

CITY OF SANTEE

PRIORITY DEVELOPMENT PROJECT (PDP) STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)

(Vacant) TYLER STREET
SANTEE CA, 92071

ASSESSOR'S PARCEL NUMBER(S):
386-290-08,09,10,13,14,20,22,24 & 26
ENGINEER OF WORK:




Lawrence W. Walsh, RCE 46316

PREPARED FOR:

Mark Steve, Trustee
Steve Family Trust #3 dated 6/21/94
4204 Jutland Drive
San Diego, CA 92117
619-204-2218

PDP SWQMP & PLANS PREPARED BY:

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TABLE OF CONTENTS

Acronym Sheet

PDP SWQMP Preparer's Certification Page

PDP SWQMP Project Owner's Certification Page

Submittal Record

Project Vicinity Map

FORM I-1 Applicability of Permanent, Post-Construction Storm Water BMP Requirements

FORM I-2 Project Type Determination Checklist (Standard Project or PDP)

FORM I-3B Site Information Checklist for PDPs

FORM I-4 Source Control BMP Checklist for All Development Projects

FORM I-5 Site Design BMP Checklist for All Development Projects

FORM I-6 Summary of PDP Structural BMPs

Attachment 1: Backup for PDP Pollutant Control BMPs

Attachment 1a: DMA Exhibit

Attachment 1b: Tabular Summary of DMAs and Design Capture Volume Calculations

Attachment 1c: Harvest and Use Feasibility Screening (when applicable)

Attachment 1d: Categorization of Infiltration Feasibility Condition (when applicable)

Attachment 1e: Pollutant Control BMP Design Worksheets / Calculations

Attachment 2: Backup for PDP Hydromodification Control Measures

Attachment 2a: Hydromodification Management Exhibit

Attachment 2b: Management of Critical Coarse Sediment Yield Areas

Attachment 2c: Geomorphic Assessment of Receiving Channels

Attachment 2d: Flow Control Facility Design

Attachment 3: Structural BMP Maintenance Plan

Attachment 3a: B Structural BMP Maintenance Thresholds and Actions

Attachment 3b: Draft Maintenance Agreement (when applicable)

Attachment 4: Copy of Plan Sheets Showing Permanent Storm Water BMPs

ACRONYMS

APN	Assessor's Parcel Number
BMP	Best Management Practice
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWQMP	Storm Water Quality Management Plan

SWQMP PREPARER'S CERTIFICATION PAGE

Project Name: Tyler Street

Permit Application Number: TM 2017-01, DR 2017-01

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the City of Santee BMP Design Manual, which is a design manual for compliance with local City of Santee and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

I have read and understand that the City of Santee has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by the City of Santee is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.



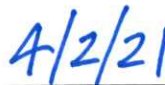
Engineer of Work's Signature

Lawrence W. Walsh

Print Name

Walsh Engineering & Surveying, Inc.

Company



Date

Engineer's Seal:



SWQMP PROJECT OWNER'S CERTIFICATION PAGE

Project Name: Tyler Street

Permit Application Number: TM 2017-01, DR 2017-01

PROJECT OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for Mark Steve, Trustee, Steve Family Trust #3 dated 6/21/94 by Walsh Engineering & Surveying, Inc. The PDP SWQMP is intended to comply with the PDP requirements of the City of Santee BMP Design Manual, which is a design manual for compliance with local City of Santee and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan. Once the undersigned transfers its interests in the property, its successor-in-interest shall bear the aforementioned responsibility to implement the best management practices (BMPs) described within this plan, including ensuring on-going operation and maintenance of structural BMPs. A signed copy of this document shall be available on the subject property into perpetuity.



Project Owner's Signature

Mark Steve, Trustee, Steve Family Trust #3 dated 6/21/94

Print Name

OWNER

Company

4-3-2021

Date

SUBMITTAL RECORD

Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In column 4 summarize the changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck comments behind this page.

Submittal Number	Date	Project Status	Summary of Changes
1	11-16-16	<input type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Initial Submittal
2	02-21-18	<input type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Address comments
3	10-3-18	<input type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Address comments
4	4-1-19	<input type="checkbox"/> Preliminary Design / Planning/ CEQA <input type="checkbox"/> Final Design	Address comments
5	4-1-21	Preliminary Design/ Planning/CEQA	Address comments

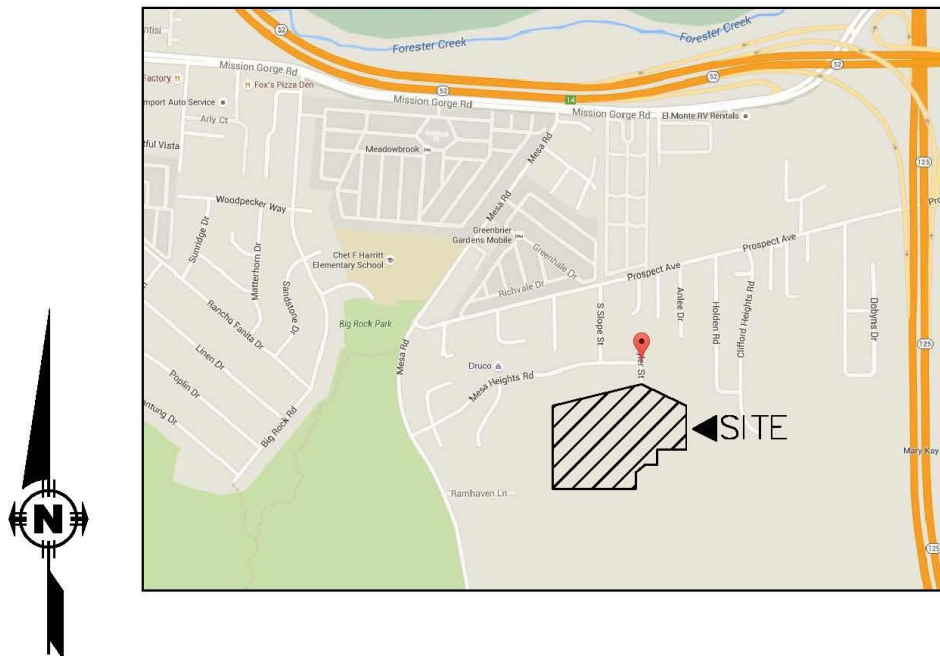
PROJECT VICINITY MAP

Project Name: Tyler Street

Permit Application Number: TM 2017-01, DR 2017-01

VICINITY MAP

TYLER STREET,
SANTEE CA, 92071



Applicability of Permanent, Post-Construction Storm Water BMP Requirements (Storm Water Intake Form for all Development Permit Applications)		Form I-1 Model BMP Design Manual [August 31, 2015]
Project Identification		
Project Name: Tyler Street		
Permit Application Number: TM 2017-01, DR 2017-01		Date: 11-16-16
Project Address: Tyler Street, Santee CA 92071		
Determination of Requirements		
<p>The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary</u> of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.</p> <p>Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop". Upon reaching a Stop, do not complete further Steps beyond the Stop.</p> <p>Refer to BMP Design Manual sections and/or separate forms referenced in each step below.</p>		
Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the BMP Design Manual for guidance.	<input type="checkbox"/> Yes	Go to Step 2.
	<input type="checkbox"/> No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.
Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes <i>only</i> interior remodels within an existing building):		
Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, see Section 1.4 of the BMP Design Manual <i>in its entirety</i> for guidance, AND complete Form I-2, Project Type Determination.	<input type="checkbox"/> Standard Project	Stop. <u>Only</u> Standard Project requirements apply, including <u>Standard Project SWQMP</u> .
	<input type="checkbox"/> PDP	<u>Standard and PDP</u> requirements apply, including <u>PDP SWQMP</u> . Go to Step 3.
	<input type="checkbox"/> Exception to PDP definitions	Stop. <u>Standard Project</u> requirements apply, <u>and any additional requirements specific to the type of project</u> . Provide discussion and list any additional requirements below. Prepare <u>Standard Project SWQMP</u> .

[Step 2 Continued from Page 1] Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:

Step 3 (PDPs only). Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the BMP Design Manual for guidance.

☐ Yes

Consult the [City Engineer] to determine requirements. Provide discussion and identify requirements below.
Go to Step 4.

☒ No

BMP Design Manual PDP requirements apply.
Go to Step 4.

Discussion / justification of prior lawful approval, and identify requirements (*not required if prior lawful approval does not apply*):

Step 4 (PDPs only). Do hydromodification control requirements apply? See Section 1.6 of the BMP Design Manual for guidance.

☐ Yes

PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6).
Go to Step 5.

☒ No

Stop.
PDP structural BMPs required for pollutant control (Chapter 5) only.
Provide brief discussion of exemption to hydromodification control below.

Discussion / justification if hydromodification control requirements do not apply:

Storm drain system discharges directly into the San Diego River.

Step 5 (PDPs subject to hydromodification control requirements only). Does protection of critical coarse sediment yield areas apply based on review of WMAA Potential Critical Coarse Sediment Yield Area Map? See Section 6.2 of the BMP Design Manual for guidance.

☐ Yes

Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2).
Stop.

☐ No

N/A

Management measures not required for protection of critical coarse sediment yield areas.
Provide brief discussion below.
Stop.

Priority Determination Form		Form I-2 Model BMP Design Manual [August 31, 2015]	
Project Information			
Project Name: Tyler Street			
Permit Application Number: TM 2017-01, DR 2017-01		Date: 11-16-16	
Project Address: Vacant, Tyler Street, Santee CA 92071			
Project Type Determination: Standard Project or Priority Development Project (PDP)			
The project is (select one): <input checked="" type="checkbox"/> New Development <input type="checkbox"/> Redevelopment			
The total proposed newly created or replaced impervious area is: 88,850 ft ² (2.04) acres			
Is the project in any of the following categories, (a) through (f)?			
<div>Yes</div> <input checked="" type="checkbox"/>	<div>No</div> <input type="checkbox"/>	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
<div>Yes</div> <input type="checkbox"/>	<div>No</div> <input checked="" type="checkbox"/>	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
<div>Yes</div> <input checked="" type="checkbox"/>	<div>No</div> <input type="checkbox"/>	(c)	<p>New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses:</p> <ul style="list-style-type: none"> (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.

Form I-2 Page 2, Form Template Date: August 31, 2015

Yes <input type="checkbox"/>	No <input type="checkbox"/>	(d)	<p>New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).</p> <p><i>Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees. See BMP Design Manual Section 1.4.2 for additional guidance.</i></p>
Yes <input type="checkbox"/>	No <input type="checkbox"/>	(e)	<p>New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses:</p> <ul style="list-style-type: none"> (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
Yes <input type="checkbox"/>	No <input type="checkbox"/>	(f)	<p>New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.</p> <p><i>Note: See BMP Design Manual Section 1.4.2 for additional guidance.</i></p>

Does the project meet the definition of one or more of the Priority Development Project categories (a) through (f) listed above?

☐ No – the project is not a Priority Development Project (Standard Project).

☒ Yes – the project is a Priority Development Project (PDP).

The following is for redevelopment PDPs only: N/A

The area of existing (pre-project) impervious area at the project site is: _____ ft² (A)

The total proposed newly created or replaced impervious area is _____ ft² (B)

Percent impervious surface created or replaced (B/A)*100: _____ %

The percent impervious surface created or replaced is (select one based on the above calculation):

☐ less than or equal to fifty percent (50%) – only new impervious areas are considered PDP

OR

☐ greater than fifty percent (50%) – the entire project site is a PDP

Site Design Checklist For PDPs		Form I-3B (PDPs) Model BMP Design Manual [August 31, 2015]
Project Summary Information		
Project Name	Tyler Street	
Project Address	Vacant, Tyler Street, Santee CA, 92071	
Assessor's Parcel Number(s) (APN(s))	386-290-08,09,10,13,14,20,22,24 & 26	
Permit Application Number	TM 2017-01, DR 2017-01	
Project Hydrologic Unit	Select One: <input type="checkbox"/> Santa Margarita 902 <input type="checkbox"/> San Luis Rey 903 <input type="checkbox"/> Carlsbad 904 <input type="checkbox"/> San Dieguito 905 <input type="checkbox"/> Penasquitos 906 <input checked="" type="checkbox"/> San Diego 907 <input type="checkbox"/> Pueblo San Diego 908 <input type="checkbox"/> Sweetwater 909 <input type="checkbox"/> Otay 910 <input type="checkbox"/> Tijuana 911	
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	907.12 Santee HSA	
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	<u>27.35</u> Acres (<u>1,191,168</u> Square Feet)	
Area to be Disturbed by the Project (Project Area)	<u>6.22</u> Acres (<u>270,860</u> Square Feet)	
Project Proposed Impervious Area (subset of Project Area)	<u>2.04</u> Acres (<u>88,850</u> Square Feet)	
Project Proposed Pervious Area (subset of Project Area)	<u>4.18</u> Acres (<u>182,010</u> Square Feet)	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.		

Description of Existing Site Condition

Current Status of the Site (select all that apply):

- ☐ Existing development
- ☒ Previously graded but not built out
- ☐ Demolition completed without new construction
- ☐ Agricultural or other non-impervious use
- ☒ Vacant, undeveloped/natural

Description / Additional Information:

A small portion of the property was graded on per DWG. 91-051

Existing Land Cover Includes (select all that apply):

- ☒ Vegetative Cover
- ☐ Non-Vegetated Pervious Areas
- ☐ Impervious Areas

Description / Additional Information:

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):

- ☐ NRCS Type A
- ☐ NRCS Type B
- ☐ NRCS Type C
- ☒ NRCS Type D

Approximate Depth to Groundwater (GW):

- ☐ GW Depth < 5 feet
- ☐ 5 feet < GW Depth < 10 feet
- ☐ 10 feet < GW Depth < 20 feet

☒ GW Depth > 20 feet

See Geotechnical Report

Existing Natural Hydrologic Features (select all that apply):

☒ Watercourses

☐ Seeps

☐ Springs

☐ Wetlands

☐ None

Description / Additional Information:

An existing ephemeral channel exists along the northeast property line and will not be disturbed

Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

- (1) whether existing drainage conveyance is natural or urban;
- (2) Is runoff from offsite conveyed through the site? if yes, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site;
- (3) Provide details regarding existing project site drainage conveyance network, including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels; and
- (4) Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Describe existing site drainage patterns:

The existing drainage is overland flow over the undeveloped land and flows into an existing ephemeral channel where it enters a storm drain system on Tyler street and discharges into the San Diego River. The runoff from the east is urban and drains to the ephemeral channel onsite through a series of storm drains and brow ditches.

See Drainage Study associated with this project.

Description of Proposed Site Development

Project Description / Proposed Land Use and/or Activities:

Grading and construction of a road and 14 low density residential single family pads, homes and driveways.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Roofs, driveways, and Tyler street extension.

List/describe proposed pervious features of the project (e.g., landscape areas):

Landscape areas and slopes

Does the project include grading and changes to site topography?

☒ Yes

☐ No

Description / Additional Information:

Grading of the 14 pads and extension of Tyler Street.

Description of Proposed Site Drainage Patterns

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☒ Yes

☐ No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Describe proposed site drainage patterns::

The drainage basin in the pre and post developed condition is 74 acres in size. In the proposed condition, drainage will continue to flow into the existing storm drain system located at the terminus of Tyler Street. A brow ditch will be constructed at the top of the southwesterly slope directing runoff from the south eastward into the existing ephemeral channel and to the west around the project. The drainage from the west will be directed to a storm drain pipe where it will confluence with the existing storm drain system on Tyler street. Runoff from the 14 homes and Tyler Street extension will flow into the curb and gutter and conveyed into a series of rain gardens/biofiltration basins on both sides of the street designed per fact sheet BF-1 for pollutant control. The Padre Dam access road will drain into a tree well per SD-1 for treatment. See Drainage Study associated with this project for detailed calculations.

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply):

☐ On-site storm drain inlets

☐ Interior floor drains and elevator shaft sump pumps

☐ Interior parking garages

☐ Need for future indoor & structural pest control

☐ Landscape/Outdoor Pesticide Use

☐ Pools, spas, ponds, decorative fountains, and other water features

☐ Food service

☐ Refuse areas

☐ Industrial processes

☐ Outdoor storage of equipment or materials

☐ Vehicle and Equipment Cleaning

☐ Vehicle/Equipment Repair and Maintenance

☐ Fuel Dispensing Areas

☐ Loading Docks

☐ Fire Sprinkler Test Water

☐ Miscellaneous Drain or Wash Water

☐ Plazas, sidewalks, and parking lots

Description / Additional Information:

Identification and Narrative of Receiving Water and Pollutants of Concern

Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):

Runoff from the site flows into a storm drain system which discharges into the San Diego River and is conveyed to the Pacific Ocean.

List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs / WQIP Highest Priority Pollutant
San Diego River	Enterococcus, Fecal Coliform, Low	Indicator Bacteria
	Dissolved Oxygen, Manganese, Nitrogen, Phosphorous, Total	
	Dissolved Solids, & Toxicity	

Identification of Project Site Pollutants*

***Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)**

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6):

Pollutant	Not Applicable to the Project Site	Expected from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment			
Nutrients			
Heavy Metals			
Organic Compounds			
Trash & Debris			
Oxygen Demanding Substances			
Oil & Grease			
Bacteria & Viruses			
Pesticides			

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)?

- ☐ Yes, hydromodification management flow control structural BMPs required.
- ☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

Runoff discharges into the San Diego River. See hardened conveyance system exhibit in attachment 2.

Critical Coarse Sediment Yield Areas*

***This Section only required if hydromodification management requirements apply**

CCSY EXHIBIT



— CCSY AREAS

SOURCE: 2015 SAN DIEGO RIVER WATERSHED MANAGEMENT AREA ANALYSIS

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

☐ Yes

☒ No, No critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the BMP Design Manual been performed?

☐ 6.2.1 Verification of Geomorphic Landscape Units (GLUs) Onsite

☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment

☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

☐ No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

☐ No critical coarse sediment yield areas to be protected based on verification of GLUs onsite

☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 2.b of the SWQMP.

☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

N/A

Flow Control for Post-Project Runoff*

***This Section only required if hydromodification management requirements apply**

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.

N/A

Has a geomorphic assessment been performed for the receiving channel(s)?

- ☐ No, the low flow threshold is 0.1Q2 (default low flow threshold)
- ☐ Yes, the result is the low flow threshold is 0.1Q2
- ☐ Yes, the result is the low flow threshold is 0.3Q2
- ☐ Yes, the result is the low flow threshold is 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:

N/A

Discussion / Additional Information: (optional)

N/A

Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

N/A

Optional Additional Information or Continuation of Previous Sections As Needed

This space provided for additional information or continuation of information from previous sections as needed.

Source Control BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)		Form I-4 Model BMP Design Manual [August 31, 2015]	
Project Identification			
Project Name Tyler Street			
Permit Application Number TM 2017-01, DR 2017-01			
Source Control BMPs			
All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement source control BMPs shown in this checklist.			
Answer each category below pursuant to the following.			
<ul style="list-style-type: none"> • "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided. 			
Source Control Requirement		Applied?	
SC-1 Prevention of Illicit Discharges into the MS4		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Discussion / justification if SC-3 not implemented: No outdoor storage areas proposed.			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		<input type="checkbox"/> Yes	<input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Discussion / justification if SC-4 not implemented: No outdoor work areas proposed.			

Source Control Requirement	Applied?		
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SC-5 not implemented:			
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
<input checked="" type="checkbox"/> On-site storm drain inlets	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Interior floor drains and elevator shaft sump pumps	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Interior parking garages	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Need for future indoor & structural pest control	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Landscape/Outdoor Pesticide Use	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Pools, spas, ponds, decorative fountains, and other water features	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Food service	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Refuse areas	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Industrial processes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Outdoor storage of equipment or materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Vehicle and Equipment Cleaning	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Vehicle/Equipment Repair and Maintenance	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Fuel Dispensing Areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Loading Docks	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Fire Sprinkler Test Water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Miscellaneous Drain or Wash Water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input checked="" type="checkbox"/> Plazas, sidewalks, and parking lots	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for all "No" answers shown above.

Site Design BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)		Form I-5 Model BMP Design Manual [August 31, 2015]	
Project Identification			
Project Name	Tyler Street		
Permit Application Number	TM 2017-01, DR 2017-01		
Site Design BMPs			
<p>All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement site design BMPs shown in this checklist.</p> <p>Answer each category below pursuant to the following.</p> <ul style="list-style-type: none"> • "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided. 			
Site Design Requirement		Applied?	
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SD-1 not implemented:			
SD-2 Conserve Natural Areas, Soils, and Vegetation		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SD-2 not implemented:			
SD-3 Minimize Impervious Area		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SD-4 not implemented:			
SD-5 Impervious Area Dispersion		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Discussion / justification if SD-5 not implemented:			

Form I-5 Page 2 of 2, Form Template Date: August 31, 2015			
Site Design Requirement	Applied?		
SD-6 Runoff Collection	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-6 not implemented:			
SD-7 Landscaping with Native or Drought Tolerant Species	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if SD-8 not implemented: See Harvest and Use Feasibility checklist in attachment 1 Incorporate rain barrels for each resident for site design. Install pet waste stations throughout project.			

<p align="center">Summary of PDP Structural BMPs</p>	<p align="center">Form I-6 (PDPs) Model BMP Design Manual [August 31, 2015]</p>
<p align="center">Project Identification</p>	
<p>Project Name <u>Tyler Street</u></p>	
<p>Permit Application Number <u>TM 2017-01, DR 2017-01</u></p>	
<p align="center">PDP Structural BMPs</p>	
<p>All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).</p> <p>PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative and engineer of record to certify construction of the structural BMPs (see Section 1.12 of the BMP Design Manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the BMP Design Manual).</p> <p>Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).</p>	
<p>Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.</p> <p>This project will construct 29 rain gardens/biofiltration basins per BF-1 acting as one system which will be constructed along Tyler Street to retain the design capture volume of the 14 homes and Tyler Street extension to provide pollutant control. The proposed northeasterly slopes will be self retaining. A tree well will be constructed at the low point of a proposed road for Padre Dam Municipal Water District for stormwater treatment. The entrance of the Tyler Street extension will be primarily de minimus (630 SF) and any additional area past the de minimus threshold will be compensated for by oversizing the proposed biofiltration basins to treat the entire DCV. Because the project discharges to an area identified as appropriate for exemption by the WMAA, this project is exempt from hydromodification flow control requirements. See Hardened Conveyance Exhibit in Attachment 2.</p> <p>(Continue on page 2 as necessary.)</p>	

(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

(Continued from page 1)

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No.	BMP A
Construction Plan Sheet No.	
Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input checked="" type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below)	
Purpose: <input checked="" type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Walsh Engineering & Surveying, Inc. 607 Aldwych Road, El Cajon, CA 619-588-6747
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA or CFD

Structural BMP ID No. A

Construction Plan Sheet No. TBD

Discussion (as needed):

Rain garden for roofs, sidewalks, driveways and Tyler Street.

Structural BMP Summary Information (Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No.	BMP B
Construction Plan Sheet No.	
Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input checked="" type="checkbox"/> Other (describe in discussion section below)	
Purpose: <input checked="" type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	Walsh Engineering & Surveying, Inc. 607 Aldwych Road, El Cajon, CA 619-588-6747
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	HOA or CFD

Structural BMP ID No. B

Construction Plan Sheet No. TBD

Discussion (as needed):

Tree well for Padre water district maintenance road.

ATTACHMENT 1

BACKUP FOR PDP POLLUTANT CONTROL BMPs

This is the cover sheet for Attachment 1.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist on the back of this Attachment cover sheet.	<input type="checkbox"/> Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	<input type="checkbox"/> Included on DMA Exhibit in Attachment 1a <input type="checkbox"/> Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	<input type="checkbox"/> Included in attachment 1A <input type="checkbox"/> Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	<input type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	<input type="checkbox"/> Included

Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

- ☒ Underlying hydrologic soil group
- ☒ Approximate depth to groundwater
- ☒ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)

N/A ☐ Critical coarse sediment yield areas to be protected

- ☒ Existing topography and impervious areas
- ☒ Existing and proposed site drainage network and connections to drainage offsite

N/A ☐ Proposed demolition

- ☒ Proposed grading
- ☒ Proposed impervious features
- ☒ Proposed design features and surface treatments used to minimize imperviousness
- ☒ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
- ☒ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
- ☒ Structural BMPs (identify location, type of BMP, and size/detail)

TYLER STREET

SANTEE CA, 92071

DRAINAGE MANAGEMENT AREAS

DMA TABLE			
NAME	AREA	DESCRIPTION	TYPE
A	6.06 AC	TYLER STREET & 14 HOMES W/DW'S	BIOFILTRATION*
B	0.16 AC	PADRE DRIVEWAY	SELF-RETAINING
C	0.01 AC	TYLER STREET	DE MINIMUS

*AREA REQUIRED: 2,880 SF AREA PROVIDED: 2,880 SF
VOLUME REQUIRED: 3,959 CF VOLUME PROVIDED: 3,959 CF

BMP LEGEND

SITE DESIGN BMPS:

MAINTAIN NATURAL DRAINAGE PATHWAYS AND HYDROLOGIC FEATURES

SD-1

CONSERVE NATURAL AREAS, SOILS, AND VEGETATION

SD-2

MINIMIZE IMPERVIOUS AREA

SD-3

MINIMIZE SOIL COMPACTION

SD-4

IMPERVIOUS AREA DISPERSION

SD-5

RUNOFF COLLECTION

SD-6

LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

SD-7

SOURCE CONTROL BMPS:

PREVENTION OF ILLICIT DISCHARGES INTO THE MS4

SC-1

STORM DRAIN STENCILING OR SIGNAGE

SC-2

PROTECT TRASH STORAGE AREAS

SC-5

LANDSCAPE/OUTDOOR PESTICIDE USE

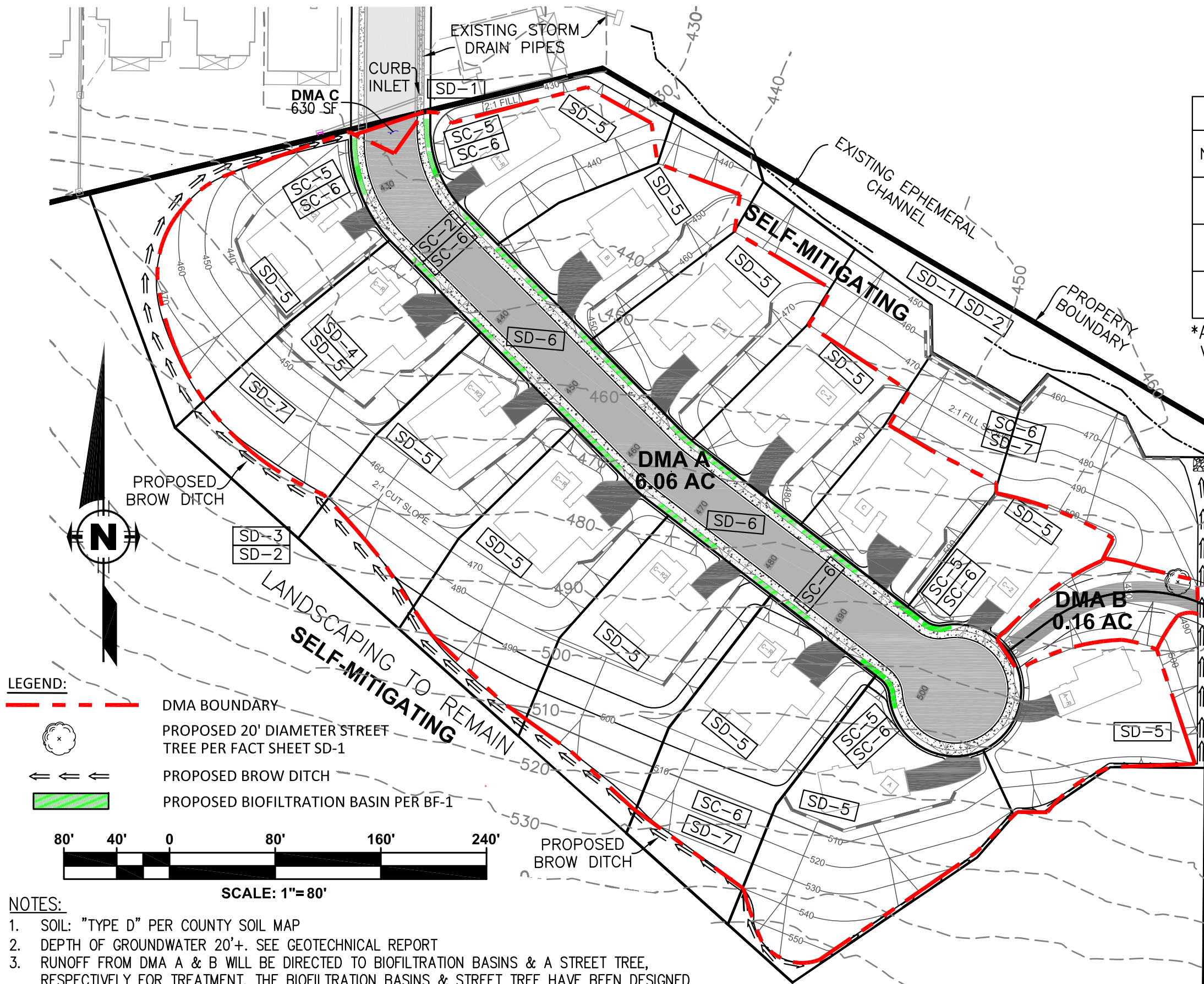
SC-6

SIDEWALK

SC-6

REFUSE AREAS

SC-6

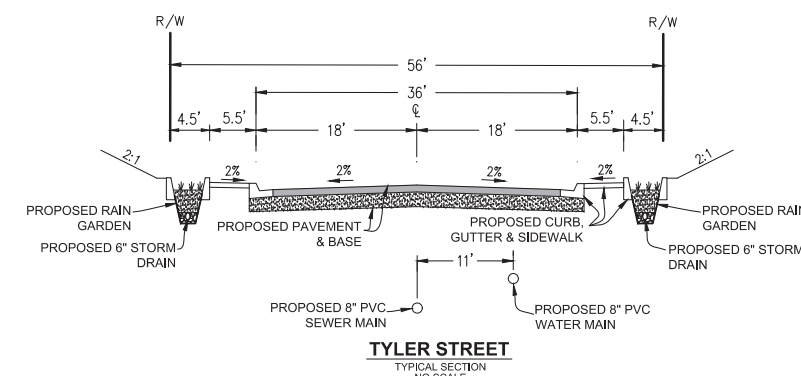
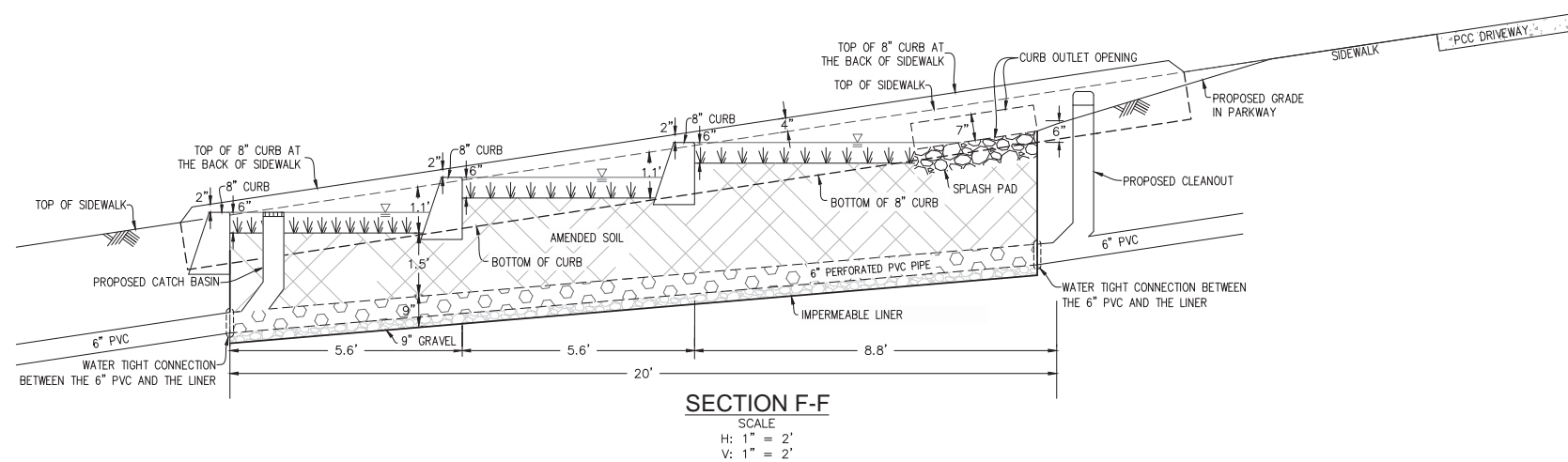
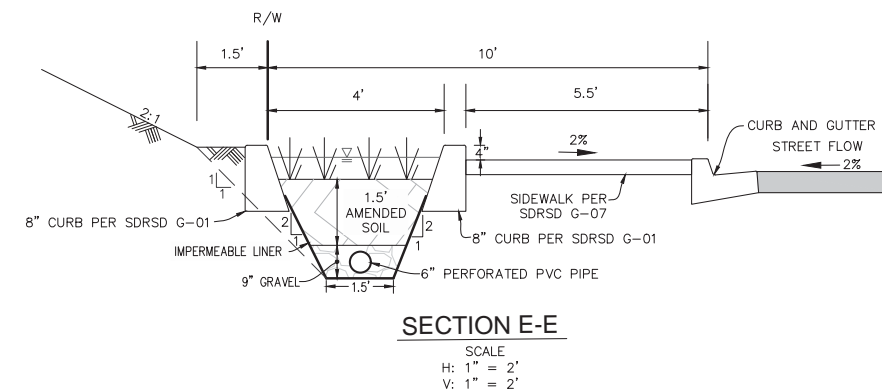
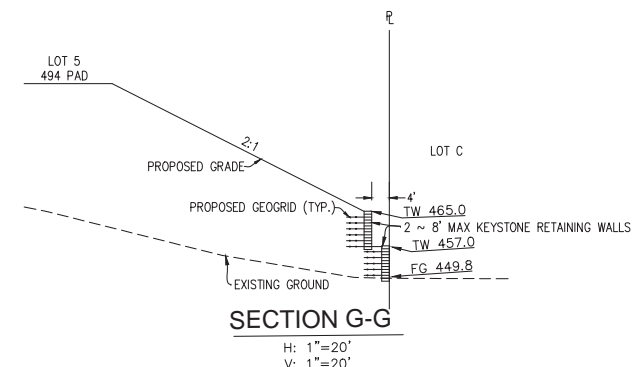
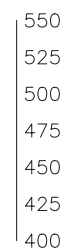
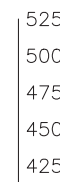
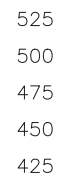


LEGEND:

- DMA BOUNDARY
 - PROPOSED 20' DIAMETER STREET TREE PER FACT SHEET SD-1
 - PROPOSED BROW DITCH
 - PROPOSED BIOFILTRATION BASIN PER BF-1
- 80' 40' 0 80' 160' 240'
- SCALE: 1"=80'

NOTES:

- SOIL: "TYPE D" PER COUNTY SOIL MAP
- DEPTH OF GROUNDWATER 20'+. SEE GEOTECHNICAL REPORT
- RUNOFF FROM DMA A & B WILL BE DIRECTED TO BIOFILTRATION BASINS & A STREET TREE, RESPECTIVELY FOR TREATMENT. THE BIOFILTRATION BASINS & STREET TREE HAVE BEEN DESIGNED PER FACT SHEET BF-1 & SD-1 TO RETAIN THE ENTIRE DCV ONSITE.
- BUILDINGS SHOWN ARE FOR REFERENCE ONLY.



Lawrence W. Walsh 3/2/21
 LAWRENCE W. WALSH DATE
 **Walsh Engineering & Surveying, Inc.**
 607 Aldwyck Road, El Cajon, CA 92020
 (619) 588-6747 (619) 792-1232 Fax



Categorization of Infiltration Feasibility Condition		Form I-8	
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Provide basis: NRCS soil maps indicate the site is mapped as “Diablo Clay – 15 to 30% slopes (DaE)”, which is a USDA hydrologic soil group “D” soil. Type “D” soils generally possess infiltration rates on the order of 0.0 to 0.5in/hr. Based on our subsurface exploration, the project site is underlain by Tertiary-age Friars Formation which generally consists of dense, interbedded claystone, siltstone, and sandstone with cobble conglomerate lenses. These formational materials possess negligible permeability and will not reliably support full infiltration.			
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Provide basis: Infiltration at a rate greater than 0.5 inches per hour is not feasible for the project. As such, this screening question does not control the feasibility of infiltration at the project site and is not applicable.			
Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Form I-8 Page 2 of 4

Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Provide basis: Infiltration at a rate greater than 0.5 inches/hour is not feasible for this project. As such, this screening question does not control the feasibility of infiltration at the project site.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</p>			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<p>Provide basis: Infiltration at a rate greater than 0.5 inches/hour is not feasible for this project. As such, this screening question does not control the feasibility of infiltration at the project site. Per Section C.4.4 of the BMP Design Manual, final determination should be made by the project design engineer.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</p>			
Part 1 Result*	<p>If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration</p> <p>If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design.</p>	No, Full infiltration is not feasible	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Form I-8 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Provide basis:

Site specific infiltration testing has not been performed. However, our recent experience performing infiltration testing within the Friars Formation has yielded infiltration rates ranging between 0.00 and 0.02 inches/hour. The subsurface soils encountered are relatively dense and possess high fines content, and perched groundwater was encountered at shallow depths during our geotechnical study at the site. It is our professional opinion that infiltration at the project site will be negligible and that over the lifetime of the development the infiltration rates will further diminish. The BMP Design Manual utilizes the subjective terminology of ‘appreciable’ and fails to define a lower bound infiltration rate. Based on our recent infiltration testing within this geologic formation and site specific data developed during our geotechnical investigation, the soil and geologic conditions at the project site does not allow for infiltration in an ‘appreciable’ rate or volume.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Provide basis:

The project site is situated in area of known and suspected landslides, and nearby projects have encountered landslides and slope instability. Creep-affected Friars Formation was encountered in our soil borings and test pits excavated onsite and will require significant mitigation to adequately address slope stability. In addition, the soils underlying the project site are expansive and when subjected to repeated wetting and drying may over time lead to a ‘softening’ of the soils. Infiltrating stormwater in concentrated areas can lead to weakening of fill soils and formational materials and long term destabilization of slopes.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Form I-8 Page 4 of 4

Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>Provide basis:</p> <p>An ephemeral stream occupies a portion of the northerly and northeasterly property and shallow groundwater was encountered during our previous subsurface investigation. However, based on our observations of the subsurface soils and bedrock materials, it is not anticipated that the onsite soil is contaminated. In addition, the subject site is not identified as contaminated per our search on the California State Water Resources Control Board GeoTracker website. No contaminated sites were identified within a 0.5 mile radius, there are no industrial sites adjacent to or tributary to the project, and the proposed development will consist of single-family residences. As such, we do not believe infiltration would pose significant risk to groundwater conditions.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</p>			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>Provide basis:</p> <p>It is not anticipated that infiltration would violate downstream water rights; however, per Section C.4.4 of the BMP Design Manual, final determination should be made by the project design engineer.</p> <p>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</p>			
Part 2 Result*	<p>If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration.</p> <p>If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.</p>	No, partial infiltration is not feasible	

**To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by the Agency/Jurisdictions to substantiate findings*

Automated Worksheet B.3-1: Project-Scale BMP Feasibility Analysis (V1.3)

Category	#	Description	Value	Units
Capture & Use Inputs	0	Design Capture Volume for Entire Project Site	4,139	cubic-feet
	1	Proposed Development Type	Residential	unitless
	2	Number of Residents or Employees at Proposed Development	56	#
	3	Total Planted Area within Development	182,010	sq-ft
	4	Water Use Category for Proposed Planted Areas	Moderate	unitless
Infiltration Inputs	5	Is Average Site Design Infiltration Rate ≤ 0.500 Inches per Hour?	No	yes/no
	6	Is Average Site Design Infiltration Rate ≤ 0.010 Inches per Hour?	Yes	yes/no
	7	Is Infiltration of the Full DCV Anticipated to Produce Negative Impacts?	No	yes/no
	8	Is Infiltration of Any Volume Anticipated to Produce Negative Impacts?	No	yes/no
Calculations	9	36-Hour Toilet Use Per Resident or Employee	1.86	cubic-feet
	10	Subtotal: Anticipated 36 Hour Toilet Use	104	cubic-feet
	11	Anticipated 1 Acre Landscape Use Over 36 Hours	196.52	cubic-feet
	12	Subtotal: Anticipated Landscape Use Over 36 Hours	821	cubic-feet
	13	Total Anticipated Use Over 36 Hours	926	cubic-feet
	14	Total Anticipated Use / Design Capture Volume	0.22	cubic-feet
	15	Are Full Capture and Use Techniques Feasible for this Project?	No	unitless
	16	Is Full Retention Feasible for this Project?	Yes	yes/no
	17	Is Partial Retention Feasible for this Project?	No	yes/no
Result	18	Feasibility Category	n/a	1, 2, 3, 4, 5

Worksheet B.3-1 General Notes:

A. Applicants may use this worksheet to determine the types of structural BMPs that are acceptable for implementation at their project site (as required in Section 5 of the BMPDM). User input should be provided for yellow shaded cells, values for all other cells will be automatically generated. Projects demonstrating feasibility or potential feasibility via this worksheet are encouraged to incorporate capture and use features in their project.

B. Negative impacts associated with retention may include geotechnical, groundwater, water balance, or other issues identified by a geotechnical engineer and substantiated through completion of Form I-8.

C. Feasibility Category 1: Applicant must implement capture & use, retention, and/or infiltration elements for the entire DCV.

D. Feasibility Category 2: Applicant must implement capture & use elements for the entire DCV.

E. Feasibility Category 3: Applicant must implement retention and/or infiltration elements for all DMAs with Design Infiltration Rates greater than 0.50 in/hr.

F. Feasibility Category 4: Applicant must implement standard unlined biofiltration BMPs sized at $\geq 3\%$ of the effective impervious tributary area for all DMAs with Design Infiltration Rates of 0.011 to 0.50 in/hr. Applicants may be permitted to implement lined BMPs, reduced size BMPs, and/or specialized biofiltration BMPs provided additional criteria identified in "Supplemental Retention Criteria for Non-Standard Biofiltration BMPs" are satisfied.

G. Feasibility Category 5: Applicant must implement standard lined biofiltration BMPs sized at $\geq 3\%$ of the effective impervious tributary area for all DMAs with Design Infiltration Rates of 0.010 in/hr or less. Applicants may also be permitted to implement reduced size and/or specialized biofiltration BMPs provided additional criteria identified in "Supplemental Retention Criteria for Non-Standard Biofiltration BMPs" are satisfied.

H. PDPs participating in an offsite alternative compliance program are not held to the feasibility categories presented herein.

Automated Worksheet B.1-1: Calculation of Design Capture Volume (V1.3)

Category	#	Description	<i>vi</i>	<i>vii</i>	Units
Standard Drainage Basin Inputs	0	Drainage Basin ID or Name	A	B	unitless
	1	Basin Drains to the Following BMP Type	Biofiltration	n/a	unitless
	2	85th Percentile 24-hr Storm Depth	0.50	0.50	inches
	3	Design Infiltration Rate Recommended by Geotechnical Engineer			in/hr
	4	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	86,500	2,350	sq-ft
	5	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)			sq-ft
	6	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)	177,400	4,610	sq-ft
	7	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)			sq-ft
	8	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)			sq-ft
	9	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)			sq-ft
	10	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)			sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	11	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	Yes	Yes	yes/no
	12	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)			sq-ft
	13	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)			sq-ft
	14	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)			sq-ft
	15	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)			sq-ft
	16	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)			sq-ft
	17	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)			sq-ft
	18	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)			sq-ft
	19	Number of Tree Wells Proposed per SD-A		1	#
	20	Average Mature Tree Canopy Diameter		20	ft
Treatment Train Inputs & Calculations	21	Number of Rain Barrels Proposed per SD-E	14		#
	22	Average Rain Barrel Size	100		gal
	23	Does BMP Overflow to Stormwater Features in Downstream Drainage?	No	No	unitless
	24	Identify Downstream Drainage Basin Providing Treatment in Series			unitless
	25	Percent of Upstream Flows Directed to Downstream Dispersion Areas			percent
	26	Upstream Impervious Surfaces Directed to Dispersion Area (Ci=0.90)	0	0	cubic-feet
	27	Upstream Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	0	0	cubic-feet
	28	Total Tributary Area	263,900	6,960	sq-ft
	29	Initial Runoff Factor for Standard Drainage Areas	0.36	0.37	unitless
	30	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	unitless
Initial Runoff Factor Calculation	31	Initial Weighted Runoff Factor	0.36	0.37	unitless
	32	Initial Design Capture Volume	3,959	107	cubic-feet
	33	Total Impervious Area Dispersed to Pervious Surface	0	0	sq-ft
	34	Total Pervious Dispersion Area	0	0	sq-ft
Dispersion Area Adjustments	35	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	ratio
	36	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	ratio
	37	Runoff Factor After Dispersion Techniques	0.36	0.37	unitless
	38	Design Capture Volume After Dispersion Techniques	3,959	107	cubic-feet
Tree & Barrel Adjustments	39	Total Tree Well Volume Reduction	0	180	cubic-feet
	40	Total Rain Barrel Volume Reduction	187	0	cubic-feet
Results	41	Final Adjusted Runoff Factor	0.34	0.00	unitless
	42	Final Effective Tributary Area	89,726	0	sq-ft
	43	Initial Design Capture Volume Retained by Site Design Elements	187	180	cubic-feet
	44	Final Design Capture Volume Tributary to BMP	3,772	0	cubic-feet

Worksheet B.1-1 General Notes:

A. Applicants may use this worksheet to calculate design capture volumes for up to 10 drainage areas. User input must be provided for yellow shaded cells, values for all other cells will be automatically generated, errors/notifications will be highlighted in red and summarized below. Upon completion of this worksheet, proceed to the appropriate BMP Sizing worksheet(s).

Automated Worksheet B.5-1: Sizing Lined or Unlined Biofiltration BMPs (V1.3)

Category	#	Description	Value	Units
BMP Inputs	0	Drainage Basin ID or Name	A	sq-ft
	1	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	in/hr
	2	Effective Tributary Area	89,726	sq-ft
	3	Minimum Biofiltration Footprint Sizing Factor	0.030	ratio
	4	Design Capture Volume Tributary to BMP	3,772	cubic-feet
	5	Is Biofiltration Basin Impermeably Lined or Unlined?	Lined	unitless
	6	Provided Biofiltration BMP Surface Area	2,880	sq-ft
	7	Provided Surface Ponding Depth	6	inches
	8	Provided Soil Media Thickness	18	inches
	9	Provided Depth of Gravel Above Underdrain Invert	6	inches
	10	Diameter of Underdrain or Hydromod Orifice (Select Smallest)	6.00	inches
Retention Calculations	11	Provided Depth of Gravel Below the Underdrain	3	inches
	12	Volume Infiltrated Over 6 Hour Storm	0	cubic-feet
	13	Soil Media Pore Space Available for Retention	0.05	unitless
	14	Gravel Pore Space Available for Retention	0.00	unitless
	15	Effective Retention Depth	0.90	inches
	16	Calculated Retention Storage Drawdown (Including 6 Hr Storm)	120	hours
	17	Volume Retained by BMP	216	cubic-feet
	18	Fraction of DCV Retained	0.06	ratio
	19	Portion of Retention Performance Standard Satisfied	0.07	ratio
	20	Fraction of DCV Retained (normalized to 36-hr drawdown)	0.03	ratio
	21	Design Capture Volume Remaining for Biofiltration	3,659	cubic-feet
Biofiltration Calculations	22	Max Hydromod Flow Rate through Underdrain	1.4181	CFS
	23	Max Soil Filtration Rate Allowed by Underdrain Orifice	21.27	in/hr
	24	Soil Media Filtration Rate per Specifications	5.00	in/hr
	25	Soil Media Filtration Rate to be used for Sizing	5.00	in/hr
	26	Depth Biofiltered Over 6 Hour Storm	30.00	inches
	27	Soil Media Pore Space Available for Biofiltration	0.20	unitless
	28	Effective Depth of Biofiltration Storage	12.00	inches
	29	Drawdown Time for Surface Ponding	1	hours
	30	Drawdown Time for Effective Biofiltration Depth	2	hours
	31	Total Depth Biofiltered	42.00	inches
	32	Option 1 - Biofilter 1.50 DCV: Target Volume	5,489	cubic-feet
	33	Option 1 - Provided Biofiltration Volume	5,489	cubic-feet
	34	Option 2 - Store 0.75 DCV: Target Volume	2,744	cubic-feet
	35	Option 2 - Provided Storage Volume	2,744	cubic-feet
	36	Portion of Biofiltration Performance Standard Satisfied	1.00	ratio
Result	37	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	yes/no
	38	Overall Portion of Performance Standard Satisfied	1.00	ratio
	39	This BMP Overflows to the Following Drainage Basin	-	unitless
	40	Deficit of Effectively Treated Stormwater	0	cubic-feet

Worksheet B.5-1 General Notes:

A. Applicants may use this worksheet to size Lined or Unlined Biofiltration BMPs (BF-1, PR-1) for up to 10 basins. User input must be provided for yellow shaded cells, values for blue cells are automatically populated based on user inputs from previous worksheets, values for all other cells will be automatically generated, errors/notifications will be highlighted in red/orange and summarized below. BMPs fully

Summary of Stormwater Pollutant Control Calculations (V1.3)

Category	#	Description	<i>vii</i>	<i>viii</i>	Units
General Info	0	Drainage Basin ID or Name	A	B	unitless
	1	85th Percentile Storm Depth	0.50	0.50	inches
	2	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	in/hr
	3	Total Tributary Area	263,900	6,960	sq-ft
	4	85th Percentile Storm Volume (Rainfall Volume)	10,996	290	cubic-feet
Initial DCV	5	Initial Weighted Runoff Factor	0.36	0.37	unitless
	6	Initial Design Capture Volume	3,959	107	cubic-feet
Site Design Volume Reductions	7	Dispersion Area Reductions	0	0	cubic-feet
	8	Tree Well and Rain Barrel Reductions	187	180	cubic-feet
BMP Volume Reductions	9	Effective Area Tributary to BMP	89,726	0	square feet
	10	Final Design Capture Volume Tributary to BMP	3,772	0	cubic-feet
	11	Basin Drains to the Following BMP Type	Biofiltration	n/a	unitless
	12	Volume Retained by BMP (normalized to 36 hour drawdown)	113	0	cubic-feet
Total Volume Reductions	13	Total Fraction of Initial DCV Retained within DMA	0.08	1.68	fraction
	14	Percent of Average Annual Runoff Retention Provided	12.2%	93.4%	%
	15	Percent of Average Annual Runoff Retention Required	4.5%	4.5%	%
Performance Standard	16	Percent of Pollution Control Standard Satisfied	100.0%	100.0%	%
Treatment Train	17	Discharges to Secondary Treatment in Drainage Basin	-	-	unitless
	18	Impervious Surface Area Still Requiring Treatment	0	0	square feet
	19	Impervious Surfaces Directed to Downstream Dispersion Area	-	-	square feet
	20	Impervious Surfaces Not Directed to Downstream Dispersion Area	-	-	square feet
Result	21	Deficit of Effectively Treated Stormwater	0	0	cubic-feet

Summary Notes:

All fields in this summary worksheet are populated based on previous user inputs. If applicable, drainage basin elements that require revisions and/or supplemental information outside the scope of these worksheets are highlighted in orange and

-Congratulations, all specified drainage basins and BMPs are in compliance with stormwater pollutant control requirements. Include 11x17 color prints of this summary sheet and supporting worksheet calculations as part of the SWQMP submittal

False

ATTACHMENT 2

BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☒ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	<input type="checkbox"/> Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	<input type="checkbox"/> Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination <input type="checkbox"/> 6.2.1 Verification of Geomorphic Landscape Units Onsite <input type="checkbox"/> 6.2.2 Downstream Systems Sensitivity to Coarse Sediment <input type="checkbox"/> 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	<input type="checkbox"/> Not performed <input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	<input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	<input type="checkbox"/> Included <input type="checkbox"/> Not required because BMPs will drain in less than 96 hours

HARDENED CONVEYANCE EXHIBIT



— HARDENED CONVEYANCE
SYSTEM

SOURCE: 2015 SAN DIEGO RIVER WATERSHED MANAGEMENT AREA ANALYSIS

ATTACHMENT 3
Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	<input checked="" type="checkbox"/> Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Maintenance Agreement (when applicable)	<input type="checkbox"/> Included <input type="checkbox"/> Not Applicable

OPERATION & MAINTENANCE (O&M) PLAN

For

Tyler Street Project (TM 2017-01)

Preparation Date: 4/5/21

Prepared for:

Steve Family Trust #3 dated 6/21/94

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Table of Contents

INTRODUCTION.....	1
1. OPERATION & MAINTENANCE PLAN.....	1
2. Operation & Maintenance of BMP'S.....	1
A. Training, Inspection & Record Keeping.....	2
B. Landscape Areas.....	2
C. Irrigation System	5
E. Bio-Retentions and Vegetated Swales.....	5
G. Storm Drains, Inlets and Outlet Structures.....	6
H. Fire Suppression Systems	6

ATTACHMENTS

- A1. Inspection & Maintenance Schedule
- B1. Cost Estimate
- C1. BMP Training Log
- D1. Inspection & Maintenance Log
- E1. BMP Specifications

INTRODUCTION

The OPERATION & MAINTENANCE PLAN (O&M) requirement is under the City of Santee “Storm Water Quality Management Plan” Storm Water BMP Maintenance. The purpose of this O&M is to address the continued maintenance and to appoint the responsible parties in charge of maintaining the proposed BMPs during construction and post-construction. Best Management Practices (BMPs) will be utilized to provide a long-term solution to water quality. This O&M is also intended to ensure the effectiveness of the BMPs through proper maintenance and operation based on long-term fiscal planning. This O&M is subject to approval and periodic revisions as required by the City Engineer. The owner is legally obligated to maintain this O&M in perpetuity. This obligation is further outlined in the Facility Maintenance Agreement recorded against the property. (See Attachment F1)

1. OPERATION & MAINTENANCE PLAN

The Operation and Maintenance Plan (O&M) needs to address construction and post-construction concerns as shown in the Storm Water Mitigation Plan. Refer to this project’s Storm Water Quality Management Plan (SWQMP) for additional information on BMPs. (See enclosed attachment for location of BMPs)

2. Operation & Maintenance of BMP’S

It shall be the responsibility of the owner to maintain and to train all employees for the maintenance and operation of all BMPs, to achieve the maximum pollutant reduction they are designed for, as addressed in the approved Project’s SWQMP. The following schedule of (O&M’s) must be followed to satisfy the Conditions of Concern and the Pollutants of Concern as addressed in the approved Project’s SWQMP and the City’s BMP Design Manual. This schedule shall include periodic inspections of all Site Design and Pollutant Control BMP’s. All maintenance records for training, inspection and maintenance shall be kept for a minimum of five (5) years.

The owner will also, provide to the City as part of the maintenance and operation agreement an executed access easement that shall be binding on the land throughout the life of the project, until such time that the storm water BMPs requiring access are replaced satisfactory to the City Engineer. This obligation is further outlined in the Facility Maintenance Agreement recorded against the property.

The proposed bioretention basins, landscaping & tree well located within the public ROW shall be maintained by the applicant with a landscape maintenance agreement.

A. Training, Inspection & Record Keeping

Training of Operation and Maintenance personnel is of primary importance to provide knowledge of the operation and maintenance of BMPs. Proper training shall provide information that will enable employees to in place an effective preventive maintenance program as described in this O & M manual. The responsible party mentioned above should take the course provided by the “BULDING INDUSTRIES ASSOCIATION” to be trained in the purpose and use of BMPs and the maintenance thereof. Proper preventive maintenance will prevent environmental incidents that may be a health and safety hazard. Also, the responsible party should refer to the following web site for resource information: www.caBMPhanbooks.com

Persons assigned the task of BMP maintenance must be trained as to the purpose, location and proper maintenance within the first week of their employment.

This training shall include receiving a copy of this O & M manual; a discussion on the location and purpose of site specific BMPs, such as Source Control and Treatment Control BMPs; trained on how to inspect and report maintenance problems and to whom they report to; They shall be trained in site specific Pollutants of Concern so that they can evaluate the functioning of all on-site BMPs this to avoid environmental incidents. These Pollutants of are given in this report under Section 2.

A log of all training and reported inspections and maintenance problems along with what was done to correct the problem shall be keep on the premises at all times for a minimum of five (5) years.

Employees and tenants shall be periodically trained and notified, at a minimum of once a year, to refresh their knowledge of BMP Operations and Maintenance.

B. Landscape Areas

Operational and maintenance needs include:

- Vegetation management to maintain adequate infiltration and to limit habitat for disease-carrying animals.
- Animal and vector control.
- Periodic sediment removal to optimize performance.
- Trash, debris, tree pruning, and leaf collection and removal to prevent obstruction of a landscape areas so as not to prohibit their use as a BMP.
- Monitoring the irrigation equipment.
- Removal of standing water, which may contribute to the development of aquatic plant communities or mosquito breeding areas.

- Erosion and structural maintenance to prevent the loss of soil and maintain the performance of all landscaping.
- Maintain a mulch layer over all exposed soil.

Inspection Frequency

- Landscape will be inspected once a month at a minimum. All inspection and maintenance will be completely documented.
- Inspections will also occur after every large storm event (after every storm monitored or storms with more than 0.50 inch of precipitation.), and on a weekly basis during extended periods of wet weather.

Aesthetic Maintenance

The following activities will be included in the aesthetic maintenance program:

Weed Control. Weeds will be removed through mechanical means. Herbicide will not be used because these chemicals may impact the water quality.

Functional Maintenance

Functional maintenance has two components:

- Preventive maintenance
- Corrective maintenance

Preventive Maintenance

Preventive maintenance activities to be instituted for landscaped areas are:

- Trash and Debris: During each inspection and maintenance visit to the site, debris and trash removal will be conducted to reduce the potential for inlet and outlet structures and other components from becoming clogged and inoperable during storm events.
- Sediment Removal: Sediment accumulation, as part of the operation and maintenance program at of landscaped areas, will be monitored once a month during the dry season, after every large storm (0.50 inch), and monthly during the wet season. Specifically, if sediment reaches a level at or near plant height, or could interfere with flow or operation, the sediment will be removed. If accumulation of debris or sediment is determined to be the cause of decline in design performance, prompt action (i.e., within ten working days) will be taken to restore the landscaped areas to design performance standards. Actions will include using additional fill and vegetation and/or removing accumulated sediment to correct channeling or ponding. Characterization and Appropriate disposal of sediment will comply with applicable local, city, county, state, or federal requirements. The landscaped areas will be re-graded, if the flow gradient has changed, and then replanted with sod.
- Removal of Standing Water: Standing water must be removed if it may contribute to the development of aquatic plant communities or mosquito breeding areas.
- Fertilization and Irrigation: The vegetation selected requires minimal to no irrigation.

- **Elimination of Mosquito Breeding Habitats.** The most effective mosquito control program is one that eliminates all standing water.

Corrective Maintenance

Corrective maintenance is required on an emergency or non-routine basis to correct problems and to restore the intended operation and safe function of all landscaped areas.

Corrective maintenance activities include:

- **Removal of Debris and Sediment:** Sediment, debris, and trash will be removed and properly disposed. Temporary arrangements will be made for handling the sediments until a permanent arrangement is made. Vegetation will be re-established after sediment removal.
- **Structural Repairs:** Once deemed necessary, repairs to structural components of landscaping will be done within 10 working days. Qualified individuals (i.e., the designers or contractors) will conduct repairs where structural damage has occurred.
- **Embankment and Slope Repairs:** Once deemed necessary, damage to the embankments and slopes of landscaped areas will be repaired within 10 working days.
- **Erosion Repair:** Should erosive conditions be identified (i.e., pedestrian traffic, concentrated flow, etc.), corrective steps will be taken to prevent loss of soil and any subsequent danger to the performance and use of landscaped areas as BMPs. There are a number of corrective actions that can be taken. These include erosion control blankets, riprap, mulch, or reduced flow through the area. Designers or contractors will be consulted to address erosion problems if the solution is not evident.
- **Elimination of Animal Burrows:** Animal burrows will be filled and steps taken to remove the animals if burrowing problems continue to occur (filling and compacting). If the problem persists, vector control specialists will be consulted regarding removal steps. This consulting is necessary as the threat of rabies in some areas may necessitate the animals being destroyed rather than relocated. If the BMP performance is affected, abatement will begin. Otherwise, abatement will be performed annually in September.
- **General Facility Maintenance:** In addition to the above elements of corrective maintenance, general corrective maintenance will address the overall facility and its associated components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.

Maintenance Frequency

The maintenance indicator document included in Attachment A1, for all BMPs lists the schedule of maintenance activities to be implemented.

Debris and Sediment Disposal

Waste generated is ultimately the responsibility of the owner. Disposal of sediments, debris, and trash will comply with applicable local, city, county, state, and federal waste control programs.

Hazardous Waste

Suspected hazardous wastes will be analyzed to determine disposal options. Hazardous wastes generated onsite will be handled and disposed of according to applicable local, state, and federal

regulations. A solid or liquid waste is considered a hazardous waste if it exceeds the criteria listed in the CCR, Title 22, Article 11.

C. Irrigation System

Inspection Frequency and Procedure

The Irrigation system shall be checked each week as a minimum. The following items shall be checked to insure that they are functioning properly:

- Shut-off devices.
- All piping and sprinkler heads to insure there are no leaks and that proper water spread is maintained.
- All flow reducers.
- Check for overspray/runoff
- Irrigation controls

D. Bio-Retention basins and Tree Well

Operational and maintenance needs include:

- Vegetation management to maintain adequate infiltration and to limit habitat for vectors.
- Periodic sediment removal to optimize performance.
- Removal of Trash, debris, trimmings, leaf collection, etc.
- Removal of standing water, which may contribute to the development of aquatic plant communities or mosquito breeding areas.
- Erosion and structural maintenance to prevent the loss of soil and maintain the performance of all landscaping.

Inspection Frequency

The facility will be inspected and inspection visits will be completely documented:

- Once a month at a minimum.
- After every large storm (after every storm monitored or these storms with more than 0.50 inch of precipitation.)
- On a weekly basis during extended periods of wet weather.

Inspect if vegetation height is greater than 12"; if there is standing water; if debris are present or if sedimentation is occurring at the vegetation height; ensure that all landscaped areas have minimum of 80% coverage and that no animal burrows are present.

Aesthetic Maintenance

The following activities will be included in the aesthetic maintenance program:

- Weed Control. Weeds will be removed through mechanical means. Herbicide shall not be used since the chemicals may impact water quality.

Preventive Maintenance

Preventive maintenance activities to be instituted:

- Trash and Debris: During each inspection and maintenance, trash and debris shall be removed in order to minimize runoff contamination and to prevent downstream inlet and outlet structures from becoming clogged and inoperable during storm events.
- Sediment Removal: Sediment accumulation, as part of the operation and maintenance program of landscaped areas, will be monitored once a month during the dry season, after every large storm (0.50 inch) and monthly during the wet season. Sediment shall be removed immediately if it is visibly accumulated and interferes with drainage flow. and/or removing accumulated sediment to correct channeling or ponding. Characterization and Appropriate disposal of sediment shall comply with applicable local, city, county, state, or federal requirements.
- Clean out blocked drains
- Repair/replace rip-rap
- Mulch layer minimum 3"
- Removal of Standing Water: Standing water must be removed if it contributes to the development of aquatic plants or mosquito breeding areas. The most effective mosquito control program is one that eliminates standing water.
- Replace plants (when dead/diseased) to maintain the functionality of the bioswale.
- Replenish or replace soil matrix to maintain minimum percolation rate.
- Bioretention Soil Matrix Details:
 - Composition and Texture: 65 percent sand, 20 percent sandy loam, and 15 percent compost (from vegetation-based feedstock). Animal wastes or by-products should not be applied.
 -
 - Permeability: 5 in/hr infiltration rate for the flow-based SUSMP method (1–6in/hr for alternative designs, as approved by local jurisdiction).
 -
 - Chemical Composition: Total phosphorus < 15 parts per million (ppm); pH 6–8; cation exchange capacity > 5 milliequivalents per 100 grams (meq/100 g) of soil; organic matter content < 5 percent by weight.
- Bioretention Vegetation Specifications:
 - For bioretention to function properly as stormwater treatment and blend into the landscaping, vegetation selection is crucial. Appropriate vegetation will have the following characteristics:
 - Plant materials must be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 10 to 48 hours.
 - It is recommended that a minimum of three tree species, three shrub species, and three herbaceous groundcover species be incorporated to protect against facuity failure from

- disease and insect infestations of a single species. plant rooting depths must not damage the underdrain, if present. slotted or perforated underdrain pipe must be more than 5 feet from tree locations (if space allows).
- Native plant species or hardy cultivars that are not invasive and do not require chemical inputs are recommended to be used to the maximum extent practicable.
 - Shade trees should be free of branches below 1/3 their total height.

E. Storm Drains, Inlets and Outlet Structures

Shall be kept functional at all times. Routine inspection and corrective maintenance shall include removal of trash sediment and debris and repair of any structural damage, repainting or replacing damaged inlet markings and labels. The minimum maintenance frequency shall be prior to August 31 each year or as needed for proper function.

F. Fire Suppression Systems

Shall be maintained and inspected at a minimum once a year. Maintenance shall include backwashing of black water from all private fire suppression systems and draining into a sanitary sewer connection.

Summary of Standard Inspection and Maintenance

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	<ul style="list-style-type: none"> • Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	<ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	<ul style="list-style-type: none"> • Inspect annually. • Maintain when needed.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	<ul style="list-style-type: none"> • Inspect monthly. • Maintain when needed.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	<ul style="list-style-type: none"> • Inspect monthly. • Maintain when needed.
Overgrown vegetation	Mow or trim as appropriate.	<ul style="list-style-type: none"> • Inspect monthly. • Maintain when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	<ul style="list-style-type: none"> • Inspect monthly. • Replenish mulch annually, or more frequently when needed based on inspection.
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	<ul style="list-style-type: none"> • Inspect monthly. • Maintain when needed.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the County reviewer shall be contacted prior to any additional repairs or reconstruction.	<ul style="list-style-type: none"> • Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the County reviewer shall be contacted prior to any additional repairs or reconstruction.
<p>Standing water in BMP for longer than 24 hours following a storm event</p> <p>Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health</p>	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	<ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
<p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p>	<p>If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water.</p> <p>If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the County reviewer shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.</p>	<ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed.
<p>Underdrain clogged</p>	<p>Clear blockage.</p>	<p>Inspect if standing water is observed for longer than 24-96 hours following a storm event.</p> <p>Maintain when needed.</p>

“25% full” is defined as $\frac{1}{4}$ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

Summary of Standard Inspection and Maintenance

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Tree health	Routine actions as necessary to maintain tree health.	<ul style="list-style-type: none"> • Inspect monthly. • Maintain when needed.
Dead or diseased tree	Remove dead or diseased tree. Replace per original plans.	<ul style="list-style-type: none"> • Inspect monthly. • Maintain when needed.
Standing water in tree well for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to tree health	Loosen or replace soils surrounding the tree to restore drainage.	<ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	Disperse any standing water from the tree well to nearby landscaping. Loosen or replace soils surrounding the tree to restore drainage (and prevent standing water).	<ul style="list-style-type: none"> • Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Entrance / opening to the tree well is blocked such that storm water will not drain into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well; or a surface depression is filled such that runoff drains away from the tree well)	Make repairs as appropriate to restore drainage into the tree well.	<ul style="list-style-type: none">• Inspect monthly.• Maintain when needed.

ATTACHMENT “A1”

INSPECTION & MAINTENANCE SCHEDULE

PREVENTATIVE MAINTENANCE AND ROUTINE INSPECTION					
TYPE BMP	Routine Action	Measurement Indicator	Measurement Frequency	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Landscaping & irrigation	Proper irrigation & Fertilizer.	<ul style="list-style-type: none"> Less than 80% Coverage Evidence of overspray, runoff Debris, dead vegetation 	Prior to August 31 each year	Re-seed or Re-plant. Repair Irrigation system with-in 5-days.	All slopes and landscaped areas are to have a minimum coverage of 80%. All exposed soils shall be mulched.
Trash storage areas	Trash free and removal of silt, spills, residues and debris.	<ul style="list-style-type: none"> Trash on ground Open bins Leaks, spills, staining	Weekly inspection	Remove trash and debris accumulations. Clean up spills, dried spills, and residues. Contain all wash water for disposal to the sanitary sewer.	All trash storage areas to be free from trash and residues
Roof drain	Trash free and removal of silt, sedimentation & Debris	Silt build up of more than 1" no trash	Prior to August 31 each year and weekly during rain season.	Remove all trash and silt and repair any damage to roof drains,	All Roof to be free from trash and silt and in good repair
Bioretentions and Vegetated Swales	Trash free and removal of silt	Silt build up, trash, Exposed soils, dead vegetation, ponded water, and excessive vegetation (see TC-30 in Attachment E-1 "BMP Specifications")	Prior to August 31 each year and weekly during rain season	Remove trash and silt –repair and reseed exposed areas, maintain plant height so as not be shorter than 2" or higher than 5" remove all ponded water weekly inspections, (See TC-30 in Attachment E-1 "BMP Specifications")	All bio-filters to be free from trash and silt at all times, ponding of water for more than 72 hours; maintenance will be required
Down spouts and HVAC systems	Visual Inspection	They are not permitted to be connected to the storm drain conveyance system.	All non-storm water discharges must either drain to landscaped areas, or be plumbed to the sewer. Construct a dedicated sewer connection for the annual backwashing of black water from any proposed private		

PREVENTATIVE MAINTENANCE AND ROUTINE INSPECTION					
TYPE BMP	Routine Action	Measurement Indicator	Measurement Frequency	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
			fire suppression systems.		
Parking Lot	Visual inspection	Shall be maintained free from trash, sediment, debris, oil and grease.	Prior to August 31 each year and routinely as needed	Shall be cleaned and swept to remove oil, grease, sediment, debris, etc.	
Storm Drains, Inlets and Outlet Structures	Visual inspection	Shall be maintained free from trash, sediment, debris, oil and grease.	Prior to August 31 each year and routinely as needed	Removal of trash sediment and debris and repair of any structural damage, repainting or replacing damaged inlet markings and labels	
Fire Suppression Systems	Visual inspection	Backwashing water from all private fire suppression systems and draining into a sanitary sewer connection	Once a year	Backwashing water from all private fire suppression systems and draining into a sanitary sewer connection	

ATTACMENT “B1”

<u>Annual Estimate to Maintain all BMPs</u>	<u>Annual</u>	<u>10-Year</u>
<u>Landscaping & Bio-Retentions& Tree Well</u>		
Maintenance of landscaping and bio-retentions is already included in the property management responsibilities. Additional cost:	\$400	\$4,000
<u>Irrigation System:</u>		
Inspection and maintenance of the irrigation system is already included in the property management responsibilities, Additional cost:	\$100	\$1,000
<u>Training:</u>		
Once a year & training of new employees within their first week of employment.	\$100	\$1,000
<hr/>		
Total Estimated Annual Cost to Maintain BMPs	\$600	\$6,000

ATTACHMENT "C1"

[illegible]

ATTACHMENT "D1"

INSPECTION AND MAINTENANCE LOG				
BMP TYP & LOCATION	DATE M/D/Y	Name of Person Inspecting	Description of BMP Condition/ Description repair required if any	Date Repair made and Description repair made and by who

ATTACHMENT “E1”

BMP SPECIFICATIONS

E.14 BF-1 Biofiltration



Location: 43rd Street and Logan Avenue, San Diego, California

Description

Biofiltration (Bioretention with underdrain) facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Bioretention with underdrain facilities are commonly incorporated into the site within parking lot landscaping, along roadsides, and in open spaces. Because these types of facilities have limited or no infiltration, they are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Treatment is achieved through filtration, sedimentation, sorption, biochemical processes and plant uptake.

Typical biofiltration components include:

- Inflow distribution mechanisms (e.g, perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on expected climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure

MS4 Permit Category

Biofiltration

Manual Category

Biofiltration

Applicable Performance Standard

Pollutant Control

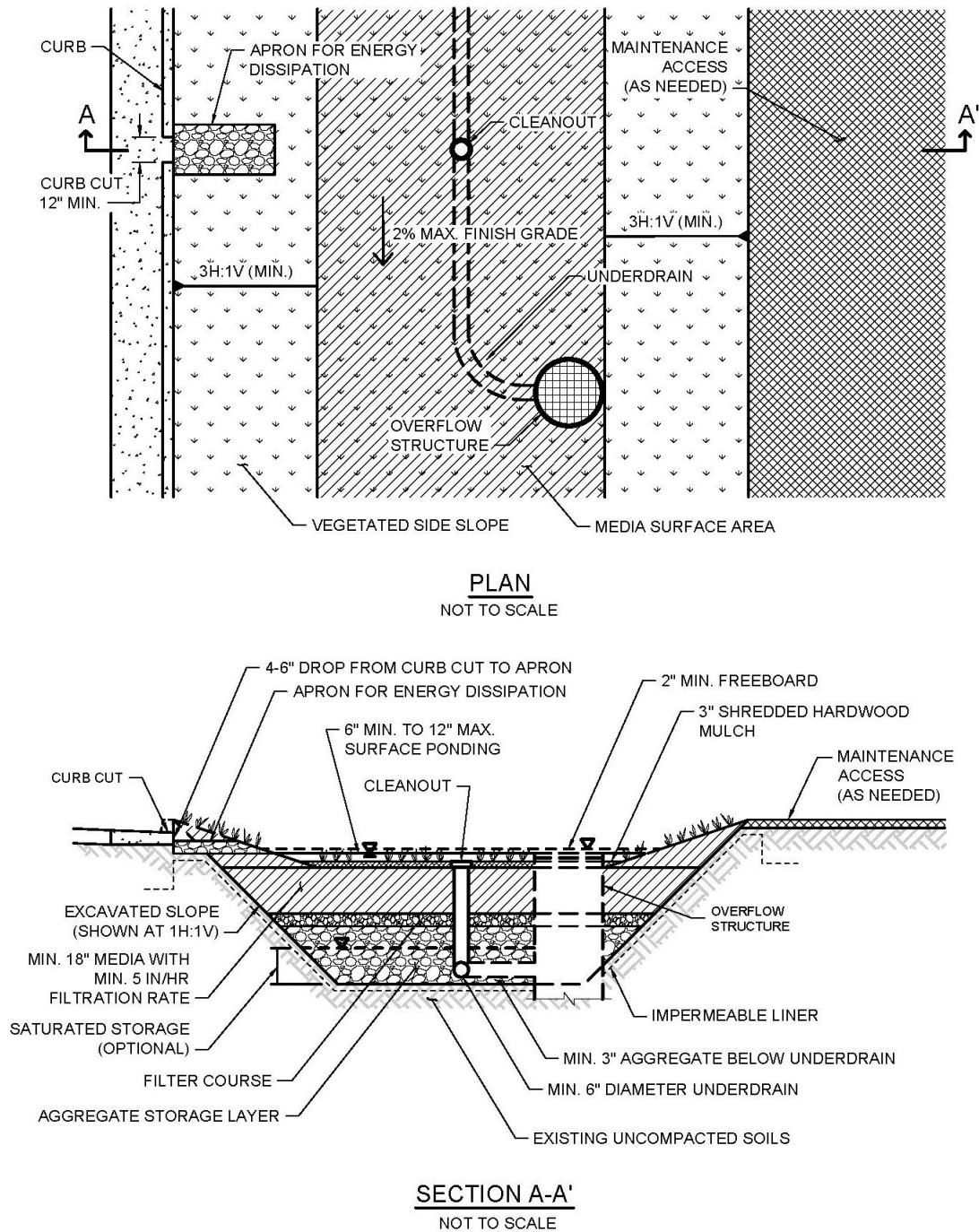
Flow Control

Primary Benefits

Treatment

Volume Reduction (Incidental)

Peak Flow Attenuation (Optional)



Typical plan and Section view of a Biofiltration BMP

Design Adaptations for Project Goals

Biofiltration Treatment BMP for storm water pollutant control. The system is lined or un-lined to provide incidental infiltration, and an underdrain is provided at the bottom to carry away filtered runoff. This configuration is considered to provide biofiltration treatment via flow through the media

layer. Storage provided above the underdrain within surface ponding, media, and aggregate storage is considered included in the biofiltration treatment volume. Saturated storage within the aggregate storage layer can be added to this design by raising the underdrain above the bottom of the aggregate storage layer or via an internal weir structure designed to maintain a specific water level elevation.

Integrated storm water flow control and pollutant control configuration. The system can be designed to provide flow rate and duration control by primarily providing increased surface ponding and/or having a deeper aggregate storage layer above the underdrain. This will allow for significant detention storage, which can be controlled via inclusion of an outlet structure at the downstream end of the underdrain.

Recommended Siting Criteria

<i>Siting Criteria</i>	<i>Intent/Rationale</i>
<input type="checkbox"/> Placement observes geotechnical recommendations regarding potential hazards (e.g., slope stability, landslides, liquefaction zones) and setbacks (e.g., slopes, foundations, utilities).	Must not negatively impact existing site geotechnical concerns.
<input type="checkbox"/> An impermeable liner or other hydraulic restriction layer is included if site constraints indicate that infiltration or lateral flows should not be allowed.	Lining prevents storm water from impacting groundwater and/or sensitive environmental or geotechnical features. Incidental infiltration, when allowable, can aid in pollutant removal and groundwater recharge.
<input type="checkbox"/> The thickness of the Impermeable Liner shall be 30 MIL per County Green Streets Design Standard Drawing GS-3.00 and County Green Streets Supplement to Caltrans Specifications 20-11.08B.	Considerations when choosing an Impermeable Liner may include placement methods, media and underlying soil characteristics, and intended design life among others.
<input type="checkbox"/> Contributing tributary area must be ≤ 5 acres (≤ 1 acre preferred).	<p>Bigger BMPs require additional design features for proper performance.</p> <p>Contributing tributary area greater than 5 acres may be allowed at the discretion of County staff if the following conditions are met: 1) incorporate design features (e.g. flow spreaders) to minimize short circuiting of flows in the BMP and 2) incorporate additional design features requested by County staff for proper performance of the regional BMP.</p>

<i>Siting Criteria</i>	<i>Intent/Rationale</i>
<input type="checkbox"/> Finish grade of the facility is $\leq 2\%$.	Flatter surfaces reduce erosion and channelization within the facility.

Design Criteria and Considerations

Biofiltration must meet the following design criteria. Deviations from the below criteria may be approved at the discretion of County staff if it is determined to be appropriate:

<i>Siting and Design</i>	<i>Intent/Rationale</i>
<i>Surface Ponding</i>	
<input type="checkbox"/> Surface ponding is limited to a 24-hour drawdown time.	Surface ponding limited to 24 hour for plant health. Surface ponding drawdown time greater than 24-hours but less than 96 hours may be allowed at the discretion of County staff if certified by a landscape architect or agronomist.
<input type="checkbox"/> Surface ponding depth is ≥ 6 and ≤ 12 inches.	Surface ponding capacity lowers subsurface storage requirements. Deep surface ponding raises safety concerns. Surface ponding depth greater than 12 inches (for additional pollutant control or surface outlet structures or flow-control orifices) may be allowed at the discretion of County staff if the following conditions are met: 1) surface ponding depth drawdown time is less than 24 hours; and 2) safety issues and fencing requirements are considered (typically ponding greater than 18" will require a fence and/or flatter side slopes) and 3) potential for elevated clogging risk is considered.
<input type="checkbox"/> A minimum of 2 inches of freeboard is provided.	Freeboard provides room for head over overflow structures and minimizes risk of uncontrolled surface discharge.
<input type="checkbox"/> Side slopes are stabilized with vegetation and are = 3H:1V or shallower.	Gentler side slopes are safer, less prone to erosion, able to establish vegetation more quickly and easier to maintain.

<i>Siting and Design</i>		<i>Intent/Rationale</i>
<i>Vegetation</i>		
<input type="checkbox"/>	Plantings are suitable for the climate and expected ponding depth. A plant list to aid in selection can be found in Appendix F.	Plants suited to the climate and ponding depth are more likely to survive.
<input type="checkbox"/>	An irrigation system with a connection to water supply should be provided as needed.	Seasonal irrigation might be needed to keep plants healthy.
<i>Mulch (Mandatory)</i>		
<input type="checkbox"/>	3 inches of well-aged, shredded hardwood mulch.	Mulch will suppress weeds and maintain moisture for plant growth.
<i>Media Layer</i>		
<input type="checkbox"/>	Media maintains a minimum filtration rate of 5 in/hr over lifetime of facility. An initial filtration rate of 8 to 12 in/hr is recommended to allow for clogging over time; the initial filtration rate should not exceed 12 inches per hour.	A filtration rate of at least 5 inches per hour allows soil to drain between events. The initial rate should be higher than long term target rate to account for clogging over time. However an excessively high initial rate can have a negative impact on treatment performance, therefore an upper limit is needed.
<input type="checkbox"/>	Media is a minimum 18 inches deep, meeting either of these two media specifications: Appendix F.2 Biofiltration Soil Media (BSM) or County of San Diego Low Impact Development Handbook: Appendix G -Bioretention Soil Specification (June 2014, unless superseded by more recent edition).	A deep media layer provides additional filtration and supports plants with deeper roots.
<input type="checkbox"/>	Alternatively, for proprietary designs and custom media mixes not meeting the media specifications, the media meets the pollutant treatment performance criteria in Section F.1.1.	Standard specifications must be followed. For non-standard or proprietary designs, compliance with F.1.1 ensures that adequate treatment performance will be provided.

<i>Siting and Design</i>	<i>Intent/Rationale</i>
<input type="checkbox"/> Media surface area is 3% of contributing area times adjusted runoff factor or greater. Unless demonstrated that the BMP surface area can be smaller than 3%.	<p>Greater surface area to tributary area ratios: a) maximizes volume retention as required by the MS4 Permit and b) decrease loading rates per square foot and therefore increase longevity.</p> <p>Adjusted runoff factor is to account for site design BMPs implemented upstream of the BMP (such as rain barrels, impervious area dispersion, etc.). Refer to Appendix B guidance.</p> <p>If media surface area is under 3% of contributing area, refer to Sediment Loading calculations in Appendix B.</p>
<input type="checkbox"/> Where receiving waters are impaired or have a TMDL for nutrients, the system is designed with nutrient sensitive media design (see fact sheet BF-2).	<p>Potential for pollutant export is partly a function of media composition; media design must minimize potential for export of nutrients, particularly where receiving waters are impaired for nutrients.</p>
<i>Filter Course Layer</i>	
<input type="checkbox"/> A filter course is used to prevent migration of fines through layers of the facility. Filter fabric is not used.	<p>Migration of media can cause clogging of the aggregate storage layer void spaces or subgrade. Filter fabric is more likely to clog.</p>
<input type="checkbox"/> Filter course is a minimum of 6 inches thick provided in two separate 3 inch layers. The top layer shall be made of ASTM C33 choker sand and the bottom layer shall be of ASTM No. 8 aggregate. Marker stakes shall be used to ensure uniform lift thickness.	<p>To prevent reduction of the available storage volume that would lead to clogging of the underdrain and native soil beneath the BMP.</p>
<input type="checkbox"/> Filter course is washed and free of fines.	<p>Washing aggregate will help eliminate fines that could clog the facility and impede infiltration.</p>
<input type="checkbox"/> Filter course calculations assessing suitability for particle migration prevention have been completed.	<p>Gradation relationship between layers can evaluate factors (e.g., bridging, permeability, and uniformity) to determine if particle sizing is appropriate or if an intermediate layer is needed.</p>

<i>Siting and Design</i>		<i>Intent/Rationale</i>
<i>Aggregate Storage Layer</i>		
<input type="checkbox"/>	Class 2 Permeable per Caltrans specification 68-1.025 is recommended for the storage layer. Washed, open-graded crushed rock may be used, however a 4-6 inch washed pea gravel filter course layer at the top of the crushed rock is required.	Washing aggregate will help eliminate fines that could clog the aggregate storage layer void spaces or subgrade.
<input type="checkbox"/>	The depth of aggregate provided (12-inch typical) and storage layer configuration is adequate for providing conveyance for underdrain flows to the outlet structure.	Proper storage layer configuration and underdrain placement will minimize facility drawdown time.
<i>Inflow, Underdrain, and Outflow Structures</i>		
<input type="checkbox"/>	Inflow, underdrains and outflow structures are accessible for inspection and maintenance.	Maintenance will prevent clogging and ensure proper operation of the flow control structures.
<input type="checkbox"/>	Inflow velocities are limited to 3 ft/s or less or use energy dissipation methods. (e.g., riprap, level spreader) for concentrated inflows.	High inflow velocities can cause erosion, scour and/or channeling.
<input type="checkbox"/>	Curb cut inlets are at least 12 inches wide, have a 4-6 inch reveal (drop) and an apron and energy dissipation as needed.	Inlets must not restrict flow and apron prevents blockage from vegetation as it grows in. Energy dissipation prevents erosion.
<input type="checkbox"/>	Underdrain outlet elevation should be a minimum of 3 inches above the bottom elevation of the aggregate storage layer.	A minimal separation from subgrade or the liner lessens the risk of fines entering the underdrain and can improve hydraulic performance by allowing perforations to remain unblocked.
<input type="checkbox"/>	Minimum underdrain diameter is 6 inches.	Smaller diameter underdrains are prone to clogging.
<i>Inflow, Underdrain, and Outflow Structures</i>		
<input type="checkbox"/>	Underdrains are made of slotted, PVC pipe conforming to ASTM D 3034 or equivalent or corrugated, HDPE pipe conforming to AASHTO 252M or equivalent.	Slotted underdrains provide greater intake capacity, clog resistant drainage, and reduced entrance velocity into the pipe, thereby reducing the chances of solids migration.

<i>Siting and Design</i>	<i>Intent/Rationale</i>
<input type="checkbox"/> An underdrain cleanout with a minimum 6-inch diameter and lockable cap is placed every 250 to 300 feet as required based on underdrain length.	Properly spaced cleanouts will facilitate underdrain maintenance.
<input type="checkbox"/> Overflow is safely conveyed to a downstream storm drain system or discharge point. Size overflow structure to pass 100-year peak flow for on-line infiltration basins and water quality peak flow for off-line basins.	Planning for overflow lessens the risk of property damage due to flooding.

Conceptual Design and Sizing Approach for Storm Water Pollutant Control Only

To design biofiltration for storm water pollutant control only (no flow control required), the following steps should be taken:

1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
2. Calculate the DCV per Appendix B based on expected site design runoff for tributary areas.
3. Use the sizing worksheet presented in Appendix B.5 to size biofiltration BMPs.

Conceptual Design and Sizing Approach when Storm Water Flow Control is Applicable

Control of flow rates and/or durations will typically require significant surface ponding and/or aggregate storage volumes, and therefore the following steps should be taken prior to determination of storm water pollutant control design. Pre-development and allowable post-project flow rates and durations should be determined as discussed in Chapter 6 of the manual.

1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
2. Iteratively determine the facility footprint area, surface ponding and/or aggregate storage layer depth required to provide detention storage to reduce flow rates and durations to allowable limits. Flow rates and durations can be controlled from detention storage by altering outlet structure orifice size(s) and/or water control levels. Multi-level orifices can be used within an outlet structure to control the full range of flows.
3. If bioretention with underdrain cannot fully provide the flow rate and duration control required by this manual, an upstream or downstream structure with significant storage volume such as an underground vault can be used to provide remaining controls.

4. After bioretention with underdrain has been designed to meet flow control requirements, calculations must be completed to verify if storm water pollutant control requirements to treat the DCV have been met.

Maintenance Overview

Normal Expected Maintenance. Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure. If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.
- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.
- Erosion due to concentrated storm water runoff flow that is not readily corrected by adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the County reviewer shall be contacted prior to any additional repairs or reconstruction.

Other Special Considerations. Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural

BMP, routine maintenance is key to preventing this scenario.

Sediment Loading. Consider the effects of BMP design and tributary area land uses on the clogging potential of the BMP. Complete the sediment loading analysis included in Appendix F.

E.2 SD-A Tree Wells



Tree Wells (Source: County of San Diego LID Manual – EOA, Inc.)

MS4 Permit Category

Site Design
Retention

Manual Category

Site Design
Infiltration

Applicable Performance Standard

Site Design
Pollutant Control
Flow Control

Primary Benefits

Volume Reduction

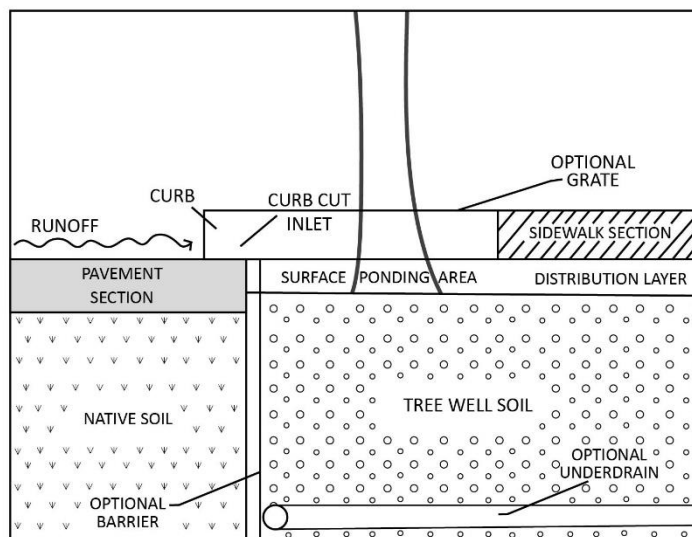
Description

Trees planted to intercept rainfall and runoff as described in this fact sheet may be used as storm water management measures to provide runoff reduction of the DCV per Appendix B.1.4. Additional benefits associated with tree wells, include energy conservation, air quality improvement, and aesthetic enhancement. In addition to the requirements provided in this fact sheet, tree wells located in the County Right-of-Way shall follow requirements in Appendix K of this manual. Deviations from the outlined criteria may be approved at the discretion of County staff. Typical storm water management benefits associated with trees include:

- **Interception of rainfall** – tree surfaces (roots, foliage, bark, and branches) intercept, evaporate, store, or convey precipitation to the soil before it reaches surrounding impervious surfaces
- **Reduced erosion** – trees protect denuded area by intercepting or reducing the velocity of rain drops as they fall through the tree canopy
- **Increased infiltration** – soil conditions created by roots and fallen leaves promote infiltration
- **Treatment of storm water** – trees provide treatment through uptake of nutrients and other storm water pollutants (phytoremediation) and support of other biological processes that break down pollutants

Typical tree well system components include:

- Trees of the appropriate species for site conditions and constraints. Refer to the Plant List in this fact sheet.
- Available soil media reservoir volume based on mature tree size, soil type, water availability, surrounding land uses, and project goals
- Optional suspended pavement design to provide structural support for adjacent pavement without requiring compaction of underlying layers
- Optional root barrier devices as needed; a root barrier is a device installed in the ground, between a tree and the sidewalk, intended to guide roots down and away from the sidewalk in order to prevent sidewalk lifting from tree roots.
- Optional tree grates; to be considered to maximize available space for pedestrian circulation and to protect tree roots from compaction related to pedestrian circulation; tree grates are typically made up of porous material that will allow the runoff to soak through.
- Optional shallow surface depression for ponding of excess runoff
- Optional planter box drain



Schematic of Tree Well

Design Adaptations for Project Goals

Site design BMP to provide incidental treatment. Tree wells primarily function as site design BMPs for incidental treatment.

Pollutant Control BMP to provide treatment. Project proponents are allowed to design trees to reduce the volume of stormwater runoff that requires treatment, (the Design Capture Volume [DCV]), or completely fulfill the pollutant control BMP requirements by retaining the entire DCV. Benefits from tree wells are accounted for by using the volume reduction values in Table B.1-3 presented in Appendix B. This credit can apply to other trees that are used for landscaping purposes that meet the same criteria. Project proponents are required to provide calculations supporting the amount of credit claimed from implementing trees within the project footprint.

Flow Control BMP to meet hydromodification requirements. Project proponents are also allowed to design tree wells as a flow control BMP. Benefits from tree wells are accounted for by using the DCV multipliers listed below. Project proponents are required to provide calculations showing that the entire DCV including the DCV multiplier is retained.

Design Criteria and Considerations

Tree Wells, whether designed as Site Design BMPs, as Stormwater Pollutant Control BMP, or as a Flow Control BMP must meet the following design criteria and considerations, and if placed in the right-of-way must be consistent with the County of San Diego Green Streets Design Criteria and Green Streets Standard Drawings in Appendix K. Deviations from the below criteria may be approved at the discretion of the County staff if it is determined to be appropriate:

<i>Siting and Design</i>	<i>Intent/Rationale</i>														
<input type="checkbox"/> Tree species is appropriately chosen for the development (private or public). For public rights-of-ways, local planning guidelines and zoning provisions for the permissible species and placement of trees are consulted. A list of trees appropriate for site design that can be used by all county municipalities are provided in this fact sheet.	Proper tree placement and species selection minimizes problems such as pavement damage by surface roots and poor growth.														
<input type="checkbox"/> Tree well placement: ensure area is graded; and the well is located so that full amount of DCV reduction drains to the well.	Minimizes short-circuiting of run off and assures DCV reductions are retained onsite.														
<p>Location of trees planted along public streets follows guidance on green infrastructure (Appendix K). Vehicle and pedestrian line of sight and clear recovery zones are considered in tree selection and placement.</p> <p>Unless exemption is granted by County staff the following minimum tree separation distance is followed</p> <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> <input type="checkbox"/> </div> <table border="1"> <thead> <tr> <th>Improvement</th><th>Minimum distance to tree well</th></tr> </thead> <tbody> <tr> <td>Traffic Signal, Stop sign</td><td>20 feet</td></tr> <tr> <td>Underground Utility lines (except sewer)</td><td>5 feet</td></tr> <tr> <td>Sewer Lines</td><td>10 feet</td></tr> <tr> <td>Above ground utility structures (Transformers, Hydrants, Utility poles, etc.)</td><td>10 feet</td></tr> <tr> <td>Driveways</td><td>10 feet</td></tr> <tr> <td>Intersections (intersecting curb lines of two streets)</td><td>25 feet</td></tr> </tbody> </table> </div>	Improvement	Minimum distance to tree well	Traffic Signal, Stop sign	20 feet	Underground Utility lines (except sewer)	5 feet	Sewer Lines	10 feet	Above ground utility structures (Transformers, Hydrants, Utility poles, etc.)	10 feet	Driveways	10 feet	Intersections (intersecting curb lines of two streets)	25 feet	Roadway safety for both vehicular and pedestrian traffic is a key consideration for placement along public streets.
Improvement	Minimum distance to tree well														
Traffic Signal, Stop sign	20 feet														
Underground Utility lines (except sewer)	5 feet														
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Driveways	10 feet														
Intersections (intersecting curb lines of two streets)	25 feet														

<i>Siting and Design</i>	<i>Intent/Rationale</i>
<input type="checkbox"/> Underground utilities and overhead wires are considered in the design and avoided or circumvented. Underground utilities are routed around or through the planter in suspended pavement applications. All underground utilities are protected from water and root penetration.	<p>Tree growth can damage utilities and overhead wires resulting in service interruptions. Protecting utilities routed through the planter prevents damage and service interruptions. Refer to Section 6.6 of the Green Streets Design Criteria in Appendix K for guidelines regarding utility placement and potential conflict with BMP facilities.</p>
<input type="checkbox"/> Suspended pavement was used for confined Tree Well soil volume. Suspended pavement design was developed where appropriate to minimize soil compaction and improve infiltration and filtration capabilities. Suspended pavement was constructed with an approved structural cell.	<p>Suspended pavement designs as shown in Page 7 of the Green Streets Guidelines in Appendix K provide structural support without compaction of the underlying layers, thereby promoting tree growth.</p> <p>Recommended structural cells include poured in place concrete columns, Silva Cells manufactured by Deeproot Green Infrastructures and Stratacell and Stratavault systems manufactured by Citygreen Systems.</p>
<input type="checkbox"/> A minimum soil volume of 2 cubic feet per square foot of mature tree canopy projection area is provided for each tree. Canopy projection area is the ground area beneath the mature tree, measured at the drip line. Soil volume must be within 1.5 times the mature tree canopy radius. Soil depth shall be a minimum of 30 inches deep, preferably 36 inches deep. When placing tree well next to curb use Structural Soil as outlined in the section below titled “Confined Tree Well Soil Volume” and use Specifications in Appendix K Use Amended Soil per Fact Sheet SD-F in all other cases.	<p>The minimum soil volume ensures that there is adequate storage volume to allow for unrestricted evapotranspiration and infiltration.</p>

<i>Siting and Design</i>	<i>Intent/Rationale</i>
<p>To claim credit for existing trees, the root structure of existing tree shall be protected and additional soil volumes provided to meet the above requirements.</p> <p><input type="checkbox"/> A berm or well must be constructed around the perimeter of the soil volume to be credited and an inlet structure must be of the appropriate size to allow runoff to enter the well.</p> <p>Considerations should be made to prevent root and water intrusion damage to surrounding infrastructure.</p>	<p>The minimum soil volume ensures that there is adequate storage volume to allow for unrestricted storage, evapotranspiration, and infiltration.</p>
<p><input type="checkbox"/> DCV from the tributary area draining to the tree is equal to or greater than the tree credit volume</p>	<p>The minimum tributary area ensures that the tree receives enough runoff to fully utilize the infiltration and evapotranspiration potential provided. In cases where the minimum tributary area is not provided, the tree credit volume must be reduced proportionately to the actual tributary area.</p>
<p><input type="checkbox"/> Inlet opening to the tree that is at least 18 inches wide.</p> <p>A minimum 2 inch drop in grade from the inlet to the finish grade of the tree.</p> <p>Grated inlets are allowed for pedestrian circulation. Grates need to be ADA compliant and have sufficient slip resistance.</p>	<p>Design requirement to ensure that the runoff from the tributary area does not bypass the BMP.</p> <p>Different inlet openings and drops in grade may be allowed at the discretion of County staff if calculations are shown that the diversion flow rate (Appendix B.) from the tributary area can be conveyed to the tree. In cases where the inlet capacity is limiting the amount of runoff draining to the tree, the tree credit volume must be reduced proportionately.</p>

Conceptual Design and Sizing Approach for Site Design

Determine the areas where tree wells can be used in the site design to achieve incidental treatment. Tree wells reduce runoff volumes from the site. Refer to Appendix B.2. Document the proposed tree locations in the SWQMP.

Conceptual Design and Sizing Approach for Pollutant Control

When trees are proposed as a storm water pollutant control BMP, the project proponent must submit detailed calculations for the DCV treated by trees. Document the proposed tree locations on the BMP Plan & DMA Map, and provide sizing calculations in the SWQMP Attachment following the steps in Appendix B.

Conceptual Design and Sizing Approach for Flow Control

When trees are proposed as a flow control BMP, the project proponent must submit detailed calculations for the Required Retention Volume (RRV) treated by trees. Document the proposed tree locations on the BMP Plan & DMA Map, and provide sizing calculations in the SWQMP Attachment. Tree Wells that are designed to meet flow control requirements are designated as SSD BMPs.

1. **Determine how much volume you need.** The Required Retention Volume (RRV) is the volume of rainfall that must be retained by the tree wells in the DMA to meet flow control requirements. It is calculated by multiplying the DCV by a DCV multiplier.
 - a. Determine the DCV. See Appendix B.
 - b. Determine the DCV Multiplier. The DCV Multiplier is based on two factors: (1) The tree well soil depth and, (2) The Hydrologic Soil Group. Once you know both values, determine the DCV Multiplier using this table:
 - c. Calculate the Required Retention Volume (DCV x DCV Multiplier). Calculate the RRV by multiplying the DCV by the DCV Multiplier. This is the volume of runoff that must be offset by the Tree Well Credit Volume. Repeat this process for each DMA.

Minimum Tree Well Soil Depth (inches)	Hydrologic Soil Group				DCV Multiplier
	A	B	C	D (Default)	
30"	1.60	2.20	2.50	2.90	
36"	1.80	2.47	2.83	3.17	
42"	2.00	2.73	3.17	3.43	
48"	2.20	3.00	3.50	3.70	

DCV Multiplier Table

Tree Well Soil Depth is the vertical distance from the top to the bottom of the soil layer in the tree well. **Hydrologic Soil Group** describes the native soil surrounding the tree well. Soil type affects how well water can infiltrate into the area surrounding the tree well. Group A soils provide the most infiltration and Group D the least. If your soil type is unknown, you can assume Group D. But this will result in larger DCV Multipliers, and in turn increase the size or number of tree wells needed.

Alternative Proposals: You can also propose RRV values or use methods and assumptions different than those described here. Proposals must be based on SWMM modeling or other methods acceptable to the County.

2. **Determine how much volume you have.** The Tree Well Credit Volume is the volume of runoff retention in cubic feet per tree (ft³/tree) to be provided by each tree well (or group) in the DMA. Together retain a volume that is equal to or greater than the RRV for the DMA.

The volume credited for each tree well is based on the mature canopy diameter of the tree species selected. Any species listed below can be used in a tree well so long as it meets all other applicable restrictions and requirements for the project area. Native and drought tolerant species are required where feasible.

Botanical Name	Common Name	Mature Height (ft)	Mature Canopy Diameter (ft)	Credit Volume per Tree (ft ³)
1 <i>Ceanothus 'Ray Hartman'</i>	California Mountain Lillac	30	10	40
2 <i>Pittosporum Phillyraeoides</i>	Willow Pittosporum	25	15	100
3 <i>Salix Lasiolepsis</i>	Arroyo Willow	25		
4 <i>Arbutus Unedo</i>	Strawberry Tree	30	20	180
5 <i>Prunus Ilicifolia</i>	Hollyleaf Cherry	30		
6 <i>Prunus Lynoii</i>	Catalina Cherry	40		
7 <i>Cercis Occidentalis</i>	Western Redbud	25	25	290
8 <i>Heteromeles Arbutifolia</i>	Toyon, Christmas Berry	25		
9 <i>Alnus Rhombifolia</i>	White Elder	75		
10 <i>Arbutus 'Marina'</i>	Hybrid Strawberry Tree	35		
11 <i>Chilopsis Linearis</i>	Desert Willow	30		
12 <i>Lyonothamnus Floribundus</i>	Catalina Ironwood	50		
13 <i>Magnolia Grandiflora</i>	Southern Magnolia	40		
14 <i>Pinus Torreyana</i>	Torrey Pines	80	30	420
15 <i>Platanus Racemosa</i>	California sycamore	60		
16 <i>Quercus Agrifolia</i>	Coast Live Oak	70		
17 <i>Quercus Engelmannii</i>	Engelmann Oak	50		
18 <i>Quercus Suber</i>	Cork Oak	40		
19 <i>Sambucus Mexicana</i>	Blue Elderberry	30		

Tree Palette Table

Below are sources for Tree Palette Mature Height and Mature Canopy Diameter:

- Water Efficient Landscape Design Manual, County of San Diego, 2016
- Sustainable Landscapes Guidelines, San Diego County Water Authority, 2015
- Low Impact Development Handbook, County of San Diego, 2014
- Low Impact Development Design Manual, City of San Diego, 2011
- Street Tree Selection Guide, City of San Diego, 2013
- Environmentally Friendly Garden Plant List, City of San Diego, 2004
- BMP Design Manual, County of San Diego, 2016
- California Native Plant Society. 2017

Alternative Species. Tree species other than those listed are allowable, but must be approved by the County. If you know the mature canopy diameter of the species you want to propose, use the values in the table to determine its credit volume. Note that even if you select a species with a canopy diameter greater than **30 feet**, the maximum credit any tree can generate is **420 ft³**.

3. **Determine if you have enough volume.** Compare your total Tree Well Credit Volume from Step 2 to the RRV you calculated in Step 1. Once your Credit Volume is equal to or greater than

your RRV, this requirement is satisfied. If your Credit Volume is initially too low, adjust your design either to (1) increase it with more or bigger trees, or (2) decrease the RRV through DCV reductions.

Tree wells will normally be placed at the **discharge point** of the DMA, either individually or in groups. If some of them will retain runoff from different areas in the DMA, RRV and DCV calculations must be specific to each subarea.

If an **underdrain** is proposed for the Tree Well, the sizing factors shown in the DCV Multiplier Table cannot be used, and instead continuous simulation modeling should be performed. This would allow to obtain credit for soil volume underneath the underdrain.

Tree Planting Design in New or Reconstructed Streetscapes

1. Maximized open soil area for tree planting is the most cost effective method of achieving the required soil volume.
2. Tree wells within sidewalks shall have a minimum open area of four feet wide by six feet long. Larger areas may be required to accommodate large root balls.
3. Tree well soil characteristics shall meet the requirements of SD-F Amended Soil.

Structural Requirements for Confined Tree Well Soil Volume

In order to provide adequate soil volume for tree wells, soils may be placed confined beneath adjacent paved surfaces. Acceptable soil systems capable of carrying D-50 loading include structural soils, structural slabs, and structural cells:

1. Structural soil systems include CU-StructuralSoil™, Stalite Structural Soil, or equivalent.
2. Suspended pavements that allow uncompacted growing soil beneath the sidewalk include; structural slabs that span between structural supports, structural cells, and other commercially available structural systems. See Page 7 of the Green Streets Guidelines in Appendix K for illustrations. Manufacturer details and certification must be provided for commercial systems. Structural calculations and details must be provided for structural slab installations. Structural cells are commercially-available structural systems placed subsurface that support the sidewalk and are filled with amended soil (SD-F). Manufacturer details and certification must be provided for commercial systems.

Stormwater Retention and Treatment Volume

Tree wells with expanded soil volume will serve as a method of capturing and retaining the required volume of stormwater in accordance with County requirements in Appendix B of this manual. These facilities can be designed to meet the County requirements when surface ponding volume is provided, whether designed as an enclosed plant bed with covered soil volume, or a continuous open area (either mulched or with turf) with soil volume under the adjacent sidewalk.

Maintenance Overview

Normal Expected Maintenance. Tree health shall be maintained as part of normal landscape maintenance. Additionally, ensure that storm water runoff can be conveyed into the tree well as

designed. That is, the opening that allows storm water runoff to flow into the tree well (e.g., a curb opening, tree grate, or surface depression) shall not be blocked, filled, re-graded, or otherwise changed in a manner that prevents storm water from draining into the tree well. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure. Trees wells are site design BMPs that normally do not require maintenance actions beyond routine landscape maintenance. The normal expected maintenance described above ensures the BMP functionality. If changes have been made to the tree well entrance / opening such that runoff is prevented from draining into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well, or a surface depression has been filled so runoff flows away from the tree well), the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance will be required to restore drainage into the tree well as designed.

Surface ponding of runoff directed into tree wells is expected to infiltrate/evapotranspire within 24-96 hours following a storm event. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging or compaction of the soils surrounding the tree. Loosen or replace the soils to restore drainage.

Other Special Considerations. Site design BMPs, such as tree wells, installed within a new development or redevelopment project are components of an overall storm water management strategy for the project. The presence of site design BMPs within a project is usually a factor in the determination of the amount of runoff to be managed with structural BMPs (i.e., the amount of runoff expected to reach downstream retention or biofiltration basins that process storm water runoff from the project as a whole). When site design BMPs are not maintained or are removed, this can lead to clogging or failure of downstream structural BMPs due to greater delivery of runoff and pollutants than intended for the structural BMP. Therefore, the County Engineer may require confirmation of maintenance of site design BMPs as part of their structural BMP maintenance documentation requirements. Site design BMPs that have been installed as part of the project should not be removed, nor should they be bypassed by re-routing roof drains or re-grading surfaces within the project. If changes are necessary, consult the County Engineer to determine requirements.

We All Live Downstream!

Clean Water is Important to All of Us!



When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance "storm drain" system.

Did you know that storm drains are **NOT** connected to sanitary sewer systems and treatment plants?

The storm drain system is designed to prevent flooding by transporting water away from developed areas.

However, this water is not filtered or treated, and all the contaminants it contains eventually flow to our streams, lakes, and ocean where we swim and fish.

Once there, polluted runoff can harm wildlife and habitats. In some cases, it can even cause beach closures or make fish and shellfish unsafe to eat.

Why do we need Clean Water?

Clean water is essential for every aspect of life. In addition to sustaining our local water resources it ensures economic growth and prosperity. Population growth has impacted water quality and placed increasing pressure on supplies. Controlling pollution is critical to preserving our aquatic resources and the economic viability of this region.

How you can help keep our water clean...

Residents of San Diego County can make a difference. Becoming aware of ways to prevent stormwater pollution is the first step toward



We All Live Downstream!

All Live Downstream!

Easy Steps to Clean Water

Sweep or Rake

Conserve water.

Do not use a hose to wash off sidewalks, driveways, and patios. Sweep up debris and put it in a trash can. Rake up yard waste to compost or recycle.



Reduce the Use of Landscape Chemicals

Decrease the use of lawn and garden care products such as pesticides, weed killers, and chemical fertilizers. Consider using non-toxic pest control methods.

Avoid over watering which may wash these products into the gutter and storm drains.



Buy Non-Toxic Products

When possible, use non-toxic products for household cleaning. If you must use a toxic cleaning product, buy small quantities, use it sparingly, and properly dispose of unused portions. For the Household Hazardous Waste collection facility nearest you, call 1-800 CLEANUP 1(800) 253-2687.



Recycle Used Motor Oil and Earn \$\$

Certified used oil collection centers will pay a few cents per gallon for used oil.

Collect used oil in sealed containers and take it to a certified center.

For the certified center nearest you, call 1-800 CLEANUP 1(800) 253-2687.



For more information on how you can prevent the pollution of our creeks, rivers, lakes, and ocean or to report a problem, please call the **Stormwater HOTLINE** at **(888) 846-0800** or visit **www.projectcleanwater.org**.

Dispose of Yard Waste Frequently

By disposing of grass, leaves, shrubs, and other organic matter more frequently — less will wash into storm drains. Request a green waste bin from your trash hauler, or compost your yard waste.



Clean up After Your Pets

Take a bag when you walk your pets and always clean up after them. Flush pet waste down the toilet or dispose of it in a sealed plastic bag and throw it in the trash.



Care for Your Vehicles

Change your oil routinely. Fix fluid leaks immediately. Keep your vehicles tuned-up. Wash your vehicle at home on an unpaved area, such as lawn or gravel. Use very little soap. Pour remaining soapy water to an indoor sink or toilet. Conserve water by using a shut-off nozzle. Consider using a car wash designed to collect the wash water.



WHAT IS STORMWATER POLLUTION?

When rain flows over streets and other surfaces, it picks up pollutants and carries them into the stormwater conveyance ("storm drain") system. This system is designed to prevent flooding by transporting water away from developed areas.



However, this water is not filtered or treated, and all the contaminants it contains eventually flow to our streams, lakes, and ocean where we swim and fish.

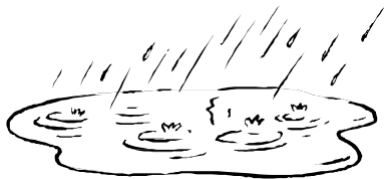


Once there, polluted runoff can harm wildlife and habitats. In some cases, it can even cause beach closures or make fish and shellfish unsafe to eat.

Wastes from yard work are among the many common stormwater pollutants that can degrade water quality. Other examples include paint, oil and automotive fluids, construction debris, pet waste, litter, pool chemicals, and dirty wash water.



ONLY RAIN IN THE STORM DRAIN



HOW DOES YARD WORK POLLUTE STORMWATER?



What you do in the yard can directly impact the quality of our local waters. When soil, organic wastes, and chemicals leave your yard, they flow directly into streams, lakes, and the ocean where they can harm human health and the environment.

OVERWATERING Over watering washes fertilizers, pesticides, and herbicides into storm drains. In your yard these chemicals kill garden invaders, but when washed into local waters they poison fish and contaminate water.



CHEMICALS The "chemical only" approach to pest control often causes more problems than it solves. Over 90% of the insects in your lawn and garden are not harmful. Many gardeners use pesticides, herbicides, and fertilizers at over 20 times the rate necessary, greatly increasing polluted runoff.

ORGANIC WASTES

Grass clippings, leaves, and tree trimmings swept or blown into streets and gutters carry chemicals into our waterways and can clog catch basins, increasing the risk of flooding. Once they settle into water bodies, these materials begin to decompose, absorbing oxygen fish need to survive.



SEDIMENT Soil and dirt washed from yards can also harm aquatic life by clogging the gills of fish, blocking light transmission, lowering water temperatures, and inhibiting photosynthesis.

WHAT CAN I DO?



Here are some things you can do to keep contaminants out of runoff.

GENERAL LANDSCAPING TIPS

1. Schedule big projects for dry weather.
2. Store stockpiles under plastic tarps to protect them from wind and rain.
3. Store pesticides, fertilizers and other chemicals in a covered area.
4. Use plants that require less water.
5. Prevent erosion by planting fast-growing grasses to shield and bind the soil.

LAWN and GARDEN MAINTENANCE

1. Don't overwater. Use drip irrigation, soaker hoses, or micro-spray systems.
2. Use curbside yard waste recycling or take clippings to a landfill for composting.
3. Don't blow or rake leaves into the street or gutter. Avoid hosing down the pavement.
4. Don't overfertilize or apply chemicals near ditches, streams, or water bodies.

CHEMICAL ALTERNATIVES

1. Don't kill insects that aren't harmful.
2. Use less toxic products, for example dehydrating dusts (such as silica gel), insecticidal soaps, boric acid powder, horticultural oils, pyrethrin-based insecticides, bacterial insecticides, and organic or non-toxic fertilizers.
3. Use predatory insects when possible.
4. If you must use a pesticide, use one that is specifically designed to control your pest (listed on the label). Always read the label and use only as directed.

REFERRAL NUMBERS



For more information on stormwater management

(888) 846-0800



For information on recycling, composting and household toxics

(877) R-1 Earth
(877) 713-2784



To schedule a presentation for your community group or organization

(888) 846-0800



For residential gardening tips or questions please contact the Master Gardener Program

(858) 694-2860



For a daily update on beach and bay closures

(619) 338-2073



project clean water

"clean water through local commitment and action"

Call us for more information:

(888) 846-0800

or visit us at our web site:

www.sdcdpw.org

or

www.projectcleanwater.org



It's against the law to pollute stormwater.

County Code §67.805 prohibits the discharge of anything but rainwater to the stormwater conveyance system or receiving waters.

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06/03

STORMWATER POLLUTION PREVENTION

YARD WORK



LANDSCAPING GARDENING PEST CONTROL

County of San Diego
Watershed Protection Program

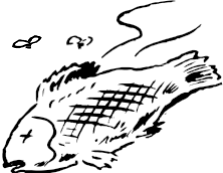


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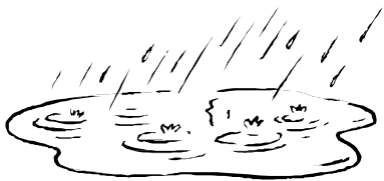


Once there, polluted runoff can harm wildlife and habitats. In some cases, it can even cause beach closures or make fish and shellfish unsafe to eat.

Pet wastes are among the many common stormwater pollutants that can degrade water quality. Other examples include paint, oil and automotive fluids, construction debris, yard wastes, pesticides, litter, pool chemicals, and dirty wash water.



ONLY RAIN IN THE STORM DRAIN



WHY IS IT SO IMPORTANT TO PICK UP AFTER YOUR PET?



During rainfall, pet waste left on lawns, beaches, trails and sidewalks washes into storm drains.

These wastes and the pathogens they contain (bacteria, parasites, and viruses) end up flowing directly into streams, lakes and the ocean where they can harm human health and the environment.

As they decompose, pet wastes demand a high level of oxygen from water. This demand can kill fish and plant life by reducing the amount of dissolved oxygen available to them.



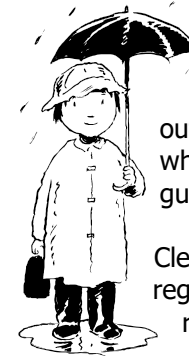
Recent studies have shown dogs and cats are sources of fecal contamination at local beaches.

In addition to causing beach closures, this contamination can make people sick with sore throats, intestinal problems, rashes, nausea, and eye and ear infections.



County Code §67.805 prohibits the discharge of anything but rainwater to the stormwater conveyance system or receiving waters.

WHAT CAN I DO?



The next time you're caught outside in the rain, take a look at what's running off the street, into the gutters, and down storm drain inlets.

Clean up pet waste in your yard on a regular basis, to prevent polluted runoff.

Carry a bag or "scooper" when you take your pet on walks, to the park or other public places. Be prepared and clean up the pet waste.



Do your part to help keep our water clean!

PICK UP AFTER YOUR PET!

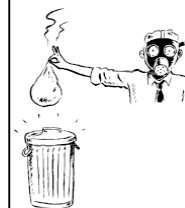
It's as easy as 1-2-3



1. Bring a bag



2. Clean it up



3. Dispose of it properly
(toilet or trash)

REFERRAL NUMBERS



For more information on stormwater management

(888) 846-0800



To reach the County Department of Environmental Health

(619) 338-2222



For information on recycling, composting and household toxics

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Or visit us at our web site:

www.sdcdpw.org or

www.projectcleanwater.org

For pet licensing information, visit the

Department of Animal Services
web site:

www.sddac.com



Small changes
reduce pollution.

Printed on recycled paper

08/03

STORMWATER POLLUTION PREVENTION

PET WASTE



County of San Diego
Watershed Protection Program



Trash Can and Street Sweeping Facts:

- 9 Street sweepers regularly clean your neighborhood streets of trash, dirt, and leaves as part of El Cajon's Storm Water Pollution Prevention Program. Keeping litter and debris out of the storm drains, streams and the ocean is the purpose of the city's street sweeping program.
- 9 The sweepers cannot sweep the streets and gutters if there are trash cans or other objects in the way. You can help us be effective in keeping your neighborhood clean by moving your vehicles and removing trash cans from the curbside or street during the hours your street is swept.
- 9 The El Cajon Municipal Code requires that trash cans not be placed curbside prior to four p.m. on the day prior to the collection and that they be removed from the curb prior to noon on the day following the collection.
- 9 Although street sweepers do NOT clean streets that do NOT have curbs and gutters, citizens are encouraged to help keep our streets clean by removing trash, soil and debris.

What You Can Do To Help Sweep Our Streets!

DOs	DON'Ts
DO move your trash can, car, boat or RV to allow cleaning at the curb & gutter.	DON'T place large trash items, i.e. tree branches, wood, tires, etc. in the sweeper path that can damage the sweeper.
DO remove any and all obstructions from the curb and gutter, i.e., cans, bicycles, skateboards, etc. before sweepers arrive.	DON'T sweep litter into the storm drain catch basins and inlets.
DO place all litter/garbage in the proper trash and recycling containers.	DON'T allow your gardener to blow trash & debris from your property into the streets. Instead REQUIRE proper disposal & place in Yard Waste Containers.
DO place garbage cans and recycling containers on the curb, not in the gutter/street.	DON'T place large leaf piles at the curb.
DO tell your neighbors to support street cleaning by observing the DOs and DON'Ts.	

RECORDING REQUESTED BY:

City of Santee, CA

AFTER RECORDING MAIL TO:

City Clerk
City of Santee
10601 Magnolia Avenue
Santee, CA 92071-1266

ABOVE SPACE FOR RECORDER'S USE

**AGREEMENT TO PERFORM STORM WATER
FACILITIES MAINTENANCE**

NO RECORDATION FEE REQUIRED; THIS DOCUMENT IS
EXEMPT FROM RECORDING FEES PURSUANT
TO CALIFORNIA GOVERNMENT CODE SECTIONS 6103 AND 27383

DOCUMENTARY TRANSFER TAX DUE \$ 0

Assessor's Parcel No. _____ Project No. _____

This AGREEMENT for the maintenance and repair of certain Storm Water Management Facilities is entered into between _____ (hereinafter referred to as "Owner") and the City of Santee (hereinafter referred to as "City") for the benefit of the City, the successors in interest to the City, and the public generally.

RECITALS

A. Owner is the owner of certain real property located in the City of Santee, California, more particularly described in **Exhibit "A"** hereto (hereinafter referred to as the "Property"), and has proposed that the Property be developed as _____ (insert brief description of type of project, e.g., "a 100 unit residential

subdivision”) _____ in accordance with applications for Tentative Map No. _____, Development Review No. _____, Conditional Use Permit No. _____, Grading Permit No. _____ which are on file with the City. This Agreement is required as a condition of approval for such development as set forth in Resolution Nos. _____.

B. In accordance with the City of Santee’s Storm Water Management and Discharge Control Ordinance, (Santee Municipal Code, Chapter 13.42), the City of Santee Subdivision Ordinance, the City of Santee Zoning Ordinance, the City of Santee Grading Ordinance and/or other ordinances or regulations of the City which regulate land development and urban runoff, Owner has prepared and submitted to the City, a site specific Storm Water Quality Management Plan (hereinafter the SWQMP), prepared by _____ and dated _____ which is on file with the City’s Department of Development Services. The SWQMP proposes that storm water runoff from the Property be treated by the use of various storm water management facilities which are identified in the SWQMP as “Best Management Practices” or “BMP’s”:

The precise location and extent of the BMP’s are described and shown in the SWQMP. The SWQMP specifies the frequency, manner, and standards by which the BMP’s must be repaired and maintained in order to retain their effectiveness, as set forth in the Operation and Maintenance Section included in the SWMP.

C. The information contained in the SWQMP and the Owner’s representation that the BMP’s will be maintained pursuant to the SWQMP have been relied upon by City in approving Owner’s development applications. It is the purpose of this Agreement to assure that the BMP’s are maintained in perpetuity, by creating obligations which are enforceable against the Owner and the Owner’s successors in interest in the Property. It is intended that these obligations be enforceable notwithstanding other provisions related to BMP maintenance which are provided by law.

AGREEMENT

NOW, THEREFORE, for consideration of City’s approval of the above development applications and the mutual covenants set forth herein, IT IS HEREBY AGREED AS FOLLOWS:

1. **Maintenance of Storm Water Management Facilities.** Owner agrees, for itself and its successors in interest, to all or any portion of the Property, to comply in all respects with the requirements of the Storm Water Management

and Discharge Control Ordinance and the SWQMP with regard to the maintenance of all BMP's as designated in the SWQMP, and in particular agrees to perform, at its sole cost, expense and liability, the following "Maintenance Activities": all inspections, cleaning, repairs, servicing, maintenance and other actions specified in the SWQMP, with respect to all of the BMP's listed at Recital "B" above, at the times and in the manner specified in the SWQMP as it currently exists or may be amended or modified as provided herein. Owner shall initiate, perform and complete all Maintenance Activities at the required time, without request or demand from City or any other agency. Owner further agrees that "Maintenance Activities" shall include replacement or modification of the BMP's in the event that the BMP fails to provide the necessary water quality treatment, it is found that the BMP was not installed correctly, or in the event that the BMP is not functioning as intended. Replacement shall be with an identical type, size and model of BMP, except that:

(a) The City Engineer may authorize substitution of an alternative BMP if he or she determines that it will function as good or better than the failed BMP. The City requires that proposed modifications be submitted for review and approval prior to making any changes in the field, and that the Storm Water Quality Management Plan be revised or amended and resubmitted for approval; and

(b) Pursuant to Section 13.42.070 of the Storm Water Management and Discharge Control Ordinance, any discharge that would result in or contribute to a violation of the City's NPDES Permit and any amendment, revision or re-issuance thereof, either separately considered or when combined with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the owner(s) causing or responsible for the discharge. Owner agrees that if the BMP, in the judgment of the Director of Development Services indicates that the BMP in use is inappropriate or inadequate to the circumstances and has or may result in a violation of water quality standards, the BMP must be modified or replaced with an upgraded BMP to prevent any actual or potential violation.

2. Annual Inspection and Certification by Owner

Owner agrees to provide documentation of BMP maintenance as required for the City to ensure that all storm water BMPs are properly maintained and are functioning as intended, in compliance with the site specific Storm Water Quality Management Plan. Owner shall provide annual certification that BMPs have been properly maintained for the time period of *September 1 to August 31, each year*. *This documentation is due to the City prior to September 15th of each year.* Structural BMPs for which annual certification is required includes, but is not limited to: drainage inserts; detention basins; hydrodynamic separators; swales; filters;

bioretention facilities; and Low Impact Development Integrated Management Practices (LID IMPs).

3. **Notices.** Owner further agrees that it shall, prior to transferring ownership of any land on which any of the above BMP's are located, and also prior to transferring ownership of any such BMP, provide clear written notice of the above maintenance obligations associated with that BMP to the transferee. The Storm Water Quality Management Plan and all associated records must also be provided to all subsequent owners upon transfer of property title.

4. **City's Right to Perform Maintenance.** It is agreed that City shall have the right, but not the obligation, to elect to perform any or all of the Maintenance Activities if, in the City's sole judgment, Owner has failed to perform the same. It is recognized and understood that the City makes no representation that it intends to or will perform any of the Maintenance Activities, and any election by the City to perform any of the Maintenance Activities, shall in no way relieve Owner of its continuing maintenance obligations under this agreement. If the City elects to perform any of the Maintenance Activities, it is understood that the City shall be deemed to be acting as the agent of the Owner and said work shall be without warranty or representation by City as to safety or effectiveness, shall be deemed to be accepted by Owner "as is", and shall be covered by Owner's indemnity provisions below.

If the City performs any of the Maintenance Activities, after City has served written notice to the Owner to perform the same, and the Owner has failed to do so within a reasonable time stated in the City's written notice, then Owner shall pay all of the City's costs incurred in performing the Maintenance Activities within sixty days of receipt of an invoice for those costs.

5. **Right of Entry and Inspection by City.** Owner hereby grants to City a perpetual right of entry over, under and across Owner's Property, for purposes of accessing the BMP's and performing inspection of the BMP's or any of the Maintenance Activities related to maintenance of the BMP's. City shall have the right, at any time and without prior notice to Owner, to enter upon any part of said area as may be necessary or convenient for such purposes. Owner shall at all times maintain the Property so as to make the City's access clear and unobstructed. City is required to perform periodic inspection of Structural BMPs. Owner agrees to pay reasonable fees levied by the City on Owners of BMPs for the costs of managing the BMP inspection and maintenance tracking program.

6. **Administration of Agreement for City.** City hereby designates its Department of Development Services with responsibility and authority to administer this Agreement on behalf of City. Any notice or communication related to the

implementation of this Agreement desired or required to be delivered to City shall be addressed to:

Director of Development Services
City of Santee
10601 Magnolia Avenue
Santee, CA 92071

The City Engineer is also granted authority to enter into appropriate amendments to this Agreement on behalf of City, provided that the amendment is consistent with the purposes of this Agreement as set forth above.

7. **Defense and Indemnity.** City shall not be liable for, and Owner and its successors in interest shall defend and indemnify City and the employees and agents of City, against any and all claims, demands, liability, judgments, awards, fines, mechanic's liens or other liens, labor disputes, losses, damages, expenses, charges or costs of any kind or character, including attorneys' fees and court costs (hereinafter collectively referred to as "CLAIMS"), related to this Agreement and arising either directly or indirectly from any act, error, omission or negligence of Owner, Owner's successors, or their contractors, licensees, agents, servants or employees, including, without limitation, claims caused by the concurrent negligent act, error or omission, whether active or passive of City. Owner shall have no obligation, however, to defend or indemnify City from a claim if it is determined by a court of competent jurisdiction that such claim was caused by the sole negligence or willful misconduct of City. Nothing in this Agreement, in the City's approval of the subdivision or other applications or plans and specifications, or inspection of the work, is intended to acknowledge responsibility for any such matter, and City shall have absolutely no responsibility or liability therefore unless otherwise provided by applicable law.

8. **Common Interest Developments.** If the Property is developed as a "Common Interest Development" as defined in Civil Code section 1351(c) which will include membership in or ownership of an "Association" as defined in Civil Code section 1351(a), then the following provisions of this Paragraph 7 shall apply during such time as the Property is encumbered by a "Declaration" as defined in Civil Code section 1351(h), and the Common Area, as "Common Area" is defined in Civil Code section 1351(b), of the Property is managed and controlled by the Association:

(a) The Association, through its Board of Directors, shall assume full responsibility to perform the MAINTENANCE ACTIVITIES pursuant to this Agreement, and shall undertake all actions and efforts necessary to accomplish the MAINTENANCE ACTIVITIES, including but not limited to,

levying regular or special assessments against each member of the Association sufficient to provide funding for the MAINTENANCE ACTIVITIES, conducting a vote of the membership related to such assessments if required by law. In the event insufficient votes have been obtained to authorize an assessment, the Association shall seek authority from a court of competent jurisdiction for a reduced percentage of affirmative votes necessary to authorize the assessment, re-conducting the vote of the membership in order to obtain the votes necessary to authorize an assessment, and the Association shall take all action authorized by the Declaration or California law to collect delinquent assessments, including but not limited to, the recording and foreclosure of assessment liens.

(b) No provision of the Declaration, nor any other governing document of the Association or grant of authority to its members, shall grant or recognize a right of any member or other person to alter, improve, maintain or repair any of the Property in any manner which would impair the functioning of the BMP's to manage drainage or storm water runoff as described in the SWQMP. In the event of any conflict between the terms of this Agreement and the Declaration or other Association governing documents, the provisions of this Agreement shall prevail.

9. **Agreement Binds Successors and Runs With the Property.** It is understood and agreed that the terms, covenants and conditions herein contained shall constitute covenants running with the land and shall be binding upon the heirs, executors, administrators, successors and assigns of Owner and City, shall be deemed to be for the benefit of all persons owning any interest in the Property (including the interest of City or its successors in the easement granted herein). It is the intent of the parties hereto that this Agreement shall be recorded and shall be binding upon all persons purchasing or otherwise acquiring all or any lot, unit or other portion of the Property, who shall be deemed to have consented to and become bound by all the provisions hereof.

10. **Owner's Continuing Responsibilities Where Work Commenced or Permit Obtained.** Notwithstanding any other provision of this Agreement, no transfer or conveyance of the Property or any portion thereof shall in any way relieve Owner of or otherwise affect Owner's responsibilities for installation or maintenance of BMP's which may have arisen under the ordinances or regulations of City referred to in Recital B above, or other federal, state or local laws, on account of Owner having obtained a permit which creates such obligations or having commenced grading, construction or other land disturbance work.

11. **Amendment and Release.** The terms of this Agreement may be modified only by a written amendment approved and signed by the Director of

Development Services and by the Owner or Owner's successor(s) in interest. This Agreement may be terminated and Owner and the Property released from the covenants set forth herein, by a Release which City may execute if it determines that another mechanism will assure the ongoing maintenance of the BMP's or that it is no longer necessary to assure such maintenance.

12. **Agreement is Intended to Supplement Not Supersede.** This Agreement is intended to supplement and not supersede the requirements of the Chapter 13.42 of the Santee Municipal Code – Storm Water Management and Discharge Control. The requirements listed herein are in addition to the requirements set forth in the Code including Civil Actions and Enforcement Powers established under the Code.

13. **Governing Law and Severability.** This Agreement shall be governed by the laws of the State of California. Venue in any action related to this Agreement shall be in the Superior Court of the State of California, County of San Diego, East County Division. In the event that any of the provisions of this Agreement are held to be unenforceable or invalid by any court of competent jurisdiction, the validity, and enforceability of the remaining provisions shall not be affected thereby.

IN WITNESS WHEREOF, the parties have executed this Agreement on the _____ day of _____, 201__.

CITY OF SANTEE:

By: _____
Melanie Kush
Acting Director of Development Services

OWNERS:

By: _____
(sign here)

(print name here)

(title of signatory)

By: _____
(sign here)

(print name here)

(title of signatory)

(All OWNERS must sign)

(Proper notary acknowledgment of execution by OWNER must be attached.)

(President or vice-president **and** secretary or assistant secretary must sign for corporations. If only one officer signs, the corporation must attach a resolution certified by the secretary or assistant secretary under corporate seal empowering that officer to bind the corporation.)

**CITY OF SANTEE
CERTIFICATE OF ACCEPTANCE
FOR
AGREEMENT TO PERFORM STORM WATER FACILITIES MAINTENANCE**

This AGREEMENT by and between the City of Santee, a municipal corporation, and _____ is accepted for recording by the undersigned officers on behalf of the City of Santee pursuant to authority granted by Resolution No. 148-89 of the Santee City Council adopted on August 9, 1989.

Date: _____

By: _____
Melanie Kush
Acting Director of Development Services

CITY CLERK'S OFFICE:

STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss.
CITY OF SANTEE)

On _____, before me, Patsy Bell, CMC, City Clerk, personally appeared Melanie Kush, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity as Development Services Director, and that by his signature on the instrument the person, or entity upon behalf of which the person acted, executed the instrument on behalf of the City of Santee.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Patsy Bell
CMC, City Clerk

Exhibit “A”

ATTACHMENT 4

Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

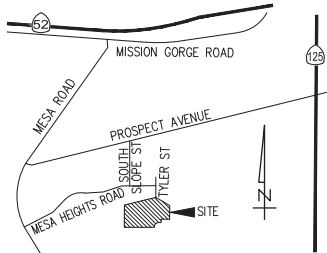
This will be shown on grading plan during final engineering

- ☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☐ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☐ Details and specifications for construction of structural BMP(s)
- ☐ Signage indicating the location and boundary of structural BMP(s) as required by the [City Engineer]
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☐ All BMPs must be fully dimensioned on the plans
- ☐ When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number shall be provided. Photocopies of general brochures are not acceptable.

NOTES:

- 1 PROPOSED 30' EASEMENT TO PADRE DAM
- 2 PROPOSED STORM DRAIN PIPE PER DETAILS
- 3 PROPOSED BROW DITCH PER RSD D-75
- 4 PROPOSED RIP RAP PER RSD D-40
- 5 PROPOSED CURB INLET PER RSD D-02
- 6 PROPOSED TYPE "F" CATCH BASIN D-07
- 7 PROPOSED LOCKED GATE
- 8 PROPOSED PERFORATED PIPE
- 9 PROPOSED MAILBOX LOCATION
- 10 PROPOSED CURB AND GUTTER G-01

PRELIMINARY GRADING PLAN
TYLER STREET PROJECT



VICINITY MAP
NO SCALE

LEGEND:

- EXISTING AC PAVEMENT
- PROPOSED THICKENED ASPHALT PAVEMENT OR PCC
- PROPOSED PCC SIDEWALK PER RSD G-7
- PROPOSED BIOFILTRATION BASIN PER BF-1 TO BE MAINTAINED BY HOMEOWNER'S ASSOCIATION
- PROPERTY BOUNDARY
- PROPOSED PROPERTY LINE
- PROPOSED 8" PVC SEWER MAIN
- PROPOSED 8" PVC WATER MAIN
- CUT/FILL LINE
- PROPOSED RETAINING WALL PER RSD C-4
- PROPOSED BROW DITCH
- 2:1 CUT SLOPE
- 2:1 FILL SLOPE
- PROPOSED STORM DRAIN PIPE
- PROPOSED RIP RAP
- PROPOSED CATCH BASIN
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED STREET TREE
- PROPOSED SEWER MANHOLE
- PROPOSED DRAINAGE PATH
- PROPOSED STREET LIGHT
- PROPOSED FIRE HYDRANT

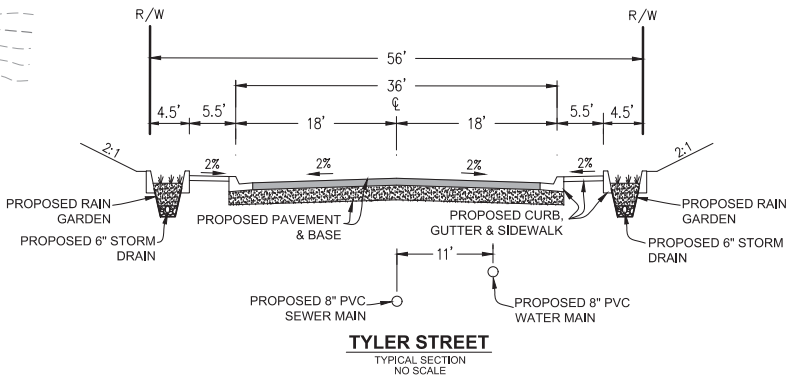
TOPOGRAPHY:

TOPOGRAPHY PROVIDED BY PHOTOGEODETIC, INC.
DATE FLOWN: APRIL 18, 2015

SITE APN'S:

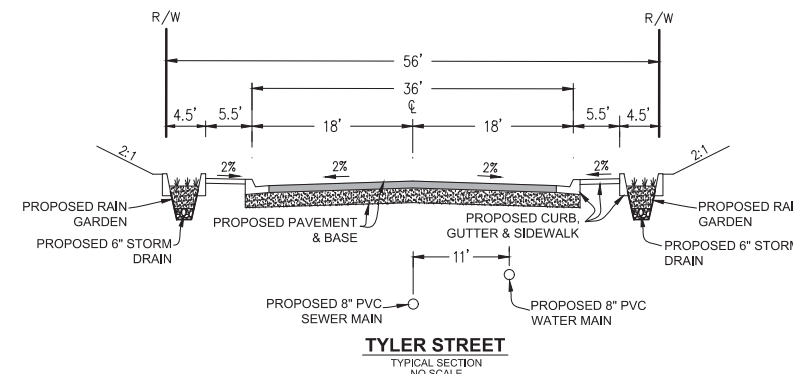
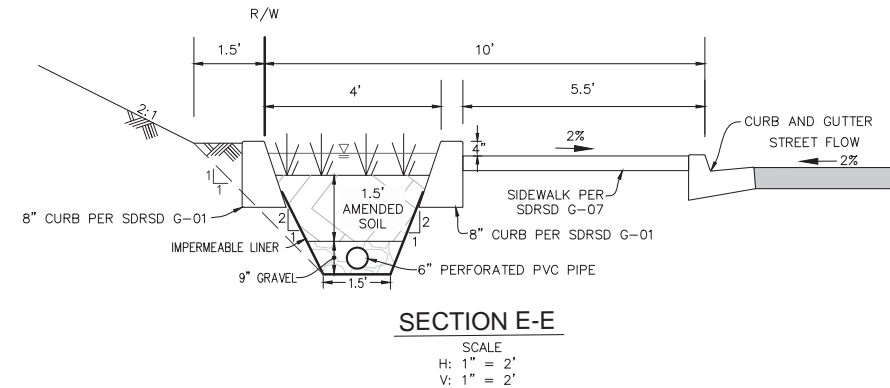
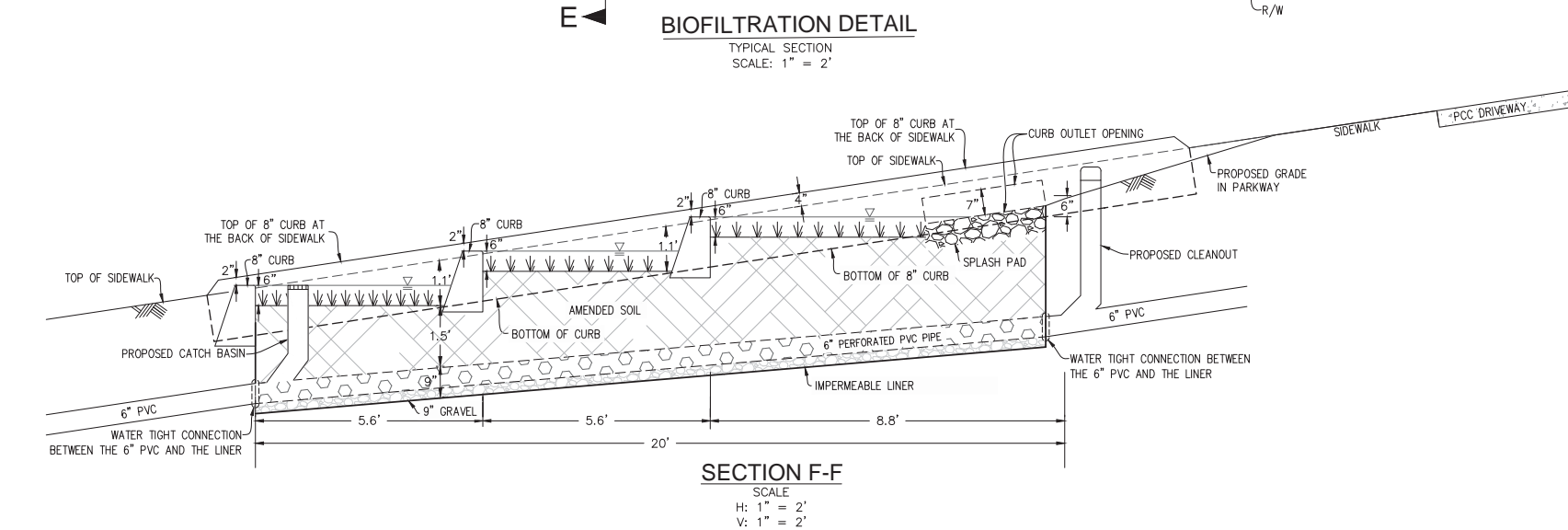
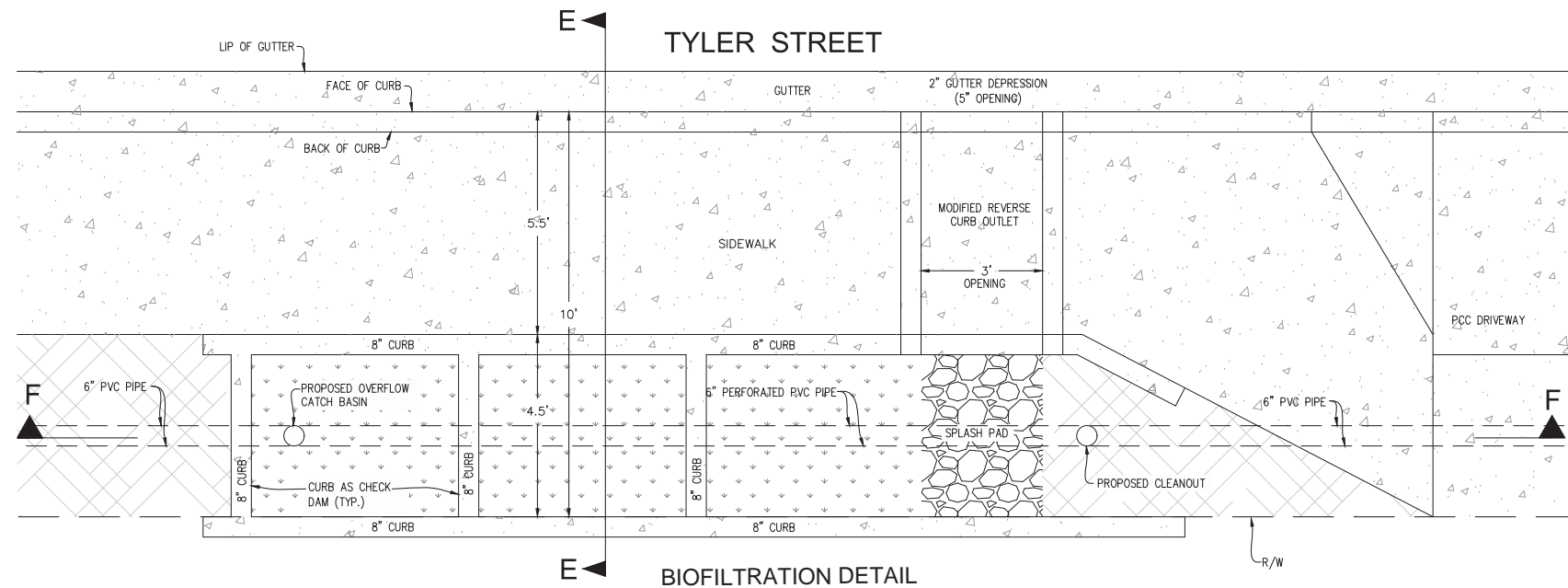
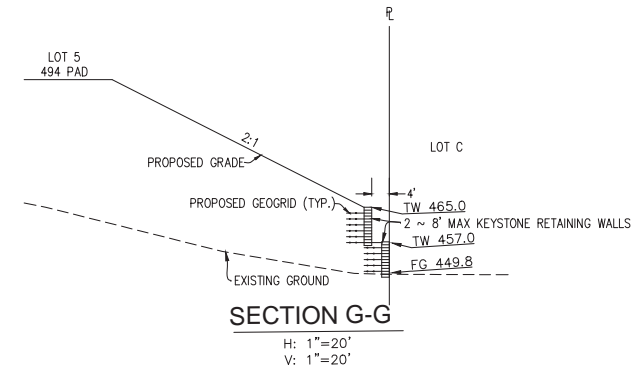
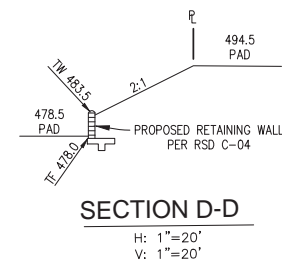
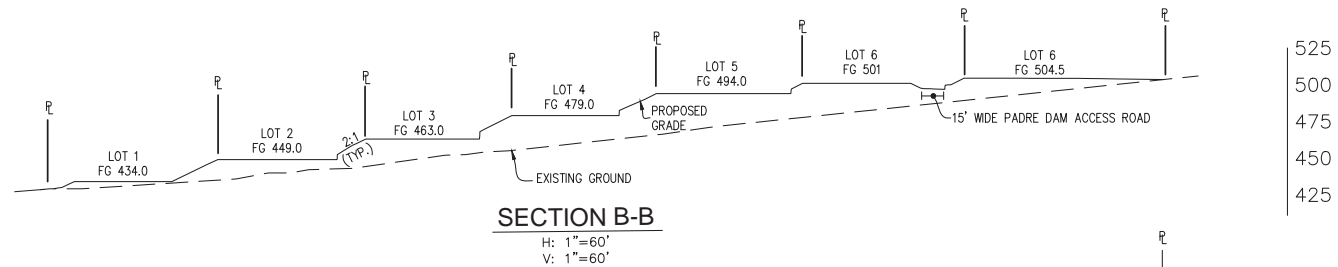
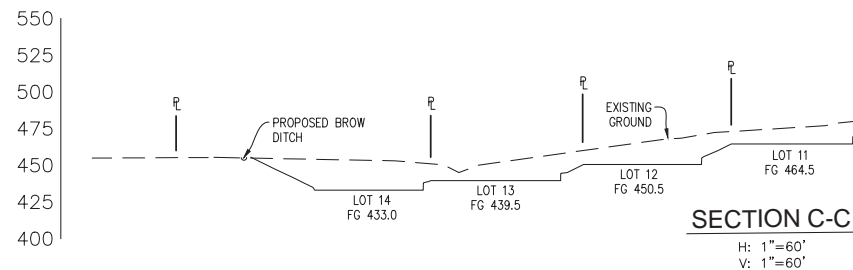
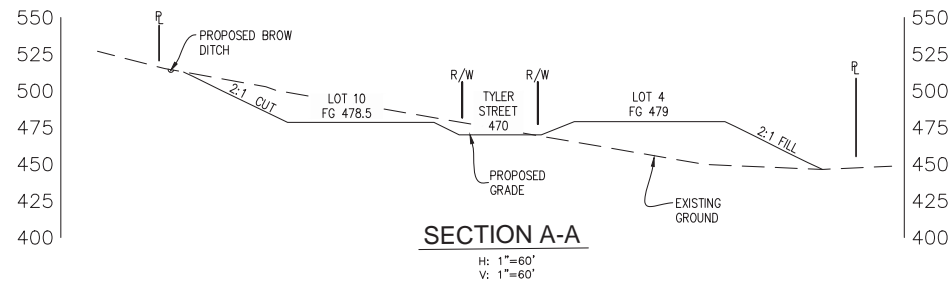
386-290-08, 09, 10, 13, 14, 20, 22, 24, 26.

GRADING: CUT = 68,000 CY
BULK = 10,000 CY (7.5%+/-)
FILL = 63,500 CY
EXPORT = 14,500 CY



Lawrence W. Walsh 3/2/21 DATE
Walsh Engineering & Surveying, Inc.
607 Aldwych Road, El Cajon, CA 92020
(619) 588-6747 (619) 792-1232 Fax

SCALE: 1"=60'



Lawrence W. Walsh
Lawrence W. Walsh
Walsh Engineering & Surveying, Inc.
607 Aldwych Road, El Cajon, CA 92020
(619) 588-6747 (619) 792-1232 Fax

