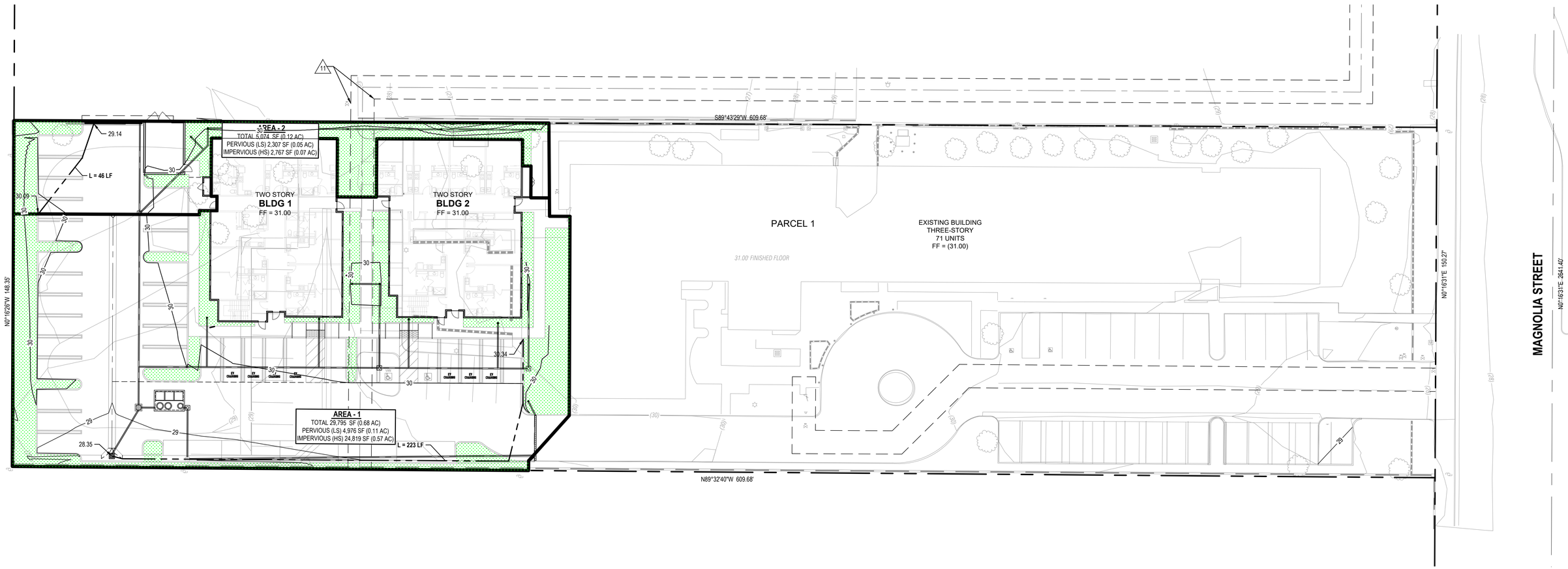
LEGEND:

PERVIOUS AREA

IMPERVIOUS AREA

DRAINAGE BOUNDARY

FLOW PATH



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20' 10' 0 20' 40'

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REVISIONS

DATE	△	DESCRIPTION

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PROPOSED HYDROLOGY MAP

GUADALUPE MANOR
17103 MAGNOLIA STREET, FOUNTAIN VALLEY, CA 92708

JOB NO. 21041

DATE: 11/23/2021

SHEET 2 OF 2 SHEETS

W:\21-041 OUR LADY OF GUADALUPE\DWG\21041HTB.dwg Nov 23, 2021 - 4:04pm