# Appendix N

## Priority Development Project Stormwater Quality Management Plan for Escondido Church

# City of Escondido
# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Escondido Church

855 Brotherton Road
Escondido, CA 92025

**ASSESSOR'S PARCEL NUMBER(S):**
236-333-53-00

**ENGINEER OF WORK:**

Daniel Quinones, PE
C 92310

REGISTERED PROFESSIONAL ENGINEER
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DATE OF SWQMP:
04/30/2025

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APPROVAL DATE:

ESCONDIDO
City of Choice

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## ATTACHMENTS

Attachment 1: Backup for PDP Pollutant Control BMPs
- Attachment 1a: Storm Water Pollutant Control Worksheet Calculations (Applicable worksheets)
- Attachment 1b: Form I-8, Categorization of Infiltration Feasibility Condition
- Attachment 1c: Form I-9, Factor of Safety and Design Infiltration Rate Worksheet
- Attachment 1d: Drainage Management Area (DMA) Exhibit
- Attachment 1e: Individual Structural BMP DMA Mapbook

Attachment 2: Backup for PDP Hydromodification Control Measures
- Attachment 2a: Flow Control Facility Design
- Attachment 2b: Hydromodification Management Exhibit
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Attachment 3: Structural BMP Maintenance Plan
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Attachment 4: City of Escondido PDP Structural BMP Verification

Attachment 5: Copy of Plan Sheets Showing Permanent Storm Water BMPs

## ACRONYMS

| | |
|---|---|
| ACP | Alternative Compliance Project |
| APN | Assessor's Parcel Number |
| BMP | Best Management Practice |
| DMA | Drainage Management Area |
| EOW | Engineer of Work |
| HMP | Hydromodification Management Plan |
| HSG | Hydrologic Soil Group |
| MS4 | Municipal Separate Storm Sewer System |
| N/A | Not Applicable |
| PDP | Priority Development Project |
| PE | Professional Engineer |
| SC | Source Control |
| SD | Site Design |
| SDRWQCB | San Diego Regional Water Quality Control Board |
| SIC | Standard Industrial Classification |
| SWDM | Storm Water Design Manual |
| SWQMP | Storm Water Quality Management Plan |
| USGS | US Geological Survey |
| WMAA | Watershed Management Area Analysis |
| WQIP | Water Quality Improvement Plan |

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

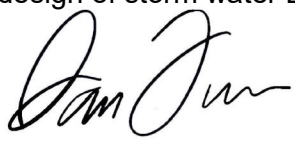
## PDP SWQMP PREPARER'S CERTIFICATION PAGE

**Project Name:** Escondido Church
**Permit Number:**

### PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the City of Escondido Storm Water Design Manual, which is a design manual for compliance with the City of Escondido Municipal Code (Chapter 22, Article 2) 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 City of Escondido has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the Storm Water 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 City staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.



C 92310 EXP: 6/30/25

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

Daniel Quinones

Print Name

Nasland Engineering

Company

04/30/2025

Date

Engineer's Seal:




Template Date: October 2022
Preparation Date: 04-30-2025

## SUBMITTAL RECORD

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

Preliminary Design / Planning / CEQA

| Submittal Number | Date | Summary of Changes |
|---|---|---|
| 1 | 10-18-2024 | Initial Submittal |
| 2 | 02-25-2025 | |
| 3 | | |
| 4 | | |

Final Design

| Submittal Number | Date | Summary of Changes |
|---|---|---|
| 1 | | Initial Submittal |
| 2 | | |
| 3 | | |
| 4 | | |

Plan Changes

| Submittal Number | Date | Summary of Changes |
|---|---|---|
| 1 | | Initial Submittal |
| 2 | | |
| 3 | | |
| 4 | | |

## PROJECT VICINITY MAP

**Project Name:** Escondido Church
**Permit Number:** _____

## Step 1: Project type determination

| Site Information Checklist for PDPs | Form I-2a |
|---|---|
| **Project Summary Information** | |
| Project Name | Escondido Church |
| Project Address | 855 Brotherton Road<br>Escondido, CA 92025 |
| Assessor's Parcel Number(s) | 236-333-53-00 |
| Permit Number | |
| Project Watershed (Hydrologic Unit) | Select One:<br>☐ Carlsbad 904<br>☑ San Dieguito 905 |
| Parcel Area<br>(total area of Assessor's Parcel(s) associated with the project) | 6.73 Acres (292,978 Square Feet) |
| Area to be disturbed by the project<br>(Project Area) | 6.48 Acres (282,369 Square Feet) |
| Project Proposed Impervious Area<br>(subset of Project Area) | 3.80 Acres (169,068 Square Feet) |
| Project Proposed Pervious Area<br>(subset of Project Area) | 2.65 Acres (113,301 Square Feet) |
| Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area. | |

## Step 1.1: Storm Water Quality Management Plan requirements

| Site Information Checklist for PDPs | | Form I-2a |
|---|---|---|
| **Step** | **Answer** | **Progression** |
| Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions?<br><br>To answer this item, complete Step 1 Project Type Determination Checklist on Pages 3 and 4, and see PDP exemption information below.<br><br>For further guidance, see Section 1.4 of the Storm Water Design Manual *in its entirety*. | ☐ Standard Project | Standard Project requirements apply.<br>**Complete Form I-1.** |
| | ▣ PDP | Standard and PDP requirements apply, including PDP SWQMP.<br>**SWQMP Required.** |
| | ☐ PDP with ACP | If participating in offsite alternative compliance, **complete Step 5.1** (Offsite Alternative Compliance Participation Form) **and an ACP SWQMP.** |
| | ☐ PDP Exemption | **Go to Step 1.2 below.** |

## Step 1.2: Exemption to PDP definitions

| Site Information Checklist for PDPs | Form I-2a |
|---|---|
| Is the project exempt from PDP definitions based on either of the following:<br><br>☐ Projects that are only new or retrofit paved sidewalks, bicycle lanes, or trails that meet the following criteria:<br><br>(i) Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas; OR<br>(ii) Designed and constructed to be hydraulically disconnected from paved streets or roads [i.e., runoff from the new improvement does not drain directly onto paved streets or roads]; OR<br>(iii) Designed and constructed with permeable pavements or surfaces in accordance with County of San Diego Green Streets Infrastructure; | If so:<br><br>Standard Project requirements apply, AND any additional requirements specific to the type of project. City concurrence with the exemption is required. *Provide discussion and list any additional requirements below in this form.* |
| ☐ Projects that are only retrofitting or redeveloping existing paved alleys, streets or roads that are designed and constructed in accordance with the County of San Diego Green Streets Infrastructure; | **PDP Exempt.** |
| Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable: | |
| N/A | |

## Step 1.3: Confirmation of PDP Determination

| Site Information Checklist for PDPs | | | Form I-2a |
|---|---|---|---|
| The project is (select one): ☐ New Development ■ Redevelopment[1] | | | |
| The total proposed newly created or replaced impervious area is: 169,068 ft² | | | |
| The project meets the following categories, (a) through (f): [select all that apply] | | | |
| Yes ☐ | No ☑ | (a) | New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. |
| Yes ☑ | No ☐ | (b) | Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. |
| Yes ☑ | No ☐ | (c) | New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses:<br>(i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812). *Information and an SIC search function are available at www.osha.gov/pls/imis/sicsearch.html.*<br>(ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater.<br>(iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce.<br>(iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles. |
| Yes ☐ | No ☑ | (d) | New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).<br>*Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any* |

[1] Redevelopment is defined as: The creation and/or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include routine maintenance activities, such as trenching and resurfacing associated with utility work; pavement grinding; resurfacing existing roadways; sidewalks; pedestrian ramps; or bike lanes on existing roads; and routine replacement of damaged pavement, such as pothole repair.

| Site Information Checklist for PDPs | | | Form I-2a |
|---|---|---|---|
| | | | *other equivalent environmentally sensitive areas which have been identified by the Copermittees.*<br>*For projects adjacent to an ESA, but not discharging to an ESA, the 2,500 square foot threshold does not apply as long as the project does not physically disturb the ESA and the ESA is upstream of the project.* |
| Yes ☐ | No ☑ | (e) | New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses:<br>(i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.<br>*Information and an SIC search function are available at www.osha.gov/pls/imis/sicsearch.html.*<br>(ii) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. |
| Yes ☑ | No ☐ | (f) | New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.<br>Note: See Storm Water Design Manual Section 1.4.2 for additional guidance. |

**The following is for redevelopment PDPs only:**

| | | | |
|---|---|---|---|
| The area of existing (pre-project) impervious area at the project site is: | A | 78,593 | $ft^2$ |
| The total proposed newly created or replaced impervious area is: | B | 169,068 | $ft^2$ |
| Percent impervious surface created or replaced: | (B/A)*100 | 215 | % |

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

☐ **less than or equal to fifty percent (50%)** – only newly created or replaced impervious areas are considered a PDP and subject to stormwater requirements

OR

▬ **greater than fifty percent (50%)** – the entire project site is considered a PDP and subject to stormwater requirements

## Step 2: City of Escondido PDP SWQMP Site Information Checklist

### Step 2.1: Description of Existing Site Condition and Drainage Patterns

| Site Information Checklist for PDPs | Form I-2a |
|---|---|

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

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

Description / Additional Information:

The existing conditions consist of 2 buildings a surface parking lot, basketball court and large open vegetated areas.

Existing Land Cover Includes (select all that apply and provide each area on site):

- ☒ Vegetative Cover 4.92 Acres (214,385 Square Feet)
- ☐ Non-Vegetated Pervious Areas _____ Acres (_____ Square Feet)
- ☒ Impervious Areas 1.8 Acres (78,593 Square Feet)

Description / Additional Information:

The existing conditions consist of 2 buildings a surface parking lot, basketball court and large open vegetated areas.

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

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

Approximate Depth to Groundwater (GW) (or N/A for no infiltration BMPs):

- ☐ Groundwater Depth < 5 feet
- ☐ 5 feet < Groundwater Depth < 10 feet
- ☐ 10 feet < Groundwater Depth < 20 feet
- ☒ Groundwater Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):

- ☐ Watercourses
- ☐ Seeps
- ☐ Springs
- ☐ Wetlands
- ☒ None
- ☐ Other

Description / Additional Information:

The existing conditions consist of 2 buildings a surface parking lot, basketball court and large open vegetated areas.

## Step 2.2: Description of Existing Site Drainage Patterns

| Site Information Checklist for PDPs | Form I-2a |
|---|---|
| How is storm water runoff conveyed from the site? At a minimum, this description should answer (1) whether existing drainage conveyance is natural or urban; (2) describe existing constructed storm water conveyance systems, if applicable; and (3) is runoff from offsite conveyed through the site? If so, describe: | |
| 1.Existing drainage conveyance is classified as urban and natural.<br><br>2. There are no existing storm drain system that connects the project site to the public right-of-way.<br><br>3. No off-site run-off is conveyed through the site.<br><br>Refer to the Drainage Study in Appendix A for the existing run off discharge locations. | |

## Step 2.3: Description of Proposed Site Development

| Site Information Checklist for PDPs | Form I-2a |
|---|---|
| Project Description / Proposed Land Use and/or Activities: | |
| The proposed improvements will include a single story church with an asphalt parking lot, concrete sidewalks, sports field, basketball court, and landscaping. | |
| List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): | |
| The proposed impervious features will include a church, asphalt parking lot, and concrete sidewalks. | |
| List/describe proposed pervious features of the project (e.g., landscape areas): | |
| The proposed pervious features will include landscaping and bioretention basins. | |
| Does the project include grading and changes to site topography?<br>■ Yes<br>☐ No<br><br>Description / Additional Information: | |
| This project proposes grading of the project site for construction, ADA accessibility, and drainage and compliance. | |

**Insert acreage or square feet for the different land cover types in the table below:**

Change in Land Cover Type Summary

| Land Cover Type | Existing (acres or $ft^2$) | Proposed (acres or $ft^2$) | Percent Change |
|---|---|---|---|
| Vegetation | 214,385 SF | 113,301 SF | -52.8% |
| Pervious (non-vegetated) | - | - | - |
| Impervious | 67,978 SF | 169,068 SF | + 40.20% |
| *total* | 282,369 SF | 282,369 SF | Sum Existing must equal Sum Proposed |

## Step 2.4: Description of Proposed Site Drainage Patterns

| Site Information Checklist for PDPs | Form I-2a |
|---|---|

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

- ☒ Yes
- ☐ No

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

Describe proposed site drainage patterns:

This project proposes a storm drain system with roof drains, curb inlets, area drains, and biofiltration basins that will retain and filter storm water before discharging it into the public storm drain system.

DMA 1A drains to the north west region of the project and enters a proposed biofiltration basin for required treatment then drains to a curb outlet, via storm drain pipes, on Brotherton Road.

DMA 1B drains to the north east region of the project and enters a proposed biofiltration basin for required treatment, then drains to a curb outlet, via storm drain pipes, on Brotherton Road.

DMA 2 drains to the south east region of the project. Storm water is collected by a series of curbs and gutters that direct water into curb inlets. The curb inlets pipe the storm water into a proposed biofiltration basin for required treatment then discharges the storm water to the neighboring property to the south.

DMA 3 will not be treated. Run off generated from the driveway in between DMA1A and DMA 1B will discharge directly into the curb and gutter along Brotherton Road.

## Step 2.5: Potential Pollutant Source Areas

| Site Information Checklist for PDPs | Form I-2a |
|---|---|

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

- ☒ On-site storm drain inlets
- ☐ Interior floor drains and elevator shaft sump pumps
- ☐ Interior parking garages
- ☐ Need for future indoor & structural pest control
- ☒ Landscape/Outdoor Pesticide Use
- ☐ Pools, spas, ponds, decorative fountains, and other water features
- ☐ Food service
- ☒ Refuse areas
- ☐ Industrial processes
- ☐ Outdoor storage of equipment or materials
- ☐ Vehicle and Equipment Cleaning
- ☐ Vehicle/Equipment Repair and Maintenance
- ☐ Fuel Dispensing Areas
- ☐ Loading Docks
- ☐ Fire Sprinkler Test Water
- ☒ Miscellaneous Drain or Wash Water
- ☒ Plazas, sidewalks, and parking lots
- ☐ Large Trash Generating Facilities
- ☐ Animal Facilities
- ☐ Nurseries and Garden Centers
- ☐ Automotive Facilities
- ☐ Other (provide description)

Description / Additional Information:

This project is proposing onsite storm drain inlets that will discharge into a biofiltration basin for DMA 2.

It is anticipated that the proposed landscaping will required outdoor pestiside use as needed.

The project is proposing a church, asphalt parking lot, concrete sidewalks and a basketball court.

It is anticipated that a refuse area will be designated and miscellaneous wash water will be present.

## Step 2.6: Identification of Receiving Water and Pollutants of Concern

| Site Information Checklist for PDPs | Form I-2a |
|---|---|

Describe path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):

The project site run-off will discharge into the southern property, where it will discharge into Felicita Creek and then into Lake Hodges.

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

| 303(d) Impaired Water Body | Pollutant(s)/Stressor(s) | TMDLs / WQIP Highest Priority Pollutant |
|---|---|---|
| Felicita Creek | Al, TDS, Indicator Bacteria, PCE, TCE | n/a |
| Lake Hodges | Hg, P, N, Mn, PH, turbidity, color | Hg, P, N, Mn, PH, turbidity, color |
| | | |

**Identification of Project Site Pollutants***

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

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

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

## Step 2.7: Hydromodification Management Requirements

| Site Information Checklist for PDPs | Form I-2a |
|---|---|

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

- ■ Yes, hydromodification management requirements for flow control and preservation of critical coarse sediment yield areas are applicable.
- ☐ No, the project will discharge runoff directly to the exempt portion of Escondido Creek as detailed in the Carlsbad Watershed WQIP (May 2018 Update). Direct discharge is defined in section 1.6 of the Escondido Storm Water Design Manual.
- ☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean. Refer to HMP Exhibit in Attachment 2.
- ☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean. Refer to HMP Exhibit in Attachment 2.

*Note: Direct Discharge refers to an uninterrupted hardened conveyance system. Projects claiming the Direct Discharge exemption must satisfy the applicable criteria (energy dissipation, invert elevation, etc.) included in Section 1.6 of the Escondido Storm Water Design Manual.*

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

**HMP Exemption Exhibit**

Attach an HMP Exemption Exhibit that shows direct storm water runoff discharge from the project site to the HMP exempt area. Include project area, applicable underground storm drain line and/or concrete lined channels, outfall information, and exempt waterbody.

Reference applicable drawing number(s).

N/A; this project requires hydromodification.

### Step 2.7.1: Critical Coarse Sediment Yield Areas

| Site Information Checklist for PDPs | Form I-2a |
|---|---|

☐ **N/A - This Section only required if hydromodification management requirements apply**

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

☐ Yes

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

If yes, have any of the optional analyses presented in Appendix H of the manual been performed?

☐ H.6.1 Site-Specific GLU Analysis

☐ H.7 Downstream Systems Sensitivity to Coarse Sediment

- H.7.1 Depositional Analysis,
- H.7.2 Threshold Channel Analysis, or
- H.7.3 Course Sediment Source Area Verification Analysis

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

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

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

☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.

☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections H.2, H.3, and H.4 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

### Step 2.7.2: Flow Control for Post-Project Runoff

| Site Information Checklist for PDPs | Form I-2a |
|---|---|

☐ **N/A - This Section only required if hydromodification management requirements apply**

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

POC 1A receives runoff from Biofiltration Basin 1 that will detain DMA 1A.
POC 1B receives runoff from Biofiltration Basin 2 that will detain DMA 1B.
POC 1A and 1B will discharge via curb outlet onto the curb and gutter on Brotherton Road. Eventually draining into Felicita Creek.

POC 2A, 2B, and 2C receive run off from Biofiltration Basin 3 that will detain DMA 2.
POC 2A, 2B, and 2C will discharge to the southern property eventually draining into Felicita Creek.

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

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

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

Discussion / Additional Information: (optional)

Select method used to determine low flow threshold:

- ☐ Sizing Factor Method
- ☐ US Geological Survey (USGS) Equation
- ☐ Continuous Simulation Modeling

## Step 2.8: Other Site Requirements and Constraints

| Site Information Checklist for PDPs | Form I-2a |
|---|---|
| When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements. | |
| N/A | |
| **Optional Additional Information or Continuation of Previous Sections As Needed** | |
| This space provided for additional information or continuation of information from previous sections as needed. | |

## Step 3: Source Control BMP Checklist

| Source Control BMP Checklist for PDPs | | | Form I-2b |
|---|---|---|---|
| All development projects must implement source control BMPs 4.2.1 through 4.2.6 where applicable and feasible. See Chapter 4.2 and Appendix E of the City Storm Water Design Manual for information to implement source control BMPs shown in this checklist. The following checklists serve as guides only. Mark what elements are included in your project. See Storm Water Design Manual Chapter 4 and Appendix E for more information on determining appropriate BMPs for your project.<br><br>Answer each category below pursuant to the following:<br>• "Yes" means the project will implement the source control BMP as described in Chapter 4.2 and/or Appendix E of the City Storm Water Design Manual. Discussion / justification is not required.<br>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.<br>• "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification must be provided. | | | |
| **Source Control Requirement** | **Applied?** | | |
| **4.2.1** Prevention of Illicit Discharges into the MS4 | ■ Yes | ☐ No | ☐ N/A |
| Discussion / justification if 4.2.1 not implemented: | | | |
| | | | |
| **4.2.2** Storm Drain Stenciling or Signage | ■ Yes | ☐ No | ☐ N/A |
| Discussion / justification if 4.2.2 not implemented: | | | |
| | | | |
| **4.2.3** Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal | ☐ Yes | ☐ No | ■ N/A |
| Discussion / justification if 4.2.3 not implemented: | | | |
| There is no proposed outdoor storage areas. | | | |
| **4.2.4** Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal | ☐ Yes | ☐ No | ■ N/A |
| Discussion / justification if 4.2.4 not implemented: | | | |
| No materials will be stored in outdoor work areas. | | | |
| **4.2.5** Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal | ■ Yes | ☐ No | ☐ N/A |
| Discussion / justification if 4.2.5 not implemented: | | | |
| | | | |

| Form I-2b Page 2 of 2 | | | |
|---|---|---|---|
| **Source Control Requirement** | **Applied?** | | |
| **4.2.6** Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below): | | | |
| ■ Onsite storm drain inlets | ■ Yes | ☐ No | ☐ N/A |
| ☐ Interior floor drains and elevator shaft sump pumps | ☐ Yes | ☐ No | ■ N/A |
| ☐ Interior parking garages | ☐ Yes | ☐ No | ■ N/A |
| ☐ Need for future indoor & structural pest control | ☐ Yes | ☐ No | ■ N/A |
| ■ Landscape/outdoor pesticide use | ■ Yes | ☐ No | ☐ N/A |
| ☐ Pools, spas, ponds, decorative fountains, and other water features | ☐ Yes | ☐ No | ■ N/A |
| ☐ Food service | ☐ Yes | ☐ No | ■ N/A |
| ■ Refuse areas | ■ Yes | ☐ No | ☐ N/A |
| ☐ Industrial processes | ☐ Yes | ☐ No | ■ N/A |
| ☐ Outdoor storage of equipment or materials | ☐ Yes | ☐ No | ■ N/A |
| ☐ Vehicle and equipment cleaning | ☐ Yes | ☐ No | ■ N/A |
| ☐ Vehicle/equipment repair and maintenance | ☐ Yes | ☐ No | ■ N/A |
| ☐ Fuel dispensing areas | ☐ Yes | ☐ No | ■ N/A |
| ☐ Loading docks | ☐ Yes | ☐ No | ■ N/A |
| ☐ Fire sprinkler test water | ☐ Yes | ☐ No | ■ N/A |
| ☐ Miscellaneous drain or wash water | ☐ Yes | ☐ No | ■ N/A |
| ■ Plazas, sidewalks, and parking lots | ■ Yes | ☐ No | ☐ N/A |
| Discussion / justification if 4.2.6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for all "No" answers shown above. | | | |
| | | | |

Note: Show all source control measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

## Step 4: Site Design BMP Checklist

| Site Design BMP Checklist for PDPs | | | Form I-2c |
|---|---|---|---|
| All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement site design BMPs shown in this checklist.<br><br>Answer each category below pursuant to the following.<br>• "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required.<br>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.<br>• "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification must be provided. | | | |
| **Site Design Requirement** | **Applied?** | | |
| **4.3.1** Maintain Natural Drainage Pathways and Hydrologic Features | ☐ Yes | ☐ No | ■ N/A |
| Discussion / justification if 4.3.1 not implemented: | | | |
| This project proposes to develop the entire site, removing natural pathways. | | | |
| 1-1 Are existing natural drainage pathways and hydrologic features mapped on the site map? | ☐ Yes | ☐ No | ■ N/A |
| 1-2 Are trees implemented? If yes, are they shown on the site map? | ☐ Yes | ☐ No | ☐ N/A |
| 1-3 Implemented trees meet the design criteria in 4.3.1 Fact Sheet (e.g. soil volume, maximum credit, etc.)? | ☐ Yes | ☐ No | ☐ N/A |
| 1-4 Is tree credit volume calculated using Appendix B.2.2.1 and SD-1 Fact Sheet in Appendix E? | ☐ Yes | ☐ No | ☐ N/A |
| **4.3.2** Conserve Natural Areas, Soils, and Vegetation | ☐ Yes | ■ No | ☐ N/A |
| Discussion / justification if 4.3.2 not implemented: | | | |
| This project proposes to develop the entire site as part of the improvements. Biofiltration units will be used to remove pollutants from the on-site run-off. | | | |
| **4.3.3** Minimize Impervious Area | ■ Yes | ☐ No | ☐ N/A |
| Discussion / justification if 4.3.3 not implemented: | | | |
| | | | |
| **4.3.4** Minimize Soil Compaction | ■ Yes | ☐ No | ☐ N/A |
| Discussion / justification if 4.3.4 not implemented: | | | |
| | | | |

| Form I-2c Page 2 of 2 | | | |
|---|---|---|---|
| **Site Design Requirement** | **Applied?** | | |
| **4.3.5** Impervious Area Dispersion | ☐ Yes | ☐ No | ■ N/A |
| Discussion / justification if 4.3.5 not implemented: | | | |
| All of the proposed impervious areas are being directed toward storm drain inlets that will discharge in the proposed Biofiltration Basins. | | | |
| 5-1 Is the pervious area receiving runon from impervious area identified on the site map? | ☐ Yes | ☐ No | ☐ N/A |
| 5-2 Does the pervious area satisfy the design criteria in 4.3.5. Fact Sheet in Appendix E (e.g. maximum slope, minimum length, etc.) | ☐ Yes | ☐ No | ☐ N/A |
| 5-3 Is impervious area dispersion credit volume calculated using Appendix B.2.1.1 and 4.3.5 Fact Sheet in Appendix E? | ☐ Yes | ☐ No | ☐ N/A |
| **4.3.6** Runoff Collection | ☐ Yes | ☐ No | ■ N/A |
| Discussion / justification if 4.3.6 not implemented: | | | |
| On-site run-off directed into the proposed biofiltration basins. | | | |
| 6a-1 Are green roofs implemented in accordance with design criteria in 4.3.6A Fact Sheet? If yes, are they shown on the site map? | ☐ Yes | ☐ No | ☐ N/A |
| 6a-2 Is the green roof credit volume calculated using Appendix B.2.1.2 and 4.3.6A Fact Sheet in Appendix E? | ☐ Yes | ☐ No | ☐ N/A |
| 6b-1 Are permeable pavements implemented in accordance with design criteria in 4.3.6B Fact Sheet? If yes, are they shown on the site map? | ☐ Yes | ☐ No | ☐ N/A |
| 6b-2 Is the permeable pavement credit volume calculated using Appendix B.2.1.3 and 4.3.6B Fact Sheet in Appendix E? | ☐ Yes | ☐ No | ☐ N/A |
| **4.3.7** Landscaping with Native or Drought Tolerant Species | ■ Yes | ☐ No | ☐ N/A |
| Discussion / justification if 4.3.7 not implemented: | | | |
| | | | |
| **4.3.8** Harvesting and Using Precipitation | ☐ Yes | ■ No | ☐ N/A |
| Discussion / justification if 4.3.8 not implemented: | | | |
| On-site run-off will be treated for pollutants with biofiltration basins. | | | |
| 8-1 Are rain barrels implemented in accordance with design criteria in 4.3.8 Fact Sheet? If yes, are they shown on the site map? | ☐ Yes | ■ No | ☐ N/A |
| 8-2 Is the rain barrel credit volume calculated using Appendix B.2.2.2 and 4.3.8 Fact Sheet in Appendix E? | ☐ Yes | ■ No | ☐ N/A |

Note: Show all site design measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

## Step 5: Summary of Structural BMPs

| Summary of Structural BMPs | Form I-3 |
|---|---|

**PDP Structural BMPs**

All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).

PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative to certify construction of the structural BMPs (see Section 1.12 of the manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the manual).

Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).

**Description of Structural BMP Strategy**

Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

Biofiltration detention basins have been selected for this site for required pollutant control and hydromodification flow control. Infiltration is likely infeasible due to the presence of Type D soil throughout the site.

DMA 1A drains to the northwest corner of the project and enters a proposed biofiltration basin for required treatment. Storm water then drains to the east where it is discharged onto Brotherton Road via a curb outlet.

DMA 1B drains to the northeast corner of the project and enters a proposed biofiltration basin for required treatment. Storm water is then discharged onto Brotherton Road via a curb outlet.

DMA 2 drains to the southeartern corner of the project and enters the proposed biofiltration basin for required treatment. Storm water is then discharged onto the southern adjacent property.

DMA 3 will not be treated directly. The quantity of area that makes up DMA 3 will be treated within Basin 2.

(Continue on page 2 as necessary.)

| Form I-3 Page 2 of 3 |
| --- |
| **(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)** |
| (Continued from page 1) |

**Form I-3 Page 3 of 3**

**Structural BMP Summary Information**

**(Copy this page as needed to provide information for each individual proposed structural BMP)**

Structural BMP ID No. BMP-1A

Construction Plan Sheet No.

Type of structural BMP:

☐Retention by harvest and use (HU-1)
☐Retention by infiltration basin (INF-1)
☐Retention by bioretention (INF-2)
☐Retention by permeable pavement (INF-3)
☐Retention by dry wells (INF-4)
☐Partial retention by biofiltration with partial retention (PR-1)
☐Biofiltration (BF-1)
▣Biofiltration with Nutrient Sensitive Media Design (BF-2)
☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
☐Detention pond or vault for hydromodification management
☐Other (describe in discussion section below)

Purpose:

☐Pollutant control only
☐Hydromodification control only
▣Combined pollutant control and hydromodification control
☐Pre-treatment/forebay for another structural BMP
☐Other (describe in discussion section below)

| | |
|---|---|
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual) | Daniel Quinones, PE 92310<br>Nasland Engineering |
| Who will be the final owner of this BMP? | ☐HOA ▣Property Owner ☐City ☐Other (describe) |
| Who will maintain this BMP into perpetuity? | ☐HOA ▣Property Owner ☐City ☐Other (describe) |

Discussion (as needed):

**Form I-3 Page 3 of 3**

**Structural BMP Summary Information**

**(Copy this page as needed to provide information for each individual proposed structural BMP)**

Structural BMP ID No. BMP-1B

Construction Plan Sheet No.

Type of structural BMP:

☐Retention by harvest and use (HU-1)
☐Retention by infiltration basin (INF-1)
☐Retention by bioretention (INF-2)
☐Retention by permeable pavement (INF-3)
☐Retention by dry wells (INF-4)
☐Partial retention by biofiltration with partial retention (PR-1)
☐Biofiltration (BF-1)
▣Biofiltration with Nutrient Sensitive Media Design (BF-2)
☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
☐Detention pond or vault for hydromodification management
☐Other (describe in discussion section below)

Purpose:

☐Pollutant control only
☐Hydromodification control only
▣Combined pollutant control and hydromodification control
☐Pre-treatment/forebay for another structural BMP
☐Other (describe in discussion section below)

| | |
|---|---|
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual) | Daniel Quinones, PE 92310<br>Nasland Engineering |
| Who will be the final owner of this BMP? | ☐HOA ▣Property Owner ☐City ☐Other (describe) |
| Who will maintain this BMP into perpetuity? | ☐HOA ▣Property Owner ☐City ☐Other (describe) |

Discussion (as needed):

**Form I-3 Page 3 of 3**

**Structural BMP Summary Information**

**(Copy this page as needed to provide information for each individual proposed structural BMP)**

Structural BMP ID No. BMP-2

Construction Plan Sheet No.

Type of structural BMP:

☐Retention by harvest and use (HU-1)
☐Retention by infiltration basin (INF-1)
☐Retention by bioretention (INF-2)
☐Retention by permeable pavement (INF-3)
☐Retention by dry wells (INF-4)
☐Partial retention by biofiltration with partial retention (PR-1)
☐Biofiltration (BF-1)
▣Biofiltration with Nutrient Sensitive Media Design (BF-2)
☐Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
☐Detention pond or vault for hydromodification management
☐Other (describe in discussion section below)

Purpose:

☐Pollutant control only
☐Hydromodification control only
▣Combined pollutant control and hydromodification control
☐Pre-treatment/forebay for another structural BMP
☐Other (describe in discussion section below)

| | |
|---|---|
| Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms (See Section 8.2.3.2 of the Storm Water Design Manual) | Daniel Quinones, PE 92310<br>Nasland Engineering |
| Who will be the final owner of this BMP? | ☐HOA ▣Property Owner ☐City ☐Other (describe) |
| Who will maintain this BMP into perpetuity? | ☐HOA ▣Property Owner ☐City ☐Other (describe) |

Discussion (as needed):

## Step 5.1: Offsite Alternative Compliance Participation Form

| THIS FORM IS NOT APPLICABLE AT THIS TIME: An Alternative Compliance Program is under consideration by the City of Escondido. | |
|---|---|
| **PDP INFORMATION** | |
| Record ID: | |
| Assessor's Parcel Number(s) [APN(s)] | |
| What are your PDP Pollutant Control Debits?<br>*See Attachment 1 of the PDP SWQMP | |
| What are your PDP HMP Debits? (if applicable)<br>*See Attachment 2 of the PDP SWQMP | |
| **ACP Information** | |
| Record ID: | |
| Assessor's Parcel Number(s) [APN(s)] | |
| Project Owner/Address | |
| What are your ACP Pollutant Control Credits?<br>*See Attachment 1 of the ACP SWQMP | |
| What are your ACP HMP Debits? (if applicable)<br>*See Attachment 2 of the ACP SWQMP | |
| | |
| Is your ACP in the same watershed as your PDP?<br>☐Yes<br>☐No | Will your ACP project be completed prior to the completion of the PDP?<br>☐Yes<br>☐No |
| Does your ACP account for all Deficits generated by the PDP?<br>☐Yes<br>☐No (PDP and/or ACP must be redesigned to account for all deficits generated by the PDP.) | What is the difference between your PDP debits and ACP Credits?<br>*(ACP Credits -Total PDP Debits = Total Earned Credits)<br>_____ |

# ATTACHMENT 1

## BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

**Indicate which Items are Included behind this cover sheet:**

| Attachment Sequence | Contents | Checklist |
|---|---|---|
| Attachment 1a | Storm Water Pollutant Control Worksheet Calculations<br>-Worksheet B.1-DMA Summary (Optional)<br>-Worksheet B.2-1- DCV (Required)<br>-Worksheet B.3-1- H&U Checklist (Required)<br>-Worksheet B.4-1-Simple Sizing Inf. (if applicable)<br>-Worksheet B.5-1-Biofilt. Sizing (Pollutant)(if applicable)<br>-Worksheet B.5-2-Biofilt. Sizing (Volume) (if applicable)<br>-Worksheet B.5-3-Biofilt. Volume Ret. (if applicable)<br>-Worksheet B.5-4-Biofilt. Alt. Min. Footprint(if applicable)<br>-Worksheet B.5-5-Biofilt. w/Upstream Stor. (if applicable)<br>-Worksheet B.5-6-Biofilt. Ret. No Inf. (if applicable)<br>-Worksheet B.5-7-Vol. Ret. Amended Soils (if applicable)<br>-Worksheet B.6-1-Flow-Thru Design Flow (if applicable)<br>-Form I-10-Compact Biofilt. Checklist (if applicable)<br>-Summary Worksheet (optional) | ■ Worksheet B.1 (Optional)<br>■ Worksheet B.2-1 (Required)<br>■ Worksheet B.3-1 (Required)<br>☐ Worksheet B.4-1 (if applicable)<br>■ Worksheet B.5-1 (if applicable)<br>■ Worksheet B.5-2 (if applicable)<br>☐ Worksheet B.5-3 (if applicable)<br>☐ Worksheet B.5-4 (if applicable)<br>☐ Worksheet B.5-5 (if applicable)<br>☐ Worksheet B.5-6 (if applicable)<br>☐ Worksheet B.5-7 (if applicable)<br>☐ Worksheet B.6-1 (if applicable)<br>☐ Form I-10 (if applicable)<br>☐ Summary Worksheet (optional) |
| Attachment 1b | -Worksheet C.4-1 (Form I-8A), Categorization of Infiltration Feasibility Condition Based on Geotechnical Conditions<br>-Worksheet C.4-2 (Form I-8B), Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions<br><br>(Required unless the project will use harvest and use BMPs, or an Infiltration Feasibility Condition Letter is submitted)<br><br>Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-8. | ☐Included<br>☐Not included because the entire project will use harvest and use BMPs<br>■Not included because an Infiltration Feasibility Condition Letter is submitted |
| Attachment 1c | Form I-9, Factor of Safety and Design Infiltration Rate Worksheet (Required unless the project will use harvest and use BMPs, or an Infiltration Feasibility Condition Letter is submitted)<br><br>Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-9. | ☐Included<br>☐Not included because the entire project will use harvest and use BMPs<br>■Not included because an Infiltration Feasibility Condition Letter is submitted |
| Attachment 1d | DMA Exhibit (Required)<br><br>See DMA Exhibit Checklist on the back of this Attachment cover sheet. | ■Included |
| Attachment 1e | Individual Structural BMP DMA Mapbook (Required)<br>-Place each map on 8.5”x11” paper.<br>-Show at a minimum the DMA, Structural BMP, and any existing hydrologic features within the DMA. | ■Included |

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

The DMA Exhibit must identify:

☐ Proposed design features and surface treatments used to minimize imperviousness
☒ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
☐ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Step 3.5)
☒ Structural BMPs (identify location, structural BMP ID#, type of BMP, and size/detail)
☒ Flow direction arrows
☐ Site Design BMPs used for volume reduction credits
☒ Existing and proposed site drainage network and connections to drainage offsite
☐ Trash Enclosure(s), if available
☐ Roof downspouts

Additionally, it is generally best practice (and the City may require) that these additional features listed below be included on the DMA Exhibit:

☐ Approximate depth to groundwater
☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☐ Critical coarse sediment yield areas to be protected
☐ Existing topography and impervious areas
☐ Proposed grading
☐ Proposed impervious features

## Worksheet B-1: Tabular Summary of DMAs

| Tabular Summary of DMAs | | | | | | | | Worksheet B-1 | |
|---|---|---|---|---|---|---|---|---|---|
| DMA Unique Identifier | Area (acres) | Impervious Area (acres) | % Imp | HSG | Area Weighted Runoff Coefficient | DCV (cubic feet) | Treated By (BMP ID) | Pollutant Control Type | Drain to (POC ID) |
| DMA 1A | 1.19 | 0.85 | 71.8% | | 0.90 | 2,210 | BMP 1A | | POC 1 |
| DMA 1B | 0.78 | 0.47 | 60.5% | | 0.90 | 1,451 | BMP 1B | | POC 2 |
| DMA 2 | 4.48 | 2.52 | 56.3% | | 0.90 | 8,345 | BMP 2 | | POC 3 |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| **Summary of DMA Information (Must match project description and SWQMP Narrative)** | | | | | | | | | |
| No. of DMAs | Total DMA Area (acres) | Total Impervious Area (acres) | % Imp | | Area Weighted Runoff Coefficient | Total DCV (cubic feet) | Total Area Treated (acres) | | No. of POCs |
| 3 | 6.45 | 3.84 | 59.5% | | 0.90 | 12,006 | | | 3 |

## Worksheet B.2-1. BMP Design Capture Volume

DMA 1A

| Design Capture Volume | | Worksheet B-2.1 | | |
|---|---|---|---|---|
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.57 | inches |
| 2 | Area tributary to BMP (s) | A= | 1.19 | acres |
| 3 | Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) | C= | 0.90 | unitless |
| 4 | Tree well volume reduction | TCV= | 0 | cubic-feet |
| 5 | Rain barrels volume reduction | RCV= | 0 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) – TCV - RCV | DCV= | 2,210 | cubic-feet |

## Worksheet B.2-1. BMP Design Capture Volume

DMA 1B

| Design Capture Volume | | Worksheet B-2.1 | | |
|---|---|---|---|---|
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.57 | inches |
| 2 | Area tributary to BMP (s) | A= | 0.78 | acres |
| 3 | Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) | C= | 0.90 | unitless |
| 4 | Tree well volume reduction | TCV= | 0 | cubic-feet |
| 5 | Rain barrels volume reduction | RCV= | 0 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) – TCV - RCV | DCV= | 1,451 | cubic-feet |

## Worksheet B.2-1. BMP Design Capture Volume

DMA 2

| Design Capture Volume | | Worksheet B-2.1 | | |
|---|---|---|---|---|
| 1 | 85th percentile 24-hr storm depth from Figure B.1-1 | d= | 0.57 | inches |
| 2 | Area tributary to BMP (s) | A= | 4.48 | acres |
| 3 | Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) | C= | 0.90 | unitless |
| 4 | Tree well volume reduction | TCV= | 0 | cubic-feet |
| 5 | Rain barrels volume reduction | RCV= | 0 | cubic-feet |
| 6 | Calculate DCV = (3630 x C x d x A) – TCV - RCV | DCV= | 8,435 | cubic-feet |

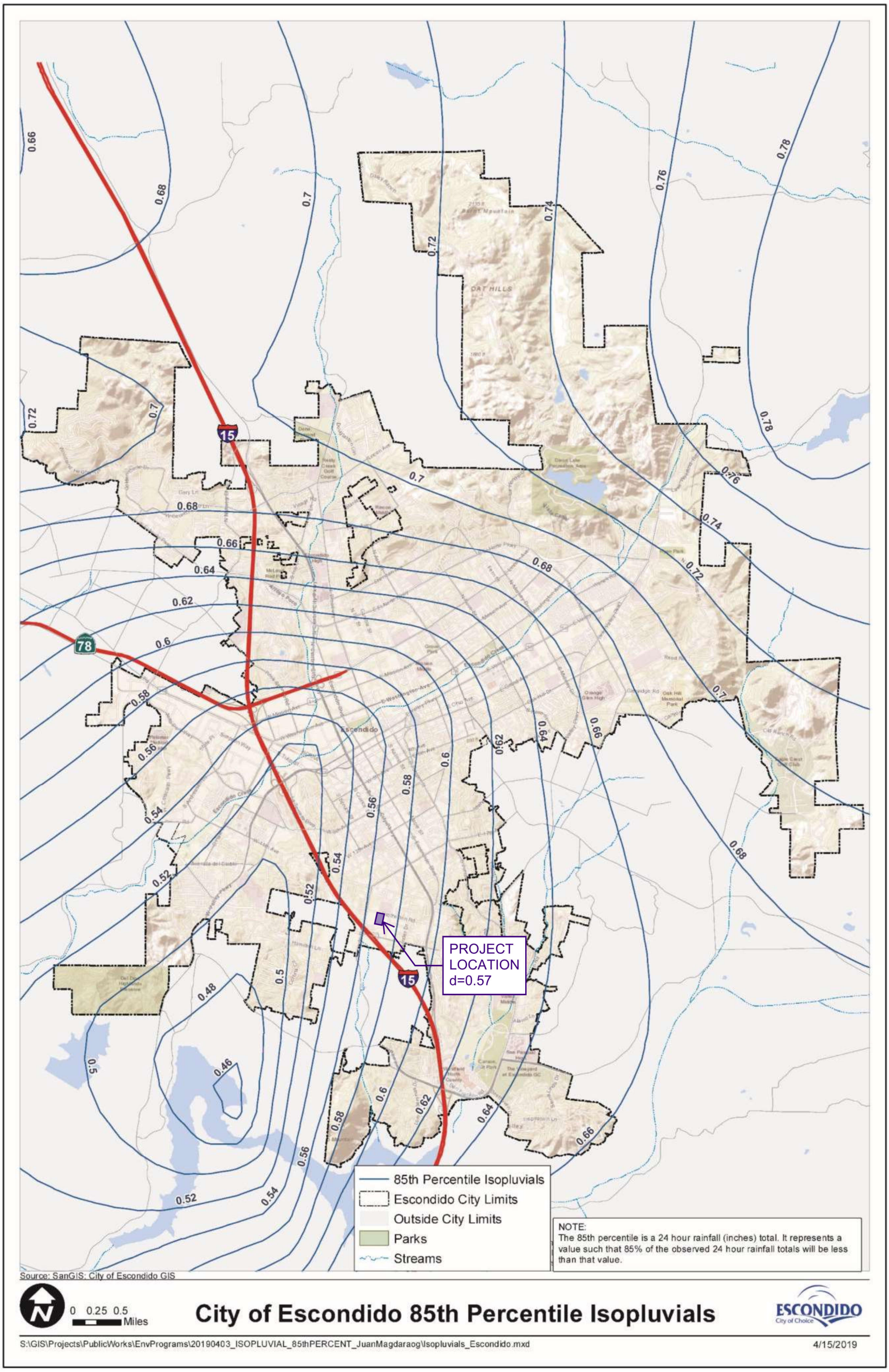



**Figure B.1-1: City of Escondido 85th Percentile 24-hour Isopluvial Map**

## Worksheet B.3-1. Harvest and Use Feasibility Checklist (Form I-7)

| Harvest and Use Feasibility Checklist | Worksksheet B.3-1 |
|---|---|

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?
   - ☐ Toilet and urinal flushing
   - ☒ Landscape irrigation
   - ☐ Other:_____

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.

   Pending Landscaping

3. Calculate the DCV using worksheet B-2.1.

# Pending landscaping

| 3a. Is the 36-hour demand greater than or equal to the DCV? | 3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV? | 3c. Is the 36-hour demand less than 0.25DCV? |
|---|---|---|
| Yes / No ⇨ ⇩ | Yes / No ⇨ ⇩ | Yes ⇩ |
| Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria. | Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours. | Harvest and use is considered to be infeasible. |

Note: 36-hour demand calculations are for feasibility analysis only. Once feasibility analysis is complete the applicant may be allowed to use a different drawdown time provided they meet the 80% annual capture standard (refer to B.4.2) and 96-hour vector control drawdown requirement.

| | | | |
|---|---|---|---|
| ESCONDIDO City of Choice | **Project Name** | Escondido Church | |
| | **BMP ID** | 1A | |
| **Sizing Method for Pollutant Removal Criteria** | | **Worksheet B.5-1** | |
| 1 | Area draining to the BMP | 51,698 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.9 | |
| 3 | 85$^{th}$ percentile 24-hour rainfall depth | 0.57 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 2210 | cu. ft. |
| **BMP Parameters** | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 18 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 12 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| **Baseline Calculations** | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [ Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| **Option 1 – Biofilter 1.5 times the DCV** | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 3315 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 872 | sq. ft. |
| **Option 2 - Store 0.75 of remaining DCV in pores and ponding** | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 1658 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 1275 | sq. ft. |
| **Footprint of the BMP** | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 1396 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 1396 | sq. ft. |
| 23 | Provided BMP Footprint | 2,800 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | **Yes, Performance Standard is Met** | |

| | | | | |
|---|---|---|---|---|
| ESCONDIDO City of Choice | | **Project Name** | Escondido Church | |
| | | **BMP ID** | 1A | |
| **Sizing Method for Volume Retention Criteria** | | | **Worksheet B.5-2** | |
| 1 | Area draining to the BMP | | 51,698 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | | 0.9 | |
| 3 | 85$^{th}$ percentile 24-hour rainfall depth | | 0.57 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | | 2210 | cu. ft. |
| **Volume Retention Requirement** | | | | |
| 5 | Measured infiltration rate in the DMA<br><br>Note:<br><br>When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30<br><br>When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | | 0 | in/hr. |
| 6 | Factor of safety | | 2 | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | | 0 | in/hr. |
| 8 | Average annual volume reduction target (Figure B.5-2)<br>When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62)<br><br>When Line 7 ≤ 0.01 in/hr. = 3.5% | | 3.5 | % |
| 9 | Fraction of DCV to be retained (Figure B.5-3)<br>When Line 8 > 8% =<br>0.0000013 x Line 8$^3$ - 0.000057 x Line 8$^2$ + 0.0086 x Line 8 - 0.014<br><br>When Line 8 ≤ 8% = 0.023 | | 0.023 | |
| 10 | Target volume retention [Line 9 x Line 4] | | 51 | cu. ft. |

| | | | |
|---|---|---|---|
| ESCONDIDO City of Choice | **Project Name** | Escondido Church | |
| | **BMP ID** | 1B | |
| **Sizing Method for Pollutant Removal Criteria** | | **Worksheet B.5-1** | |
| 1 | Area draining to the BMP | 33,938 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.9 | |
| 3 | 85$^{th}$ percentile 24-hour rainfall depth | 0.57 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 1451 | cu. ft. |
| **BMP Parameters** | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 18 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 12 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| **Baseline Calculations** | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [ Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| **Option 1 – Biofilter 1.5 times the DCV** | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 2176 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 573 | sq. ft. |
| **Option 2 - Store 0.75 of remaining DCV in pores and ponding** | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 1088 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 837 | sq. ft. |
| **Footprint of the BMP** | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 916 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 916 | sq. ft. |
| 23 | Provided BMP Footprint | 2,400 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | **Yes, Performance Standard is Met** | |

| | | | |
|---|---|---|---|
| ESCONDIDO City of Choice | **Project Name** | Escondido Church | |
| | **BMP ID** | 1B | |
| **Sizing Method for Volume Retention Criteria** | | **Worksheet B.5-2** | |
| 1 | Area draining to the BMP | 33,938 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.9 | |
| 3 | 85$^{th}$ percentile 24-hour rainfall depth | 0.57 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 1451 | cu. ft. |
| **Volume Retention Requirement** | | | |
| 5 | Measured infiltration rate in the DMA<br><br>Note:<br><br>When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30<br><br>When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. |
| 6 | Factor of safety | 2 | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. |
| 8 | Average annual volume reduction target (Figure B.5-2)<br>When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62)<br><br>When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % |
| 9 | Fraction of DCV to be retained (Figure B.5-3)<br>When Line 8 > 8% =<br>0.0000013 x Line 8$^3$ - 0.000057 x Line 8$^2$ + 0.0086 x Line 8 - 0.014<br><br>When Line 8 ≤ 8% = 0.023 | 0.023 | |
| 10 | Target volume retention [Line 9 x Line 4] | 33 | cu. ft. |

| | | | |
|---|---|---|---|
| ESCONDIDO City of Choice | **Project Name** | Escondido Church | |
| | **BMP ID** | 2 | |
| **Sizing Method for Pollutant Removal Criteria** | | **Worksheet B.5-1** | |
| 1 | Area draining to the BMP | 195,198 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.9 | |
| 3 | 85$^{th}$ percentile 24-hour rainfall depth | 0.57 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 8345 | cu. ft. |
| **BMP Parameters** | | | |
| 5 | Surface ponding [6 inch minimum, 12 inch maximum] | 6 | inches |
| 6 | Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations | 18 | inches |
| 7 | Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area | 12 | inches |
| 8 | Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area | 3 | inches |
| 9 | Freely drained pore storage of the media | 0.2 | in/in |
| 10 | Porosity of aggregate storage | 0.4 | in/in |
| 11 | Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.) | 5 | in/hr. |
| **Baseline Calculations** | | | |
| 12 | Allowable routing time for sizing | 6 | hours |
| 13 | Depth filtered during storm [ Line 11 x Line 12] | 30 | inches |
| 14 | Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)] | 15.6 | inches |
| 15 | Total Depth Treated [Line 13 + Line 14] | 45.6 | inches |
| **Option 1 – Biofilter 1.5 times the DCV** | | | |
| 16 | Required biofiltered volume [1.5 x Line 4] | 12517 | cu. ft. |
| 17 | Required Footprint [Line 16/ Line 15] x 12 | 3294 | sq. ft. |
| **Option 2 - Store 0.75 of remaining DCV in pores and ponding** | | | |
| 18 | Required Storage (surface + pores) Volume [0.75 x Line 4] | 6259 | cu. ft. |
| 19 | Required Footprint [Line 18/ Line 14] x 12 | 4814 | sq. ft. |
| **Footprint of the BMP** | | | |
| 20 | BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4) | 0.03 | |
| 21 | Minimum BMP Footprint [Line 1 x Line 2 x Line 20] | 5270 | sq. ft. |
| 22 | Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21) | 5270 | sq. ft. |
| 23 | Provided BMP Footprint | 8,400 | sq. ft. |
| 24 | Is Line 23 ≥ Line 22? | **Yes, Performance Standard is Met** | |

| | | | |
|---|---|---|---|
| ESCONDIDO City of Choice | **Project Name** | Escondido Church | |
| | **BMP ID** | 2 | |
| **Sizing Method for Volume Retention Criteria** | | **Worksheet B.5-2** | |
| 1 | Area draining to the BMP | 195,198 | sq. ft. |
| 2 | Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2) | 0.9 | |
| 3 | 85$^{th}$ percentile 24-hour rainfall depth | 0.57 | inches |
| 4 | Design capture volume [Line 1 x Line 2 x (Line 3/12)] | 8345 | cu. ft. |
| **Volume Retention Requirement** | | | |
| 5 | Measured infiltration rate in the DMA<br><br>Note:<br><br>When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30<br><br>When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or | 0 | in/hr. |
| 6 | Factor of safety | 2 | |
| 7 | Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6] | 0 | in/hr. |
| 8 | Average annual volume reduction target (Figure B.5-2)<br>When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62)<br><br>When Line 7 ≤ 0.01 in/hr. = 3.5% | 3.5 | % |
| 9 | Fraction of DCV to be retained (Figure B.5-3)<br>When Line 8 > 8% =<br>0.0000013 x Line 8$^3$ - 0.000057 x Line 8$^2$ + 0.0086 x Line 8 - 0.014<br><br>When Line 8 ≤ 8% = 0.023 | 0.023 | |
| 10 | Target volume retention [Line 9 x Line 4] | 192 | cu. ft. |

| Compact (high rate) Biofiltration BMP Checklist | Form I-10 |
|---|---|

**Provide basis for Criteria 1 and 3:**

**Feasibility Analysis:**

Summarize findings and include either infiltration feasibility condition letter or Worksheet C.4-1: Form I-8A and Worksheet C.4-2: Form I-8B in the PDP SWQMP submittal.

**If Partial Infiltration Condition:**

Provide documentation that target volume retention is met (include Worksheet B.5-2 in the PDP SWQMP submittal). Worksheet B.5-7 in Appendix B.5 can be used to estimate volume retention benefits from landscape areas.

**If No Infiltration Condition:**

Provide documentation that the volume retention performance standard is met (include Worksheet B.5-2 in the PDP SWQMP submittal) in the PDP SWQMP submittal. Worksheet B.5-6 in Appendix B.5 can be used to document that the performance standard is met.

| Criteria | Answer | Progression |
|---|---|---|
| **Criteria 2:**<br>Is the compact biofiltration BMP sized to meet the performance standard from the MS4 Permit?<br><br>Refer to Appendix B.5 and Appendix F.2 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance. | ☐ Meets Flow Based Criteria | Use guidance from **Appendix F.2.2** to size the compact biofiltration BMP to meet the flow based criteria. Include the calculations in the PDP SWQMP.<br>Use parameters for sizing consistent with manufacturer guidelines and conditions of its third party certifications (i.e. a BMP certified at a loading rate of 1 gpm/sq. ft. cannot be designed using a loading rate of 1.5 gpm/sq. ft.)<br>**Proceed to Criteria 4.** |
| | ☐ Meets Volume Based Criteria | Provide documentation that the compact biofiltration BMP has a total static (i.e. non-routed) storage volume, including pore-spaces and pre-filter detention volume (Refer to Appendix B.5 for a schematic) of at least 0.75 times the portion of the DCV not reliably retained onsite.<br>**Proceed to Criteria 4.** |
| | ☐ Does not Meet either | **Stop**. Compact biofiltration BMP is not allowed. |

| Compact (high rate) Biofiltration BMP Checklist | Form I-10 |
|---|---|

**Provide basis for Criteria 2:**
Provide documentation that the BMP meets the numeric criteria and is designed consistent with the manufacturer guidelines and conditions of its third-party certification (i.e., loading rate, etc., as applicable).

| Criteria | Answer | Progression |
|---|---|---|
| **Criteria 4:**<br><br>Does the compact biofiltration BMP meet the pollutant treatment performance standard for the projects most significant pollutants of concern?<br><br>Refer to Appendix B.6 and Appendix F.1 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance. | ☐ Yes, meets the TAPE certification. | Provide documentation that the compact BMP has an appropriate TAPE certification for the projects most significant pollutants of concern. **Proceed to Criteria 5.** |
| | ☐ Yes, through other third-party documentation. | Acceptance of third-party documentation is at the discretion of the City Engineer. The City engineer will consider, (a) the data submitted; (b) representativeness of the data submitted; and (c) consistency of the BMP performance claims with pollutant control objectives in Table F.1-2 and Table F.1-1 while making this determination. If a compact biofiltration BMP is not accepted, a written explanation/ reason will be provided in Section 2. **Proceed to Criteria 5.** |
| | ☐ No | **Stop**. Compact biofiltration BMP is not allowed. |

**Provide basis for Criteria 4:**
Provide documentation that identifies the projects most significant pollutants of concern and TAPE certification or other third party documentation that shows that the compact biofiltration BMP meets the pollutant treatment performance standard for the projects most significant pollutants of concern.

| Compact (high rate) Biofiltration BMP Checklist | | Form I-10 |
|---|---|---|
| **Criteria** | **Answer** | **Progression** |
| **Criteria 5**:<br>Is the compact biofiltration BMP designed to promote appropriate biological activity to support and maintain treatment process?<br>Refer to Appendix F of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance. | ☐ Yes | Provide documentation that the compact biofiltration BMP support appropriate biological activity. Refer to Appendix F for guidance.<br>**Proceed to Criteria 6.** |
| | ☐ No | **Stop**. Compact biofiltration BMP is not allowed. |
| **Provide basis for Criteria 5:**<br><br>Provide documentation that appropriate biological activity is supported by the compact biofiltration BMP to maintain treatment process. | | |
| | | |
| **Criteria** | **Answer** | **Progression** |
| **Criteria 6:**<br>Is the compact biofiltration BMP designed with a hydraulic loading rate to prevent erosion, scour and channeling within the BMP? | ☐ Yes | Provide documentation that the compact biofiltration BMP is used in a manner consistent with manufacturer guidelines and conditions of its third-party certification.<br>**Proceed to Criteria 7.** |
| | ☐ No | **Stop**. Compact biofiltration BMP is not allowed. |
| **Provide basis for Criteria 6:**<br><br>Provide documentation that the BMP meets the numeric criteria and is designed consistent with the manufacturer guidelines and conditions of its third-party certification (i.e., maximum tributary area, maximum inflow velocities, etc., as applicable). | | |
| | | |

| Compact (high rate) Biofiltration BMP Checklist | | Form I-10 |
|---|---|---|
| **Criteria** | **Answer** | **Progression** |
| **Criteria 7:**<br>Is the compact biofiltration BMP maintenance plan consistent with manufacturer guidelines and conditions of its third-party certification (i.e., maintenance activities, frequencies)? | ☐ Yes, and the compact BMP is privately owned, operated and not in the public right of way. | Submit a maintenance agreement that will also include a statement that the BMP will be maintained in accordance with manufacturer guidelines and conditions of third-party certification.<br>**Stop**. The compact biofiltration BMP meets the required criteria. |
| | ☐ Yes, and the BMP is either owned or operated by the City or in the public right of way. | Approval is at the discretion of the City Engineer. The city engineer will consider maintenance requirements, cost of maintenance activities, relevant previous local experience with operation and maintenance of the BMP type, ability to continue to operate the system in event that the vending company is no longer operating as a business or other relevant factors while making the determination.<br>**Stop**. Consult the City Engineer for a determination. |
| | ☐ No | **Stop**. Compact biofiltration BMP is not allowed. |
| **Provide basis for Criteria 7:**<br><br>Include copy of manufacturer guidelines and conditions of third-party certification in the maintenance agreement. PDP SWQMP must include a statement that the compact BMP will be maintained in accordance with manufacturer guidelines and conditions of third-party certification. | | |
| | | |

| Compact (high rate) Biofiltration BMP Checklist | Form I-10 |
|---|---|
| **Section 1: Biofiltration Criteria Checklist (Appendix F)** | |
| Is the proposed compact BMP accepted by the City Engineer for onsite pollutant control compliance for the DMA? | ☐ Yes<br>☐ No, See explanation below |
| Explanation/reason if the compact BMP is not accepted by the City for onsite pollutant control compliance: | |

# STORMWATER MANAGEMENT INVESTIGATION

# PROPOSED MULTI-STORY APARTMENT HOUSING DEVELOPMENT 855 BROTHERTON ROAD ESCONDIDO, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

**PREPARED FOR**

TCR
TRAMMELL CROW
RESIDENTIAL

**SEPTEMBER 28, 2022**
**PROJECT NO. G3009-52-01**

Project No. G3009-52-01
September 28, 2022

Trammell Crow Residential
5790 Fleet Street, Suite 140
Carlsbad, California 92008

Attention: Mr. Conner Noon

Subject: STORMWATER MANAGEMENT INVESTIGATION
PROPOSED MULTI-STORY APARTMENT HOUSING DEVELOPMENT
855 BROTHERTON ROAD
ESCONDIDO, CALIFORNIA

Reference: *Geotechnical Investigation, Mission Gorge Mixed-Use Development, 6171 Mission Gorge Road, San Diego, California,* prepared by Geocon Incorporated, dated September 15, 2022 (Project No. G3009-52-01).

Dear Mr. Noon:

In accordance with your request and authorization of our Proposal No. LG-22316 dated July 7, 2022, we herein submit the results of our stormwater management investigation for the property located at 855 Brotherton Road in the City of Escondido, California (see Vicinity Map).




**Vicinity Map**

## SITE AND PROJECT DESCRIPTION

The property is east of Felicita Road, south of Brotherton Road, west of an existing private school building, and north of residential properties in the City of Escondido, California. The developed portion of the site consists of an existing church building that sits atop a nearly level pad with relative flat parking and drivelane surfaces immediately surrounding the building. Undeveloped land exists to the west and south of the existing church complex. Existing elevations around the building and pavement areas range from approximately 656 to 662 feet above Mean Sea Level (MSL). Fill slopes descend to the west and south from the pavement area boundaries with approximate inclinations ranging from 2:1 to 3:1 (horizontal to vertical) and a maximum height of about 15 feet. The site appears to be terraced into what was originally gently to moderately sloping, west descending natural ground. It appears the site generally drains to the southwest. The Existing Site Map shows the current site conditions.




**Existing Site Map**

Based on review of the conceptual plans provided, we understand the project will consist of demolishing the existing building and improvements and constructing multi-story, multi-family residential apartment buildings with associated site improvements, utilities and landscaping. Storm water BMPs are not shown in the conceptual plans.

We prepared the referenced geotechnical investigation report for the site and proposed development. Our field investigation consisted of advancing 8 exploratory borings to a maximum depth of about 20 feet and performing 2 infiltration tests. The Geologic Map, Figure 1, shows the approximate locations of the borings and infiltration tests. During our investigation, we encountered one surficial soil unit (consisting of undocumented fill) and one formational unit (consisting of cretaceous-age granitoid bedrock). We encountered undocumented fill in our borings to depths ranging from about 2 to 13 feet overlying the granitoid bedrock. The occurrence, distribution, and description of each unit encountered are shown on the Geologic Map, Figure 1, and on the boring logs in Appendix A.

## STORM WATER MANAGEMENT INVESTIGATION

We understand storm water management devices are being proposed in accordance with the 2016 Escondido Storm Water Design Manual (BMP Design Manual). If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to these devices. The attached Figure 1, Geologic Map, displays the infiltration setback zones with respect to the existing site conditions. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeological study at the site. If infiltration of storm water runoff occurs, downstream properties may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other undesirable impacts as a result of water infiltration.

### Hydrologic Soil Group

The United States Department of Agriculture (USDA), Natural Resources Conservation Services, possesses general information regarding the existing soil conditions for areas within the United States. The USDA website also provides the Hydrologic Soil Group. Table 1 presents the descriptions of the hydrologic soil groups. If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. In addition, the USDA website also provides an estimated saturated hydraulic conductivity for the existing soil.

**TABLE 1**
**HYDROLOGIC SOIL GROUP DEFINITIONS**

| Soil Group | Soil Group Definition |
|---|---|
| A | Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. |
| B | Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission. |
| C | Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission. |
| D | Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission. |

The property is underlain by previously-placed fill which is underlain by granitoid bedrock and should be classified as Soil Group D. The Hydrologic Soil Group Map presents output from the USDA website showing the limits of the soil units.

Table 2 presents the information from the USDA website for the subject property.

**TABLE 2**
**USDA WEB SOIL SURVEY – HYDROLOGIC SOIL GROUP***

| Map Unit Name | Map Unit Symbol | Approximate Percentage of Property | Hydrologic Soil Group | $k_{SAT}$ of Most Limiting Layer (Inches/ Hour) |
|---|---|---|---|---|
| Bonsall sandy loam, 2 to 9 percent slopes | BlC | 38.4 | D | 0.00 – 0.06 |
| Fallbrook sandy loam, 2 to 5 percent slopes | FaB | 2.3 | C | 0.20 – 0.57 |
| Fallbrook sandy loam, 5 to 9 percent slopes | FaC | 46.1 | C | 0.20 – 0.57 |
| Ramona sandy loam, 2 to 5 percent slopes | RaB | 13.3 | C | 0.20 – 0.57 |

*The areas of the property that possess fill materials should be considered to possess a Hydrologic Soil Group D.




**Hydrologic Soil Group Map**

## In Situ Testing

We performed 2 infiltration tests using the Aardvark permeameter at the locations shown on the Geologic Map, Figure 1. The results of the tests provide design parameters regarding the saturated hydraulic conductivity and infiltration characteristics of the on-site soils and geologic units. Table 3 presents the results of the estimated field saturated hydraulic conductivity and estimated infiltration rates obtained from the

infiltration tests. The field data sheets are also attached herein. Based on the 2016 Escondido Storm Water Design Manual (BMP Design Manual), the infiltration rate should be considered equal to the saturated hydraulic conductivity rate. We applied a feasibility factor of safety of 2.0 to our estimated infiltration rates to provide input on Worksheet C.4-1. Soil infiltration rates from in-situ tests can vary significantly from one location to another due to the heterogeneous characteristics inherent to most soil. However, we consider the results of the infiltration tests to be consistent for the granitic rock (Kwm).

**TABLE 3**
**INFILTRATION TEST RESULTS**

| Test No. | Geologic Unit | Test Elevation (feet, MSL) | Field-Saturated Hydraulic Conductivity/Infiltration Rate, $k_{sat}$ (inch/hour) | Worksheet Infiltration Rate[1] (inch/hour) |
|---|---|---|---|---|
| I-1 | Kwm | 641 | 0.013 | 0.007 |
| I-2 | Kwm | 640.5 | 0.003 | 0.002 |
| | | **Average:** | **0.008** | **0.005** |

[1] Using a Factor of Safety of 2.

Infiltration categories include full infiltration, partial infiltration, and no infiltration. Table 4 presents the commonly accepted definitions of the potential infiltration categories based on the infiltration rates.

**TABLE 4**
**INFILTRATION CATEGORIES**

| Infiltration Category | Field Infiltration Rate, I (Inches/Hour) | Factored Infiltration Rate[1], I (Inches/Hour) |
|---|---|---|
| Full Infiltration | $I > 1.0$ | $I > 0.5$ |
| Partial Infiltration | $0.10 < I \leq 1.0$ | $0.05 < I \leq 0.5$ |
| No Infiltration (Infeasible) | $I < 0.10$ | $I < 0.05$ |

[1] Using a Factor of Safety of 2.

## GEOLOGIC HAZARDS AND GEOTECHNICAL CONSIDERATIONS

### Groundwater Elevations

We did not encounter groundwater or seepage during our field investigation to the maximum depth explored of 20 feet. We expect a static groundwater table exists at depths greater than 50 feet below existing grades.

### New or Existing Utilities

Existing utilities are located on and adjacent to the property within the existing parking area, driveways, and roadways. Therefore, full or partial infiltration should not be allowed within areas of proposed or existing

utilities to help prevent potential damage/distress to improvements. Mitigation measures to prevent water from infiltrating the utilities consist of setbacks, installing cutoff walls around the utilities and installing subdrains and/or installing liners. The horizontal and vertical setbacks for infiltration devices should be a minimum of 10 feet and a 1:1 plane of 1 foot below the closest edge of the deepest adjacent utility, respectively.

### Planned Structures

We understand that the proposed development will consist of several multi-story apartment buildings with associated site improvements. In general, water should not be allowed to infiltrate in areas where it could affect the structures. In addition, infiltration should not be permitted upgradient from or within 10 feet of any existing neighboring foundations and property lines.

### Slope Hazards

Fill slopes descend to the west and south from the west and south pavement area boundaries with approximate inclinations ranging from 2:1 to 3:1 (horizontal to vertical) and a maximum height of about 15 feet. However, we expect the eastern portion site grade will be lowered several feet which would consist of the partial removal of these existing slopes. In general, water migration and the resulting seepage forces negatively affect the stability of slopes and cause erosion. The 2016 Escondido Storm Water Design Manual (BMP Design Manual) recommends a minimum setback of 50 feet from the top of slopes or a setback distance of 1.5 times the slope height, whichever results in a larger setback.

## CONCLUSIONS AND RECOMMENDATIONS

### Storm Water Evaluation Narrative

The areas where infiltration that could potentially be feasibly are limited based on the existing development and locations of existing underground utilities, neighboring foundations, existing fills, and existing slopes. We expect the best location for the infiltration area would be the southwestern portion of the property (low point).

### Storm Water Infiltration Conclusion

The average infiltration test results from the area where infiltration could be possible within the natural granitoid bedrock materials indicate an average permeability rate of 0.005 inches per hour (less than 0.05 inches/hour) and possesses a “No Infiltration” condition. In addition, infiltration would not be possible in the areas of existing underground utilities, proposed or existing foundations, and slopes, as discussed herein. Therefore, we opine infiltration should not be permitted and liners and subdrains should be installed in storm water management devices. Incidental infiltration may be allowed (removing the bottom liner) in areas that would not affect proposed improvements (at least 10 feet laterally away from utilities and structures) and embedded in granitic rock.

## Storm Water Infiltration Recommendations

Liners and subdrains should be incorporated into the design and construction of the planned storm water devices. The liners should be impermeable (e.g. High-density polyethylene, HDPE, with a thickness of about 30 mil or equivalent Polyvinyl Chloride, PVC) to prevent water migration. The subdrains should be perforated within the liner area, installed at the base and above the liner, be at least 3 inches in diameter and consist of Schedule 40 PVC pipe. The subdrains outside of the liner should consist of solid pipe. The penetration of the liners at the subdrains should be properly waterproofed. The subdrains should be connected to a proper outlet. The devices should also be installed in accordance with the manufacturer's recommendations.

## Storm Water Standard Worksheets

The 2016 Escondido Storm Water Design Manual (BMP Design Manual) requests the geotechnical engineer complete the *Categorization of Infiltration Feasibility Condition* (Worksheet C.4-1) worksheet information to help evaluate the potential for infiltration on the property. The attached Worksheet C.4-1 presents the completed information for the submittal process.

The regional storm water standards also have a worksheet (Worksheet D.5-1 or Form I-9) that helps the project civil engineer estimate the factor of safety based on several factors. Table 5 describes the suitability assessment input parameters related to the geotechnical engineering aspects for the factor of safety determination.

**TABLE 5**
**SUITABILITY ASSESSMENT RELATED CONSIDERATIONS**
**FOR INFILTRATION FACILITY SAFETY FACTORS**

| Consideration | High Concern – 3 Points | Medium Concern – 2 Points | Low Concern – 1 Point |
|---|---|---|---|
| Assessment Methods | Use of soil survey maps or simple texture analysis to estimate short-term infiltration rates. Use of well permeameter or borehole methods without accompanying continuous boring log. Relatively sparse testing with direct infiltration methods | Use of well permeameter or borehole methods with accompanying continuous boring log. Direct measurement of infiltration area with localized infiltration measurement methods (e.g., Infiltrometer). Moderate spatial resolution | Direct measurement with localized (i.e. small-scale) infiltration testing methods at relatively high resolution or use of extensive test pit infiltration measurement methods. |
| Predominant Soil Texture | Silty and clayey soils with significant fines | Loamy soils | Granular to slightly loamy soils |
| Site Soil Variability | Highly variable soils indicated from site assessment or unknown variability | Soil boring/test pits indicate moderately homogenous soils | Soil boring/test pits indicate relatively homogenous soils |
| Depth to Groundwater/ Impervious Layer | <5 feet below facility bottom | 5-15 feet below facility bottom | >15 feet below facility bottom |

Based on our geotechnical investigation and the previous table, Table 6 presents the estimated factor values for the evaluation of the factor of safety. This table only presents the suitability assessment safety factor (Part A) of the worksheet. The project civil engineer should evaluate the safety factor for design (Part B) and use the combined safety factor for the design infiltration rate.

**TABLE 6**
**FACTOR OF SAFETY WORKSHEET DESIGN VALUES – PART A1**

| Suitability Assessment Factor Category | Assigned Weight (w) | Factor Value (v) | Product (p = w x v) |
|---|---|---|---|
| Assessment Methods | 0.25 | 2 | 0.50 |
| Predominant Soil Texture | 0.25 | 2 | 0.50 |
| Site Soil Variability | 0.25 | 2 | 0.50 |
| Depth to Groundwater/ Impervious Layer | 0.25 | 1 | 0.25 |
| Suitability Assessment Safety Factor, $S_A = \sum p$ | | | 1.75 |

*The project civil engineer should complete Worksheet D.5-1 or Form I-9 using the data on this table. Additional information is required to evaluate the design factor of safety.

If you have any questions regarding this correspondence, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

GEOCON INCORPORATED

Adam W. Hespeler
PG 10001

Shawn Foy Weedon
GE 2714

AWH:SFW:arm

Attachments:
Figure 1 – Geologic Map
Appendix A – Boring Logs
City of Escondido C.4-1 Worksheet
(2) Aardvark Permeameter Data Sheets

(e-mail) Addressee

# APPENDIX A

PROJECT NO. G3009-52-01

## BORING B 1

ELEV. (MSL.) 663' DATE COMPLETED 08-11-2022

EQUIPMENT INGERSOLL RAND A-300 W/8-INCH HSA's BY: A. HESPELER

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | | |
| | B1-1 | | | SM | **2.5 INCHES ASPHALT CONCRETE, NO BASE** | | | |
| | | | | | **UNDOCUMENTED FILL (Qudf)** Medium dense, moist, light grayish brown, Silty, fine- to medium-grained SAND | | | |
| 2 | | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)** Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 4 | | | | | | | | |
| | B1-2 | | | | | 50/3" | | 2.5 |
| 6 | | | | | | | | |
| 8 | | | | | | | | |
| 10 | B1-3 | | | | | 50/3" | | 3.5 |
| 12 | | | | | | | | |
| 14 | | | | | -Becomes less weathered at 14 feet | | | |
| | B1-4 | | | | | 50/3" | | 3.0 |
| 16 | | | | | | | | |
| 18 | | | | | | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE (No drilling refusal encountered) No groundwater encountered Backfilled with cuttings Patched with aquaphalt | | | |

**Figure A-1,**
**Log of Boring B 1, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | BORING B 2<br>ELEV. (MSL.) 661' DATE COMPLETED 08-11-2022<br>EQUIPMENT INGERSOLL RAND A-300 W/8-INCH HSA's BY: A. HESPELER<br>MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | SM | **2.5 INCHES ASPHALT CONCRETE, NO BASE**<br>**UNDOCUMENTED FILL (Qudf)**<br>Medium dense, moist, light grayish brown, Silty, fine- to medium-grained SAND | | | |
| 2 | | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 4 | | | | | | | | |
| | B2-1 | | | | | 50/4" | 129.8 | 6.7 |
| 6 | | | | | | | | |
| 8 | | | | | | | | |
| 10 | B2-2 | | | | | 50/3" | 119.3 | 6.9 |
| 12 | | | | | | | | |
| 14 | | | | | | | | |
| | B2-3 | | | | | 50/3" | | |
| 16 | | | | | | | | |
| 18 | | | | | | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with cuttings<br>Patched with aquaphalt | | | |

**Figure A-2,**
**Log of Boring B 2, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

## BORING B 3

ELEV. (MSL.) 663' DATE COMPLETED 08-11-2022

EQUIPMENT INGERSOLL RAND A-300 W/8-INCH HSA's BY: A. HESPELER

| DEPTH IN FEET | SAMPLE NO. | SOIL CLASS (USCS) | MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|
| 0 | | | **2.5 INCHES ASPHALT CONCRETE, NO BASE** | | | |
| | B3-1 | SM | **UNDOCUMENTED FILL (Qudf)**<br>Medium dense, moist, grayish brown, Silty, fine- to medium-grained SAND | | | |
| 2 | | | | | | |
| 4 | | | | | | |
| | B3-2 | | -Becomes dense and reddish brown at 5 feet | 69 | 128.1 | 11.4 |
| 6 | | | | | | |
| 8 | | | -Becomes dark brown at 8 feet | | | |
| 10 | B3-3 | | | 75 | 122.2 | 11.7 |
| | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 12 | | | | | | |
| 14 | | | | | | |
| | B3-4 | | | 50/3" | | 2.7 |
| 16 | | | | | | |
| 18 | | | | | | |
| 20 | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils<br>Patched with aquaphalt | | | |

**Figure A-3,**
**Log of Boring B 3, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

## BORING B 4

ELEV. (MSL.) 657' DATE COMPLETED 08-11-2022

EQUIPMENT INGERSOLL RAND A-300 W/8-INCH HSA's BY: A. HESPELER

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | **3 INCHES ASPHALT CONCRETE, NO BASE** | | | |
| | | | | SM | **UNDOCUMENTED FILL (Qudf)**<br>Medium dense, moist, grayish brown, Silty, fine- to medium-grained SAND | | | |
| 2 | | | | | | | | |
| 4 | | | | | | | | |
| | B4-1 | | | | -Becomes very dense | 82 | 124.5 | 10.3 |
| 6 | | | | | | | | |
| 8 | | | | SC | Dense, moist, dark gray, Clayey fine- to medium-grained SAND | | | |
| 10 | B4-2 | | | | | 67 | 123.5 | 13.5 |
| 12 | | | | | | | | |
| | | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 14 | | | | | | | | |
| | B4-3 | | | | | 50/3" | | 4.5 |
| 16 | | | | | | | | |
| 18 | | | | | | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils<br>Patched with aquaphalt | | | |

**Figure A-4,**
**Log of Boring B 4, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

## BORING B 5

ELEV. (MSL.) **659'** DATE COMPLETED **08-11-2022**

EQUIPMENT **INGERSOLL RAND A-300 W/8-INCH HSA's** BY: **A. HESPELER**

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | **2.5 INCHES ASPHALT CONCRETE, NO BASE** | | | |
| | B5-1 | | | SC | **UNDOCUMENTED FILL (Qudf)**<br>Medium dense, moist, reddish brown, Clayey, fine- to medium-grained SAND | | | |
| 2 | | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 4 | | | | | | | | |
| | B5-2 | | | | | 50/6" | 122.4 | 5.8 |
| 6 | | | | | | | | |
| 8 | | | | | | | | |
| 10 | B5-3 | | | | -No sample recovery | 50/2" | | |
| 12 | | | | | | | | |
| 14 | | | | | | | | |
| 16 | | | | | -Becomes less weathered at 16 feet | | | |
| 18 | | | | | | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils<br>Patched with aquaphalt | | | |

**Figure A-5,**
**Log of Boring B 5, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

## BORING B 6

ELEV. (MSL.) 662' DATE COMPLETED 08-12-2022

EQUIPMENT INGERSOLL RAND A-300 W/8-INCH HSA's BY: A. HESPELER

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | **3 INCHES ASPHALT CONCRETE, NO BASE** | | | |
| | | | | SC | **UNDOCUMENTED FILL (Qudf)**<br>Medium dense, moist, reddish brown, Clayey, fine- to medium-grained SAND | | | |
| 2 | | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 4 | | | | | | | | |
| | B6-1 | | | | | 50/5" | 117.2 | 4.5 |
| 6 | | | | | | | | |
| 8 | | | | | | | | |
| 10 | B6-2 | | | | | 50/5" | 112.2 | 4.1 |
| 12 | | | | | | | | |
| 14 | | | | | | | | |
| 16 | | | | | | | | |
| 18 | | | | | | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils<br>Patched with aquaphalt | | | |

**Figure A-6,**
**Log of Boring B 6, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

## BORING B 7

ELEV. (MSL.) **644'** DATE COMPLETED **08-12-2022**

EQUIPMENT **INGERSOLL RAND A-300 W/8-INCH HSA's** BY: **A. HESPELER**

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | SC | **UNDOCUMENTED FILL (Qudf)**<br>Loose, dry, grayish brown, Clayey, fine- to medium-grained SAND | | | |
| 2 | | | | | | | | |
| 4 | | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 6 | B7-1 | | | | | 50/6" | 106.7 | 8.7 |
| 8 | | | | | | | | |
| 10 | B7-2 | | | | | 50/6" | 104.0 | 19.7 |
| 12 | | | | | | | | |
| 14 | | | | | | | | |
| 16 | | | | | | | | |
| 18 | | | | | | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils | | | |

**Figure A-7,**
**Log of Boring B 7, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

## BORING B 8

ELEV. (MSL.) **642'** DATE COMPLETED **08-12-2022**

EQUIPMENT **INGERSOLL RAND A-300 W/8-INCH HSA's** BY: **A. HESPELER**

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | MATERIAL DESCRIPTION | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | SC | **UNDOCUMENTED FILL (Qudf)**<br>Loose, dry, grayish brown, Clayey, fine- to medium-grained SAND | | | |
| 2 | | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| 4 | | | | | | | | |
| 6 | B8-1 | | | | | 50/6" | 119.3 | 12.9 |
| 8 | | | | | | | | |
| 10 | B8-2 | | | | | 50/4.5" | 112.0 | 12.4 |
| 12 | | | | | -Becomes less weathered at 13 feet | | | |
| 14 | | | | | | | | |
| 16 | | | | | | | | |
| 18 | | | | | | | | |
| 20 | | | | | BORING TERMINATED AT 20 FEET BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils | | | |

**Figure A-8,**
**Log of Boring B 8, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | **BORING I 1**<br>ELEV. (MSL.) **644'** DATE COMPLETED **08-12-2022**<br>EQUIPMENT **INGERSOLL RAND A-300 W/8-INCH HSA's** BY: **A. HESPELER** | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| | | | | | MATERIAL DESCRIPTION | | | |
| 0 | | | | SC | **UNDOCUMENTED FILL (Qudf)**<br>Loose, dry, grayish brown, Clayey, fine- to medium-grained SAND | | | |
| 2 | I1-1 | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANITOID BEDROCK; very intensely fractured; excavates as Clayey SAND | | | |
| | | | | | BOTTOM OF BORING AT 39 INCHES BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils | | | |

**Figure A-9,**
**Log of Boring I 1, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. G3009-52-01

| DEPTH IN FEET | SAMPLE NO. | LITHOLOGY | GROUNDWATER | SOIL CLASS (USCS) | **BORING I 2**<br>ELEV. (MSL.) **643'** DATE COMPLETED **08-12-2022**<br>EQUIPMENT **INGERSOLL RAND A-300 W/8-INCH HSA's** BY: **A. HESPELER** | PENETRATION RESISTANCE (BLOWS/FT.) | DRY DENSITY (P.C.F.) | MOISTURE CONTENT (%) |
|---|---|---|---|---|---|---|---|---|
| | | | | | MATERIAL DESCRIPTION | | | |
| 0 | | | | SC | **UNDOCUMENTED FILL (Qudf)**<br>Loose, dry, grayish brown, Clayey, fine- to medium-grained SAND | | | |
| 2 | I2-1 | | | SW | **GRANODIORITE OF WOODSON MOUNTAIN (Kwm)**<br>Slightly weathered, "salt and pepper" colored with some red iron oxide staining, moderately weak GRANODIORITE BEDROCK; very intensely fractured; excavates as Well Graded SAND | | | |
| | | | | | BOTTOM OF BORING AT 42 INCHES BELOW GROUND SURFACE<br>(No drilling refusal encountered)<br>No groundwater encountered<br>Backfilled with spoils | | | |

**Figure A-10,**
**Log of Boring I 2, Page 1 of 1**

G3009-52-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL ... STANDARD PENETRATION TEST ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE ... CHUNK SAMPLE ... WATER TABLE OR ... SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

| Categorization of Infiltration Feasibility Condition | | Form I-5 | |
|---|---|---|---|
| **Part 1 - Full Infiltration Feasibility Screening Criteria**<br>**Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?** | | | |
| Criteria | Screening Question | **Yes** | **No** |
| 1 | **Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D. | | X |
| Provide basis:<br>As outlined in the attached Storm Water Management Investigation report, in-situ infiltration testing at the site at locations I-1 and I-2 yielded rates of 0.007 and 0.002, respectively, with a FoS of 2.0 applied.<br>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability. | | | |
| 2 | **Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2. | | |
| Provide basis:<br>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability. | | | |

| Form I-5 Page 2 of 4 | | | |
|---|---|---|---|
| Criteria | Screening Question | **Yes** | **No** |
| 3 | **Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3. | | |
| Provide basis:<br><br>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability. | | | |
| 4 | **Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3. | | |
| Provide basis:<br><br>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability. | | | |
| **Part 1 Result *** | If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration**<br><br>If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2 | | |

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

## Form I-5 Page 3 of 4

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

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

| Criteria | Screening Question | Yes | No |
|---|---|---|---|
| 5 | **Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D. | | X |

Provide basis:

As outlined in the attached Storm Water Management Investigation report, in-situ infiltration testing at the site at locations I-1 and I-2 yielded rates of 0.007 and 0.002, respectively, with a FoS of 2.0 applied. The corrected infiltration rates are not considered appreciable for partial infiltration.

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

| | | | |
|---|---|---|---|
| 6 | **Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2. | | |

Provide basis:

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

| Form I-5 Page 4 of 4 | | | |
|---|---|---|---|
| Criteria | Screening Question | **Yes** | **No** |
| 7 | **Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3. | | |
| Provide basis:<br><br>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates. | | | |
| 8 | **Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3. | | |
| Provide basis:<br><br>Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates. | | | |
| **Part 2 Result*** | If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.**<br><br>If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.** | No Infiltration Condition. | |

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

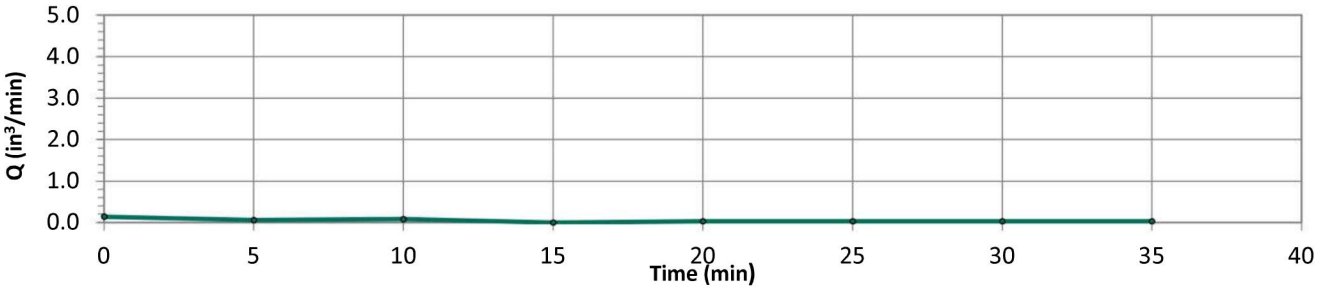
TEST NO.: **I-2**

GEOLOGIC UNIT: **Kwm**

EXCAVATION ELEVATION (MSL, FT): **640.5**

| TEST INFORMATION | |
|---|---|
| BOREHOLE DIAMETER (IN): | 4 |
| BOREHOLE DEPTH (FT): | 3.3 |
| TEST/BOTTOM ELEVATION (MSL, FT): | 637 |
| MEASURED HEAD HEIGHT (IN): | 6.0 |
| CALCULATED HEAD HEIGHT (IN): | 5.9 |
| FACTOR OF SAFETY: | 2.0 |

| TEST RESULTS | |
|---|---|
| STEADY FLOW RATE ($IN^3$/MIN): | **0.028** |
| FIELD-SATURATED INFILTRATION RATE (IN/HR): | **0.003** |
| FACTORED INFILTRATION RATE (IN/HR): | **0.002** |




| TEST DATA | | | | |
|---|---|---|---|---|
| Reading | Time Elapsed (min) | Water Weight Consumed (lbs) | Water Volume Consumed ($in^3$) | Q ($in^3$/min) |
| 1 | 0.00 | 0.000 | 0.00 | 0.00 |
| 2 | 5.00 | 0.025 | 0.69 | 0.138 |
| 3 | 5.00 | 0.010 | 0.28 | 0.055 |
| 4 | 5.00 | 0.015 | 0.42 | 0.083 |
| 5 | 5.00 | 0.000 | 0.00 | 0.000 |
| 6 | 5.00 | 0.005 | 0.14 | 0.028 |
| 7 | 5.00 | 0.005 | 0.14 | 0.028 |
| 8 | 5.00 | 0.005 | 0.14 | 0.028 |
| 9 | 5.00 | 0.005 | 0.14 | 0.028 |

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INCORPORATED
GEOTECHNICAL CONSULTANTS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121-2974
PHONE 858 558-6900 - FAX 858 558-6159

**AARDVARK PERMEAMETER TEST RESULTS**

**Brotherton Rd Apartments**

**PROJECT NO.: G3009-52-01**

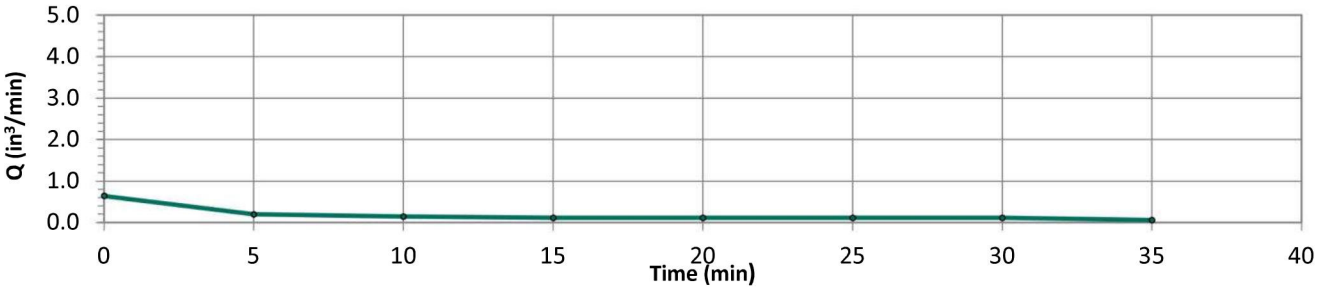
TEST NO.: I-I

GEOLOGIC UNIT: Kwm

EXCAVATION ELEVATION (MSL, FT): 641

| TEST INFORMATION | |
|---|---|
| BOREHOLE DIAMETER (IN): | 4 |
| BOREHOLE DEPTH (FT): | 3.3 |
| TEST/BOTTOM ELEVATION (MSL, FT): | 638 |
| MEASURED HEAD HEIGHT (IN): | 6.0 |
| CALCULATED HEAD HEIGHT (IN): | 5.9 |
| FACTOR OF SAFETY: | 2.0 |

| TEST RESULTS | |
|---|---|
| STEADY FLOW RATE ($IN^3$/MIN): | **0.111** |
| FIELD-SATURATED INFILTRATION RATE (IN/HR): | **0.013** |
| FACTORED INFILTRATION RATE (IN/HR): | **0.007** |




| TEST DATA | | | | |
|---|---|---|---|---|
| Reading | Time Elapsed (min) | Water Weight Consumed (lbs) | Water Volume Consumed ($in^3$) | Q ($in^3$/min) |
| 1 | 0.00 | 0.000 | 0.00 | 0.00 |
| 2 | 5.00 | 0.115 | 3.18 | 0.637 |
| 3 | 5.00 | 0.035 | 0.97 | 0.194 |
| 4 | 5.00 | 0.025 | 0.69 | 0.138 |
| 5 | 5.00 | 0.020 | 0.55 | 0.111 |
| 6 | 5.00 | 0.020 | 0.55 | 0.111 |
| 7 | 5.00 | 0.020 | 0.55 | 0.111 |
| 8 | 5.00 | 0.020 | 0.55 | 0.111 |
| 9 | 5.00 | 0.010 | 0.28 | 0.055 |

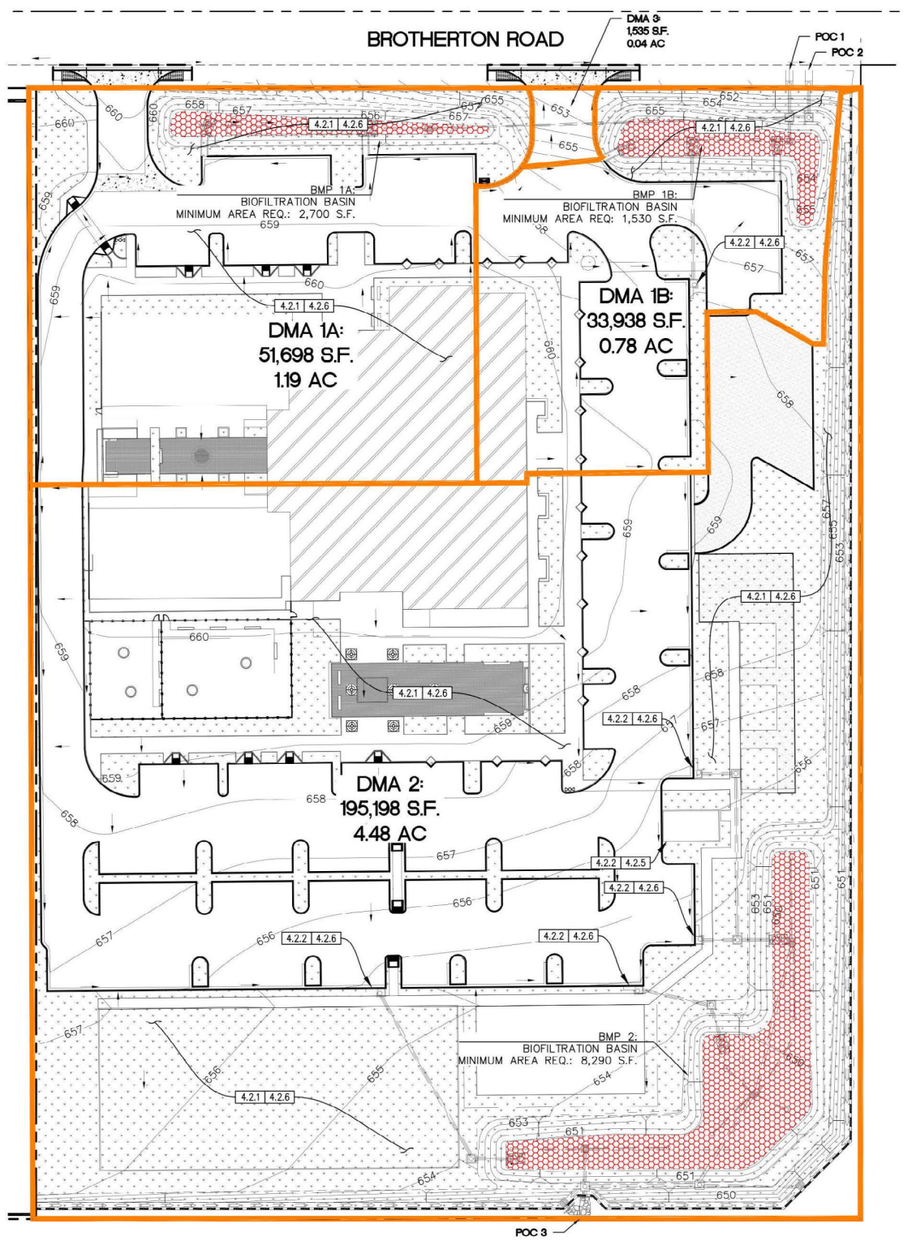
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PHONE 858 558-6900 - FAX 858 558-6159

**AARDVARK PERMEAMETER TEST RESULTS**

**Brotherton Rd Apartments**

**PROJECT NO.: G3009-52-01**

ATTACHMENT 1D




## LEGEND

DMA LIMIT

PROPOSED BIOFILTRATION BMP

PROPOSED IMPERVIOUS AREA

## NOTES

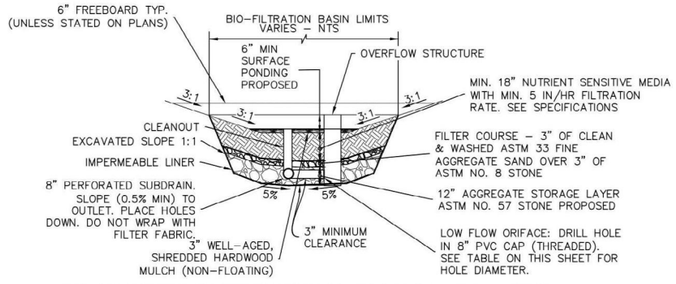
1. ALL DMAS ARE HYDROLOGIC SOIL GROUP D
2. GROUNDWATER US AT A DEPTH IF GREATER THAN 20 FEET BGS
3. CRITICAL COARSE SEDIMENT YIELD AREAS ARE NOT PRESENT WITHIN THE LIMITS OF WORK

EXISTING CONDITIONS
TOTAL SITE AREA: 292,978 S.F.
PERVIOUS AREA: 214,385 S.F. (73.2%)
IMPERVIOUS AREA: 78,593 S.F. (26.8%)

PROPOSED CONDITIONS
TOTAL SITE AREA: 292,978 S.F.
AREA TO BE DISTURBED: 282,369 S.F.
TOTAL PERVIOUS AREA: 113,301 S.F. (39.5%)
TOTAL IMPERVIOUS AREA: 179,677 S.F. (60.5%)
NEW/REPLACED IMPERVIOUS AREA: 169,068 S.F.

## SOURCE CONTROL BMP'S

4.2.1 PREVENTION OF ILLICIT DISCHARGES INTO THE MS4
4.2.2 STORM DRAIN STENCILING OR SIGNAGE
4.2.5 PROTECT TRASH STORAGE AREAS FROM RAINFALL, RUN-ON, RUNOFF, AND WIND DISPERSAL
4.2.6 ON-SITE STORM DRAIN INLETS
LANDSCAPE/OUTDOOR PESTICIDE USE
REFUSE AREAS
PLAZAS, SIDEWALKS, AND PARKING LOTS




NOTE: SEE LANDSCAPE AND IRRIGATION PLANS FOR PLANTING AND SURFACE FEATURES.

BIOFILTRATION BASIN DETAIL (AT GRADE) (PVT.)

NO SCALE

| BMP TABLE | |
|---|---|
| BMP NAME | ORIFACE DIAMETER (IN) |
| 1A | 1.15 |
| 1B | 0.93 |
| 2 | 2.23 |

N

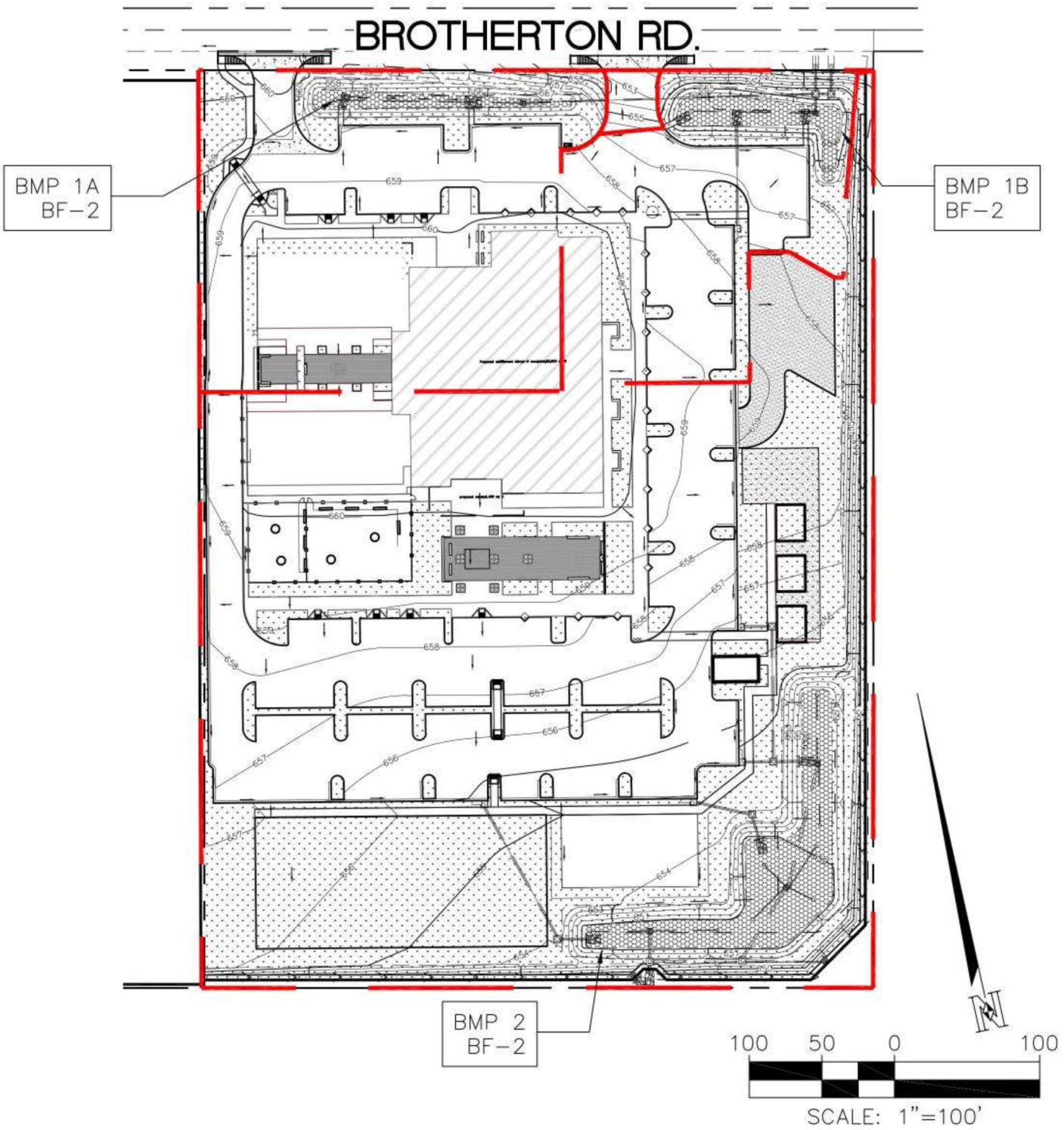
40 20 0 40 80 120

SCALE: 1"=40'

# BROTHERTON ROAD - ESCONDIDO
# DMA EXHIBIT

Nasland
Civil Engineering
Surveying
Land Planning
T (858) 292-7770
4740 Ruffner Street
San Diego, CA 92111
nasland.com

ATTACHMENT 1E




# BMP DMA MAPBOOK

SCALE: 1" = 100'

# ATTACHMENT 2

## BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

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

**Indicate which Items are Included behind this cover sheet:**

| Attachment Sequence | Contents | Checklist |
|---|---|---|
| Attachment 2a | Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required)<br>See Chapter 6 and Appendix G of the Storm Water Design Manual | ▣Included<br>☐Submitted as separate stand-alone document |
| Attachment 2b | Hydromodification Management Exhibit (Required) | ▣Included<br><br>See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet. |
| Attachment 2c | Management of Critical Coarse Sediment Yield Areas<br><br>See Section 6.2 and Appendix H of the Storm Water Design Manual. | ▣Exhibit depicting onsite and/or upstream sources of critical coarse sediment as mapped in the WMAA AND,<br>☐Demonstration that the project effectively avoids and bypasses sources of mapped critical coarse sediment OR,<br>☐Demonstration that the downstream system is not sensitive to preservation of Coarse Sediment Supply (Form I-11).<br>☐Demonstration that project does not generate a net impact on the receiving water. |
| Attachment 2d | Geomorphic Assessment of Receiving Channels (Optional)<br>See Section 6.3.4 of the Storm Water Design Manual. | ▣Not performed<br>☐Included<br>☐Submitted as separate stand-alone document |
| Attachment 2e | Vector Control Plan (Required when structural BMPs will not drain in 96 hours) | ☐Included<br>▣Not required because BMPs will drain in less than 96 hours |

**Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:**

The Hydromodification Management Exhibit must identify:

- ☒ Underlying hydrologic soil group
- ☒ Approximate depth to groundwater
- ☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☒ Critical coarse sediment yield areas to be protected
- ☒ Existing topography
- ☒ Existing and proposed site drainage network and connections to drainage offsite
- ☒ Proposed grading
- ☒ Proposed impervious features
- ☒ Proposed design features and surface treatments used to minimize imperviousness
- ☒ Point(s) of Compliance (POC) for Hydromodification Management
- ☒ Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
- ☒ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)

| BMP Sizing Spreadsheet V3.1 | | | |
|---|---|---|---|
| Project Name: | Escondido Church | Hydrologic Unit: | D |
| Project Applicant: | Maple Multi-Family Land CA, LP | Rain Gauge: | Oceanside |
| Jurisdiction: | City of Escondido | Total Project Area: | 0 |
| Parcel (APN): | 236-333-41, 263-333-53 | Low Flow Threshold: | 0.1Q2 |
| BMP Name: | BMP 1A | BMP Type: | Biofiltration |
| BMP Native Soil Type: | D | BMP Infiltration Rate (in/hr): | 0.025 |

| 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] | Surface Area | Surface Area (SF) |
| 1A IMPERVIOUS | 37,116 | D | Flat | Concrete | 1.0 | 0.07 | 2598 |
| 1A PERVIOUS | 14,582 | D | Flat | Landscape | 0.1 | 0.07 | 102 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
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| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| | | | | | | 0 | 0 |
| BMP Tributary Area | 51,698 | | | | | Minimum BMP Size | 2700 |
| | | | | | | Proposed BMP Size* | 2800 |

* Assumes standard configuration

| | | |
|---|---|---|
| Surface Ponding Depth | 6.00 | in |
| Bioretention Soil Media Depth | 18.00 | in |
| Filter Coarse | 6.00 | in |
| Gravel Storage Layer Depth | 12 | in |
| Underdrain Offset | 3.0 | in |
| | | |
| | | |

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 Manual

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, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

| BMP Sizing Spreadsheet V3.1 | | | |
|---|---|---|---|
| Project Name: | Escondido Church | Hydrologic Unit: | D |
| Project Applicant: | Maple Multi-Family Land CA, LP | Rain Gauge: | Oceanside |
| Jurisdiction: | City of Escondido | Total Project Area: | 0 |
| Parcel (APN): | 236-333-41, 263-333-53 | Low Flow Threshold: | 0.1Q2 |
| BMP Name | BMP 1A | BMP Type: | Biofiltration |

| 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 | | | | |
| 1A IMPERVIOUS | Oceanside | D | Flat | 0.571 | 0.852 | 0.049 | **0.75** |
| 1A PERVIOUS | Oceanside | D | Flat | 0.571 | 0.335 | 0.019 | **0.29** |
| | | | | | | | |
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| | | | | | | | |

| **3.25** | **0.068** | **1.04** | **1.15** |
|---|---|---|---|
| **Max Orifice Head (feet)** | **Max Tot. Allowable Orifice Flow (cfs)** | **Max Tot. Allowable Orifice Area ($in^2$)** | **Max Orifice Diameter (in)** |

| **0.111** | **0.115** | **1.77** | **1.500** |
|---|---|---|---|
| Average outflow during surface drawdown (cfs) | Max Orifice Outflow (cfs) | Actual Orifice Area ($in^2$) | Selected Orifice Diameter (in) |

| | |
|---|---|
| Drawdown (Hrs) | 3.5 |

| BMP Sizing Spreadsheet V3.1 | | | |
|---|---|---|---|
| Project Name: | Escondido Church | Hydrologic Unit: | D |
| Project Applicant: | Maple Multi-Family Land CA, LP | Rain Gauge: | Oceanside |
| Jurisdiction: | City of Escondido | Total Project Area: | 0 |
| Parcel (APN): | 236-333-41, 263-333-53 | Low Flow Threshold: | 0.1Q2 |
| BMP Name: | BMP 1B | BMP Type: | Biofiltration |
| BMP Native Soil Type: | D | BMP Infiltration Rate (in/hr): | 0.025 |

| 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] | Surface Area | Surface Area (SF) |
| 1B IMPERVIOUS | 20,518 | D | Flat | Concrete | 1.0 | 0.07 | 1436 |
| 1B PERVIOUS | 13,420 | D | Flat | Landscape | 0.1 | 0.07 | 94 |
| | | | | | | 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 | 33,938 | | | | | Minimum BMP Size | 1530 |
| | | | | | | Proposed BMP Size* | 2400 |

* Assumes standard configuration

| | | |
|---|---|---|
| Surface Ponding Depth | 6.00 | in |
| Bioretention Soil Media Depth | 18.00 | in |
| Filter Coarse | 6.00 | in |
| Gravel Storage Layer Depth | 12 | in |
| Underdrain Offset | 3.0 | in |
| | | |
| | | |

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 Manual

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, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

| BMP Sizing Spreadsheet V3.1 | | | |
|---|---|---|---|
| Project Name: | Escondido Church | Hydrologic Unit: | D |
| Project Applicant: | Maple Multi-Family Land CA, LP | Rain Gauge: | Oceanside |
| Jurisdiction: | City of Escondido | Total Project Area: | 0 |
| Parcel (APN): | 236-333-41, 263-333-53 | Low Flow Threshold: | 0.1Q2 |
| BMP Name | BMP 1B | BMP Type: | Biofiltration |

| 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 | | | | |
| 1B IMPERVIOUS | Oceanside | D | Flat | 0.571 | 0.471 | 0.027 | **0.41** |
| 1B PERVIOUS | Oceanside | D | Flat | 0.571 | 0.308 | 0.018 | **0.27** |
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| **3.25** | **0.044** | **0.68** | **0.93** |
|---|---|---|---|
| **Max Orifice Head (feet)** | **Max Tot. Allowable Orifice Flow (cfs)** | **Max Tot. Allowable Orifice Area ($in^2$)** | **Max Orifice Diameter (in)** |

| **0.111** | **0.115** | **1.77** | **1.500** |
|---|---|---|---|
| Average outflow during surface drawdown (cfs) | Max Orifice Outflow (cfs) | Actual Orifice Area ($in^2$) | Selected Orifice Diameter (in) |

| Drawdown (Hrs) | 3.0 |
|---|---|

| BMP Sizing Spreadsheet V3.1 | | | |
|---|---|---|---|
| Project Name: | Escondido Church | Hydrologic Unit: | D |
| Project Applicant: | Maple Multi-Family Land CA, LP | Rain Gauge: | Oceanside |
| Jurisdiction: | City of Escondido | Total Project Area: | 0 |
| Parcel (APN): | 236-333-41, 263-333-53 | Low Flow Threshold: | 0.1Q2 |
| BMP Name: | BMP 2 | BMP Type: | Biofiltration |
| BMP Native Soil Type: | D | BMP Infiltration Rate (in/hr): | 0.025 |

| 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] | Surface Area | Surface Area (SF) |
| 2 IMPERVIOUS | 109,899 | D | Flat | Concrete | 1.0 | 0.07 | 7693 |
| 2 PERVIOUS | 85,299 | D | Flat | Landscape | 0.1 | 0.07 | 597 |
| | | | | | | 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 | 195,198 | | | | | Minimum BMP Size | 8290 |
| | | | | | | Proposed BMP Size* | 8400 |

* Assumes standard configuration

| | | |
|---|---|---|
| Surface Ponding Depth | 6.00 | in |
| Bioretention Soil Media Depth | 18.00 | in |
| Filter Coarse | 6.00 | in |
| Gravel Storage Layer Depth | 12 | in |
| Underdrain Offset | 3.0 | in |
| | | |
| | | |

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 Manual

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, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.

| BMP Sizing Spreadsheet V3.1 | | | |
|---|---|---|---|
| Project Name: | Escondido Church | Hydrologic Unit: | D |
| Project Applicant: | Maple Multi-Family Land CA, LP | Rain Gauge: | Oceanside |
| Jurisdiction: | City of Escondido | Total Project Area: | 0 |
| Parcel (APN): | 236-333-41, 263-333-53 | Low Flow Threshold: | 0.1Q2 |
| BMP Name | BMP 2 | BMP Type: | Biofiltration |

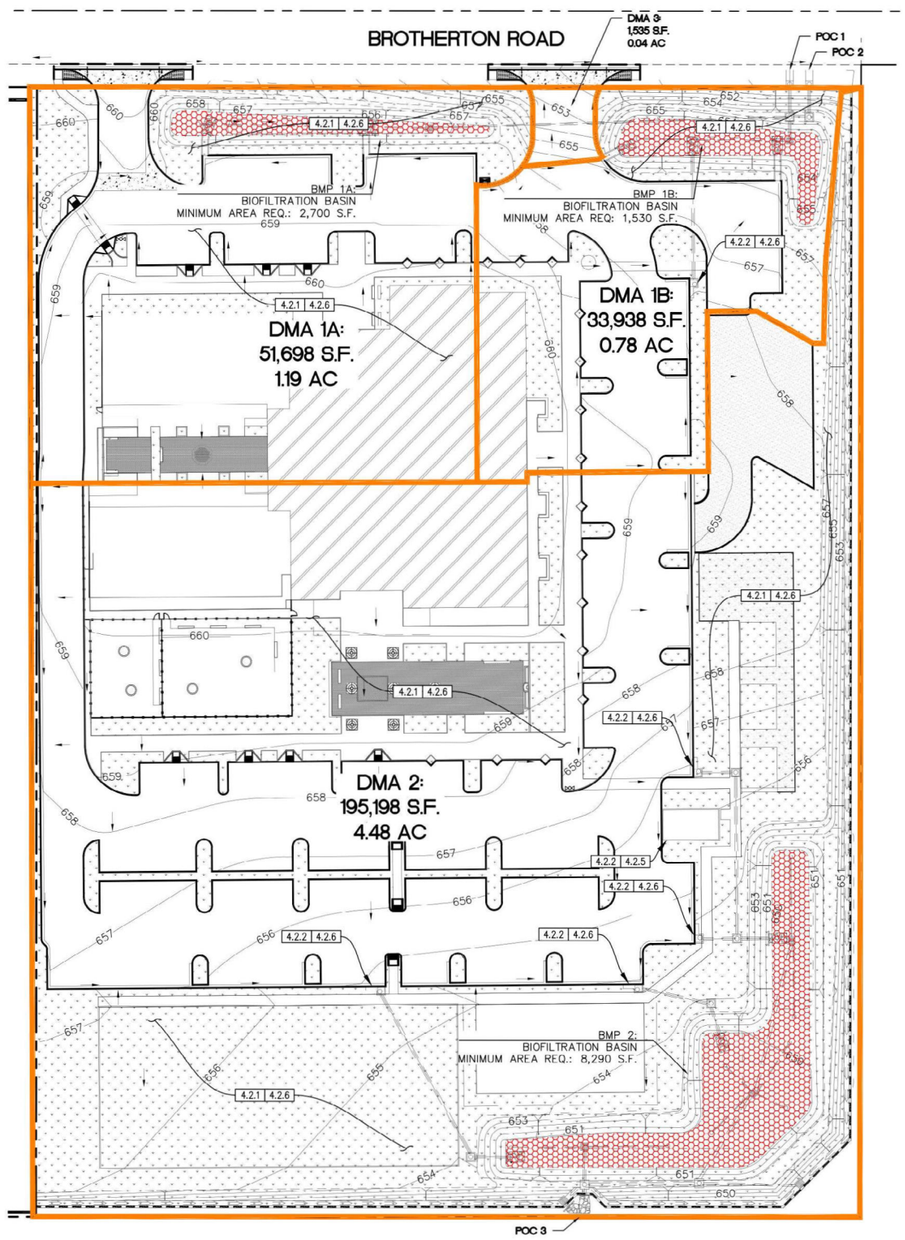
| DMA Name | Rain Gauge | Pre-developed Condition | | Unit Runoff Ratio (cfs/ac) | DMA Area (ac) | Orifice Flow - $\%Q_2$ (cfs) | Orifice Area ($in^2$) |
|---|---|---|---|---|---|---|---|
| | | Soil Type | Slope | | | | |
| 2 IMPERVIOUS | Oceanside | D | Flat | 0.571 | 2.523 | 0.144 | **2.21** |
| 2 PERVIOUS | Oceanside | D | Flat | 0.571 | 1.958 | 0.112 | **1.71** |
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| **3.25** | **0.256** | **3.92** | **2.23** |
|---|---|---|---|
| **Max Orifice Head (feet)** | **Max Tot. Allowable Orifice Flow (cfs)** | **Max Tot. Allowable Orifice Area ($in^2$)** | **Max Orifice Diameter (in)** |

| **0.111** | **0.115** | **1.77** | **1.500** |
|---|---|---|---|
| Average outflow during surface drawdown (cfs) | Max Orifice Outflow (cfs) | Actual Orifice Area ($in^2$) | Selected Orifice Diameter (in) |

| Drawdown (Hrs) | 10.5 |
|---|---|

ATTACHMENT 2B




## LEGEND

DMA LIMIT

PROPOSED BIOFILTRATION BMP

PROPOSED IMPERVIOUS AREA

## NOTES

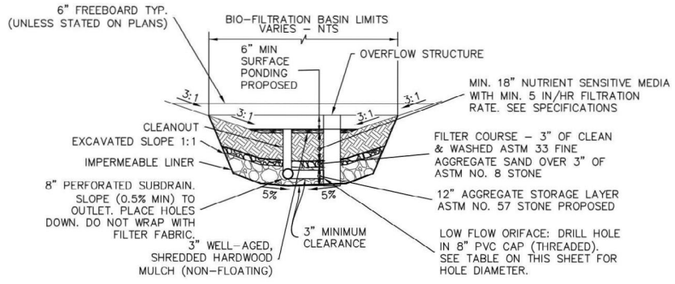
1. ALL DMAS ARE HYDROLOGIC SOIL GROUP D
2. GROUNDWATER US AT A DEPTH IF GREATER THAN 20 FEET BGS
3. CRITICAL COARSE SEDIMENT YIELD AREAS ARE NOT PRESENT WITHIN THE LIMITS OF WORK

EXISTING CONDITIONS
TOTAL SITE AREA: 292,978 S.F.
PERVIOUS AREA: 214,385 S.F. (73.2%)
IMPERVIOUS AREA: 78,593 S.F. (26.8%)

PROPOSED CONDITIONS
TOTAL SITE AREA: 292,978 S.F.
AREA TO BE DISTURBED: 282,369 S.F.
TOTAL PERVIOUS AREA: 113,301 S.F. (39.5%)
TOTAL IMPERVIOUS AREA: 179,677 S.F. (60.5%)
NEW/REPLACED IMPERVIOUS AREA: 169,068 S.F.

## SOURCE CONTROL BMP'S

4.2.1 PREVENTION OF ILLICIT DISCHARGES INTO THE MS4
4.2.2 STORM DRAIN STENCILING OR SIGNAGE
4.2.5 PROTECT TRASH STORAGE AREAS FROM RAINFALL, RUN-ON, RUNOFF, AND WIND DISPERSAL
4.2.6 ON-SITE STORM DRAIN INLETS
LANDSCAPE/OUTDOOR PESTICIDE USE
REFUSE AREAS
PLAZAS, SIDEWALKS, AND PARKING LOTS




NOTE: SEE LANDSCAPE AND IRRIGATION PLANS FOR PLANTING AND SURFACE FEATURES.

## BIOFILTRATION BASIN DETAIL (AT GRADE) (PVT.)

NO SCALE

| BMP TABLE | |
|---|---|
| BMP NAME | ORIFACE DIAMETER (IN) |
| 1A | 1.15 |
| 1B | 0.93 |
| 2 | 2.23 |

N

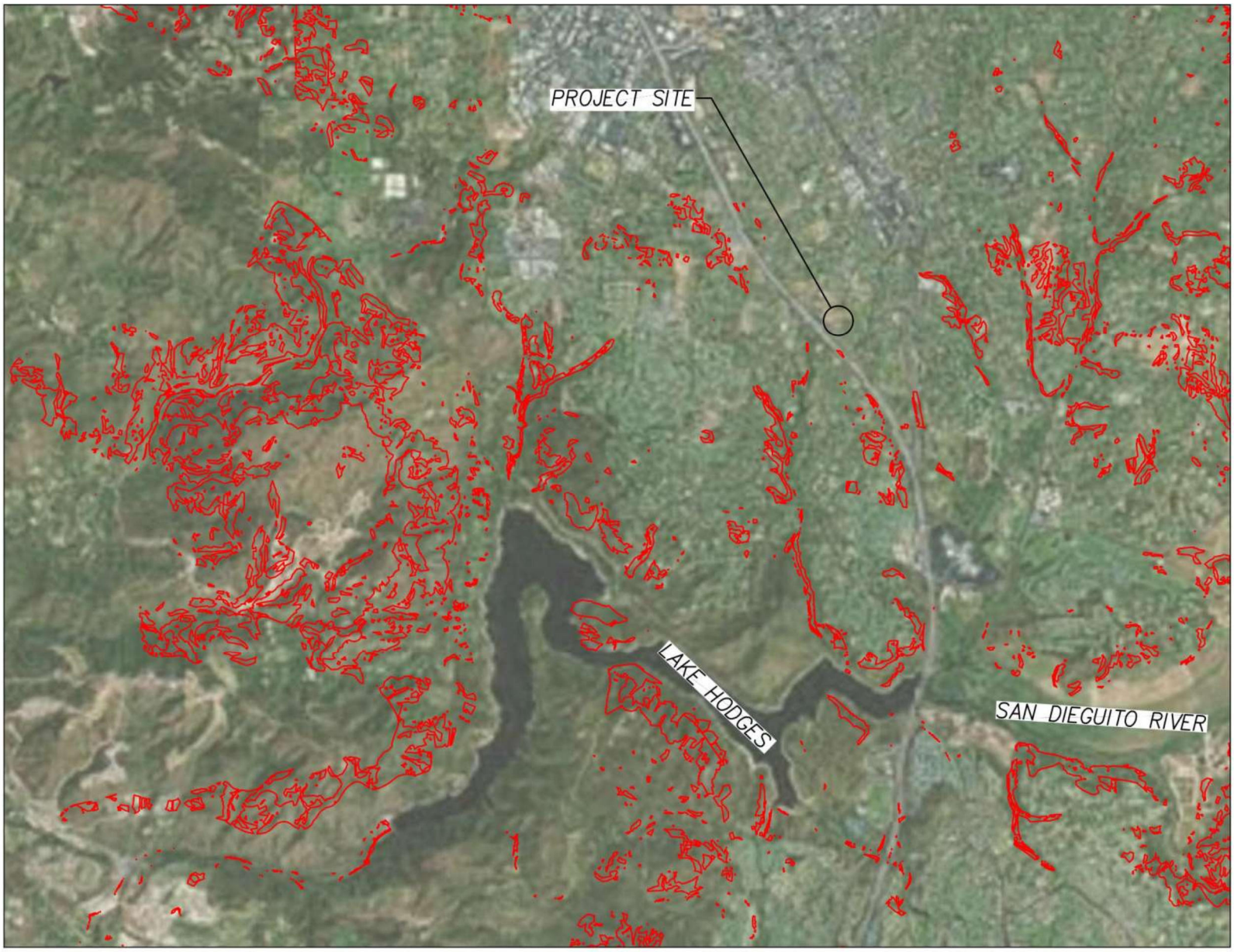
40 20 0 40 80 120

SCALE: 1"=40'

# BROTHERTON ROAD - ESCONDIDO
# DMA EXHIBIT

Nasland
Civil Engineering
Surveying
Land Planning
T (858) 292-7770
4740 Ruffner Street
San Diego, CA 92111
nasland.com

# ATTACHMENT 2C




## POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS

| Downstream Systems Requirements for Preservation of Coarse Sediment Supply | | | Form I-11 |
|---|---|---|---|
| When it has been determined that potential critical coarse sediment yield areas exist within the project site, the next step is to determine whether downstream systems would be sensitive to reduction of coarse sediment yield from the project site. Use this form to document the evaluation of downstream systems requirements for preservation of coarse sediment supply. | | | |
| Project Name: | | | |
| Project Tracking Number / Permit Application Number: | | | |
| 1 | Will the project discharge runoff to a hardened MS4 system (pipe or lined channel) or an un-lined channel? | ☐ Hardened MS4 system | Go to 2 |
| | | ☐ Un-lined channel | Go to 4 |
| 2 | Will the hardened MS4 system convey sediment (e.g., a concrete-lined channel with steep slope and cleansing velocity) or sink sediment (e.g., flat slopes, constrictions, treatment BMPs, or ponds with restricted outlets within the system will trap sediment and not allow conveyance of coarse sediment from the project site to an un-lined system). | ☐ Convey | Go to 3 |
| | | ☐ Sink | Go to 7 |
| 3 | What kind of receiving water will the hardened MS4 system convey the sediment to? | ☐ Un-lined channel | Go to 4 |
| | | ☐ Lake<br>☐ Reservoir<br>☐ Bay | Go to 7 |
| | | ☐ Lagoon<br>☐ Ocean | Go to 6 |
| 4 | Is the un-lined channel impacted by deposition of sediment? This condition must be documented by the local agency. | ☐ Yes | Go to 7 |
| | | ☐ No | Go to 5 |
| 5 | End – Preserve coarse sediment supply to protect un-lined channels from accelerated erosion due to reduction of coarse sediment yield from the project site unless further investigation determines the sediment is not critical to the receiving stream. Sediment that is critical to receiving streams is the sediment that is a significant source of bed material to the receiving stream (bed sediment supply) (see Section 6.2.3 and Appendix H.2 of the manual). | | |
| 6 | End – Provide management measures for preservation of coarse sediment supply (protect beach sand supply). | | |
| 7 | End – Downstream system does not warrant preservation of coarse sediment supply, no measures for protection of critical coarse sediment yield areas onsite are necessary. Use the space below to describe the basis for this finding for the project. | | |

# ATTACHMENT 3

## Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

**Indicate which Items are Included behind this cover sheet:**

| Attachment Sequence | Contents | Checklist |
|---|---|---|
| Attachment 3a | Structural BMP Maintenance Plan (Required) | ☐Included<br><br>See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet. |
| Attachment 3b | Draft Storm Water Control Facilities Maintenance Agreement (SWCFMA) (when applicable) | ▣Included<br>▣Not Applicable |

**Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:**

**Attachment 3a must identify:**

- ☐Specific maintenance indicators and actions for proposed structural BMP(s). This must be based on Section 7.7 and Appendix E of the Storm Water Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☐How to access the structural BMP(s) to inspect and perform maintenance
- ☐Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐Recommended equipment to perform maintenance
- ☐When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

**Attachment 3b:** For all Structural BMPs, Attachment 3b must include a draft maintenance agreement in the City's standard format (PDP applicant to contact City staff to obtain the current maintenance agreement forms or download from City's website).

**EXEMPT FROM FEES** pursuant to
Gov't Code §§ 6103, 27383, and 27388.1
(filing requested/executed by municipality)

RECORDING REQUESTED BY, AND
WHEN RECORDED RETURN TO:

City Engineer
City of Escondido
201 North Broadway
Escondido, CA 92025-2798

*This Space for Recorder's Use Only*

**STORM WATER CONTROL FACILITY MAINTENANCE AGREEMENT**
**APN NO. _____**

This STORM WATER CONTROL FACILITY MAINTENANCE AGREEMENT ("Agreement") is entered into between the City of Escondido, a California municipal corporation ("City") and [Entity Name, Entity Type] ("Owner"), and in accordance with City of Escondido Grading Plan No. [XXXXX] ("Grading Plan"). (The City and Owner may each be referred to herein as a "Party" and collectively as the "Parties.")

WHEREAS, installation and maintenance of Storm Water Control Facilities ("SWCF") is required pursuant to the Escondido Municipal Code, by the California Regional Water Quality Control Board ("RWQCB"), and by the City as a condition of approval of property development; and

WHEREAS, Owner is the owner of certain real property identified as Assessor's Parcel Number (APN) [236-333-53-00]; located at [855 Brotheron Road], Escondido, CA [92025]; and more particularly described in Exhibit A, attached hereto and incorporated herein by this reference ("Property"); and

WHEREAS, Owner has proposed development of the Property that provides benefit to the general public and the City and meets the requirements of RWQCB Order R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100 (National Pollution Discharge Elimination System No. CAS0109266); and

WHEREAS, the current and future subdivision Owner shall use the SWCF as installed per the Grading Plan and the provisions of the Storm Water Quality Management Plan prepared by the Owner and approved by the CITY on [XX-XX-XX] ("Storm Water Plan"); and

WHEREAS, it is the mutual desire of the Parties to establish a method for the maintenance and repair of the SWCF, and that the SWCF be maintained in a safe and usable condition by the Owner; and

WHEREAS, the City shall have the right but not the obligation to enforce full compliance with the terms and conditions of this Agreement; and

WHEREAS, it is the mutual intention of the Parties that this Agreement constitute a covenant running with the land, binding upon each successive person having or acquiring any right, title, or interest in all or any portion of the Property.

NOW, THEREFORE, in consideration of the above premises, the mutual covenants and promises below, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. The Property is benefited by this Agreement, and the Owner is expressly bound hereby for the benefit of the land. In the event any of the herein described parcels of land are subdivided further, the Owner, or its heirs, assigns, and successors in interest of each such newly created parcel, shall be liable under this Agreement for its then pro rata share of expenses and such pro rata shares of expenses shall be computed to reflect such newly created parcels.

2. The cost and expense of maintaining the SWCF shall be the responsibility of, and paid by, the Owner. The SWCF shall be constructed and maintained by the Owner in accordance with the Grading Plan and Storm Water Plan.

3. Repair and maintenance responsibilities for all structural SWCF and required Best Management Practices ("BMPs") are set forth in the Storm Water Plan. Owner shall, as changes occur, provide the City with the name, title, and phone number of the persons or entities responsible for maintenance and reporting activities; funding, schedules, and procedures for inspection and maintenance of the SWCF; implementation of worker training requirements; and any other activities necessary to ensure compliance with BMPs. The Storm Water Plan shall provide for the servicing of all SWCF as needed, and at least once during August or September of each year, and for the retention of inspection and maintenance records for at least three years. Owner shall submit annual certification to the City's Department of Engineering Services between September 1 and October 1 of each year. The certification shall document all maintenance performed and compliance with applicable permits.

4. The City shall have the right to inspect the SWCF and related records as needed to ensure the SWCF is being properly maintained.

5. If any individual Owner fails to pay its share of costs and expenses as required to use, maintain, or repair the SWCF, then the City shall be entitled without further notice to institute legal action for the collection of funds advanced on behalf of the individual Owner that did not pay its share of costs and expenses and shall be entitled to recover in such action, in addition to the funds advanced, interest thereon at the current prime rate of interest, until paid; all costs and disbursements of such action, including such sum or sums as the court may fix; and reasonable attorney's fees.

6. Any liability of the Owner to any worker employed to make repairs or provide maintenance under this Agreement, or to third persons, as well as any liability of the Owner for damage to the property of any such worker, or any third persons, as a result of or arising out of repairs and maintenance under this Agreement, shall be borne solely by the Owner (and if jointly owned,

then in the same percentage as each individual Owner bears the costs and expenses of such repairs and maintenance). In the case of more than one Owner, each individual Owner shall be responsible for and maintain its own insurance. By this Agreement, the Parties do not intend to provide for the sharing of liability with respect to personal injury or property damage other than that attributable to the repairs and maintenance undertaken under this Agreement. Each Owner agrees to indemnify any other Owner from any and all liability for injury to an individual Owner or damage to its property when such injury or damage results from, arises out of, or is attributable to any maintenance or repairs undertaken pursuant to this Agreement.

7. Indemnification, Duty to Defend, Hold Harmless.

7.1 To the fullest extent permitted by law, Owner shall jointly and severally indemnify, defend with legal counsel reasonably satisfactory to the City, and hold harmless the City and the City's officers, officials, directors, employees, agents, volunteers, and Councilmembers (collectively, "Indemnitees") from and against any and all claims, demands, actions, causes of action, proceedings (including but not limited to legal and administrative proceedings of any kind), suits, fines, penalties, sanctions, judgments, levies, liens, orders (including without limitation any RWQCB Orders), assessments, costs, expenses, liabilities, losses, damages, or injuries, in law or equity, including without limitation the payment of all consequential damages and attorney's fees and other related litigation costs and expenses, of every nature caused by, arising out of, or in connection with Owner's obligations under this Agreement or Owner's obligations for implementation of storm water management in accordance with RWQCB Order R9-2013-0001 and subsequent amendments (collectively, "Claims"), including any reasonable attorney's fees, costs, and expenses incurred by the Indemnitees in responding to or defending any Claims, except where caused by the active negligence, sole negligence, or willful misconduct of the Indemnitees.

7.2 Owner's duty to defend the Indemnitees is separate, independent, and free-standing from Owner's duty to indemnify and hold harmless the Indemnitees. Owner's defense obligation shall arise immediately upon receipt by the City or Owner of any written notice of any alleged Claims, or a written Notice of Violation or equivalent notice of intent from the RWQCB or other enforcement agency to levy any fines, penalties, or sanctions against Indemnitees, and shall continue until the entry of any final and non-appealable judgment or order, including without limitation any final and non-appealable RWQCB Order or other agency enforcement order.

7.3 The indemnity protections provided by this Agreement are not intended to exceed the indemnity available under applicable law. If the indemnity protections are found by a court to be unlawful in any way, the protection shall be curtailed or adjusted, but only to the minimum extent required to conform to applicable law.

7.4 All terms and provisions within this Section 7 shall survive termination of this Agreement.

8. If, in the City's sole judgment, the SWCF is not being maintained to the standards required by this Agreement, the City may thereupon provide written notice to the Owner to initiate repairs or construction within 90 days. Upon the Owner's failure to demonstrate good faith to make repairs or construction within 90 days, the City may make all necessary repairs to the SWCF or construct the SWCF in a manner to meet the standards set forth in this Agreement and to then assess

costs to the Owner.

9. If the City elects to make necessary maintenance or repairs in accordance with this Agreement, such maintenance and repairs shall be accepted "as is" by the Owner without any warranty of workmanship and be guaranteed and indemnified by Owner in accordance with this Agreement.

10. The obligations and benefits provided for in this Agreement shall run with the land obligated and benefited, respectively, and shall be binding on all persons having or acquiring any right, title, or interest in the Property or any part thereof. As such, it is the intent of the Parties that this Agreement and the promises, covenants, rights, and obligations set forth herein (i) shall be and are covenants running with the Property, encumbering the Property for the term of this Agreement, and binding upon Owner's successors in title and all subsequent owners and operators of the Property; (ii) are not merely personal covenants of the Owner; and (iii) shall bind Owner and its respective heirs, executors, administrators, successors, and assigns.

11. Amendments. This Agreement may not be amended, modified, waived, or supplemented except by an agreement in writing signed by all of the Parties, and then only in the specific instance and for the specific purpose given.

12. Governing Law. This Agreement shall be governed by the laws of the State of California. In the event any provision of this Agreement is held to be unenforceable or invalid by any court of competent jurisdiction, the validity and enforceability of the remaining provisions shall not be affected thereby.

13. Entire Agreement. This Agreement, together with its attachments or other documents, if any, described or incorporated herein, contains the entire agreement and understanding concerning the subject of this Agreement and supersedes and replaces all prior negotiations, understandings, or proposed agreements, written or oral, except as otherwise provided herein. Each of the Parties hereto acknowledges that no other Party, nor the agents nor the attorneys for any Party, has made any promise, representation, or warranty whatsoever, express or implied, not contained herein, to induce the execution of this Agreement and acknowledges that this Agreement has not been executed in reliance upon any promise, representation, or warranty not contained herein.

14. Severability. This Agreement shall be performed and shall be enforceable to the full extent allowed by applicable law, and the illegality, invalidity, waiver, or unenforceability of any provision of this Agreement shall not affect the legality, validity, applicability, or enforceability of the remaining provisions of this Agreement.

15. Capacity. Each individual signing this Agreement represents and warrants that he or she has been authorized to do so by proper action of the Party on whose behalf he or she has signed.

16 Advice of Counsel. The Parties hereby acknowledge that they have executed this Agreement after having the opportunity to consult with, and receive the advice of, their own counsel.

17. Attorney's Fees. In any action to enforce the terms of this Agreement, the Parties agree that the prevailing party shall be entitled to its actual attorney's fees and all costs, fees, and expenses, including the fees of expert witnesses and consultants, whether or not such costs, fees, and

expenses are recoverable or allowed as costs under section 1033.5 of the California Code of Civil Procedure. Such fees and costs shall be proven and awarded by the court after the conclusion of the trial on all other issues by way of a cost bill and motion. In addition to the foregoing award of attorney's fees and costs, the prevailing party shall be entitled to its attorney's fees and costs incurred in any post-judgment proceeding to collect or enforce any judgment. This provision is separate and shall survive the merger of this provision into any judgment on this Agreement.

18 Counterparts. This Agreement may be executed on separate counterparts that, upon completion, may be assembled into and shall be construed as one document.

19 Recitals. The Recitals set forth in this Agreement are included herein by reference as part of this Agreement and the Parties agree that said Recitals are essential facts to this Agreement.

20 Effective Date. Unless a different date is provided in this Agreement, the effective date of this Agreement shall be the latest date of execution set forth by the names of the signators below.

IN WITNESS WHEREOF, this Agreement is executed by the Parties or their duly authorized representatives as of the Effective Date:

CITY OF ESCONDIDO

Date: _____

_____
Julie Procopio, Director of Engineering Services

[OWNER]

Date: _____

_____
Signature

_____
Name/Title (please print)

(ALL ABOVE SIGNATURES MUST BE NOTARIZED)

Approved as to Form:

OFFICE OF THE CITY ATTORNEY
Michael R. McGuinness, City Attorney

BY: _____

# **EXHIBIT A**

Legal Description of Property

# ATTACHMENT 4

## City of Escondido PDP Structural BMP Verification for Permitted Land Development Projects

This is the cover sheet for Attachment 4.

| City of Escondido Storm Water Structural BMP Verification Form Page 1 of 3 | |
|---|---|
| **Project Summary Information** | |
| Project Name | Escondido Church |
| Permit Number (e.g., grading/improvement plan number) | |
| Project Address | 855 Brotherton Road, Escondido, CA 92025 |
| Assessor's Parcel Number(s) (APN(s)) | 236-333-53-00 |
| Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier) | San Dieguito 905 |
| Maintenance Notification / Agreement No. | |
| **Responsible Party for Construction Phase** | |
| Developer's Name | |
| Address | |
| Email Address | |
| Phone Number | |
| Engineer of Work | |
| Engineer's Phone Number | |
| **Responsible Party for Ongoing Maintenance** | |
| Owner's Name(s)* | |
| Address | |
| Email Address | |
| Phone Number | |
| *Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout. | |

| City of Escondido Storm Water Structural BMP Verification Form Page 2 of 3 | | | | |
|---|---|---|---|---|
| **Stormwater Structural Pollutant Control & Hydromodification Control BMPs* (List all from SWQMP)** | | | | |
| **Description/Type of Structural BMP** | **Plan Sheet #** | **Structural BMP ID#** | **Maintenance Agreement Recorded Doc #** | **Revisions** |
| Biofiltration Basin | | BMP 1A | | |
| Biofiltration Basin | | BMP 1B | | |
| Biofiltration Basin | | BMP 2 | | |
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| *All Priority Development Projects (PDPs) require a Structural BMP | | | | |

Note: If this is a partial verification of Structural BMPs, provide a list and map denoting Structural BMPs that have already been submitted, those for this submission, and those anticipated in future submissions.

**City of Escondido Storm Structural BMP Verification Form Page 3 of 3**

**Checklist for Engineer of Work (EOW) to submit to Field Engineering:**

- ☐ Copy of the final accepted SWQMP and any accepted addendum.
- ☐ Copy of the most current plan showing the Storm Water Structural BMP Table, plans/cross-section sheets of the Structural BMPs and the location of each verified as-built Structural BMP.
- ☐ Photograph of each Structural BMP.
- ☐ Photograph(s) of each Structural BMP during the construction process to illustrate proper construction.
- ☐ Copy of the approved Structural BMP maintenance agreement and associated security

By signing below, I certify that the Structural BMP(s) for this project have been constructed and all BMPs are in substantial conformance with the approved plans and applicable regulations. I understand the City reserves the right to inspect the above BMPs to verify compliance with the approved plans and Storm Water Ordinance. Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Please sign your name and seal.

Professional Engineer's Printed Name:

_____

Professional Engineer's Signed Name:

_____

Date: _____

[SEAL]

# ATTACHMENT 5

## Copy of Plan Sheets Showing Permanent Storm Water BMPs, Source Control, and Site Design BMPs

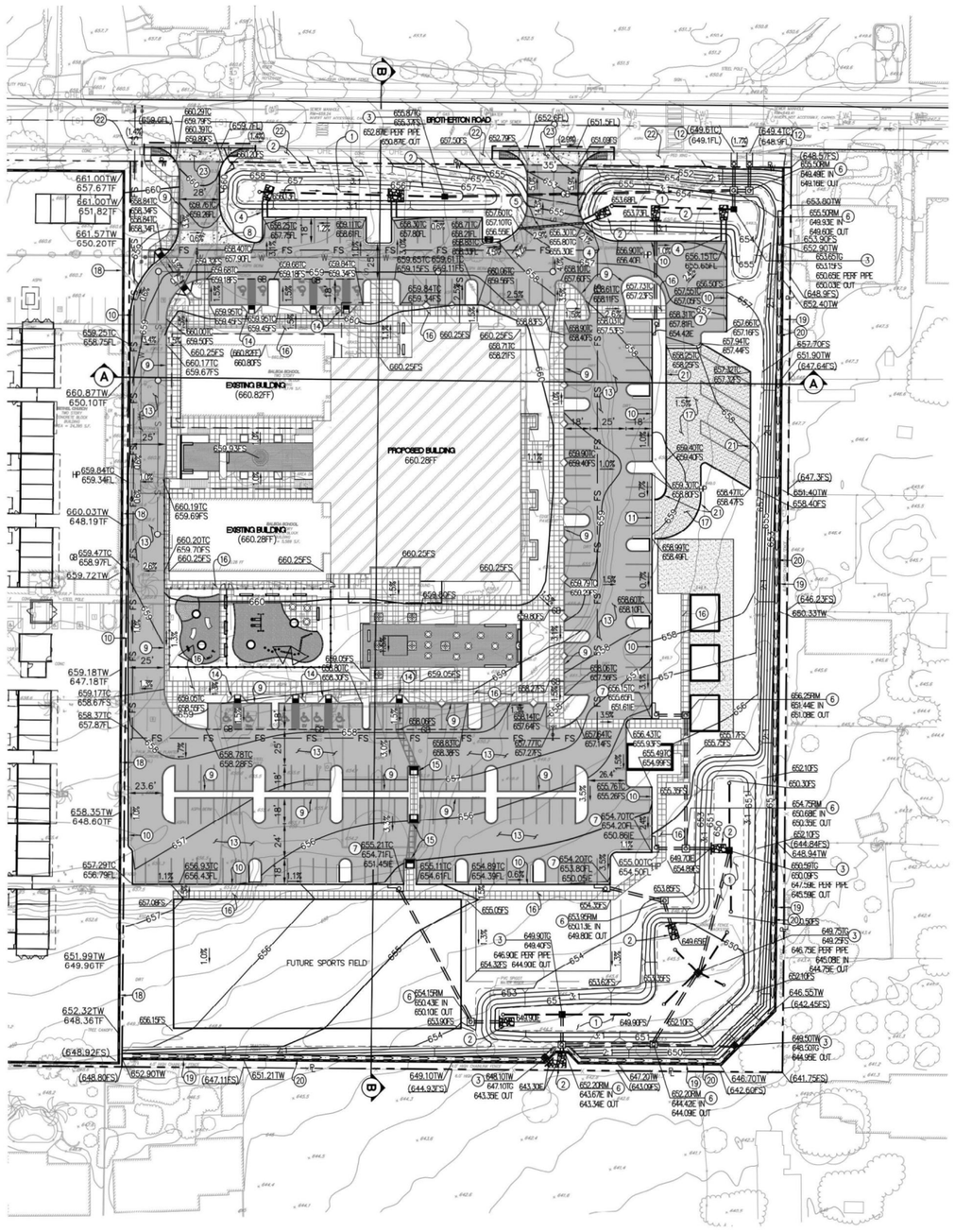
This is the cover sheet for Attachment 5.

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

**The plans must identify:**

- ☐Structural BMP(s) with ID numbers matching Step 5 Summary of PDP Structural BMPs
- ☐The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☐Details and specifications for construction of structural BMP(s)
- ☐Signage indicating the location and boundary of structural BMP(s) as required by City 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)
- ☐Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐Recommended equipment to perform maintenance
- ☐When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☐Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☐All BMPs must be fully dimensioned on the plans
- ☐When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number must be provided. Photocopies of general brochures are not acceptable.
- ☐Include all source control and site design measures described in Steps 3 and 4 of the SWQMP. Can be included as a separate exhibit as necessary.

***Note: Plan sheets included in this attachment can be full size or half size.**

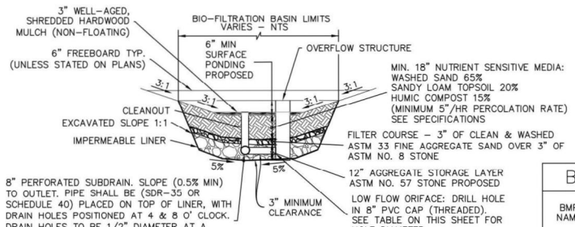



## CONSTRUCTION NOTES

1. PROPOSED BIOFILTRATION BMP.PER DETAIL THIS SHEET.
2. PROPOSED RIP RAP ENERGY DISSIPATOR RSD SDD-104.
3. PROPOSED TYPE I CATCH BASIN RSD D-29.
4. PROPOSED CONCRETE FLUME PER DETAIL THIS SHEET.
5. PROPOSED TRENCH DRAIN PER DETAIL THIS SHEET.
6. PROPOSED TYPE A STORM DRAIN CLEANOUT RSD D-09.
7. PROPOSED TYPE B CURB INLET RSD SDD-116.
8. PROPOSED CROSS GUTTER RSD SDG-157.
9. PROPOSED 6" CONCRETE CURB RSD SDG-150.
10. PROPOSED 6" CONCRETE CURB AND GUTTER RSD SDG-151.
11. PROPOSED CONCRETE ROLLED CURB RSD G-4A.
12. PROPOSED CURB TYPE A OUTLET RSD D-25A.
13. PROPOSED ASPHALT CONCRETE (AC) PAVEMENT.
14. PROPOSED PED RAMP TYPE A RSD SDG-132.
15. PROPOSED PED RAMP TYPE D (MODIFIED WITH CURB ON BOTH SIDES) RSD SDG-137.
16. PROPOSED CONCRETE SIDEWALK, SEE LANDSCAPE FOR COLOR AND FINISH.
17. PROPOSED GRAVEL PAVING SECTION.
18. PROPOSED RETAINING WALL PER SEPARATE PERMIT, REFER TO PL23-0273.
19. PROPOSED MASONRY RETAINING WALL TYPE 4 RSD C-04.
20. PROPOSED DRAINAGE DITCH TYPE B RSD SDD-106.
21. PROPOSED REDWOOD HEADER.
22. EXISTING SIDEWALK TO REMAIN IN PLACE.
23. PROPOSED CONCRETE DRIVEWAY APRON PER CITY OF ESCONDIDO STD DWG G-5-E.

## LEGEND

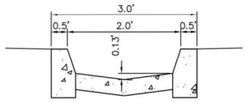
| ITEM | SYMBOL |
|---|---|
| **EXISTING:** | |
| EXISTING RIGHT-OF-WAY | |
| EXISTING CONTOUR | 340 |
| EXISTING WATER SERVICE | W |
| EXISTING WATER MAIN | W |
| EXISTING FIRE HYDRANT | |
| EXISTING SEWER MAIN | S |
| EXISTING STORM DRAIN | |
| EXISTING GAS | G |
| EXISTING SPOT ELEVATION | × 341.8 |
| **PROPOSED WORK:** | |
| PROPOSED CONTOUR | 340 |
| PROPOSED GRADE BREAK | GB |
| PROPOSED RIP RAP | |
| PROPOSED STORM DRAIN (PVC/RCP) | |
| PROPOSED CATCH BASIN (TYPE I) | |
| PROPOSED STORM DRAIN CLEANOUT (MANHOLE) | |
| PROPOSED STORM DRAIN CLEANOUT | |
| PROPOSED 6" CURB CURB | |
| PROPOSED 6" CURB CURB AND GUTTER | |
| PROPOSED SIDEWALK | |
| SURFACE FLOW | |
| PROPOSED BIO-RETENSION BASIN | |
| PROPOSED PED RAMP TYPE A | |
| PROPOSED PED RAMP TYPE D | |
| PROPOSED RETAINING WALL | |
| PROPOSED GRAVEL PAVING SECTION | |
| PROPOSED ASPHALT CONCRETE (AC) PAVING | |



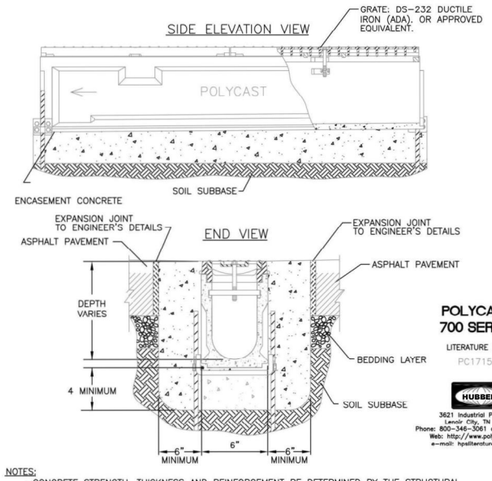

NOTE: SEE LANDSCAPE AND IRRIGATION PLANS FOR PLANTING AND SURFACE FEATURES.

**BIOFILTRATION BASIN DETAIL (AT GRADE) (PVT.)**
NO SCALE

| BMP TABLE | |
|---|---|
| BMP NAME | ORIFACE DIAMETER (IN) |
| 1A | 1.15 |
| 1B | 0.93 |
| 2 | 2.23 |




**DETAIL 24' CONCRETE FLUME**
NO SCALE




**POLYCAST 700 SERIES**
LITERATURE NO. PC1715

HUBBELL
3621 Industrial Park Drive
Lenoir City, TN 37771
Phone: 800-346-3061 or 865-986-9726
Web: http://www.polycastdrain.com
e-mail: hpolliterature@hubbell.com

NOTES:
- CONCRETE STRENGTH, THICKNESS AND REINFORCEMENT BE DETERMINED BY THE STRUCTURAL ENGINEER.
- REFFER TO POLYCAST® INSTALLATION GUIDE FOR COMPLETE DETAILS.
- EXPANSION JOINTS SHOULD BE USED TO PROTECT THE CHANNEL AND CONCRETE ENCASEMENT.

**TRENCH DRAIN INSTALLATION DETAIL**
NO SCALE

N

40 0 40 80 120 160

SCALE 1" = 40'


Civil Engineering
Surveying
Land Planning

**Nasland**

T (858) 292-7770
4740 Ruffner Street
San Diego, CA 92111
nasland.com


NE: 122-113.1


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| REV | DATE | DESCRIPTION |
|---|---|---|
| 0 | Preliminary | ORIGINAL ISSUE |
| 1 | ### | ### |
| 2 | ### | ### |
| 3 | ### | ### |
| 4 | ### | ### |
| 5 | | |

PROJECT:
Bethel baptist Church
New Building Addition
855 Brotherton Rd.
Escondido, CA 92025


BDW ARCHITECTS | 2327 GRANT AVE. - OGDEN, UT 84401 | PH: 800-552-7137 | www.BDWERKMOS.com


SEAL:

SHEET TITLE:
PRELIMINARY GRADING PLAN
ORIGINAL ISSUE: Preliminary

SHEET NUMBER:
**C2.0**

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