Appendix H

Storm Water Quality Management Plan

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)

Priority Development Project

Project Information		Development type ☐ New development ☐ Redevelopment
Project Name	Jericho Road	
Project Address	9407 JERICHO RD	
Assessor's Parcel # (APN)	486-670-18-00	
Permit # / Record ID	TBD	
Project category (select one)	☐ Commercial	☐ Minor subdivision*
	☐ Industrial	☐ Major subdivision*
	☐ Single family residential lot	☒ Multi-family residential*
	*If residential, is a Homeowners Association (HOA) proposed? ☒ Yes ☐ No	

Project Applicant / Project Proponent		
Name	Johanna Crooker	
Address	5 Peters Canyon Road	
Phone	(949) 299-3847	Email: johanna.crooker@mlcholdings.net

SWQMP Preparer		
Name	Alisa S. Vilapando	
Company (if applicable)	Hunsaker & Associates San Diego, Inc.	
Address	9707 Waples Street, San Diego, CA 92121	
Phone	(858) 558-4500	Email: AVialpnado@HunsakerSD.com
PE Number (if applicable)	4795	

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 Alisa S. Vilapando Date 07/28/2023

COUNTY ACCEPTED

SWQMP Approved By: *Approval Date*:

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

Scope of SWQMP Submittal (Required)

Select the option that describes the scope of this SWQMP Submittal. Document your selection as indicated.

SWQMP Scope	Required Documentation
☒ *a. SWQMP addresses the entire project*	No additional documentation.
☐ *b. SWQMP implements requirements of an earlier master SWQMP submittal*	Include a copy of the previous submittal as Attachment 4.
☐ *c. First of multiple SWQMP submittals*	Identify below the elements addressed in this submittal and in future submittals.

(1) Elements addressed in current submittal (streets, common areas, first project phase, etc.):

(2) Elements to be addressed in future submittal(s) (individual lots, future project phases, etc.):

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	7/28/2023	Initial Submittal
2	Date	Summary of Change
3	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
No.	Date	Summary of Change
Plan Changes		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
No.	Date	Summary of Change

PDP SWQMP Submittal Checklist

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

SWQMP Attachments[1]: 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: Reserved for Future Use

☐ 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: BMP 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, Submittal Templates.

Table 1 – Baseline BMPs for Existing and Proposed Site Features

A. BMPs for Existing Natural Site Features (See Fact Sheet BL-1)

1. Check the boxes below for each existing feature on the site.

2. Select the BMPs to be implemented for each identified feature. Explain why any BMP not selected is infeasible in Table 3.

	Conserve natural features (SD-G)	Provide buffers around waterbodies (SD-H)
☐ Natural waterbodies	☐	☐
☐ Natural storage reservoirs & drainage corridors	☐	---
☐ Natural areas, soils, & vegetation (incl. trees)	☐	---

B. BMPs for Common Impervious Outdoor Site Features (See Fact Sheet BL-2)

1. Check the boxes below for each proposed feature.

2. Select the BMPs to be implemented for each proposed feature. If neither BMP SD-B nor SD-I is selected for a feature, explain why both BMPs are infeasible in Table 3.

	a. Direct runoff to pervious areas (SD-B)	b. Construct surfaces from permeable materials (SD-I)	c. Minimize the size of impervious areas
☐ Streets and roads	☐	☐	☒ *Check this box to confirm that all impervious areas on the site will be minimized where feasible.*
☒ Sidewalks & walkways	☒	☐	
☒ Parking areas & lots	☒	☐	
☒ Driveways	☒	☐	*If this box is not checked, identify the surfaces that cannot be minimized in Table 3, and explain why it is infeasible to do so.*
☒ Patios, decks, & courtyards	☒	☐	
☒ Hardcourt recreation areas	☒	☒	
☐ Other:	☐	☐	

C. ☒ BMPs for Rooftop Areas: *Check this box if rooftop areas are proposed and select at least one BMP below.* (See Fact Sheet BL-3)

If no BMPs are selected, explain why they are infeasible in Table 3.

1. Direct runoff to pervious areas (SD-B)	2. Install green roofs (SD-C)	3. Install rain barrels (SD-E)
☒	☐	☐

D. ☒ BMPs for Landscaped Areas: *Check this box if landscaping is proposed and select at least one BMP below.* (See Fact Sheet BL-4)

If no BMPs are selected, explain why they are infeasible in Table 3.

1. Sustainable Landscaping (SD-K)
☒

Note: All features and BMPs must be shown on applicable construction plans. See applicable Fact Sheets in Appendix C of the BMP Design Manual for additional information.

Note: Use Table 3 to explain BMP infeasibility or inapplicability, or to describe features or BMPs not listed in this table. Additional explanation may be required by the County.

Table 2 – Baseline BMPs for Pollutant-generating Sources

☐ If this is a Small Residential Project, check this box and skip the rest of this table.

A. Management of Stormwater Discharges

1. Identify all proposed outdoor work areas below (☐ *Check here if none are proposed*)	2. Which BMPs will be used to prevent materials from contacting rainfall or runoff? (See Fact Sheet BL-5) *(Select all feasible BMPs for each work area[2])*			3. Where will runoff from the work area be routed? (See Fact Sheet BL-6) *(Select one or more option for each work area)*			
	Overhead covering (rooftops, etc.) (SC-A)	Separation of flows from adjacent areas (berms, etc.) (SC-B)	Wind protection (screens, etc.) (SC-C)	Sanitary sewer[3] (SC-D)	Containment system (SC-E)	Stormwater S-BMP or SSD-BMP[4]	Other[5]
☐ Trash & Refuse Storage	☐	☐	☐	☐	☐	☐	☐
☐ Materials & Equipment Storage	☐	☐	☐	☐	☐	☐	☐
☐ Loading & Unloading	☐	☐	---	☐	☐	☐	☐
☐ Fueling	☐	☐	---	☐	☐	☐	☐
☐ Maintenance & Repair	☐	☐	---	☐	☐	☐	☐
☐ Vehicle & Equipment Cleaning	☐	☐	---	☐	☐	☐	☐
☐ Other:	☐	☐	---	☐	☐	☐	☐

B. Prevention of Non-stormwater Discharges (See Fact Sheet BL-7)

Select one option for each feature below:

• Storm drain inlets and catch basins ...	☐ are not proposed	☒ will be labeled with stenciling or signage to discourage dumping (SC-F)
• Educational BMP Signage ...	☐ are not proposed	☒ will be labeled with educational signage for BMP (SC-G)
• Interior work surfaces, floor drains, & sumps ...	☐ are not proposed	☒ will not discharge directly or indirectly to the MS4 or receiving waters
• Drain lines (e.g., air conditioning, boiler, etc.) ...	☐ are not proposed	☒ will not discharge directly or indirectly to the MS4 or receiving waters
• Fire sprinkler test water ...	☐ are not proposed	☒ will not discharge directly or indirectly to the MS4 or receiving waters

Note: All outdoor features and BMPs in this table must be shown on applicable construction plans. See applicable Fact Sheets in Appendix C of the BMP Design Manual for additional information.

Note: Use Table 3 to explain BMP infeasibility or inapplicability, or to describe features or BMPs not listed in this table. Additional explanation may be required by the County.

[2] Each BMP is required where feasible. If none are selected for any feature, explain why they are infeasible in Table 3.

[3] Separate wastewater agency approvals may be required.

[4] Structural Treatment Control BMPs (S-BMPs) and Significant Site Design BMPs (SSD-BMPs) may not receive discharges from work areas that concentrate pollutants in a manner that will impair their functioning. Discharges from the proposed work area must also be included in DCV calculations for the applicable BMP.

[5] Describe other proposed options for managing stormwater discharges in Table 3.

Table 3 – Explanations and Justifications for Table 1 and 2 Baseline BMPs

☐ Check here if no explanations or justifications for Table 1 or 2 BMPs are required.

- Required Justifications: Provide explanations of BMP inapplicability and/or infeasibility as indicated per Tables 1 and 2.
- If Requested: Justify why specific BMPs will not be implemented or will only be partially implemented.
- Additional Explanation: Describe any proposed features and/or BMPs not listed in Tables 1 or 2.

BMP-Feature Combination		Explanation
Feature	Exisitng Natural Site Features	The site is currently occupied by existing development and does not have any natural water bodies, storage reservoirs, or corridors. In preparation for the new development, the entire site will undergo grading to accommodate the proposed project.
BMP	SD-G and SD-H	
Feature	Proposed Oudoor work areas	No outdoor work areas are Proposed
BMP	SC-A, SC-B, SC-C, SC-D	
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 4: 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)

☒ a. Pollutant control + hydromodification ☐ b. Pollutant control only (project is exempt from hydromodification requirements)

2. Application of Structural Performance Standards (select one; see BMPDM Section 1.7)

☐ New Development Projects: Standards apply to all impervious surfaces.

☒ Redevelopment Projects: Complete the calculations below. Select the applicable scenario based on the results.

a. Existing impervious area (ft^2)	b. Impervious area created / replaced (ft^2)	c. % Impervious created / replaced [(b/a)*100]
72,795	112,783	155%

☒ *Scenario 1: c is 50% or more*: Performance standards apply to all impervious surfaces (a + b).

☐ *Scenario 2: c is less than 50%*: 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 ☒	DMA Exhibits and Construction Plan Sheets ☒	N/A ☐	Previous SWQMP Submittals (see inside cover) ☐	Existing Site and Drainage Description ☒

2. Indicate each compliance strategy below that will be used for one or more DMAs on the site.

	Att. 6 DMAs without Structural BMPs	Att. 7 DMAs w/ Structural Pollutant Control BMPs	Att. 8 DMAs w/ Structural Hydromod. BMPs	Att. 9 Critical Coarse Sediment Yield Areas	Att. 10 BMP Installation Verification Form	Att. 11 Maintenance Agreements/ Plans	Att. 12 Alternative Compliance Projects
☒Self-mitigating DMAs (BMPDM Section 5.2.1)	☒			☐			
☒De Minimis DMAs (BMPDM Section 5.2.2)	☒			☐			
☒Self-retaining DMAs (BMPDM Section 5.2.3)	☒			☐	☐		
Structural BMPs (select all that apply)							
☒Pollutant Control BMPs (BMPDM Section 5.4)		☒		☐	☒	☒	
☒Hydromodification Control BMPs (BMPDM Chapter 6)			☒	☐	☒	☒	
☐Alternative Compliance Project (BMPDM Section 1.8)				☐	☐	☐	☐

☒ Please check this box after you complete this list. Corresponding attachments will be automatically selected on the right.

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

Table 5: Critical Coarse Sediment Yield Area (CCSYA) Requirements

o Identify one applicable compliance pathway for the PDP below.
o Document your selection in Attachment 9.

A. Hydromodification Management Exemption (BMPDM Sections 1.6 and 6.1)

☐ PDP is Exempt from Hydromodification Management Requirements

Select if hydromodification management exemption was selected in Table 4 Part A.1.

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

☒ WMAA mapping demonstrates the following:

a. <5% of potential onsite CCYSAs will be impacted (built on or obstructed) SEE MAP NEXT PAGE

b. All potential upstream offsite CCYSAs will be bypassed

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

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

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

☐ RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements[6]

a. Project does not require discretionary permits

b. Project will bypass all upstream offsite CCSYAs (no requirements for onsite CCSYAs)

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

☐ Project demonstrates no net impact to receiving waters

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

Jericho Road

PCCSYA PER WMAA MAP

Legend

- 9407 Jericho Rd
- PCCSYA

Project Location

9407 Jericho Rd

LAKE MURRAY

FLETCHER HILLS

La Mesita Park

Harry Griffen Park

Grossmont

El Cajon

Mission Trails Golf Course

ALDI

Albertsons

JOANN Fabric and Crafts

Parkway Plaza

Toyota of El Cajon

Team Kia of El Cajon

The Home Dep

Ross Dress for Less

Golden Corral Buffet & Gri

BMW of El Cajon

Funky Fries a

Trader Joe's

Grossmont Center

Walmart

Costco Gas Station

Costco Wholesale

Murray

La Mesa

Google Earth

1 mi

N

Table 6 – Minimum Construction Stormwater BMPs

Minimum Required BMPs by Activity Type Select all applicable activities and at least one BMP for each.	References Caltrans[7]	 County of San Diego	
☒ Erosion Control for Disturbed Slopes (choose at least 1 per season)			
☐ Vegetation Stabilization Planting[8] (Summer)	SS-2, SS-4		
☒ Hydraulic Stabilization Hydroseeding (Summer)	SS-4		
☐ Bonded Fiber Matrix or Stabilized Fiber Matrix[9] (Winter)	SS-3		
☐ Physical Stabilization Erosion Control Blanket (Winter)	SS-7		
☒ Erosion control for disturbed flat areas (slope < 5%)			
☐ County Standard Lot Perimeter Protection Detail	SC-2	PDS 659[10]	
☒ Use of Item A erosion control measures on flat areas	SS-3, SS-4, SS-7		
☐ County Standard Desilting Basin (must treat all site runoff)	SC-2	PDS 660[11]	
☐ Mulch, straw, wood chips, soil application	SS-6, SS-8		
☒ Energy dissipation (required to control velocity for concentrated runoff or dewatering discharge)			
☒ Energy Dissipater Outlet Protection	SS-10	RSD D-40[12]	
☒ Sediment control for all disturbed areas			
☒ Silt Fence	SC-1		
☒ Fiber Rolls (Straw Wattles)	SC-5		
☒ Gravel & Sand Bags	SC-6, SC-8		
☐ Dewatering Filtration	NS-2		
☐ Storm Drain Inlet Protection	SC-10		
☒ Engineered Desilting Basin (sized for 10-year flow)	SC-2		
☒ Preventing offsite tracking of sediment			
☒ Stabilized Construction Entrance	TC-1		
☒ Construction Road Stabilization	TC-2		
☒ Entrance/Exit Tire Wash	TC-3		
☐ Entrance/Exit Inspection & Cleaning Facility	TC-1		
☒ Street Sweeping and Vacuuming	SC-7		
☒ Materials Management			
☒ Material Delivery & Storage	WM-1		
☒ Spill Prevention and Control	WM-4		
☒ Waste Management[13]			
☒ Waste Management Concrete Waste Management	WM-8		
☒ Solid Waste Management	WM-5		
☒ Sanitary Waste Management	WM-9		
☒ Hazardous Waste Management	WM-6		

[7] See Caltrans 2017 Construction Site Best Management Practices (BMP) Manual available at: https://dot.ca.gov/programs/construction/storm-water-and-water-pollution-control/manuals-and-handbooks
[8] 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.
[9] All slopes over three feet must have established vegetative cover prior to final permit approval.
[10] County PDS 659. Standard Lot Perimeter Protection Design System (Bldg. Division)
[11] County PDS 660. County Standard Desilting Basin for Disturbed Areas of 1 Acre or Less Bldg. Division
[12] Regional Standard Drawing D-40 – Rip Rap Energy Dissipater (also acceptable for velocity reduction)
[13] Applicants are responsible to apply appropriate BMPs for specific wastes (e.g., BMP WM-8 for concrete).

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:	Jericho Road
Record ID (Permit) No(s):	TBD
Assessor's Parcel No(s):	486-670-18-00
Street Address (or Intersection):	9407 JERICHO RD
City, State, Zip:	La Mesa, CA, 91942-3841

Part 2. Applicant / Project Proponent Information	
Name:	Johanna Crooker
Company:	Meritage Home
Street Address:	5 Peters Canyon Road, Suite 310
City, State, Zip:	Irvine, CA, 92606
Phone Number	(949) 299-3847
Email:	johanna.crooker@mlcholdings.net

Part 3. Required Information for All Development Projects

Ⓐ 1. Existing (pre-development) impervious surfaces (ft²)	2. Created or replaced impervious surfaces (ft²)	3. Total disturbed area (acres or ft²)
72,795	112,783	151,842

Ⓑ ☒ Check here and provide a WDID# if this project is subject to the California Construction General Permit (Order No. 2009-0009-DWQ)[1]	WDID # (if issued)
	To be provided during Final Engineering

For County Use Only	**Reviewed By**:	**Review Date**:
☐ Standard SWQMP	☐ PDP SWQMP	☐ Green Streets PDP Exemption SWQMP

[1] Available at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html

Part 4. Priority Classification & SWQMP Form Selection

(A) *If your project is the following ... (select one)*	(B) *You must complete ...*
☐ **Standard Project** ☐ a. Project is East of the Pacific/Salton Sea Divide ☐ b. None of the PDP criteria below applies	→ **Standard *SWQMP Form***
☒ **Priority Development Project (PDP)** ☐ 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	→ **PDP *SWQMP Form***
☐ **Green Streets PDP Exemption**[2]	→ **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: [signature] Date: 8/3/23

- ***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.*

[2] ***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.

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.

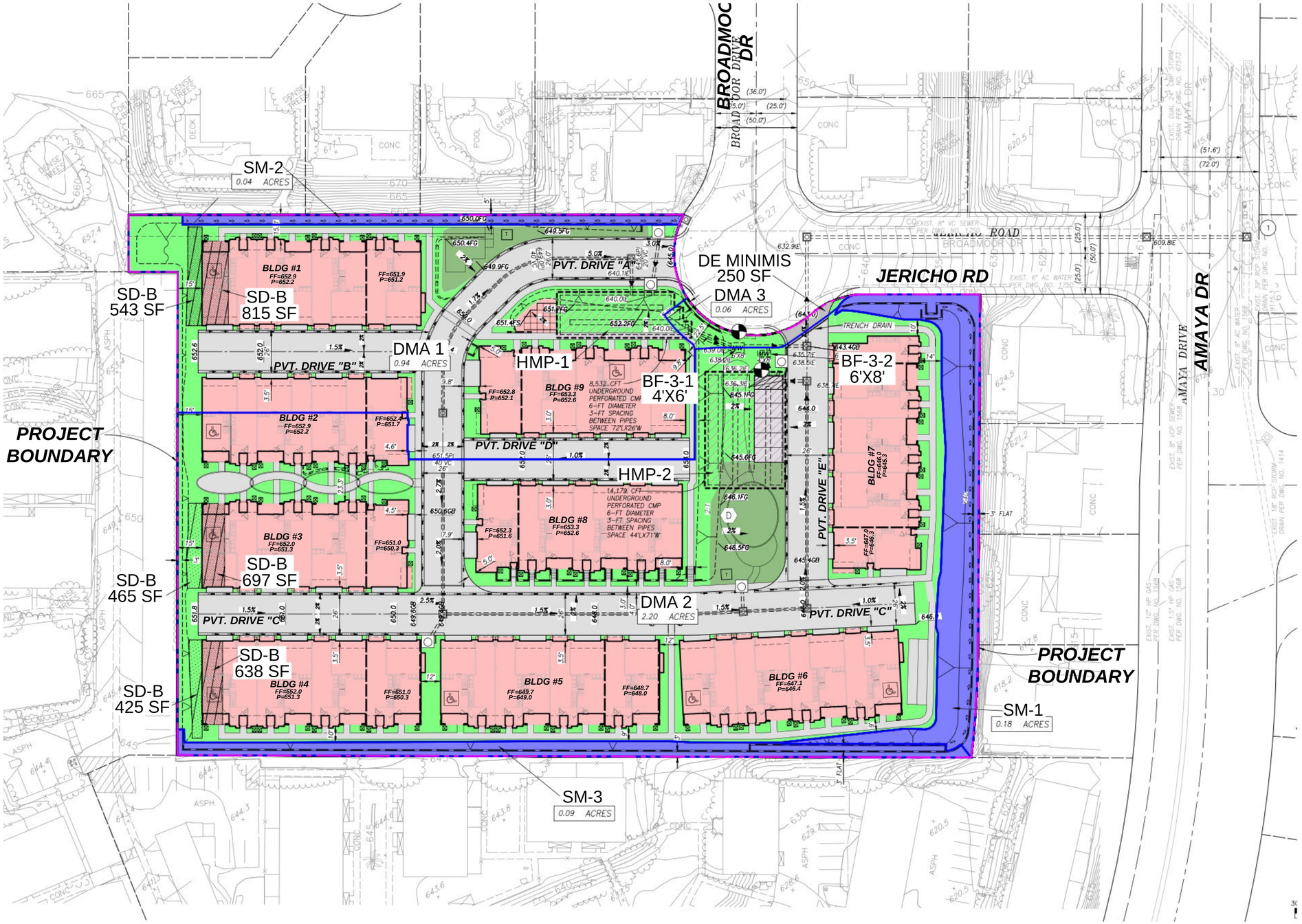
Sub-attachments	Requirement
☒ 2.1: DMA Exhibits	All PDPs
☒ 2.2: Individual Structural BMP DMA Mapbook	PDPs with structural BMPs
☒ 2.3: Construction Plan Sets	All projects

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

[1] Group 1-4 features and baseline BMPs from PDP SWQMP Tables 2 and 3.
[2] Minimum Construction Stormwater BMPs from PDP SWQMP Table 7.
[3] Identify the location, ID numbers, type, and size/detail of BMPs.



LEGEND:	SYMBOL:
PROJECT BOUNDARY	
DMA BOUNDARY	
DAYLIGHT	
PROPOSED STORM DRAIN	
FLOW LINE	
SUBAREA ACREAGE	00.00 ACRES
DMA ICON	DMA 1
IMPERVIOUS - ROAD	
IMPERVIOUS - ROOF	
IMPERVIOUS - SIDEWALK/DRIVEWAY	
PERVIOUS AREAS	
SELF-MITIGATING AREA	
ACTIVE OPEN SPACE	
DISPERSION AREA	
DE MINIMIS AREA	
INLET	
HYDROLOGIC SOIL TYPE	D
POINT OF COMPLIANCE	1
STRUCTURAL BMP\ MWS UNIT	

SITE DESIGN BMPs:

BL-2 MINIMIZE IMPERVIOUS AREA: ALL IMPERVIOUS AREAS WILL BE MINIMIZED WHERE FEASIBLE .

BL-4 MINIMIZE SOIL COMPLACTION PER 4.3.4 SECTION

SD-B IMPERVIOUS AREA DISPERSION

SD-K LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES

SOURCE CONTROL BMPs:

BL-7, SC-F, SC-G
PERVENTION OF ILLICIT DISCHARGE TO THE MS4

SC-F, SC-F STORM DRAIN STENCILIING OR SIGNAGE - MARK ALL INLETS WITH "NO DIMPING DRAINS TO WATERWAYS" OR SIMILAR

BL-7 ONSITE STORM DRAIN INLETS

BL-4 LANDSCAPE/OUTDOOR PESTICIDE USE

BL-7 FIRE SPRINKLERS WATER TEST: WILL NOT BE DIRECTLY CONNECTED TO THE MS4 OR RECEIVING WEATER

SC-6 MISCELLANEOUS RAIN OR WASH WATER

UNDERLYING SOIL GROUP D
APPROXIMATE DEPTH TO GROUNDWATER > 20'
NO CRITICAL COARSE AREAS REQUIRE PRESERVATION

30 0 30 60 90
SCALE 1"= 30'

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC

PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)350-1414

DMA MAP

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

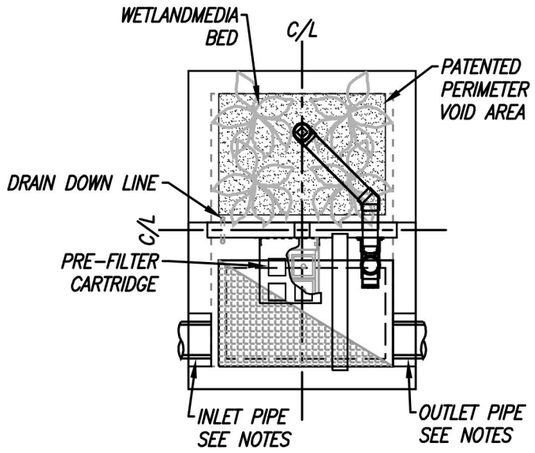
MAP 1 OF 1

W.O.# 3087-0012

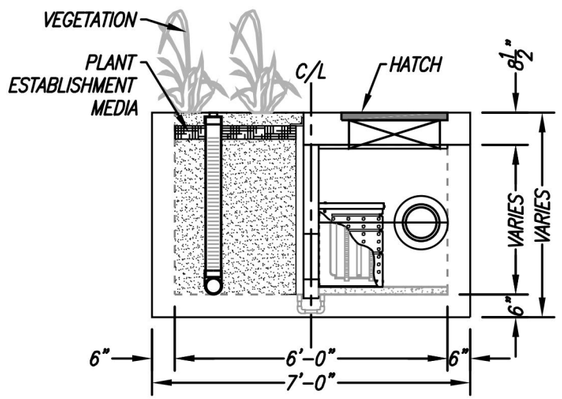
R:\1790\Hyd\TM\SWQMP\CAD\1790$SWQMP_DMA_MAP.dwg[]Aug-09-2023:16:49

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID	BF-3-1		
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.073			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



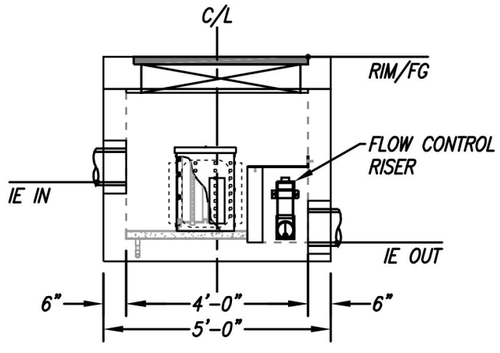
LEFT END VIEW

INSTALLATION NOTES

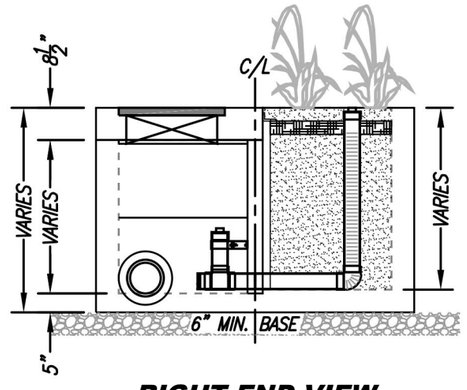
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.

GENERAL NOTES

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



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.073
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	1.3
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

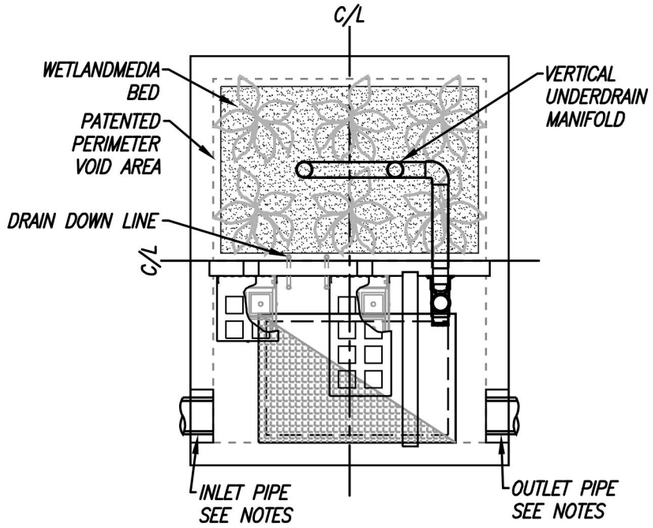
MODULAR WETLANDS
FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com

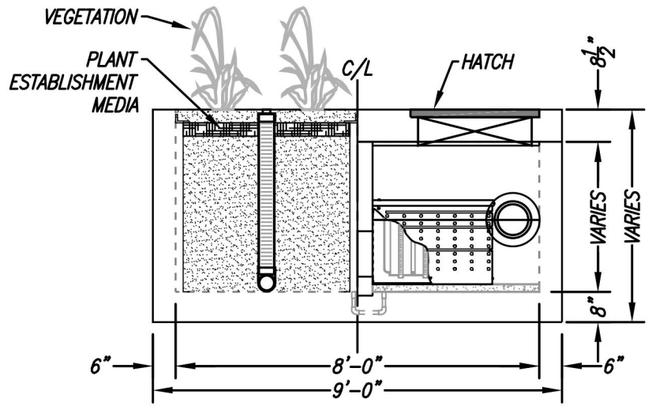
MWS-L-4-6-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID		BF-3-2	
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.147			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



LEFT END VIEW

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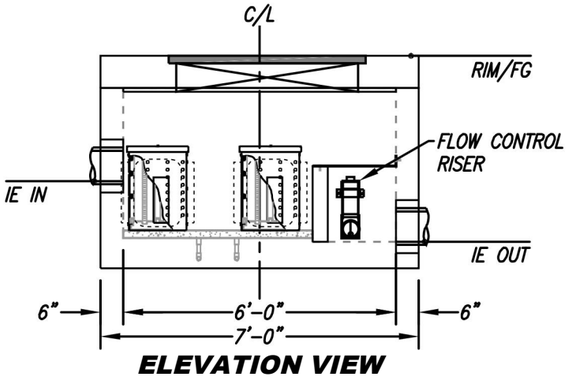
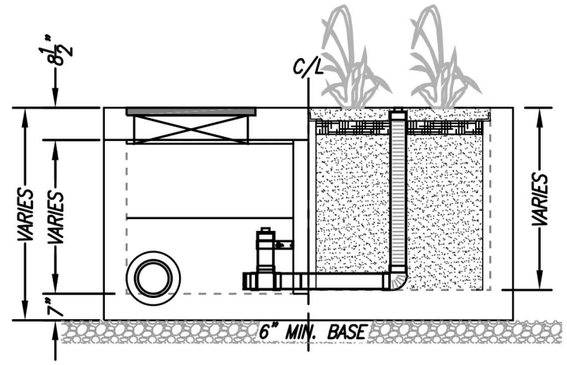


ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.147
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	1.3
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS
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CONTECH® ENGINEERED SOLUTIONS LLC
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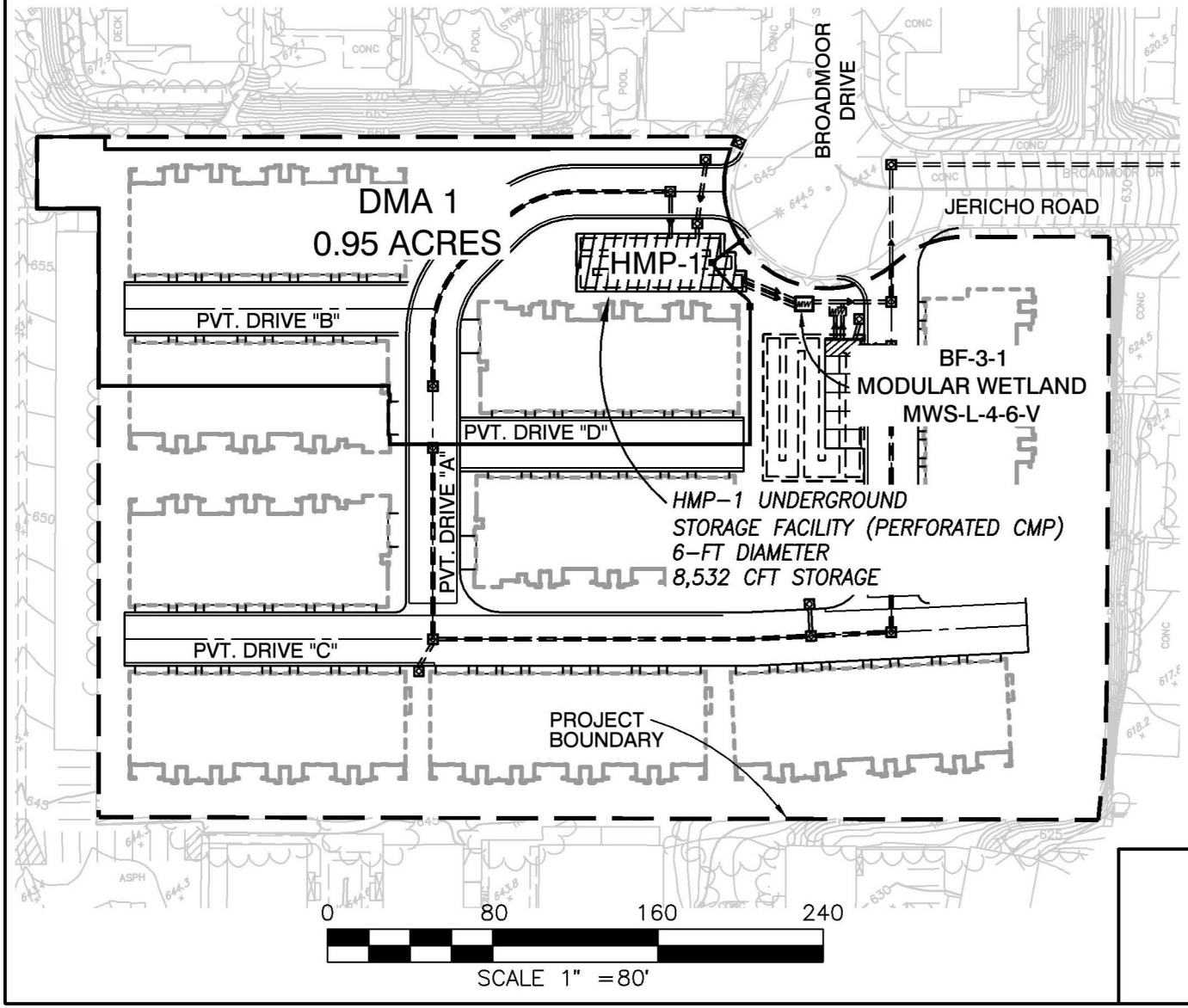
MWS-L-6-8-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

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

DMA 1 AREA SUMMARY		
SURFACE TYPE	AREA (SQFT)	TOTAL (SQFT)
IMPERVIOUS	34,863	41,086
PERVIOUS	6,223	



LEGEND

PROJECT BOUNDARY

DMA BOUNDARY

PROPOSED STORM DRAIN

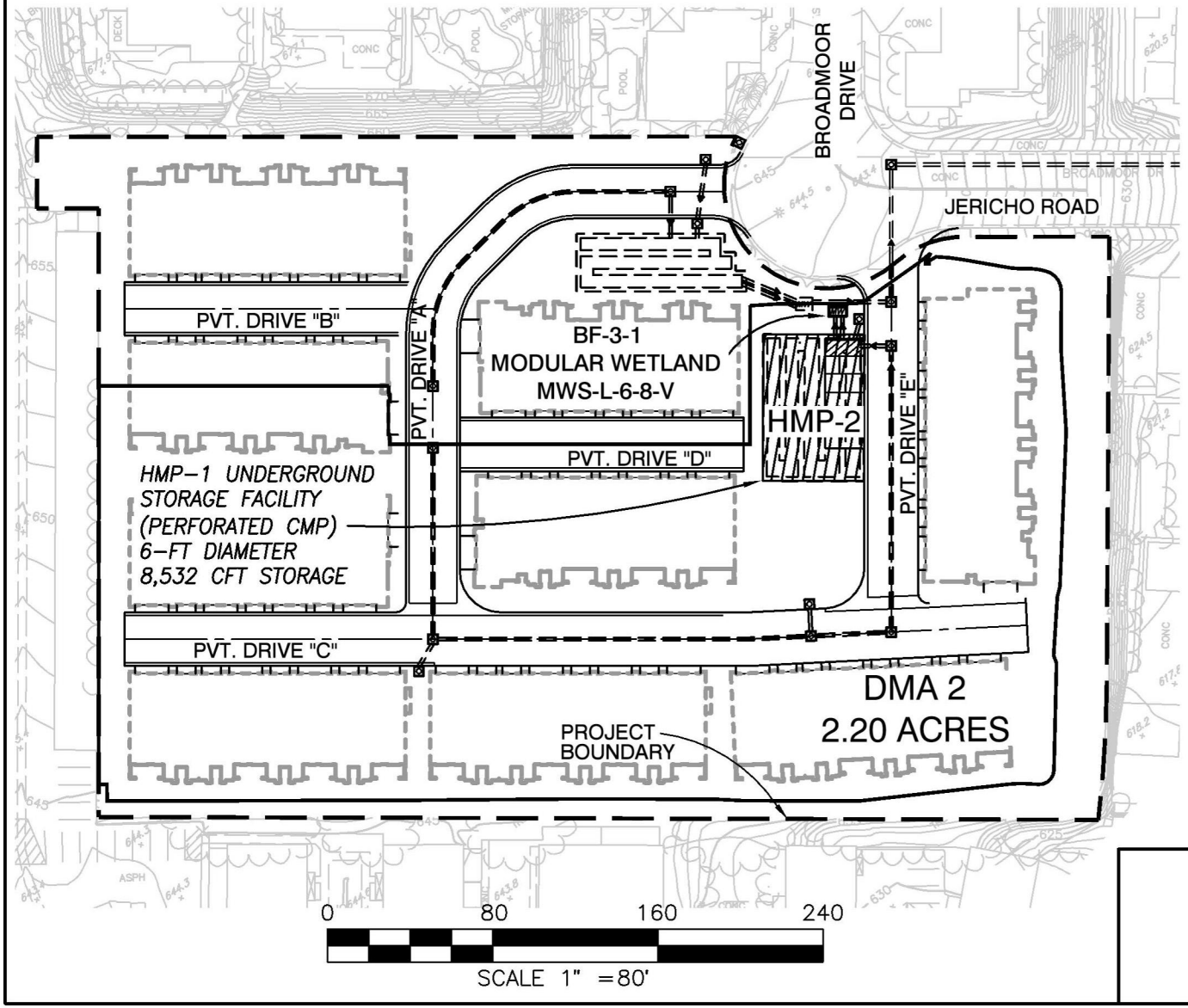
MODULAR WETLAND SYSTEM UNIT BF-3-1

UNDERGROUND STORAGE HMP-1

H&A

ATTACHMENT 2.2
DMA 1 MAPBOOK FOR
JERICHO ROAD
CITY OF LA MESA, CALIFORNIA

DMA 2 AREA SUMMARY		
SURFACE TYPE	AREA (SQFT)	TOTAL (SQFT)
IMPERVIOUS	77,920	95,865
PERVIOUS	17,946	



LEGEND

PROJECT BOUNDARY

DMA BOUNDARY

PROPOSED STORM DRAIN

MODULAR WETLAND SYSTEM UNIT BF-3-2

UNDERGROUND STORAGE HMP-2

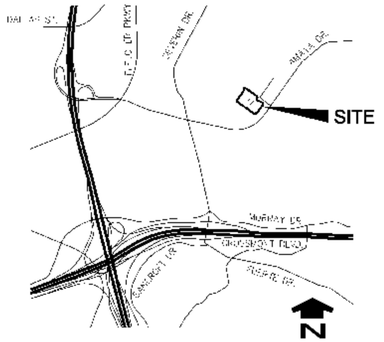
ATTACHMENT 2.2
DMA 2 MAPBOOK FOR
JERICHO ROAD
CITY OF LA MESA, CALIFORNIA

- 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).

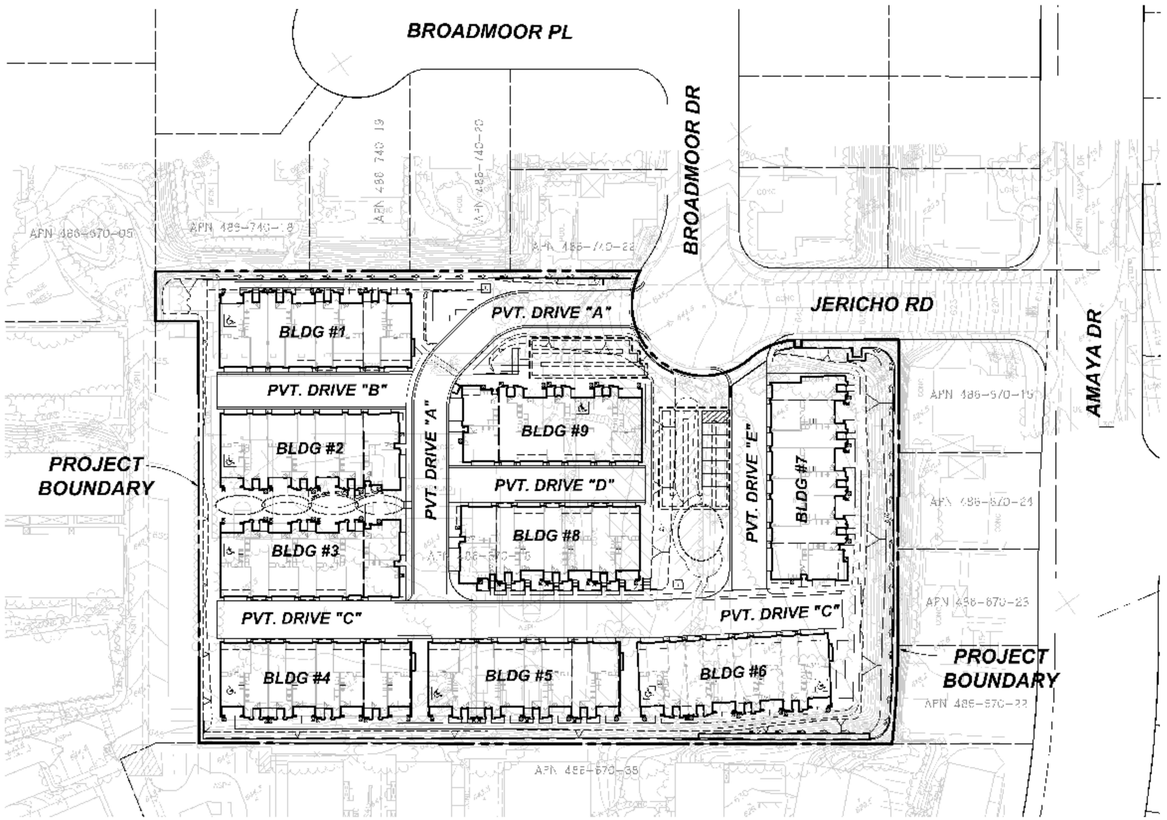
Plan Type	
Required Information[4]	
☒ Structural BMP(s) and Significant Site Design BMPs (if applicable) with ID numbers.	
☒ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit.	
☒ Details and specifications for construction of Structural BMP(s) and Significant Site Design BMPs (if applicable).	
☒ Signage indicating the location and boundary of structural BMP(s) as required by County staff.	
☒ How to access the structural BMP(s) to inspect and perform maintenance.	
☒ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).	
☒ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP).	
☒ Recommended equipment to perform maintenance.	
☒ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.	
☒ Include landscaping plan sheets (if available) showing vegetation requirements for vegetated structural BMP(s).	
☒ All BMPs must be fully dimensioned on the plans.	
☒ When proprietary BMPs are used, site-specific cross-section with outflow, inflow, and manufacturer model number must be provided. Photocopies of general brochures are not acceptable.	
☒ Include all source control and site design measures described in the SWQMP.	
☒ Include all construction BMPs described in the SWQMP.	

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

SITE DEVELOPMENT PLAN
JERICHO ROAD
CITY OF LA MESA, CALIFORNIA



VICINITY MAP
NOT TO SCALE



KEY MAP
NOT TO SCALE

LEGEND

PROJECT BOUNDARY	
EXISTING TOPO CONTOUR	350
BUILDING NUMBER	BLDG #2
FINISH FLOOR ELEVATION	FF=100.75
PAD ELEVATION	P=100.00
SLOPE (2:1 MAX)	2:1
DAYLIGHT LINE	
PERCENT OF GRADE	2%
ST. ELEVATION	350.4
4"ø PVC PRIVATE SEWER MAIN W/ MANHOLE *UNLESS SHOWN OTHERWISE ON PLAN	
SEWER INVERT ELEVATION	347.4 IE
4"ø PRIVATE PVC WATER MAIN *UNLESS SHOWN OTHERWISE ON PLAN	W
8" PUBLIC PVC WATER MAIN (HELIX WATER DISTRICT)	W
WATER METER	M
BACKFLOW PREVENTER	
FIRE HYDRANT	
18" PRIVATE HDPE STORM DRAIN* *UNLESS SHOWN OTHERWISE ON PLAN	
18" PUBLIC HDPE STORM DRAIN* *UNLESS SHOWN OTHERWISE ON PLAN	
RETAINING WALL* *PER CITY OF LA MESA STANDARD DRAWINGS	
TOP OF WALL ELEVATION/ FINISH GRADE	TW/FG
ST. LIGHT	
EASEMENT LINE	
TRANSFORMER	T
DRAINAGE SWALE PATH	
IRON DITCH	
ACCESSIBLE UNIT	

PARKING SUMMARY

USE	PARKING STANDARD	# OF UNITS	REQUIRED	PROVIDED
ATTACHED RESIDENTIAL	2 spaces per unit	73	146	146
GUEST PARKING	No minimum per AB 2097	73	0	5
	SUBTOTAL	73	146	151

GENERAL NOTES

1. GROSS SITE AREA: 3.49 AC
2. TOTAL NUMBER OF EXISTING LOTS: 1
3. TOTAL NUMBER OF PROPOSED LOTS: 1
4. TOTAL NUMBER OF UNITS: 73 (ATTACHED UNITS)
5. ASSESSOR PARCEL NUMBER: 486 670 18
6. EXISTING GENERAL PLAN: URBAN RESIDENTIAL (7-10 DU/AC)
7. PROPOSED GENERAL PLAN: MULTIPLE UNIT RESIDENTIAL (18.73 DU/AC)
8. EXISTING ZONING CLASSIFICATION: R1
9. PROPOSED ZONING CLASSIFICATION: R3
10. PROPOSED DENSITY: 20.9 DU/AC (73 DU's/3.49 AC)
11. TOPOGRAPHIC CONTOUR INTERVAL: 1 FOOT
12. MAP/NEW SUBDIVISION: 2:1
13. AREA/PERCENT OF TOTAL BUILDING COVERAGE: 1.30 AC (37.2%)
14. AREA/PERCENT OF PROJECT IN STREETS, DRIVEWAYS & DRIVE AISLES: 0.82 AC (23.5%)
15. AREA/PERCENT OF SIDEWALKS: 0.17 AC (4.9%)
16. AREA/PERCENT OF LANDSCAPING: 1.20 AC (34.4%)

DESIGN NOTES

1. ALL STREET DESIGN SHALL CONFORM TO THE CITY OF LA MESA DESIGN STANDARDS AS REQUIRED BY THE CITY ENGINEER.
2. EASEMENTS SHALL BE PROVIDED, REMOVED OR RELOCATED AS REQUIRED BY THE CITY ENGINEER.
3. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND AND EASEMENTS PROVIDED.
4. GEOTECHNICAL INVESTIGATION PREPARED BY: LGC GEOTECHNICAL, INC. DATED JUNE 5, 2023.
5. THE DEVELOPER SHALL INSTALL STREET LIGHTS PER THE CITY OF LA MESA ENGINEERING DEPARTMENT.
6. THE PROPOSED SEWER SHALL BE INSTALLED PER CITY OF LA MESA STANDARDS.
7. THE PROPOSED WATER SHALL BE INSTALLED PER HELIX WATER DISTRICT.
8. FINISH GRADES ARE APPROXIMATE AND SUBJECT TO CHANGE IN FINAL DESIGN.
9. MODEL UNITS MAY BE BUILT PRIOR TO FINAL MAP WITH APPROVAL FROM THE CITY ENGINEER AND PLANNING DIRECTOR.
10. ALL FUTURE DRIVEWAYS AND GEOMETRIC DESIGN SHALL BE DESIGNED IN COMPLIANCE WITH THE CITY OF LA MESA ENGINEERS DESIGN STANDARDS.
11. THE PRESENT OR FUTURE OWNER/DEVELOPER SHALL INDEMNIFY AND SAVE CITY OF LA MESA, ITS OFFICERS, AGENTS, AND EMPLOYEES HARMLESS FROM ANY AND ALL LIABILITIES, CLAIMS ARISING FROM ANY FLOODING THAT OCCURS ON THIS SITE AND FLOODING THAT MAYBE DISCHARGED FROM THIS SITE INTO ADJACENT PROPERTIES.
12. ADA COMPLIANT SIDEWALKS AND PATHWAYS ARE PROVIDED THROUGHOUT THE SITE WHERE APPROPRIATE.

OWNER

CALVARY CHAPEL OF EL CAJON
9407 JERICHO ROAD
LA MESA, CA 91942
ATTN: DONZIO OLIVERIO
TEL: (619) 533 9956

OWNER DATE

APPLICANT

MLC HOLDINGS, INC./ MERITAGE HOMES
JOHANNA CROOKER
5 PARK PLAZA CANYON ROAD
SUITE 310
IRVINE, CA 92606

JOHANNA CROOKER DATE
APPLICANT

EARTHWORK/GRADING QUANTITIES

CUT: APPROX. 4,522 C.Y.
FILL: APPROX. 4,522 C.Y.

GRADING QUANTITIES SHOWN ARE RAW QUANTITIES ONLY AND DO NOT INCLUDE THE EFFECT OF REMEDIAL GRADING SHOWN IN THE PRELIMINARY SOILS REPORT.

SHEET INDEX

OPEN SPACE

SEE SHEET 6

BASIS OF BEARING

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CCS '83 CALIFORNIA COORDINATE SYSTEM ZONE 6, 1991.35 EPOCH, GRID BEARING BETWEEN STATION 51 AND STATION 47 AS SAID COORDINATES ARE PUBLISHED IN RECORD OF SURVEY MAP NO. 16570, I.E. N80°11'21"E

BENCHMARK

VERTICAL BASED ON CITY OF LA MESA BENCHMARK NO. 1(4031) ELEV. 379.160' (NGVD 29)

TOPOGRAPHY SOURCE

VERTICAL DATUM SHOWN HEREON WAS PROVIDED BY FIELD METHODS COMBINED WITH AERIAL PHOTOGRAPHY BY PHOTO GEODETIC CORPORATION FLOWN ON MARCH 17, 2023.

REGISTERED PROFESSIONAL ENGINEER ALISA S. VIALPANDO C 47945 CIVIL STATE OF CALIFORNIA

CIVIL ENGINEER

HUNSAKER & ASSOCIATES, SAN DIEGO, INC
9707 WAPLES STREET
SAN DIEGO, CA 92121
(858) 558 4500

ALISA S. VIALPANDO R.C.E. 47945 DATE

LEGAL DESCRIPTION

SEE SHEET 8

EASEMENTS

SEE SHEET 8

PREPARED BY:
HUNSAKER & ASSOCIATES SAN DIEGO, INC
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 FX(858)558-1414

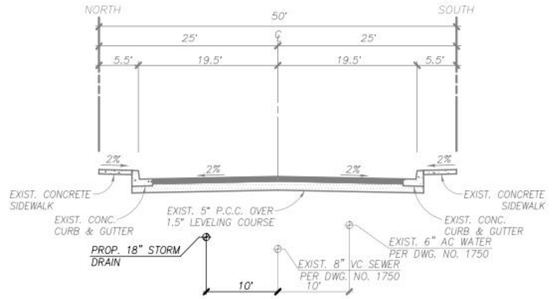
NO.	REVISIONS	DATE	BY
1	1st SUBMITTAL	08/11/2023	H&A
2			
3			
4			
5			
6			
7			
8			
9			
10			

SITE DEVELOPMENT PLAN
JERICHO ROAD
CITY OF LA MESA, CALIFORNIA

SHEET 1 OF 8

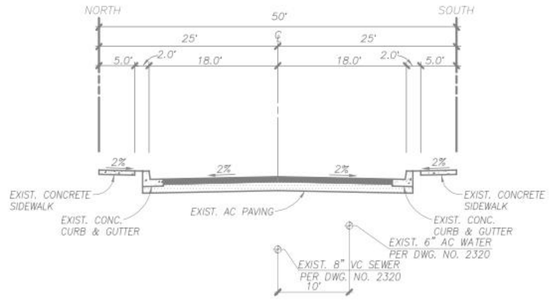
HA # 3937-0612

R:\1790\&Pm\SDP\Jericho Road SDP Sht 01.dwg[]Aug-10-2023:16:54



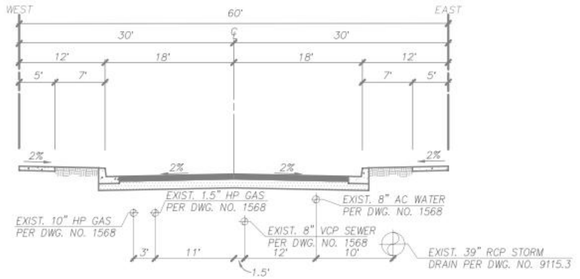
EXISTING JERICHO ROAD

NOT TO SCALE



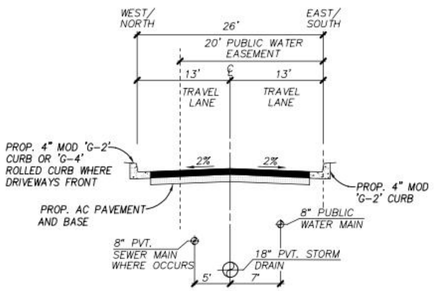
EXISTING BROADMOR DRIVE

NOT TO SCALE



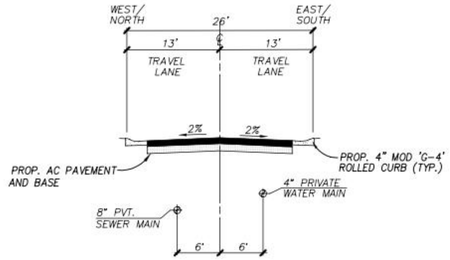
EXISTING AMAYA DRIVE
(AT CURB RETURN NORTH OF PROP. STORM DRAIN CONN.)

NOT TO SCALE



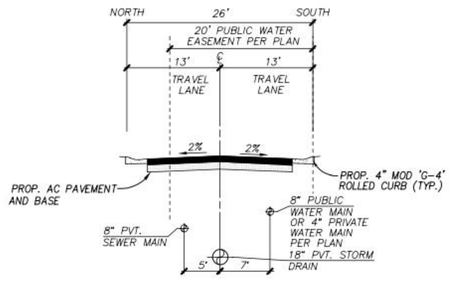
PROPOSED PVT. DRIVE 'A'

NOT TO SCALE



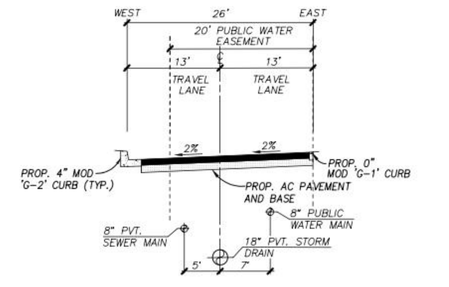
PROPOSED PVT. DRIVES 'B' & 'D'

NOT TO SCALE



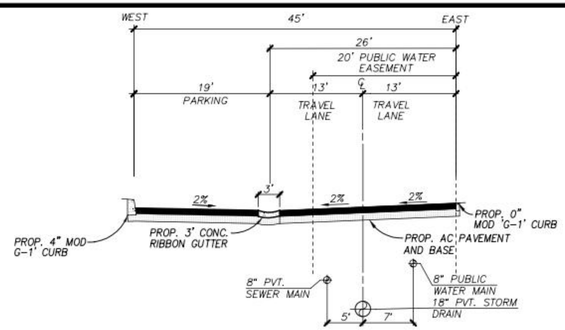
PROPOSED PORTION OF PVT. DRIVE 'C'

NOT TO SCALE



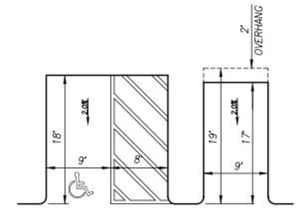
PROPOSED PORTION OF PVT. DRIVE 'E'

NOT TO SCALE



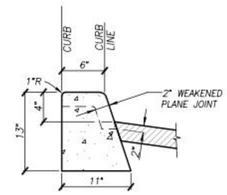
PROPOSED PORTION OF PVT. DRIVE 'E'
(WHERE ON STREET PARKING IS SHOWN)

NOT TO SCALE



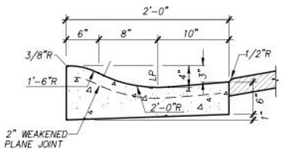
TYPICAL PARKING DETAIL

NOT TO SCALE



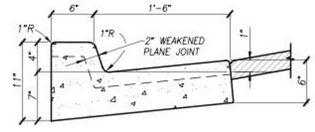
4" MOD. 'G-1' CURB

NOT TO SCALE



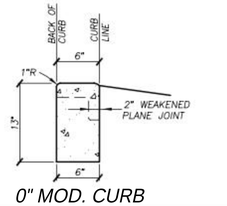
4" MOD. 'G-4' ROLLED CURB

NOT TO SCALE



4" MOD. 'G-2' CURB & GUTTER

NOT TO SCALE



0" MOD. CURB

NOT TO SCALE

STREET SECTIONS / SITE DETAILS

PREPARED BY:
HUNSAKER & ASSOCIATES SAN DIEGO, INC.
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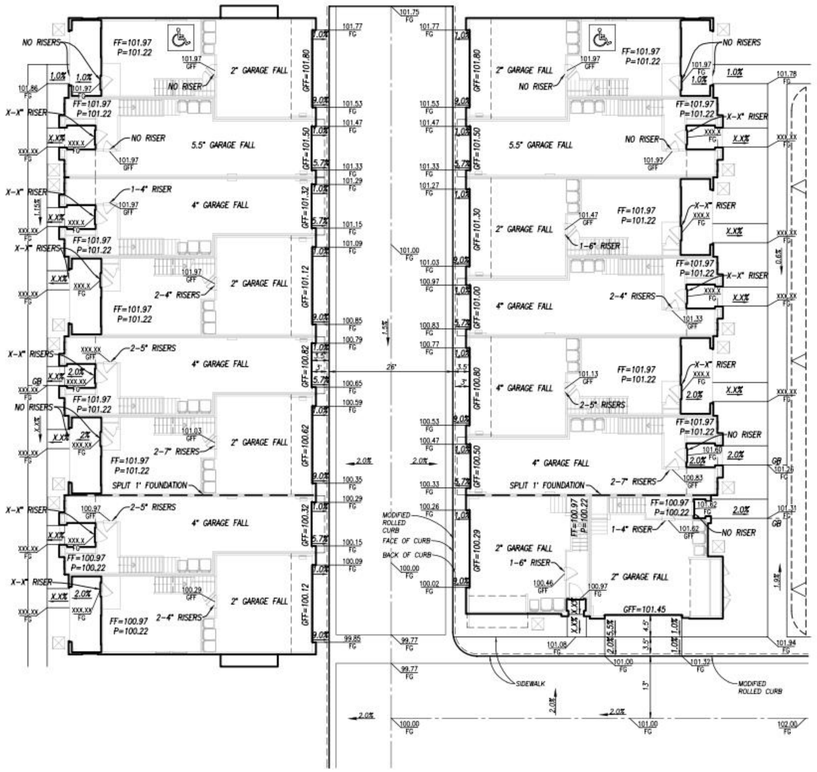
SITE DEVELOPMENT PLAN

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

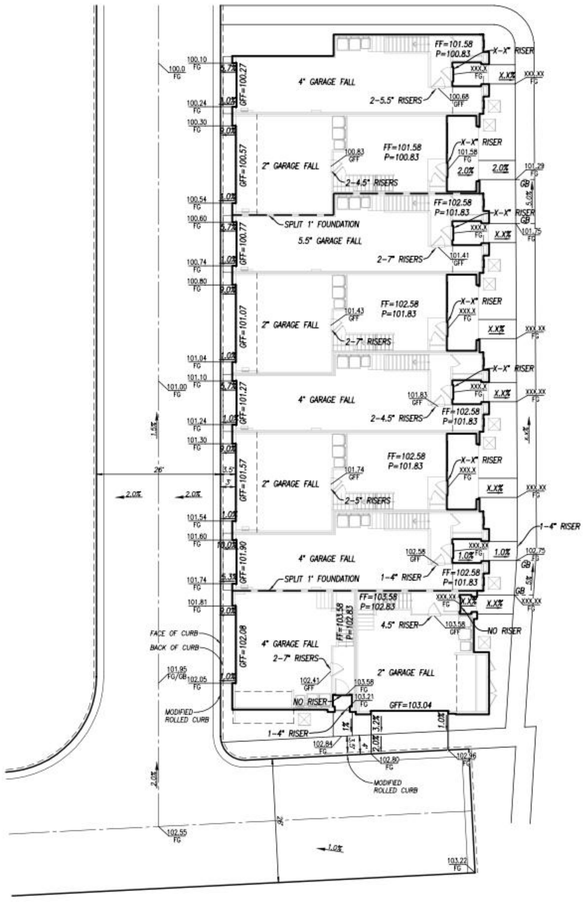
SHEET 2 OF 8

WO # 3087-0012



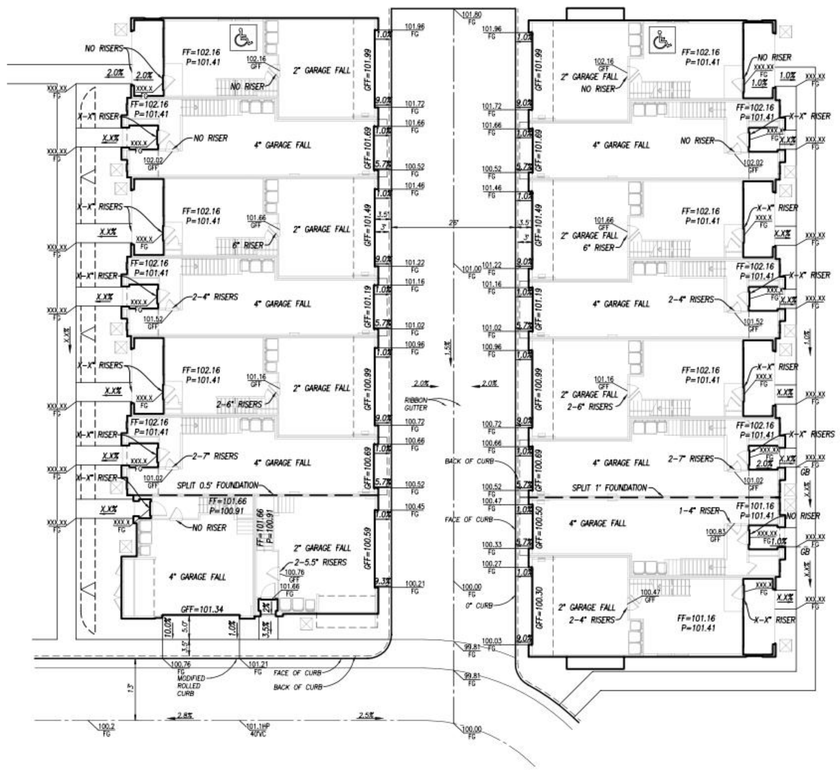
TYPICAL 8-PLEX & 8-PLEX WITH TURN-IN DRIVEWAY/GARAGE DETAIL ON CROWNED DRIVE

NOT TO SCALE



TYPICAL 9-PLEX WITH TURN-IN DRIVEWAY/GARAGE DETAIL ON CROWNED DRIVE

NOT TO SCALE



TYPICAL 8-PLEX & 8-PLEX WITH TURN-IN DRIVEWAY/GARAGE DETAIL ON INVERTED DRIVE

NOT TO SCALE

SITE DETAILS / DRIVEWAY DETAILS

PREPARED BY:

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SITE DEVELOPMENT PLAN

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

SHEET 3 OF 8

WO # 3087-0012

R:\1790\&Pln\SDP\Jericho Road SDP Sht 03.dwg[]Aug-10-2023:16:28


BROADMOOR PL
BROADMOOR DR
JERICHO RD
AMAYA DR
LAKEVIEW DR
PROJECT BOUNDARY
PROJECT BOUNDARY
EXIST. 8" VC SEWER PER DWG. NO. 23020-D
EXIST. 6" AC WATER PER DWG. NO. 23020-D
EXIST. 8" VC SEWER PER DWG. NO. 1750
EXIST. 6" AC WATER PER DWG. NO. 1750
EXIST. FIRE HYDRANT
LOT 1 MAP NO 8012
POR. LOT 2 BLOCK 30 LS MAP 50
APN 486-670-05
APN 486-740-18
APN 486-740-19
APN 486-740-20
APN 486-740-22
MAP 5572
APN 486-670-27
LOT 1 MAP 7700
POR. LOT 11, BLOCK 30 LS MAP 50
APN 486-670-18
APN 486-670-15
APN 486-670-24
POR. LOT 11 BLOCK 30 LS MAP 50
APN 486-670-23
APN 486-670-22
APN 486-670-38
LOT 1 MAP 10412
EXIST. BUILDING
EXIST. HOUSE
EXIST. COURT
EXIST. PARKING LOT
PLAYGROUND
SCALE 1"= 30'
EXISTING CONDITIONS

PREPARED BY:

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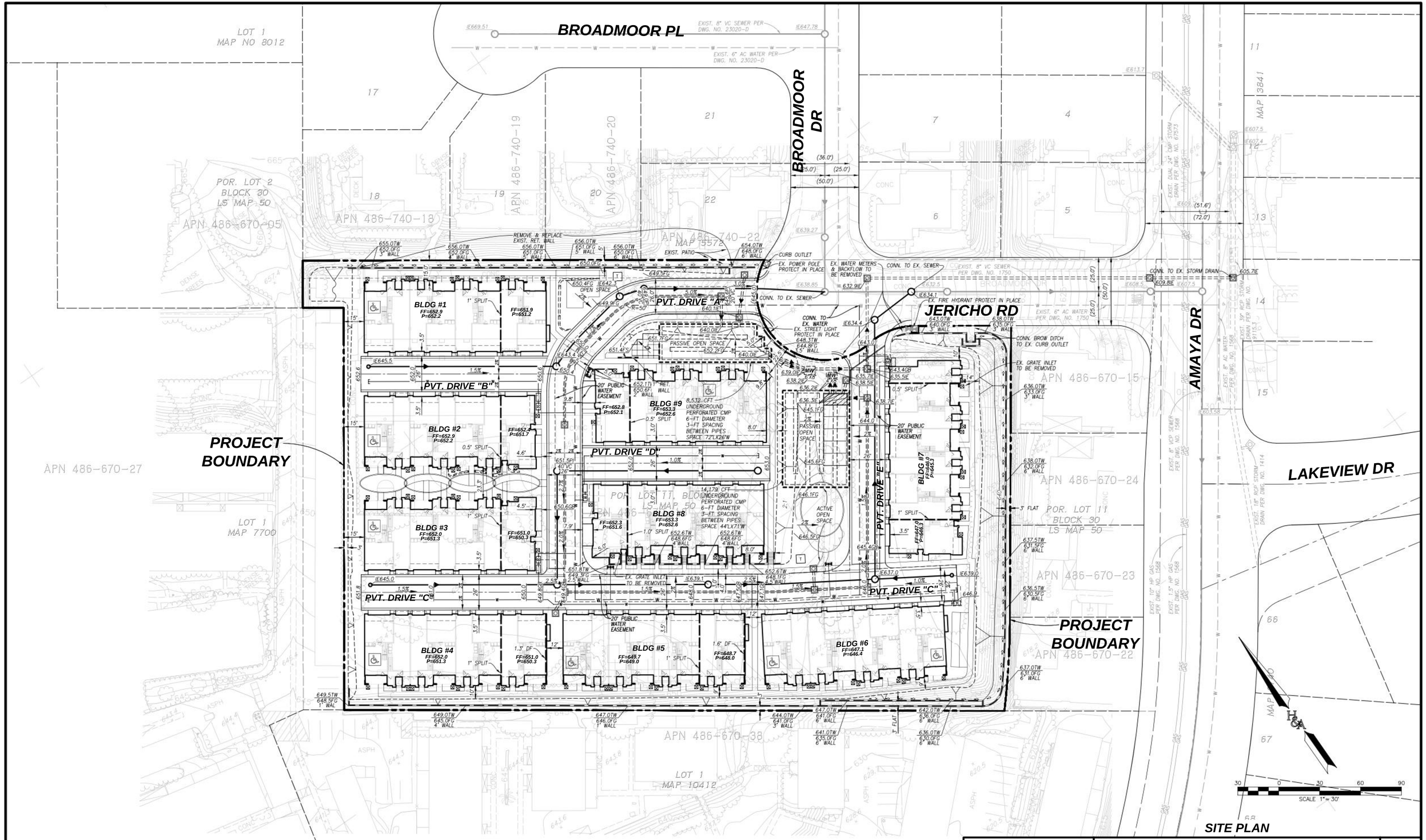
SITE DEVELOPMENT PLAN

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

SHEET 4 OF 8

WO # 3087-0012



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SITE DEVELOPMENT PLAN

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

SHEET 5 OF 8

WO # 3087-0012

LEGEND

- ACTIVE COMMON OPEN SPACE
- PASSIVE COMMON OPEN SPACE

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC

PLANNING ENGINEERING SURVEYING

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San Diego, Ca 92121
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SITE DEVELOPMENT PLAN

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

SHEET 6 OF 8

BROADMOOR PL

BROADMOOR DR

JERICHO RD

AMAYA DR

LAKEVIEW DR

PVT. DRIVE "A"

PVT. DRIVE "B"

PVT. DRIVE "C"

PVT. DRIVE "D"

PVT. DRIVE "E"

BLDG #1
FF=652.9
P=652.2
FF=651.9
P=651.2

BLDG #2
FF=652.9
P=652.2
FF=652.2
P=651.7

BLDG #3
FF=652.0
P=651.3
FF=651.0
P=650.3

BLDG #4
FF=652.0
P=651.3
FF=651.0
P=650.3

BLDG #5
FF=649.7
P=649.0
FF=648.7
P=648.0

BLDG #6
FF=647.1
P=646.4

BLDG #7
FF=646.0
P=645.3
FF=647.0
P=646.3

BLDG #8
FF=653.3
P=652.6
FF=652.3
P=651.6

BLDG #9
FF=653.3
P=652.6
FF=652.8
P=652.1

PROJECT BOUNDARY

PROJECT BOUNDARY

ACCESSIBILE ROUTE

LOT 1
MAP NO 8012

POR. LOT 2
BLOCK 30
LS MAP 50

APN 486-670-05

APN 486-740-18

APN 486-740-19

APN 486-740-20

APN 486-740-22
MAP 15572

APN 486-670-15

APN 486-670-24

POR. LOT 11
BLOCK 30
LS MAP 50

APN 486-670-23

APN 486-670-22

APN 486-670-27

APN 486-670-38

LOT 1
MAP 7700

LOT 1
MAP 10412

POR. LOT 11, BLOCK 30
LS MAP 50

MAP 3841

SCALE 1" = 30'

LEGEND

PROPOSED ACCESSIBLE ROUTE

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SITE DEVELOPMENT PLAN

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

SHEET 7 OF 8

WO # 3087-0012

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF LA MESA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

LOT 11, BLOCK 30 OF EL CAJON HEIGHTS, IN THE CITY OF LA MESA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO LICENSED SURVEYOR'S MAP NO. 50 FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, FEBRUARY 20, 1894. EXCEPTING THEREFROM THE SOUTHEASTERLY 110.00 FEET. ALSO EXCEPTING THEREFROM THAT PORTION LYING WITHIN THE BOUNDARY OF LAND FIRST DESCRIBED IN DEED TO THE CITY OF LA MESA, RECORDED JANUARY 12, 1961, AS INSTRUMENT NO. 6087 OF OFFICIAL RECORDS DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST EASTERLY CORNER OF SAID LOT 11; THENCE NORTH 55°28'15" WEST ALONG THE NORTHEAST LINE OF SAID LOT 11, A DISTANCE OF 3.75 FEET TO THE TRUE POINT OF BEGINNING, SAID POINT BEING ALSO THE NORTHWEST LINE OF PROPERTY DEEDED TO THE CITY OF LA MESA, RECORDED IN BOOK 7502, PAGE 21, DATED FEBRUARY 17, 1959; THENCE LEAVING SAID NORTHEAST LINE SOUTH 37°41'43" WEST A DISTANCE OF 75.11 FEET ALONG THE NORTHEAST LINE OF PROPERTY SO DEEDED, TO THE END OF A TANGENT 25.00 FOOT RADIUS CURVE; THENCE ALONG SAID CURVE CONCAVE WESTERLY (RECORD EASTERLY) THROUGH AN ANGLE OF 93°09'58" A DISTANCE OF 40.65 FEET TO THE POINT OF TANGENCY; THENCE NORTH 55°28'15" WEST A DISTANCE OF 147.96 FEET TO THE BEGINNING OF A TANGENT 50.00 FOOT RADIUS CURVE, HEREINAFTER CALLED POINT "A", CONCAVE SOUTHERLY (RECORD NORTHERLY); THENCE WESTERLY ALONG SAID CURVE THROUGH AN ANGLE OF 41°24'35" A DISTANCE OF 36.13 FEET TO THE POINT OF A REVERSE 50.00 FOOT RADIUS CURVE; THENCE WESTERLY AND NORTHERLY ALONG SAID CURVE TO ITS INTERSECTION WITH THE NORTHEAST LINE OF SAID LOT 11; THENCE SOUTH 55°28'15" EAST ALONG SAID NORTHEAST LINE TO THE TRUE POINT OF BEGINNING.

TOGETHER WITH THAT PORTION OF SAID LOT 11 DESCRIBED AS FOLLOWS:

BEGINNING AT SAID POINT "A" THENCE SOUTH 55°28'15" EAST 2.50 FEET; THENCE SOUTH 34°31'45" WEST 5.00 FEET; THENCE NORTH 55°28'15" WEST 5.00 FEET; THENCE NORTH 34°31'43" EAST 5.00 FEET; THENCE SOUTH 55°28'15" EAST TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THAT PORTION CONVEYED IN DEED RECORDED AUGUST 19, 1965 AS FILE NO. 150926 OF OFFICIAL RECORDS AND DESCRIBED AS FOLLOWS:

THE NORTHWEST 30.00 FEET OF LOT 11 IN BLOCK 30 OF EL CAJON HEIGHTS, IN THE CITY OF LA MESA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO LICENSE SURVEY MAP NO. 50, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID SAN DIEGO COUNTY, FEBRUARY 20, 1894, LYING SOUTHWESTERLY OF THE SOUTHEASTERLY PROLONGATION OF THE SOUTHWESTERLY LINE OF THE NORTHEASTERLY 180.00 FEET OF LOT 2 IN BLOCK 30 OF SAID EL CAJON HEIGHTS.

TITLE REFERENCE

THE INFORMATION SHOWN HEREON IS BASED ON THE PRELIMINARY TITLE REPORT ISSUED BY FIRST AMERICAN TITLE COMPANY AS ORDER NO. NHSC-1172039-SA1 DATED MARCH 20, 2023.

ASSESSOR'S PARCEL NUMBER

486-670-18-00

TITLE EXCEPTIONS

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I—REQUIREMENTS ARE MET.

2. (A) TAXES OR ASSESSMENTS THAT ARE NOT SHOWN AS EXISTING LIENS BY THE RECORDS OF ANY TAXING AUTHORITY THAT LEVIES TAXES OR ASSESSMENTS ON REAL PROPERTY OR BY THE PUBLIC RECORDS; (B) PROCEEDINGS BY A PUBLIC AGENCY THAT MAY RESULT IN TAXES OR ASSESSMENTS, OR NOTICES OF SUCH PROCEEDINGS, WHETHER OR NOT SHOWN BY THE RECORDS OF SUCH AGENCY OR BY THE PUBLIC RECORDS.

3. ANY FACTS, RIGHTS, INTERESTS, OR CLAIMS THAT ARE NOT SHOWN BY THE PUBLIC RECORDS BUT THAT COULD BE ASCERTAINED BY AN INSPECTION OF THE LAND OR THAT MAY BE ASSERTED BY PERSONS IN POSSESSION OF THE LAND.

4. EASEMENTS, LIENS OR ENCUMBRANCES, OR CLAIMS THEREOF, NOT SHOWN BY THE PUBLIC RECORDS.

5. ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND AND NOT SHOWN BY THE PUBLIC RECORDS.

6. (A) UNPATENTED MINING CLAIMS; (B) RESERVATIONS OR EXCEPTIONS IN PATENTS OR IN ACTS AUTHORIZING THE ISSUANCE THEREOF; (C) WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT THE MATTERS EXCEPTED UNDER (A), (B), OR (C) ARE SHOWN BY THE PUBLIC RECORDS.

7. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2023-2024, A LIEN NOT YET DUE OR PAYABLE.

8. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2022-2023 ARE PARTIALLY EXEMPT. IF THE EXEMPT STATUS IS TERMINATED AN ADDITIONAL TAX MAY BE LEVIED. ACCOUNT NO. 486-670-18-00.

9. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE.

10. AN EASEMENT FOR PIPE LINES AND AQUEDUCTS AND INCIDENTAL PURPOSES, RECORDED AUGUST 17, 1887 IN BOOK 175 OF DEEDS, PAGE 342.

    IN FAVOR OF: SAN DIEGO FLUME COMPANY

    AFFECTS: AS DESCRIBED THEREIN

    THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

11. AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED JULY 11, 1960 AS INSTRUMENT NO. 139520 OF OFFICIAL RECORDS.

    IN FAVOR OF: SAN DIEGO GAS AND ELECTRIC COMPANY

    AFFECTS: AS DESCRIBED THEREIN

    THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

12. AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 03, 1965 AS INSTRUMENT NO. 65-161436 OF OFFICIAL RECORDS.

    IN FAVOR OF: SAN DIEGO GAS AND ELECTRIC COMPANY

    AFFECTS: AS DESCRIBED THEREIN

13. A DEED OF TRUST TO SECURE AN ORIGINAL INDEBTEDNESS OF $980,000.00 RECORDED SEPTEMBER 06, 2017 AS INSTRUMENT NO. 2017-0408505 OF OFFICIAL RECORDS.

    DATED: AUGUST 29, 2017

    TRUSTOR: CALVARY CHAPEL OF EL CAJON, A CALIFORNIA CORPORATION

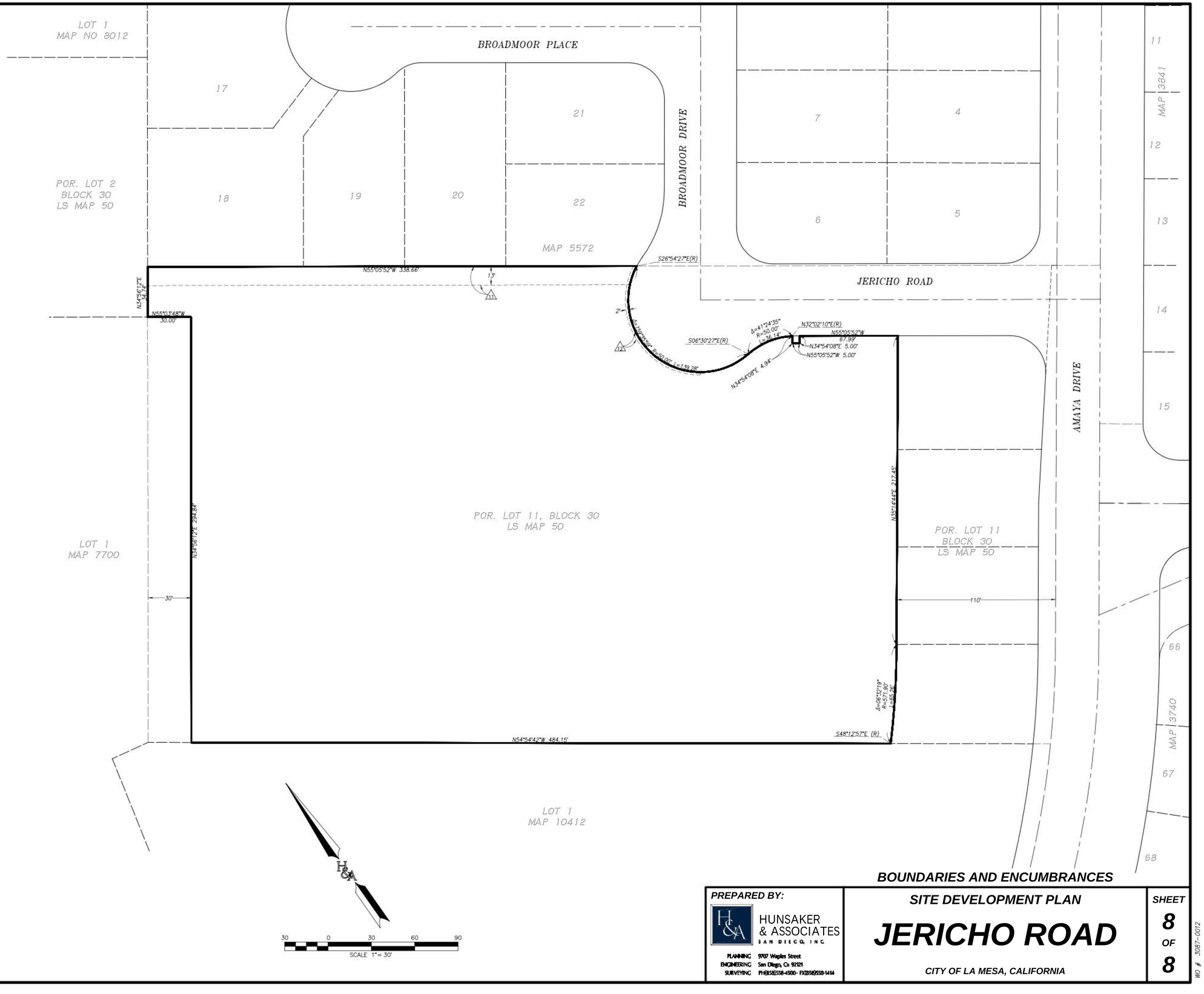
    TRUSTEE: COMMERCEWEST BANK

    BENEFICIARY: COMMERCEWEST BANK

14. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

15. ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH WOULD BE DISCLOSED BY A CORRECT ALTA/NSPS SURVEY.

16. RIGHTS OF PARTIES IN POSSESSION.



BOUNDARIES AND ENCUMBRANCES

PREPARED BY:

HUNSAKER & ASSOCIATES SAN DIEGO, INC.

PLANNING
ENGINEERING
SURVEYING

9707 Waples Street
San Diego, Ca 92121
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SITE DEVELOPMENT PLAN

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

SHEET 8 OF 8

WO # 3087-0012

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: Drainage Study for Jericho Road

    Prepared By: Hunsaker and Associates San Diego, Inc.

    Date: 07/28/2023

  - 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.

DRAINAGE STUDY
for
Jericho Road

APN: 486-670-18-00
City of La Mesa, California

Prepared for:

Meritage Home
5 Peters Canyon Road, Suite 310
Irvine, CA, 92606
(949) 299-3847

W.O. 3087-12

July 28, 2023

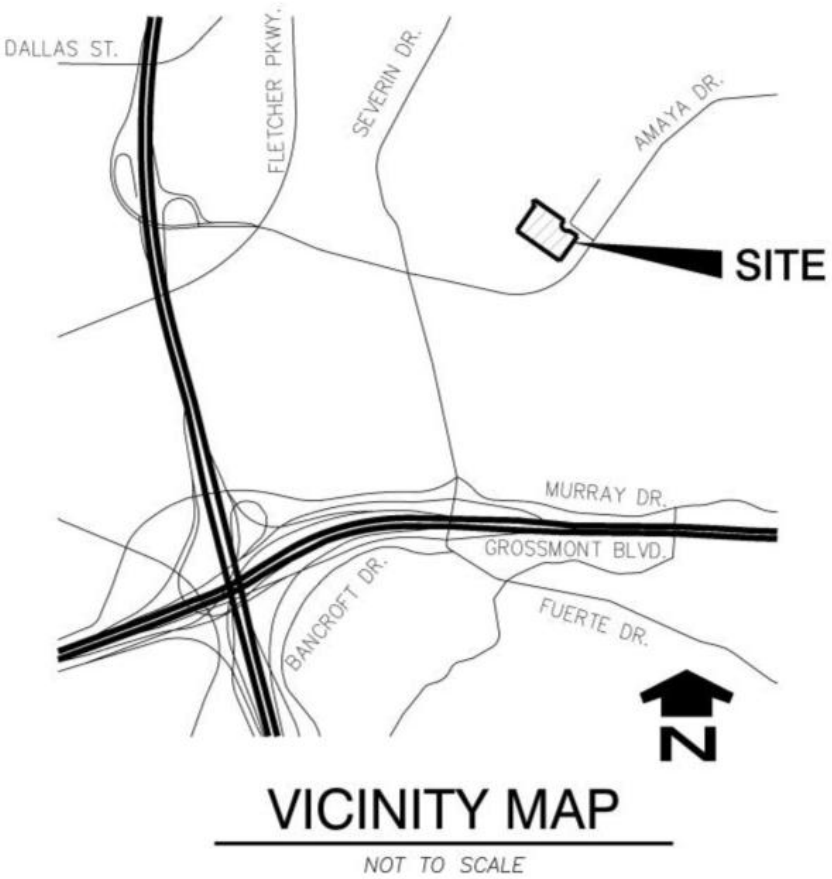
Alisa S. Vialpando, R.C.E.
President
Hunsaker & Associates San Diego, Inc.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1.1 Introduction

The Jericho Road project is situated at 9407 Jericho Road, on the southwest corner of the intersection of Amaya Drive and Broadmoor Drive, in the City of La Mesa, California. The 3.49-acre site, which is rectangular in shape, is bordered to the south by an existing multi-family residential community, and to the east, north, and west by existing single-family residential properties. A vicinity map is included below to better illustrate the project site's location.



VICINITY MAP

NOT TO SCALE

The redevelopment plan involves the removal of the current structures and proposes the construction of multi-family residences with 73 attached units with associated improvements. The site will also include a tot lot, open spaces, sidewalks, and private driveways. The units are connected by private drives which are accessible via Jericho Rd on the east boundary.

This report aims to evaluate the existing and projected hydrological conditions in relation to the site's development. The proposed stormwater management infrastructure encompasses storm drain, curb inlets, catch basins, curb outlets, brow ditches, and an underground storage facility designed for water quality control, hydromodification, and detention (detention system made from corrugated metal

pipe (CMP) or equivalent). The storage facility will utilize a proprietary biofiltration modular wetland system downstream of it to provide water quality treatment.

This drainage study will address:

- 100-Year Peak Flowrates for Existing and Developed Conditions
- Detention Calculations

A separate report has been prepared to address water quality and HMP flow control requirements for the project. Refer to the *Stormwater Quality Management Plan (SWQMP) for Jericho Road* prepared by Hunsaker & Associates San Diego, Inc. (July 2023).

1.2 Existing Conditions

Under existing conditions, the Jericho Road site primarily serves as a church, comprising several buildings, a concrete parking area, an asphalt basketball court, and numerous open grassy spaces. Surface water flow from the northwestern portions of the site tends to move south towards an 18" x 18" catch basin situated within a sediment basin. This flow is subsequently directed eastward via an existing 3" HDPE drain, where it converges with runoff from the northeastern section before discharging onto Jericho Road through existing curb outlets.

Surface water from the southern part of the site flows south towards a 12" x 12" catch basin and then to an existing curb outlet (D25) on Jericho Road. This runoff then merges with additional runoff from the southeastern part of the site and is funneled south through the Jericho Road and Amaya Drive curb and gutter systems.

After approximately 815 feet, this runoff is intercepted by an inlet situated across from Water Street on Amaya Drive. The captured flow enters an existing 39” R.C.P. under Amaya Drive and continues southeast under Water Street, is then discharged via an existing 3.2’ X 5’ box culvert into an existing channel north of Janfred Road. This runoff persists in its westward direction, entering a 10' X 5' R.C.B located southwest of the intersection of Amaya Drive and Severin Drive, then to dual 72” pipe which outlets into an existing open channel. This channel continues westerly to Alvarado Creek, eventually flowing into the lower San Diego River. The river subsequently empties into the Pacific Ocean at the mouth of the San Diego River.

The runoff coefficient corresponding to the site was calculated considering the respective hydrologic soil type and imperviousness, following the guidelines set forth in Table 3-1 of the San Diego County Hydrology Manual 2003. The computed runoff coefficient for the on-site drainage area associated with 48% imperviousness and Soil type D is approximately 0.618, while the slope contributes a runoff factor of 0.35.

Table 1 below summarizes the 100-year existing condition peak flow at the downstream project boundary. Supporting calculations for the data presented in

Table 1 is located in Chapter 3 of this report. The corresponding hydrology map (Exhibit 1) is located in Chapter 5.

TABLE 1
Summary of Existing Conditions

Outlet Location	Node Number	Area (Acres)	Runoff Factor C	Tc (min)	I (in\hr)	V100* Velocity (ft\sec)	100 Year Peak Flow (cfs)
East	206	3.6	0.618	10.68	4.7	8.97	9.42

1.3 Proposed Condition

The Jericho Road project proposes the construction of nine structure buildings comprising a total of 73 attached units, along with various associated improvements. In addition to the residential units, the site will feature amenities such as a tot lot, open spaces, sidewalks, and private driveways.

Runoff from the developed site will be collected by the proposed inlets and routed via the proposed storm drain system towards two underground storage facilities, such as CMP or equivalent structures. The underground storage facilities serve to meet hydromodification and peak flow attenuation requirements and to store the water quality designed captured volume and releasing it at a specified flow rate to a downstream modular wetland, which will address water quality concerns. To thoroughly address water quality and HMP flow control requirements for the Jericho Road project, a separate report titled "Stormwater Quality Management Plan (SWQMP)" has been prepared by Hunsaker & Associates San Diego, Inc. (July 2023).

The peak flow will be routed through their respective vault riser structure and discharged into the proposed 18” storm drain near the entrance of the site. The runoff will then confluence with the offsite existing 39” storm drain on Amaya Drive and flow south similarly to existing conditions to eventually discharge into the San Diego River which empties into the Pacific Ocean.

The peak flow has been calculated in accordance with the San Diego County Hydrology Manual, County of San Diego Department of Public Works Flood Control Division, June 2003.

In the Rational Method Analysis, a runoff coefficient of 0.80 has been utilized for the southern drainage area (100 Node series), considering an 81% imperviousness factor. For the northern drainage area (200 Node series), a runoff coefficient of 0.82 was used, considering an 85% imperviousness factor. These runoff coefficients were calculated assuming a fully developed site and soil type D for the entire project site,

following the formula in section 3.1.2 from the San Diego County Hydrology Manual 2003.

$$C = 0.90 \times (\% \text{ Impervious}) + C_p \times (1 - \% \text{ Impervious})$$

Where: C_p = Pervious Coefficient Runoff Value for the soil type (shown in Table 3-1 as Undisturbed Natural Terrain/Permanent Open Space, 0% Impervious).

Cp = 0.35 from table 3-1 San Diego County Hydrology Manual 2003.

Table2 below summarizes the proposed Q100 flow at the discharge point.

TABLE 2 - Summary of Proposed Condition Peak Flows for Jericho Road

Outlet Location	Node Number	Area (Acres)	Runoff Factor	Tc (min)	I (in\hr)	V100* Velocity (ft\sec)		100 Year Peak Flow (cfs)	100 Year Peak Flow Mitigated (cfs)
						Pr.	PR. Mit.		
Jericho Road	126	3.6	0.82	7.29	4.396	17.39	14.39	15.15	8.07

1.4 Conclusion

TABLE 3 – Summary of Existing Vs Proposed Site Runoff

Outlet Location	Node Number	Area (Acres)		Runoff Factor		Tc (min)		I (in\hr)		V100* Velocity (ft\sec)			100 Year Peak Flow (cfs)		
		Ex.	Pr.	Ex.	Pr.	Ex.	Pr.	Ex.	Pr.	Ex.	Pr.	PR. Mit.	Ex.	Pr.	PR. Mit.
Jericho Road	126 – PR 206 - EX	3.6	3.6	0.618	0.82	9.65	7.29	4.7	4.4	8.97	17.39	14.39	9.66	15.15	8.07

*Ex.: Existing Conditions
Pr.: Proposed Conditions
Mit.: Mitigated Conditions

Location	Area (Acres)	100 Year Peak Flow (cfs)
Existing	3.6	9.66
Proposed (Mitigated)	3.6	8.07

DIFFERENCE	**+0.0**	**-1.59**

Per Table 3 above, there was no charge in area from existing to proposed, the 100-year peak flow is decrease by 1.59 cfs., and velocity is increased by 5.42 fps as a result of mitigation the peak flows in proposed conditions within the underground storage facility.

CEQA Issues of Concern:

- The project will not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion on- or off-site.

-Discharge point (outlet) from the storm drain system is designed to discharge to an existing storm drain systems at existing flow rates.

- The project will not substantially alter the existing drainage pattern of the site or area compared to existing conditions, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, or substantial erosion or siltation on- or off-site. As discussed in the previous bulleted item, the site discharge is conveyed to the existing storm drain system through the proposed storm drain.

Underground storage with adequate outlet structure was proposed to decrease peak discharge from the site in developed conditions to be equal or less than existing values (ie.to meet downstream storm drain design flow rate. Thus, the site provides adequate drainage and protection against flooding, and downstream properties are not impacted by the project.

- The project will not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems. The proposed peak flow has been mitigated within the underground storage facility to be equal to or less than the capacity of the existing storm drain that we connecting to. See discussion in the previous two bulleted items.

- The project will not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate map or other flood hazard delineation map, including County Floodplain maps. The project is not located within a floodplain or floodway; resultantly no County Floodplain Map exists for the project location.

- The project will not place, within a 100-year flood hazard area, structures which would impede or redirect flood flows. See previous bulleted item for further details.

- The project will not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam on-site or off-site. No levee or dam exists on-site or up-stream of the site.

1.5 References

"San Diego County Hydrology Manual". Department of Public Works – Flood Control Division. County of San Diego, California. Revised April 2003.

"*San Diego Regional Standard Drawings*". Section D – Drainage Systems.

"Stormwater Quality Management Plan (SWQMP) for Jericho Road" prepared by Hunsaker & Associates San Diego, Inc. (July 2023)

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 or Printouts	BMPDM Design Resources
☒ Self-mitigating	• Sub-attachment 6.1	• BMPDM Section 5.2.1
☒ De minimis	• Sub-attachment 6.2	• BMPDM Section 5.2.2
☒ Self-retaining[1] <u>SSD-BMP Type(s)</u>	• Sub-attachment 6.3	• BMPDM Section 5.2.3 (all options)
☒ Impervious Area Dispersion	• DCV calculations from SSD-BMP tool • Dispersion Areas calculations from SSD-BMP tool	• Fact Sheet SD-B (Appendix E.8) • Appendix I
☐ Tree Wells	• DCV calculations from SSD-BMP tool • Tree Well calculations from SSD-BMP tool	• Fact Sheet SD-A (Appendix E.7) • Appendix I

- Submit this cover page and all "Required Sub-attachments or Printouts" 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 <u>fully</u> satisfy the requirements described in these resources, and any other guidance identified by the County.
- <u>DMA Exhibits and Construction Plans</u>: 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.

[1] 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 (ft^2)*	*Incidental Impervious Area*		*Permit # and Sheet #*
		b. Size(ft^2)	*c. % (b/a*100)*	
SM-1	7777	0	0	TBD
SM-2	1825	0	0	TBD
SM-3	4102	0	0	TBD

- "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 <u>fully</u> 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 <u>for every DMA listed</u>.

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

<u>Natural and Landscaped Areas</u>

☒ 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.

<u>Incidental Impervious Areas (if applicable; see above)</u>

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 <u>not</u> self-mitigating if this area is 5% or greater.

6.2 De Minimis DMAs (complete this page once for ALL de minimis DMAs)

De minimis DMAs consist of areas too small to be considered significant contributors of pollutants and not practicable to drain to a BMP. They are excluded from DCV calculations. Examples include driveway aprons connecting to existing streets, portions of sidewalks, retaining walls, and similar features at the external boundaries of a project.

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

DMA #	*DMA Area (ft^2)*	*Permit # and Sheet #*
De Minimis	250	TBD

- "DMA #", "DMA Area", and "Permit # and Sheet #" are required.
- Check the boxes below to confirm that each required condition is satisfied for ALL de minimis DMAs on the site.

☐ Each DMA listed is less than 250 square feet and not adjacent or hydraulically connected to each other.

☐ Each DMA listed <u>fully</u> satisfies all design requirements and restrictions described in BMPDM Section 5.2.2 De Minimis DMAs.

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)	
DMA1-SD-B	815 1,358	☒	☐	TBD
DMA2-SD-B	1320 2,217	☒	☐	TBD
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

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 <u>fully</u> satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, applicable BMPDM Appendix E Fact Sheets, BMPDM Appendix I, and any other guidance or instruction identified by the County.

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.

Summary Sheet for Self-retaining DMAs with Impervious Area Dispersion

Attach Printouts from SSD-BMP tool below

- DCV calculations from SSD-BMP tool
- Dispersion Areas calculations from SSD-BMP tool

SSD-BMP Automated Worksheet I-1: Step 1. Calculation of Design Capture Volume (V1.0)													
Category	#	Description	i	ii	iii	iv	v	vi	vii	viii	ix	x	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	SD-B-1	SD-B-2									unitless
	2	85th Percentile 24-hr Storm Depth	0.51	0.51									inches
	3	Is Hydromodification Control Applicable?	No	No									yes/no
	4	Impervious Surfaces Not Directed to Dispersion Area (C=0.90)											sq-ft
	5	Semi-Pervious Surfaces Not Serving as Dispersion Area (C=0.30)											sq-ft
	6	Engineered Pervious Surfaces Not Serving as Dispersion Area (C=0.10)											sq-ft
	7	Natural Type A Soil Not Serving as Dispersion Area (C=0.10)											sq-ft
	8	Natural Type B Soil Not Serving as Dispersion Area (C=0.14)											sq-ft
	9	Natural Type C Soil Not Serving as Dispersion Area (C=0.23)											sq-ft
	10	Natural Type D Soil Not Serving as Dispersion Area (C=0.30)											sq-ft
SSD-BMPs Proposed	11	Does Tributary Incorporate Dispersion and/or Rain Barrels?	Yes	Yes									yes/no
	12	Does Tributary Incorporate Tree Wells?	No	No									yes/no
Dispersion Area & Rain Barrel Inputs (Optional)	13	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)	815	1,330									sq-ft
	14	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	15	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)	543	887									sq-ft
	16	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)											sq-ft
	17	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)											sq-ft
	18	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)											sq-ft
	19	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)											sq-ft
	20	Number of Rain Barrels Proposed per SD-E											#
	21	Average Rain Barrel Size											gal
Initial Runoff Factor Calculation	22	Total Tributary Area	1,358	2,217	0	0	0	0	0	0	0	0	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.58	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	25	Initial Weighted Runoff Factor	0.58	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	26	Initial Design Capture Volume	33	55	0	0	0	0	0	0	0	0	cubic-feet
Dispersion Area Adjustment & Rain Barrel Adjustment	27	Total Impervious Area Dispersed to Pervious Surface	815	1,330	0	0	0	0	0	0	0	0	sq-ft
	28	Total Pervious Dispersion Area	543	887	0	0	0	0	0	0	0	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area for DCV Reduction	1.50	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.00	0.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	unitless
	32	Design Capture Volume After Dispersion Techniques	0	0	0	0	0	0	0	0	0	0	cubic-feet
	33	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	34	Final Adjusted Runoff Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	35	Final Effective Tributary Area	0	0	0	0	0	0	0	0	0	0	sq-ft
	36	Initial Design Capture Volume Retained by Dispersion Area and Rain Barrel(s)	33	55	0	0	0	0	0	0	0	0	cubic-feet
	37	Remaining Design Capture Volume Tributary to Tree Well(s)	0	0	0	0	0	0	0	0	0	0	cubic-feet

No Warning Messages

SSD-BMP Automated Worksheet I-2: Step 2. Dispersion Area Validation (V1.0)

Category	#	Description	i	ii	iii	iv	v	vi	vii	viii	ix	x	Units
Standard Dispersion Area Inputs	1	Drainage Basin ID or Name	SD-B-1	SD-B-2	-	-	-	-	-	-	-	-	unitless
	2	Final Design Capture Volume (DCV)	0	0	-	-	-	-	-	-	-	-	cubic-feet
	3	Is Hydromodification Control Applicable?	No	No	-	-	-	-	-	-	-	-	yes/no
	4	Total Impervious Area Dispersed to Pervious Surface	815	1,330	-	-	-	-	-	-	-	-	sq-ft
	5	Total Engineered Pervious Surface and/or Natural Soil Dispersion Area (Does Not Include Semi-Pervious Surfaces Serving as Dispersion Area)	543	887	-	-	-	-	-	-	-	-	sq-ft
	6	Ratio of Dispersed Impervious Area to Total Engineered Pervious Surface and/or Natural Soil Dispersion Area	1.50	1.50	-	-	-	-	-	-	-	-	unitless
	7	Dispersion Area Length (Length of Sheet Flow Across Dispersion Area)	10	10									feet
	8	Dispersion Area Slope	5.0	5.0									%
	9	Thickness of Amended Soil	0	0									inches
	10	How is Flow Dispersed Across Width of Dispersion Area (definitions below*)?	Roof Drains	Roof Drains									unitless
Results	11	Is DCV Requirement Fully Satisfied by Dispersion Area?	Yes	Yes	-	-	-	-	-	-	-	-	yes/no
	12	Is Hydromodification Control Requirement Satisfied by Dispersion Area?	n/a	n/a	-	-	-	-	-	-	-	-	yes/no
	13	Are Dispersion Area Length, Slope, and Thickness of Amended Soil (when applicable) Adequate?	Yes	Yes	-	-	-	-	-	-	-	-	yes/no

No Warning Messages

Notes:

*How is Flow Dispersed Across Width of Pervious Dispersion Area?

Sheet Flow: Flow arrives as sheet flow across the width of the adjacent impervious area

Spreader(s): Flow is discharged from flow spreader(s) across the width of the pervious area

Roof Drains: Discharge from roof drains distributed across the width of the pervious area

Curb Cuts: Discharge from curb cuts distributed across the width of the pervious area

Other: Other (Describe in PDP SWQMP)

7.0 General Requirements

- Submit this cover page and all required Sub-attachments for all structural BMPs proposed for the project.
- 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
☒ 7.1: Preparer's Certification	Required	• N/A
☐ 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)
☒ 7.3: Structural BMP Checklist(s)	Required	
☒ 7.4: Stormwater Pollutant Control Worksheet Calculations	Required	• BMPDM Appendix B
☐ 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 Jericho Road

Permit Application Number TBD

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).

Engineer of Work's Signature, PE Number & Expiration Date

Print Name

Company

Engineer's Seal:

Date

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.

The selection, sizing, and design of stormwater treatment and other control measures in this plan was done based on the County of San Diego BMP Design Manual and the requirements of the San Diego Regional Water Quality Control Board Order R9-2012-0001.

Step 1: 1,327 CFT total DCV has been calculated from DMA1 and 2,974 CFT from DMA 2 per Appendix B.1

A. 0.51 Rainfall depth has been determined.

B. Total Drainage Map Area of 41,086 sqft has been delineated for DMA 1 and 95,865 sft for DMA2, per the Appendix B.1.2.

C. Runoff factor has been determined for each surface per Appendix B.a.3 (0.9 for impervious areas, 0.1 for landscaped and pervious areas.)

D. Dispersion area SD-B site design volume reduction is applied.

Step 2: Determine Retention Requirements b.2

A. Project doesn't proposed a structure over 9 stories therefore capture and use is not required per Appendix B.2.1.
B. According to the web soil survey the soil found onsite is soil type D, which Is classified as having a very low infiltration rate.
C. The calculated required retention volume for DMA 1 is 27 cubic feet, while for DMA 2, it is 59 cubic feet. The minimum retention volume has been achieved through impervious area dispersion. For DMA 1, 815 square feet of roof area is directed over 543 square feet of adjacent landscaped area. Likewise, for DMA 2, 1,330 square feet of roof area is directed over 887 square feet of adjacent landscaped area.

Step 3. Per B.4.3, for each DMA, one MWS unit has been sized downstream of a storage unit (CMP pr equivalent).

DMA 1: 1.5DCV = 1,991 cft. is required to be treated.

Per the stage storage table 1.53DCV = 2,079 cft is provided at 1.67 ft.

Per percent capture nomograph 36 hrs maximum drawdown time is determined.

One 1" orifice has been sized to drawdown the 1.53 DCV in 28hrs and meets the HMP requirements. The WQ flow associated with the WQ ponding depth 1.67 ft is 0.034 cfs. MWS unit BF-3-1 has been sized to treat the required flow.

The required HMP volume has been determined using the County Sizing calculator V3.0= 4,240 cft

The provided HMP volume at 3.17 ft is 4,333 cft (> 4,240 cft)

The maximum allowable orifice flow associated with the HMP water surface elevation= 0.054 cfs

The released orifice flow associated with the HMP water surface elevation at 3.17 ft= 0.047 cfs (< 0.054)

Additional orifices were added above the HMP WSE for 100 year peak flow detention.

DMA 2: 1.5DCV = 4,461 cft. . is required to be treated.

Per the stage storage table 1.57DCV = 4,679 cft is provided at 2.17 ft.

Per percent capture nomograph 36 hrs maximum drawdown time is determined.

1-1.45" orifice has been sized to drawdown the 1.57 DCV in 28 hrs and meets the HMP requirements. The WQ flow associated with the WQ ponding depth 2.17 ft is 0.081 cfs.

MWS unit BF-3-2 has been sized to treat the required flow.

The required HMP volume has been determined using the County Sizing calculator V3.0= 9,566 cft

The provided HMP volume at 4,17 ft is 9,696 cft (> 9,566 cft)

The maximum allowable orifice flow associated with the HMP water surface elevation= 0.127 cfs

The released orifice flow associated with the HMP water surface elevation at 4.17 ft= 0.114 cfs (< 0.127)

Additional orifices were added above the HMP WSE for 100-year peak flow detention.

7.2.2 Structural BMP Summary Table (Complete for all proposed structural BMPs)

- 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.

			Structural BMP Type							
BMP ID #	DMA #	DMA Area (ft^2)	Harvest and Use	Infiltration	Unlined Biofiltration	Lined Biofiltration	Flow-thru treatment	Hydromodification Management [1]	Other	Permit # and Sheet #
BF3-1	1	41086	☐	☐	☐	☒	☐	☒	☐	TBD
BF3-2	2	95865	☐	☐	☐	☒	☐	☒	☐	TBD
			☐	☐	☐	☐	☐	☐	☐	
			☐	☐	☐	☐	☐	☐	☐	
			☐	☐	☐	☐	☐	☐	☐	
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			☐	☐	☐	☐	☐	☐	☐	
			☐	☐	☐	☐	☐	☐	☐	

Copy and Paste table here for additional BMPs

[1] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

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

Structural BMP ID # HMP-1	Permit # and Sheet #
BMP Type	
Infiltration ☐ Infiltration basin (INF-1) ☐ Bioretention (INF-2) ☐ Permeable pavement (INF-3) Unlined Biofiltration ☐ Biofiltration with partial retention (PR-1) Lined Biofiltration ☐ Biofiltration (BF-1) ☐ Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3)	Harvest and Use ☐ Cistern (HU-1) Flow-thru Treatment (describe below) ☐ With prior lawful approval to meet earlier PDP requirements ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2] ☐ With alternative compliance Hydromodification Management[3] ☒ Detention pond or vault ☐ Other (describe below)
BMP Purpose	
☐ Pollutant control only ☒ Hydromodification control only ☐ Combined pollutant control and hydromodification	☐ Pre-treatment/forebay for another BMP ☐ Other (describe below)
BMP Verification (See BMPDM Section 8.3)	
Provide name and contact information for the party responsible to sign BMP verification forms	Alisa S. Vialpando (858) 558-4500 AVialpandp@HunsakerSD.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)				
BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☒ HOA	☐ Property Owner	☐ County	
	☐ Other (describe):			
Maintenance of BMP into perpetuity	☒ HOA	☐ Property Owner	☐ County	
	☐ Other (describe):			
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.

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

Structural BMP ID # BF-3-1	Permit # and Sheet #
BMP Type	
Infiltration ☐ Infiltration basin (INF-1) ☐ Bioretention (INF-2) ☐ Permeable pavement (INF-3) Unlined Biofiltration ☐ Biofiltration with partial retention (PR-1) Lined Biofiltration ☐ Biofiltration (BF-1) ☐ Nutrient Sensitive Media Design (BF-2) ☒ Proprietary Biofiltration (BF-3)	Harvest and Use ☐ Cistern (HU-1) Flow-thru Treatment (describe below) ☐ With prior lawful approval to meet earlier PDP requirements ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2] ☐ With alternative compliance Hydromodification Management[3] ☒ Detention pond or vault ☐ Other (describe below)
BMP Purpose	
☒Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification	☐ Pre-treatment/forebay for another BMP ☐ Other (describe below)
BMP Verification (See BMPDM Section 8.3)	
Provide name and contact information for the party responsible to sign BMP verification forms	Alisa S. Vialpando (858) 558-4500 AVialpandp@HunsakerSD.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)				
BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☒ HOA	☐ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☒ HOA	☐ Property Owner	☐ County	☐ Other (describe):
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.

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

Structural BMP ID # HMP-2	Permit # and Sheet #
BMP Type	
Infiltration ☐ Infiltration basin (INF-1) ☐ Bioretention (INF-2) ☐ Permeable pavement (INF-3) Unlined Biofiltration ☐ Biofiltration with partial retention (PR-1) Lined Biofiltration ☐ Biofiltration (BF-1) ☐ Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3)	Harvest and Use ☐ Cistern (HU-1) Flow-thru Treatment (describe below) ☐ With prior lawful approval to meet earlier PDP requirements ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2] ☐ With alternative compliance Hydromodification Management[3] ☒ Detention pond or vault ☐ Other (describe below)
BMP Purpose	
☐ Pollutant control only ☒ Hydromodification control only ☐ Combined pollutant control and hydromodification	☐ Pre-treatment/forebay for another BMP ☐ Other (describe below)
BMP Verification (See BMPDM Section 8.3)	
Provide name and contact information for the party responsible to sign BMP verification forms	Alisa S. Vialpando (858) 558-4500 AVialpandp@HunsakerSD.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)				
BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☒ HOA	☐ Property Owner	☐ County	
	☐ Other (describe):			
Maintenance of BMP into perpetuity	☒ HOA	☐ Property Owner	☐ County	
	☐ Other (describe):			
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.

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

Structural BMP ID # BF-3-2	Permit # and Sheet #
BMP Type	
Infiltration ☐ Infiltration basin (INF-1) ☐ Bioretention (INF-2) ☐ Permeable pavement (INF-3) Unlined Biofiltration ☐ Biofiltration with partial retention (PR-1) Lined Biofiltration ☐ Biofiltration (BF-1) ☐ Nutrient Sensitive Media Design (BF-2) ☒ Proprietary Biofiltration (BF-3)	Harvest and Use ☐ Cistern (HU-1) Flow-thru Treatment (describe below) ☐ With prior lawful approval to meet earlier PDP requirements ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2] ☐ With alternative compliance Hydromodification Management[3] ☒ Detention pond or vault ☐ Other (describe below)
BMP Purpose	
☒Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification	☐ Pre-treatment/forebay for another BMP ☐ Other (describe below)
BMP Verification (See BMPDM Section 8.3)	
Provide name and contact information for the party responsible to sign BMP verification forms	Alisa S. Vialpando (858) 558-4500 AVialpandp@HunsakerSD.com

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)				
BMP Maintenance Category	Cat. 1 ☒	Cat. 2 ☐	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☒ HOA	☐ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☒ HOA	☐ Property Owner	☐ County	☐ Other (describe):
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
☒ Worksheet B.1 Calculation of Design Capture Volume (DCV)	Required
☒ Worksheet B.2 Retention Requirements	Required
☒ Worksheet B.3 BMP Performance	Required
☐ Worksheet B.4 Major Maintenance Intervals for Reduced-sized BMPs	If applicable
☐ Other worksheets	As required

DMA AREA BREAKDOWN

	Imp. RF	Pervious RF	% Imp	DMA1	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA-2	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA-3	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
				SQFT		SQFT	SQFT		SQFT		SQFT	SQFT		SQFT		SQFT	SQFT	
ROAD	0.90	0.10	100	11181	0.31	11181	0	10063	20761	0.26	20761	0	18685	0	0.00	0	0	0
DRIVEWAYS	0.90	0.10	100	918	0.03	918	0	826	1603	0.02	1603	0	1443	0	0.00	0	0	0
OPEN SPACE (ACTIVE)	0.90	0.10	50	1842	0.03	921	921	921	3247	0.02	1624	1624	1624	0	0.00	0	0	0
ROOF *	0.90	0.10	100	17682	0.50	17682	0	15914	48056	0.60	48056	0	43251	0	0.00	0	0	0
SIDEWALKS	0.90	0.10	100	2080	0.06	2080	0	1872	5876	0.07	5876	0	5288	0	0.00	0	0	0
LANDSCAPE/SLOPES	0.90	0.10	0	7383	0.08	2081	5302	2403	16322	0.02	0	16322	1632	2494	1.00	0	2494	249
TOTAL				41086	1.00	34863	6223	31999	95865	1.00	77920	17946	71922	2494	1.00	0	2494	249
				0.94	AC				2.20	AC				0.06	AC			
				84.85	%Imperv		Weighted C =	0.78	81.28	%Imperv		Weighted C =	0.75	0.00	%Imperv		Weighted C =	0.10
* Addition 5% of the roff area has been added to count for any future hardscape																		

B.1.2 Step 1B - Tributary Area

Determine the total tributary area through evaluation of the drainage area delineations performed as outlined in Section 3. These areas will be analyzed in additional detail in Step 1C below.

B.1.3 Step 1C - Runoff Factor

Runoff factors (C) represent the ratio of storm water runoff over rainfall that is anticipated for a particular surface type. Impervious surfaces typically have high runoff factors (0.90) as nearly all rainfall is converted into runoff. Pervious surfaces typically have low runoff factors (0.10) as much of the rainfall is retained in natural surface features. Applicants should evaluate all of the surface coverages within a drainage area and assign runoff factors consistent with the values in Table B.1-1.

Table B.1**-1: Runoff factors for surfaces draining to BMPs – Pollutant Control BMPs**

Category	Surface Type	Runoff Factor (C)
Impervious Surfaces	Roofs, Concrete, Asphalt, Unit Pavers (grouted)	0.90
Semi-Pervious Surfaces	Decomposed Granite, Cobbles, Crushed Aggregate, Compacted soil (unpaved parking)	0.30
Engineered Pervious Surfaces	Green Roofs per SD-C Permeable Pavement per SD-D, Amended Soils per SD-F, Landscaped/Mulched Soils, Permeable Pavement per INF-3	0.10
Natural Pervious Surfaces	Type A Soil	0.10
	Type B Soil	0.14
	Type C Soil	0.23
	Type D Soil	0.30
Impoundments	Swimming pools, fountains, ponds, etc.	0.00
Dispersion Areas	Areas routed to or serving as a dispersion area per SD-B	See Dispersion Area Text Below

If a drainage area is comprised of more than one surface type, an area-weighted runoff factor must be calculated per the following equation where C represents the runoff coefficient and A represents the area of each surface.

$$C_{area-weighted} = \frac{\sum C_{surface\,1}\,A_{surface\,1} + C_{surface\,2}\,A_{surface\,2} + C_{surface\,x}A_{surface\,x}}{\sum A_{all\ surfaces}}$$

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

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	DMA 1	DMA 2									unitless
	2	85th Percentile 24-hr Storm Depth	0.51	0.51									inches
	3	Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	34,048	76,590									sq-ft
	4	Semi-Pervious Surfaces Not Serving as Dispersion Area (C=0.30)											sq-ft
	5	Engineered Pervious Surfaces Not Serving as Dispersion Area (C=0.10)	5,679	17,059									sq-ft
	6	Natural Type A Soil Not Serving as Dispersion Area (C=0.10)											sq-ft
	7	Natural Type B Soil Not Serving as Dispersion Area (C=0.14)											sq-ft
	8	Natural Type C Soil Not Serving as Dispersion Area (C=0.23)											sq-ft
	9	Natural Type D Soil Not Serving as Dispersion Area (C=0.30)											sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	Yes	Yes									yes/no
	11	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)	815	1,330									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)	543	887									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											#
	19	Average Mature Tree Canopy Diameter											ft
	20	Number of Rain Barrels Proposed per SD-E											#
	21	Average Rain Barrel Size											gal
Initial Runoff Factor Calculation	22	Total Tributary Area	41,086	95,865	0	0	0	0	0	0	0	0	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.79	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.58	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	25	Initial Weighted Runoff Factor	0.78	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	26	Initial Design Capture Volume	1,362	3,056	0	0	0	0	0	0	0	0	cubic-feet
Dispersion Area Adjustments	27	Total Impervious Area Dispersed to Pervious Surface	815	1,330	0	0	0	0	0	0	0	0	sq-ft
	28	Total Pervious Dispersion Area	543	887	0	0	0	0	0	0	0	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	1.50	1.50	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.76	0.73	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	unitless
	32	Design Capture Volume After Dispersion Techniques	1,327	2,974	0	0	0	0	0	0	0	0	cubic-feet
Tree & Barrel Adjustments	33	Total Tree Well Volume Reduction	0	0	0	0	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	0.76	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	36	Final Effective Tributary Area	31,225	69,981	0	0	0	0	0	0	0	0	sq-ft
	37	Initial Design Capture Volume Retained by Site Design Elements	35	82	0	0	0	0	0	0	0	0	cubic-feet
	38	Final Design Capture Volume Tributary to BMP	1,327	2,974	0	0	0	0	0	0	0	0	cubic-feet

No Warning Messages

1.5 of the final DCV is stored in the proposed CMPs and released via proposed orifices to the downstream MWS proprietary biofiltration BMPs within 36 hours drawdown time.

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

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
Basic Analysis	1	Drainage Basin ID or Name	DMA 1	DMA 2	-	-	-	-	-	-	-	-	unitless
	2	85th Percentile Rainfall Depth	0.51	0.51	-	-	-	-	-	-	-	-	inches
	3	Predominant NRCS Soil Type Within BMP Location	D	D									unitless
	4	Is proposed BMP location Restricted or Unrestricted for Infiltration Activities?	Restricted	Restricted									unitless
	5	Nature of Restriction	Soil Type	Soil Type									unitless
	6	Do Minimum Retention Requirements Apply to this Project?	Yes	Yes									yes/no
	7	Are Habitable Structures Greater than 9 Stories Proposed?	No	No									yes/no
Advanced Analysis	8	Has Geotechnical Engineer Performed an Infiltration Analysis?	Yes	Yes									yes/no
	9	Design Infiltration Rate Recommended by Geotechnical Engineer	0.003	0.003									in/hr
Result	10	Design Infiltration Rate Used To Determine Retention Requirements	0.000	0.000	-	-	-	-	-	-	-	-	in/hr
	11	Percent of Average Annual Runoff that Must be Retained within DMA	4.5%	4.5%	-	-	-	-	-	-	-	-	percentage
	12	Fraction of DCV Requiring Retention	0.02	0.02	-	-	-	-	-	-	-	-	ratio
	13	Required Retention Volume	27	59	-	-	-	-	-	-	-	-	cubic-feet

No Warning Messages

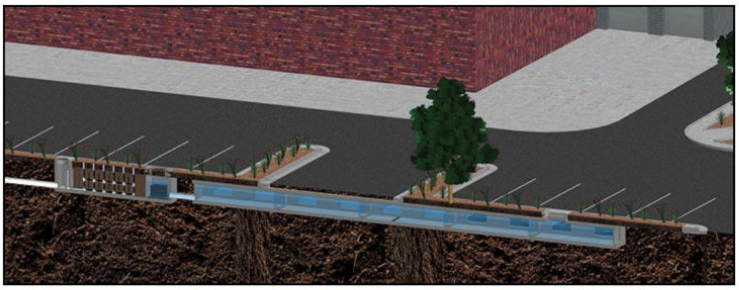
Automated Worksheet B.3: BMP Performance (V2.0)

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
BMP Inputs	1	Drainage Basin ID or Name	DMA 1	DMA 2	-	-	-	-	-	-	-	-	sq-ft
	2	Design Infiltration Rate Recommended	0.000	0.000	-	-	-	-	-	-	-	-	in/hr
	3	Design Capture Volume Tributary to BMP	1,327	2,974	-	-	-	-	-	-	-	-	cubic-feet
	4	Is BMP Vegetated or Unvegetated?											unitless
	5	Is BMP Impermeably Lined or Unlined?											unitless
	6	Does BMP Have an Underdrain?											unitless
	7	Does BMP Utilize Standard or Specialized Media?											unitless
	8	Provided Surface Area											sq-ft
	9	Provided Surface Ponding Depth											inches
	10	Provided Soil Media Thickness											inches
	11	Provided Gravel Thickness (Total Thickness)											inches
	12	Underdrain Offset											inches
	13	Diameter of Underdrain or Hydromod Orifice (Select Smallest)											inches
	14	Specialized Soil Media Filtration Rate											in/hr
	15	Specialized Soil Media Pore Space for Retention											unitless
	16	Specialized Soil Media Pore Space for Biofiltration											unitless
	17	Specialized Gravel Media Pore Space											unitless
Retention Calculations	18	Volume Infiltrated Over 6 Hour Storm	0	0	0	0	0	0	0	0	0	0	cubic-feet
	19	Ponding Pore Space Available for Retention	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	unitless
	20	Soil Media Pore Space Available for Retention	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	unitless
	21	Gravel Pore Space Available for Retention (Above Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	22	Gravel Pore Space Available for Retention (Below Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	23	Effective Retention Depth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	24	Fraction of DCV Retained (Independent of Drawdown Time)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
	25	Calculated Retention Storage Drawdown Time	0	0	0	0	0	0	0	0	0	0	hours
	26	Efficacy of Retention Processes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
	27	Volume Retained by BMP (Considering Drawdown Time)	0	0	0	0	0	0	0	0	0	0	cubic-feet
	28	Design Capture Volume Remaining for Biofiltration	1,327	2,974	0	0	0	0	0	0	0	0	cubic-feet
Biofiltration Calculations	29	Max Hydromod Flow Rate through Underdrain	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	cfs
	30	Max Soil Filtration Rate Allowed by Underdrain Orifice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	in/hr
	31	Soil Media Filtration Rate per Specifications	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	in/hr
	32	Soil Media Filtration Rate to be used for Sizing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	in/hr
	33	Depth Biofiltered Over 6 Hour Storm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	34	Ponding Pore Space Available for Biofiltration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	35	Soil Media Pore Space Available for Biofiltration	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	unitless
	36	Gravel Pore Space Available for Biofiltration (Above Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	37	Effective Depth of Biofiltration Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	38	Drawdown Time for Surface Ponding	0	0	0	0	0	0	0	0	0	0	hours
	39	Drawdown Time for Effective Biofiltration Depth	0	0	0	0	0	0	0	0	0	0	hours
	40	Total Depth Biofiltered	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	41	Option 1 - Biofilter 1.50 DCV: Target Volume	1,991	4,461	0	0	0	0	0	0	0	0	cubic-feet
	42	Option 1 - Provided Biofiltration Volume	0	0	0	0	0	0	0	0	0	0	cubic-feet
	43	Option 2 - Store 0.75 DCV: Target Volume	995	2,231	0	0	0	0	0	0	0	0	cubic-feet
	44	Option 2 - Provided Storage Volume	0	0	0	0	0	0	0	0	0	0	cubic-feet
	45	Portion of Biofiltration Performance Standard Satisfied	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
Result	46	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	Yes	-	-	-	-	-	-	-	-	yes/no
	47	Overall Portion of Performance Standard Satisfied (BMP Efficacy Factor)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
	48	Deficit of Effectively Treated Stormwater	-1,327	-2,974	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	cubic-feet

Attention!

Site Design and BMPs satisfy annual retention requirements

-This BMP does not fully satisfy the performance standards for pollutant control for the drainage area.



Volume Based Sizing

Many states require treatment of a water quality volume and do not offer the option of flow based design. The MWS Linear and its unique horizontal flow makes it the only biofilter that can be used in volume based design installed downstream of ponds, detention basins, and underground storage systems.

36 Hr

Model #	Treatment Capacity (cu. ft.) @ 24-Hour Drain Down		Treatment Capacity (cu. ft.) @ 48-Hour Drain Down
MWS-L-4-4	1140	1710	2280
MWS-L-4-6	1600	2400	3200
MWS-L-4-8	2518	3777	5036
MWS-L-4-13	3131	4696	6261
MWS-L-4-15	3811	5716	7623
MWS-L-4-17	4492	6738	8984
MWS-L-4-19	5172	7758	10345
MWS-L-4-21	5853	8779	11706
MWS-L-6-8	3191	4786	6382
MWS-L-8-8	5036	7554	10072
MWS-L-8-12	7554	11331	15109
MWS-L-8-16	10073	15109	20145
MWS-L-8-20	12560	18840	25120
MWS-L-8-24	15108	22662	30216

BF-3-1

BF-3-2

B.4.3 BMPs Downstream of a Storage Unit

Incorporation of upstream storage units (cisterns, vaults, etc) into a project's design can regulate flows to downstream biofiltration BMPs and potentially optimize the required BMP footprints. Use of this approach is not supported by County automated worksheets, but compliance with stormwater pollutant control requirements can be demonstrated through the following steps.

- Step 1) Determine the flow rate from the upstream storage unit
    - Use the orifice equation to determine outflow from the storage unit when it is filled to the depth associated with the DCV.
- Step 2) Demonstrate that the proposed BMP can accommodate flows from the storage unit
    - Multiply the BMP surface area (ft^2) by the filtration rate of the biofiltration soil media (in/hr) and divide by 43,200 to convert the units into CFS. For proprietary BMPs, this rate should correspond with the rates from certified testing the manufacturer has performed.
- Step 3) Demonstrate that the proposed BMP biofilters 92% of the annual runoff volume
    - If continuous simulation modeling has been performed, provide output reports from SWMM or SDHM modeling.
    - If continuous simulation modeling has not been performed, reference the percent capture nomographs in Figure B.3-1 to determine the percentage of annual runoff that is biofiltered. To use the nomographs, applicants must represent the BMP storage capacity as a fraction of the DCV along the x-axis, trace a line vertically to the colored line representing the drawdown time of the system, and then determine the percentage of annual runoff biofiltered by tracing horizontally to the y-axis.
- Step 4) If the downstream biofiltration BMP is <3% of the effective tributary area, provide information supporting use of compact biofiltration as generally outlined below.
    - Retention Requirements: Demonstrate that minimum retention requirements from Section B.2 are satisfied.
    - Maintenance Requirements: Demonstrate that the BMP design is expected to last 10 years before major maintenance is anticipated per Appendix B.4.1.
    - Proprietary Requirements (if applicable): Provide proprietary information demonstrating that the device meets biofiltration criteria outlined in Appendices F.1-F.2.

B.4.4 Onsite Alternative Compliance

If desired, a PDP applicant may generate stormwater pollutant control and/or hydromodification flow control benefits by managing stormwater flows from "excess areas" that are conveyed to the site. Management of flows from these excess areas may be used to offset flows from "required areas" that lack management.

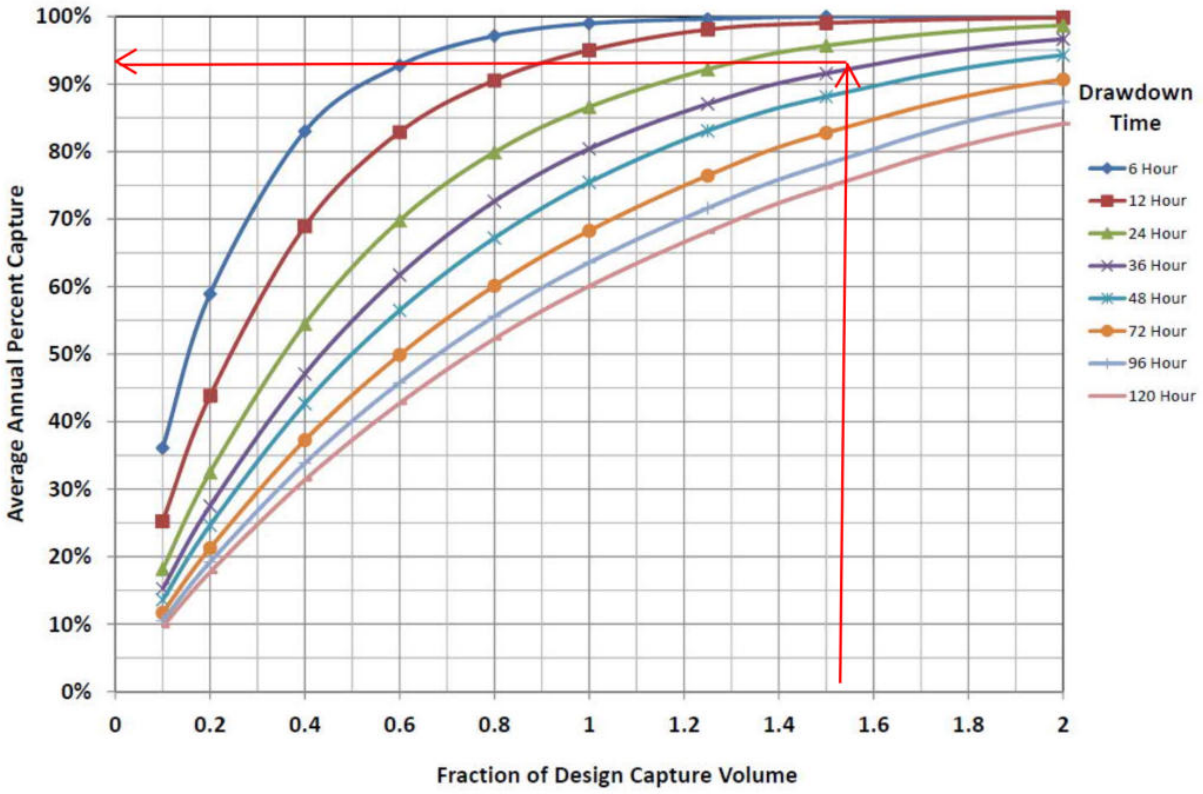


Figure B.3-1: Percent Capture Nomograph

Part 6) Determine the efficacy of the retention processes provided by the BMP. This value represents the portion of the pollutant control performance standard that is satisfied through retention processes of the BMP and is calculated as follows.

$$E_R = \frac{P_C}{80\%}$$

Where:
E_R: Efficacy of retention processes (decimal)
P_C: Average Annual Percent Capture (%)

Part 7) Determine the total volume retained by the proposed BMP.

$$V_{RBMP} = \text{DCV} \times E_R$$

Where:
V_{RBMP}: Total volume retained by BMP (ft^3)
DCV: Design capture volume (ft^3)
E_R: Efficacy of retention processes (decimal)

HMP #1 Discharge

Discharge vs Elevation Table

Low orifice:	1 "	Top orifice:	4 "
Number:	1	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.00 ft	invert elev:	4.00 ft
Middle orifice:	3 "	Emergency inlet: 18" standup pipe	
number of orif:	1	Rim height:	5.00 ft
Cg-middle:	0.61	Area	1.7671 sq ft
invert elev:	3.17 ft	Circumference	4.7124 ft

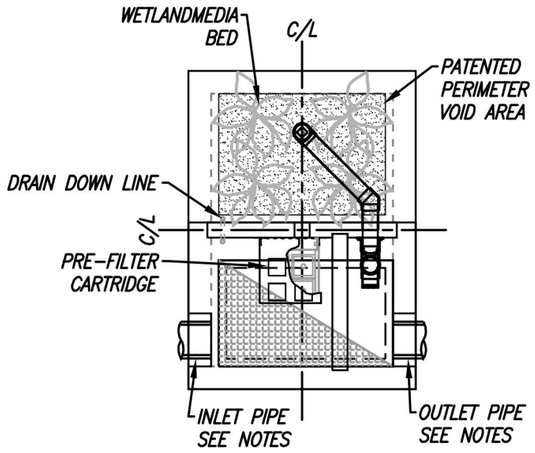
h (ft)	H/D-low -	H/D-mid -	H/D-top -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qemerg (cfs)	Qtot (cfs)	
0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0.17	2.00	0.00	0.00	0.009	0.013	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	
0.33	4.00	1.88	0.00	0.014	0.024	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014	
0.50	6.00	0.00	0.00	0.018	0.344	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	
0.67	8.00	0.00	0.00	0.021	2.243	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	
0.83	10.00	0.00	0.00	0.024	8.567	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024	
1.00	12.00	0.00	0.00	0.026	24.355	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	
1.17	14.00	0.00	0.00	0.028	57.454	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	
1.33	16.00	0.00	0.00	0.030	119.136	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	
1.50	18.00	0.00	0.00	0.032	224.716	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	
1.67	20.00	0.00	0.00	0.034	394.165	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	
1.83	22.00	0.00	0.00	0.036	652.729	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.036	
2.00	24.00	0.00	0.00	0.037	1031.545	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	
2.17	26.00	0.00	0.00	0.039	1568.256	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	
2.33	28.00	0.00	0.00	0.040	2307.630	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040	
2.50	30.00	0.00	0.00	0.042	3302.171	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	
2.67	32.00	0.00	0.00	0.043	4612.744	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.043	
2.83	34.00	0.00	0.00	0.045	6309.182	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.045	
3.00	36.00	0.00	0.00	0.046	8470.909	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	
3.17	38.00	0.00	0.00	0.047	11187.553	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	< 0.054 cfs
3.33	40.00	0.65	0.00	0.048	14559.566	0.048	0.047	0.039	0.039	0.000	0.000	0.000	0.000	0.088	
3.50	42.00	1.32	0.00	0.050	18698.833	0.050	0.109	0.123	0.109	0.000	0.000	0.000	0.000	0.158	
3.67	44.00	1.99	0.00	0.051	23729.298	0.051	0.146	0.194	0.146	0.000	0.000	0.000	0.000	0.197	
3.83	46.00	2.65	0.00	0.052	29787.573	0.052	0.176	0.219	0.176	0.000	0.000	0.000	0.000	0.228	
4.00	48.00	3.32	0.00	0.053	37023.556	0.053	0.202	0.230	0.202	0.000	0.000	0.000	0.000	0.255	
4.17	50.00	3.99	0.50	0.054	45601.051	0.054	0.224	0.363	0.224	0.000	0.000	0.000	0.000	0.279	
4.33	52.00	4.65	1.00	0.055	55698.380	0.055	0.245	0.902	0.245	0.000	0.000	0.000	0.000	0.300	
4.50	54.00	5.32	1.50	0.056	67509.000	0.056	0.264	2.310	0.264	0.000	0.000	0.000	0.000	0.320	
4.67	56.00	5.99	2.00	0.057	81242.122	0.057	0.281	5.277	0.281	0.000	0.000	0.000	0.000	0.339	
4.83	58.00	6.65	2.50	0.058	97123.324	0.058	0.298	10.755	0.298	0.000	0.000	0.000	0.000	0.356	
5.00	60.00	7.32	3.00	0.059	115395.172	0.059	0.314	19.999	0.314	0.000	0.000	0.000	0.000	0.373	
5.17	62.00	7.99	3.50	0.060	136317.830	0.060	0.329	34.603	0.329	0.000	0.000	0.000	0.994	1.383	
5.33	64.00	8.65	4.00	0.061	160169.680	0.061	0.343	56.547	0.343	0.000	0.000	0.000	2.811	3.216	
5.50	66.00	9.32	4.50	0.062	187247.942	0.062	0.357	88.230	0.357	0.000	0.000	0.000	5.165	5.584	
5.67	68.00	9.99	5.00	0.063	217869.281	0.063	0.370	132.512	0.370	0.000	0.000	0.000	7.063	7.497	
5.83	70.00	10.65	5.50	0.064	252370.432	0.064	0.383	192.752	0.383	0.000	0.000	0.000	7.897	8.344	
6.00	72.00	11.32	6.00	0.065	291108.813	0.065	0.395	272.851	0.395	0.000	0.000	0.000	8.651	9.111	

HMP #1 Stage Storage-CMP						
depth	area	area (ac)	elevation	volume (cf)	volume (acft)	
0.00	749	0.0172	0.0	0.0	0.000	
0.17	1004	0.0231	0.2	153.4	0.004	
0.33	1105	0.0254	0.3	329.7	0.008	
0.50	1179	0.0271	0.5	520.3	0.012	
0.67	1238	0.0284	0.7	721.8	0.017	
0.83	1287	0.0295	0.8	932.2	0.021	
1.00	1328	0.0305	1.0	1,150.2	0.026	
1.17	1364	0.0313	1.2	1,374.7	0.032	
1.33	1395	0.0320	1.3	1,604.7	0.037	
1.50	1422	0.0326	1.5	1,839.6	0.042	
1.67	1445	0.0332	1.7	2,078.6	0.048	1.53 DCV
1.83	1465	0.0336	1.8	2,321.2	0.053	
2.00	1482	0.0340	2.0	2,566.8	0.059	
2.17	1496	0.0343	2.2	2,815.0	0.065	
2.33	1507	0.0346	2.3	3,065.3	0.070	
2.50	1516	0.0348	2.5	3,317.2	0.076	
2.67	1522	0.0349	2.7	3,570.3	0.082	
2.83	1525	0.0350	2.8	3,824.2	0.088	
3.00	1526	0.0350	3.0	4,078.6	0.094	
3.17	1525	0.0350	3.2	4,332.9	0.099	>4240 cft
3.33	1522	0.0349	3.3	4,586.8	0.105	
3.50	1516	0.0348	3.5	4,840.0	0.111	
3.67	1507	0.0346	3.7	5,091.9	0.117	
3.83	1496	0.0343	3.8	5,342.1	0.123	
4.00	1482	0.0340	4.0	5,590.3	0.128	
4.17	1465	0.0336	4.2	5,836.0	0.134	
4.33	1445	0.0332	4.3	6,078.6	0.140	
4.50	1422	0.0326	4.5	6,317.6	0.145	
4.67	1395	0.0320	4.7	6,552.4	0.150	
4.83	1364	0.0313	4.8	6,782.5	0.156	
5.00	1328	0.0305	5.0	7,006.9	0.161	
5.17	1287	0.0295	5.2	7,224.9	0.166	
5.33	1238	0.0284	5.3	7,435.4	0.171	
5.50	1179	0.0271	5.5	7,636.9	0.175	
5.67	1105	0.0254	5.7	7,827.5	0.180	
5.83	1004	0.0231	5.8	8,003.8	0.184	
6.00	749	0.0172	6.0	8,157.2	0.187	
6.17	749	0.0172	6.2	8,282.0	0.190	
6.33	749	0.0172	6.3	8,406.8	0.193	
6.50	749	0.0172	6.5	8,531.6	0.196	

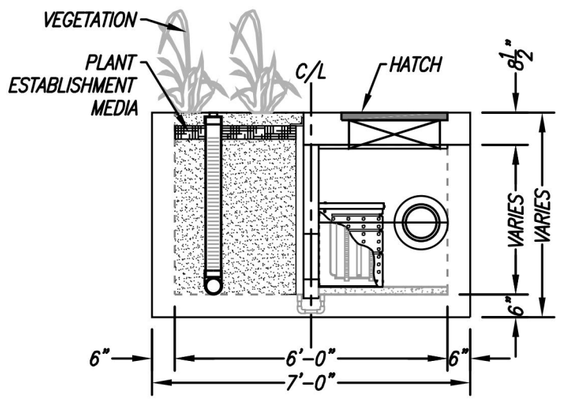
HMP-1				
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
0.17	0.01	153	4.51	28.32
0.33	0.01	176	4.11	23.81
0.50	0.02	191	3.26	19.71
0.67	0.02	202	2.86	16.45
0.83	0.02	210	2.61	13.59
1.00	0.02	218	2.43	10.98
1.17	0.03	224	2.29	8.56
1.33	0.03	230	2.18	6.27
1.50	0.03	235	2.08	4.09
1.67	0.03	239	2.00	2.00

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID	BF-3-1		
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.073			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



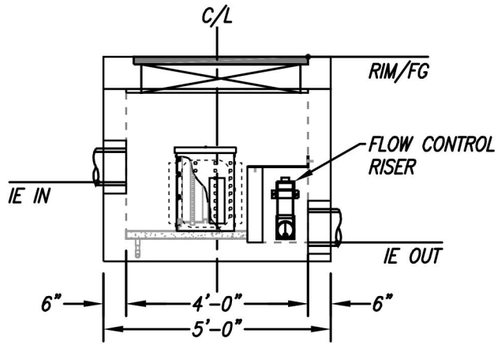
LEFT END VIEW

INSTALLATION NOTES

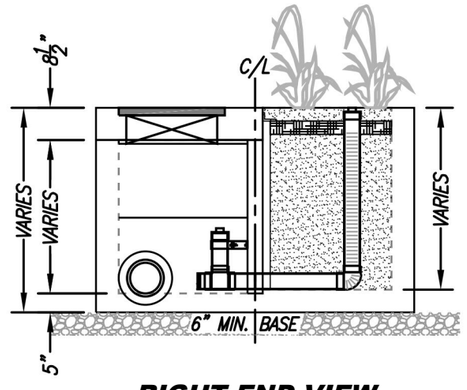
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.

GENERAL NOTES

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



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.073
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	1.3
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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STANDARD DETAIL

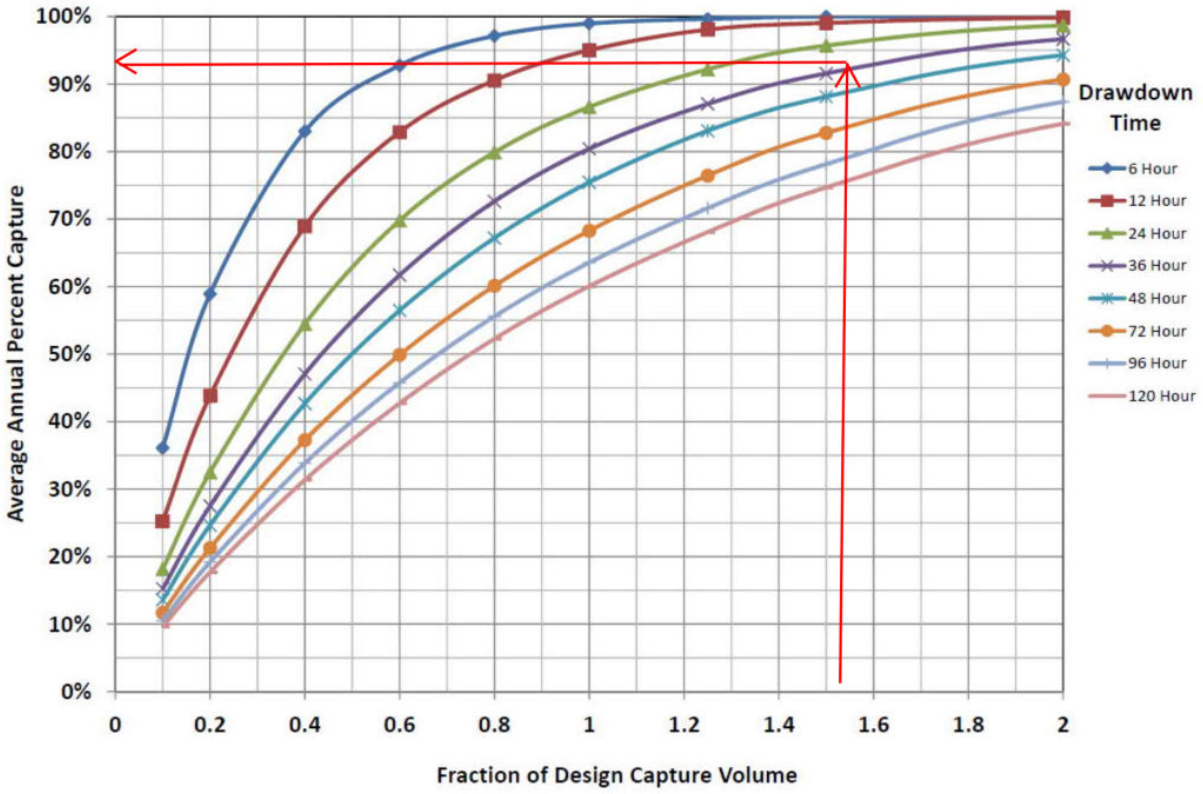


Figure B.3-1: Percent Capture Nomograph

Part 6) Determine the efficacy of the retention processes provided by the BMP. This value represents the portion of the pollutant control performance standard that is satisfied through retention processes of the BMP and is calculated as follows.

$$E_R = \frac{P_C}{80\%}$$

Where:
E_R: Efficacy of retention processes (decimal)
P_C: Average Annual Percent Capture (%)

Part 7) Determine the total volume retained by the proposed BMP.

$$V_{RBMP} = \text{DCV} \times E_R$$

Where:
V_{RBMP}: Total volume retained by BMP (ft^3)
DCV: Design capture volume (ft^3)
E_R: Efficacy of retention processes (decimal)

HMP #2 Discharge

Discharge vs Elevation Table

Low orifice:	1.45 "	Top orifice:	6 "	
Number:	1	Number:	0	
Cg-low:	0.61	Cg-low:	0.61	
invert elev:	0.00 ft	invert elev:	5.00 ft	
Middle orifice:	6 "	Emergency inlet:		
number of orif:	10	Rim height:	5.00 ft	
Cg-middle:	0.61	Area	1.7671 sq ft	<-2' X 2' Weir
invert elev:	4.17 ft	Circumference	4.7124 ft	

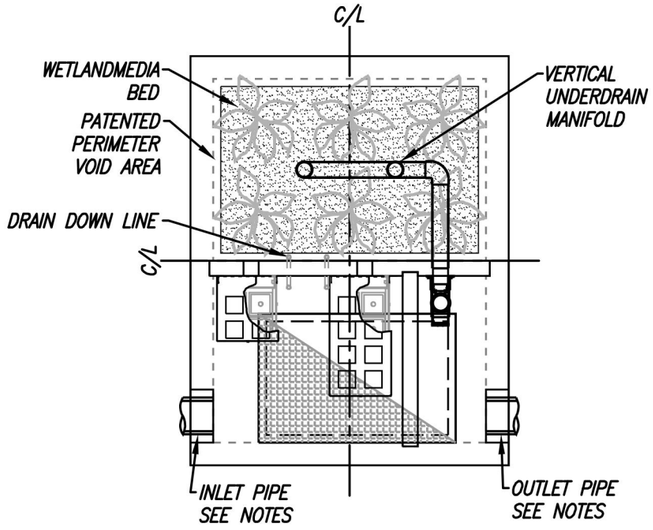
h (ft)	H/D-low -	H/D-mid -	H/D-top -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qemerg (cfs)	Qtot (cfs)	
0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0.17	1.38	0.00	0.00	0.018	0.021	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	
0.33	2.76	1.88	0.00	0.029	0.036	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029	
0.50	4.14	0.00	0.00	0.037	0.071	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	
0.67	5.52	0.00	0.00	0.044	0.485	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.044	
0.83	6.90	0.00	0.00	0.049	2.211	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	
1.00	8.28	0.00	0.00	0.054	6.998	0.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.054	
1.17	9.66	0.00	0.00	0.059	17.657	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.059	
1.33	11.03	0.00	0.00	0.063	38.303	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.063	
1.50	12.41	0.00	0.00	0.067	74.599	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	
1.67	13.79	0.00	0.00	0.071	133.999	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.071	
1.83	15.17	0.00	0.00	0.075	225.991	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075	
2.00	16.55	0.00	0.00	0.078	362.342	0.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.078	
2.17	17.93	0.00	0.00	0.081	557.341	0.081	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.081	
2.33	19.31	0.00	0.00	0.085	828.042	0.085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.085	
2.50	20.69	0.00	0.00	0.088	1194.507	0.088	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.088	
2.67	22.07	0.00	0.00	0.091	1680.049	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091	
2.83	23.45	0.00	0.00	0.093	2311.478	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.093	
3.00	24.83	0.00	0.00	0.096	3119.343	0.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.096	
3.17	26.21	0.00	0.00	0.099	4138.174	0.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.099	
3.33	27.59	0.00	0.00	0.102	5406.727	0.102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.102	
3.50	28.97	0.00	0.00	0.104	6968.229	0.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.104	
3.67	30.34	0.00	0.00	0.107	8870.617	0.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.107	
3.83	31.72	0.00	0.00	0.109	11166.786	0.109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.109	
4.00	33.10	0.00	0.00	0.111	13914.830	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	
4.17	34.48	0.00	0.00	0.114	17178.286	0.114	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.114	< 0.127 cfs
4.33	35.86	0.33	0.00	0.116	21026.378	0.116	0.000	0.606	0.606	0.000	0.000	0.000	0.000	0.722	
4.50	37.24	0.66	0.00	0.118	25534.259	0.118	2.719	2.252	2.252	0.000	0.000	0.000	0.000	2.370	
4.67	38.62	0.99	0.00	0.120	30783.255	0.120	4.774	4.542	4.542	0.000	0.000	0.000	0.000	4.663	
4.83	40.00	1.33	0.00	0.123	36861.111	0.123	6.179	7.034	6.179	0.000	0.000	0.000	0.000	6.302	
5.00	41.38	1.66	0.00	0.125	43862.231	0.125	7.320	9.305	7.320	0.000	0.000	0.000	0.000	7.445	
5.17	42.76	1.99	0.33	0.127	51887.922	0.127	8.306	11.028	8.306	0.000	0.000	0.000	0.994	9.426	
5.33	44.14	2.33	0.67	0.129	61046.639	0.129	9.186	12.036	9.186	0.000	0.000	0.000	2.811	12.126	
5.50	45.52	2.66	1.00	0.131	71454.227	0.131	9.989	12.396	9.989	0.000	0.000	0.000	5.165	15.285	
5.67	46.90	2.99	1.33	0.133	83234.167	0.133	10.732	12.475	10.732	0.000	0.000	0.000	7.063	17.928	
5.83	48.28	3.33	1.67	0.135	96517.815	0.135	11.427	13.014	11.427	0.000	0.000	0.000	7.897	19.459	
6.00	49.66	3.66	2.00	0.137	111444.651	0.137	12.082	15.195	12.082	0.000	0.000	0.000	8.651	20.869	
6.17	51.06	4.00	2.34	0.139	128516.201	0.139	12.715	20.871	12.715	0.000	0.000	0.000	9.357	22.211	
6.33	52.39	4.32	2.66	0.141	146434.413	0.141	13.284	31.545	13.284	0.000	0.000	0.000	9.976	23.401	
6.50	53.79	4.66	3.00	0.142	167605.986	0.142	13.862	51.508	13.862	0.000	0.000	0.000	10.595	24.599	

HMP #2 Stage Storage-CMP						
depth	area	area (ac)	elevation	volume (cf)	volume (acft)	
0.00	1249.6	0.0000	0.0	0.0	0.000	
0.17	1672.0	0.0384	0.2	255.5	0.006	
0.33	1838.4	0.0422	0.3	548.9	0.013	
0.50	1960.0	0.0450	0.5	865.9	0.020	
0.67	2057.4	0.0472	0.7	1,200.9	0.028	
0.83	2138.5	0.0491	0.8	1,550.8	0.036	
1.00	2207.5	0.0507	1.0	1,913.1	0.044	
1.17	2266.9	0.0520	1.2	2,286.1	0.052	
1.33	2318.2	0.0532	1.3	2,668.3	0.061	
1.50	2362.6	0.0542	1.5	3,058.4	0.070	
1.67	2400.9	0.0551	1.7	3,455.5	0.079	
1.83	2433.6	0.0559	1.8	3,858.4	0.089	
2.00	2461.3	0.0565	2.0	4,266.4	0.098	
2.17	2484.2	0.0570	2.2	4,678.6	0.107	1.57 DCV
2.33	2502.7	0.0575	2.3	5,094.2	0.117	
2.50	2516.8	0.0578	2.5	5,512.6	0.127	
2.67	2526.8	0.0580	2.7	5,932.9	0.136	
2.83	2532.8	0.0581	2.8	6,354.6	0.146	
3.00	2534.8	0.0582	3.0	6,777.0	0.156	
3.17	2532.8	0.0581	3.2	7,199.3	0.165	
3.33	2526.8	0.0580	3.3	7,621.0	0.175	
3.50	2516.8	0.0578	3.5	8,041.4	0.185	
3.67	2502.7	0.0575	3.7	8,459.7	0.194	
3.83	2484.2	0.0570	3.8	8,875.4	0.204	
4.00	2461.3	0.0565	4.0	9,287.6	0.213	
4.17	2433.6	0.0559	4.2	9,695.5	0.223	>9566 cft
4.33	2400.9	0.0551	4.3	10,098.5	0.232	
4.50	2362.6	0.0542	4.5	10,495.5	0.241	
4.67	2318.2	0.0532	4.7	10,885.7	0.250	
4.83	2266.9	0.0520	4.8	11,267.9	0.259	
5.00	2207.5	0.0507	5.0	11,640.9	0.267	
5.17	2138.5	0.0491	5.2	12,003.2	0.276	
5.33	2057.4	0.0472	5.3	12,353.1	0.284	
5.50	1960.0	0.0450	5.5	12,688.1	0.291	
5.67	1838.4	0.0422	5.7	13,005.1	0.299	
5.83	1672.0	0.0384	5.8	13,298.5	0.305	
6.00	1249.6	0.0287	6.0	13,554.0	0.311	
6.17	1249.6	0.0287	6.2	13,762.2	0.316	
6.33	1249.6	0.0287	6.3	13,970.5	0.321	
6.50	1249.6	0.0287	6.5	14,178.8	0.325	

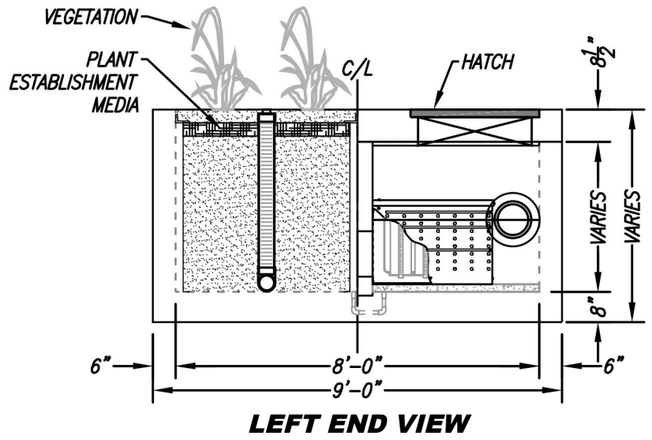
HMP-2				
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
0.17	0.02	255	3.88	27.54
0.33	0.02	293	3.42	23.66
0.50	0.03	317	2.65	20.24
0.67	0.04	335	2.30	17.59
0.83	0.05	350	2.09	15.29
1.00	0.05	362	1.94	13.20
1.17	0.06	373	1.83	11.26
1.33	0.06	382	1.74	9.44
1.50	0.07	390	1.66	7.70
1.67	0.07	397	1.59	6.04
1.83	0.07	403	1.53	4.45
2.00	0.08	408	1.48	2.92
2.17	0.08	412	1.43	1.43

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID		BF-3-2	
TREATMENT REQUIRED			
FLOW BASED (CFS)			
0.147			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
NOTES:			

* PRELIMINARY NOT FOR CONSTRUC



PLAN VIEW



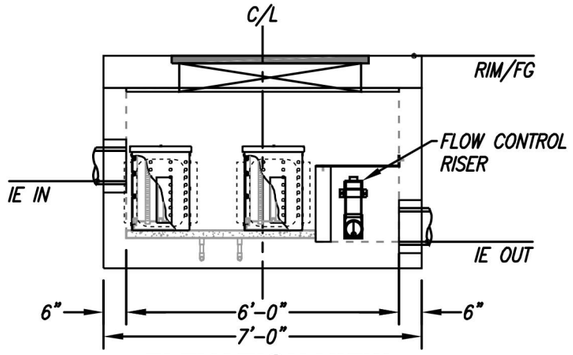
LEFT END VIEW

INSTALLATION NOTES

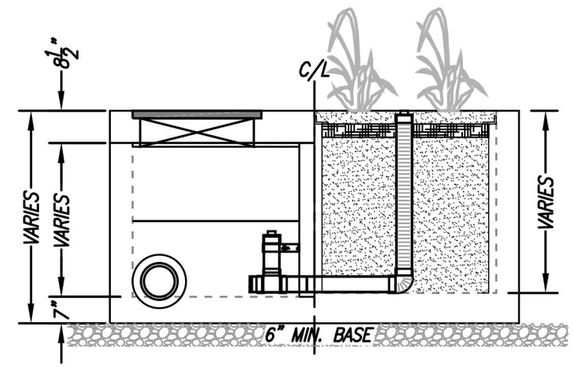
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS' SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURER'S CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PROJECT ENGINEER'S RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATERTIGHT PER MANUFACTURER'S STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL PIPES, RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO USE GROUT AND/OR BRICKS TO MATCH COVERS WITH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING CONTECH FOR ACTIVATION OF UNIT. MANUFACTURER'S WARRANTY IS VOID WITHOUT PROPER ACTIVATION BY A CONTECH REPRESENTATIVE.

GENERAL NOTES

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



ELEVATION VIEW



RIGHT END VIEW

TREATMENT FLOW (CFS)	0.147
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	1.3
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS
FOR PATENT INFORMATION, GO TO www.ContechES.com/IP

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com

MWS-L-6-8-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

August 2021

GENERAL USE LEVEL DESIGNATION FOR BASIC (TSS) ENHANCED AND PHOSPHORUS TREATMENT

For

MWS-Linear Modular Wetland

Ecology's Decision

Based on Modular Wetland Systems, Inc, application submissions, including the Technical Evaluation Report, dated April 1, 2014, Ecology hereby issues the following use level designation:

1. General Use Level Designation (GULD) for the MWS-Linear Modular Wetland Stormwater Treatment System for Basic, Phosphorus, and Enhanced treatment
    - Sized at a hydraulic loading rate of:
        - 1 gallon per minute (gpm) per square foot (sq ft) of Wetland Cell Surface Area
        - Prefilter box (approved at either 22 inches or 33 inches tall)
            - 3.0 gpm/sq ft of prefilter box surface area for moderate pollutant loading rates (low to medium density residential basins).
            - 2.1 gpm/sq ft of prefilter box surface area for high pollutant loading rates (commercial and industrial basins).
2. Ecology approves the MWS – Linear Modular Wetland Stormwater Treatment System units for Basic, Phosphorus, and Enhanced treatment at the hydraulic loading rate listed above. Designers shall calculate the water quality design flow rates using the following procedures:
    - Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology- approved continuous runoff model.

- Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.
- Entire State: For treatment installed downstream of detention, the water quality treatment design flow rate is the full 2-year release rate of the detention facility.

3. These use level designations have no expiration date but may be amended or revoked by Ecology, and are subject to the conditions specified below.

Ecology's Conditions of Use

Applicants shall comply with the following conditions:

1) Design, assemble, install, operate, and maintain the MWS – Linear Modular Wetland Stormwater Treatment System units, in accordance with Modular Wetland Systems, Inc. applicable manuals and documents and the Ecology Decision.
2) Each site plan must undergo Modular Wetland Systems, Inc. review and approval before site installation. This ensures that site grading and slope are appropriate for use of a MWS – Linear Modular Wetland Stormwater Treatment System unit.
3) MSW – Linear Modular Wetland Stormwater Treatment System media shall conform to the specifications submitted to and approved by Ecology.
4) The applicant tested the MWS – Linear Modular Wetland Stormwater Treatment System with an external bypass weir. This weir limited the depth of water flowing through the media, and therefore the active treatment area, to below the root zone of the plants. This GULD applies to MWS – Linear Modular Wetland Stormwater Treatment Systems whether plants are included in the final product or not.
5) Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of stormwater treatment technology.
    - Typically, Modular Wetland Systems, Inc. designs MWS – Linear Modular Wetland systems for a target prefilter media life of 6 to 12 months.
    - Indications of the need for maintenance include effluent flow decreasing to below the design flow rate or decrease in treatment below required levels.
    - Owners/operators must inspect MWS – Linear Modular Wetland systems for a minimum of twelve months from the start of post-construction operation to determine site-specific maintenance schedules and requirements. You must conduct inspections monthly during the wet season, and every other month during the dry season (According to the SWMMWW, the wet season in western Washington is October 1 to April

30. According to the SWMMEW, the wet season in eastern Washington is October 1 to June 30). After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections.

- Conduct inspections by qualified personnel, follow manufacturer's guidelines, and use methods capable fo determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.
- When inspections are performed, the following findings typically serve as maintenance triggers:
    - Standing water remains in the vault between rain events, or
    - Bypass occurs during storms smaller than the design storm.
    - If excessive floatables (trash and debris) are present (but no standing water or excessive sedimentation), perform a minor maintenance consisting of gross solids removal, not prefilter media replacement.
    - Additional data collection will be used to create a correlation between pretreatment chamber sediment depth and pre-filter clogging (see *Issues to be Addressed by the Company* section below)

6) Discharges from the MWS – Linear Modular Wetland Stormwater Treatment System units shall not cause or contribute to water quality standards violations in receiving waters.

Applicant:	Modular Wetland Systems, Inc.
Applicant's Address:	5796 Armada Drive, Suite 250 Carlsbad, CA 92008

Application Documents:

Original Application for Conditional Use Level Designation, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., January 2011

Quality Assurance Project Plan: Modular Wetland System – Linear Treatment System Performance Monitoring Project, draft, January 2011

Revised Application for Conditional Use Level Designation, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., May 2011

Memorandum: Modular Wetland System-Linear GULD Application Supplementary Data, April 2014

Technical Evaluation Report: Modular Wetland System Stormwater Treatment System Performance Monitoring, April 2014

Applicant's Use Level Request:

- General Use Level Designation as a Basic, Enhanced, and Phosphorus treatment device in accordance with Ecology's Guidance for Evaluating Emerging Stormwater Treatment Technologies Technology Assessment Protocol – Ecology (TAPE) January 2011 Revision.

Applicant's Performance Claims:

- The MWS – Linear Modular wetland is capable of removing a minimum of 80-percent of TSS from stormwater with influent concentrations between 100 and 200 mg/L.
- The MWS – Linear Modular wetland is capable of removing a minimum of 50-percent of total phosphorus from stormwater with influent concentrations between 0.1 and 0.5 mg/L.
- The MWS – Linear Modular wetland is capable of removing a minimum 30-percent of dissolved copper from stormwater with influent concentrations between 0.005 and 0.020 mg/L.
- The MWS – Linear Modular wetland is capable of removing a minimum 60-percent of dissolved zinc from stormwater with influent concentrations between 0.02 and 0.30 mg/L.

Ecology's Recommendations:

- Modular Wetland System, Inc. has shown Ecology, through laboratory and field-testing, that the MWS – Linear Modular Wetland Stormwater Treatment System filter system is capable of attaining Ecology's Basic, Phosphorus, and Enhanced treatment goals.

Findings of Fact:

<u>Laboratory Testing</u>

The MWS-Linear Modular wetland has the:

- Capability to remove 99 percent of total suspended solids (using Sil-Co-Sil 106) in a quarter-scale model with influent concentrations of 270 mg/L.
- Capability to remove 91 percent of total suspended solids (using Sil-Co-Sil 106) in laboratory conditions with influent concentrations of 84.6 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 93 percent of dissolved Copper in a quarter-scale model with influent concentrations of 0.757 mg/L.
- Capability to remove 79 percent of dissolved Copper in laboratory conditions with influent concentrations of 0.567 mg/L at a flow rate of 3.0 gpm per square foot of media.

- Capability to remove 80.5-percent of dissolved Zinc in a quarter-scale model with influent concentrations of 0.95 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 78-percent of dissolved Zinc in laboratory conditions with influent concentrations of 0.75 mg/L at a flow rate of 3.0 gpm per square foot of media.

Field Testing

- Modular Wetland Systems, Inc. conducted monitoring of an MWS-Linear (Model # MWS-L-4-13) from April 2012 through May 2013, at a transportation maintenance facility in Portland, Oregon. The manufacturer collected flow-weighted composite samples of the system's influent and effluent during 28 separate storm events. The system treated approximately 75 percent of the runoff from 53.5 inches of rainfall during the monitoring period. The applicant sized the system at 1 gpm/sq ft. (wetland media) and 3gpm/sq ft. (prefilter).
- Influent TSS concentrations for qualifying sampled storm events ranged from 20 to 339 mg/L. Average TSS removal for influent concentrations greater than 100 mg/L (n=7) averaged 85 percent. For influent concentrations in the range of 20-100 mg/L (n=18), the upper 95 percent confidence interval about the mean effluent concentration was 12.8 mg/L.
- Total phosphorus removal for 17 events with influent TP concentrations in the range of 0.1 to 0.5 mg/L averaged 65 percent. A bootstrap estimate of the lower 95 percent confidence limit (LCL95) of the mean total phosphorus reduction was 58 percent.
- The lower 95 percent confidence limit of the mean percent removal was 60.5 percent for dissolved zinc for influent concentrations in the range of 0.02 to 0.3 mg/L (n=11). The lower 95 percent confidence limit of the mean percent removal was 32.5 percent for dissolved copper for influent concentrations in the range of 0.005 to 0.02 mg/L (n=14) at flow rates up to 28 gpm (design flow rate 41 gpm). Laboratory test data augmented the data set, showing dissolved copper removal at the design flow rate of 41 gpm (93 percent reduction in influent dissolved copper of 0.757 mg/L).

Issues to be addressed by the Company:

1. Modular Wetland Systems, Inc. should collect maintenance and inspection data for the first year on all installations in the Northwest in order to assess standard maintenance requirements for various land uses in the region. Modular Wetland Systems, Inc. should use these data to establish required maintenance cycles.
2. Modular Wetland Systems, Inc. should collect pre-treatment chamber sediment depth data for the first year of operation for all installations in the Northwest. Modular Wetland Systems, Inc. will use these data to create a correlation between sediment depth and pre-filter clogging.

Technology Description:
Download at http://www.modularwetlands.com/

Contact Information:

Applicant: Zach Kent
BioClean A Forterra Company
5796 Armada Drive, Suite 250
Carlsbad, CA 92008
zach.kent@forterrabp.com

Applicant website: http://www.modularwetlands.com/

Ecology web link: http://www.ecy.wa.gov/programs/wg/stormwater/newtech/index.html

Ecology: Douglas C. Howie, P.E. Department of Ecology Water Quality Program
(360) 870-0983
douglas.howie@ecy.wa.gov

Revision History

Date	Revision
June 2011	Original use-level-designation document
September 2012	Revised dates for TER and expiration
January 2013	Modified Design Storm Description, added Revision Table, added maintenance discussion, modified format in accordance with Ecology standard
December 2013	Updated name of Applicant
April 2014	Approved GULD designation for Basic, Phosphorus, and Enhanced treatment
December 2015	Updated GULD to document the acceptance of MWS – Linear Modular Wetland installations with or without the inclusion of plants
July 2017	Revised Manufacturer Contact Information (name, address, and email)
December 2019	Revised Manufacturer Contact Address
July 2021	Added additional prefilter sized at 33 inches
August 2021	Changed “Prefilter” to “Prefilter box”

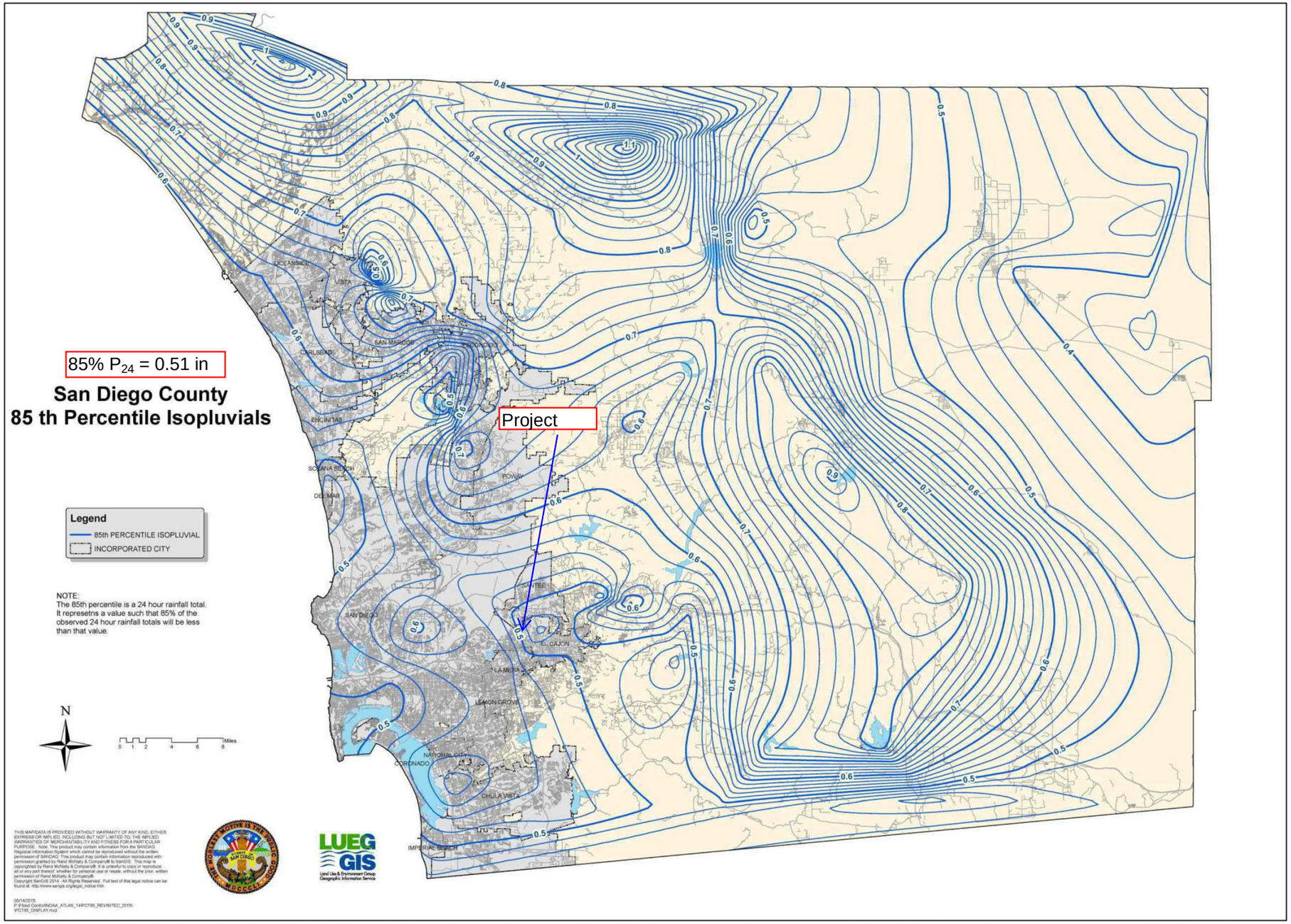


Figure B.1-1: 85th Percentile 24-hour Isopluvial Map

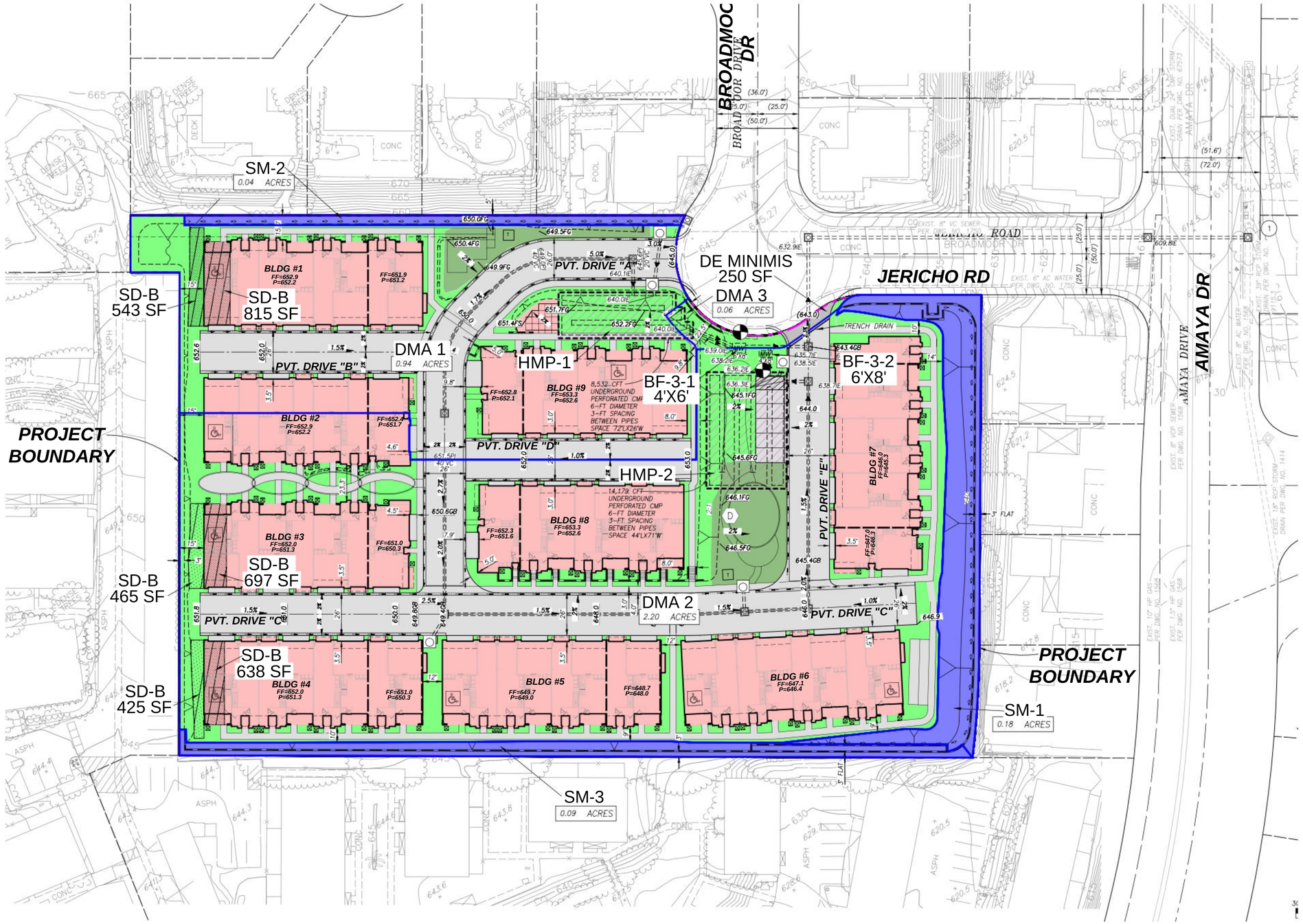
8.0 General Requirements

- 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)
☒ 8.1: Flow Control Facility Design (required)[1] Submit using ☒ the Sub-attachment 8.1 cover sheet provided, or ☐ as a separate stand-alone document labeled Sub-attachment 8.1.
☒ 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)? ☒ No, the low flow threshold is 0.1Q2 (default low flow threshold)
☐ Yes (provide the information below): Low flow threshold: ☐ 0.1Q2 ☐ 0.3Q2 ☐ 0.5Q2
Title: Date: Preparer:
Submit using ☐ the Sub-attachment 8.3 cover sheet provided, or ☐ 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) ☐ Included with this attachment ☐ Not required

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

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



LEGEND: SYMBOL:

- PROJECT BOUNDARY
- DMA BOUNDARY
- DAYLIGHT
- PROPOSED STORM DRAIN
- FLOW LINE
- SUBAREA ACREAGE — 00.00 ACRES
- DMA ICON — DMA 1
- IMPERVIOUS - ROAD
- IMPERVIOUS - ROOF
- IMPERVIOUS - SIDEWALK/DRIVEWAY
- PERVIOUS AREAS
- SELF-MITIGATING AREA
- ACTIVE OPEN SPACE
- DISPERSION AREA
- DE MINIMIS AREA
- INLET
- HYDROLOGIC SOIL TYPE — D
- POINT OF COMPLIANCE — 1
- STRUCTURAL BMP\ MWS UNIT

30 0 30 60 90
SCALE 1" = 30'

PREPARED BY:
HUNSAKER & ASSOCIATES SAN DIEGO, INC
PLANNING ENGINEERING SURVEYING
9707 Waples Street
San Diego, Ca 92121
PH(858)558-4500 FX(858)558-1414

HMP MAP

JERICHO ROAD

CITY OF LA MESA, CALIFORNIA

MAP 1 OF 1

W.O.# 3087-0012

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BMP Sizing Spreadsheet V3.0

Project Name:	Jericho
Project Applicant:	Meritage Homes
Jurisdiction:	City of La Mesa
Parcel (APN):	E4866701800
Hydrologic Unit:	San Diego
Rain Gauge:	Oceanside
Total Project Area (sf):	152,024
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.0			
Project Name:	Jericho	Hydrologic Unit:	San Diego
Project Applicant:	Meritage Homes	Rain Gauge:	Oceanside
Jurisdiction:	City of La Mesa	Total Project Area:	152,024
Parcel (APN):	E4866701800	Low Flow Threshold:	0.1Q2
BMP Name:	HMP-1	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1)[1]	Volume	Volume (CF)
DMA 1	41,086	D	Moderate	Mixed	0.9	0.12	4240
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	41,086					Minimum BMP Size	4240
						Proposed BMP Size*	4390

* Assumes standard configuration

Standard Cistern Depth (Overflow Elevation)	3.5	ft
Provided Cistern Depth (Overflow Elevation)	3.5	ft
Minimum Required Cistern Footprint)	1211	CF

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manu

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, April 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.0			
Project Name:	Jericho	Hydrologic Unit:	San Diego
Project Applicant:	Meritage Homes	Rain Gauge:	Oceanside
Jurisdiction:	City of La Mesa	Total Project Area:	152,024
Parcel (APN):	E4866701800	Low Flow Threshold:	0.1Q2
BMP Name	HMP-1	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	Orifice Area (in^2)
		Soil Type	Slope				
DMA 1	Oceanside	D	Moderate	0.575	0.943	0.054	0.80

3.50	0.054	0.80	1.01
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in^2)	Max Orifice Diameter (in)

Provide Hand Calc.	0.053	0.79	1.000
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in^2)	Selected Orifice Diameter (in)

PLEASE SEE FOLLOWING PAGES FOR MANUAL CALCS

Drawdown (Hrs)	48 hrs

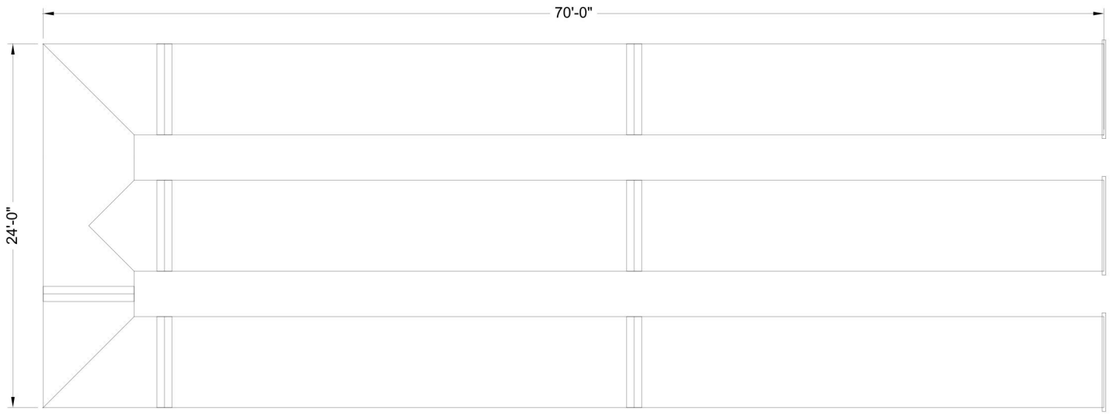
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 216 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 6,107 CF
- BACKFILL STORAGE VOLUME = 2,611 CF
- TOTAL STORAGE PROVIDED = 8,719 CF

PIPE DETAILS
- DIAMETER = 72"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 36"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 6"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 10'

DATE	REVISION DESCRIPTION	BY

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO33763 calvary Church
DMA1- SOUTH - COPY
La Mesa, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
22716	33763	7/26/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

C:\EXPORTS\TEMPLATES\CMP_V8.DWG 10/18/2019 10:02 AM

CONTECH ENGINEERED SOLUTIONS

Date: 7/26/2023
Project Name: DMA1- SOUTH - COPY - 33763 (7-26-2023 22-10-38)

City / County:
State:

Designed By:
Company:
Telephone:

CMP: Underground Detention System Storage Volume Estimation

=Adjustable Input Cells

Contech Engineered Solutions, LLC is pleased to offer the following estimate of storage volume for the above named project. The results are submitted as an estimate only, without liability on the part of Contech Engineered Solutions, LLC for accuracy or suitability to any particular applicaton and are subject to verification of the Engineer of Record. This tool is only applicable for rectangular shaped systems.

Summary of Inputs

System Information		Backfill Information		Pipe & Analysis Information	
Out-to-out length (ft):	70.0	Backfill Porosity (%):	40%	System Diameter (in):	72
Out-to-out width (ft):	24.0	Depth Above Pipe (in):	6.0	Pipe Spacing (in):	36
Number of Manifolds (ea):	1.0	Depth Below Pipe (in):	0.0	Incremental Analysis (in):	2
Number of Barrels (ea):	3.0	Width At Ends (ft):	1.0	System Invert (Elevation):	0
		Width At Sides (ft):	1.0		

Storage Volume Estimation

System		Pipe		Stone		Total System		Miscellaneous	
Depth (ft)	Elevation (ft)	Incremental Storage (cf)	Cumulative Storage (cf)	Incremental Storage (cf)	Cumulative Storage (cf)	Incremental Storage (cf)	Cumulative Storage (cf)	Percent Open Storage (%)	Ave. Surface Area (sf)
0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	748.8
0.17	0.16	47.6	47.6	105.8	105.8	153.4	153.4	31.0%	1,004.4
0.33	0.33	85.9	133.5	90.4	196.2	176.3	329.7	40.5%	1,105.0
0.50	0.50	109.6	243.1	81.0	277.2	190.6	520.3	46.7%	1,178.6
0.67	0.66	127.9	370.9	73.7	350.8	201.5	721.8	51.4%	1,237.6
0.83	0.83	142.8	513.7	67.7	418.5	210.5	932.2	55.1%	1,286.6
1.00	1.00	155.3	669.1	62.7	481.2	218.0	1,150.2	58.2%	1,328.4
1.17	1.16	166.1	835.2	58.4	539.5	224.5	1,374.7	60.8%	1,364.3
1.33	1.33	175.4	1,010.6	54.6	594.2	230.0	1,604.7	63.0%	1,395.4
1.50	1.50	183.4	1,194.0	51.4	645.6	234.9	1,839.6	64.9%	1,422.2
1.67	1.66	190.4	1,384.3	48.7	694.3	239.0	2,078.6	66.6%	1,445.4
1.83	1.83	196.3	1,580.7	46.3	740.5	242.6	2,321.2	68.1%	1,465.2
2.00	2.00	201.4	1,782.0	44.2	784.8	245.6	2,566.8	69.4%	1,481.9
2.17	2.16	205.6	1,987.7	42.5	827.3	248.2	2,815.0	70.6%	1,495.8
2.33	2.33	209.1	2,196.8	41.2	868.5	250.3	3,065.3	71.7%	1,507.0
2.50	2.50	211.8	2,408.6	40.1	908.5	251.9	3,317.2	72.6%	1,515.5
2.67	2.66	213.9	2,622.5	39.2	947.8	253.1	3,570.3	73.5%	1,521.6
2.83	2.83	215.2	2,837.7	38.7	986.5	253.9	3,824.2	74.2%	1,525.2
3.00	3.00	215.9	3,053.6	38.4	1,024.9	254.3	4,078.6	74.9%	1,526.4
3.17	3.16	215.9	3,269.5	38.4	1,063.4	254.3	4,332.9	75.5%	1,525.2
3.33	3.33	215.2	3,484.7	38.7	1,102.1	253.9	4,586.8	76.0%	1,521.6
3.50	3.50	213.9	3,698.6	39.2	1,141.4	253.1	4,840.0	76.4%	1,515.5
3.67	3.66	211.8	3,910.5	40.1	1,181.4	251.9	5,091.9	76.8%	1,507.0
3.83	3.83	209.1	4,119.6	41.2	1,222.6	250.3	5,342.1	77.1%	1,495.8
4.00	4.00	205.6	4,325.2	42.5	1,265.1	248.2	5,590.3	77.4%	1,481.9
4.17	4.16	201.4	4,526.6	44.2	1,309.4	245.6	5,836.0	77.6%	1,465.2
4.33	4.33	196.3	4,722.9	46.3	1,355.6	242.6	6,078.6	77.7%	1,445.4
4.50	4.50	190.4	4,913.3	48.7	1,404.3	239.0	6,317.6	77.8%	1,422.2
4.67	4.66	183.4	5,096.7	51.4	1,455.7	234.9	6,552.4	77.8%	1,395.4
4.83	4.83	175.4	5,272.1	54.6	1,510.4	230.0	6,782.5	77.7%	1,364.3
5.00	5.00	166.1	5,438.2	58.4	1,568.7	224.5	7,006.9	77.6%	1,328.4
5.17	5.16	155.3	5,593.5	62.7	1,631.4	218.0	7,224.9	77.4%	1,286.6
5.33	5.33	142.8	5,736.3	67.7	1,699.1	210.5	7,435.4	77.1%	1,237.6
5.50	5.50	127.9	5,864.2	73.7	1,772.7	201.5	7,636.9	76.8%	1,178.6
5.67	5.66	109.6	5,973.8	81.0	1,853.7	190.6	7,827.5	76.3%	1,105.0
5.83	5.83	85.9	6,059.7	90.4	1,944.1	176.3	8,003.8	75.7%	1,004.4
6.00	6.00	47.6	6,107.3	105.8	2,049.9	153.4	8,157.2	74.9%	748.8
6.17	6.16	0.0	6,107.3	124.8	2,174.7	124.8	8,282.0	73.7%	748.8
6.33	6.33	0.0	6,107.3	124.8	2,299.5	124.8	8,406.8	72.6%	748.8

HMP #1 Discharge

Discharge vs Elevation Table

Low orifice:	1 "	Top orifice:	4 "
Number:	1	Number:	0
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.00 ft	invert elev:	4.00 ft
Middle orifice:	3 "	Emergency inlet: 18" standup pipe	
number of orif:	1	Rim height:	5.00 ft
Cg-middle:	0.61	Area	1.7671 sq ft
invert elev:	3.17 ft	Circumference	4.7124 ft

h (ft)	H/D-low -	H/D-mid -	H/D-top -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qemerg (cfs)	Qtot (cfs)	
0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0.17	2.00	0.00	0.00	0.009	0.013	0.009	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	
0.33	4.00	1.88	0.00	0.014	0.024	0.014	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014	
0.50	6.00	0.00	0.00	0.018	0.344	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	
0.67	8.00	0.00	0.00	0.021	2.243	0.021	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.021	
0.83	10.00	0.00	0.00	0.024	8.567	0.024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.024	
1.00	12.00	0.00	0.00	0.026	24.355	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026	
1.17	14.00	0.00	0.00	0.028	57.454	0.028	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.028	
1.33	16.00	0.00	0.00	0.030	119.136	0.030	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.030	
1.50	18.00	0.00	0.00	0.032	224.716	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.032	
1.67	20.00	0.00	0.00	0.034	394.165	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	
1.83	22.00	0.00	0.00	0.036	652.729	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.036	
2.00	24.00	0.00	0.00	0.037	1031.545	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	
2.17	26.00	0.00	0.00	0.039	1568.256	0.039	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	
2.33	28.00	0.00	0.00	0.040	2307.630	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.040	
2.50	30.00	0.00	0.00	0.042	3302.171	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	
2.67	32.00	0.00	0.00	0.043	4612.744	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.043	
2.83	34.00	0.00	0.00	0.045	6309.182	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.045	
3.00	36.00	0.00	0.00	0.046	8470.909	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	
3.17	38.00	0.00	0.00	0.047	11187.553	0.047	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.047	< 0.054 cfs
3.33	40.00	0.65	0.00	0.048	14559.566	0.048	0.047	0.039	0.039	0.000	0.000	0.000	0.000	0.088	
3.50	42.00	1.32	0.00	0.050	18698.833	0.050	0.109	0.123	0.109	0.000	0.000	0.000	0.000	0.158	
3.67	44.00	1.99	0.00	0.051	23729.298	0.051	0.146	0.194	0.146	0.000	0.000	0.000	0.000	0.197	
3.83	46.00	2.65	0.00	0.052	29787.573	0.052	0.176	0.219	0.176	0.000	0.000	0.000	0.000	0.228	
4.00	48.00	3.32	0.00	0.053	37023.556	0.053	0.202	0.230	0.202	0.000	0.000	0.000	0.000	0.255	
4.17	50.00	3.99	0.50	0.054	45601.051	0.054	0.224	0.363	0.224	0.000	0.000	0.000	0.000	0.279	
4.33	52.00	4.65	1.00	0.055	55698.380	0.055	0.245	0.902	0.245	0.000	0.000	0.000	0.000	0.300	
4.50	54.00	5.32	1.50	0.056	67509.000	0.056	0.264	2.310	0.264	0.000	0.000	0.000	0.000	0.320	
4.67	56.00	5.99	2.00	0.057	81242.122	0.057	0.281	5.277	0.281	0.000	0.000	0.000	0.000	0.339	
4.83	58.00	6.65	2.50	0.058	97123.324	0.058	0.298	10.755	0.298	0.000	0.000	0.000	0.000	0.356	
5.00	60.00	7.32	3.00	0.059	115395.172	0.059	0.314	19.999	0.314	0.000	0.000	0.000	0.000	0.373	
5.17	62.00	7.99	3.50	0.060	136317.830	0.060	0.329	34.603	0.329	0.000	0.000	0.000	0.994	1.383	
5.33	64.00	8.65	4.00	0.061	160169.680	0.061	0.343	56.547	0.343	0.000	0.000	0.000	2.811	3.216	
5.50	66.00	9.32	4.50	0.062	187247.942	0.062	0.357	88.230	0.357	0.000	0.000	0.000	5.165	5.684	
5.67	68.00	9.99	5.00	0.063	217869.281	0.063	0.370	132.512	0.370	0.000	0.000	0.000	7.063	7.497	
5.83	70.00	10.65	5.50	0.064	252370.432	0.064	0.383	192.752	0.383	0.000	0.000	0.000	7.897	8.344	
6.00	72.00	11.32	6.00	0.065	291108.813	0.065	0.395	272.851	0.395	0.000	0.000	0.000	8.651	9.111	

0.047 CFS AT 3.17 FT =TOTAL ALLOWABLE ORIFICE FLOW, WHERE REQUIRED VOLUME IS PROVIDED (4,333 CFT) SEE NEXT PAGE

HMP #1 Stage Storage-CMP						
depth	area	area (ac)	elevation	volume (cf)	volume (acft)	
0.00	749	0.0172	0.0	0.0	0.000	
0.17	1004	0.0231	0.2	153.4	0.004	
0.33	1105	0.0254	0.3	329.7	0.008	
0.50	1179	0.0271	0.5	520.3	0.012	
0.67	1238	0.0284	0.7	721.8	0.017	
0.83	1287	0.0295	0.8	932.2	0.021	
1.00	1328	0.0305	1.0	1,150.2	0.026	
1.17	1364	0.0313	1.2	1,374.7	0.032	
1.33	1395	0.0320	1.3	1,604.7	0.037	
1.50	1422	0.0326	1.5	1,839.6	0.042	
1.67	1445	0.0332	1.7	2,078.6	0.048	1.53 DCV
1.83	1465	0.0336	1.8	2,321.2	0.053	
2.00	1482	0.0340	2.0	2,566.8	0.059	
2.17	1496	0.0343	2.2	2,815.0	0.065	
2.33	1507	0.0346	2.3	3,065.3	0.070	
2.50	1516	0.0348	2.5	3,317.2	0.076	
2.67	1522	0.0349	2.7	3,570.3	0.082	
2.83	1525	0.0350	2.8	3,824.2	0.088	
3.00	1526	0.0350	3.0	4,078.6	0.094	
3.17	1525	0.0350	3.2	4,332.9	0.099	>4240 cft
3.33	1522	0.0349	3.3	4,586.8	0.105	
3.50	1516	0.0348	3.5	4,840.0	0.111	
3.67	1507	0.0346	3.7	5,091.9	0.117	
3.83	1496	0.0343	3.8	5,342.1	0.123	
4.00	1482	0.0340	4.0	5,590.3	0.128	
4.17	1465	0.0336	4.2	5,836.0	0.134	
4.33	1445	0.0332	4.3	6,078.6	0.140	
4.50	1422	0.0326	4.5	6,317.6	0.145	
4.67	1395	0.0320	4.7	6,552.4	0.150	
4.83	1364	0.0313	4.8	6,782.5	0.156	
5.00	1328	0.0305	5.0	7,006.9	0.161	
5.17	1287	0.0295	5.2	7,224.9	0.166	
5.33	1238	0.0284	5.3	7,435.4	0.171	
5.50	1179	0.0271	5.5	7,636.9	0.175	
5.67	1105	0.0254	5.7	7,827.5	0.180	
5.83	1004	0.0231	5.8	8,003.8	0.184	
6.00	749	0.0172	6.0	8,157.2	0.187	
6.17	749	0.0172	6.2	8,282.0	0.190	
6.33	749	0.0172	6.3	8,406.8	0.193	
6.50	749	0.0172	6.5	8,531.6	0.196	

4,333 CFT STORAGE PROVIDED AT 3.17 FT > 4,240 CFT MIN BMP SIZE

HMP #1 DRAWDOWN CALCULATION				
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
0.17	0.01	153	4.51	47.72
0.33	0.01	176	4.11	43.21
0.50	0.02	191	3.26	39.11
0.67	0.02	202	2.86	35.85
0.83	0.02	210	2.61	32.99
1.00	0.02	218	2.43	30.38
1.17	0.03	224	2.29	27.96
1.33	0.03	230	2.18	25.67
1.50	0.03	235	2.08	23.49
1.67	0.03	239	2.00	21.40
1.83	0.03	243	1.93	19.40
2.00	0.04	246	1.87	17.47
2.17	0.04	248	1.81	15.60
2.33	0.04	250	1.75	13.79
2.50	0.04	252	1.70	12.04
2.67	0.04	253	1.65	10.34
2.83	0.04	254	1.61	8.69
3.00	0.05	254	1.56	7.08
3.17	0.05	254	1.52	5.52
3.33	0.07	254	1.05	4.01
3.50	0.12	253	0.57	2.96
3.67	0.18	252	0.39	2.39
3.83	0.21	250	0.33	1.99
4.00	0.24	248	0.29	1.67
4.17	0.27	246	0.26	1.38
4.33	0.29	243	0.23	1.13
4.50	0.31	239	0.21	0.89
4.67	0.33	235	0.20	0.68
4.83	0.35	230	0.18	0.48
5.00	0.36	224	0.17	0.30
5.17	0.88	218	0.07	0.13
5.33	2.30	210	0.03	0.06
5.50	4.40	202	0.01	0.03
5.67	6.54	191	0.01	0.02
5.83	7.92	176	0.01	0.01
6.00	8.73	153	0.00	0.00

TOTAL DRAW DOWN < 96 HRS

BMP Sizing Spreadsheet V3.0			
Project Name:	Jericho	Hydrologic Unit:	San Diego
Project Applicant:	Meritage Homes	Rain Gauge:	Oceanside
Jurisdiction:	City of La Mesa	Total Project Area:	152,024
Parcel (APN):	E4866701800	Low Flow Threshold:	0.1Q2
BMP Name:	HMP-2	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1)[1]	Volume	Volume (CF)
DMA 2	95,865	D	Moderate	Mixed	0.8	0.12	9566
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	95,865					Minimum BMP Size	9566
						Proposed BMP Size*	9842

* Assumes standard configuration

Standard Cistern Depth (Overflow Elevation)	3.5	ft
Provided Cistern Depth (Overflow Elevation)	3.5	ft
Minimum Required Cistern Footprint)	2733	CF

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manu

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, April 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.0			
Project Name:	Jericho	Hydrologic Unit:	San Diego
Project Applicant:	Meritage Homes	Rain Gauge:	Oceanside
Jurisdiction:	City of La Mesa	Total Project Area:	152,024
Parcel (APN):	E4866701800	Low Flow Threshold:	0.1Q2
BMP Name	HMP-2	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	Orifice Area (in^2)
		Soil Type	Slope				
DMA 2	Oceanside	D	Moderate	0.575	2.201	0.127	1.87

3.50	0.127	1.87	1.54
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in^2)	Max Orifice Diameter (in)

Provide Hand Calc.	0.043	0.64	0.900
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in^2)	Selected Orifice Diameter (in)

PLEASE SEE FOLLOWING PAGES FOR MANUAL CALCS

Drawdown (Hrs)	42 hrs

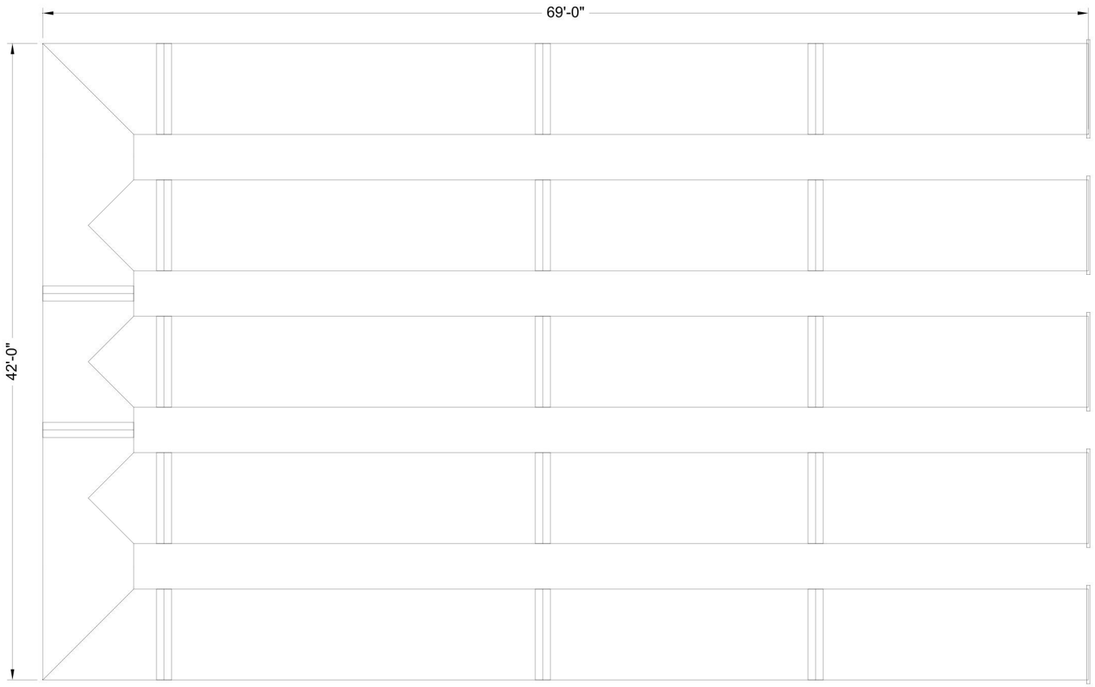
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 357 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = N/A
- PIPE STORAGE VOLUME = 10,094 CF
- BACKFILL STORAGE VOLUME = 4,269 CF
- TOTAL STORAGE PROVIDED = 14,363 CF

PIPE DETAILS
- DIAMETER = 72"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = PERFORATED
- BARREL SPACING = 36"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 6"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 10'

C:\EXPORTS\TEMPLATES\CMP_V8.DWG 10/18/2019 10:02 AM

DATE	REVISION DESCRIPTION	BY

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH® CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO35383 Jericho Road
Underground Perforated CMP
La Mesa, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
24012	35383	8/1/2023
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

Date: 8/1/2023
Project Name: Underground Perforated CMP - 35383 (8-1-2023 17-29-9)

City / County:
State:

Designed By:
Company:
Telephone:

CMP: Underground Detention System Storage Volume Estimation

=Adjustable Input Cells

Contech Engineered Solutions, LLC is pleased to offer the following estimate of storage volume for the above named project. The results are submitted as an estimate only, without liability on the part of Contech Engineered Solutions, LLC for accuracy or suitability to any particular applicaton and are subject to verification of the Engineer of Record. This tool is only applicable for rectangular shaped systems.

Summary of Inputs

System Information		Backfill Information		Pipe & Analysis Information	
Out-to-out length (ft):	69.0	Backfill Porosity (%):	40%	System Diameter (in):	72
Out-to-out width (ft):	42.0	Depth Above Pipe (in):	6.0	Pipe Spacing (in):	36
Number of Manifolds (ea):	1.0	Depth Below Pipe (in):	0.0	Incremental Analysis (in):	2
Number of Barrels (ea):	5.0	Width At Ends (ft):	1.0	System Invert (Elevation):	0
		Width At Sides (ft):	1.0		

Storage Volume Estimation

System		Pipe		Stone		Total System		Miscellaneous	
Depth (ft)	Elevation (ft)	Incremental Storage (cf)	Cumulative Storage (cf)	Incremental Storage (cf)	Cumulative Storage (cf)	Incremental Storage (cf)	Cumulative Storage (cf)	Percent Open Storage (%)	Ave. Surface Area (sf)
0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0%	1,249.6
0.17	0.16	78.7	78.7	176.8	176.8	255.5	255.5	30.8%	1,672.0
0.33	0.33	141.9	220.6	151.5	328.3	293.4	548.9	40.2%	1,838.4
0.50	0.50	181.2	401.8	135.8	464.1	317.0	865.9	46.4%	1,960.0
0.67	0.66	211.3	613.1	123.7	587.8	335.1	1,200.9	51.1%	2,057.4
0.83	0.83	236.0	849.0	113.9	701.7	349.9	1,550.8	54.8%	2,138.5
1.00	1.00	256.8	1,105.8	105.6	807.3	362.3	1,913.1	57.8%	2,207.5
1.17	1.16	274.5	1,380.3	98.5	905.7	373.0	2,286.1	60.4%	2,266.9
1.33	1.33	289.9	1,670.2	92.3	998.0	382.2	2,668.3	62.6%	2,318.2
1.50	1.50	303.2	1,973.4	87.0	1,085.0	390.2	3,058.4	64.5%	2,362.6
1.67	1.66	314.6	2,288.0	82.4	1,167.5	397.0	3,455.5	66.2%	2,400.9
1.83	1.83	324.5	2,612.5	78.5	1,245.9	403.0	3,858.4	67.7%	2,433.6
2.00	2.00	332.9	2,945.3	75.1	1,321.1	408.0	4,266.4	69.0%	2,461.3
2.17	2.16	339.9	3,285.2	72.3	1,393.4	412.2	4,678.6	70.2%	2,484.2
2.33	2.33	345.6	3,630.8	70.0	1,463.4	415.6	5,094.2	71.3%	2,502.7
2.50	2.50	350.1	3,980.9	68.2	1,531.6	418.3	5,512.6	72.2%	2,516.8
2.67	2.66	353.5	4,334.4	66.9	1,598.5	420.4	5,932.9	73.1%	2,526.8
2.83	2.83	355.7	4,690.2	66.0	1,664.5	421.7	6,354.6	73.8%	2,532.8
3.00	3.00	356.8	5,047.0	65.5	1,730.0	422.4	6,777.0	74.5%	2,534.8
3.17	3.16	356.8	5,403.8	65.5	1,795.6	422.4	7,199.3	75.1%	2,532.8
3.33	3.33	355.7	5,759.5	66.0	1,861.5	421.7	7,621.0	75.6%	2,526.8
3.50	3.50	353.5	6,113.0	66.9	1,928.4	420.4	8,041.4	76.0%	2,516.8
3.67	3.66	350.1	6,463.1	68.2	1,996.6	418.3	8,459.7	76.4%	2,502.7
3.83	3.83	345.6	6,808.7	70.0	2,066.6	415.6	8,875.4	76.7%	2,484.2
4.00	4.00	339.9	7,148.6	72.3	2,139.0	412.2	9,287.6	77.0%	2,461.3
4.17	4.16	332.9	7,481.5	75.1	2,214.1	408.0	9,695.5	77.2%	2,433.6
4.33	4.33	324.5	7,805.9	78.5	2,292.6	403.0	10,098.5	77.3%	2,400.9
4.50	4.50	314.6	8,120.6	82.4	2,375.0	397.0	10,495.5	77.4%	2,362.6
4.67	4.66	303.2	8,423.7	87.0	2,462.0	390.2	10,885.7	77.4%	2,318.2
4.83	4.83	289.9	8,713.6	92.3	2,554.3	382.2	11,267.9	77.3%	2,266.9
5.00	5.00	274.5	8,988.1	98.5	2,652.7	373.0	11,640.9	77.2%	2,207.5
5.17	5.16	256.8	9,244.9	105.6	2,758.3	362.3	12,003.2	77.0%	2,138.5
5.33	5.33	236.0	9,480.9	113.9	2,872.2	349.9	12,353.1	76.7%	2,057.4
5.50	5.50	211.3	9,692.2	123.7	2,995.9	335.1	12,688.1	76.4%	1,960.0
5.67	5.66	181.2	9,873.3	135.8	3,131.7	317.0	13,005.1	75.9%	1,838.4
5.83	5.83	141.9	10,015.3	151.5	3,283.2	293.4	13,298.5	75.3%	1,672.0
6.00	6.00	78.7	10,093.9	176.8	3,460.0	255.5	13,554.0	74.5%	1,249.6
6.17	6.16	0.0	10,093.9	208.3	3,668.3	208.3	13,762.2	73.3%	1,249.6

HMP #2 Discharge

Discharge vs Elevation Table

Low orifice:	1.45 "	Top orifice:	6 "	
Number:	1	Number:	0	
Cg-low:	0.61	Cg-low:	0.61	
invert elev:	0.00 ft	invert elev:	5.00 ft	
Middle orifice:	6 "	Emergency inlet:		
number of orif:	10	Rim height:	5.00 ft	
Cg-middle:	0.61	Area	1.7671 sq ft	<-2' X 2' Weir
invert elev:	4.17 ft	Circumference	4.7124 ft	

h (ft)	H/D-low -	H/D-mid -	H/D-top -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qemerg (cfs)	Qtot (cfs)	
0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
0.17	1.38	0.00	0.00	0.018	0.021	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	
0.33	2.76	1.88	0.00	0.029	0.036	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.029	
0.50	4.14	0.00	0.00	0.037	0.071	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	
0.67	5.52	0.00	0.00	0.044	0.485	0.044	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.044	
0.83	6.90	0.00	0.00	0.049	2.211	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	
1.00	8.28	0.00	0.00	0.054	6.998	0.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.054	
1.17	9.66	0.00	0.00	0.059	17.657	0.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.059	
1.33	11.03	0.00	0.00	0.063	38.303	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.063	
1.50	12.41	0.00	0.00	0.067	74.599	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	
1.67	13.79	0.00	0.00	0.071	133.999	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.071	
1.83	15.17	0.00	0.00	0.075	225.991	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.075	
2.00	16.55	0.00	0.00	0.078	362.342	0.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.078	
2.17	17.93	0.00	0.00	0.081	557.341	0.081	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.081	
2.33	19.31	0.00	0.00	0.085	828.042	0.085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.085	
2.50	20.69	0.00	0.00	0.088	1194.507	0.088	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.088	
2.67	22.07	0.00	0.00	0.091	1680.049	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091	
2.83	23.45	0.00	0.00	0.093	2311.478	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.093	
3.00	24.83	0.00	0.00	0.096	3119.343	0.096	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.096	
3.17	26.21	0.00	0.00	0.099	4138.174	0.099	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.099	
3.33	27.59	0.00	0.00	0.102	5406.727	0.102	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.102	
3.50	28.97	0.00	0.00	0.104	6968.229	0.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.104	
3.67	30.34	0.00	0.00	0.107	8870.617	0.107	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.107	
3.83	31.72	0.00	0.00	0.109	11166.786	0.109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.109	
4.00	33.10	0.00	0.00	0.111	13914.830	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.111	
4.17	34.48	0.00	0.00	0.114	17178.286	0.114	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.114	< 0.127 cfs
4.33	35.86	0.33	0.00	0.116	21026.378	0.116	0.000	0.606	0.606	0.000	0.000	0.000	0.000	0.722	
4.50	37.24	0.66	0.00	0.118	25534.259	0.118	2.719	2.252	2.252	0.000	0.000	0.000	0.000	2.370	
4.67	38.62	0.99	0.00	0.120	30783.255	0.120	4.774	4.542	4.542	0.000	0.000	0.000	0.000	4.663	
4.83	40.00	1.33	0.00	0.123	36861.111	0.123	6.179	7.034	6.179	0.000	0.000	0.000	0.000	6.302	
5.00	41.38	1.66	0.00	0.125	43862.231	0.125	7.320	9.305	7.320	0.000	0.000	0.000	0.000	7.445	
5.17	42.76	1.99	0.33	0.127	51887.922	0.127	8.306	11.028	8.306	0.000	0.000	0.000	0.994	9.426	
5.33	44.14	2.33	0.67	0.129	61046.639	0.129	9.186	12.036	9.186	0.000	0.000	0.000	2.811	12.126	
5.50	45.52	2.66	1.00	0.131	71454.227	0.131	9.989	12.396	9.989	0.000	0.000	0.000	5.165	15.285	
5.67	46.90	2.99	1.33	0.133	83234.167	0.133	10.732	12.475	10.732	0.000	0.000	0.000	7.063	17.928	
5.83	48.28	3.33	1.67	0.135	96517.815	0.135	11.427	13.014	11.427	0.000	0.000	0.000	7.897	19.459	
6.00	49.66	3.66	2.00	0.137	111444.651	0.137	12.082	15.195	12.082	0.000	0.000	0.000	8.651	20.869	
6.17	51.06	4.00	2.34	0.139	128516.201	0.139	12.715	20.871	12.715	0.000	0.000	0.000	9.357	22.211	
6.33	52.39	4.32	2.66	0.141	146434.413	0.141	13.284	31.545	13.284	0.000	0.000	0.000	9.976	23.401	
6.50	53.79	4.66	3.00	0.142	167605.986	0.142	13.862	51.508	13.862	0.000	0.000	0.000	10.595	24.599	

0.114 CFS AT 4.17 FT =TOTAL ALLOWABLE ORIFICE FLOW, WHERE REQUIRED VOLUME IS PROVIDED (9,696 CFT) SEE NEXT PAGE

HMP #2 Stage Storage-CMP						
depth	area	area (ac)	elevation	volume (cf)	volume (acft)	
0.00	1249.6	0.0000	0.0	0.0	0.000	
0.17	1672.0	0.0384	0.2	255.5	0.006	
0.33	1838.4	0.0422	0.3	548.9	0.013	
0.50	1960.0	0.0450	0.5	865.9	0.020	
0.67	2057.4	0.0472	0.7	1,200.9	0.028	
0.83	2138.5	0.0491	0.8	1,550.8	0.036	
1.00	2207.5	0.0507	1.0	1,913.1	0.044	
1.17	2266.9	0.0520	1.2	2,286.1	0.052	
1.33	2318.2	0.0532	1.3	2,668.3	0.061	
1.50	2362.6	0.0542	1.5	3,058.4	0.070	
1.67	2400.9	0.0551	1.7	3,455.5	0.079	
1.83	2433.6	0.0559	1.8	3,858.4	0.089	
2.00	2461.3	0.0565	2.0	4,266.4	0.098	
2.17	2484.2	0.0570	2.2	4,678.6	0.107	1.57 DCV
2.33	2502.7	0.0575	2.3	5,094.2	0.117	
2.50	2516.8	0.0578	2.5	5,512.6	0.127	
2.67	2526.8	0.0580	2.7	5,932.9	0.136	
2.83	2532.8	0.0581	2.8	6,354.6	0.146	
3.00	2534.8	0.0582	3.0	6,777.0	0.156	
3.17	2532.8	0.0581	3.2	7,199.3	0.165	
3.33	2526.8	0.0580	3.3	7,621.0	0.175	
3.50	2516.8	0.0578	3.5	8,041.4	0.185	
3.67	2502.7	0.0575	3.7	8,459.7	0.194	
3.83	2484.2	0.0570	3.8	8,875.4	0.204	
4.00	2461.3	0.0565	4.0	9,287.6	0.213	
4.17	2433.6	0.0559	4.2	9,695.5	0.223	>9566 cft
4.33	2400.9	0.0551	4.3	10,098.5	0.232	
4.50	2362.6	0.0542	4.5	10,495.5	0.241	
4.67	2318.2	0.0532	4.7	10,885.7	0.250	
4.83	2266.9	0.0520	4.8	11,267.9	0.259	
5.00	2207.5	0.0507	5.0	11,640.9	0.267	
5.17	2138.5	0.0491	5.2	12,003.2	0.276	
5.33	2057.4	0.0472	5.3	12,353.1	0.284	
5.50	1960.0	0.0450	5.5	12,688.1	0.291	
5.67	1838.4	0.0422	5.7	13,005.1	0.299	
5.83	1672.0	0.0384	5.8	13,298.5	0.305	
6.00	1249.6	0.0287	6.0	13,554.0	0.311	
6.17	1249.6	0.0287	6.2	13,762.2	0.316	
6.33	1249.6	0.0287	6.3	13,970.5	0.321	
6.50	1249.6	0.0287	6.5	14,178.8	0.325	

9,696 CFT STORAGE PROVIDED AT 4.17 FT > 9,566 CFT MIN BMP SIZE

HMP #2 DRAWDOWN CALCULATION				
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
0.17	0.02	255	3.88	42.28
0.33	0.02	293	3.42	38.40
0.50	0.03	317	2.65	34.97
0.67	0.04	335	2.30	32.33
0.83	0.05	350	2.09	30.03
1.00	0.05	362	1.94	27.94
1.17	0.06	373	1.83	26.00
1.33	0.06	382	1.74	24.17
1.50	0.07	390	1.66	22.44
1.67	0.07	397	1.59	20.78
1.83	0.07	403	1.53	19.19
2.00	0.08	408	1.48	17.65
2.17	0.08	412	1.43	16.17
2.33	0.08	416	1.39	14.74
2.50	0.09	418	1.35	13.35
2.67	0.09	420	1.31	12.00
2.83	0.09	422	1.27	10.69
3.00	0.09	422	1.24	9.42
3.17	0.10	422	1.20	8.18
3.33	0.10	422	1.17	6.98
3.50	0.10	420	1.14	5.81
3.67	0.11	418	1.10	4.67
3.83	0.11	416	1.07	3.57
4.00	0.11	412	1.04	2.50
4.17	0.11	408	1.01	1.46
4.33	0.42	403	0.27	0.45
4.50	1.55	397	0.07	0.19
4.67	3.52	390	0.03	0.11
4.83	5.48	382	0.02	0.08
5.00	6.87	373	0.02	0.06
5.17	8.44	362	0.01	0.05
5.33	10.78	350	0.01	0.04
5.50	13.71	335	0.01	0.03
5.67	16.61	317	0.01	0.02
5.83	18.69	293	0.00	0.02
6.00	20.16	255	0.00	0.01
6.17	21.54	208	0.00	0.01
6.33	22.81	208	0.00	0.00
6.50	24.00	208	0.00	0.00

TOTAL DRAW DOWN < 96 HRS

HMP-2				
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
0.17	0.02	255	3.88	30.28
0.33	0.02	293	3.42	26.40
0.50	0.03	317	2.65	22.98
0.67	0.04	335	2.30	20.33
0.83	0.05	350	2.09	18.03
1.00	0.05	362	1.94	15.94
1.17	0.06	373	1.83	14.00
1.33	0.06	382	1.74	12.18
1.50	0.07	390	1.66	10.44
1.67	0.07	397	1.59	8.78
1.83	0.07	403	1.53	7.19
2.00	0.08	408	1.48	5.66
2.17	0.08	412	1.43	4.17
2.33	0.08	416	1.39	2.74
2.50	0.09	418	1.35	1.35

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
1	Proposed 18" onsite Storm Drain	Runoff from DMA 1 and DMA 2 comingle at this point and then flow to an existing Storm Drain pipe on Amaya Drive where it comingles with existing flows.

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.

PART 1 PROJECT INFORMATION

A. Project Summary Information	
Project Name	Jericho Road
Record ID (e.g. grading/improvement plan number, building permit)	TBD
Project Address	9407 Jericho Road
Assessor's Parcel Number(s) APN(s)	486-670-18
Project Watershed (Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	San Diego River Watershed, Lower San Diego, La Mesa, #907.10
B. Owner Information	
Name	Calvary Chapel of El Cajon
Address	9407 Jericho Road, La Mesa, CA 91942
Email Address	
Phone Number	(619) 633-9956

COUNTY – OFFICIAL USE ONLY	
INTAKE ID#	
ACCEPTANCE ID#	

**THIS PAGE IS FOR PARTIAL VERIFICATIONS ONLY **

If final grade release or granting of occupancy is being requested for only a portion of the Priority Development Project (PDP) please fill out the table below. Include ALL of the Structural BMPs and/or Significant Site Design BMPs for the entire project in the table. Include a mark-up of the DMA map from the approved SWQMP with this Verification package that clearly shows which DMAs you are submitting for approval and which DMAs have already been accepted (if any).

DMA #	APN or Lot #	BMP ID #	WPP Acceptance Date (If applicable)	WPP Acceptance ID# (If applicable, e.g. 20/21-001)

PART 2 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.
- 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.

DMA #	BMP Information			Maintenance Category (1, 2, 3, or 4)	Maintenance Agreement Recorded DOC #	Construction Plan Sheet #	Landscape Plan Sheet #	FOR DPW-WPP USE ONLY
	Quantity	Description/Type of Structural BMP	BMP ID #					
A. Structural BMPs (S-BMPs)								
Add rows as needed. Click into the last column in the row below this, then press TAB to add a new row.								
B. Significant Site Design BMPs (SSD-BMPs)								
		Choose an item.		Choose				
		Choose an item.		Choose				
		Choose an item.		Choose				
		Choose an item.		Choose				
		Choose an item.		Choose				
		Choose an item.		Choose				
Add rows as needed. Click into the last column in the row below this, then press TAB to add a new row.								

PART 3 REQUIRED ATTACHMENTS

For the permanent BMPs listed in Part 2, submit the following to the County inspector along with this Verification form as a package (check all that are attached):

☐ PHOTOGRAPHS: Final construction photos of every permanent BMP listed in Part 2 are required. Final photos must be recent and be labeled with the date and a BMP Identifier. Additional photographs illustrating proper construction of the BMPs are recommended to be included and may be requested by WPP prior to acceptance of this Verification (e.g. excavation depths, liners, hydromodification orifices, Biofiltration Soil Media (BSM), vegetation, mulch).

☐ MAINTENANCE AGREEMENTS: Copies of approved and recorded Storm Water Maintenance Agreements (SWMA), Category 1 Maintenance Notification Agreements (MN), or Encroachment Maintenance and Removal Agreements (EMRA) for all S-BMPs.

Note: Significant Site Design (SSD) BMPs and most Category 4 BMPs do not require recorded maintenance agreements.

☐ CONSTRUCTION PLANS: Submit electronic and/or 11" X 17" hard copies of the current approved Construction Plan sheets for the Record ID(s) listed on Page 1:

- ☐ Grading Plans
- ☐ Improvement Plans
- ☐ Precise Grading Plan
- ☐ Building Plan (Applicable BMP Sheets only)
- ☐ Other (Please specify) _____

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

- A BMP Table on Sheet 1, AND
- A plan detail cross-section of each verified as-built BMP, AND
- The location of each verified as-built BMP

☐ LANDSCAPE PLANS: If the PDP includes vegetated BMPs and has a Landscape Plan, submit the following:

- ☐ Final Landscape Plans
- ☐ Proof of Irrigation Installed (if applicable)

PART 4 PREPARER'S CERTIFICATION

By signing below, I certify that the BMP(s) listed in Part 2 of this Verification Form have been constructed and 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 must be certified by a licensed professional engineer.

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

Preparer's Name:	
Email Address:	
Phone Number:	
Preparer's Signature:	
Date:	

[SEAL]

PROJECT RECORD ID: _____

COUNTY - OFFICIAL USE ONLY

County Inspector Approval:

*NOTE: The County approved SWQMP document and any Addendums or Revisions must be included with this BMP Installation Verification submittal package.

- ☐ DPW Private Development Construction Inspection (PDCI)
- ☐ PDS Building
- ☐ DGS
- ☐ DPR

By signing below, the County Inspector concurs that every BMP listed in Part 2 of this BMP Installation Verification form has been installed per plan.

Inspector Name: _____

Inspector's Signature: _____ Date: _____

DPW Watershed Protection Program (WPP) Acceptance:

Date Received: _____

WPP Reviewer: _____

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

WPP Reviewer's Signature: _____ Date: _____

Enter Acceptance ID# on page 1.

NOTES:

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 Agreement for Category 1 Stormwater Structural BMPs

- Exhibit A: Project Site Map; and a Map for each BMP and its Drainage Management Area (DMA).
- Exhibit B: BMP Maintenance Plan (see below)

CATEGORY 1 MAINTENANCE AGREEMENTS ARE RECORDED PRIOR TO OCCUPANCY.

☐ Storm Water Facilities Maintenance Agreement (SWMA) (Category 2 BMPs)

- Exhibit A: Legal Description of Property
- Exhibit B: BMP Maintenance Program (see below)
- Exhibit C: BMP Locations

CATEGORY 2 MAINTENANCE AGREEMENTS ARE RECORDED PRIOR TO PERMIT ISSUANCE.

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

b. Maintenance Plan Requirements

Maintenance plans should include the following:

☒ Specific maintenance indicators and actions for proposed structural BMP(s). These must be based on maintenance indicators presented in BMP Design Manual 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.