



County of San Diego
Stormwater Quality Management Plan (SWQMP)
For Priority Development Projects (PDPs)

Use for all PDPs (see Storm Water Intake Form, Part 4)



Project Information	
Project Name	Hurrell Subdivision Lakeside
Project Address	12392 Lakeside Ave, Lakeside, CA 92040
Assessor's Parcel # (APN)	392-070-07-00 & 392-070-10-00
Permit # / Record ID	PDS2020-TPM-21279

Project Applicant / Project Proponent	
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SWQMP Preparer	
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PE Number (if applicable)	83583

Preparer's Certification

I understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the County of San Diego BMP Design Manual. The BMP Design Manual is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100) requirements for storm water management.

This SWQMP is intended to comply with applicable requirements of the BMP Design Manual. I certify that it 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 SWQMP by County staff is confined to a review and does not relieve me as the person in charge of overseeing the selection and design of storm water BMPs for this project, of my responsibilities for project design.

Signature 	Date October 4, 2021
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COUNTY ACCEPTED

SWQMP Approved By:

Approval Date:

*** Note* Approval does not constitute compliance with regulatory requirements.**

Submittal Record: List the dates of SWQMP and plan submittals and updates. Briefly describe key changes from previous versions. If responding to plan check comments, note this in the entry and attach the responses as applicable.

No.	Date	Summary of Changes
Preliminary Design / Planning / CEQA		
1	5/28/2020	Initial Submittal
2	12/4/2020	2 nd Submittal
3	10/04/2021	3 Rd Submittal
4	Date	Summary of Change
No.	Date	Summary of Change
Final Design		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
4	Date	Summary of Change
No.	Date	Summary of Change
Plan Changes		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
4	Date	Summary of Change
No.	Date	Summary of Change

PDP SWQMP Submittal Checklist

SWQMP Tables: All of the eight tables below must be completed.

<input checked="" type="checkbox"/> Table 1: Scope of SWQMP Submittal	Page 2
<input checked="" type="checkbox"/> Table 2: Baseline BMPs for Existing Natural Features and Proposed Features (Groups 1, 2, and 3)	Page 3
<input checked="" type="checkbox"/> Table 3: Baseline BMPs for Pollutant-generating Sources (Group 4)	Page 4
<input checked="" type="checkbox"/> Table 4: Infeasibility Justifications for Baseline BMPs	Page 5
<input checked="" type="checkbox"/> Table 5: DMA Structural Compliance Strategies and Documentation	Page 6
<input checked="" type="checkbox"/> Table 6: Critical Coarse Sediment Yield Area (CCSYA) Requirements	Page 7
<input checked="" type="checkbox"/> Table 7: Minimum Construction Stormwater BMPs	Page 8
<input checked="" type="checkbox"/> Table 8: Infeasibility Justifications for Construction BMPs.....	Page 9

SWQMP Attachments¹: Use the checklist below to identify which attachments will be included with this submittal. Attachments with boxes already checked (☒) are required for all projects. The applicability of other attachments will be determined upon completing this form.

- ☒ Attachment 1: Storm Water Intake Form
- ☒ Attachment 2: DMA Exhibits and Construction Plan Sheets
- ☒ Attachment 3: Source Control BMP Worksheet
- ☐ Attachment 4: Previous SWQMP Submittals
- ☒ Attachment 5: Existing Site and Drainage Description
- ☒ Attachment 6: Documentation of DMAs without Structural BMPs
- ☐ Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs
- ☐ Attachment 8: Documentation of DMAs with Structural Hydromodification Management BMPs
- ☒ Attachment 9: Management of Critical Coarse Sediment Yield Areas
- ☐ Attachment 10: Installation Verification Form
- ☐ Attachment 11: BMP Maintenance Agreements and Plans
- ☐ Attachment 12: Documentation of Alternative Compliance Projects (ACPs)

After completing the remainder of this form, check the applicable SWQMP Attachment boxes to summarize your selections.

¹ All SWQMP attachments are available at www.sandiego.gov/stormwater under the Development Resources tab. Some attachments are presented out of order because they are shared between multiple SWQMP forms.

Table 1 – Scope of SWQMP Submittal

Select one option below that describes the scope of this SWQMP Submittal. Document your selection as indicated.	
SWQMP Scope	Required Documentation
<input checked="" type="checkbox"/> a. SWQMP addresses the entire project	No additional documentation.
<input type="checkbox"/> b. SWQMP implements requirements of an earlier master SWQMP submittal	Include a copy of the previous submittal as Attachment 4 .
<input type="checkbox"/> c. First of multiple SWQMP submittals	Use the spaces below to identify the elements addressed in this submittal and in future submittals.
<i>(1) Elements addressed in current submittal (streets, common areas, first project phase, etc.):</i>	
<i>(2) Elements to be addressed in future submittal(s) (individual lots, future project phases, etc.):</i>	

Table 2 – Baseline BMPs for Existing and Proposed Site Features

Site Features Select each feature that applies.		BMP Implementation Describe BMP implementation for each selected site feature.			
Group 1: Existing Natural Site Features [See BMPDM Sections 4.3.1 and 4.3.2]					
		Maintain & Conserve natural features		Establish buffers for waterbodies	
		Full	Partial	Full	Partial
<input checked="" type="checkbox"/>	Natural waterbodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Natural storage reservoirs & drainage corridors	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<input checked="" type="checkbox"/>	Natural areas, soils, & vegetation (incl. trees)	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Group 2: Common Impervious Outdoor Site Features [See BMPDM Sections 4.3.3 and 4.3.5]					
		Disperse impervious areas (See SD-B)		Use permeable materials (See SD-D)	Minimize impervious areas
		Full	Partial	Full	Partial
<input checked="" type="checkbox"/>	Streets and roads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Sidewalks & walkways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Parking areas & lots	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Driveways	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Patios, decks, & courtyards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	Hardcourt recreation areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Group 3: Other Outdoor Site Features [See BMPDM Sections 4.2.6, 4.3.4, 4.3.5, 4.3.7, and 4.3.8]					
<input checked="" type="checkbox"/>	Rooftop areas	Disperse rooftop runoff (See SD-B)		Install green roofs (optional; See SD-C)	Use rain barrels to capture runoff (optional; See SD-E)
		Full	Partial	Full	Partial
		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Landscaped areas	Use water-efficient landscaping (required)		Install efficient irrigation systems (required)	Minimize erosion of slopes and surfaces (required)
		Full		Full	Full
		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Water features (pools, spas, etc.)	Provide a designated washing area		Drain feature to the sanitary sewer (if allowed)	Drain feature to a pervious area
		Full	Partial	Full	Partial
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
					<input checked="" type="checkbox"/>

Note: Justification is required in Table 4 for any feature not selecting at least one BMP (either full or partial implementation). For Group 2 features this means not selecting either SD-B or SD-D. Additional justifications may be required on request by County staff. Also use Table 4 to describe sources or BMPs other than those listed.

Table 3 –Baseline BMPs for Pollutant-generating Sources (Group 4)

A. Requirements for Documentation Select either or both as applicable.	Completion of Part B is <u>not</u> required because: <input type="checkbox"/> This is a Small Residential Project, OR <input checked="" type="checkbox"/> None of these sources or features is proposed.	<input checked="" type="checkbox"/> Source Control BMP Requirements Worksheet E.1-1 (SC in Appendix E of the BMP Design Manual) is included as Attachment 3 (optional unless requested by County staff).
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B. Sources and BMPs Select all proposed sources and features below. Then select the BMPs on the right to be implemented for each.	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #f2f2f2;"> <th style="width: 12.5%; padding: 5px;">Plumb to sanitary sewer</th> <th style="width: 12.5%; padding: 5px;">Drain feature to a pervious area</th> <th style="width: 12.5%; padding: 5px;">Provide containment for spills and discharges</th> <th style="width: 12.5%; padding: 5px;">Prevent contact with rainfall</th> <th style="width: 12.5%; padding: 5px;">Isolate flows from adjacent areas</th> <th style="width: 12.5%; padding: 5px;">Prevent wind dispersal</th> <th style="width: 12.5%; padding: 5px;">Label with stencils or signs</th> </tr> </thead> <tbody> <tr> <td colspan="7">Common Source Areas</td></tr> <tr> <td><input type="checkbox"/> Trash & Refuse Storage</td><td>---</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td></tr> <tr> <td><input type="checkbox"/> Materials & Equipment Storage</td><td>---</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td></tr> <tr> <td><input type="checkbox"/> Loading & Unloading</td><td>---</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td><td>---</td></tr> <tr> <td><input type="checkbox"/> Fueling</td><td>---</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td><td>---</td></tr> <tr> <td><input type="checkbox"/> Maintenance & Repair</td><td>---</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td><td>---</td></tr> <tr> <td><input type="checkbox"/> Vehicle & Equipment Cleaning</td><td>---</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td><td>---</td></tr> <tr> <td><input type="checkbox"/> Food Preparation or Service</td><td>---</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td><td>---</td></tr> <tr> <td colspan="7">Distributed Features</td></tr> <tr> <td><input type="checkbox"/> Storm drain inlets & catch basins</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td><td><input type="checkbox"/></td></tr> <tr> <td><input type="checkbox"/> Interior floor drains and sumps</td><td><input type="checkbox"/></td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td></tr> <tr> <td><input type="checkbox"/> Drain lines (air conditioning, etc.)</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td><td>---</td><td>---</td><td>---</td></tr> <tr> <td><input type="checkbox"/> Fire test sprinkler discharges</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td>---</td><td>---</td><td>---</td><td>---</td></tr> </tbody> </table>	Plumb to sanitary sewer	Drain feature to a pervious area	Provide containment for spills and discharges	Prevent contact with rainfall	Isolate flows from adjacent areas	Prevent wind dispersal	Label with stencils or signs	Common Source Areas							<input type="checkbox"/> Trash & Refuse Storage	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	---	<input type="checkbox"/> Materials & Equipment Storage	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	---	<input type="checkbox"/> Loading & Unloading	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	---	---	<input type="checkbox"/> Fueling	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	---	---	<input type="checkbox"/> Maintenance & Repair	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	---	---	<input type="checkbox"/> Vehicle & Equipment Cleaning	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	---	---	<input type="checkbox"/> Food Preparation or Service	---	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	---	---	Distributed Features							<input type="checkbox"/> Storm drain inlets & catch basins	---	---	---	---	---	<input type="checkbox"/>	<input type="checkbox"/> Interior floor drains and sumps	<input type="checkbox"/>	---	---	---	---	---	<input type="checkbox"/> Drain lines (air conditioning, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	---	---	---	---	<input type="checkbox"/> Fire test sprinkler discharges	<input type="checkbox"/>	<input type="checkbox"/>	---	---	---	---
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Provide the following in Table 4: (1) justification of any source area or feature with NO BMPs selected, (2) justification of individual unselected BMPs *if requested by County staff*, and (3) identification of any proposed pollutant-generating sources and BMPs not listed here.

Note: Pollutant-generating sources and features may not discharge directly to the MS4. Discharging to any of the stormwater BMPs identified in Table 5 Part B is also discouraged. If doing so, however, the source or feature area must be included in applicable DCV calculations.

Table 4 – Explanations and Justifications for Table 2 and 3 Baseline BMPs

<input type="checkbox"/> Check here if no explanations or justifications for Table 2 or 3 BMPs are required.		
<ul style="list-style-type: none"> • Required Justifications: If NO BMPs are selected for a source or feature, justify why <u>all</u> BMPs are either not applicable or are infeasible. For Group 2 features NO BMPs means not selecting either SD-B or SD-D. • If Requested: Justify why individual BMPs will not be implemented or will only be partially implemented. • Additional Explanation: Describe any proposed features and/or BMPs not listed in Tables 2 or 3. 		
BMP-Feature Combination		Explanation
Feature	Streets & Roads	The northern portion of the access road is required to also function as a conveyance for stormwater. There are no opportunities to disperse runoff generated by the road to pervious area prior to leaving the site.
BMP	N/A	
Feature	Feature	Explanation
BMP		
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	

Table 5: DMA Structural Compliance Strategies and Documentation

Part A – Selection and Application Structural Performance Standards							
1. Selection of Standards (select one; see BMPDM Section 6.1) <input checked="" type="checkbox"/> a. Pollutant control + hydromodification <input type="checkbox"/> b. Pollutant control only (project is exempt from hydromodification requirements)							
2. Application of Structural Performance Standards (select one; see BMPDM Section 1.7) <input type="checkbox"/> New Development Projects: Standards apply to <u>all impervious surfaces</u> . <input checked="" type="checkbox"/> Redevelopment Projects: Complete the calculations below. Select <u>the</u> applicable scenario based on the results.							
a. Existing impervious area (ft²) <div style="border: 1px solid black; padding: 2px; width: 100%;">46,790</div>		b. Impervious area created / replaced (ft²) <div style="border: 1px solid black; padding: 2px; width: 100%;">17,216</div>		c. % Impervious created / replaced [(b/a)*100] <div style="border: 1px solid black; padding: 2px; width: 100%;">36.8%</div>			
<input type="checkbox"/> <i>Scenario 1: c is 50% or more:</i> Performance standards apply to all impervious surfaces (a + b). <input checked="" type="checkbox"/> <i>Scenario 2: c is less than 50%:</i> Performance standards apply only to created or replaced impervious surfaces (b only).							
Part B – Compliance Strategies and Required Attachments							
1. Complete and submit each of the applicable attachments on the right.	Att. 1	Att. 2	Att. 3	Att. 4	Att. 5		
	Storm Water Intake Form <input checked="" type="checkbox"/>	DMA Exhibits and Construction Plan Sheets <input checked="" type="checkbox"/>	Source Control BMP Worksheet (see Table 3) <input checked="" type="checkbox"/>	Previous SWQMP Submittals (see Table 1) <input checked="" type="checkbox"/>	Existing Site and Drainage Description <input checked="" type="checkbox"/>		
2. Indicate each compliance strategy below that will be used for one or more DMAs on the site. <input checked="" type="checkbox"/> Self-mitigating DMAs (BMPDM Section 5.2.1) <input type="checkbox"/> De Minimis DMAs (BMPDM Section 5.2.2) <input checked="" type="checkbox"/> Self-retaining DMAs (BMPDM Section 5.2.3) Structural BMPs (select all that apply) <input type="checkbox"/> Pollutant Control BMPs (BMPDM Section 5.4) <input type="checkbox"/> Hydromodification BMPs (BMPDM Chapter 6) <input type="checkbox"/> Alternative Compliance Project (BMPDM Section 1.8)	Att. 6	Att. 7	Att. 8	Att. 9	Att. 10	Att. 11	Att. 12
	DMAs without Structural BMPs	DMAs w/ Structural Pollutant Control BMPs	DMAs w/ Structural Hydromod. BMPs	Critical Coarse Sediment Yield Areas	Installation Verification Form	Maintenance Agreements/ Plans	Alternative Compliance Projects
	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			
	<input type="checkbox"/>			<input type="checkbox"/>			
	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- Attachments 1, 2, and 5 are required for all projects.

Table 6: Critical Coarse Sediment Yield Area (CCSYA) Requirements

<ul style="list-style-type: none">○ Identify one applicable compliance pathway for the PDP below.○ Document your selection in Attachment 9.
A. Hydromodification Management Exemption (BMPDM Sections 1.6 and 6.1)
<p><input type="checkbox"/> PDP is Exempt from Hydromodification Management Requirements</p> <p>Select if hydromodification management exemption was selected in Table 4 Part A.1.</p>
B. Watershed Management Area (WMAA) Mapping (BMPDM Appendix H.1.1.2)
<p><input checked="" type="checkbox"/> WMAA mapping demonstrates the following:</p> <ul style="list-style-type: none">a. <5% of potential onsite CCYSAs will be impacted (built on or obstructed)b. All potential upstream offsite CCYSAs will be bypassed
C. Resource Protection Ordinance (RPO) Methods (BMPDM Appendix H.1.1.1)
<p><input type="checkbox"/> RPO Scenario 1: PDP is subject to and in compliance with RPO requirements</p> <ul style="list-style-type: none">a. Project requires one or more discretionary permits (RPO applicability is confirmed during discretionary review)b. Onsite AND upstream offsite CCSYAs will be avoided and/or bypassed <p><input type="checkbox"/> RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements²</p> <ul style="list-style-type: none">a. Project does not require discretionary permitsb. Project will bypass all upstream offsite CCSYAs (no requirements for onsite CCSYAs)
D. No Net Impact Analysis (BMPDM Appendix H.4)
<p><input type="checkbox"/> Project demonstrates no net impact to receiving waters</p>

² Does not include PDPs utilizing exemption(s) via RPO Section 86.604(e)(2)(cc) or 86.604(e)(3).

Table 7 – Minimum Construction Stormwater BMPs

Minimum Required BMPs by Activity Type		References	
Select all applicable activities and at least one BMP for each		Caltrans ³	County of San Diego
<input checked="" type="checkbox"/> Erosion Control for Disturbed Slopes (choose at least 1 per season)			
<input type="checkbox"/> Vegetation Stabilization Planting ⁴ (Summer)	SS-2, SS-4		
<input checked="" type="checkbox"/> Hydraulic Stabilization Hydroseeding ⁹ (Summer)	SS-4		
<input checked="" type="checkbox"/> Bonded Fiber Matrix or Stabilized Fiber Matrix ⁵ (Winter)	SS-3		
<input type="checkbox"/> Physical Stabilization Erosion Control Blanket ⁷ (Winter)	SS-7		
<input checked="" type="checkbox"/> Erosion control for disturbed flat areas (slope < 5%)			
<input checked="" type="checkbox"/> County Standard Lot Perimeter Protection Detail	SC-2		PDS 659 ⁶
<input type="checkbox"/> Use of Item A erosion control measures on flat areas	SS-3, SS-4, SS-7		
<input type="checkbox"/> County Standard Desilting Basin (must treat all site runoff)	SC-2		PDS 660 ⁷
<input type="checkbox"/> Mulch, straw, wood chips, soil application	SS-6, SS-8		
<input checked="" type="checkbox"/> Energy dissipation (required to control velocity for concentrated runoff or dewatering discharge)			
<input checked="" type="checkbox"/> Energy Dissipater Outlet Protection	SS-10		RSD D-40 ⁸
<input checked="" type="checkbox"/> Sediment control for all disturbed areas			
<input checked="" type="checkbox"/> Silt Fence	SC-1		
<input checked="" type="checkbox"/> Fiber Rolls (Straw Wattles)	SC-5		
<input checked="" type="checkbox"/> Gravel & Sand Bags	SC-6, SC-8		
<input type="checkbox"/> Dewatering Filtration	NS-2		
<input checked="" type="checkbox"/> Storm Drain Inlet Protection	SC-10		
<input type="checkbox"/> Engineered Desilting Basin (sized for 10-year flow)	SC-2		
<input checked="" type="checkbox"/> Preventing offsite tracking of sediment			
<input checked="" type="checkbox"/> Stabilized Construction Entrance	TC-1		
<input type="checkbox"/> Construction Road Stabilization	TC-2		
<input type="checkbox"/> Entrance/Exit Tire Wash	TC-3		
<input type="checkbox"/> Entrance/Exit Inspection & Cleaning Facility	TC-1		
<input checked="" type="checkbox"/> Street Sweeping and Vacuuming	SC-7		
<input checked="" type="checkbox"/> Materials Management			
<input checked="" type="checkbox"/> Material Delivery & Storage	WM-1		
<input checked="" type="checkbox"/> Spill Prevention and Control	WM-4		
<input checked="" type="checkbox"/> Waste Management⁹			
<input type="checkbox"/> Waste Management Concrete Waste Management	WM-8		
<input type="checkbox"/> Solid Waste Management	WM-5		
<input checked="" type="checkbox"/> Sanitary Waste Management	WM-9		
<input type="checkbox"/> Hazardous Waste Management	WM-6		

³ See Caltrans 2017 Storm Water Quality Handbooks, Construction Site BMP Manual, available at: (<http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm>)

⁴ Planting or Hydroseeding may be installed between May 1st and August 15th. Slope irrigation must be in place and operable for slopes >3 feet. Vegetation must be watered and established prior to October 1st. A contingency physical BMP must be implemented by August 15th if vegetation is not established by that date. If landscaping is proposed, erosion control measures must also be used while landscaping is being established. Established vegetation must have a subsurface mat of intertwined mature roots with a uniform vegetative coverage of 70 percent of the natural vegetative coverage or more on all disturbed areas.

⁵ All slopes over three feet must have established vegetative cover prior to final permit approval.

⁶ County PDS 659. Standard Lot Perimeter Protection Design System (Bldg. Division)

⁷ County PDS 660. County Standard Desilting Basin for Disturbed Areas of 1 Acre or Less Bldg. Division

⁸ Regional Standard Drawing D-40 – Rip Rap Energy Dissipater (also acceptable for velocity reduction)

⁹ Applicants are responsible to apply appropriate BMPs for specific wastes (e.g., BMP WM-8 for concrete).

Table 8 – Explanations and Justifications for Construction Phase BMPs

<input checked="" type="checkbox"/> Check here if no explanations or justifications for Table 7 BMPs are required.		
Justifications for Table 7 Temporary Construction Phase BMPs <ul style="list-style-type: none"> • Required Justifications: Justify all construction activity types for which NO BMPs were selected. • If Requested: Justify why specific individual BMPs were not selected. • Additional Explanation: Describe any proposed features and/or BMPs not listed in Table 7. 		
Activity Type / BMP		Explanation
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	

ATTACHMENT #1



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 1: Storm Water Intake Form for All Permit Applications

This form establishes Stormwater Quality Management Plan (SWQMP) requirements for Development Projects per Sections 67.809 and 67.811 of the County of San Diego Watershed Protection Ordinance (WPO). See **Storm Water Intake Form Instructions** for additional guidance and explanation of terms.

Part 1. Project Information			
Project Name:	Hurrell Subdivision Lakeside		
Record ID (Permit) No(s):	PDS-2020-TPM-21279		
Assessor's Parcel No(s):	12392 Lakeside Ave, Lakeside, CA 92040		
Street Address (or Intersection):	12392 Lakeside Avenue		
City, State, Zip:	Lakeside, CA 92040		
Part 2. Applicant / Project Proponent Information			
Name:	Patric de Boer		
Company:	Omega Consultants		
Street Address:	4340 Viewridge Ave		
City, State, Zip:	San Diego, CA 92123		
Phone Number:	858-634-8620		
Email:	Patric@omega-consultants.com		
Part 3. Required Information for All Development Projects			
(A)	1. Existing (pre-development) impervious surfaces (ft²)	2. Created or replaced impervious surfaces (ft²)	3. Total disturbed area (acres or ft²)
	46,790	17,216	2.89 ac
(B)	<input checked="" type="checkbox"/> Check here and provide a WDID# if this project is subject to the California Construction General Permit (Order No. 2009-0009-DWQ) ¹⁰		WDID # (if issued)

For County Use Only	Reviewed By:	Review Date:
<input type="checkbox"/> Standard SWQMP	<input type="checkbox"/> PDP SWQMP	<input type="checkbox"/> Green Streets PDP Exemption SWQMP

¹⁰ Available at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html

ATTACHMENT #2



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 2: DMA Exhibits and Construction Plans

Part 4. Priority Classification & SWQMP Form Selection

(A) If your project is the following ... (select one)

(B) You must complete ...

☐ **Standard Project**

→ Standard SWQMP Form

- ☐ a. Project is East of the Pacific/Salton Sea Divide
☐ b. None of the PDP criteria below applies

☒ **Priority Development Project (PDP)**

→ PDP SWQMP Form

- ☐ 1. Project is part of an existing PDP, OR
☐ 2. Project does any of the following:
☒ a. Creates or replaces a total of 10,000 ft² or more of impervious surface
☒ b. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) parking lots; (2) streets, roads, highways, freeways, and/or driveways; (3) restaurants; and (4) hillsides
☐ c. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) automotive repair shops; and (2) retail gasoline outlets
☐ d. Discharges directly to an Environmentally Sensitive Area (ESA) AND creates or replaces 2,500 ft² or more of impervious surface
☐ e. Disturbs one or more acres of land (43,560 ft²) and is expected to generate pollutants post-construction
☐ f. Is a redevelopment project that creates or replaces 5,000 ft² or more of impervious surface on a site already having at least 10,000 ft² of impervious surface

☐ **Green Streets PDP Exemption¹¹**

**→ Green Streets PDP
Exemption SWQMP Form**

Part 5. Applicant Signature

I have reviewed the information in this form, and it is true and correct to the best of my knowledge.

Applicant / Project Proponent Signature: 

Date: 12/4/2020

- **Upon completion** submit this form to the County.
- **If requested**, attach supporting documentation to justify selections made or exemptions claimed.
- **If this is a PDP that is part of a larger existing PDP**, you will be required to attach a copy of the existing SWQMP to the newer SWQMP submittal.

¹¹ **Green Streets PDP Exemption Projects** are those claiming exemption from PDP classification per WPO Section 67.811(b)(2) because they consist exclusively of *either* 1) development of new sidewalks, bike lanes, and/or trails; *or* 2) improvements to existing roads, sidewalks, bike lanes, and/or trails.



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 2: DMA Exhibits and Construction Plans

2.0 General Requirements

- Attachment 2 consolidates exhibits and plans required for the entire project.
- Complete the table below to indicate which sub-attachments are included with the submittal. Sub-attachments that are not applicable can be excluded from the submittal.
- Unless otherwise stated, features and BMPs identified and described in each corresponding Attachment (6 through 9) must be shown on applicable DMA Exhibits and construction plans submitted for the project.

Sub-attachments	Requirement
<input checked="" type="checkbox"/> 2.1: DMA Exhibits	All PDPs
<input type="checkbox"/> 2.2: Individual Structural BMP DMA Mapbook	PDPs with structural BMPs
<input checked="" type="checkbox"/> 2.3: Construction Plan Sets	All projects

2.1 DMA Exhibits

- DMA Exhibits must show all DMAs on the project site. Exhibits must include all applicable features identified in applicable SWQMP attachments.
- Exhibits may be prepared individually for the BMPs associated with each applicable SWQMP Attachment (6, 7, 8, and/or 9) or combined into one or more consolidated exhibits.
- Use this checklist to ensure required information is included on each exhibit (copy as needed).

DMA Exhibit ID #: Attachment 1c	
A. Features required for all exhibits	
1. Existing Site Features	
<input checked="" type="checkbox"/> Underlying hydrologic soil group (A, B, C, D)	<input checked="" type="checkbox"/> Topography and impervious areas
<input checked="" type="checkbox"/> Approximate depth to groundwater	<input checked="" type="checkbox"/> Existing drainage network, directions, and offsite connections
<input checked="" type="checkbox"/> Natural hydrologic features	
2. Drainage Management Area (DMA) Information	
<input checked="" type="checkbox"/> Proposed drainage network, directions, and offsite connections	<input checked="" type="checkbox"/> DMA boundaries, ID numbers, areas, and type (structural BMP, de minimis, etc.)
3. Proposed Site Changes, Features, and BMPs	
<input checked="" type="checkbox"/> Proposed demolition and grading	<input type="checkbox"/> Construction BMPs ¹³
<input checked="" type="checkbox"/> Group 1, 2, and 3 Features ¹²	<input checked="" type="checkbox"/> Baseline source control BMPs
<input checked="" type="checkbox"/> Group 4 Features	<input checked="" type="checkbox"/> Baseline source control BMPs
B. Proposed Features and BMPs Specific to Individual SWQMP Attachments¹⁴	
<input checked="" type="checkbox"/> Attachment 6	<input type="checkbox"/> SSD-BMP impervious dispersion areas
	<input checked="" type="checkbox"/> SSD-BMP tree wells
<input type="checkbox"/> Attachment 7	<input type="checkbox"/> Structural pollutant control BMPs
<input type="checkbox"/> Attachment 8	<input type="checkbox"/> Structural hydromodification management BMPs
	<input type="checkbox"/> Point(s) of Compliance (POC) for hydromodification management
	<input type="checkbox"/> Proposed drainage boundary and drainage area to each POC
<input checked="" type="checkbox"/> Attachment 9	<input checked="" type="checkbox"/> Onsite CCSYAs
	<input checked="" type="checkbox"/> Bypass of onsite CCSYAs
	<input checked="" type="checkbox"/> Bypass of upstream offsite CCSYAs

¹² Group 1-4 features and baseline BMPs from PDP SWQMP Tables 2 and 3.

¹³ Minimum Construction Stormwater BMPs from PDP SWQMP Table 7.

¹⁴ Identify the location, ID numbers, type, and size/detail of BMPs.

HURRELL SUBDIVISION
DMA / BMP MAP

TPM 21279

PDS2020-TPM-21279

LEGEND:

DMA BOUNDARY	---
DRAINAGE ARROWS	→
DRAINAGE MANAGEMENT AREA	DMA-1
POINT OF COMPLIANCE	POC-#
IMPERVIOUS AREA	[Pattern]
PERVIOUS AREA	[Pattern]
PERVIOUS PAVERS AREA	[Pattern]
EQUIVALENT TREATMENT IMPERVIOUS AREA*	[Pattern]
TREE WELL W/ 9' MATURE CANOPY WITH CF OF AMENDED SOIL	[Symbol]
BROW DITCH	→
POTENTIAL CRITICAL COURSE SEDIMENT YIELD AREA	[Pattern]

*NOTE- EQUIVALENT TREATMENT IMPERVIOUS AREA IS A 1,400 SF STRIP OF EXISTING PAVEMENT THAT IS NOT REQUIRED TO BE TREATED AS PART OF THIS PROJECT. HOWEVER, IT IS BEING ACCEPTED FOR TREATMENT TO OFFSET 1,400 SF OF NEW IMPERVIOUS PAVEMENT THAT IS BEING CONSTRUCTED DOWNHILL AND OFFSITE OF THE PROJECT SITE.

GENERAL NOTES

- UNDERLYING NRCS HYDROLOGIC SOIL GROUP FOR SITE IS TYPE D
- GROUNDWATER DEPTH IS ASSUMED GREATER THAN 20 FEET. GROUNDWATER DEPTH TO BE CONFIRMED BY BORING DATA IN FUTURE SUBMITTALS

SELF-MITIGATING DMA NOTES

- SELF-MITIGATING DMAs MUST INCLUDE ALL OF THE FOLLOWING:
- VEGETATION IN THE NATURAL OR LANDSCAPED AREA IS NATIVE AND/OR NON-NATIVE/NON-INVASIVE DROUGHT TOLERANT SPECIES THAT DO NOT REQUIRE REGULAR APPLICATION OF FERTILIZERS AND PESTICIDES.
 - SOILS ARE UNDISTURBED NATIVE TOPSOIL, OR DISTURBED SOILS THAT HAVE BEEN AMENDED AND AERATED TO PROMOTE WATER RETENTION CHARACTERISTICS EQUIVALENT TO UNDISTURBED NATIVE TOPSOIL.
 - THE INCIDENTAL IMPERVIOUS AREAS ARE LESS THAN 5 PERCENT OF THE SELF-MITIGATING AREA.
 - IMPERVIOUS AREA WITHIN THE SELF-MITIGATED AREA SHOULD NOT BE HYDRAULICALLY CONNECTED TO OTHER IMPERVIOUS AREAS UNLESS IT IS A STORM WATER CONVEYANCE SYSTEM (SUCH AS BROW DITCHES).
 - THE SELF-MITIGATING AREA IS HYDRAULICALLY SEPARATE FROM DMAs THAT CONTAIN PERMANENT STORM WATER POLLUTANT CONTROL BMPs.

DMA DATA TABLE						
DMA-NO.	TOT. AREA	IMPERVIOUS AREA	IMPERVIOUS %	DCV	TYPE/TREATED BY	
DMA-1	34,264 SF	0 SF	0%	143 CF	SELF MITIGATING	
DMA-2	13,399 SF	3,493 SF	26.1%	502 CF	SELF RETAINING	
DMA-3	7,067 SF	2,270 SF	32.1%	307 CF	SELF RETAINING	
DMA-4	23,025 SF	11,453 SF	49.7%	1,391 CF	SELF RETAINING*	
DMA-5	21,663 SF	0 SF	0%	155 CF	SELF MITIGATING	

*NOTE- DMA 4 INCLUDES AN ADDITIONAL 1,400 SF OF IMPERVIOUS AREA THAT IS OUTSIDE THE PROJECT DISTURBED AREA. THIS IS INTENDED TO OFFSET THE 1,400 SF OF ROAD WIDENING THAT OCCURS DOWNHILL AND OFFSITE OF THE PROJECT SITE.

TREE-WELL DATA TABLE						
TRIBUTARY BASIN	TREATMENT DCV	# OF TREES	CANOPY DIAMETER	AMENDED SOIL DEPTH	AMENDED SOIL AREA*	DCV REDUCTION
DMA-2	502 CF	2	24 FT	2.5 FT	362 SF	536 CF
DMA-3	307 CF	1	26 FT	2.5 FT	425 SF	316 CF
DMA-4	1,391 CF	21	13 FT	2.5 FT	2,230 SF	1,391 CF

*NOTE- FOR DMA -2, 3 AND 4, A DCV MULTIPLIER OF 2.9 WAS APPLIED TO THE 85TH PERCENTILE DEPTH IN THE SIZING CALCULATIONS ON WORKSHEET B.1-1 THIS CORRESPONDS WITH A SOIL DEPTH OF 2.5 FT AND TYPE 'D' SOIL. REQUIRED SOIL AREA IS DETERMINED BY MULTIPLYING THE SUM OF THE CANOPY AREA BY 2 AND THEN DIVIDING BY THE SOIL DEPTH.

APPLICABLE SITE DESIGN BMP NOTES	
SITE DESIGN BMP	SOURCE CONTROL REQUIREMENT
4.3.1	MAINTAIN NATURAL DRAINAGE PATHWAYS & HYDROLOGIC FEATURES
4.3.2	CONSERVE NATURAL AREAS, SOILS, AND VEGETATION
4.3.3	MINIMIZE IMPERVIOUS AREA
4.3.4	MINIMIZE SOIL COMPACTION

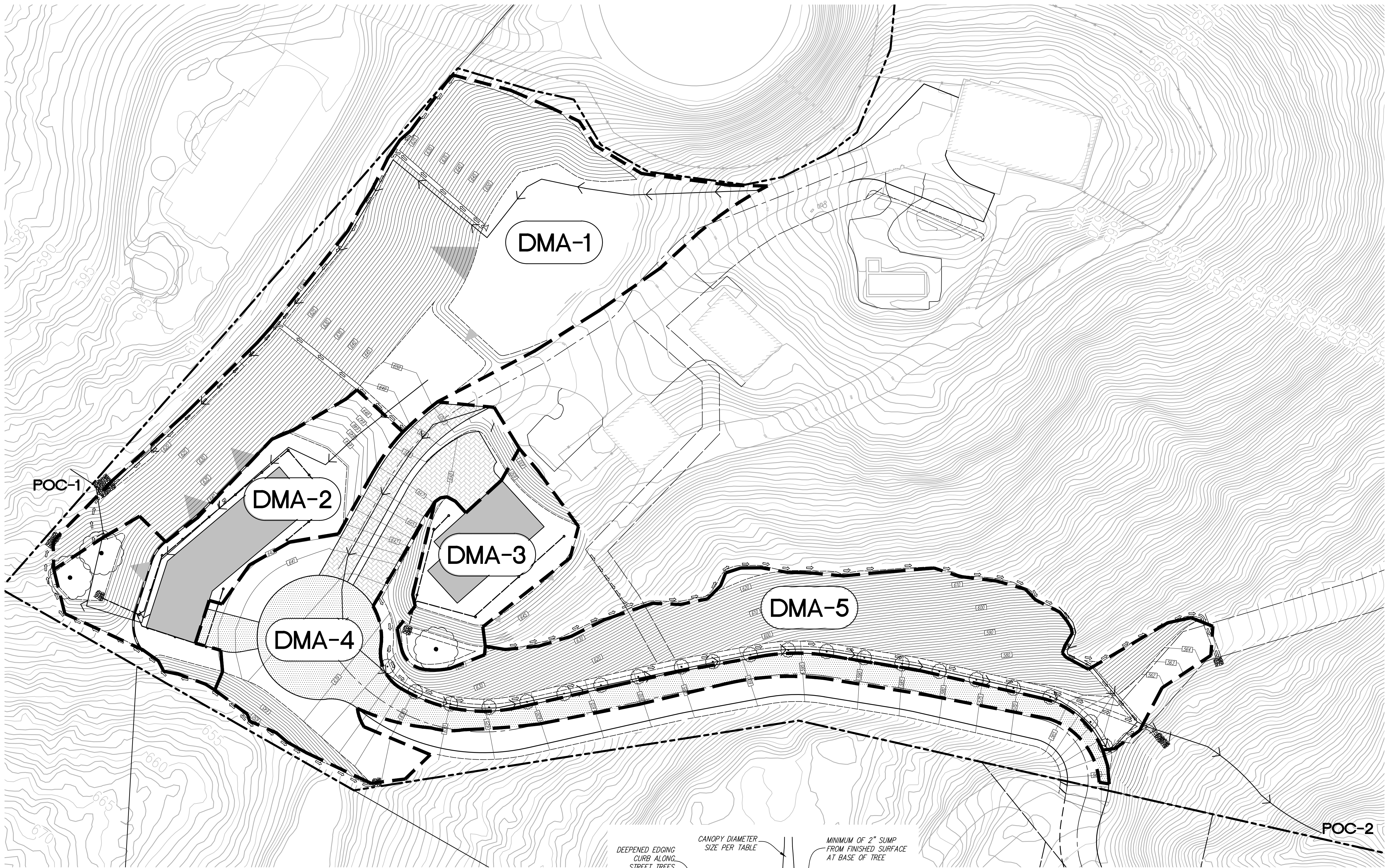
SHEET 4 OF 4 SHEETS

ENGINEER OF WORK:



Andrew J. Kann
ANDREW J. KANN R.C.E. 50940

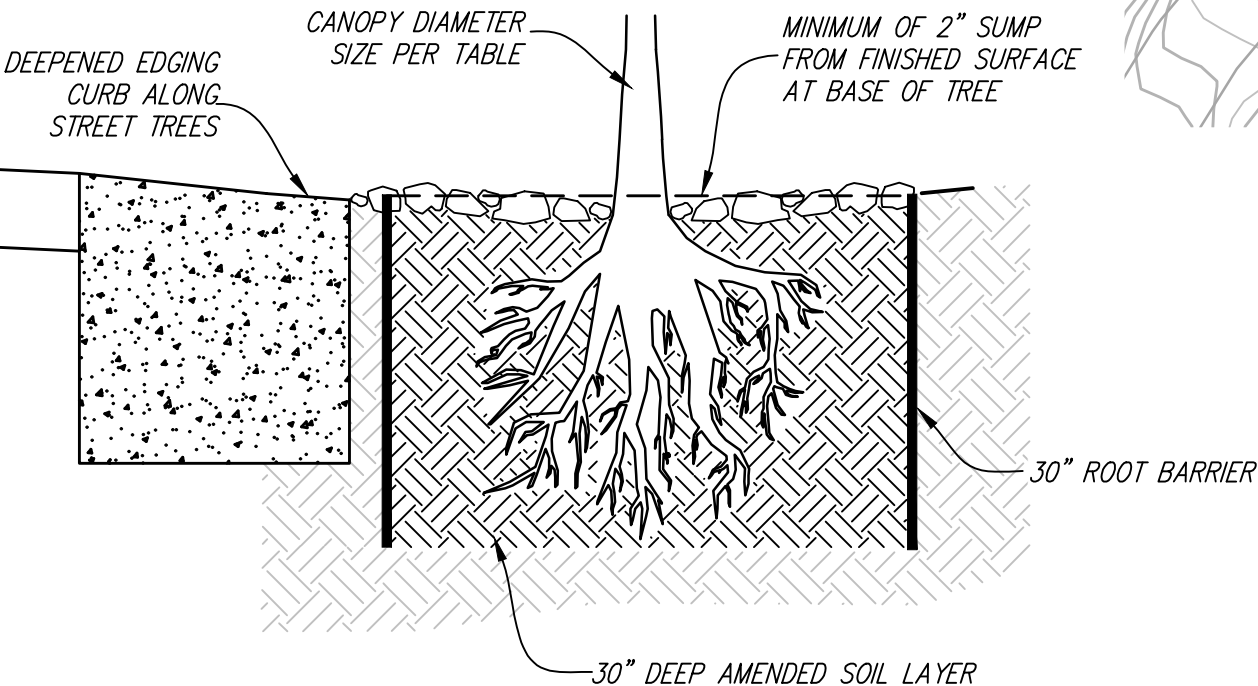
2/15/2022
DATE



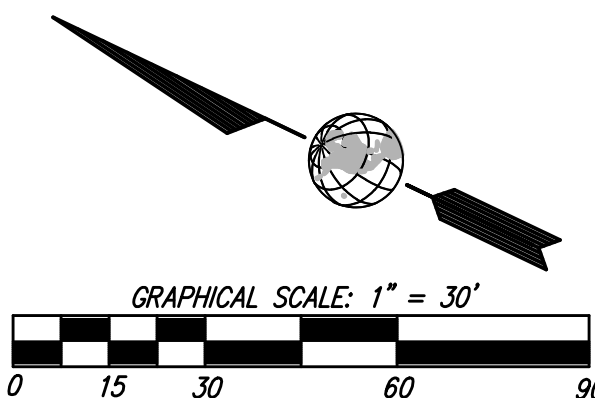
SOURCE CONTROL BMP NOTES

- FINAL LANDSCAPING PLANS DO THE FOLLOWING:
- PRESERVE EXISTING DROUGHT TOLERANT TREES, SHRUBS, AND GROUND COVER TO THE MAXIMUM EXTENT POSSIBLE.
 - DESIGN LANDSCAPING TO MINIMIZE IRRIGATION AND RUNOFF TO PROMOTE SURFACE INFILTRATION WHERE APPROPRIATE, AND TO MINIMIZE THE USE OF FERTILIZERS AND PESTICIDES THAT CAN CONTRIBUTE TO STORM WATER POLLUTION.
 - WHERE LANDSCAPED AREAS ARE USED TO RETAIN AND DETAIN STORM WATER, SPECIFY PLANTS THAT ARE TOLERANT OF PERIODIC SATURATED SOIL CONDITIONS.
 - CONSIDER USING PEST-RESISTANT PLANTS, ESPECIALLY ADJACENT TO HARDSCAPE.
 - TO ENSURE SUCCESSFUL ESTABLISHMENT, SELECT PLANTS APPROPRIATE TO SITE SOILS, SLOPES, CLIMATE, SUN WIND, RAIN, AND LANDUSE.

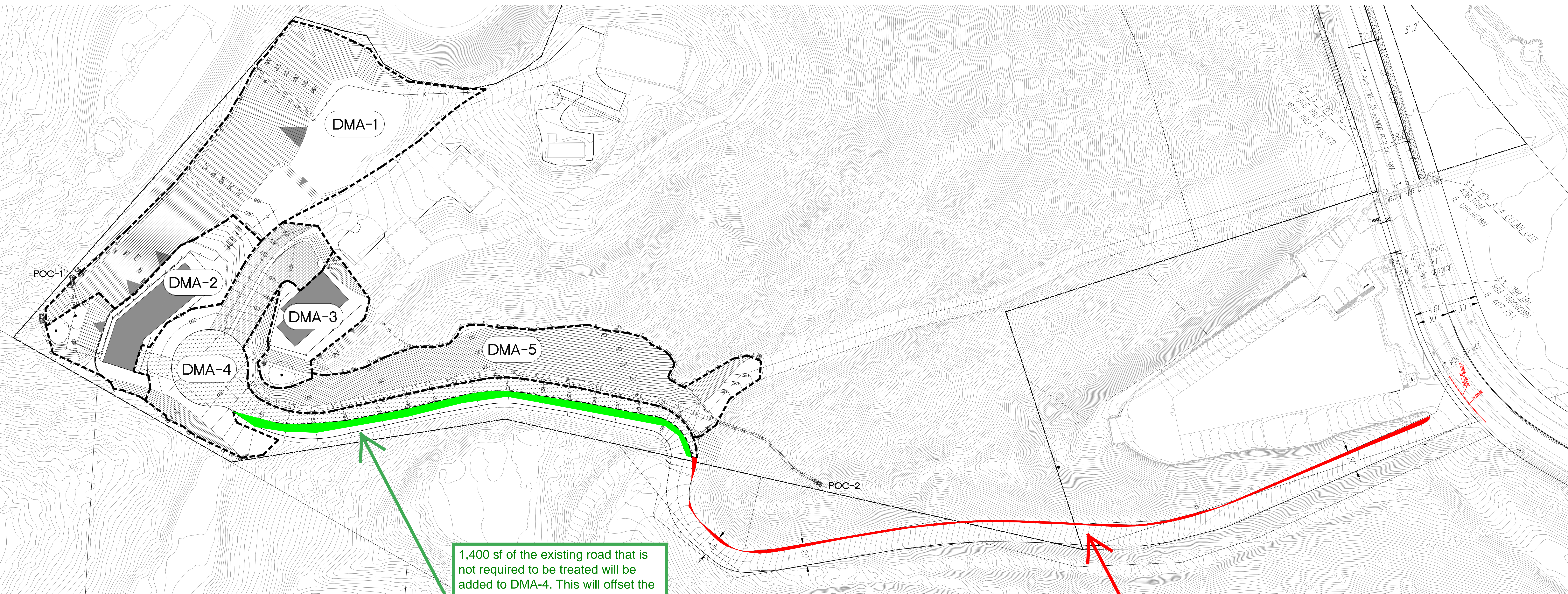
FIRE SPRINKLER TEST WATER SHALL BE DRAINED TO SEWER CLEANOUT TO BE ACCEPTED BY THE ONSITE SEPTIC SYSTEM, OR COLLECTED AND TRUCKED OFFSITE FOR DISPOSAL.



STREET TREE DETAIL
NOT TO SCALE



Equivalent Treatment Area Map



1,400 sf of the existing road that is not required to be treated will be added to DMA-4. This will offset the offsite area that cannot be treated.

The private access road that is downhill and offsite, will be widened as part of the project. This 1,400 sf area cannot be treated onsite. An equivalent area will be added to the onsite DMA-4.

2.2 Individual Structural BMP DMA Mapbook

- Use this page as a cover sheet for the Structural DMA Mapbook.
 - An individual Structural DMA Mapbook must be submitted for any project site with one or more structural BMPs. One Mapbook is required for each unique subsequent owner with responsibility for maintenance of a Structural BMP. Mapbook exhibits will be incorporated as exhibits in Stormwater Maintenance Agreements (SWMAs) and Maintenance Notifications (MNs). See Attachment 11 for additional information on maintenance agreements. If the Mapbook has been provided for each subsequent owner in Attachment 11, they are not required here.
 - Place each map on 8.5"x11" paper.
 - Show at a minimum the DMA, Structural BMP, Assessor's parcel boundaries with parcel numbers, and any existing hydrologic features within the DMA.
- ☐ All Mapbooks are attached
- ☐ All Mapbooks are in Attachment 11

2.3 Construction Plan Sets

- DMAs, features, and BMPs identified and described in this attachment must also be shown on all applicable construction and landscape plans.
- As applicable, plan sheets must identify:
 - All features and BMPs identified in Sub-attachment 2.1 (DMA Exhibits).
 - The additional information listed below.
- Use this checklist to ensure required information is included on each plan (copy as needed).

Plan Type	Preliminary Grading Plan
Required Information¹⁵	
<input type="checkbox"/> Structural BMP(s) and Significant Site Design BMPs (if applicable) with ID numbers.	
<input checked="" type="checkbox"/> The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit.	
<input type="checkbox"/> Details and specifications for construction of Structural BMP(s) and Significant Site Design BMPs (if applicable).	
<input type="checkbox"/> Signage indicating the location and boundary of structural BMP(s) as required by County staff.	
<input type="checkbox"/> How to access the structural BMP(s) to inspect and perform maintenance.	
<input type="checkbox"/> 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).	
<input type="checkbox"/> 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).	
<input type="checkbox"/> Recommended equipment to perform maintenance.	
<input type="checkbox"/> When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.	
<input type="checkbox"/> Include landscaping plan sheets (if available) showing vegetation requirements for vegetated structural BMP(s).	
<input checked="" type="checkbox"/> All BMPs must be fully dimensioned on the plans.	
<input type="checkbox"/> When proprietary BMPs are used, site-specific cross-section with outflow, inflow, and manufacturer model number must be provided. Photocopies of general brochures are not acceptable.	
<input checked="" type="checkbox"/> Include all source control and site design measures described in the SWQMP.	
<input checked="" type="checkbox"/> Include all construction BMPs described in the SWQMP.	

¹⁵ For Building Permit Applications, refer to Form PDS 272,
<https://www.sandiegocounty.gov/content/dam/sdc/pds/docs/pds272.pdf>

ATTACHMENT #3

If These Sources Will Be on the Project Site ...	... Then Your SWQMP Must Consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> A. Onsite storm drain inlets <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Locations of inlets.	<input type="checkbox"/> Mark all inlets with the words “No Dumping! Flows to Bay” or similar. See stencil template provided in Appendix I-4	<input type="checkbox"/> Maintain and periodically repaint or replace inlet markings. <input type="checkbox"/> Provide storm water pollution prevention information to new site owners, lessees, or operators. <input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks <input type="checkbox"/> Include the following in lease agreements: “Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.”

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> B. Interior floor drains and elevator shaft sump pumps <input checked="" type="checkbox"/> Not Applicable		<input type="checkbox"/> State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.
<input type="checkbox"/> C. Interior parking garages <input checked="" type="checkbox"/> Not Applicable		<input type="checkbox"/> State that parking garage floor drains will be plumbed to the sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.
<input type="checkbox"/> D1. Need for future indoor & structural pest control <input checked="" type="checkbox"/> Not Applicable		<input type="checkbox"/> Note building design features that discourage entry of pests.	<input type="checkbox"/> Provide Integrated Pest Management information to owners, lessees, and operators.

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input checked="" type="checkbox"/> D2. Landscape/ Outdoor Pesticide Use <input type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Show locations of existing trees or areas of shrubs and ground cover to be undisturbed and retained. <input type="checkbox"/> Show self-retaining landscape areas, if any. <input type="checkbox"/> Show storm water treatment facilities.	<p>State that final landscape plans will accomplish all of the following.</p> <input checked="" type="checkbox"/> Preserve existing drought tolerant trees, shrubs, and ground cover to the maximum extent possible. <input type="checkbox"/> Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. <input type="checkbox"/> Where landscaped areas are used to retain or detain storm water, specify plants that are tolerant of periodic saturated soil conditions. <input type="checkbox"/> Consider using pest-resistant plants, especially adjacent to hardscape. <input type="checkbox"/> To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use,	<input type="checkbox"/> Maintain landscaping using minimum or no pesticides. <input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks <input type="checkbox"/> Provide IPM information to new owners, lessees and operators.

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> E. Pools, spas, ponds, decorative fountains, and other water features. <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	<input type="checkbox"/> If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	<input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-72, “Fountain and Pool Maintenance,” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks
<input type="checkbox"/> F. Food service <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. <input type="checkbox"/> On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	<input type="checkbox"/> Describe the location and features of the designated cleaning area. <input type="checkbox"/> Describe the items to be cleaned in this facility and how it has been sized to ensure that the largest items can be accommodated.	

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> G. Refuse areas <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. <input type="checkbox"/> If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. Also show how the designated area will be protected from wind dispersal. <input type="checkbox"/> Any drains from dumpsters, compactors, and tallow bin areas must be connected to a grease removal device before discharge to sanitary sewer.	<input type="checkbox"/> State how site refuse will be handled and provide supporting detail to what is shown on plans. <input type="checkbox"/> State that signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.	<input type="checkbox"/> State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative Table and Narrative
<input type="checkbox"/> H. Industrial processes. <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Show process area.	<input type="checkbox"/> If industrial processes are to be located onsite, state: “All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.”	<input type="checkbox"/> See Fact Sheet SC-10, “Non-Storm Water Discharges” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks
<input type="checkbox"/> I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.) <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or runoff from area and protected from wind dispersal. <input type="checkbox"/> Storage of non-hazardous liquids must be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. <input type="checkbox"/> Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	<input type="checkbox"/> Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for: <ul style="list-style-type: none"> ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release Prevention Program ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank 	<input type="checkbox"/> See the Fact Sheets SC-31, “Outdoor Liquid Container Storage” and SC-33, “Outdoor Storage of Raw Materials” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> J. Vehicle and Equipment Cleaning <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Show on drawings as appropriate: <ul style="list-style-type: none"> (1) Commercial/industrial facilities having vehicle /equipment cleaning needs must either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes must have a paved, bermed, and covered car wash area (unless car washing is prohibited onsite and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment must be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities must be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility must discharge to the sanitary sewer, or a wastewater reclamation system must be installed. 	<input type="checkbox"/> If a car wash area is not provided, describe measures taken to discourage onsite car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): <ul style="list-style-type: none"> <input type="checkbox"/> Washwater from vehicle and equipment washing operations must not be discharged to the storm drain system. <input type="checkbox"/> Car dealerships and similar may rinse cars with water only. <input type="checkbox"/> See Fact Sheet SC-21, “Vehicle and Equipment Cleaning,” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> K. Vehicle/Equipment Repair and Maintenance <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to protect from rainfall, run-on runoff, and wind dispersal. <input type="checkbox"/> Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains must not be installed within the secondary containment areas. <input type="checkbox"/> Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	<input type="checkbox"/> State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. <input type="checkbox"/> State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. <input type="checkbox"/> State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	<p>In the report, note that all of the following restrictions apply to use the site:</p> <input type="checkbox"/> No person must dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. <input type="checkbox"/> No vehicle fluid removal must be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids must be contained or drained from the vehicle immediately. <input type="checkbox"/> No person must leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> L. Fuel Dispensing Areas <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Fueling areas ² must have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are (1) graded at the minimum slope necessary to prevent ponding; and (2) separated from the rest of the site by a grade break that prevents run-on of storm water to the MEP. <input type="checkbox"/> Fueling areas must be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area ¹ .] The canopy [or cover] must not drain onto the fueling area.		<input type="checkbox"/> The property owner must dry sweep the fueling area routinely. <input type="checkbox"/> See the Business Guide Sheet, “Automotive Service—Service Stations” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks

² The fueling area must be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
M. Loading Docks <input checked="" type="checkbox"/> Not Applicable	<input type="checkbox"/> Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks must be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts must be positioned to direct storm water away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited. <input type="checkbox"/> Loading dock areas draining directly to the sanitary sewer must be equipped with a spill control valve or equivalent device, which must be kept closed during periods of operation. <input type="checkbox"/> Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		<input type="checkbox"/> Move loaded and unloaded items indoors as soon as possible. <input type="checkbox"/> See Fact Sheet SC-30, “Outdoor Loading and Unloading,” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input checked="" type="checkbox"/> N. Fire Sprinkler Test Water <input type="checkbox"/> Not Applicable		<input checked="" type="checkbox"/> Provide a means to drain fire sprinkler test water to the sanitary sewer.	<input checked="" type="checkbox"/> See the note in Fact Sheet SC-41, “Building and Grounds Maintenance,” in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks
<input type="checkbox"/> O. Miscellaneous Drain or Wash Water <input type="checkbox"/> Boiler drain lines <input type="checkbox"/> Condensate drain lines <input type="checkbox"/> Rooftop equipment <input type="checkbox"/> Drainage sumps <input type="checkbox"/> Roofing, gutters, and trim <input checked="" type="checkbox"/> Not Applicable		<input type="checkbox"/> Boiler drain lines must be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. <input type="checkbox"/> Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. <input type="checkbox"/> Rooftop mounted equipment with potential to produce pollutants must be roofed and/or have secondary containment. <input type="checkbox"/> Any drainage sumps onsite must feature a sediment sump to reduce the quantity of sediment in pumped water. <input type="checkbox"/> Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	

If These Sources Will Be on the Project Site ...	... Then Your SWQMP must consider These Source Control BMPs		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on Drawings	3 Permanent Controls—List in Table and Narrative	4 Operational BMPs—Include in Table and Narrative
<input type="checkbox"/> P. Plazas, sidewalks, and parking lots. <input checked="" type="checkbox"/> Not Applicable			<input type="checkbox"/> Plazas, sidewalks, and parking lots must be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing must be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser must be collected and discharged to the sanitary sewer and not discharged to a storm drain.



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 3: Source Control BMP Worksheet

3.0 Cover Sheet and General Requirements

- Standard SWQMP Form Table 2 and PDP SWQMP Form Table 3 require the identification of pollutant-generating sources and associated BMPs for development projects.
- In some cases, County staff may request additional, more detailed documentation of source control BMP design details. If requested, applicants must submit a completed copy of this Source Control BMP Worksheet. This requirement can be satisfied either by submitting a copy of BMPDM Attachment E.1 (Source Control BMP Requirements) or equivalent documentation at the County's discretion.
- Submit this documentation using this cover sheet.
- Sources and BMPs must also be shown as applicable on DMA exhibits and construction plans (see Attachment 2).

ATTACHMENT #5



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 4: Previous SWQMP Submittals

4.0 Cover Sheet

- If this SWQMP implements any requirements of an earlier master SWQMP submittal, a copy of that previous submittal must be attached under cover of this sheet.



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 5: Site and Drainage Description

5.0 General Requirements

- Each Priority Development Project (PDP) must provide a description of existing site conditions and proposed changes to them, including changes to topography and drainage.
- Has a **Drainage Report** has been prepared for the PDP?

☒ **Yes**

- Review of the Drainage Report must be concurrent with the PDP SWQMP.
- Include the summary page of the Drainage Report with this cover page, and provide the following information:

Title: Hurrell Subdivision, Lakeside Drainage Study Prepared By: Omega Engineering Consultants Date: April 30 th 2020
--

- Do not complete the rest of this attachment (also exclude these additional pages from your submittal). Additional documentation of site and drainage conditions is not required unless requested by County staff.

☐ **No** -- Complete and submit the remainder of this attachment below.

Hydrology Analysis Summary Page

Existing Rational Calculation Summary

Basin	Impervious %	C	I ₁₀₀ (in/hr)	Area (ac)	Q ₁₀₀ (cfs)
E-1	19.8	0.46	5.01	2.03	4.66
E-2	15.9	0.44	5.61	2.08	5.10

The total peak runoff flowrate generated by the existing site is 4.66 cfs at the northerly discharge point and 5.10 cfs at the southerly discharge point.

Proposed Rational Calculation Summary

Basin	Impervious %	C	I ₁₀₀ (in/hr)	Area (ac)	Q ₁₀₀ (cfs)
P-1	69.9%	0.73	5.43	0.42	1.67
P-2	0.0%	0.35	4.41	0.76	1.18
P-3	24.4%	0.49	5.62	0.32	0.88
P-4	0.0%	0.35	5.42	0.24	0.46
P-5	10.1%	0.41	5.28	1.20	2.57
P-6	0.0%	0.35	3.58	0.49	0.62
P-7	54.3%	0.65	5.09	0.67	2.22

The total peak runoff flowrate generated by the proposed site is 3.83 cfs at the northerly discharge point and 5.00 cfs at the southerly discharge point.

Results & Conclusions

The redevelopment of the project site will modify the onsite drainage patterns, but the discharge point locations will remain unchanged. The proposed improvements result in a decrease of 0.83 cfs at the northerly drainage point and a decrease in 0.10 cfs at the southerly discharge point.

See full Drainage Report for specifics.

ATTACHMENT #6



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 6: Documentation of DMAs without Structural BMPs

6.0 General Requirements

- Use this attachment to document all proposed (1) self-mitigating, (2) de minimis, and (3) self-retaining DMAs. Indicate under “DMA Compliance Option” below which design options will be used to satisfy structural performance requirements for one or more DMA.

DMA Compliance Option	Required Sub-attachments	BMPDM Design Resources
<input checked="" type="checkbox"/> Self-mitigating	<ul style="list-style-type: none">Sub-attachment 6.1	<ul style="list-style-type: none">BMPDM Section 5.2.1
<input type="checkbox"/> De minimis	<ul style="list-style-type: none">Sub-attachment 6.2	<ul style="list-style-type: none">BMPDM Section 5.2.2
<input checked="" type="checkbox"/> Self-retaining ¹⁶ <u>SSD-BMP Type(s)</u> <input type="checkbox"/> Impervious Area Dispersion <input checked="" type="checkbox"/> Tree Wells	<ul style="list-style-type: none">Sub-attachment 6.3<ul style="list-style-type: none">Sub-attachment 6.3.1Sub-attachment 6.3.2	<ul style="list-style-type: none">BMPDM Section 5.2.3 (all options)<ul style="list-style-type: none">Fact Sheet SD-B (Appendix E.8)Fact Sheet SD-A (Appendix E.7)

- Submit this cover page and all “Required Sub-attachments” listed for each selected DMA compliance option.
- See the BMPDM sections and appendices listed under “BMPDM Design Resources” for additional explanation of design requirements. Each constructed feature must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans:** DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.

¹⁶ If “Self-retaining” is selected, also choose the types of Significant Site Design BMPs (SSD-BMPs) to be used. SSD-BMPs are Site Design BMPs that are sized and constructed to fully satisfy all applicable Structural Performance Standards for a DMA.

6.1 Self-mitigating DMAs (complete this page once for ALL self-mitigating DMAs)

Self-mitigating DMAs consist of natural or landscaped areas that drain directly offsite or to the public storm drain system. These DMAs are excluded from DCV calculations.

- Provide the information requested below for each proposed self-mitigating DMA. Add rows or copy the table if additional entries are needed.

DMA #	a. DMA Area (ft²)	Incidental Impervious Area		Permit # and Sheet #
		b. Size(ft²)	c. % (b/a*100)	
DMA-1	34,264	0	0	PDS2020-TPM-21279 and Sheet 2
DMA-5	21,663	0	0	PDS2020-TPM-21279 and Sheet 2

- “DMA #”, “DMA Area”, and “Permit # and Sheet #” are required for all DMAs listed.
- “Incidental Impervious Area” calculations are required only where applicable (see below).
- Each self-mitigating DMA must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.1 and any other guidance or instruction identified by the County. Check the boxes below to confirm that all required conditions are satisfied for every DMA listed.

☒ Each DMA is hydraulically separate from other DMAs that contain permanent storm water pollutant control BMPs.

Natural and Landscaped Areas

- ☒ Each DMA consists solely of natural or landscaped areas, except for incidental impervious areas (see below).
- ☒ Each area drains directly offsite or to the public storm drain system.
- ☒ Soils are undisturbed native topsoil, or disturbed soils that have been amended and aerated to promote water retention characteristics equivalent to undisturbed native topsoil.
- ☒ Vegetation is native and/or non-native/non-invasive drought tolerant species that do not require regular application of fertilizers and pesticides.

Incidental Impervious Areas (if applicable; see above)

Minor impervious areas may be permitted within the DMA if they satisfy the following criteria:

- ☐ They are not hydraulically connected to other impervious areas (unless it is a storm water conveyance system such as a brow ditch).
- ☐ They comprise less than 5% of the total DMA. Calculate the % incidental impervious area in the table above ($c = b/a$). DMAs are not self-mitigating if this area is 5% or greater.

6.3 Self-retaining DMAs using Significant Site Design BMPs

Self-retaining DMAs use Site Design BMPs to fully-retain the entire DCV, at a minimum. Site Design BMPs that fully retain the DCV, at a minimum, therefore replacing the need for a Structural BMP (S-BMP), are classified as Significant Site Design BMPs (SSD-BMPs). To satisfy pollutant control requirements only, self-retaining means retention of the entire DCV. However, under some circumstances, a self-retaining DMA can also satisfy hydromodification management requirements by implementing BMPs that retain a greater volume of runoff.

- Provide the information requested below for each proposed self-retaining DMA. Add rows or copy the table if additional entries are needed.

DMA #	DMA Area (ft ²)	BMP Type (choose one per DMA)		Permit # and Sheet #
		Dispersion Area (Att. 6.3.1)	Tree Wells (Att. 6.3.2)	
2	13,399	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PDS2020-TPM-21279 and Sheet 2
3	7,067	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PDS2020-TPM-21279 and Sheet 2
4	21,625	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PDS2020-TPM-21279 and Sheet 2
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	
		<input type="checkbox"/>	<input type="checkbox"/>	

Copy and Paste table here for additional DMAs

- “DMA #”, “DMA Area”, and “Permit # and Sheet #” are required.
- Select one BMP Type per DMA. Provide detailed documentation for each DMA in Attachments 6.3.1 (Impervious Dispersion Areas) and/or 6.3.2 (Tree Wells) below.
 - Each self-retaining DMA must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, applicable BMPDM Appendix E Fact Sheets, and any other guidance or instruction identified by the County.

²Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.

³Including the permeable pavement.

6.3.1 Self-retaining DMAs with Impervious Dispersion Areas

Impervious area dispersion (dispersion) refers to the practice of effectively disconnecting impervious areas from directly draining to the storm drain system by routing runoff from impervious areas such as rooftops (through downspout disconnection), walkways, and driveways onto the surface of adjacent pervious areas. The intent is to slow runoff discharges and reduce volumes. Dispersion with partial or full infiltration results in significant volume reduction by means of infiltration and evapotranspiration. When adequately sized, dispersion can also be used to satisfy both the pollutant control and hydromodification management structural performance standards for a DMA.

- Each self-retaining DMA with impervious area dispersion must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, Fact Sheet SD-B: Impervious Area Dispersion, and any other guidance or instruction identified by the County.
- Documentation of compliance with all applicable conditions must be submitted with this sub-attachment using the **Summary Sheet for DMAs with Impervious Area Dispersion** on the next page. One version of this Summary Sheet must be completed for each applicable DMA.
- Applicants are responsible to comply with all other applicable requirements, regardless of whether they are included in the summary sheet.
- The following applies if the dispersion area is **native soil** (SD-B in Appendix E):
 - For pollutant control only, the DMA is considered self-retaining if the impervious to pervious ratio is:
 - 2:1 when the pervious area is composed of Hydrologic Soil Group A
 - 1:1 when the pervious area is composed of Hydrologic Soil Group B
- The following applies if the dispersion area includes **amended soil** (SD-B in Appendix E):
 - DMAs using impervious area dispersion can be considered to meet both pollutant control and hydromodification flow control requirements if the impervious to pervious area ratio is 1:1 or less and all other design requirements of SD-B are satisfied, including 11 inches of amended soil.
- The following apply if the dispersion area is **permeable pavement** (SD-D in Appendix E):
 - For pollutant control only, a DMA is considered self-retaining if the ratio of total drainage area (including permeable pavement) to area of permeable pavement is 1.5:1 or less, and all other design requirements of SD-D are satisfied.
 - Hydromodification management performance standards can be satisfied using permeable pavement only if constructed to Structural BMP specifications. In this case, the permeable pavement must be sized and constructed in accordance with the requirements of INF-3.

²Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.

³Including the permeable pavement.

Summary Sheet for DMAs with Impervious Area Dispersion (Complete 1 sheet per DMA)

DMA #		
A. Minimum Sizing Requirements		
Verify that minimum standards are satisfied for the applicable dispersion area type below ² .		
Native Soil (Pollutant Control Only) Select one and provide calculations below.		
<input type="checkbox"/> <u>Soil Group A</u> : Ratio I:P is 2:1 or less <input type="checkbox"/> <u>Soil Group B</u> : Ratio I:P is 1:1 or less		
<i>Impervious Area (ft²)</i>	<i>Permeable Dispersion Area (ft²)</i>	<i>Ratio I:P</i>
Amended Soil (Pollutant Control plus Hydromodification Management)		
Must satisfy both conditions and provide calculations below.		
<input type="checkbox"/> Ratio I:P is 1:1 or less, AND <input type="checkbox"/> 11 inches or more of the top of the pervious area consists of amended soils (Fact Sheet SD-F)		
<i>Impervious Area (ft²)</i>	<i>Permeable Dispersion Area (ft²)</i>	<i>Ratio I:P</i>
Permeable Pavement (Pollutant Control Only) Provide calculations below.		
<input type="checkbox"/> Ratio DMA area to area of permeable pavement is 1.5:1 or less		
<i>DMA Area³ (ft²)</i>	<i>Permeable Pavement Area (ft²)</i>	<i>Ratio DMA:Pavement</i>
B. Minimum Design Criteria		
Check the boxes below to confirm that each design criterion has been satisfied for the DMA.		
Impervious Areas:		
<input type="checkbox"/> Are graded to ensure area that the full DCV drains to the dispersion area before the runoff discharges from the DMA.		
Pervious Dispersion Areas:		
<input type="checkbox"/> Are less than 5% slope and sheet flow over a distance of at least 10 feet from inflow to overflow route.		
<input type="checkbox"/> Have inflow velocities of 3 ft/s or less OR use energy dissipation methods (e.g., riprap, level spreader) for concentrated inflows.		
<input type="checkbox"/> Are densely and robustly vegetated with drought tolerant species.		
<input type="checkbox"/> Consist of soil types capable of supporting or being amended to support vegetation (e.g., with sand or compost). If applicable, media amendments have been tested to verify that they are not a source of pollutants.		
<input type="checkbox"/> Are owned by the project owner and will be dedicated to exclude future uses that might reduce their effectiveness.		

²Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.

³Including the permeable pavement.

6.3.2 Self-retaining DMAs with Tree Wells

Trees wells can provide a variety of benefits such as interception and increased infiltration of rainfall, reduced erosion, energy conservation, air quality improvement, and aesthetic enhancement. They can also be used to satisfy both pollutant control and hydromodification management performance standards for a DMA.

- Each self-retaining DMA with tree wells must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, Fact Sheet SD-A: Tree Wells, and any other guidance or instruction identified by the County.
- For pollutant control only, the DMA must retain the entire DCV. For hydromodification management, an additional volume must be retained in accordance with the sizing requirements presented in the DCV multiplier table in Fact Sheet SD-A.
- Documentation of compliance with applicable conditions must be submitted using the **Summary Sheet for Self-retaining DMAs with Tree Wells** on the next page. One version of this Summary Sheet must be completed for each applicable DMA.
- If both pollutant control and hydromodification standards apply, the soil depth of all tree wells in the DMA must be selected before determining the Required Retention Volume (RRV). Each tree well must be constructed to the selected depth. For pollutant control only, tree wells within a DMA may be constructed to different soil depths.
 - In most cases tree wells must use Amended Soil per Fact Sheet SD-F. However, Structural Soil is required in some cases (e.g., placing the tree well next to a curb). See **Structural Requirements for Confined Tree Well Soil Volume** in Fact Sheet SD-A for additional explanation. If applicable, list the DMAs and Tree Well #s below for all tree wells requiring Structural Soil.

DMA #	Tree Wells Requiring Structural Soil (list Tree Well #s)
2	#1 &2
3	#3
4	#4-24

- The Design Capture Volume (DCV) must be known for each DMA in order to determine the volume to be mitigated by the tree wells. Instructions for DCV calculation are provided in BMPDM Appendix B.1. An automated version of Worksheet B.1 (Calculation of Design Capture Volume) is available at www.sandiegocounty.gov/stormwater under the Development Resources tab.

ATTACHMENT #7



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs

Summary Sheet for Self-retaining DMAs with Tree Wells (complete one sheet per DMA)

DMA #: 2		DMA Area (ft²): 13,399	
Required Retention Volume (RRV)			
a. Design Capture Volume (DCV; ft³): 173			
b. DCV Multiplier (Fact Sheet SD-A) 2.90			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
<input type="checkbox"/> Pollutant control only	Any	All	1.0
<input checked="" type="checkbox"/> Pollutant control plus hydromodification	30	D	2.90
c. Required Retention Volume (ft³) [DCV * DCV Multiplier]			536
Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)			
Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.			
Tree species or name	SELECT FROM SD-A TREE PALETT TABLE	No. tree wells	2
Mature Canopy Diameter (ft)	24	Credit Volume per tree well (ft³)	268
Tree well ID #(s)	1	Combined Volume (ft³)	536
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Total Credit Volume (ft³)			536
Add the combined volumes above. Total credit volume must equal or exceed the RRV.			



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs

Summary Sheet for Self-retaining DMAs with Tree Wells (complete one sheet per DMA)

DMA #: 3		DMA Area (ft²): 7,067	
Required Retention Volume (RRV)			
a. Design Capture Volume (DCV; ft³): 106			
b. DCV Multiplier (Fact Sheet SD-A) 2.90			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
<input type="checkbox"/> Pollutant control only	Any	All	1.0
<input checked="" type="checkbox"/> Pollutant control plus hydromodification	30	D	2.90
c. Required Retention Volume (ft³) [DCV * DCV Multiplier]			307
Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)			
Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.			
Tree species or name	SELECT FROM SD-A TREE PALETT TABLE	No. tree wells	1
Mature Canopy Diameter (ft)	26	Credit Volume per tree well (ft³)	316
Tree well ID #(s)	1	Combined Volume (ft³)	316
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Total Credit Volume (ft³)			316
Add the combined volumes above. Total credit volume must equal or exceed the RRV.			



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs

Summary Sheet for Self-retaining DMAs with Tree Wells (complete one sheet per DMA)

DMA #: 4		DMA Area (ft²): 23,025	
Required Retention Volume (RRV)			
a. Design Capture Volume (DCV; ft³): 480			
b. DCV Multiplier (Fact Sheet SD-A) 2.9			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
<input type="checkbox"/> Pollutant control only	Any	All	
<input checked="" type="checkbox"/> Pollutant control plus hydromodification	30	D	2.9
c. Required Retention Volume (ft³) [DCV * DCV Multiplier]			1,391
Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)			
Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.			
Tree species or name	SELECT FROM SD-A TREE PALETT TABLE	No. tree wells	21
Mature Canopy Diameter (ft)	13	Credit Volume per tree well (ft³)	76
Tree well ID #(s)	12	Combined Volume (ft³)	1,596
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Tree species or name		No. tree wells	
Mature Canopy Diameter (ft)		Credit Volume per tree well (ft³)	
Tree well ID #(s)		Combined Volume (ft³)	
Total Credit Volume (ft³)			1,596
Add the combined volumes above. Total credit volume must equal or exceed the RRV.			

7.0 General Requirements

- Submit this cover page and all required Sub-attachments for all structural BMPs proposed for the project.



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs

- See the BMPDM sections and appendices listed under “BMPDM Design Resources” in the table below for additional explanation of design requirements. Constructed features must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management. Completion of SWQMP Attachment 8 is also required for these BMPs.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.
- Structural BMP Certification. All structural BMPs documented this attachment and in Attachment 8 must be certified by a registered engineer in Sub-attachment 7.1.
- Structural BMP Verification. Structural BMP installation must be verified by the County at the completion of construction. Applicants must complete an Installation Verification Form (Attachment 10).

Sub-attachments (check all that are completed)	Requirement	BMPDM Design Resources
<input checked="" type="checkbox"/> 7.1: Preparer’s Certification	Required	• N/A
<input type="checkbox"/> 7.2: Structural BMP Strategy	Required	• BMPDM Sections 5.1., 5.3, 5.4, and Chapter 6 • BMPDM Appendix E (pages E-78 through E-210)
<input checked="" type="checkbox"/> 7.3: Structural BMP Checklist(s)	Required	
<input checked="" type="checkbox"/> 7.4: Stormwater Pollutant Control	Required	• BMPDM Appendix B
Worksheet Calculations		
<input type="checkbox"/> 7.5: Identification and Narrative of Receiving Water and Pollutants of Concern	Required if flow-thru BMPs are proposed	• N/A

7.1 Engineer of Work Certification for Structural BMPs

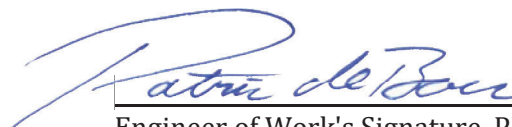
Project Name	Hurrell Subdivision Lakeside
Permit Application Number	PDS2020-TPM-21279

CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of structural 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 County of San Diego BMP Design Manual, which is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100) requirements for storm water management. I have read and understand that the County of San Diego 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 County staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of structural storm water BMPs for this project, of my responsibilities for their design.

☒ In addition to the structural pollutant control BMPs described in this attachment, this certification applies to the Structural Hydromodification Management BMPs described in Attachment 8 (check if applicable).

 83583 EXP: 3/31/23
Engineer of Work's Signature, PE Number & Expiration Date

Patric de Boer
Print Name

Omega Engineering Consultants
Company

10/04/2021
Date

Engineer's Seal:



Step 1: 7.2 Structural BMP Strategy

7.2.1 Narrative Strategy (Continue description on subsequent pages as necessary)

Describe the general strategy for structural BMP implementation at the project site. For pollutant control BMPs, your description must address the key points outlined in Section 5.1 of the BMP Design Manual, and the type of BMPs selected. For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

This redevelopment project consists of the widening of an existing road and the grading of 2 house pads. The house pads will not be constructed on as part of this permit action. Conservative impervious footprints are assumed for future houses to ensure that the built-out condition of the site will be compliant with current stormwater code.

The project site is very steep with very little area for BMPs that require a flat area, such as biofiltration or bioretention basins.

The stormwater design for this project uses standard Tree Wells to treat the proposed widened portion of the access road. The two house pads will be treated by Tree Wells with a DCV multiplier of 2.9 applied to the precipitation depth.

The extensive use of tree wells makes all the DMAs self-retaining or self-mitigating. As tree wells are not considered structural BMPs, the remainder of the Structural BMP section has not been completed in this report.

The hydromodification analysis of the site indicates that the proposed site will be in compliance without the need for detention and outlet control. This is due to the very steep nature of the site. The proposed drainage paths are longer than the existing. Any increase in flow as a result of increased impervious area will be offset by the increase in time of concentration.

- List and provide the information requested below for all pollutant control and hydromodification management BMPs proposed for the project.
- For each BMP listed, complete the Structural BMP Checklist on the next page. Copy the Checklist as many times as needed.

BMP ID #	DMA #	DMA Area (ft²)	Structural BMP Type							Permit # and Sheet #
			Harvest and Use	Infiltration	Unlined Biofiltration	Lined Biofiltration	Flow-thru treatment	Hydromodification Management ¹⁷	Other	
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			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					

County of San Diego SWQMP Sub-attachment 7.2 (Structural BMP Strategy) Page 7.2-2
Template Date: January 03, 2019 Preparation Date: 12/3/2020

Copy and Paste table here for additional BMPs

Step 2: 7.3 Structural BMP Checklist (Complete once for each proposed structural BMP)

Structural BMP ID #	Permit # and Sheet #			
BMP Type				
Infiltration <input type="checkbox"/> Infiltration basin (INF-1) <input type="checkbox"/> Bioretention (INF-2) <input type="checkbox"/> Permeable pavement (INF-3)		Harvest and Use <input type="checkbox"/> Cistern (HU-1) Flow-thru Treatment (describe below) <input type="checkbox"/> With prior lawful approval to meet earlier PDP requirements <input type="checkbox"/> Pre-treatment/forebay for an onsite retention or biofiltration BMP ² <input type="checkbox"/> With alternative compliance		
Unlined Biofiltration <input type="checkbox"/> Biofiltration with partial retention (PR-1)		Hydromodification Management³ <input type="checkbox"/> Detention pond or vault <input type="checkbox"/> Other (describe below)		
Lined Biofiltration <input type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3)				
BMP Purpose				
<input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input type="checkbox"/> Combined pollutant control and hydromodification		<input type="checkbox"/> Pre-treatment/forebay for another BMP <input type="checkbox"/> Other (describe below)		
BMP Verification (See BMPDM Section 8.3)				
Provide name and contact information for the party responsible to sign BMP verification forms				
BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)				
BMP Maintenance Category	Cat. 1	Cat. 2	Cat. 3	Cat. 4
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Final owner of BMP	<input type="checkbox"/> HOA <input type="checkbox"/> Other (describe):	<input type="checkbox"/> Property Owner	<input type="checkbox"/> County	
Maintenance of BMP into perpetuity	<input type="checkbox"/> HOA <input type="checkbox"/> Other (describe):	<input type="checkbox"/> Property Owner	<input type="checkbox"/> County	
Discussion (As needed; Continue on subsequent pages as necessary)				

Copy and Paste table here for additional BMPs

² Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

³ Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

7.4 Storm Water Pollutant Control Worksheet Calculations

- Use this page as a cover sheet for the submittal of any required worksheets below.
- Complete the checklist to identify which BMPDM Appendix B (Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods) worksheets are included with this attachment.
- See BMPDM Appendix B for an explanation of the applicability of individual worksheets and detailed guidance on their completion.

Worksheet	Requirement
<input checked="" type="checkbox"/> Worksheet B.1 Calculation of Design Capture Volume (DCV)	Required
<input checked="" type="checkbox"/> Worksheet B.2 Retention Requirements	Required
<input type="checkbox"/> Worksheet B.3 BMP Performance	Required
<input type="checkbox"/> Worksheet B.4 Major Maintenance Intervals for Reduced-sized BMPs	If applicable
<input type="checkbox"/> Other worksheets	As required

Automated Worksheet B.1: Calculation of Design Capture Volume (V2.0)

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-3	DMA-4	DMA-5						unitless
	2	85th Percentile 24-hr Storm Depth	0.50	1.45	1.45	1.45	0.50						inches
	3	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	0	3,493	2,270	11,453	0						sq-ft
	4	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)											sq-ft
	5	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)	34,264	9,906	4,797	11,572	37,291						sq-ft
	6	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)											sq-ft
	7	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)											sq-ft
	8	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)											sq-ft
	9	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)											sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	Yes	Yes	Yes	No	No	No	No	No	No	yes/no
	11	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)											sq-ft
	12	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	13	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)											sq-ft
	14	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)											sq-ft
	15	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)											sq-ft
	16	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)											sq-ft
	17	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	18	Number of Tree Wells Proposed per SD-A		2	1	21							#
	19	Average Mature Tree Canopy Diameter		24	26	13							ft
	20	Number of Rain Barrels Proposed per SD-E											#
21	Average Rain Barrel Size											gal	
Initial Runoff Factor Calculation	22	Total Tributary Area	34,264	13,399	7,067	23,025	37,291	0	0	0	0	0	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.10	0.31	0.36	0.50	0.10	0.00	0.00	0.00	0.00	0.00	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	25	Initial Weighted Runoff Factor	0.10	0.31	0.36	0.50	0.10	0.00	0.00	0.00	0.00	0.00	unitless
	26	Initial Design Capture Volume	143	502	307	1,391	155	0	0	0	0	0	cubic-feet
Dispersion Area Adjustments	27	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	0	0	0	sq-ft
	28	Total Pervious Dispersion Area	0	0	0	0	0	0	0	0	0	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.10	0.31	0.36	0.50	0.10	n/a	n/a	n/a	n/a	n/a	unitless
	32	Design Capture Volume After Dispersion Techniques	143	502	307	1,391	155	0	0	0	0	0	cubic-feet
Tree & Barrel Adjustments	33	Total Tree Well Volume Reduction	0	536	316	1,596	0	0	0	0	0	0	cubic-feet
	34	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	35	Final Adjusted Runoff Factor	0.10	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	unitless
	36	Final Effective Tributary Area	3,426	0	0	0	3,729	0	0	0	0	0	sq-ft
	37	Initial Design Capture Volume Retained by Site Design Elements	0	536	316	1,596	0	0	0	0	0	0	cubic-feet
	38	Final Design Capture Volume Tributary to BMP	143	0	0	0	155	0	0	0	0	0	cubic-feet
No Warning Messages													

Automated Worksheet B.2: Retention Requirements (V2.0)

Category	#	Description	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>	<i>viii</i>	<i>ix</i>	<i>x</i>	Units
Basic Analysis	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-3	DMA-4	DMA-5	-	-	-	-	-	unitless
	2	85th Percentile Rainfall Depth	0.50	1.45	1.45	1.45	0.50	-	-	-	-	-	inches
	3	Predominant NRCS Soil Type Within BMP Location	D	D	D	D	D						unitless
	4	Is proposed BMP location Restricted or Unrestricted for Infiltration Activities?	Restricted	Restricted	Restricted	Restricted	Restricted						unitless
	5	Nature of Restriction	Slopes	Slopes	Slopes	Slopes	Slopes						unitless
	6	Do Minimum Retention Requirements Apply to this Project?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	yes/no
	7	Are Habitable Structures Greater than 9 Stories Proposed?	No	No	No	No	No						yes/no
Advanced Analysis	8	Has Geotechnical Engineer Performed an Infiltration Analysis?	No	No	No	No	No						yes/no
	9	Design Infiltration Rate Recommended by Geotechnical Engineer											in/hr
Result	10	Design Infiltration Rate Used To Determine Retention Requirements	0.000	0.000	0.000	0.000	0.000	-	-	-	-	-	in/hr
	11	Percent of Average Annual Runoff that Must be Retained within DMA	4.5%	1.5%	1.5%	1.5%	4.5%	-	-	-	-	-	percentage
	12	Fraction of DCV Requiring Retention	0.02	0.01	0.01	0.01	0.02	-	-	-	-	-	ratio
	13	Required Retention Volume	3	0	0	0	3	-	-	-	-	-	cubic-feet

No Warning Messages

7.5 Identification and Narrative of Receiving Water and Pollutants of Concern

- Complete this sub-attachment *only if flow-thru treatment BMPs are implemented onsite* in lieu of retention or biofiltration BMPs. Unless excepted because of a Prior Lawful Approval¹⁸, PDPs must also participate in an alternative compliance program¹⁹.

A. General Description

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).

B. Water Body Impairments and Priorities

List any 303(d) impaired water bodies²⁰ 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

C. Identification of Project Site Pollutants

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	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nutrients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy Metals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organic Compounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trash & Debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oxygen Demanding Substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil & Grease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bacteria & Viruses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

¹⁸ See BMPDM Appendix L: Prior Lawful Approval Requirements and Guidance.

¹⁹ See SWQMP Attachment 12 (Alternative Compliance Projects) and BMPDM Appendix J (Offsite Alternative Compliance Requirements and Guidance).

²⁰ The current list of Section 303(d) impaired water bodies can be found at:

https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml

ATTACHMENT #8

**8.0 General Requirements**

- Completion of this attachment is required for all PDPs subject to hydromodification management requirements (see PDP SWQMP Form Table 5). Do not submit this attachment if exempt from Hydromodification Management requirements. Document the PDP exemption in Attachment 9.
- Submit this cover page and all required Sub-attachments for all structural hydromodification management BMPs proposed for the project.
- Constructed features must fully satisfy the requirements described in applicable BMPDM sections and appendices, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.
- Structural BMP Certification. All structural hydromodification management BMPs documented this attachment must be certified by a registered engineer in Attachment 7, Sub-attachment 7.1.
- Structural BMP Verification. BMP installation must be verified by the County at the completion of construction. Applicants must complete an Installation Verification Form (Attachment 10).

Sub-attachments (check all that are completed)	
<input type="checkbox"/> 8.1: Flow Control Facility Design (required) ²¹	Submit using <input type="checkbox"/> the Sub-attachment 8.1 cover sheet provided, or <input type="checkbox"/> as a separate stand-alone document labeled Sub-attachment 8.1.
<input type="checkbox"/> 8.2: Hydromodification Management Points of Compliance (required)	Complete the table provided in Sub-attachment 8.2.
8.3: Geomorphic Assessment of Receiving Channels	
1. Has a geomorphic assessment been performed for the receiving channel(s)?	
<input checked="" type="checkbox"/> No, the low flow threshold is 0.1Q ₂ (default low flow threshold)	
<input type="checkbox"/> Yes (provide the information below):	
Low flow threshold: <input type="checkbox"/> 0.1Q ₂ <input type="checkbox"/> 0.3Q ₂ <input type="checkbox"/> 0.5Q ₂	
Title: _____	
Date: _____	Preparer: _____
Submit using <input type="checkbox"/> the Sub-attachment 8.3 cover sheet provided, or <input type="checkbox"/> as a separate stand-alone document labeled Sub-attachment 8.3.	
8.4: Vector Control Plan (required if BMPs will not drain in less than 96 hours)	
<input type="checkbox"/> Included with this attachment <input checked="" type="checkbox"/> Not required	

²¹ Including Structural BMP Drawdown Calculations and Overflow Design Summary. See BMPDM Chapter 6 and Appendix G for additional design guidance.

8.1 Flow Control Facility Design

Insert Flow Control Facility Design behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.1.

No flow control facility is required. Project will use street trees with the appropriate DCV multiplier applied to the storm depth. |

8.2 Hydromodification Management Points of Compliance

- List and describe all points of compliance (POCs) for flow control for hydromodification management.
- For each POC, provide a POC identification name or number, and a receiving channel identification name or number correlating to the project's HMP Exhibit (see Attachment 2).

POC name or #	Channel name or #	POC Description
POC-1		POC-1 is the point where runoff is discharged at the northern property boundary
POC-2		POC-2 is the point runoff is discharged from a browditch to a riprap pad southeast of the access road. After this point runoff flows along a onsite natural drainage path.

8.3 Geomorphic Assessment of Receiving Water Channels

Insert Geomorphic Assessment behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.3.

| |

8.4 Vector Control Plan

Insert Vector Control Plan behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.4.

||

ATTACHMENT #9



County of San Diego Stormwater Quality Management Plan (SWQMP)
Attachment 9: Management of Critical Coarse Sediment Yield Areas

9.0 General Requirements

- Complete the table below to indicate which compliance pathway was selected in PDP SWQMP Table 6. Include the corresponding sub-attachment with your SWQMP submittal. Other sub-attachments do not need to be included.
- See the BMPDM sections and appendices listed under “BMPDM Design Resources” for additional explanation of design requirements. Constructed features must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: CCSYAs and applicable BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.

Sub-attachments	BMPDM Design Resources
<input type="checkbox"/> 9.1: Documentation of Hydromodification Management Exemption²²	Section 1.6
<input checked="" type="checkbox"/> 9.2: Watershed Management Area Analysis (WMAA) Mapping²²	Appendix H.1.1.2
<input type="checkbox"/> 9.3: Resource Protection Ordinance (RPO) Methods	Appendix H.1.1.1
<input type="checkbox"/> 9.4: No Net Impact Analysis	Appendix H.4

²² The San Diego County Regional comprehensive WMAA mapping data can be found on the Project Clean Water website here: http://www.projectcleanwater.org/download/wmaa_attc_data/

9.1 Documentation of Hydromodification Management Exemption (BMPDM Section 1.6)

- If the PDP is exempt from hydromodification management requirements (see Table 4 Part A.1 of the PDP SWQMP), use this Sub-attachment to document the exemption.
- Select the type of exemption below that applies and provide an explanation of the selection, including maps or other applicable documentation. Additional documentation may be requested by County staff.

Exemption Type per BMPDM Figure 1-2 (select one)	
<input type="checkbox"/>	a. The proposed project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
<input type="checkbox"/>	b. The proposed 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.
<input type="checkbox"/>	c. The proposed project will discharge runoff directly to an area identified by the County as appropriate for an exemption by the WMAA for the watershed in which the project resides ²³ .
Explanation (add or attach pages as necessary)	
<div style="border: 1px solid black; height: 300px; width: 100%;"></div>	

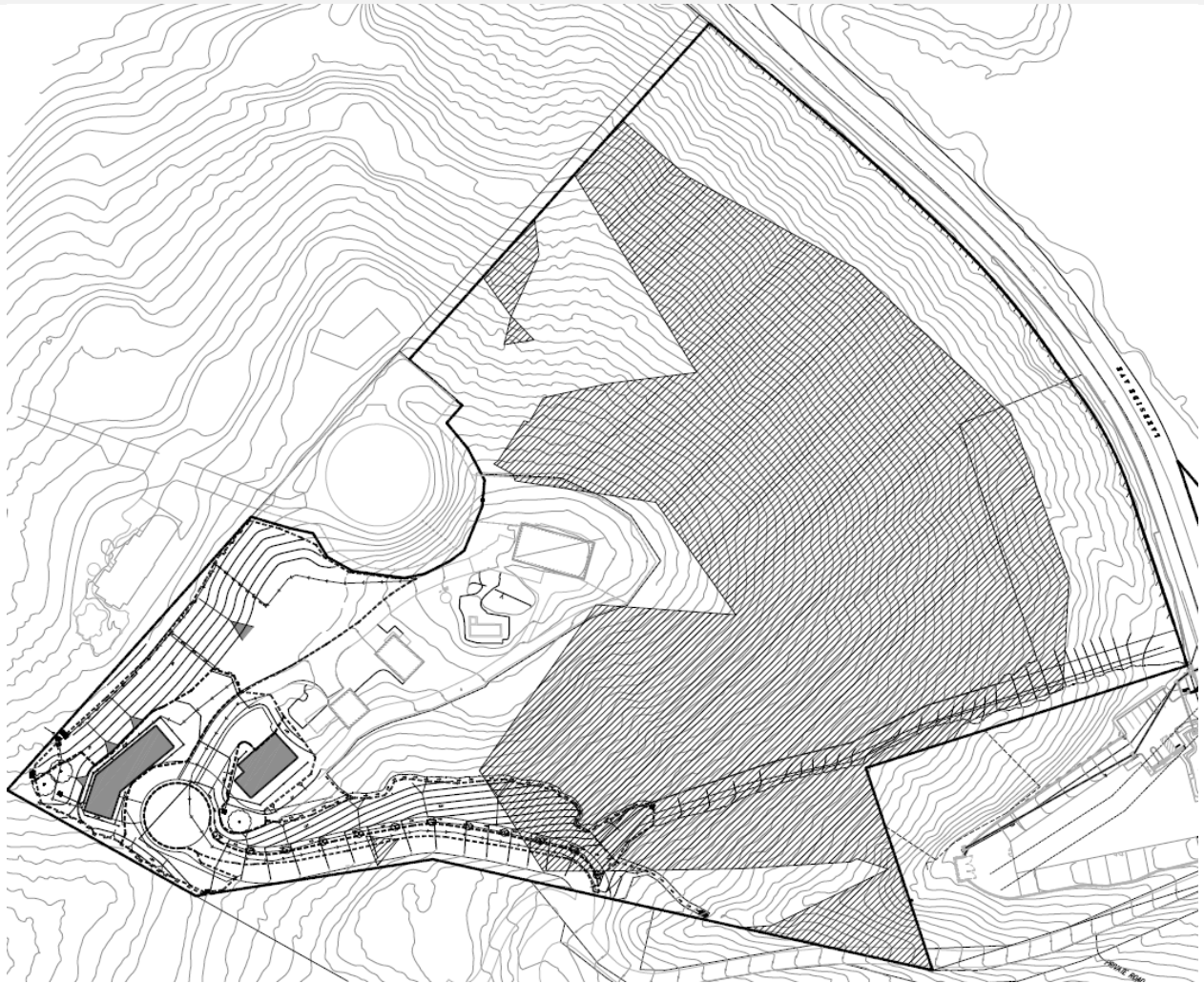
²³ This option must include an analysis of the project using the methodology presented in Attachment E of the Regional Watershed Management Area Analysis.

9.2 Watershed Management Area Analysis (WMAA) Mapping (BMPDM Appendix H.1.1.2)

Watershed Management Area Analysis (WMAA) mapping is a simple way to screen projects to determine the presence of onsite or offsite upstream Potential Critical Coarse Sediment Yield Areas (PCCSYAs). The San Diego County Regional WMAA mapping data can be found on the Project Clean Water website here: http://www.projectcleanwater.org/download/wmaa_attc_data/.²⁴

- Based on the WMAA map and the proposed project design, demonstrate below that both of the following conditions apply to the PDP:
 - (a) Less than 5% of PCCSYAs will be impacted (built on or obstructed) by the PDP, and
 - (b) All upstream offsite PCCSYAs will be bypassed (see BMPDM Appendix H.3).

A. Mapping Results -- At a minimum, show: (1) the project footprint, (2) areas of proposed development, (3) impacted onsite PCCSYAs, (4) offsite tributary areas²⁵, and (5) bypass of upstream offsite PCCSYAs.



²⁴ Applicants may refine initial mapping results using options identified in BMPDM Appendix H.1.2.

²⁵ Tributary areas must be shown to demonstrate that upstream offsite PCCSYAs do not exist. If bypassing these areas, only the bypass should be shown.

B. Explanation -- Provide documentation as needed to demonstrate that (1) impacts to PCCSYAs are below 5%, and (2) upstream offsite PCCYSAs are effectively bypassed. Add pages as necessary.

The map on the previous page shows the WMAA mapped CCSYA area in the crosshatched area. The only portion of the project that impinges on mapped CCYSA area is a small portion of the widened road. The total CCSYA are to be disturbed by the project is 11,591 sf. The total area on the lot is 321,901 sf.

This means that the area impacted by the PCCSYA is 3.6% of the onsite total. The site does not receive run-on and no CCSYAs drain to the site.

9.3 Resource Protection Ordinance (RPO) Methods (BMPDM Appendix H.1.1.1)

- Either of two Resource Protection Ordinance (RPO) methods may also be used to demonstrate compliance with CCSYA requirements. Select either option and document the selection below:

☐ **RPO Scenario 1: PDP is subject to and in compliance with RPO requirements**²⁶

- **Select** if the project requires one or more discretionary permits;
- **Demonstrate** that onsite AND upstream offsite CCSYAs will be avoided and/or bypassed.

☐ **RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements**²⁷

- **Select** if the project does not require discretionary permits;
- **Demonstrate** that all upstream offsite CCSYAs will be bypassed²⁸.

A. Mapping Results -- At a minimum, show as applicable: (1) the project footprint, (2) areas of proposed development, (3) locations of onsite and upstream offsite CCSYAs, and (4) bypass of all identified CCSYAs.

²⁶ RPO applicability is normally confirmed during discretionary review. Check with your project manager if you're not sure of your status.

²⁷ Does not include PDPs utilizing exemption(s) via RPO Section 86.604(e)(2)(cc) or 86.604(e)(3).

²⁸ This scenario does not impose requirements for onsite CCSYAs.

B. Explanation -- Provide documentation as needed to demonstrate that (1) onsite CCSYAs are avoided and bypassed [if applicable], and (2) upstream offsite CCYSAs are effectively bypassed. Add pages as necessary.

9.4 No Net Impact Analysis (BMPDM Appendix H.4)

- When impacts to CCSYAs cannot be avoided or effectively bypassed, applicants must demonstrate that their project generates no net impact to the receiving water per the performance metrics identified in BMPDM Appendix H.4.
- Use the space below to document that the PDP will generate no net impact to any receiving water.

No Net Impact Analysis (add or attach pages as necessary)



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 10: Installation Verification Form for Priority Development Projects

This form must be accepted by the County prior to the release of construction permits or granting of occupancy for applicable portions of a Priority Development Project (PDP). Its purpose is to provide documentation of the final installation of permanent Best Management Practices (BMPs) used to satisfy Structural Performance Standards for the development project. Compliance with these standards reduces the discharge of pollutants and flows from the completed project site. Applicable standards may be satisfied using Structural BMPs (S-BMPs), Significant Site Design BMPs (SSD-BMPs), or both. Applicants are responsible for providing all requested information. Do not leave any fields blank; indicate N/A for any requested item that is not applicable.

PART 1 General Project and Applicant Information

Table 1: Project and Applicant Information

A. Project Summary Information		ID No. IVF-20__-__ To be assigned by DPW-WPP
Project Name	Hurrell Subdivision Lakeside	
Record ID (e.g. grading/improvement plan number, building permit)	Click here to enter text.	
Project Address	12392 Lakeside Avenue, Lakeside CA 92040	
Assessor's Parcel Number(s) APN(s)	392-070-07, 392-070-10	
Project Watershed (complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	San Diego, Lower San Diego, Santee 907.12	
B. Owner Information		
Name	James Hurrell	
Address	12392 Lakeside Avenue, Lakeside CA 92040	
Email Address	kingjameshurr@gmail.com	
Phone Number	619-519-3853	

ATTACHMENT #10



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 10: Installation Verification Form for Priority Development Projects

****THIS PAGE IS FOR PARTIAL RECORD PLAN VERIFICATIONS ONLY ****

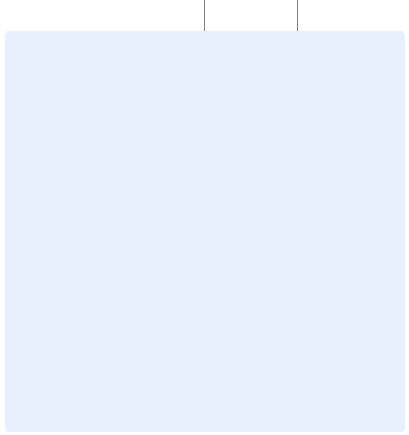
If this is a partial Installation Verification Form submittal, list ALL DMAs and BMPs for the Priority Development Project in **Table 2**. Provide acceptance information where applicable.

Table 2: Information for Partial IVF Submittals

A: DMA and BMP Information							
DMA #	Structural and Significant Site Design BMPs		WPP Acceptance Date		IVF ID No. (e.g. 2018-001)		

B: DMA and BMP Map

Please attach a map showing (1) all DMAs for the project site, (2) the DMAs and/or lots accepted under previous Verification Forms, and (3) the locations of Structural BMPs and Significant Site Design BMPs previously accepted.





County of San Diego
 Stormwater Quality Management Plan (SWQMP)
Attachment 10: Installation Verification Form for Priority Development Projects

PART 2 DMA and BMP Inventory Information

Use this table to document Structural BMPs (S-BMPs) and Significant Site Design BMPs (SSD-BMPs) for the PDP. All DMAs that are not self-mitigating or de minimis must have at least one Structural BMP or Significant Site Design BMP.

- In **Part A**, list all Structural BMPs (including both Pollutant Control and/or Hydromodification as applicable) by DMA.
- Complete **Part B** for all DMAs that contain only Significant Site Design BMPs. SSD-BMPs are Site Design BMPs (SD-BMPs) that are sized and constructed to satisfy Structural Performance Standards for a DMA.
- Documentation of SD-BMPs is not required in this table for any DMA that also contains S-BMPs.
- The information provided for each BMP in the table must match that provided in the Stormwater Quality Management Plan (SWQMP), construction plans, maintenance agreements, and other relevant project documentation.

Table 3: Required Information for Structural BMPs and Significant Site Design BMPs

DMA #	BMP Information			Maintenance Category	Maintenance Agreement or Maintenance Notification Recorded Doc. #	Construction Plan Sheet #	Landscape Plan # & Sheet # (For Vegetated BMPs Only)	FOR DPW-WPP USE ONLY <i>Reviewer concurs that the BMP(s) may be accepted into inventory (date and initial)</i>
	Quantity	Description/Type of Structural BMP	BMP ID #(s)					
Part A Structural BMPs (S-BMPs)								
Add rows as needed								
Part B Significant Site Design BMPs (SSD-BMPs)								
		Choose an item.		---	---			
		Choose an item.		---	---			
		Choose an item.		---	---			
Add rows as needed								



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 10: Installation Verification Form for Priority Development Projects

PART 3 Required Attachments for All BMPs Listed in Table 3

For ALL projects, submit the following to the County inspector (check all that are attached):

- ☐ Photographs: Labeled photographs illustrating proper construction of each S-BMP or SSD-BMP.
- ☐ Maintenance Agreements: Copies of all approved and recorded Storm Water Maintenance Agreements (SWMAs) or Maintenance Notifications (MNs) for all S-BMPs.

Note: All BMPs proposed for County ownership will remain the responsibility of the owner listed on **Page 1** until a signed Letter of Acceptance of Completion is received by the DPW Watershed Protection Program.

For Grading and Improvement projects only, ALSO submit:

- ☐ Construction Plans: An 11" X 17" copy of the most current applicable approved Construction Plan sheets:
 - ☐ Grading Plans, AND/OR
 - ☐ Improvement Plans, AND/OR
 - ☐ Precise Grading Plan(s) (only for residential subdivisions with tract homes), AND/OR
 - ☐ Other (Please specify) [Click here to enter text.](#)

Note: For each Construction Plan, the sheets submitted must incorporate all of the following:

- ☐ A BMP Table, AND
- ☐ A plan/cross-section of each verified as-built BMP, AND
- ☐ The location of each verified as-built BMP
- ☐ Landscape Plans: An 11" X 17" copy of the most current applicable Landscape Plan sheets where the BMPs are required to be vegetated, including:
 - ☐ The Certification of Completion (Form 407), AND
 - ☐ The Certificate of Approval from PDS Landscape Architect

Note: For each Landscape Plan, the sheets submitted must show the location of each verified as-built BMP.

Required only for Verifications for Partial Record Plans

- ☐ If this is a partial record plan verification, please include the following:
 - ☐ A list of previously submitted Verification Forms (**Table 2, A**)
 - ☐ A map of DMAs and BMPs (**Table 2, B**)

PART 4 Preparer's Certification



County of San Diego

Stormwater Quality Management Plan (SWQMP)

Attachment 10: Installation Verification Form for Priority Development Projects

By signing below, I certify that the BMP(s) listed in Table 3 of this Verification Form have been constructed and all are in substantial conformance with the approved plans and applicable regulations. I understand the County reserves the right to inspect the above BMPs to verify compliance with the approved plans and Watershed Protection Ordinance (WPO). Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Note: Structural BMPs (Table 3, Part A) must be certified by a licensed professional engineer.

Please sign and, if applicable, provide your seal below.

Preparer's Printed Name:

Click here to enter text.

Email: Click here to enter text.

Phone Number: Click here to enter text.

Preparer's Signed Name:

Date: Click here to enter text.

[SEAL]



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 10: Installation Verification Form for Priority Development Projects

COUNTY - OFFICIAL USE ONLY:

For County Inspectors

County Department: _____

Date verification received from EOW: _____

By signing below, County Inspector concurs that every noted BMP has been installed per plan.

Inspector Name: _____

Inspector's Signature: _____ Date: _____

For Building Division Only

Inspection Supervisor Name: _____

Inspector Supervisor's Signature: _____ Date: _____

PDCI & Building, along with the rest of this package, please provide to DPW WPP:

☐ A copy of the final accepted SWQMP and any accepted addendum

For Watershed Protection Program Only

Date Received: _____

WPP Reviewer: _____

WPP Reviewer concurs that the BMPs accepted in **Part 2** above may be entered into inventory.

WPP Reviewer's Signature: _____ Date: _____



11.0 Cover Sheet and General Requirements

- All Structural BMPs must have a plan and mechanism to ensure on-going maintenance. Use the table below to document the types of agreements to be submitted for the PDP and submit them under cover of this sheet.
- See BMPDM Section 7.3 for a description of maintenance categories and responsibilities. Note that since Category 3 and 4 BMPs are County-maintained, they do not require maintenance agreements.

a. Applicability of Maintenance Agreements

Check the boxes below to indicate which types of agreements are included with this attachment.

- ☒ Maintenance Notification (Category 1 BMPs)
 - Exhibit A: Project Site Vicinity; Project Site Map; and a map for each BMP and its Drainage Management Area
 - Exhibit B: BMP Maintenance Plan (see below)
- ☐ Stormwater Maintenance Agreement (Category 2 BMPs)
 - Exhibit A: Legal Description of Property
 - Exhibit B: BMP Maintenance Plan (see below)
 - Exhibit C: Project Site Vicinity Map

Maintenance agreement templates and instructions are provided on the County's website: www.sandiegocounty.gov/stormwater under the Development Resources tab.

PDP applicants contact County staff to ensure they have the most current forms.

b. Maintenance Plan Requirements

Use this checklist to confirm that each maintenance plan includes the following that as applicable.

- ☐ Specific **maintenance indicators and actions** for proposed structural BMP(s). These must be based on maintenance indicators presented in BMP Design Fact Sheets in Appendix E and enhanced to reflect actual proposed components of the structural BMP(s).
- ☐ **Access** to inspect and perform maintenance on the structural BMP(s).
- ☐ Features 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.

ATTACHMENT #11



11.0 Cover Sheet and General Requirements

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- ☐ 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.

E.7 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

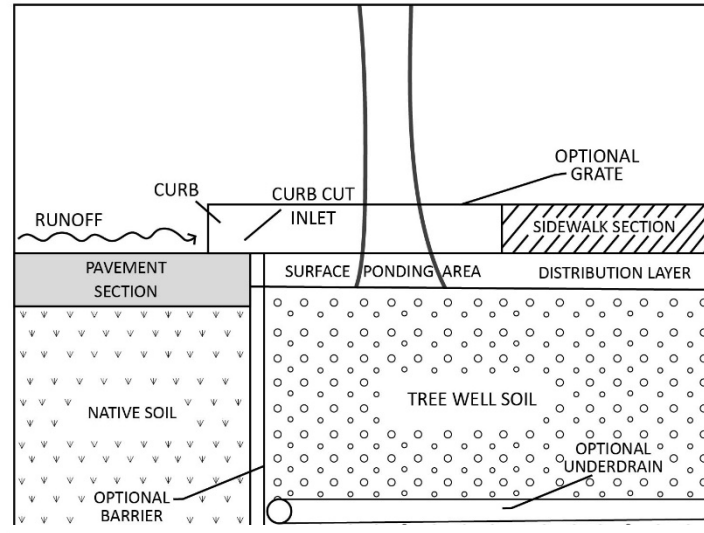
Description

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.

<i>Siting and Design</i>	<i>Intent/Rationale</i>														
<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> <table border="1" data-bbox="297 625 860 1234"> <tr> <th>Improvement</th><th>Minimum distance to tree well</th></tr> <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> </table>	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	<p>Roadway safety for both vehicular and pedestrian traffic is a key consideration for placement along public streets.</p>
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														
<p>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>	<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>														
<p>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.</p>	<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>														

<i>Siting and Design</i>	<i>Intent/Rationale</i>
Suspended pavement was constructed with an approved structural cell.	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.
<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.	The minimum soil volume ensures that there is adequate storage volume to allow for unrestricted evapotranspiration and infiltration.
<input type="checkbox"/> 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. 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. Considerations should be made to prevent root and water intrusion damage to surrounding infrastructure.	The minimum soil volume ensures that there is adequate storage volume to allow for unrestricted storage, evapotranspiration, and infiltration.
<input type="checkbox"/> DCV from the tributary area draining to the tree is equal to or greater than the tree credit volume	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

<i>Siting and Design</i>	<i>Intent/Rationale</i>
	must be reduced proportionately to the actual tributary area.
<p>Inlet opening to the tree that is at least 18 inches wide.</p> <p><input type="checkbox"/> 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 Lasiolepis</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	30	420
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		
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:

- A. Water Efficient Landscape Design Manual, County of San Diego, 2016
- B. Sustainable Landscapes Guidelines, San Diego County Water Authority, 2015
- C. Low Impact Development Handbook, County of San Diego, 2014
- D. Low Impact Development Design Manual, City of San Diego, 2011
- E. Street Tree Selection Guide, City of San Diego, 2013
- F. Environmentally Friendly Garden Plant List, City of San Diego, 2004
- G. BMP Design Manual, County of San Diego, 2016
- H. 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-StructuralSoilTM, 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.

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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.

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Tree Wells

BMP MAINTENANCE FACT SHEET FOR SITE DESIGN BMP SD-1 TREE WELLS

Tree wells as site design BMPs are trees planted in configurations that allow storm water runoff to be directed into the soil immediately surrounding the tree. The tree may be contained within a planter box or structural cells. The surrounding area will be graded to direct runoff to the tree well. There may be features such as tree grates, suspended pavement design, or shallow surface depressions designed to allow runoff into the tree well. Typical tree well components include:

- Trees of the appropriate species for site conditions and constraints
- Available growing space based on tree species, soil type, water availability, surrounding land uses, and project goals
- Entrance/opening that allows storm water runoff to flow into the tree well (e.g., a curb opening, tree grate, or surface depression)
- 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

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

Tree 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.

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Tree Wells

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 [City 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 [City Engineer] to determine requirements.

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

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Tree Wells

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR SD-1 TREE WELLS		
<p>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.</p> <p>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.</p>		
Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Tree health	Routine actions as necessary to maintain tree health.	<ul style="list-style-type: none"> Inspect monthly. Maintenance when needed.
Dead or diseased tree	Remove dead or diseased tree. Replace per original plans.	<ul style="list-style-type: none"> Inspect monthly. Maintenance when needed.
<p>Standing water in tree well 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 tree health</p>	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. Maintenance when needed.
<p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p>	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. Maintenance when needed
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. Maintenance when needed.

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Tree Wells

References

American Mosquito Control Association.

<http://www.mosquito.org/>

County of San Diego. 2014. Low Impact Development Handbook.

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