

Appendix D

Preliminary Water Quality Management Plan



Ventura Engineering Inland INC
VEI

**PRELIMINARY WATER QUALITY MANAGEMENT PLAN
SANTA MARGARITA REGION OF RIVERSIDE COUNTY**

**CARANCHO CANNABIS CULTIVATION FACILITY
CUP190038**

22750 CARANCHO ROAD
TEMECULA, CALIFORNIA 92590
APN: 933-020-005-06

PREPARED FOR:

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Original: February 4, 2021

I hereby declare that I am the engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions code, and that the design is consistent with current standards.



2/4/21

WILFREDO VENTURA
R.C.E. NO. 66532
EXPIRES 6/30/22

DATE



County Project Specific Water Quality Management Plan

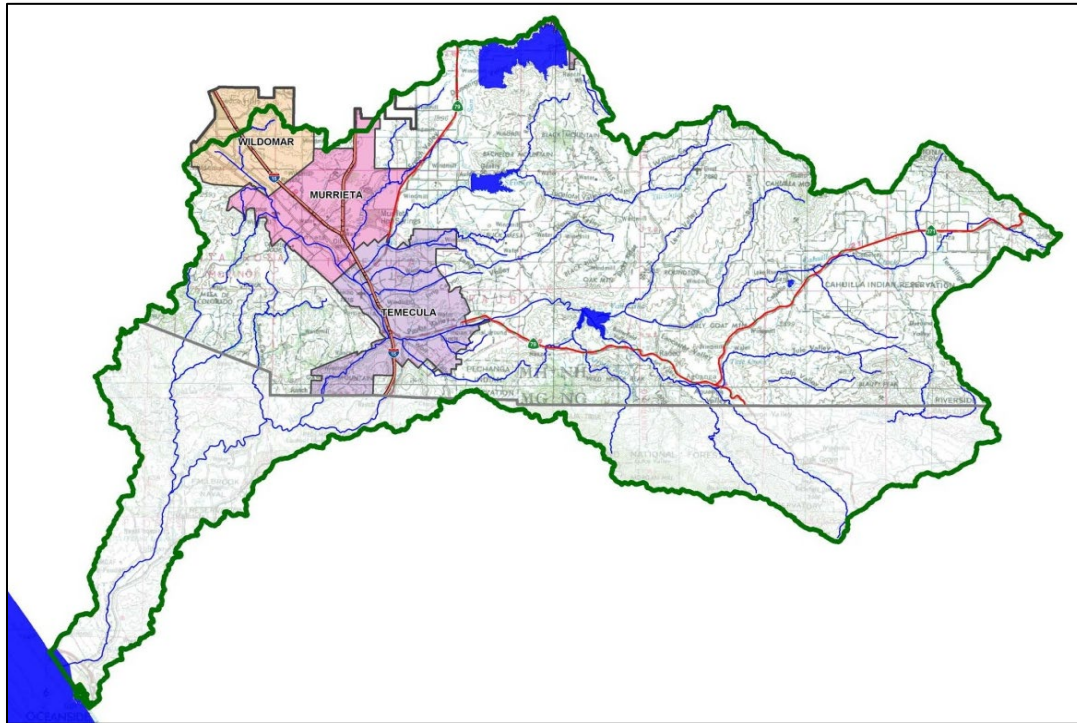
*A Template for preparing Project Specific WQMPs for Priority Development Projects only for use in the **unincorporated portions of Riverside County** located within the **Santa Margarita Region**.*

Project Title: Carancho Cannabis Cultivation Facility

Development No: CUP190038

Design Review/Case No: _____

BMP_i (Latitude, Longitude): Latitude 33.498256 N, Longitude -117.252053 W



- Preliminary
- Final

Original Date Prepared: February 4, 2021

Revision Date(s): _____

*Based on 2018 WQMP, prepared for Compliance with Regional Board Order No. **R9-2013-0001** as amended by Order No. **R9-2015-0001** and Order No. **R9-2015-0100***

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The County updated this template on July 24, 2018

OWNER'S CERTIFICATION

This Project-Specific WQMP has been prepared for Hector Blanchet for the Carancho Cannabis Cultivation Facility project.

This WQMP is intended to comply with the requirements of Riverside County for County Ordinance No. 754 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater Best Management Practices until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under Riverside County Water Quality Ordinance (No. 754).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature

Date

Owner's Printed Name

Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control Best Management Practices in this plan meet the requirements of Regional Water Quality Control Board Order No. **R9-2013-0001** as amended by Order Nos. **R9-2015-0001** and **R9-2015-0100**."

Preparer's Signature

Date

Preparer's Printed Name

Preparer's Title/Position

Preparer's Licensure:

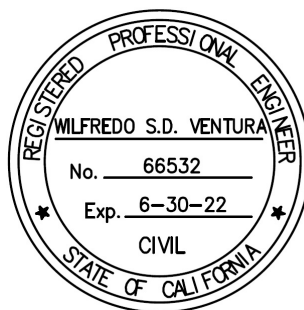


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Section A: Project and Site Information

Use the table below to compile and summarize basic site information that will be important for completing subsequent steps. Subsections A.1 through A.4 provide additional detail on documentation of additional project and site information. The Regional MS4 Permit has effectively removed the ability for a project to be grandfathered from WQMP requirements. Even if a project were able to meet all the requirements stated in Section 1.2 of the WQMP, the 2014 WQMP requirements would apply.

PROJECT INFORMATION	
Type of PDP:	Commercial, Agriculture
Type of Project:	Cannibas Cultivation Facility
Planning Case Number:	CUP190038
Rough Grade Permit No.:	_____
Development Name:	Carancho Cannibas Cultivation Facility
PROJECT LOCATION	
Latitude & Longitude (DMS):	33.498256 W, -117.252053 W
Project Watershed and Sub-Watershed:	902.22 Santa Margarita River HU, De Luz HA, Gavilan HSA
24-Hour 85 th Percentile Storm Depth (inches):	0.82
Is project subject to Hydromodification requirements?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N (Select based on Section A.3)
APN(s):	933-020-005-06
Map Book and Page No.:	See Grading Plan
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Cannabis Cultivation
Proposed or Potential SIC Code(s)	111419
Existing Impervious Area of Project Footprint (SF)	0
Total area of <u>proposed</u> Impervious Surfaces within the Project Limits (SF)/or Replacement	100,530 SF
Total Project Area (ac)	8.497 acres
Does the project consist of offsite road improvements?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Does the project propose to construct unpaved roads?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Is the project part of a larger common plan of development (phased project)?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Has preparation of Project-Specific WQMP included coordination with other site plans?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
EXISTING SITE CHARACTERISTICS	
Is the project located within any Multi-Species Habitat Conservation Plan area (MSHCP Criteria Cell?)	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Is a Geotechnical Report attached?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
If no Geotech. Report, list the Natural Resources Conservation Service (NRCS) soils type(s) present on the site (A, B, C and/or D)	D
<u>Provide a brief description of the project:</u>	
The project site proposes a new cannabis cultivation facility, associated improvements, landscaping, paved driveways, and BMPs on a currently used agricultural property. In addition the project meets the criteria in Table 2-5 in the SMR Guidance Document and is underlaid by 'D' Soils; therefore the in-situ soil testing is not required and the LID infiltration BMPs cannot be used, but incidental infiltration may occur in the proposed biofiltration BMP.	

Paver and dirt roads are considered pervious for determining WQMP applicability.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the Project vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Vicinity and location maps
- Parcel Boundary and Project Footprint
- Existing and Proposed Topography
- Drainage Management Areas (DMAs)
- Proposed Structural Best Management Practices (BMPs)
- Drainage Paths
- Drainage infrastructure, inlets, overflows
- Source Control BMPs
- Site Design BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Pervious Surfaces (i.e. Landscaping)
- Standard Labeling
- Cross Section and Outlet details

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Copermittee plan reviewer must be able to easily analyze your Project utilizing this template and its associated site plans and maps. Complete the checklists in Appendix 1 to verify that all exhibits and components are included.

A.2 Identify Receiving Waters

Using Table A-1 below, list in order of upstream to downstream, the Receiving Waters that the Project site is tributary to. Continue to fill each row with the Receiving Water’s 303(d) listed impairments (if any), designated Beneficial Uses, and proximity, if any, to a RARE Beneficial Use. Include a map of the Receiving Waters in Appendix 1. This map should identify the path of the stormwater discharged from the site all the way to the outlet of the Santa Margarita River to the Pacific Ocean. Use the most recent 303(d) list available from the State Water Resources Control Board Website.

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/

Table A-1 Identification of Receiving Waters

Receiving Waters	USEPA Approved 303(d) List Impairments **	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Local Channels	Not Listed	Not Listed	N/A
Santa Margarita River- Upper portion (902.22 - 902.21)	Indicator Bacteria (Fecal Indicator Bacteria); Iron, Manganese (Metals/Metalloids); Nitrogen, Phosphorus (Nutrients); Toxicity (Toxicity)	MUN, AGR, IND, REC1, REC2, WARM, COLD, WILD, RARE	+/- 15 MILES
Santa Margarita River- Lower portion (902.11 - 902.12- 902.13)	Chlorpyrifos (Pesticides); Nitrogen, Phosphorus (Nutrients); Benthic Community Effects (Misc); Toxicity (Toxicity); Indicator Bacteria (Fecal Indicator Bacteria)	MUN, AGR, IND, PROC, REC1, REC2, WARM, COLD, WILD, RARE	
Santa Margarita Lagoon [902.11]	Enterococcus, Fecal Colliform, Phosphorus, Total Nitrogen as N Estuary: Eutrophic	REC1, REC2, EST, WILD, RARE, MAR, MIGR, SPWN	+/- 21 MILES
Pacific Ocean Shoreline	Not Listed	IND, NAV, REC1, REC2 COMM, BIOL, WILD, RARE, MAR, AQUA, MIGR, SPWN, SHELL	+/- 29 MILES

** The 2014_2016_303d_SWRCB_Approved_List_with_sources_final list from the State’s website was used to determine these values.

A.3 Drainage System Susceptibility to Hydromodification

Using Table A-2 below, list in order of the point of discharge at the project site down to the Santa Margarita River¹, each drainage system or receiving water that the project site is tributary to. Continue to fill each row with the material of the drainage system, and any exemption (if applicable). Based on the results, summarize the applicable hydromodification performance standards that will be documented in Section E. Exempted categories of receiving waters include:

- Existing storm drains that discharge directly to water storage reservoirs, lakes, or enclosed embayments, or
- 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.
- Other water bodies identified in an approved WMAA (See Exhibit G to the WQMP)

Include a map exhibiting each drainage system and the associated susceptibility in Appendix 1.

Table A-2 Identification of Susceptibility to Hydromodification

Drainage System	Drainage System Material	Hydromodification Exemption	Hydromodification Exempt
Local Channels	Natural	None	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Santa Margarita River	Natural	None	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Summary of Performance Standards			
<input type="checkbox"/> Hydromodification Exempt – Select if “Y” is selected in the Hydromodification Exempt column above, project is exempt from hydromodification requirements.			
<input checked="" type="checkbox"/> Not Exempt -Select if “N” is selected in any row of the Hydromodification Exempt column above. Project is subject to hydrologic control requirements and may be subject to sediment supply requirements.			

¹ Refer to Exhibit G of the WQMP for a map of exempt and potentially exempt areas. These maps are from the Draft SMR WMAA as of January 5, 2018 and will be replaced upon acceptance of the SMR WMAA.

A.4 Additional Permits/Approvals required for the Project:

Table A-3 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Statewide Construction General Permit Coverage - State GCP WDID# (_____)	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
Statewide Industrial General Permit Coverage	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Other (please list in the space below as required) - County of Riverside Grading Permit - County of Riverside Building Permit	<input checked="" type="checkbox"/> Y <input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N <input checked="" type="checkbox"/> N

If yes is answered to any of the questions above, the Copermitttee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

WDID# Note: This project will require a Construction WDID# that will be obtained during final engineering and prior to the issuance of the grading permit.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for LID Bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your Low Impact Development (LID) design and explain your design decisions to others.

Apply the following LID Principles to the layout of the PDP to the extent they are applicable and feasible. Putting thought upfront about how best to organize the various elements of a site can help to significantly reduce the PDP's potential impact on the environment and reduce the number and size of Structural LID BMPs that must be implemented. Integrate opportunities to accommodate the following LID Principles within the preliminary PDP site layout to maximize implementation of LID Principles.

Site Optimization

Complete checklist below to determine applicable Site Design BMPs for your site.

Project- Specific WQMP Site Design BMP Checklist	
<p>The following questions below are based upon Section 3.2 of the SMR WQMP will help you determine how to best optimize your site and subsequently identify opportunities and/or constraints, and document compliance.</p>	
SITE DESIGN REQUIREMENTS	
<p>Answer the following questions below by indicating “Yes,” “No,” or “N/A” (Not Applicable). Justify all “No” and “N/A” answers by inserting a narrative at the end of the section. The narrative should include identification and justification of any constraints that would prevent the use of those categories of LID BMPs. Upon identifying Site Design BMP opportunities, include these on your WQMP Site plan in Appendix 1.</p>	
<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</p>	<p>Did you identify and preserve existing drainage patterns?</p> <p>Integrating existing drainage patterns into the site plan helps to maintain the time of concentration and infiltration rates of runoff, decreasing peak flows, and may also help preserve the contribution of Critical Coarse Sediment (i.e., Bed Sediment Supply) from the PDP to the Receiving Water. Preserve existing drainage patterns by:</p> <ul style="list-style-type: none"> • Minimizing unnecessary site grading that would eliminate small depressions, where appropriate add additional “micro” storage throughout the site landscaping. • Where possible conform the PDP site layout along natural landforms, avoid excessive grading and disturbance of vegetation and soils, preserve or replicate the sites natural drainage features and patterns. • Set back PDP improvements from creeks, wetlands, riparian habitats and any other natural water bodies. • Use existing and proposed site drainage patterns as a natural design element, rather than using expensive impervious conveyance systems. Use depressed landscaped areas, vegetated buffers, and bioretention areas as amenities and focal points within the site and landscape design.
<p>Discuss how this was included or provide a discussion/justification for “No” or “N/A” answer.</p> <p>Existing drainage pattern has been observed as much as feasible on the steep site.</p>	
<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A</p>	<p>Did you identify and protect existing vegetation?</p> <p>Identify any areas containing dense native vegetation or well-established trees, and try to avoid disturbing these areas. Soils with thick, undisturbed vegetation have a much higher capacity to store and infiltrate runoff than do disturbed soils. Reestablishment of a mature vegetative community may take decades. Sensitive areas, such as streams and floodplains should also be avoided.</p> <ul style="list-style-type: none"> • Define the development envelope and protected areas, identifying areas that are most suitable for development and areas that should be left undisturbed. • Establish setbacks and buffer zones surrounding sensitive areas. • Preserve significant trees and other natural vegetation where possible.
<p>Discuss how this was included or provide a discussion/justification for “No” or “N/A” answer.</p> <p>Areas not disturbed will be left natural.</p>	

Project- Specific WQMP Site Design BMP Checklist

Did you identify and preserve natural infiltration capacity?

A key component of LID is taking advantage of a site's natural infiltration and storage capacity. A site survey and geotechnical investigation can help define areas with high potential for infiltration and surface storage.

Yes No N/A

- Identify opportunities to locate LID Principles and Structural BMPs in highly pervious areas. Doing so will maximize infiltration and limit the amount of runoff generated.
- Concentrate development on portions of the site with less permeable soils, and preserve areas that can promote infiltration.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.

Site is classified as Type 'D' Soils; therefore, no infiltration is needed nor expected, and therefore, cannot be preserved.

Did you minimize impervious area?

Look for opportunities to limit impervious cover through identification of the smallest possible land area that can be practically impacted or disturbed during site development.

Yes No N/A

- Limit overall coverage of paving and roofs. This can be accomplished by designing compact, taller structures, narrower and shorter streets and sidewalks, clustering buildings and sharing driveways, smaller parking lots (fewer stalls, smaller stalls, and more efficient lanes), and indoor or underground parking.
- Inventory planned impervious areas on your preliminary site plan. Identify where permeable pavements, or other permeable materials, such as crushed aggregate, turf block, permeable modular blocks, pervious concrete or pervious asphalt could be substituted for impervious concrete or asphalt paving. This will help reduce the amount of Runoff that may need to be addressed through Structural BMPs.
- Examine site layout and circulation patterns and identify areas where landscaping can be substituted for pavement, such as for overflow parking.
- Consider green roofs. Green roofs are roofing systems that provide a layer of soil/vegetative cover over a waterproofing membrane. A green roof mimics pre-development conditions by filtering, absorbing, and evapotranspiring precipitation to help manage the effects of an otherwise impervious rooftop.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.

DG surfaces are being proposed instead of concrete paved surfaces were feasible and all impervious surfaces are being discharged to adjacent permeable surfaces or proposed biofiltration facilities.

Project- Specific WQMP Site Design BMP Checklist	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<p>Did you identify and disperse runoff to adjacent pervious areas or small collection areas? Look for opportunities to direct runoff from impervious areas to adjacent landscaping, other pervious areas, or small collection areas where such runoff may be retained. This is sometimes referred to as reducing Directly Connected Impervious Areas.</p> <ul style="list-style-type: none"> • Direct roof runoff into landscaped areas such as medians, parking islands, planter boxes, etc., and/or areas of pervious paving. Instead of having landscaped areas raised above the surrounding impervious areas, design them as depressed areas that can receive Runoff from adjacent impervious pavement. For example, a lawn or garden depressed 3"-4" below surrounding walkways or driveways provides a simple but quite functional landscape design element. • Detain and retain runoff throughout the site. On flatter sites, smaller Structural BMPs may be interspersed in landscaped areas among the buildings and paving. • On hillside sites, drainage from upper areas may be collected in conventional catch basins and piped to landscaped areas and LID BMPs and/or Hydrologic Control BMPs in lower areas. Low retaining walls may also be used to create terraces that can accommodate LID BMPs. Wherever possible, direct drainage from landscaped slopes offsite and not to impervious surfaces like parking lots. • Reduce curb maintenance and provide for allowances for curb cuts. • Design landscaped areas or other pervious areas to receive and infiltrate runoff from nearby impervious areas. • Use Tree Wells to intercept, infiltrate, and evapotranspire precipitation and runoff before it reaches structural BMPs. Tree wells can be used to limit the size of Drainage Management Areas that must be treated by structural BMPs. Guidelines for Tree Wells are included in the Tree Well Fact Sheet in the LID BMP Design Handbook.
<p>Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.</p> <p>The pad area is directed to the outer areas after being dispersed through permeable areas and elements.</p>	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<p>Did you utilize native or drought tolerant species in site landscaping? Wherever possible, use native or drought tolerant species within site landscaping instead of alternatives. These plants are uniquely suited to local soils and climate and can reduce the overall demands for potable water use associated with irrigation.</p>
<p>Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.</p> <p>Please refer to the project's landscape plans performed by the landscape architect per County regulations to utilize these types of vegetation. A copy of the landscape plans are provided for reference in Appendix 2.</p>	

Project- Specific WQMP Site Design BMP Checklist

Did implement harvest and use of runoff?

Under the Regional MS4 Permit, Harvest and Use BMPs must be employed to reduce runoff on any site where they are applicable and feasible. However, Harvest and Use BMPs are effective for retention of stormwater runoff only when there is adequate demand for non-potable water during the wet season. If demand for non-potable water is not sufficiently large, the actual retention of stormwater runoff will be diminished during larger storms or during back-to-back storms.

For the purposes of planning level Harvest and Use BMP feasibility screening, Harvest and Use is only considered to be a feasible if the total average wet season demand for non-potable water is sufficiently large to use the entire DCV within 72 hours. If the average wet season demand for non-potable water is not sufficiently large to use the entire DCV within 72 hours, then Harvest and Use is not considered to be feasible and need not be considered further.

Yes No N/A

The general feasibility and applicability of Harvest and Use BMPs should consider:

- Any downstream impacts related to water rights that could arise from capturing stormwater (not common).
- Conflicts with recycled water used – where the project is conditioned to use recycled water for irrigation, this should be given priority over stormwater capture as it is a year-round supply of water.
- Code Compliance - If a particular use of captured stormwater, and/or available methods for storage of captured stormwater would be contrary to building codes in effect at the time of approval of the preliminary Project-Specific WQMP, then an evaluation of harvesting and use for that use would not be required.
- Wet season demand – the applicant shall demonstrate, to the acceptance of the County of Riverside, that there is adequate demand for harvested water during the wet season to drain the system in a reasonable amount of time.

Discuss how this was included or provide a discussion/justification for “No” or “N/A” answer.

The project site’ agricultural needs and regulations will not allow for this use.

Did you keep the runoff from sediment producing pervious area hydrologically separate from developed areas that require treatment?

Yes No N/A

Pervious area that qualify as self-treating areas or off-site open space should be kept separate from drainage to structural BMPs whenever possible. This helps limit the required size of structural BMPs, helps avoid impacts to sediment supply, and helps reduce clogging risk to BMPs.

Discuss how this was included or provide a discussion/justification for “No” or “N/A” answer.

Per mapping, the site is not in a CCSYA. Exhibit provided in Attachment 7; however, the project site allows off-site drainage to route around the project site and not co-mingle with site water. This will keep the run-off routing to natural areas as much as feasible.

Section C: Delineate Drainage Management Areas (DMAs) & Green Streets

This section provides streamlined guidance and documentation of the DMA delineation and categorization process, for additional information refer to the procedure in Section 3.3 of the SMR WQMP which discusses the methods of delineating and mapping your project site into individual DMAs. Complete Steps 1 to 4 to successfully delineate and categorize DMAs.

Step 1: Identify Surface Types and Drainage Pathways

Carefully delineate pervious areas and impervious areas (including roofs) throughout site and identify overland flow paths and above ground and below ground conveyances. Also identify common points (such as BMPs) that these areas drain to.

Step 2: DMA Delineation

Use the information in Step 1 to divide the entire PDP site into individual, discrete DMAs. Typically, lines delineating DMAs follow grade breaks and roof ridge lines. Where possible, establish separate DMAs for each surface type (e.g., landscaping, pervious paving, or roofs). Assign each DMA a unique code and determine its size in square feet. The total area of your site should total the sum of all of your DMAs (unless water from outside the project limits comingles with water from inside the project limits, i.e. run-on). Complete Table C-1.

Please see Table C-1 provided on the next page.

Table C-1 DMA Identification

Table C-1: DMA 1 Breakdown			
DMA Name or Identification	Surface Type(s)¹	Area (Sq. Ft.)	DMA Type
SRA	DG SURFACE	36,933	To be Determined in Step 3
DSRA-R7	ROOF	2,920	
DSRA-R8	ROOF	3,840	
DSRA-R9	ROOF	3,840	
DSRA-R10	ROOF	3,840	
DSRA-R11	ROOF	3,840	
DSRA-R12	ROOF	3,840	
DSRA-R13	ROOF	3,840	
DSRA-R14	ROOF	3,840	
DSRA-R15	ROOF	3,840	
DSRA-R16	ROOF	2,920	
DSRA-R17	ROOF	3,840	
DSRA-LS1	LANDSCAPE	2,203	
SRB	DG SURFACE	11,600	
DSRB-R1	ROOF	3,840	
DSRB-R2	ROOF	3,840	
DSRB-R3	ROOF	3,840	
DSRB-R4	ROOF	3,840	
DSRB-R5	ROOF	3,840	
DSRB-R6	ROOF	4,786	
SRC	DG SURFACE	817	
DMA1-R18	ROOF	4,800	
DMA1-IP1	IMPERVIOUS PAVING	24,814	
DMA1-IP2	IMPERVIOUS PAVING	7,746	
DMA1-LS2	LANDSCAPE	1,556	
DSRB-LS3	LANDSCAPE	677	
ST-A	REVEGETATED LANDSCAPE	23,693	
ST-B	REVEGETATED LANDSCAPE	5,620	
ST-C	REVEGETATED LANDSCAPE	1,623	
ST-D	REVEGETATED LANDSCAPE	205	
ST-E	REVEGETATED LANDSCAPE	749	
Total Disturbed Area:		186,208	

Step 3: DMA Classification

Determine how drainage from each DMA will be handled by using information from Steps 1 and 2 and by completing Steps 3.A to 3.C. Each DMA will be classified as one of the following four types:

- Type 'A': Self-Treating Areas:
- Type 'B': Self-Retaining Areas
- Type 'C': Areas Draining to Self-Retaining Areas
- Type 'D': Areas Draining to BMPs

Step 3.A – Identify Type 'A' Self-Treating Area

Indicate if the DMAs meet the following criteria by answering "Yes" or "No".

- Yes No Area is undisturbed from their natural condition OR restored with Native and/or California Friendly vegetative covers.
- Yes No Area is irrigated, if at all, with appropriate low water use irrigation systems to prevent irrigation runoff.
- Yes No Runoff from the area will not comingle with runoff from the developed portion of the site, or across other landscaped areas that do not meet the above criteria.

If all answers indicate "Yes," complete Table C-2 to document the DMAs that are classified as Self-Treating Areas.

Table C-2 Type 'A', Self-Treating Areas

<i>Table C-2: Type 'A', Self-Treating DMAs</i>			
<i>DMA Name or Identification</i>	<i>Area (Sq. Ft.)</i>	<i>Stabilization Type</i>	<i>Irrigation Type (if any)</i>
ST-A	23,693	LANDSCAPING	REVEGETATED NATIVE
ST-B	5,620	LANDSCAPING	REVEGETATED NATIVE
ST-C	1,623	LANDSCAPING	REVEGETATED NATIVE
ST-D	205	LANDSCAPING	REVEGETATED NATIVE
ST-E	749	LANDSCAPING	REVEGETATED NATIVE

Step 3.B – Identify Type 'B' Self-Retaining Area and Type 'C' Areas Draining to Self-Retaining Areas

Type 'B' Self-Retaining Area: A Self-Retaining Area is shallowly depressed 'micro infiltration' areas designed to retain the Design Storm rainfall that reaches the area, without producing any Runoff.

Indicate if the DMAs meet the following criteria by answering "Yes," "No," or "N/A".

- Yes No N/A Inlet elevations of area/overflow drains, if any, should be clearly specified to be three inches or more above the low point to promote ponding.
- Yes No N/A Soils will be freely draining to not create vector or nuisance conditions.
- Yes No N/A Pervious pavements (e.g., crushed stone, porous asphalt, pervious concrete, or permeable pavers) can be self-retaining when constructed with a gravel base course four or more inches deep below any underdrain discharge elevation.

If all answers indicate “Yes,” DMAs may be categorized as Type ‘B’, proceed to identify Type ‘C’ Areas Draining to Self-Retaining Areas.

Type ‘C’ Areas Draining to Self-Retaining Areas: Runoff from impervious or partially pervious areas can be managed by routing it to Self-Retaining Areas consistent with the LID Principle discussed in SMR WQMP Section 3.2.5 for 'Dispersing Runoff to Adjacent Pervious Areas'.

Indicate if the DMAs meet the following criteria by answering “Yes” or “No”.

Yes No The drainage from the tributary area must be directed to and dispersed within the Self-Retaining Area.

Yes No The maximum ratio of Tributary Area to Self-Retaining area is $(2 \div \text{Impervious Fraction})$: 1

If all answers indicate “Yes,” DMAs may be categorized as Type ‘C’.

Complete Table C-3 and Table C-4 to identify Type ‘B’ Self-Retaining Areas and Type ‘C’ Areas Draining to Self-Retaining Areas.

Table C-3 Type ‘B’, Self-Retaining Areas

Table C-3 Type ‘B’, Self-Retaining Areas							
Self-Retaining Area				Type ‘C’ DMAs that are draining to the Self-Retaining Area			
DMA Name/ ID	Post-project surface type	Area (square feet)	Storm Depth (inches)	DMA Name / ID	[C] from Table C-4=	Required Retention Depth (inches)	
		[A]	[B]		[C]	[D] = [B] + $\frac{[B] \cdot [C]}{[A]}$	
SR-A	DG AREA	36,933	0.82	DSRA-R7	2,920	1.72” REQUIRED 2.4” PROPOSED (6” DG PROPOSED WITH 40% POROSITY)	
				DSRA-R8	3,840		
				DSRA-R9	3,840		
				DSRA-R10	3,840		
				DSRA-R11	3,840		
				DSRA-R12	3,840		
				DSRA-R13	3,840		
				DSRA-R14	3,840		
				DSRA-R15	3,840		
				DSRA-R16	3,840		
				DSRA-R17	3,840		
				DSRA-LS1	2,203		
					<u>Σ 79,536</u>		
				SR-B	DG AREA		11,600
DSRB-R2	3,840						
DSRB-R3	3,840						
DSRB-R4	3,840						
DSRB-R5	3,840						
DSRB-R6	3,840						
	<u>Σ 23,040</u>						

Table C-4 Type 'C', Areas that Drain to Self-Retaining Areas

Table C-4 Type 'C', Areas That Drain to Self-Retaining Areas							
DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
DSRA-R7	2,920	ROOF	1.0	2,920			
DSRA-R8	3,840	ROOF	1.0	3,840			
DSRA-R9	3,840	ROOF	1.0	3,840			
DSRA-R10	3,840	ROOF	1.0	3,840			
DSRA-R11	3,840	ROOF	1.0	3,840			
DSRA-R12	3,840	ROOF	1.0	3,840			
DSRA-R13	3,840	ROOF	1.0	3,840			
DSRA-R14	3,840	ROOF	1.0	3,840			
DSRA-R15	3,840	ROOF	1.0	3,840			
DSRA-R16	2,920	ROOF	1.0	2,920			
DSRA-R17	3,840	ROOF	1.0	3,840			
DSRA-LS1	2,203	LANDSCAPE	0.1	220			
				∑ 40,619	SRA	36,933	1.10 < 2
DSRB-R1	3,840	ROOF	1.0	3,840			
DSRB-R2	3,840	ROOF	1.0	3,840			
DSRB-R3	3,840	ROOF	1.0	3,840			
DSRB-R4	3,840	ROOF	1.0	3,840			
DSRB-R5	3,840	ROOF	1.0	3,840			
DSRB-R6	3,840	ROOF	1.0	3,840			
				∑ 23,040	SRB	11,600	1.99 < 2

Note: DSRA and DSRB both have overflow capacity in their associated Biofiltration with Infiltration BMPs

Note: (See Section 3.3 of SMR WQMP) Ensure that partially pervious areas draining to a Self-Retaining area do not exceed the following ratio:

$$\left(\frac{2}{\text{Impervious Fraction}} \right) : 1$$

(Tributary Area: Self-Retaining Area)

Step 3.B.1 – Document the use of Green Street Exemption (see Section 3.11 of the WQMP Guidance)

The Regional MS4 Permit specifies that projects that consist of retrofitting or redevelopment of existing paved alleys, streets, or roads may be exempted from classification as PDPs if they are designed and constructed in accordance with USEPA Green Streets Guidance. This does not apply for interior roads for PDP projects. For projects with road frontage improvements, Green Street standards can be used in the frontage road right-of-way. The remainder of the project is subject to full WQMP and Hydromodification requirements. See excerpt from Section 3.11 of the WQMP Guidance below:

3.11.4 BMP Sizing Targets for Applicable Green Streets Projects

Applicable green street projects are not required to meet the same sizing requirements for BMPs as other projects, but should attempt to meet a sizing target to the MEP. The following steps are used to size BMPs for applicable Green Streets projects:

1. Delineate drainage areas tributary to BMP locations and compute imperviousness.
2. Determine sizing goal by referring to sizing criteria presented in Section 2.3.2 (V_{BMP}).
3. Attempt to provide the target BMP sizing according to Step 2.
4. If the target criteria cannot be achieved, document the constraints that override the application of BMPs, and provide the largest portion of the sizing criteria that can be reasonably provided given constraints.

Even if BMPs cannot be sized to meet the target sizing criteria, it is still important to design the BMP inlet, energy dissipation, and overflow capacity for the full tributary area to ensure that flooding and scour is avoided. It is strongly recommended that BMPs which are designed to less than their target design volume be designed to bypass peak flows.

Table C-4.1 – Green Streets

DMA Name or ID	Street Name	BMP Sizing Targets Calculations and documenting constraints included in Appendix 6*
N/A		<input type="checkbox"/> Yes <input type="checkbox"/> No
*WQMP shall not be approved without calculations or documenting constraints for Green Street Exemption.		

Step 3.C – Identify Type ‘D’ Areas Draining to BMPs

Areas draining to BMPs are those that could not be fully managed through LID Principles (DMA Types A through C) and will instead drain to an LID BMP and/or a Conventional Treatment BMP designed to manage water quality impacts from that area, and Hydromodification where necessary.

Complete Table C-5 to document which DMAs are classified as Areas Draining to BMPs

Table C-5 Type ‘D’, Areas Draining to BMPs

Table C-5: Type ‘D’ Areas Draining to BMPs	
DMA Name or ID	BMP Name or ID Receiving Runoff from DMA
DMA1-R1 TO R6	BMP1
<i>Note: More than one DMA may drain to a single LID BMP; however, one DMA may not drain to more than one BMP.</i>	

Section D: Implement LID BMPs

The Regional MS4 Permit requires the use of LID BMPs to provide retention or treatment of the DCV and includes a BMP hierarchy which requires Full Retention BMPs (Priority 1) to be considered before Biofiltration BMPs (Priority 2) and Flow-Through Treatment BMPs and Alternative Compliance BMPs (Priority 3). LID BMP selection must be based on technical feasibility and should be considered early in the site planning and design process. Use this section to document the selection of LID BMPs for each DMA. Note that feasibility is based on the DMA scale and may vary between DMAs based on site conditions.

D.1 Full Infiltration Applicability

An assessment of the feasibility of utilizing full infiltration BMPs is required for all projects, *except where it can be shown that site design LID principles fully retain the DCV (i.e., all DMAs are Type A, B, or C), or where Harvest and Use BMPs fully retain the DCV. Check the following box if applicable:*

- Site design LID principles fully retain the DCV (i.e., all DMAs are Type A, B, or C), (Proceed to Section E).

If the above box remains unchecked, perform a [site-specific](#) evaluation of the feasibility of Infiltration BMPs using each of the applicable criteria identified in Chapter 2.3.3 of the SMR WQMP and complete the remainder of Section D.1.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Copermittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the SMR WQMP. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Infiltration Feasibility

Table D-1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the SMR WQMP in Chapter 2.3.3. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D-1 Infiltration Feasibility

Downstream Impacts (SMR WQMP Section 2.3.3.a)		
Does the project site...	YES	NO
...have any DMAs where infiltration would negatively impact downstream water rights or other Beneficial Uses ² ?		X
If Yes, list affected DMAs:		
Groundwater Protection (SMR WQMP Section 2.3.3.b)		
Does the project site...	YES	NO
...have any DMAs with industrial, and other land uses that pose a high threat to water quality, which cannot be treated by Bioretention BMPs? Or have DMAs with active industrial process areas?		X
If Yes, list affected DMAs:		
...have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
...have any DMAs located within 100 feet horizontally of a water supply well?		X
If Yes, list affected DMAs:		
...have any DMAs that would restrict BMP locations to within a 2:1 (horizontal: vertical) influence line extending from any septic leach line?		X
If Yes, list affected DMAs:		
...have any DMAs been evaluated by a licensed Geotechnical Engineer, or Environmental Engineer, who has concluded that the soils do not have adequate physical and chemical characteristics for the protection of groundwater, and has treatment provided by amended media layers in Bioretention BMPs been considered in evaluating this factor?		X
If Yes, list affected DMAs:		
Public Safety and Offsite Improvements (SMR WQMP Section 2.3.3.c)		
Does the project site...	YES	NO
...have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact, such as potential seepage through fill conditions?		X
If Yes, list affected DMAs:		
Infiltration Characteristics For LID BMPs (SMR WQMP Section 2.3.3.d)		
Does the project site...	YES	NO
...have measured infiltration rates of less than 2.4 inches / hour? Riverside County may allow measure rates as low as 0.8 in/hr to support infiltration BMPs, if the Engineer believes infiltration is appropriate and sustainable. Mark no, if this is the case.	X	
If Yes, list affected DMAs: Entire Site Has A Geo Hazard – Shallow bedrock, See Appendix 5	All	
Cut/Fill Conditions (SMR WQMP Section 2.3.3.e)		
Does the project site...	YES	NO
...have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?	X	
If Yes, list affected DMAs: Entire Site Has A Geo Hazard – Shallow bedrock, See Appendix 5	All	
Other Site-Specific Factors (SMR WQMP Section 2.3.3.f)		
Does the project site...	YES	NO
...have DMAs where the geotechnical investigation discovered other site-specific factors that would preclude effective and/or safe infiltration?	X	
Describe here: Entire Site Has A Geo Hazard – Shallow bedrock, See Appendix 5		

If you answered “Yes” to any of the questions above for any DMA, Infiltration BMPs that rely solely on infiltration should not be used for those DMAs and you should proceed to the assessment for Biofiltration BMPs below. Biofiltration BMPs that provide partial infiltration may still be feasible and should be assessed in Section D.2. Summarize concerns identified in the Geotechnical Report, if any, that resulted in a “YES” response above in the table below.

² Such a condition must be substantiated by sufficient modeling to demonstrate an impact and would be subject to County of Riverside discretion. There is not a standardized method for assessing this criterion. Water rights evaluations should be site-specific.

Table D-2 Geotechnical Concerns for Onsite Infiltration

Type of Geotechnical Concern	DMAs Feasible (By Name or ID)	DMAs Infeasible (By Name or ID)
Collapsible Soil	All	
Expansive Soil	All	
Slopes	None	All
Liquefaction	All	
Other – Type C and D Soils per Table 2-5	None	All

D.2 Biofiltration Applicability

This section should document the applicability of biofiltration BMPs for Type D DMAs that are not feasible for full infiltration BMPs. The key decisions to be documented in this section include:

1. Are biofiltration BMPs with partial infiltration feasible?
 - a. Biofiltration BMPs must be designed to maximize incidental infiltration via a partial infiltration design unless it is demonstrated that this design is not feasible.
 - b. These designs can be used at sites with low infiltration rates where other feasibility factors do not preclude incidental infiltration.

Document summary in Table D-3.

2. If not, what are the factors that require the use of biofiltration with no infiltration? This may include:
 - a. Geotechnical hazards
 - b. Water rights issues
 - c. Water balance issues
 - d. Soil contamination or groundwater quality issues
 - e. Very low infiltration rates (factored rates < 0.1 in/hr)
 - f. Other factors, demonstrated to the acceptance of the local jurisdiction

If this applies to any DMAs, then rationale must be documented in Table D-3.

3. Are biofiltration BMPs infeasible?
 - a. If yes, then provide a site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee with jurisdiction over the Project site to discuss this option. Proceed below.

Table D-3 Evaluation of Biofiltration BMP Feasibility

DMA ID	Is Partial/ Incidental Infiltration Allowable? (Y/N)	Basis for Infeasibility of Partial Infiltration (provide summary and include supporting basis if partial infiltration not feasible)
All Areas	No	See Geotechnical Engineer Letter in Appendix 5 supporting no infiltration on the site due to geotechnical conditions.

Proprietary Biofiltration BMP Approval Criteria

Does the Co-Permittee allow Proprietary BMPs as an equivalent to Biofiltration, if specific criteria is met?

Yes or No, if no skip to Section F to document your alternative compliance measures.

If the project will use proprietary BMPs as biofiltration BMPs, then this section and Appendix 5 shall be completed to document that the proprietary BMPs are selected in accordance with Section 2.3.6 of the SMR WQMP and County requirements. Proprietary Biofiltration BMPs must meet both of the following approval criteria:

1. Demonstrate equivalency to Biofiltration by completing the BMP Design worksheet and Proprietary Biofiltration Criteria, which is found in Appendix 5, including all supporting documentation, and
2. Obtain Co-Permittee concurrence for the long term Operation and Maintenance Plan for the proprietary BMP. The Co-Permittee has the sole discretion to allow or reject Proprietary BMPs, especially if they will be maintained publicly through a CFD, CSA, or L&LMD.

Add additional rows to Table D-4 to document approval criteria are met for each type of BMP proposed.

Table D-4 Proprietary BMP Approval Requirement Summary

Proposed Proprietary Biofiltration BMP	Approval Criteria	Notes/Comments
On-Grade Biofiltration Basin with No Infiltration	BMP Design worksheets and Proprietary Biofiltration Criteria are completed in Appendix 5	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Proposed BMP has an active TAPE GULD Certification for the project pollutants of concern ³ or equivalent 3 rd party demonstrated performance.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Is there any media or cartridge required to maintain the function of the BMP sole-sourced or proprietary in any way? If yes, obtain explicit approval by the Agency. Potentially full replacement costs to a non-proprietary BMP needs to be considered.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A If yes, provide the date of concurrence from the Co-Permittee.
	<input checked="" type="checkbox"/> The BMP includes biological features including vegetation supported by engineered or other growing media.	

³ Use Table F-1, F-2, and F-3 to identify and document the pollutants of concern and include these tables in Appendix 5.

D.3 Feasibility Assessment Summaries

From the Infiltration, Biofiltration with Partial Infiltration and Biofiltration with No Infiltration Sections above, complete Table D-5 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D-5 LID Prioritization Summary Matrix

Table D-5, LID Prioritization Summary Matrix				
DMA Name/ID	LID BMP Hierarchy			No LID (Alternative Compliance)
	1. Infiltration	2. Biofiltration with Partial Infiltration*	3. Biofiltration with No Infiltration*	
DMA1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

*Includes Proprietary Biofiltration, if accepted by the Co-Permittee.

For those DMAs where LID BMPs are not feasible, provide a narrative in Table D-6 below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section F below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

This is based on the clarification letter titled “San Diego Water Board’s Expectations of Documentation to Support a Determination of Priority Development Project Infiltration Infeasibility” (April 28, 2017, Via email from San Diego Regional Water Quality Control Board to San Diego County Municipal Storm Water Coopermittees⁴).

Table D-6 Summary of Infeasibility Documentation

Question	Narrative Summary (include reference to applicable appendix/attachment/report, as applicable)
a) When in the entitlement process did a geotechnical engineer analyze the site for infiltration feasibility?	Yes, See Letter in Appendix 5
b) When in the entitlement process were other investigations conducted (e.g., groundwater quality, water rights) to evaluate infiltration feasibility?	N/A NRCS
c) What was the scope and results of testing, if conducted, or rationale for why testing was not needed to reach findings?	N/A
d) What public health and safety requirements affected infiltration locations?	None
e) What were the conclusions and recommendations of the geotechnical engineer and/or other professional responsible for other investigations?	No Infiltration – Shallow Bedrock
f) What was the history of design discussions between the permittee and applicant for the proposed project, resulting in the final design determination related locations feasible for infiltration?	N/A

⁴ <http://www.projectcleanwater.org/download/pdp-infiltration-infeasibility/>

g) What site design alternatives were considered to achieve infiltration or partial infiltration on site?	None, will use biofiltration with no infiltration
h) What physical impairments (i.e., fire road egress, public safety considerations, utilities) and public safety concerns influenced site layout and infiltration feasibility?	Steep slopes
i) What LID Principles (site design BMPs) were included in the project site design?	Identification and Preservation of Existing Drainage Patterns; Identification and Protection of Existing Vegetation; Minimization of Impervious Area Runoff By Using Permeable Surfaces, Utilization of Drought Tolerant Site Landscaping

D.4 LID BMP Sizing

Each LID BMP must be designed to ensure that the DCV will be captured by the selected BMPs with no discharge to the storm drain or surface waters during the DCV size storm. Infiltration BMPs must at minimum be sized to capture the DCV to achieve pollutant control requirements.

Biofiltration BMPs must at a minimum be sized to:

- Treat 1.5 times the DCV not reliably retained on site using a volume-based or flow-based sizing method, or
- Include static storage volume, including pore spaces and pre-filter detention volume, at least 0.75 times the portion of the DCV not reliably retained on site.

First, calculate the DCV for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second, design the LID BMP to meet the required V_{BMP} using the methods included in Section 3 of the LID BMP Design Handbook. Utilize the worksheets found in the LID BMP Design Handbook or consult with the Copermittee to assist you in correctly sizing your LID BMPs. Use Table D-7 below to document the DCV each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D-7 DCV Calculations for LID BMPs

Table D-7: DCV Calculations for LID BMPs (DMA1)								
DMA Type/ID	DMA (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	DMA1: BMP1 CISTERN AND MWS UNIT		
	[A]		[B]	[C]	[A] x [C]			
DMA1-R18	4,800	ROOF	1.0	0.892	4,282	Design Storm Depth (in) [E]	DCV, V_{BMP} (cubic feet) [F] = [D] x [E]/12	Proposed Volume on Plans (cubic feet) [G]
DMA1-IP1	24,814	PCC	1.0	0.892	22,134			
DMA1-IP2	7,476	PCC	1.0	0.892	6,669			
DMA1-LS2	1,556	LANDSCAPE	0.1	0.110	172			
DMA1-LS3	677	LANDSCAPE	0.1	0.110	75			
	39,324				33,332	0.82	2,278	5,376

[B], [C] is obtained as described in Section 2.6.1.b of the SMR WQMP

[E] is obtained from Exhibit A in the SMR WQMP

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6.

Complete Table D-8 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. You can add rows to the table as needed. Alternatively, the Santa Margarita Hydrology Model (SMRHM) can be used to size LID BMPs to address the DCV and, if applicable, to size Hydrologic Control BMPs to meet the Hydrologic Performance Standard described in the SMR WQMP, as identified in Section E.

Table D-8 LID BMP Sizing

Table D-8: LID BMP Sizing				
BMP Name / ID	DMA No.	BMP Type / Description	HMP Volume (ft³)	Proposed Volume (ft³)
BMP1	DMA1	CISTERN TANK AND MODULAR WETLANDS UNIT	4,487	5,376

If bioretention will include a capped underdrain, then include sizing calculations demonstrating that the BMP will meet infiltration sizing requirements with the underdrain capped and also meet biofiltration sizing requirements if the underdrain is uncapped.

Section E: Implement Hydrologic Control BMPs and Sediment Supply BMPs

See Appendix 7 for additional required information.

If a completed Table 1.2 demonstrates that the project is exempt from Hydromodification Performance Standards, specify N/A and proceed to Section G.

- N/A Project is Exempt from Hydromodification Performance Standards.

If a PDP is not exempt from hydromodification requirements than the PDP must satisfy the requirements of the performance standards for hydrologic control BMPs and Sediment Supply BMPs. The PDP may choose to satisfy hydrologic control requirements using onsite or offsite BMPs (i.e. Alternative Compliance). Sediment supply requirements cannot be met via alternative compliance. If N/A is not selected above, select one of the two options below and complete the applicable sections.

- Project is Not Hydromodification Exempt and chooses to implement Hydrologic Control and Sediment Supply BMPs Onsite (complete Section E).
- Project is Not Hydromodification Exempt and chooses to implement Hydrologic Control Requirements using Alternative Compliance (complete Section F). Selection of this option must be approved by the Copermittee.

E.1 Hydrologic Control BMP Selection

Capture of the DCV and achievement of the Hydrologic Performance Standard may be met by combined and/or separate structural BMPs. The user should consider the full suite of Hydrologic Control BMPs to manage runoff from the post-development condition and meet the Hydrologic Performance Standard identified in this section.

For the Preliminary WQMP, in lieu of preparing detailed routing calculations, the basin size may be estimated as the difference in volume between the pre-development and post-development hydrograph for the 10-year 24-hour storm event plus the V_{bmp} . This does not relieve the engineer of the responsibility for meeting the full Hydrologic Control requirements during final design.

The Hydrologic Performance Standard consists of matching or reducing the flow duration curve of post-development conditions to that of pre-existing, naturally occurring conditions, for the range of geomorphically significant flows (the low flow threshold runoff event up to the 10-year runoff event). 10% of the 2-year runoff event can be used for the low flow threshold without any justification. Higher low flow thresholds can be used with site-specific analysis, see Section 2.6.2.b of the WQMP guidance document. Select each of the hydrologic control BMP types that are applied to meet the above performance standard on the site.

- LID principles as defined in Section 3.2 of the SMR WQMP.
- Structural LID BMPs that may be modified or enlarged, if necessary, beyond the DCV.
- Structural Hydrologic Control BMPs that are distinct from the LID BMPs above. The LID BMP Design Handbook provides information not only on Hydrologic Control BMP design, but also on BMP design to meet the combined LID requirement and Hydrologic Performance Standard. The Handbook specifies the type of BMPs that can be used to meet the Hydrologic Performance Standard.

E.2 Hydrologic Control BMP Sizing

Hydrologic Control BMPs must be designed to ensure that the flow duration curve of the post-development DMA will not exceed that of the pre-existing, naturally occurring, DMA for the range of geomorphically significant flows. Using SMRHM, (or another acceptable continuous simulation model if approved by the Copermittee) the applicant shall demonstrate that the performance of the Hydrologic Control BMPs complies with the Hydrologic Performance Standard. Complete Table E-1 below and identify, for each DMA, the type of Hydrologic Control BMP, if the SMRHM model confirmed the management (Identified as “passed” in SMRHM), the total volume capacity of the Hydrologic Control BMP, the Hydrologic Control BMP footprint at top floor elevation, and the drawdown time of the Hydrologic Control BMP. SMRHM summary reports should be documented in Appendix 7. Refer to the SMRHM Guidance Document for additional information on SMRHM. You can add rows to the table as needed.

Table E-1 Hydrologic Control BMP Sizing

Table E-1 Hydrologic Control BMP Sizing						
BMP Name / ID	DMA No.	BMP Type / Description	SMRHM Passed *	BMP Volume Required (cu-ft)	BMP Footprint Provided (cu-ft)	Drawdown Time (hr)
BMP1	DMA1	CISTERN AND MODULAR WETLANDS UNIT	YES	4,487	5,376	29.87
* SMRHM WAS NOT USED. THE SAN DIEGO COUNTY HMP SIZING SPREADSHEETS WERE USED. THIS IS A CONSERVATIVE METHOD THAT PROVIDES LARGER STORAGE NEEDS THAN OTHER METHODS, BUT IS STANDARD IN SAN DIEGO COUNTY, DOWNSTREAM OF THE PROJECT SITE IN THE SAME WATERSHED THAT IS ALSO REGULATED BY REGION 9 OF THE WATER QUALITY CONTROL BOARD.						

If a bioretention BMP with capped underdrain is used and hydromodification requirements apply, then sizing calculations must demonstrate that the BMP meets flow duration control criteria with the underdrain capped and uncapped. Both calculations must be included.

E.3 Implement Sediment Supply BMPs

The sediment supply performance standard applies to PDPs for which hydromodification applied that have the potential to impact Potential Critical Coarse Sediment Yield Areas. Refer to Exhibit G-1 of the WQMP Guidance Document to determine if there are onsite Potential Critical Coarse Sediment Yield Areas (based on on-going WMAA analysis) or Potential Sediment Source Areas (sites added through the Regional Board review process). Select one of the two options below and include the Potential Critical Coarse Sediment Yield Area Exhibit showing your project location in Appendix 7.

- There are no mapped Potential Critical Coarse Sediment Yield Areas or Potential Sediment Source Areas on the site. The Sediment Supply Performance Standard is met with no further action is needed.
- There are mapped Potential Critical Coarse Sediment Yield Areas or Potential Sediment Source Areas on the site, the Sediment Supply Performance Standard will be met through Option 1 (E.3.1) or Option 2 (E.3.2) below.

E.3.1 Option 1: Avoid Potential Critical Coarse Sediment Yield Areas and Potential Sediment Source Areas

The simplest approach for complying with the Sediment Supply Performance Standard is to avoid impacts to areas identified as Potential Critical Coarse Sediment Yield Areas or Potential Sediment Supply Areas. If a portion of PDP is identified as a Potential Critical Coarse Sediment Yield Area or a Potential Sediment Source Area, that PDP may still achieve compliance with the Sediment Supply Performance Standards if Potential Critical Coarse Sediment Yield Areas and Potential Sediment Supply Areas are avoided, i.e. areas are not developed and thereby delivery of Critical Coarse Sediment to the receiving waters is not impeded by site developments.

Provide a narrative describing how the PDP has avoided impacts to Potential Critical Coarse Sediment Yield Areas and/or Potential Sediment Source Areas below.

n/a

If it is not feasible to avoid these areas, proceed to Option 2 to complete a Site-Specific Critical Coarse Sediment Analysis.

E.3.2 Option 2: Site-Specific Critical Coarse Sediment Analysis

Perform a stepwise assessment to ensure the pre-project source(s) of Critical Coarse Sediment (i.e., Bed Sediment Supply) is maintained:

Step 1: Identify if the site is an actual verified Critical Coarse Sediment Yield Area supplying Bed Sediment Supply to the receiving channel

Step 1.A – Is the Bed Sediment of onsite streams similar to that of receiving streams?

Rate the similarity: High
 Medium
 Low

Results from the geotechnical and sieve analysis to be performed both onsite and in the receiving channel should be documented in Appendix 7. Of particular interest, the results of the sieve analysis, the soil erodibility factor, a description of the topographic relief of the project area, and the lithology of onsite soils should be reported in Appendix 7.

Step 1.B – Are onsite streams capable of delivering Bed Sediment Supply from the site, if any, to the receiving channel?

Rate the potential: High
 Medium
 Low

Results from the analyses of the sediment delivery potential to the receiving channel should be documented in Appendix 7 and identify, at a minimum, the Sediment Source, the distance to the receiving channel, the onsite channel density, the project watershed area, the slope, length, land use, and rainfall intensity.

Step 1.C – Will the receiving channel adversely respond to a change in Bed Sediment Load?

Rate the need for bed sediment supply:
 High
 Medium
 Low

Results from the in-stream analysis to be performed both onsite should be documented in Appendix 7. The analysis should, at a minimum, quantify the bank stability and the degree of incision, provide a gradation of the Bed Sediment within the receiving channel, and identify if the channel is sediment supply-limited.

Step 1.D – Summary of Step 1

Summarize in Table E.3 the findings of Step 1 and associate a score (in parenthesis) to each step. The sum of the three individual scores determines if a stream is a significant contributor to the receiving stream.

- Sum is equal to or greater than eight - Site is a significant source of sediment bed material – all on-site streams must be preserved or by-passed within the site plan. The applicant shall proceed to Step 2 for all onsite streams.
- Sum is greater than five but lower than eight. Site is a source of sediment bed material – some of the on-site streams must be preserved (with identified streams noted). The applicant shall proceed to Step 2 for the identified streams only.
- Sum is equal to or lower than five. Site is not a significant source of sediment bed material. The applicant may advance to Section F.

Table E-2 Triad Assessment Summary

Step	Rating			Total Score
1.A	<input type="checkbox"/> High (3)	<input type="checkbox"/> Medium (2)	<input type="checkbox"/> Low (1)	
1.B	<input type="checkbox"/> High (3)	<input type="checkbox"/> Medium (2)	<input type="checkbox"/> Low (1)	
1.C	<input type="checkbox"/> High (3)	<input type="checkbox"/> Medium (2)	<input type="checkbox"/> Low (1)	
Significant Source Rating of Bed Sediment to the receiving channel(s)				

Step 2: Avoid Development of Critical Coarse Sediment Yield Areas, Potential Sediment Sources Areas, and Preserve Pathways for Transport of Bed Sediment Supply to Receiving Waters

Onsite streams identified as a actual verified Critical Coarse Sediment Yield Areas should be avoided in the site design and transport pathways for Critical Coarse Sediment should be preserved

Check those that apply:

- The site design does avoid all onsite channels identified as actual verified Critical Coarse Sediment Yield Areas **AND**
- The drainage design bypasses flow and sediment from onsite upstream drainages identified as actual verified Critical Coarse Sediment Yield Areas to maintain Critical Coarse Sediment supply to receiving waters

(If both are yes, the applicant may disregard subsequent steps of Section E.3 and directly advance directly to Section G)

Or -

Provide in Appendix 7 a site map that identifies all onsite channels and highlights those onsite channels that were identified as a Significant Source of Bed Sediment. The site map shall demonstrate, if feasible, that the site design avoids those onsite channels identified as a Significant Source of Bed Sediment. In addition, the applicant shall describe the characteristics of each onsite channel identified as a Significant Source of Bed Sediment. If the design plan cannot avoid the onsite channels, please provide a rationale for each channel individually.

The site map shall demonstrate that the drainage design bypasses those onsite channels that supply Critical Coarse Sediment to the receiving channel(s). In addition, the applicant shall describe the characteristics of each onsite channel identified as an actual verified Critical Coarse Sediment Yield Area.

n/a

- The site design **does NOT avoid** all onsite channels identified as actual verified Critical Coarse Sediment Yield Areas

OR

- The project blocks the potential for Critical Coarse Sediment from migrating to receiving waters.

(If either of these are the case, the applicant shall continue completing this section).

E.3.3 Sediment Supply BMPs to Result in No Net Impact to Downstream Receiving Waters

If impacts to Critical Coarse Sediment Yield Areas cannot be avoided, sediment supply BMPs must be implemented such there is no net impact to receiving waters. Sediment supply BMPs may consist of approaches that permit flux of bed sediment supply from Critical Coarse Sediment Yield Areas within the project boundary. This approach is subject to acceptance by the County of Riverside. It may require extensive documentation and analysis by qualified professionals to support this demonstration.

Appendix H of the San Diego Model BMP Design Manual provides additional information on site-specific investigation of Critical Coarse Sediment Supply areas.

<http://www.projectcleanwater.org/download/2018-model-bmp-design-manual/>

n/a

Documentation of sediment supply BMPs should be detailed in Appendix 7.

Section F: Alternative Compliance

Alternative Compliance may be used to achieve compliance with pollutant control and/or hydromodification requirements for a given PDP. Alternative Compliance may be used under two scenarios, check the applicable box if the PDP is proposing to use Alternative Compliance to satisfy all or a portion of the Pollutant Control and/or Hydrologic Control requirements (but not sediment supply requirements)

- If it is not feasible to fully implement Infiltration or Biofiltration BMPs at a PDP site, Flow-Through Treatment Control BMPs may be used to treat pollutants contained in the portion of DCV not reliably retained on site and Alternative Compliance measures must also be implemented to mitigate for those pollutants in the DCV that are not retained or removed on site prior to discharging to a receiving water.

- Alternative Compliance is selected to comply with either pollutant control or hydromodification flow control requirements even if complying with these requirements is potentially feasible on-site. If such voluntary Alternative Compliance is implemented, Flow-Through Treatment Control BMPs must still be used to treat those pollutants in the portion of the DCV not reliably retained on site prior to discharging to a receiving water.

Refer to Section 2.7 of the SMR WQMP and consult the Local Jurisdiction for currently available Alternative Compliance pathways. Coordinate with the Copermittee if electing to participate in Alternative Compliance and complete the sections below to document implementation of the Flow-Through BMP component of the program.

F.1 Identify Pollutants of Concern

The purpose of this section is to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs and to document compliance and.

Utilize Table A-1 from Section A, which noted your project's Receiving Waters, to identify impairments for Receiving Waters (including downstream receiving waters) by completing Table F-1. Table F-1 includes the watersheds identified as impaired in the Approved 2010 303(d) list; check box corresponding with the PDP's receiving water. The most recent 303(d) lists are available from the State Water Resources Control Board website:

https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml).https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

Table F-1 Summary of Approved 2010 303(d) listed waterbodies and associated pollutants of concern for the Riverside County SMR Region and downstream waterbodies.

Water Body		Nutrients¹	Metals²	Toxicity	Bacteria and Pathogens	Pesticides and Herbicides	Sulfate	Total Dissolved Solids
<input type="checkbox"/>	De Luz Creek	X	X				X	
<input type="checkbox"/>	Long Canyon Creek		X		X	X		
<input type="checkbox"/>	Murrieta Creek	X	X	X		X		
<input type="checkbox"/>	Redhawk Channel	X	X		X	X		X
<input type="checkbox"/>	Santa Gertudis Creek	X	X		X	X		
<input type="checkbox"/>	Santa Margarita Estuary	X						
<input type="checkbox"/>	Santa Margarita River (Lower)	X			X			
<input type="checkbox"/>	Santa Margarita River (Upper)	X		X				
<input type="checkbox"/>	Temecula Creek	X	X	X		X		X
<input type="checkbox"/>	Warm Springs Creek	X	X		X	X		

¹Nutrients include nitrogen, phosphorus and eutrophic conditions caused by excess nutrients.

²Metals includes copper, iron, and manganese.

Use Table F-2 to identify the pollutants identified with the project site. Indicate the applicable PDP Categories and/or Project Features by checking the boxes that apply. If the identified General Pollutant Categories are the same as those listed for your Receiving Waters, then these will be your Pollutants of Concern; check the appropriate box or boxes in the last row.

Table F-2 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)		General Pollutant Categories									
		Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease	Total Dissolved Solids	Sulfate
<input type="checkbox"/>	Detached Residential Development	P	N	P	P	N	P	P	P	N	N
<input type="checkbox"/>	Attached Residential Development	P	N	P	P	N	P	P	P ⁽²⁾	N	N
<input type="checkbox"/>	Commercial/Industrial Development	P ⁽³⁾	P ⁽⁷⁾	P ⁽¹⁾	P ⁽¹⁾	P	P ⁽¹⁾	P	P	N	N
<input type="checkbox"/>	Automotive Repair Shops	N	P	N	N	P ^(4, 5)	N	P	P	N	N
<input type="checkbox"/>	Restaurants (>5,000 ft ²)	P	N	N	P ⁽¹⁾	N	N	P	P	N	N
<input type="checkbox"/>	Hillside Development (>5,000 ft ²)	P	N	P	P	N	P	P	P	N	N
<input type="checkbox"/>	Parking Lots (>5,000 ft ²)	P ⁽⁶⁾	P ⁽⁷⁾	P ⁽¹⁾	P ⁽¹⁾	P ⁽⁴⁾	P	P	P	N	N
<input type="checkbox"/>	Streets, Highways, and Freeways	P ⁽⁶⁾	P ⁽⁷⁾	P ⁽¹⁾	P ⁽¹⁾	P ⁽⁴⁾	P	P	P	N	N
<input type="checkbox"/>	Retail Gasoline Outlets	N	P ⁽⁷⁾	N	N	P ⁽⁴⁾	N	P	P	N	N
Project Priority Pollutant(s) of Concern		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

P = Potential

N = Not Potential

⁽¹⁾ A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

⁽²⁾ A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

⁽³⁾ A potential Pollutant is land use involving animal waste products; otherwise not expected

⁽⁴⁾ Including petroleum hydrocarbons

⁽⁵⁾ Including solvents

⁽⁶⁾ Bacterial indicators are routinely detected in pavement runoff

⁽⁷⁾ A potential source of metals, primarily copper and zinc. Iron, magnesium, and aluminum are commonly found in the environment and are commonly associated with soils, but are not primarily of anthropogenic stormwater origin in the municipal environment.

F.2 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential Pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must be selected to address the Project Priority Pollutants of Concern (identified above) and meet the acceptance criteria described in Section 2.3.7 of the SMR WQMP. Documentation of acceptance criteria must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table F-3 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID ¹	Priority Pollutant(s) of Concern to Mitigate ²	Removal Efficiency Percentage ³

¹ Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

² Cross Reference Table E.1 above to populate this column.

³ As documented in a Copermitttee Approved Study and provided in Appendix 6.

F.3 Sizing Criteria

Utilize Table F-4 below to appropriately size flow-through BMPs to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.1 of the SMR WQMP for further information.

Table F-4 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I _f	DMA Runoff Factor	DMA Areas x Runoff Factor	Enter BMP Name / Identifier Here	
	[A]		[B]	[C]	[A] x [C]		
						Design Storm (in)	Design Flow Rate (cfs)
	A _T = Σ[A]			Σ= [D]	[E]	[F] = $\frac{[D] \times [E]}{[G]}$	

[B], [C] is obtained as described in Section 2.6.1.b from the SMR WQMP

[E] either 0.2 inches or 2 times the 85th percentile hourly rainfall intensity

[G] = 43,560.

F.4 Hydrologic Performance Standard – Alternative Compliance Approach

Alternative compliance options are only available if the governing Copermittee has acknowledged the infeasibility of onsite Hydrologic Control BMPs and approved an alternative compliance approach. See Section 3.5 and 3.6 of the SMR WQMP.

Select the pursued alternative and describe the specifics of the alternative:

- Offsite Hydrologic Control Management within the same channel system

n/a

- In-Stream Restoration Project

n/a

For Offsite Hydrologic Control BMP Option

Each Hydrologic Control BMP must be designed to ensure that the flow duration curve of the post-development DMA will not exceed that of the pre-existing, naturally occurring, DMA by more than ten percent over a one-year period. Using SMRHM, the applicant shall demonstrate that the performance of each designed Hydrologic Control BMP is equivalent with the Hydrologic Performance Standard for onsite conditions. Complete Table F-5 below and identify, for each Hydrologic Control BMP, the equivalent DMA the Hydrologic Control BMP mitigates, that the SMRHM model passed, the total volume capacity of the BMP, the BMP footprint at top floor elevation, and the drawdown time of the BMP. SMRHM summary reports for the alternative approach should be documented in Appendix 7. Refer to the SMRHM Guidance Document for additional information on SMRHM. You can add rows to the table as needed.

Table F-5 Offsite Hydrologic Control BMP Sizing

BMP Name / Type	Equivalent DMA (ac)	SMRHM Passed	BMP Volume (ac-ft)	BMP Footprint (ac)	Drawdown time (hr)
		<input type="checkbox"/>			
		<input type="checkbox"/>			
		<input type="checkbox"/>			
		<input type="checkbox"/>			

For Instream Restoration Option

Attach to Appendix 7 the technical report detailing the condition of the receiving channel subject to the proposed hydrologic and sediment regimes. Provide the full design plans for the in-stream restoration project that have been approved by the Copermittee. Utilize the San Diego Regional Water Quality Equivalency Guidance Document.

Section G: Implement Trash Capture BMPs

The Local Jurisdiction may require full trash capture BMPs to be installed as part of the project. Consult with the Local Jurisdiction to determine applicability. Riverside County Maintenance is generally supportive of United Storm Water – Connector Pipe Screens or equivalent. Equivalent systems or alternative designs shall be on the State of California Approved Trash Capture Device List and requires approval by the Transportation Department for maintenance. Riverside County is developing Trash Capture Device Standards, which are expected to be added to the Transportation Plan Check Policies and Guidelines when available. Design calculations are not expected to be required if the project uses standard sizes per the County’s Trash Capture Device Standards. Until the Trash Capture Device Standards are available and the project uses standard sizes, the project shall complete the following tables.

Trash Capture BMPs may be applicable to Type 'D' DMAs, as defined in Section 2.3.4 of the SMR WQMP. Trash Capture BMPs are designed to treat Q_{TRASH} , the runoff flow rate generated during the 1-year 1-hour precipitation depth. Utilize Table G-1 to size Trash Capture BMP. Refer to Table G-2 to determine the Trash Capture Design Storm Intensity (E).

Table G-1 Sizing Trash Capture BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Enter BMP Name / Identifier Here	
	[A]		[B]	[C]	[A] x [C]		
	<i>BIOFILTRATION BASINS QUALIFY AS COMPLIANT PER STATE REGULATIONS WITHOUT FURTHER MODIFICATION</i>						
						<i>Trash Capture Design Storm Intensity (in)</i>	<i>Trash Capture Design Flow Rate (cubic feet or cfs)</i>
	$\Lambda_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D] \times [E]}{[G]}$

[B], [C] is obtained as described in Section 2.6.1.b from the SMR WQMP
 [G] = 43,560

Table G-2 Approximate precipitation depth/intensity values for calculation of the Trash Capture Design Storm

City	1-year 1-hour Precipitation Depth/Intensity (inches/hr)
Murrieta	0.47
Temecula	0.50
Wildomar	0.37

Use Table G-3 to summarize and document the selection and sizing of Trash Capture BMPs.

Table G-3 Trash Capture BMPs

<i>Table G-3 Trash Capture BMPs</i>				
<i>BMP Name / ID</i>	<i>DMA No(s)</i>	<i>BMP Type / Description</i>	<i>Required Trash Capture Flowrate (cfs)</i>	<i>Provided Trash Capture Flowrate (cfs)¹</i>
n/a				

¹For connector pipe screens, the Trash Capture Flowrate shall be based on a fully clogged condition for the screen, where the water level is at the top of the screen. Then determined the Flowrate based on weir equation ($Q_{weir} = C \times L \times H^{2/3}$), where $C = 3.4$). The height used to calculate the weir flow rate shall maintain a 6" freeboard to the invert of the catch basin opening at the road. This analysis is meant to replicate the hydraulic analysis used in the County's Full Trash Capture Device Standards.

Section H: Source Control BMPs

Section H need only be completed at the Preliminary WQMP phase if source control is critical to the project successfully handling the anticipated pollutants.

Source Control BMPs include permanent, structural features that may be required in your Project plans, such as roofs over and berms around trash and recycling areas, and Operational BMPs, such as regular sweeping and “housekeeping,” that must be implemented by the site’s occupant or user. The Maximum Extent Practicable (MEP) standard typically requires both types of BMPs. In general, Operational Source Control BMPs cannot be substituted for a feasible and effective Structural Source Control BMP. Complete checklist below to determine applicable Source Control BMPs for your site.

Project-Specific WQMP Source Control BMP Checklist			
All development projects must implement Source Control BMPs. Source Control BMPs are used to minimize pollutants that may discharge to the MS4. Refer to Chapter 3 (Section 3.8) of the SMR WQMP for additional information. Complete Steps 1 and 2 below to identify Source Control BMPs for the project site.			
STEP 1: IDENTIFY POLLUTANT SOURCES			
Review project site plans and identify the applicable pollutant sources. “Yes” indicates that the pollutant source is applicable to project site. “No” indicates that the pollutant source is not applicable to project site.			
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Storm Drain Inlets	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Outdoor storage areas
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Floor Drains	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Material storage areas
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sump Pumps	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Fueling areas
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Pest Control/Herbicide Application	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Loading Docks
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Food Service Areas	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Fire Sprinkler Test/Maintenance water
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Trash Storage Areas	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Plazas, Sidewalks and Parking Lots
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Industrial Processes	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Pools, Spas, Fountains and other water features
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Vehicle and Equipment Cleaning and Maintenance/Repair Areas		

STEP 2: REQUIRED SOURCE CONTROL BMPs		
<p>List each Pollutant source identified above in column 1 and fill in the corresponding Structural Source Control BMPs and Operational Control BMPs by referring to the Stormwater Pollutant Sources/Source Control Checklist included in Appendix 8. The resulting list of structural and operational source control BMPs must be implemented as long as the associated sources are present on the project site. Add additional rows as needed.</p>		
Pollutant Source	Structural Source Control BMP	Operational Source Control BMP
A. On-site storm drain inlets	Mark all inlets with the words “No Dumping! Flows to Bay” or similar	Maintain and periodically repaint or replace inlet markings
		Provide stormwater pollution prevention information to new site owners, lessees, or operators
		See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
		Include the following in lease agreements: ‘Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.
D1. Need for future indoor & structural pest control	Note building design features that discourage entry of pests.	Provide Integrated Pest Management information to owners, lessees, and operators.
D2. Landscape/Outdoor Pesticide Use	Show Locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.	State that final landscape plans will accomplish all of the following: Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.
	Show self-retaining landscape areas, if any.	Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.
	Show stormwater treatment facilities	Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.

Pollutant Source	Structural Source Control BMP	Operational Source Control BMP
G. Refuse areas	Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.	State how the following will be implemented:
	If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms.	Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs.
	Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available onsite. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
H. Industrial processes.	Show process area.	See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
N. Fire Sprinkler Test Water		Provide a means to drain fire Sprinkler test water to the sanitary sewer.
O. Miscellaneous Drain or Wash Water - Condensate Drain Lines		Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.
O. Miscellaneous Drain or Wash Water – Roofing, gutters, and trim		Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.
P. Plazas, sidewalks, and parking lots		Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.

Section I: Coordinate Submittal with Other Site Plans

For Final WQMPs, populate Table I-1 below to assist the plan checker in an expeditious review of your project. During construction and at completion, County of Riverside inspectors will verify the installation of BMPs against the approved plans. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table I-1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
DMA1-BMP1	URBAN POND (CISTERN) AND MODULAR WETLANDS (COMPACT BIOFILTRATION)	CONCEPTUAL GRADING PLAN SHEETS 1 AND 2

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. The Copermitttee with jurisdiction over the Project site can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Use Table I-2 to identify other applicable permits that may impact design of the site. If yes is answered to any of the items below, the Copermitttee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Table I-2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Statewide Construction General Permit Coverage - State GCP WDID# (_____)	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
Statewide Industrial General Permit Coverage	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Other (please list in the space below as required)		
- County of Riverside Grading Permit	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N
- County of Riverside Building Permit	<input checked="" type="checkbox"/> Y	<input checked="" type="checkbox"/> N

WDID# Note: This project will require a Construction WDID# that will be obtained during final engineering and prior to the issuance of the grading permit.

Section J: Operation, Maintenance and Funding

Applicant is required to state the intended responsible party for BMP Operation, Maintenance and Funding at the Preliminary WQMP phase. The remaining requirements as outlined above are required for Final WQMP only.

The Copermittee with jurisdiction over the Project site will periodically verify that BMPs on your Project are maintained and continue to operate as designed. To make this possible, the Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement maintenance of BMPs in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized Operations and Maintenance or inspections but will require typical landscape maintenance as noted in Chapter 5, in the SMR WQMP. Include a brief description of typical landscape maintenance for these areas.

The Copermittee with jurisdiction over the Project site will also require that you prepare and submit a detailed BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a BMP Operation and Maintenance Plan are in Chapter 5 of the SMR WQMP.

Maintenance Mechanism: Property Owner

Will the proposed BMPs be maintained by a Homeowners' Association (HOA) or Property Owners Association (POA)?

Y N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9, **see Appendix 9 for additional instructions**. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Section K: Acronyms, Abbreviations and Definitions

Regional MS4 Permit	Order No. R9-2013-0001 as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100 an NPDES Permit issued by the San Diego Regional Water Quality Control Board.
Applicant	Public or private entity seeking the discretionary approval of new or replaced improvements from the Copermittee with jurisdiction over the project site. The Applicant has overall responsibility for the implementation and the approval of a Priority Development Project. The WQMP uses consistently the term “user” to refer to the applicant such as developer or project proponent. The WQMP employs also the designation “user” to identify the Registered Professional Civil Engineer responsible for submitting the Project-Specific WQMP, and designing the required BMPs.
Best Management Practice (BMP)	Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of municipal storm water permits, BMPs are typically used in place of numeric effluent limits.
BMP Fact Sheets	BMP Fact Sheets are available in the LID BMP Design Handbook. Individual BMP Fact Sheets include siting considerations, and design and sizing guidelines for seven types of structural BMPs (infiltration basin, infiltration trench, permeable pavement, harvest-and-use, bioretention, extended detention basin, and sand filter).
California Stormwater Quality Association (CASQA)	Publisher of the California Stormwater Best Management Practices Handbooks, available at www.cabmphandbooks.com .
Conventional Treatment Control BMP	A type of BMP that provides treatment of stormwater runoff. Conventional treatment control BMPs, while designed to treat particular Pollutants, typically do not provide the same level of volume reduction as LID BMPs, and commonly require more specialized maintenance than LID BMPs. As such, the Regional MS4 Permit and this WQMP require the use of LID BMPs wherever feasible, before Conventional Treatment BMPs can be considered or implemented.
Copermittees	The Regional MS4 Permit identifies the Cities of Murrieta, Temecula, and Wildomar, the County, and the District, as Copermittees for the SMR.
County	The abbreviation refers to the County of Riverside in this document.

CEQA	California Environmental Quality Act - a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.
CIMIS	California Irrigation Management Information System - an integrated network of 118 automated active weather stations all over California managed by the California Department of Water Resources.
CWA	Clean Water Act - is the primary federal law governing water pollution. Passed in 1972, the CWA established the goals of eliminating releases of high amounts of toxic substances into water, eliminating additional water pollution by 1985, and ensuring that surface waters would meet standards necessary for human sports and recreation by 1983. CWA Section 402(p) is the federal statute requiring NPDES permits for discharges from MS4s.
CWA Section 303(d) Waterbody	Impaired water in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the CWA. The discharge of urban runoff to these water bodies by the Copermittees is significant because these discharges can cause or contribute to violations of applicable water quality standards.
Design Storm	The Regional MS4 Permit has established the 85th percentile, 24-hour storm event as the "Design Storm". The applicant may refer to Exhibit A to identify the applicable Design Storm Depth (D85) to the project.
DCV	Design Capture Volume (DCV) is the volume of runoff produced from the Design Storm to be mitigated through LID Retention BMPs, Other LID BMPs and Volume Based Conventional Treatment BMPs, as appropriate.
Design Flow Rate	The design flow rate represents the minimum flow rate capacity that flow-based conventional treatment control BMPs should treat to the MEP, when considered.
DCIA	Directly Connected Impervious Areas - those impervious areas that are hydraulically connected to the MS4 (i.e. street curbs, catch basins, storm drains, etc.) and thence to the structural BMP without flowing over pervious areas.
Discretionary Approval	A decision in which a Copermittee uses its judgment in deciding whether and how to carry out or approve a project.
District	Riverside County Flood Control and Water Conservation District.
DMA	A Drainage Management Area - a delineated portion of a project site that is hydraulically connected to a common structural BMP or conveyance point. The Applicant may refer to Section 3.3 for further guidelines on how to delineate DMAs.

Drawdown Time	Refers to the amount of time the design volume takes to pass through the BMP. The specified or incorporated drawdown times are to ensure that adequate contact or detention time has occurred for treatment, while not creating vector or other nuisance issues. It is important to abide by the drawdown time requirements stated in the fact sheet for each specific BMP.
Effective Area	Area which 1) is suitable for a BMP (for example, if infiltration is potentially feasible for the site based on infeasibility criteria, infiltration must be allowed over this area) and 2) receives runoff from impervious areas.
ESA	An Environmental Sensitive Area (ESA) designates an area "in which plants or animals life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would be easily disturbed or degraded by human activities and developments". (Reference: California Public Resources Code § 30107.5).
ET	Evapotranspiration (ET) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is also an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity
FAR	The Floor Area Ratio (FAR) is the total square feet of a building divided by the total square feet of the lot the building is located on.
Flow-Based BMP	Flow-based BMPs are conventional treatment control BMPs that are sized to treat the design flow rate.
FPPP	Facility Pollution Prevention Plan
HCOC	Hydrologic Condition of Concern - Exists when the alteration of a site's hydrologic regime caused by development would cause significant impacts on downstream channels and aquatic habitats, alone or in conjunction with impacts of other projects.
HMP	Hydromodification Management Plan - Plan defining Performance Standards for PDPs to manage increases in runoff discharge rates and durations.
Hydrologic Control BMP	BMP to mitigate the increases in runoff discharge rates and durations and meet the Performance Standards set forth in the HMP.
HSG	Hydrologic Soil Groups - soil classification to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSGs are A (very low runoff potential/high infiltration rate), B, C, and D (high runoff potential/very low infiltration rate)

Hydromodification	The Regional MS4 Permit identifies that increased volume, velocity, frequency and discharge duration of storm water runoff from developed areas has the potential to greatly accelerate downstream erosion, impair stream habitat in natural drainages, and negatively impact beneficial uses.
JRMP	A separate Jurisdictional Runoff Management Plan (JRMP) has been developed by each Copermittee and identifies the local programs and activities that the Copermittee is implementing to meet the Regional MS4 Permit requirements.
LID	Low Impact Development (LID) is a site design strategy with a goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques. LID site design BMPs help preserve and restore the natural hydrologic cycle of the site, allowing for filtration and infiltration which can greatly reduce the volume, peak flow rate, velocity, and pollutant loads of storm water runoff.
LID BMP	A type of stormwater BMP that is based upon Low Impact Development concepts. LID BMPs not only provide highly effective treatment of stormwater runoff, but also yield potentially significant reductions in runoff volume – helping to mimic the pre-project hydrologic regime, and also require less ongoing maintenance than Treatment Control BMPs. The applicant may refer to Chapter 2.
LID BMP Design Handbook	The LID BMP Design Handbook was developed by the Copermittees to provide guidance for the planning, design and maintenance of LID BMPs which may be used to mitigate the water quality impacts of PDPs within the County.
LID Bioretention BMP	LID Bioretention BMPs are bioretention areas are vegetated (i.e., landscaped) shallow depressions that provide storage, infiltration, and evapotranspiration, and provide for pollutant removal (e.g., filtration, adsorption, nutrient uptake) by filtering stormwater through the vegetation and soils. In bioretention areas, pore spaces and organic material in the soils help to retain water in the form of soil moisture and to promote the adsorption of pollutants (e.g., dissolved metals and petroleum hydrocarbons) into the soil matrix. Plants use soil moisture and promote the drying of the soil through transpiration. The Regional MS4 Permit defines “retain” as to keep or hold in a particular place, condition, or position without discharge to surface waters.

LID Biofiltration BMP	BMPs that reduce stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration, and other biological and chemical processes. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and plants, and collected through an underdrain.
LID Harvest and Reuse BMP	BMPs used to facilitate capturing Stormwater Runoff for later use without negatively impacting downstream water rights or other Beneficial Uses.
LID Infiltration BMP	BMPs to reduce stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Typical LID Infiltration BMPs include infiltration basins, infiltration trenches and pervious pavements.
LID Retention BMP	BMPs to ensure full onsite retention without runoff of the DCV such as infiltration basins, bioretention, chambers, trenches, permeable pavement and pavers, harvest and reuse.
LID Principles	Site design concepts that prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.
MEP	Maximum Extent Practicable - standard established by the 1987 amendments to the CWA for the reduction of Pollutant discharges from MS4s. Refer to Attachment C of the Regional MS4 Permit for a complete definition of MEP.
MF	Multi-family - zoning classification for parcels having 2 or more living residential units.
MS4	Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designated or used for collecting or conveying storm water; (iii) Which is not a combined sewer; (iv) Which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.26.
New Development Project	Defined by the Regional MS4 Permit as 'Priority Development Projects' if the project, or a component of the project meets the categories and thresholds described in Section 1.1.1.

NPDES	National Pollution Discharge Elimination System - Federal program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the CWA.
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project - Includes New Development and Redevelopment project categories listed in Provision E.3.b of the Regional MS4 Permit.
Priority Pollutants of Concern	Pollutants expected to be present on the project site and for which a downstream water body is also listed as Impaired under the CWA Section 303(d) list or by a TMDL.
Project-Specific WQMP	A plan specifying and documenting permanent LID Principles and Stormwater BMPs to control post-construction Pollutants and stormwater runoff for the life of the PDP, and the plans for operation and maintenance of those BMPs for the life of the project.
Receiving Waters	Waters of the United States.
Redevelopment Project	The creation, addition, 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 trenching and resurfacing associated with utility work; resurfacing existing roadways; new sidewalk construction, pedestrian ramps, or bike lane on existing roads; and routine replacement of damaged pavement, such as pothole repair. Project that meets the criteria described in Section 1.
Runoff Fund	Runoff Funds have not been established by the Copermitttees and are not available to the Applicant. If established, a Runoff Fund will develop regional mitigation projects where PDPs will be able to buy mitigation credits if it is determined that implementing onsite controls is infeasible.
San Diego Regional Board	San Diego Regional Water Quality Control Board - The term "Regional Board", as defined in Water Code section 13050(b), is intended to refer to the California Regional Water Quality Control Board for the San Diego Region as specified in Water Code Section 13200. State agency responsible for managing and regulating water quality in the SMR.
SCCWRP	Southern California Coastal Water Research Project
Site Design BMP	Site design BMPs prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.

SF	Parcels with a zoning classification for a single residential unit.
SMC	Southern California Stormwater Monitoring Coalition
SMR	The Santa Margarita Region (SMR) represents the portion of the Santa Margarita Watershed that is included within the County of Riverside.
Source Control BMP	Source Control BMPs land use or site planning practices, or structural or nonstructural measures that aim to prevent runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between Pollutants and runoff.
Structural BMP	Structures designed to remove pollutants from stormwater runoff and mitigate hydromodification impacts.
SWPPP	Storm Water Pollution Prevention Plan
Tentative Tract Map	Tentative Tract Maps are required for all subdivision creating five (5) or more parcels, five (5) or more condominiums as defined in Section 783 of the California Civil Code, a community apartment project containing five (5) or more parcels, or for the conversion of a dwelling to a stock cooperative containing five (5) or more dwelling units.
TMDL	Total Maximum Daily Load - the maximum amount of a Pollutant that can be discharged into a waterbody from all sources (point and non-point) and still maintain Water Quality Standards. Under CWA Section 303(d), TMDLs must be developed for all waterbodies that do not meet Water Quality Standards after application of technology-based controls.
USEPA	United States Environmental Protection Agency
Volume-Based BMP	Volume-Based BMPs applies to BMPs where the primary mode of pollutant removal depends upon the volumetric capacity such as detention, retention, and infiltration systems.
WQMP	Water Quality Management Plan
Wet Season	The Regional MS4 Permit defines the wet season from October 1 through April 30.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

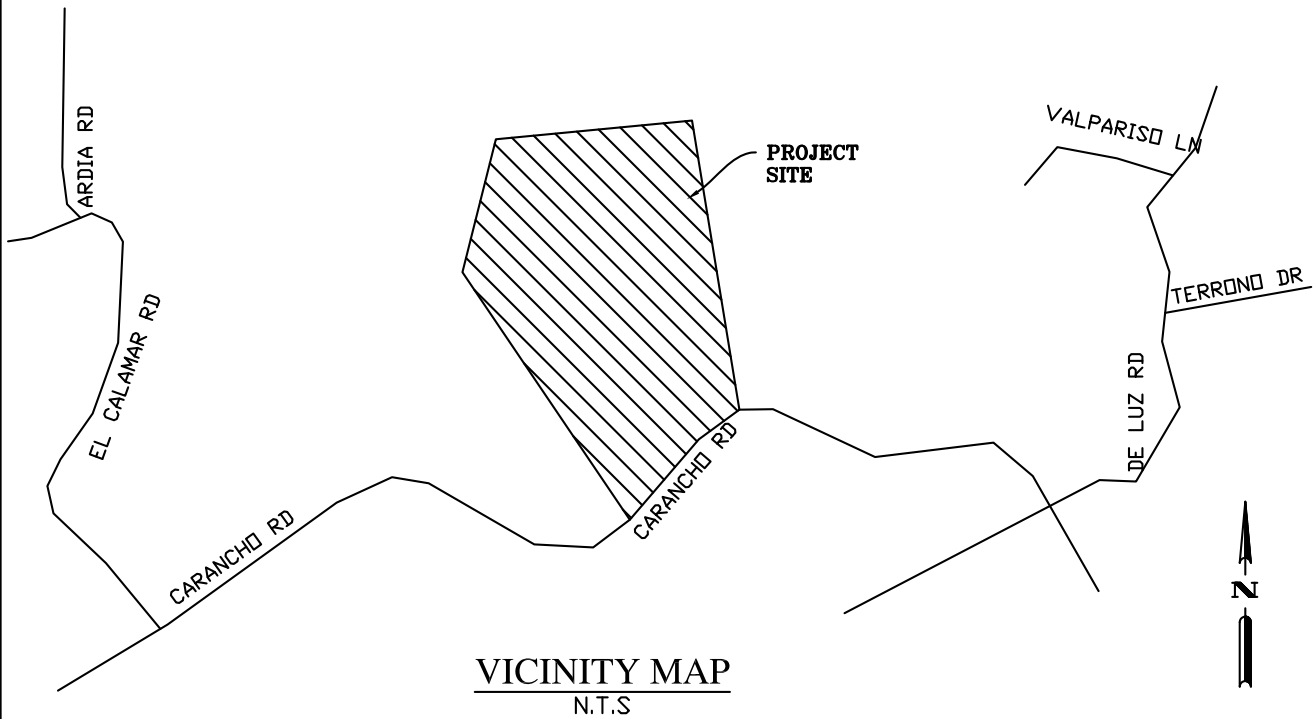
Complete the checklist below to verify all exhibits and components are included in the Project-Specific WQMP. Refer Section 4 of the SMR WQMP and Section D of this Template.

Map and Site Plan Checklist

Indicate all Maps and Site Plans are included in your Project-Specific WQMP by checking the boxes below.

- Vicinity and Location Map
- Existing Site Map (unless existing conditions are included in WQMP Site Plan)
- WQMP Site Plan
 - Parcel Boundary and Project Footprint
 - Existing and Proposed Topography
 - Drainage Management Areas (DMAs)
 - Proposed Structural Best Management Practices (BMPs)
 - Drainage Paths
 - Drainage infrastructure, inlets, overflows
 - Source Control BMPs
 - Site Design BMPs
 - Buildings, Roof Lines, Downspouts
 - Impervious Surfaces
 - Pervious Surfaces (i.e. Landscaping)
 - Standard Labeling
 - Use Riverside County Flood Control CB-110 for outlet structure with block outs for a trash screen out the outside, and an orifice/weir plate(s) on the inside of the structure or other design that is as easy to maintain. The screen should be as large as possible to minimize clogging.
 - If BMPs are in the road R/W (only with CFD/CSA maintenance or LID Principals) add "BMP" paddle markers at the start and end of each BMPs and LID principals
 - For Tracts, the Regional Board requires fully functioning WQMP BMPs for opening model home complexes, sales offices, or use of roads (i.e. prior to occupancy or intended use of any portion of the project). The County encourages phasing post-construction BMPs, small structural BMPs (e.g. specifically for sales offices), or self-retaining areas. This phasing can be shown on the WQMP site map and sequencing shall be included on the Grading plans, so that a fully functioning WQMP BMP is addressing any portion of the project that has been granted occupancy or granted the intended use.

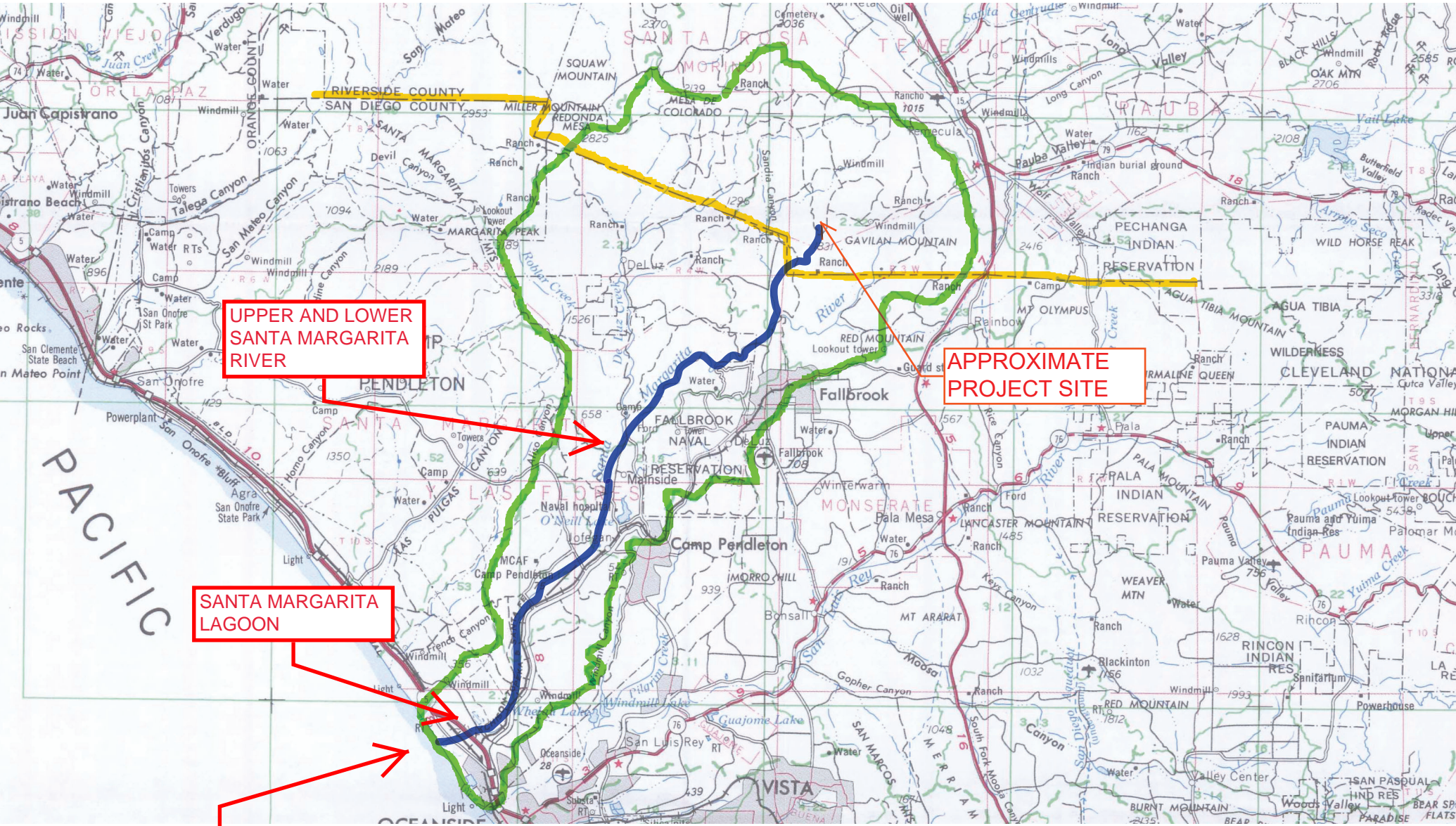
VICINITY MAP



SITE ADDRESS:
22750 CARANCHO ROAD
TEMECULA, CALIFORNIA 92590

A.P.N.:
933-020-005-06

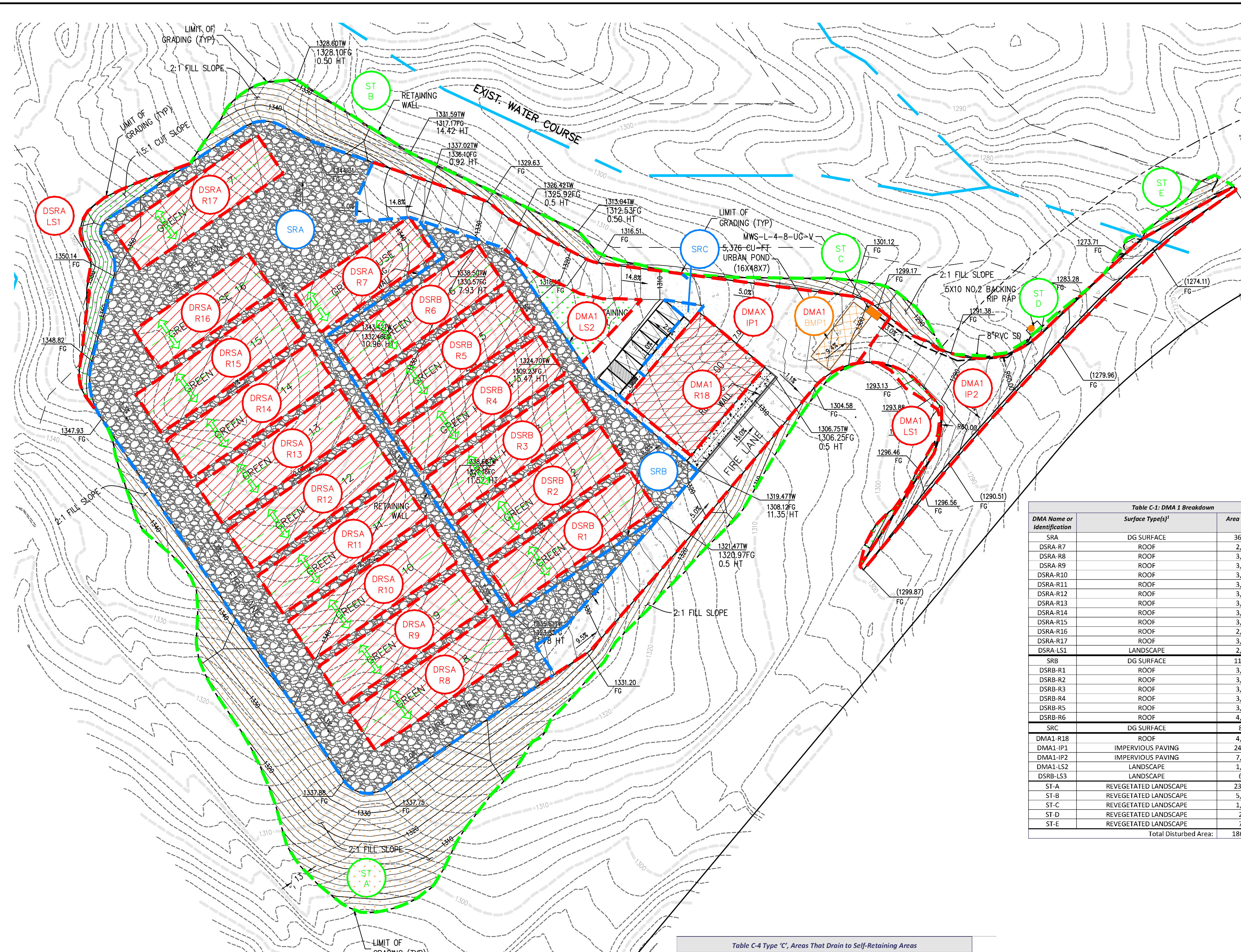
REGION 9 WATERSHED LOCATION MAP AND PATH TO OCEAN



PACIFIC OCEAN

902.22 SANTA MARGARITA RIVER WATERSHED
 LOCAL UNNAMED STREAMS

SANTA MARGARITA HU
 DE LUZ HA
 GAVILAN HSA



MASTER DMA LEGEND (DMA EXHIBITS)

- DMA BOUNDARY
- SELF-TREATING DMA BOUNDARY
- SELF-RETAINING AREA BOUNDARY
- BMP BOUNDARY
- DMA DRAINING TO SELF-RETAINING AREA
DMA SUB-AREA ID
- SELF-TREATING DMA ID
DMA SUB-AREA ID
- SELF-RETAINING AREAS / DRAINS TO SELF-RETAINING AREAS
DMA SUB-AREA ID
- BMP AREA
DMA/BMP ID
- ROOF RIDGE LINE
- BMP1: CISTERN STORAGE VIA 5376 CU-FT BIOCLEAN 12 UNIT URBAN POND (16X48X7)
- BMP1: BIOFILTRATION UNIT VIA BIOCLEAN MSW-L-4-8-UG-V
- 5'X10' NO. 2 BACKING ROCK RIP RAP DISSIPATION AREA
- 24' PCC FIRE LANE PAVING

SOURCE CONTROL BMP LEGEND

- A. STORM DRAIN INLET W/STENCILING (LOCATION TO BE DETERMINED)
- D1. NEED FOR FUTURE INDOOR & STRUCTURAL OUTDOOR PEST CONTROL
- D2. LANDSCAPE/OUTDOOR PESTICIDE USE
- NOT PLOTTABLE G. REFUSE AREAS (LOCATIONS TO BE DETERMINED)
- H. INDUSTRIAL PROCESSES (LOCATIONS TO BE DETERMINED)
- N. FIRE SPRINKLERS
- O. MISC. - CONDENSATE DRAIN LINES
- O. MISC. - ROOFTOP EQUIPMENT
- O. MISC. - ROOFING, GUTTERS, AND TRIM
- P. PLAZAS, SIDEWALKS, AND PARKING LOTS

SITE DEIGN BMP LEGEND

- IDENTIFY AND PRESERVE EXISTING DRAINAGE PATTERNS
- NOT PLOTTABLE IDENTIFY AND PROTECT EXISTING VEGETATION (OUTSIDE DISTURBED AREA)
- NOT PLOTTABLE IDENTIFY AND PRESERVE NATURAL INFILTRATION CAPACITY
- MINIMIZE IMPERVIOUS AREA (WITH THE USE OF DG SURFACES)
- NOT PLOTTABLE DISPERSE IMPERVIOUS AREA RUNOFF TO ADJACENT PERVIOUS AREAS
- UTILIZATION OF NATIVE OR DROUGHT TOLERANT SITE LANDSCAPING

Table C-1: DMA 1 Breakdown

DMA Name or Identification	Surface Type(s) ¹	Area (Sq. Ft.)	DMA Type
SRA	DG SURFACE	36,933	To be Determined in Step 3
DSRA-R7	ROOF	2,920	
DSRA-R8	ROOF	3,840	
DSRA-R9	ROOF	3,840	
DSRA-R10	ROOF	3,840	
DSRA-R11	ROOF	3,840	
DSRA-R12	ROOF	3,840	
DSRA-R13	ROOF	3,840	
DSRA-R14	ROOF	3,840	
DSRA-R15	ROOF	3,840	
DSRA-R16	ROOF	2,920	
DSRA-R17	ROOF	3,840	
DSRA-LS1	LANDSCAPE	2,203	
SRB	DG SURFACE	11,600	
DSRB-R1	ROOF	3,840	
DSRB-R2	ROOF	3,840	
DSRB-R3	ROOF	3,840	
DSRB-R4	ROOF	3,840	
DSRB-R5	ROOF	3,840	
DSRB-R6	ROOF	4,786	
SRC	DG SURFACE	817	
DMA1-R18	ROOF	4,800	
DMA1-IP1	IMPERVIOUS PAVING	24,814	
DMA1-IP2	IMPERVIOUS PAVING	7,746	
DMA1-LS2	LANDSCAPE	1,556	
ST-A	REVEGETATED LANDSCAPE	677	
ST-B	REVEGETATED LANDSCAPE	23,693	
ST-C	REVEGETATED LANDSCAPE	5,620	
ST-D	REVEGETATED LANDSCAPE	205	
ST-E	REVEGETATED LANDSCAPE	749	
Total Disturbed Area:		186,208	

Table C-4 Type 'C', Areas That Drain to Self-Retaining Areas

DMA Name/ID	DMA				Receiving Self-Retaining DMA		
	Area (square feet)	Post-project surface type	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
DSRA-R7	2,920	ROOF	1.0	2,920			
DSRA-R8	3,840	ROOF	1.0	3,840			
DSRA-R9	3,840	ROOF	1.0	3,840			
DSRA-R10	3,840	ROOF	1.0	3,840			
DSRA-R11	3,840	ROOF	1.0	3,840			
DSRA-R12	3,840	ROOF	1.0	3,840			
DSRA-R13	3,840	ROOF	1.0	3,840			
DSRA-R14	3,840	ROOF	1.0	3,840			
DSRA-R15	3,840	ROOF	1.0	3,840			
DSRA-R16	2,920	ROOF	1.0	2,920			
DSRA-R17	3,840	ROOF	1.0	3,840			
DSRA-LS1	2,203	LANDSCAPE	0.1	220			
					Σ	40,619	
DSRB-R1	3,840	ROOF	1.0	3,840	SRA	36,933	1.10 < 2
DSRB-R2	3,840	ROOF	1.0	3,840			
DSRB-R3	3,840	ROOF	1.0	3,840			
DSRB-R4	3,840	ROOF	1.0	3,840			
DSRB-R5	3,840	ROOF	1.0	3,840			
DSRB-R6	3,840	ROOF	1.0	3,840			
					Σ	23,040	
					Σ	11,600	1.99 < 2

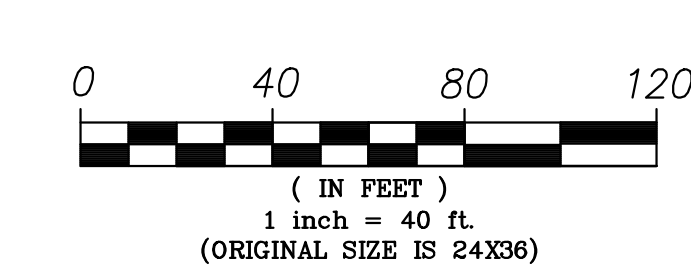
Note: DSRA and DSRB both have overflow capacity in their associated Biofiltration with Infiltration BMPs.

Table C-3 Type 'B', Self-Retaining Areas

DMA Name/ID	Self-Retaining Area		Type 'C' DMAs that are draining to the Self-Retaining Area		Required Retention Depth (inches)
	Post-project surface type	Area (square feet)	Storm Depth (inches)	DMA Name / ID	
SRA	DG AREA	36,933	0.82	DSRA-R7	1.22" REQUIRED 2.4" PROPOSED (8" DG PROPOSED WITH 40% POROSITY)
				DSRA-R8	
				DSRA-R9	
				DSRA-R10	
				DSRA-R11	
				DSRA-R12	
				DSRA-R13	
				DSRA-R14	
				DSRA-R15	
				DSRA-R16	
SRB	DG AREA	11,600	0.82	DSRB-R1	2.45" REQUIRED 3.2" PROPOSED (8" DG PROPOSED WITH 40% POROSITY)
				DSRB-R2	
				DSRB-R3	
				DSRB-R4	
				DSRB-R5	
				DSRB-R6	

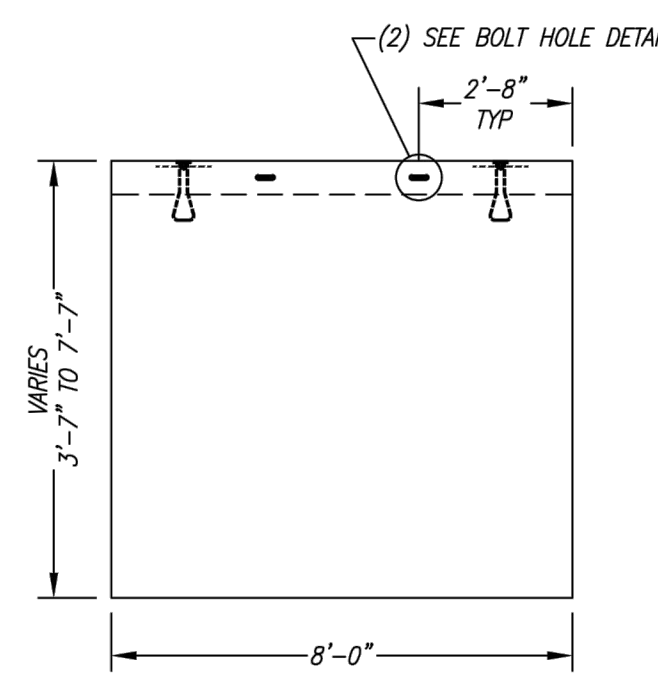
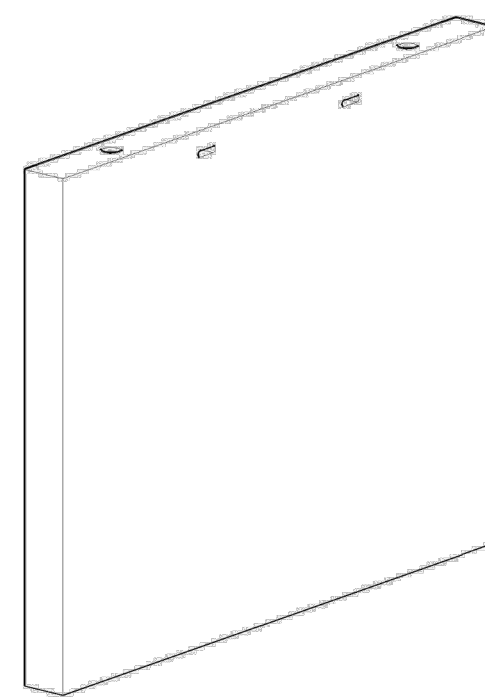
Table C-2: Type 'A', Self-Treating DMAs

DMA Name or Identification	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
ST-A	23,693	LANDSCAPING	REVEGETATED NATIVE
ST-B	5,620	LANDSCAPING	REVEGETATED NATIVE
ST-C	1,623	LANDSCAPING	REVEGETATED NATIVE
ST-D	205	LANDSCAPING	REVEGETATED NATIVE
ST-E	749	LANDSCAPING	REVEGETATED NATIVE

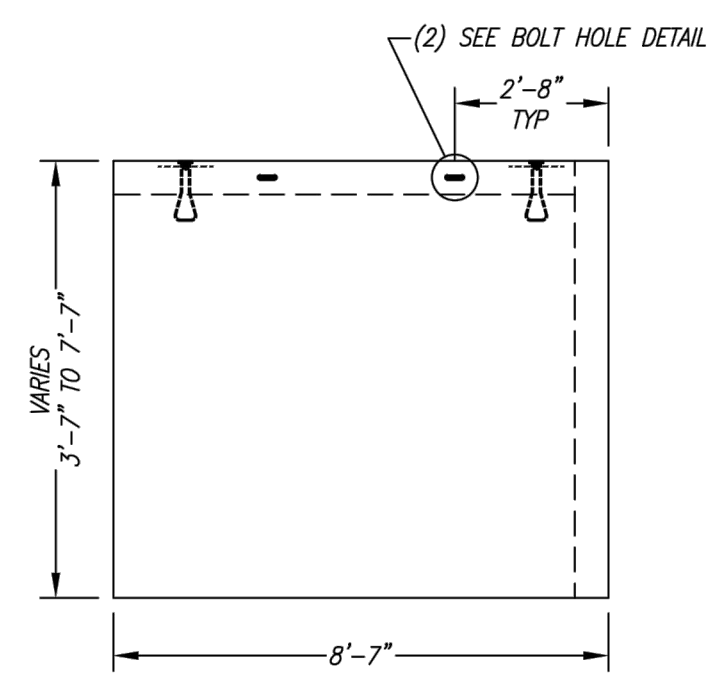


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 27393 YNEZ ROAD, SUITE 159 TEMECULA, CALIFORNIA 92591
 PHONE (951) 252-7632 FAX (951) 346-5726

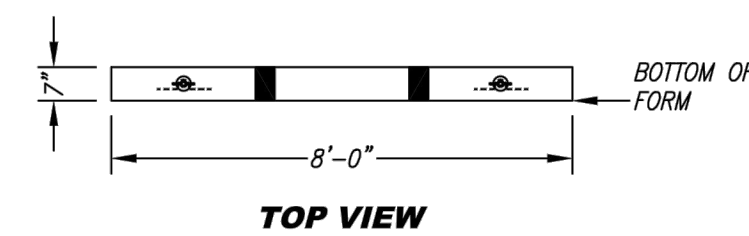
CUP190038
COUNTY OF RIVERSIDE
 CANNIBIS CULTIVATION FACILITY
 TEMECULA, CALIFORNIA
 APNS: 933-020-005-6
 LEGAL: SEE GRADING PLAN
WQMP SITE PLAN
 EXHIBIT 1 OF 2



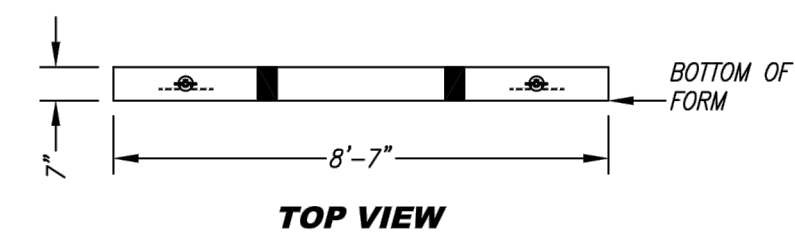
EXTERIOR VIEW



EXTERIOR VIEW



TOP VIEW

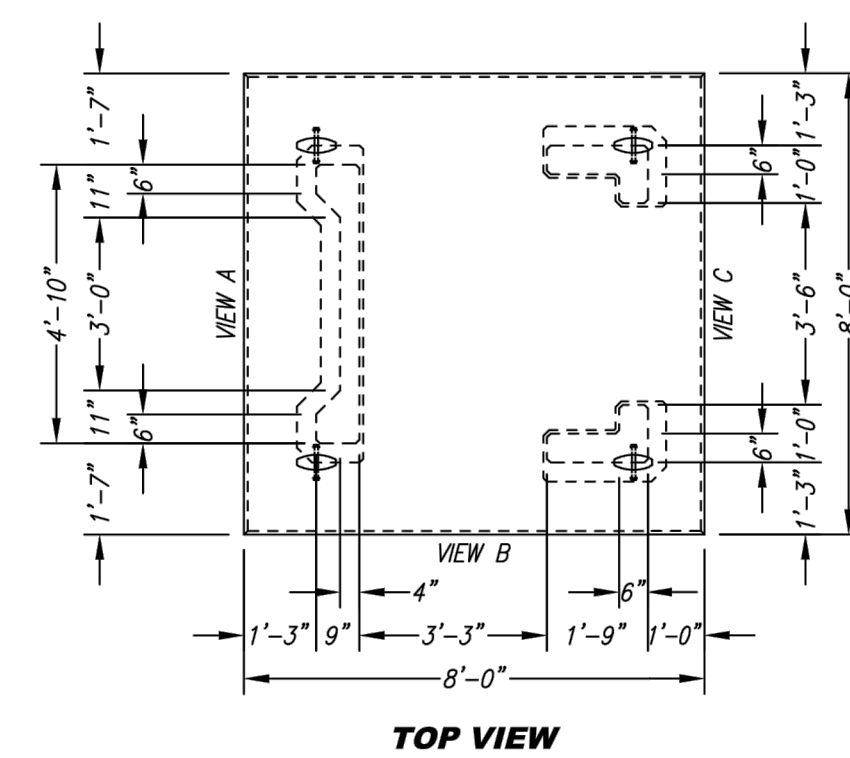


TOP VIEW

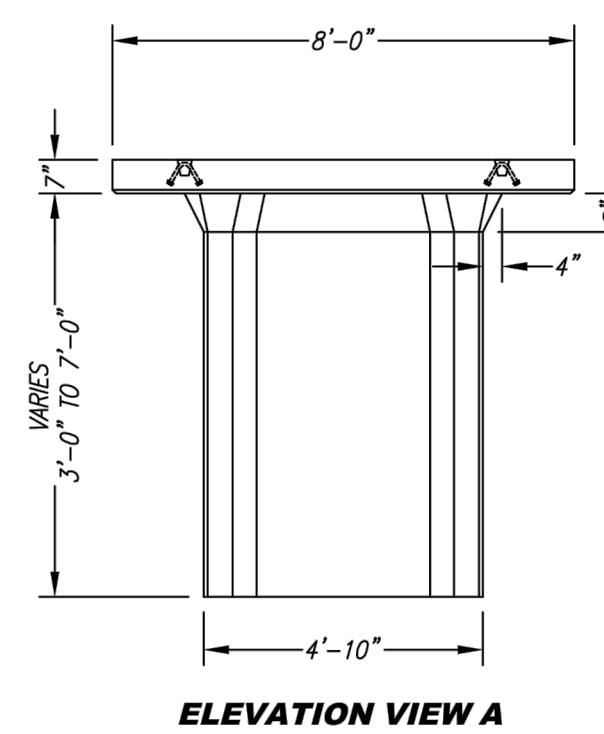
1" SLOTTED HOLE FOR USE WITH 3/8" EXPANSION ANCHORS/NUTS/WASHERS

BOLT HOLE DETAIL

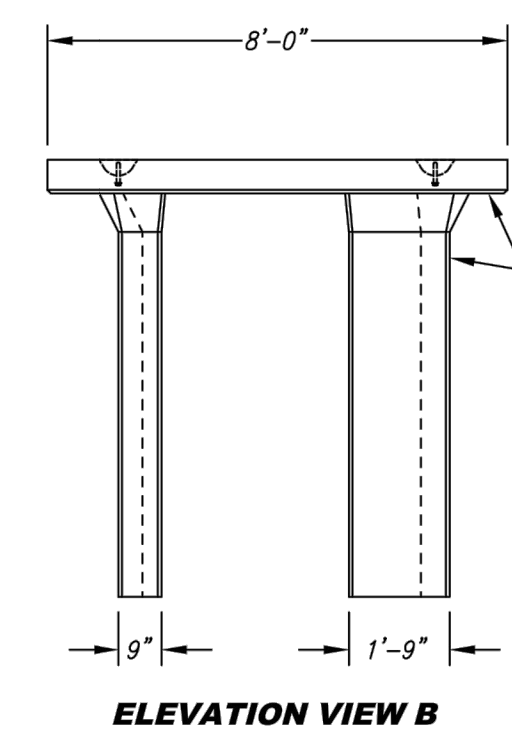
URBAN POND – EXTERIOR WALL PANELS



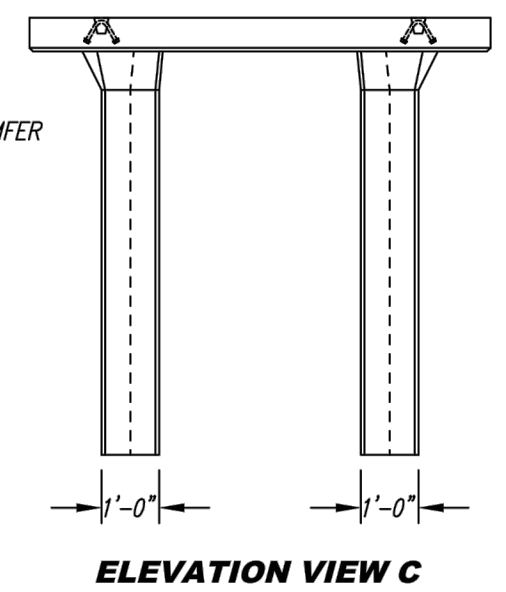
TOP VIEW



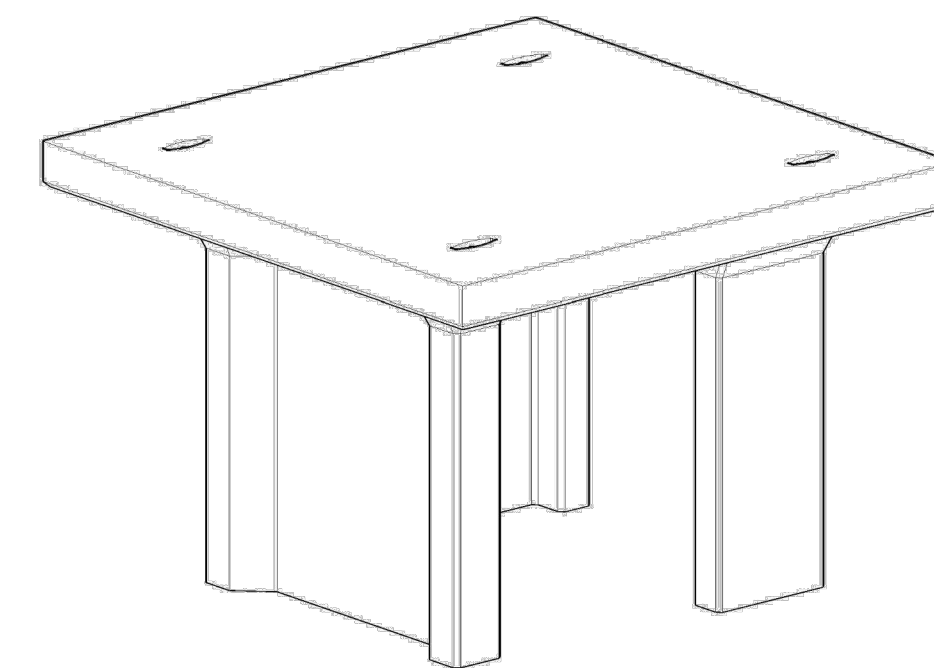
ELEVATION VIEW A



ELEVATION VIEW B



ELEVATION VIEW C



URBAN POND – SINGULAR MODULAR – INTERIOR

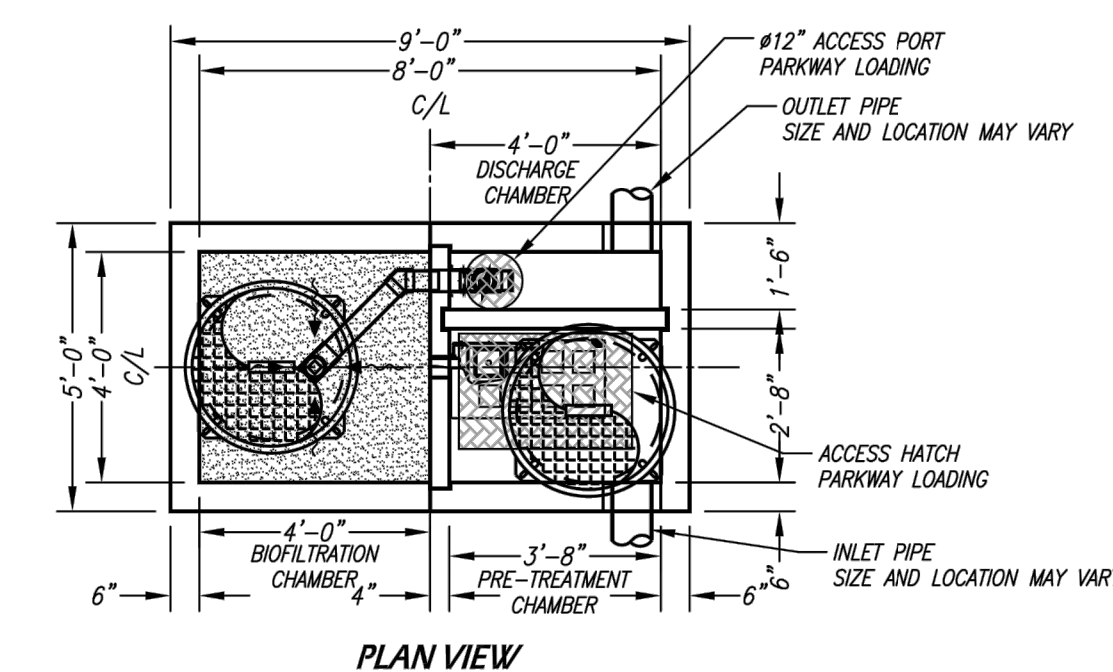
SITE SPECIFIC DATA*			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
PERFORMANCE DATA			
TREATMENT FLOW (CFS)	0.116		
TREATMENT HGL (FT)			
BYPASS FLOW RATE (CFS)	DEPENDANT ON PIPE SIZE		
PROJECT PARAMETERS			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1		PVC	8"
OUTLET PIPE	-4.13	PVC	8"
RIM ELEVATION	0.0		
SURFACE LOADING REQUIREMENT	PARKWAY		
FRAME & COVER	PRETREATMENT	BIOFILTRATION	DISCHARGE
	24"X36"	OPEN PLANTER	12"
WETLANDMEDIA VOLUME (CY)	2.4		
MEDIA DELIVERED	TBD		
ORIFICE SIZE (DIA)			
MAX PICK WEIGHT (LBS)	TBD		
NOTES:			
*PER ENGINEER OF RECORD			

INSTALLATION NOTES

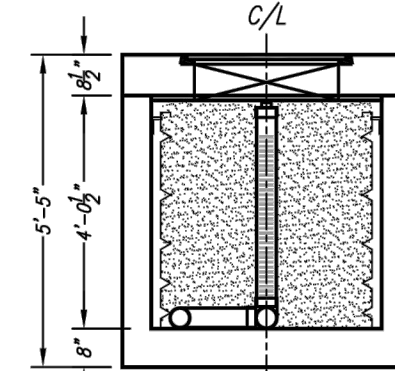
- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
- MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
- ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH).
- INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
- ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.

GENERAL NOTES

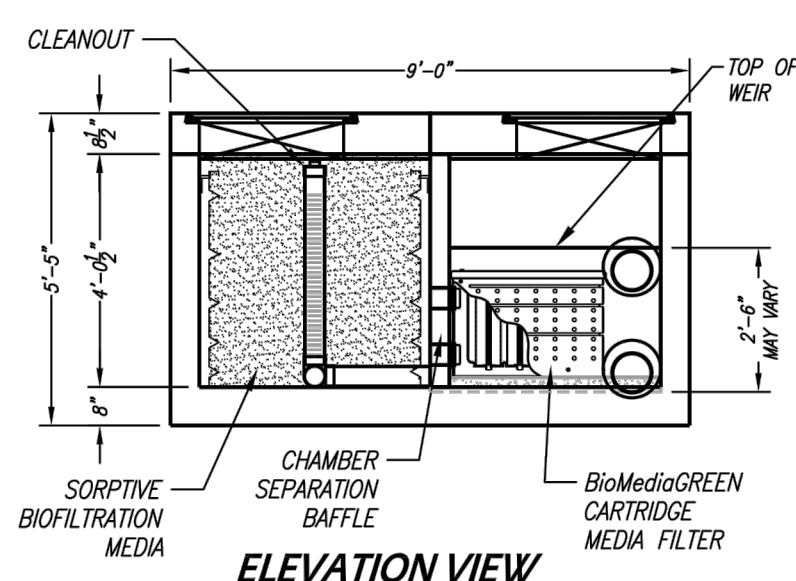
- MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.



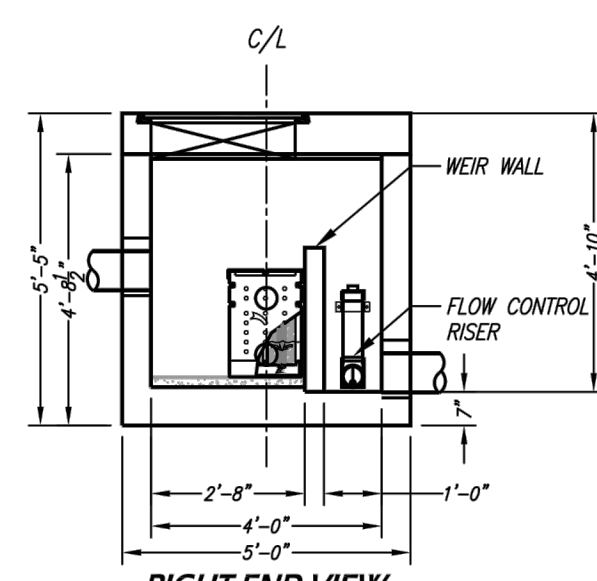
PLAN VIEW



**LEFT END VIEW
BIOFILTRATION CHAMBER**



ELEVATION VIEW

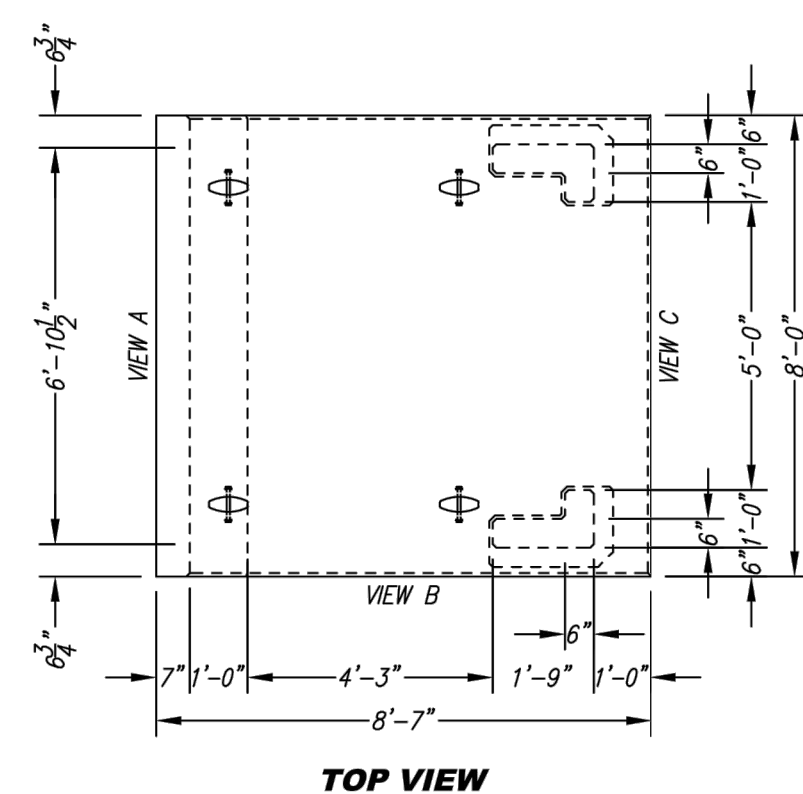


**RIGHT END VIEW
PRETREATMENT/DISCHARGE CHAMBER**

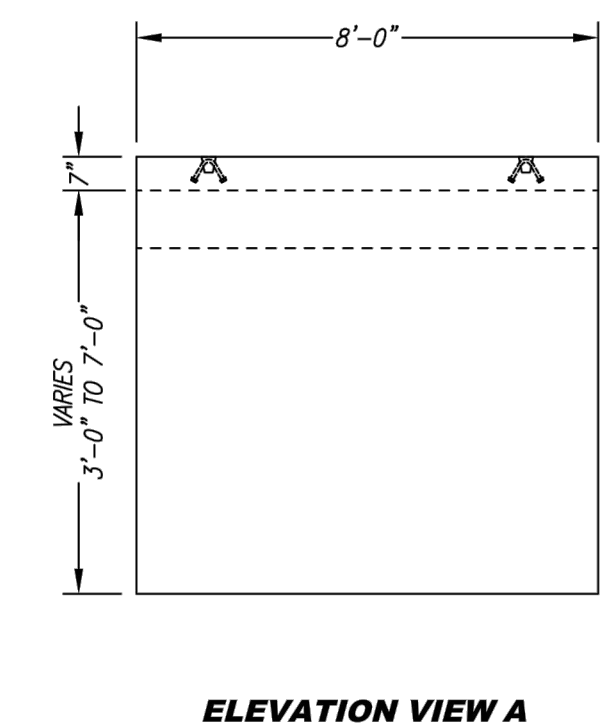
MWS UNIT DESIGN DATA	
TREATMENT CAPACITY (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND LOADING RATE (GPM/SF)	1.0
MWS-L-4-8-UG-V STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL	

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,455,362; 7,473,362; 7,474,376; 8,000,616; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

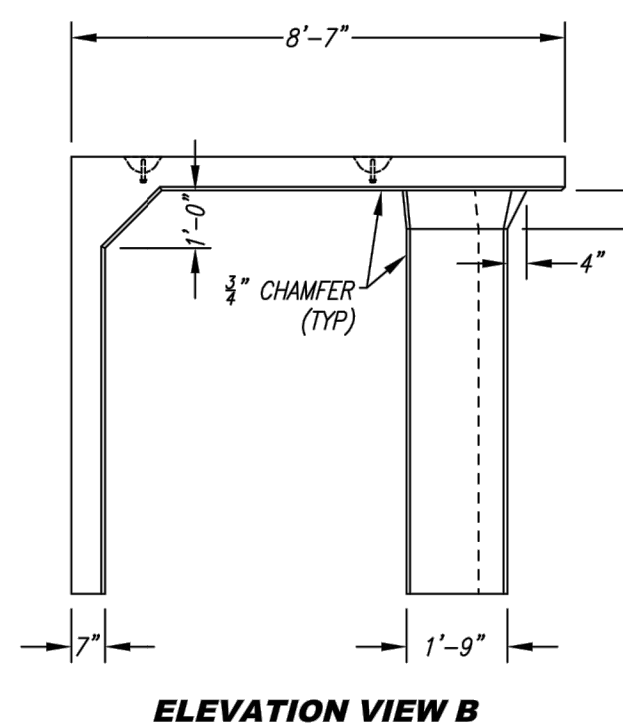
PROPRIETARY AND CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF MODULAR WETLANDS SYSTEMS. ANY REPRODUCTION IN WHOLE OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF MODULAR WETLANDS SYSTEMS IS PROHIBITED.



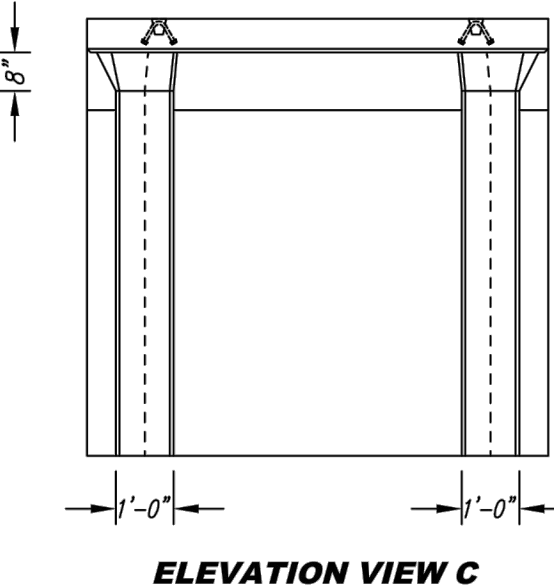
TOP VIEW



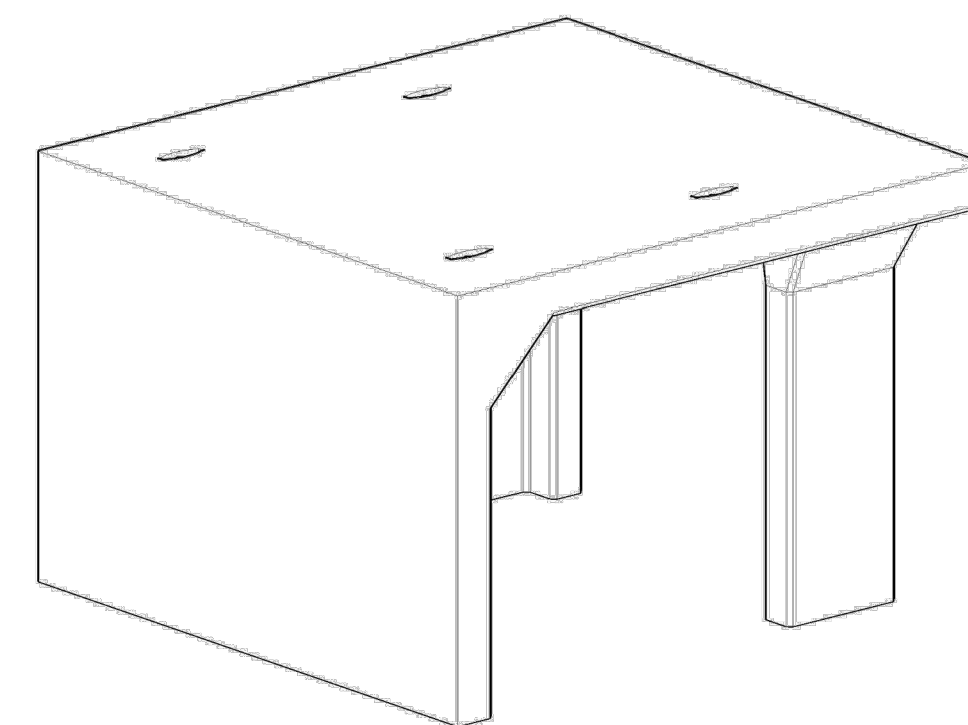
ELEVATION VIEW A



ELEVATION VIEW B



ELEVATION VIEW C



URBAN POND – SINGULAR MODULAR – PERIMETER

CUP190038

COUNTY OF RIVERSIDE
CANNIBIS CULTIVATION FACILITY
TEMECULA, CALIFORNIA

APNS: 933-020-005-6
LEGAL: SEE GRADING PLAN

DETAILS
EXHIBIT 2 OF 2

VENTURA ENGINEERING INLAND

27393 YNEZ ROAD, SUITE 159 TEMECULA, CALIFORNIA 92591 PHONE (951) 252-7632 FAX (951) 346-5726

Appendix 2: Construction Plans

*The latest set of Grading, Drainage Plans, and Street Improvement plans **shall be included.***

Bioretention/Biofiltration BMPs construction notes (Santa Margarita Region only). For Bioretention and Biofiltration facilities, the **following construction notes shall be shown on the Grading and/or Drainage plans:**

1. *The Engineer shall furnish to the County a copy of the source testing and a signed certification that the fully blended Bioretention/Biofiltration Soil Media (BSM) material meets all of the WQMP requirements before material is imported or if the material is mixed onsite prior to installation.*
2. *As BSM material is being installed, Quality Assurance (QA) testing shall be conducted every 1,200 tons or 800 cubic yards from a completely mixed stockpile or windrow.*
3. *The Engineer of Record or Geotechnical Engineer conducting the Quality Control testing shall furnish to the County copy of the QA testing and a certification that the BSM for the project meets all of the following requirements.*
 - a. *BSM shall consist of 60-80% clean sand, up to 20% clean topsoil, and 20% of a nutrient-stabilized organic amendment. Organic amendment may consist of either low-nutrient, stable, and mature compost; washed and aged coconut coir pith; and/or sphagnum peat. BSM shall be placed on top of 3-inches of Choker Sand placed on top of 3-inches of ASTM No. 8 stone (1/4 to 1/2-inch pea gravel), and placed on top of 12 to 24-inches of a clean, open-graded drain rock layer.*
 - b. *BSM shall be tested to ensure that it meets WQMP requirements for hydraulic conductivity. Such testing shall comply with ASTM Method D2434, USDA Handbook 30 Method 34b, or a similar laboratory method. The initial infiltration rate shall be between 8 and 20 inches per hour. Hydraulic conductivity may exceed 20 inches per hour, if the subdrain is designated as an "Outlet Control Subdrain" on the plans, where the subdrain is sized to convey no more than an equivalent of 5 inches per hour. BSM shall not be compacted.*
 - c. *pH: 6.0 – 8.5; Salinity: 0.5 to 3.0 mmho/cm as electrical conductivity; Sodium absorption ratio: < 6.0; Chloride: < 800 ppm in saturated extract; Cation Exchange Capacity (CEC): > 10 meq/100 g; Organic Matter: 2 to 5-percent on a dry weight basis; Carbon: Nitrogen Ratio: 12 to 40, preferably 15 to 40; Gravel larger than 2mm: 0 to 25-percent of the total sample; Clay smaller than 0.005mm: 0 to 5 percent of the non-gravel fraction.*
 - d. *BSM shall be tested to limit the leaching of potential inherent pollutants. BSM used in Biofiltration BMPs shall conform to the following limits for pollutant concentrations in saturated extract: Phosphorus: < 1 mg/L; Nitrate < 3 mg/L, Copper < 0.025 mg/L. Testing may be performed after laboratory rinsing of media with up to 15 pore volumes of water.*
 - e. *Low nutrient compost used in BSM shall be sourced from a facility permitted through CalRecycle, preferably through USCC STA program. Compost shall conform to the following requirements: Physical contaminants <1% by dry weight; Carbon:Nitrogen ratio: 12:1 to 40:1; Maturity/Stability shall conform to either: Solvita Maturity Index: ≥ 5.5, CO2 Evolution: < 2.5 mg CO2-C per g compost organic matter per day, or < 5 mg CO2-C per g compost C per day; Select Pathogens and Trace metals shall pass US EPA Class A Standard. Testing shall be no more than 6 months old and representative of current stockpiles.*
 - f. *Coconut coir pith used in BSM shall be thoroughly rinsed with freshwater and screened to remove coarse fibers as part of production and aged > 6 months. Peat used in BSM shall be sphagnum peat.*

The Potential Sources and Laboratories are not part of the construction note - **Potential BSM sources may include:** Gail Materials (Temescal Valley), Agriservice (Oceanside), and Greatsoils (Escondido). Earthworks (Riverside); **Potential Laboratories may include:** Wallace Laboratories (El Segundo, <http://us.wlabs.com/>). Control Labs (Watsonville, <http://www.controllabs.com>) and A&L Western Laboratories (Modesto, <http://www.al-labs-west.com/>)

CONCEPTUAL GRADING PLAN

APN: 933-020-005-6

EARTHWORK

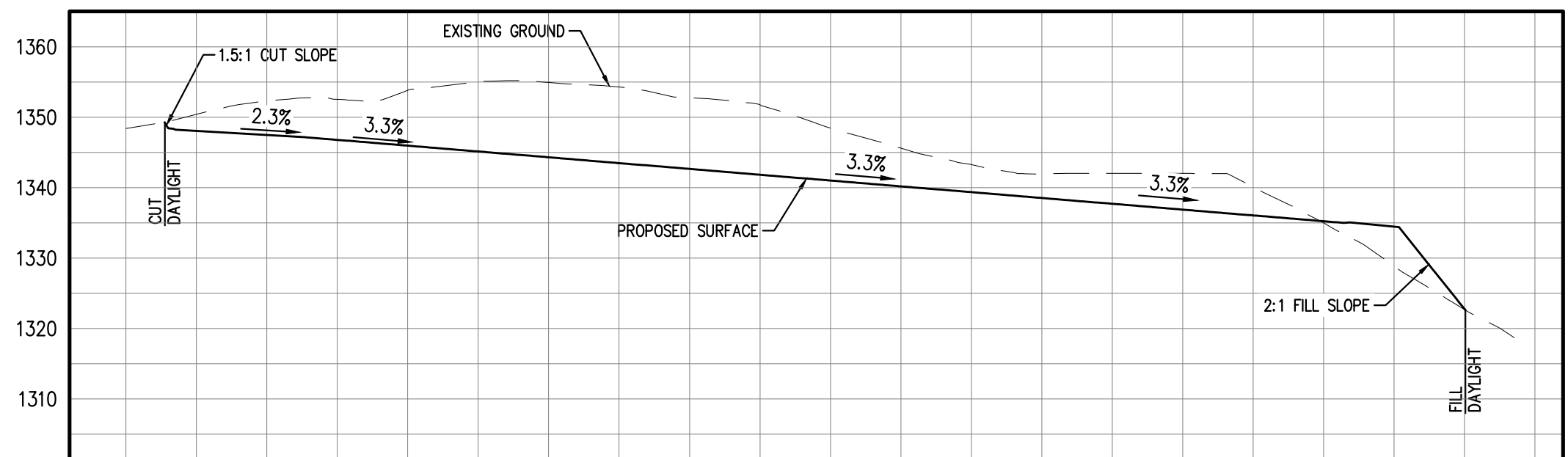
CUT: 22,761 CY
 FILL: 22,761 CY

AREA OF DISTURBANCE

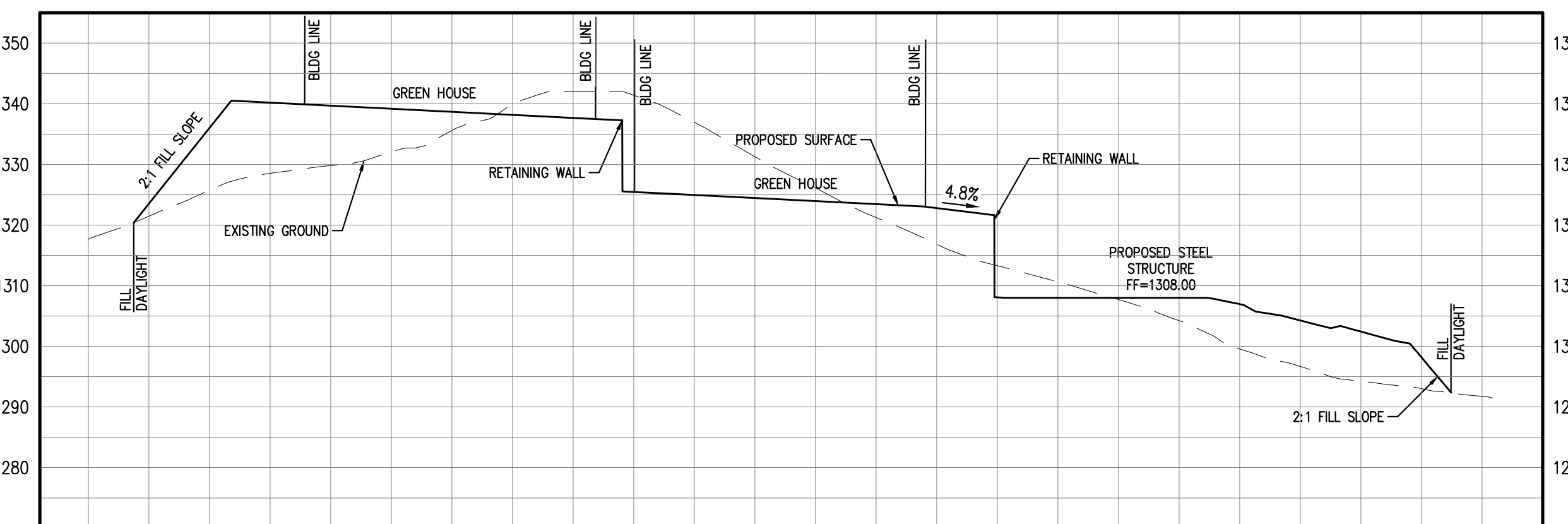
185,916 S.F. (4.27 ACRES)

DRIVEWAY LENGTH

481 LF



SECTION A-A
 HORIZONTAL SCALE: 1"=50'
 VERTICAL SCALE: 1"=20'



SECTION B-B
 HORIZONTAL SCALE: 1"=50'
 VERTICAL SCALE: 1"=20'



WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

MARK	BY	DATE	REVISIONS	APPR.	COUNTY

SEAL-COUNTY

SEAL-ENGINEER

ENGINEER OF WORK

WILFREDO S.D. VENTURA
 No. 66532
 Exp. 6-30-22
 CIVIL

ENGINEER OF WORK

Ventura Engineering Inland, INC
 27393 Ynez Road, Suite 159
 Temecula, CA 92591
 Phone: (951)252-7632
 wilfredo@venturaengineeringinland.com

Wulfrido Ventura
 DATE 2/12/21

WILFREDO S.D. VENTURA
 RCE 66532 EXP. 06/30/22

BENCHMARK:

DRAWN VEY
 DESIGNED VEY
 CHECKED WV
 SCALE AS SHOWN
 JOB NUMBER VEI 2020-200

COUNTY OF RIVERSIDE

CANNABIS CULTIVATION FACILITY

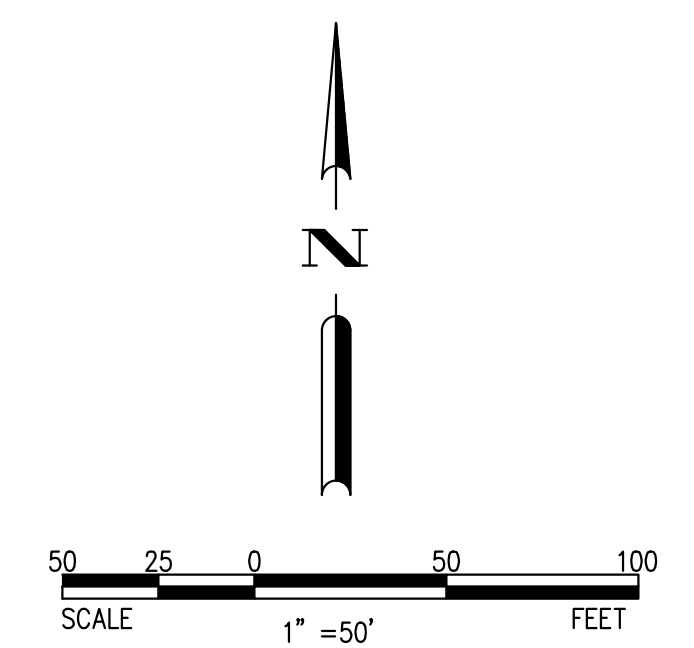
APN 933-020-005-6

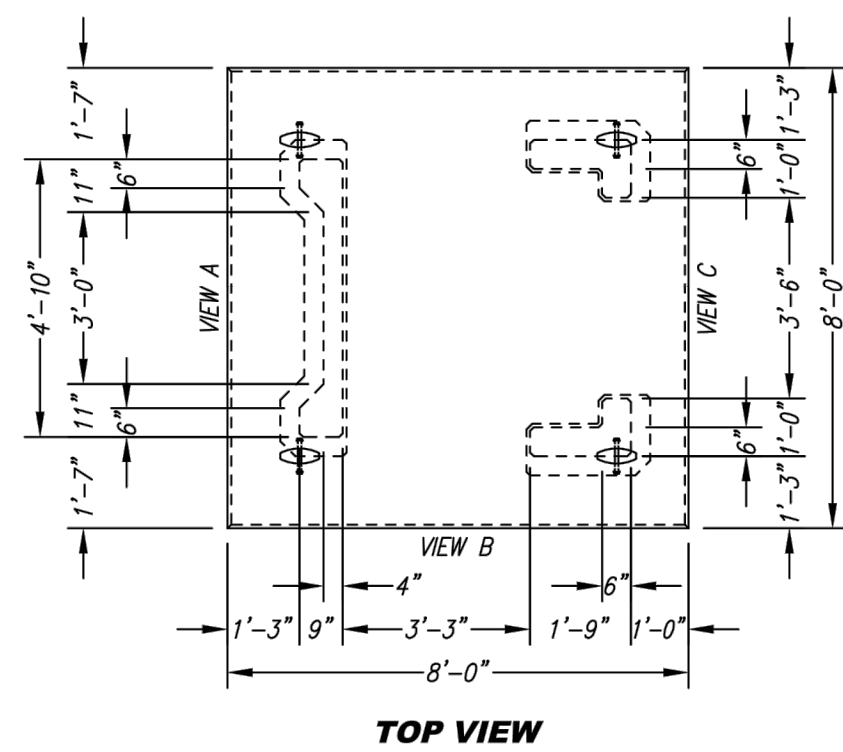
CONCEPTUAL GRADING PLAN

SHEET NO. 1 OF 3 SHEETS

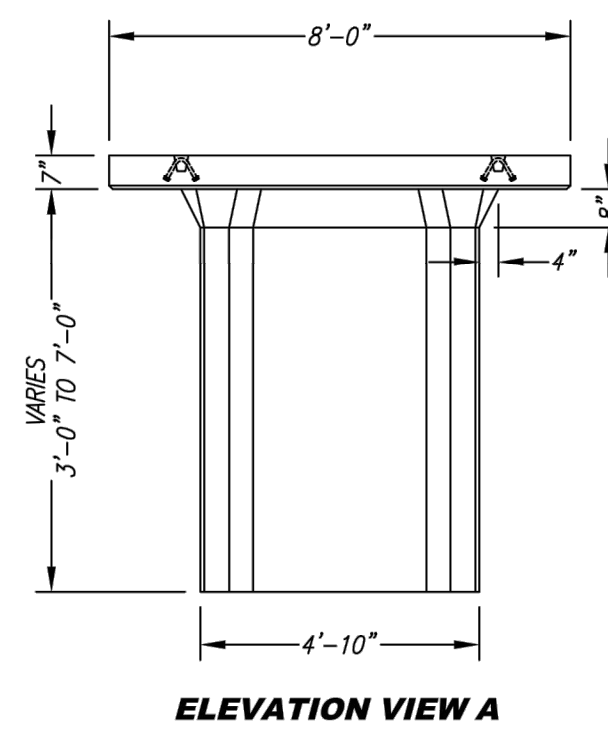
FILE NO.

FOR: W.O. COUNTY FILE NO.

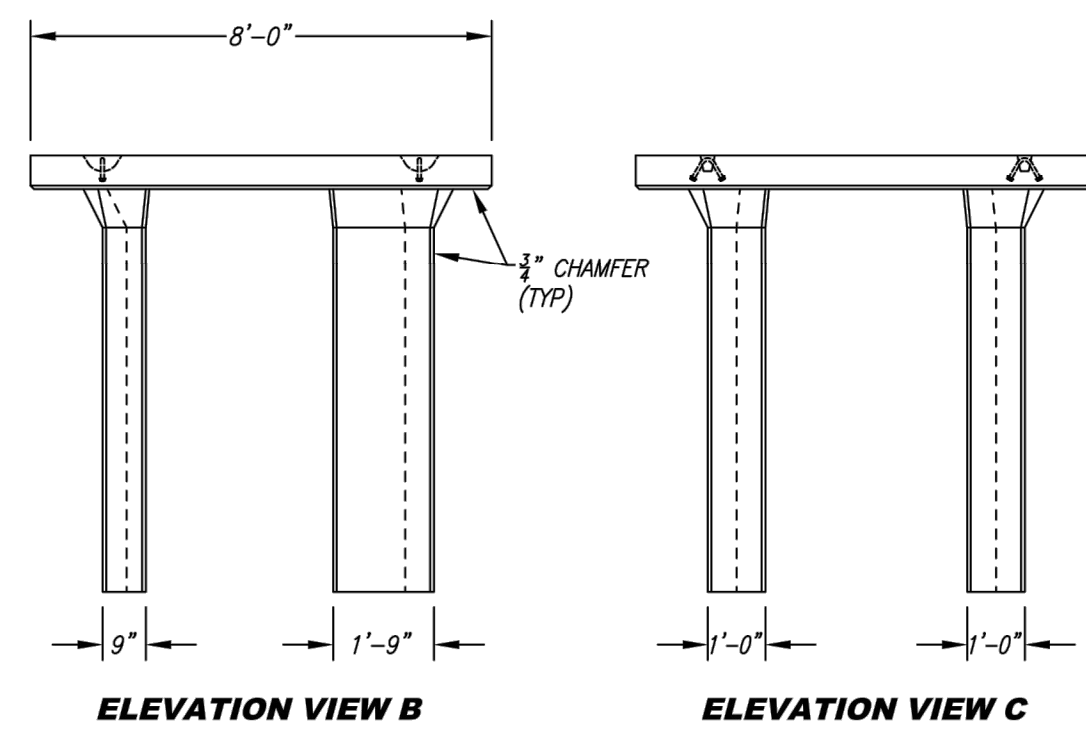




TOP VIEW

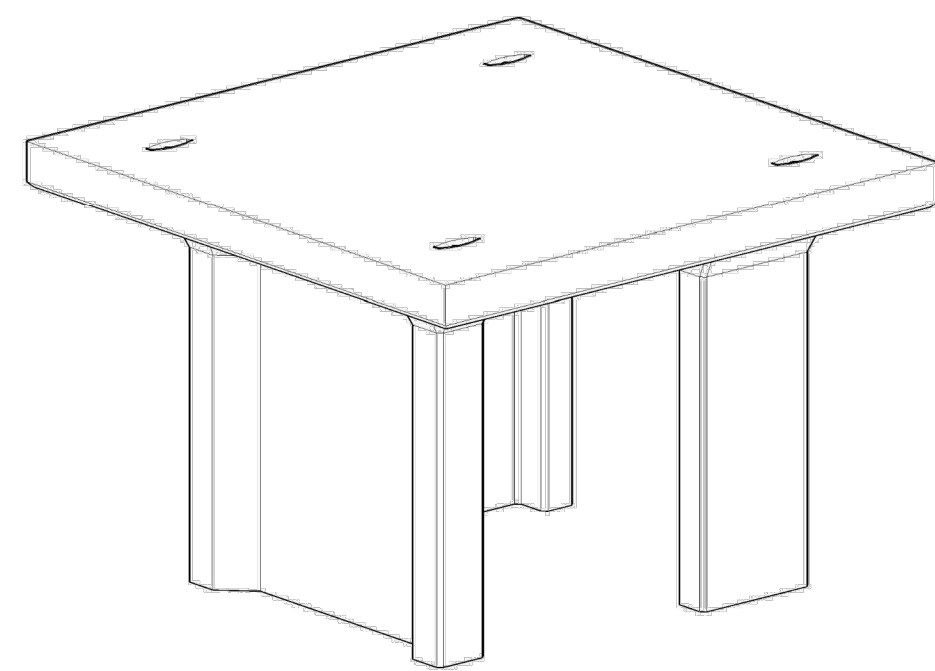


ELEVATION VIEW A

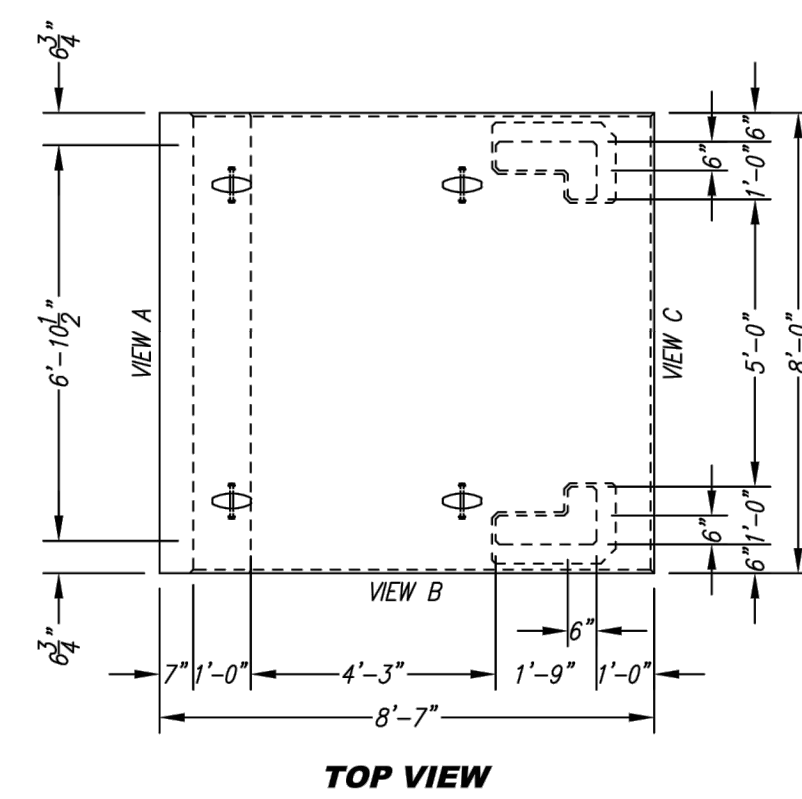


ELEVATION VIEW B

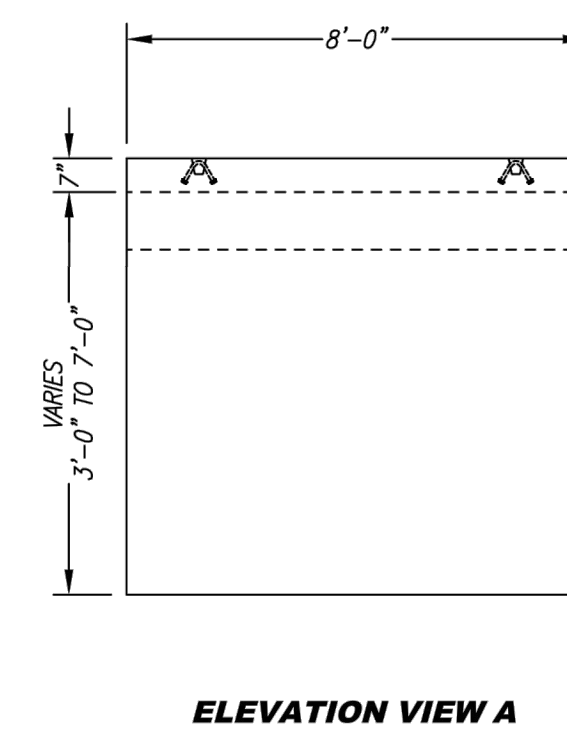
ELEVATION VIEW C



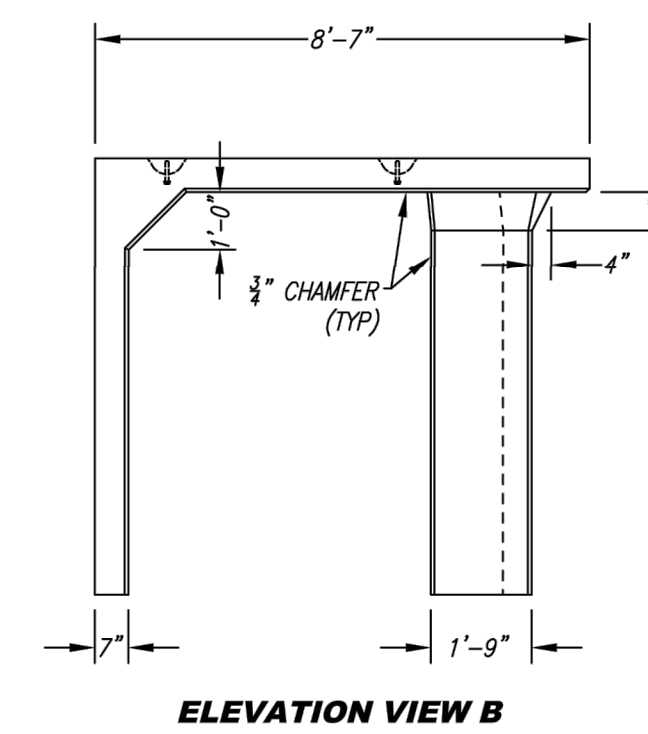
URBAN POND – SINGULAR MODULAR – INTERIOR



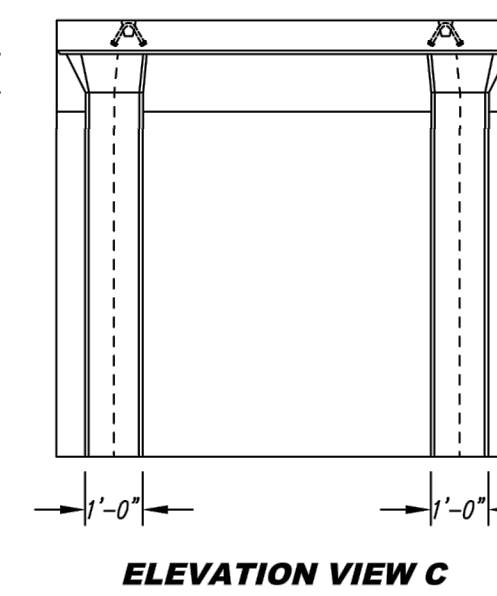
TOP VIEW



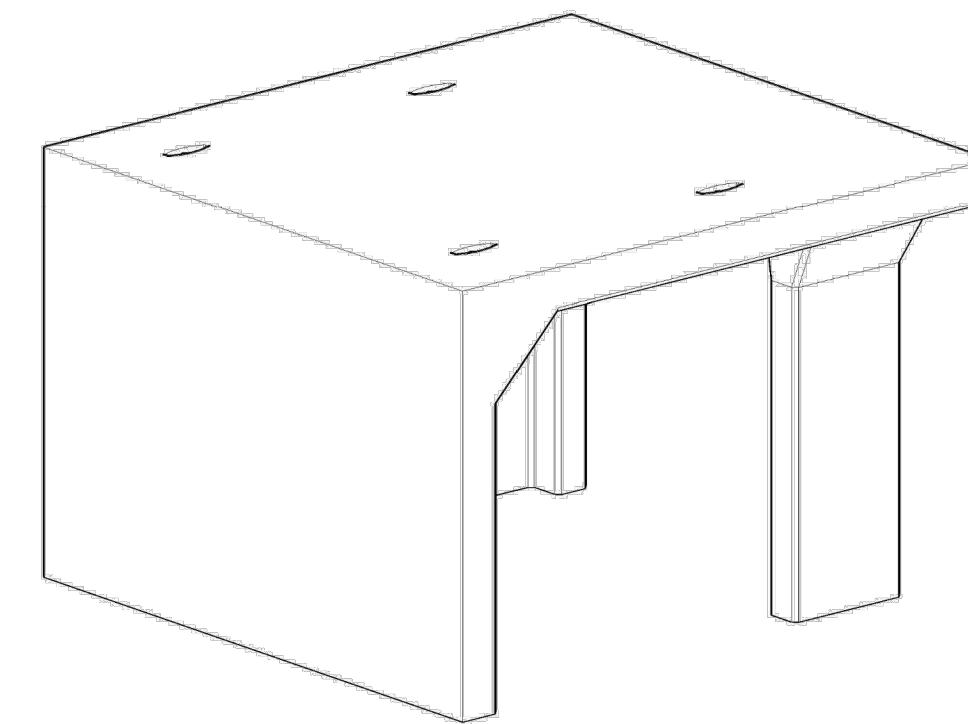
ELEVATION VIEW A



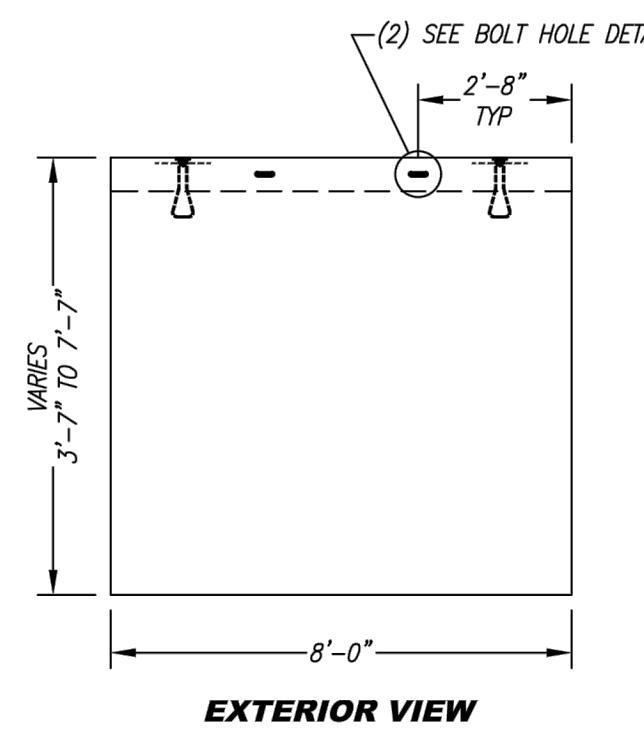
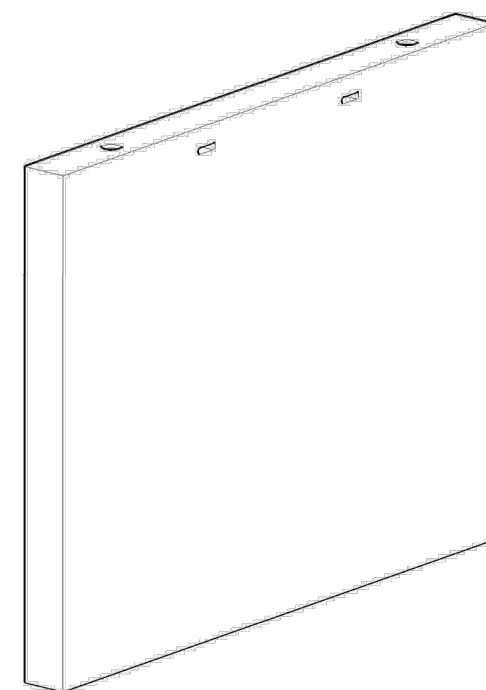
ELEVATION VIEW B



ELEVATION VIEW C

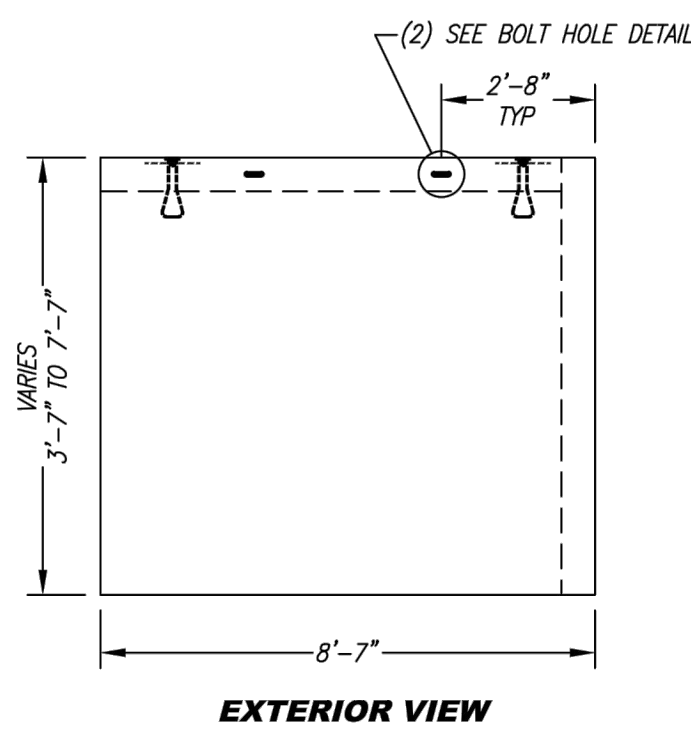


URBAN POND – SINGULAR MODULAR – PERIMETER



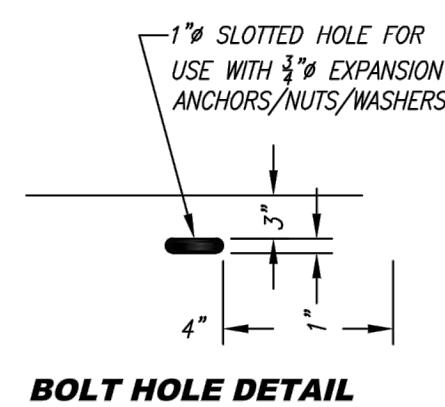
EXTERIOR VIEW

TOP VIEW



EXTERIOR VIEW

TOP VIEW



BOLT HOLE DETAIL

URBAN POND – EXTERIOR WALL PANELS

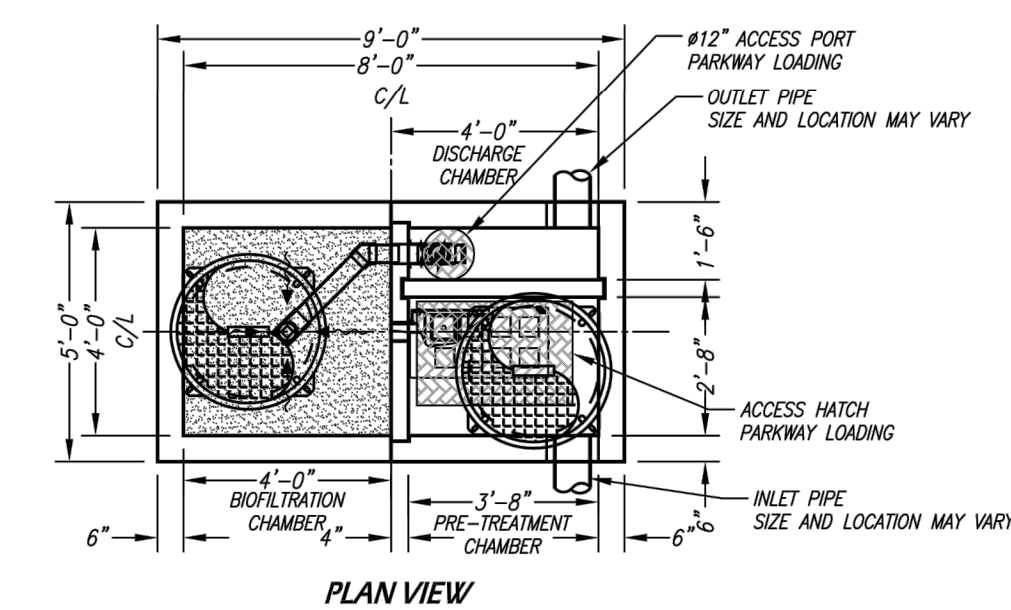
SITE SPECIFIC DATA*	
PROJECT NAME	
PROJECT LOCATION	
STRUCTURE ID	
PERFORMANCE DATA	
TREATMENT FLOW (CFS)	0.116
TREATMENT HGL (FT)	
BYPASS FLOW RATE (CFS)	DEPENDANT ON PIPE SIZE
PROJECT PARAMETERS	
PIPE DATA	I.E. MATERIAL DIAMETER
INLET PIPE 1	PVC 8"
OUTLET PIPE	PVC 8"
RIM ELEVATION	0.0
SURFACE LOADING REQUIREMENT	PARKWAY
FRAME & COVER	PRETREATMENT BIOFILTRATION DISCHARGE 24"x36" OPEN PLANTER 12"
WETLAND MEDIA VOLUME (CY)	2.4
MEDIA DELIVERED	TBD
ORIFICE SIZE (DIA)	
MAX PICK WEIGHT (LBS)	TBD
NOTES: *PER ENGINEER OF RECORD	

INSTALLATION NOTES

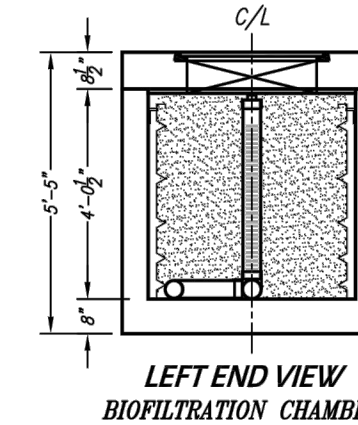
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GENERAL NOTES

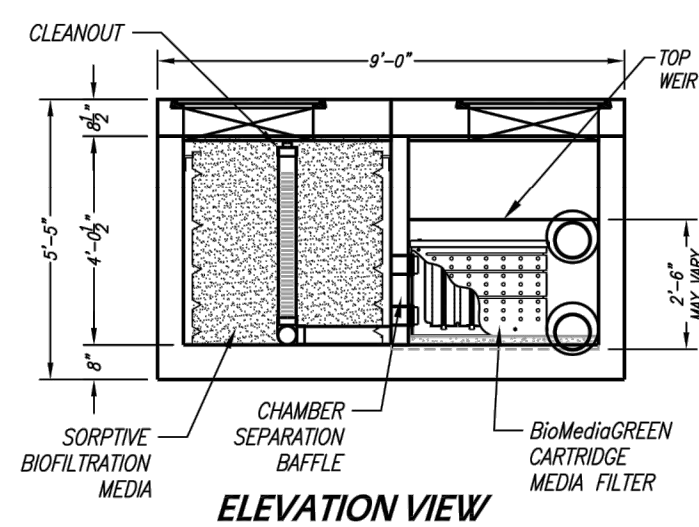
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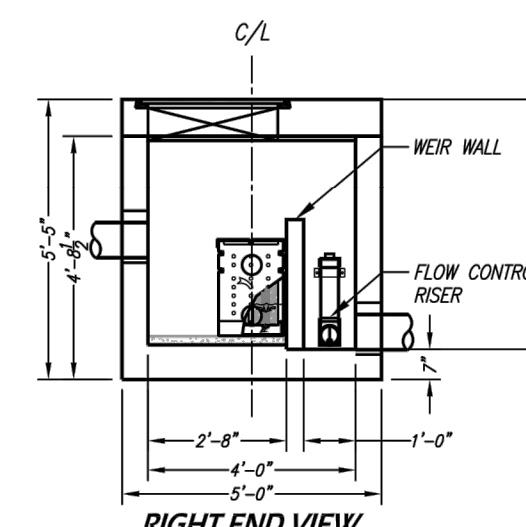
PLAN VIEW



LEFT END VIEW BIOFILTRATION CHAMBER



ELEVATION VIEW



RIGHT END VIEW PRETREATMENT/DISCHARGE CHAMBER

MWS UNIT DESIGN DATA	
TREATMENT CAPACITY (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND LOADING RATE (GPM/SF)	1.0

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

DIG ALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

MARK	BY	DATE	REVISIONS	APPR.	COUNTY

SEAL-COUNTY	SEAL-ENGINEER	ENGINEER OF WORK	BENCHMARK:	DRAWN	VEY	DESIGNED	VEY	CHECKED	WV	SCALE	AS SHOWN	JOB NUMBER	VEI 2020-200	FOR:	W.O.	COUNTY FILE NO.

WILFREDO S.D. VENTURA
No. 66532
Exp. 6-30-22
CIVIL
STATE OF CALIFORNIA

ENGINEER OF WORK
Ventura Engineering Inland, INC
27393 Ynez Road, Suite 159
Temecula, CA 92591
Phone: (951)252-7632
wilfredo@venturaengineeringinland.com

WILFREDO S.D. VENTURA
RCE 66532 EXP. 06/30/22

VEI
DATE 2/12/21

COUNTY OF RIVERSIDE
CANNABIS CULTIVATION FACILITY
APN 933-020-005-6
CONCEPTUAL GRADING PLAN

SHEET NO. 2
OF 3 SHEETS
FILE NO.

EROSION CONTROL NOTES

- IN CASE OF EMERGENCY, CALL **RAY & STACY MORAN** (RESPONSIBLE PERSON) AT (24-HOUR PHONE NUMBER).
- THE UNDERSIGNED CIVIL ENGINEER WILL REVIEW PLACEMENT OF EROSION CONTROL AND INSURE THAT WORK IS IN ACCORDANCE WITH THE APPROVED PLANS. WILFREDO S.D. VENTURA R.C.E. NO. 66532 EXP. DATE: 06-30-18
- A STANDBY CREW FOR EMERGENCY WORK SHALL BE AVAILABLE AT ALL TIMES DURING THE RAINY SEASON, OCTOBER 15 THROUGH APRIL 15. NECESSARY MATERIALS SHALL BE AVAILABLE ON-SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES OR TO REPAIR ANY DAMAGED EROSION CONTROL MEASURE WHEN RAIN IS IMMINENT.
- EROSION CONTROL DEVICES SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE COUNTY INSPECTOR/ ENGINEER.
- ALL REMOVABLE PROTECTIVE EROSION CONTROL DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE FIVE (5) DAY RAIN PROBABILITY FORECAST EXCEEDS FORTY PERCENT (40%).
- AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS AND DESILTING BASINS. ANY GRADED SLOPE SURFACE PROTECTION MEASURES DAMAGED DURING A RAINSTORM SHALL ALSO BE IMMEDIATELY REPAIRED.
- FILL SLOPES AT THE TRACT PERIMETER MUST DRAIN AWAY FROM THE TOP OF THE SLOPE AT THE CONCLUSION OF EACH WORKING DAY.
- THE CONTRACTOR SHALL BE RESPONSIBLE AND HAVE POSTED ON THE SITE TO PREVENT PUBLIC TRESPASS INTO AREAS WHERE WATER IS IMPOUNDED WHENEVER THE DEPTH EXCEEDS TWO (2) FEET OR CREATES A HAZARDOUS CONDITION.

ATTACHMENTS & BMP'S

THE FOLLOWING BMP'S AS OUTLINED IN, BUT NOT LIMITED TO, THE CALIFORNIA STORMWATER BEST MANAGEMENT PRACTICES HANDBOOK, JANUARY 2003, OR THE LATEST REVISED EDITION, MAY APPLY DURING THE CONSTRUCTION OF THIS PROJECT (ADDITIONAL MEASURES MAY BE REQUIRED IF DEEMED APPROPRIATE BY THE PROJECT ENGINEER OR BUILDING OFFICIAL)

- ### EROSION CONTROL
- EC1- SCHEDULING
 - EC2- PRESERVATION OF EXISTING VEGETATION
 - EC4- HYDROSEEDING
 - EC5- SOIL BINDERS
 - EC9- DRAINAGE SWALES
 - EC10- STORM DRAIN INLET PROTECTION

- ### WIND EROSION CONTROL
- WE1- WIND EROSION CONTROL

- ### TEMPORARY SEDIMENT CONTROL

- SE1- SILT FENCE
- SE5- FIBER ROLL
- SE6- GRAVEL BAG BERM
- SE7- STREET SWEEPING AND VACUUMING
- SE10- STORM DRAIN INLET PROTECTION

- ### EQUIPMENT TRACKING CONTROL
- TC1- STABILIZED CONSTRUCTION ENTRANCE EXIT

NON-STORMWATER MANAGEMENT

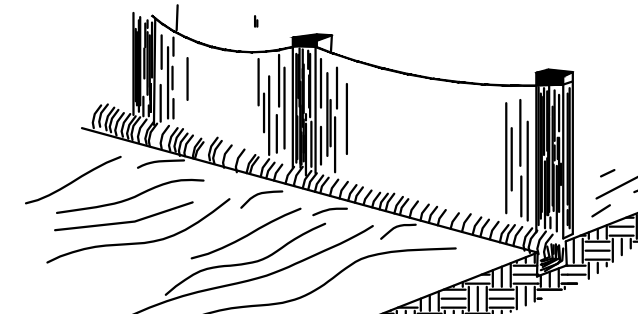
- NS1- WATER CONSERVATION PRACTICES
- NS6- ILLICIT CONNECTION
- NS8- VEHICLE AND EQUIPMENT CLEANING
- NS10- VEHICLE AND EQUIPMENT MAINTENANCE

WASTE MANAGEMENT & MATERIAL POLLUTION CONTROL

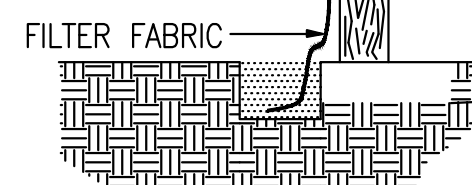
- WM1- MATERIAL DELIVERY AND STORAGE
- WM2- MATERIAL USE/DISCHARGE
- WM3- STOCKPILE MANAGEMENT
- WM4- SPILL PREVENTION AND CONTROL
- WM5- SOLID WASTE MANAGEMENT
- WM7- CONTAMINATION SOIL MANAGEMENT
- WM8- CONCRETE WASTE MANAGEMENT
- WM9- SANITARY

CONSTRUCTION NOTES

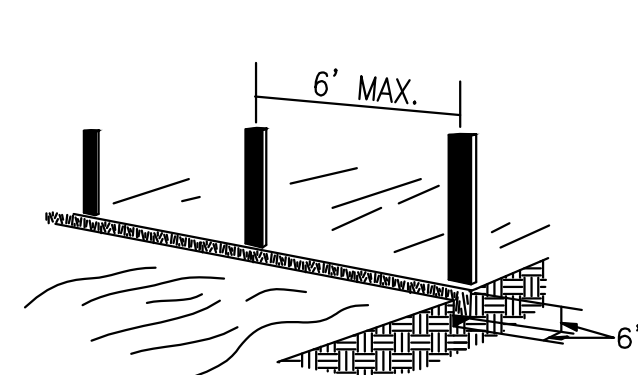
- DESCRIPTION
- STABILIZED CONSTRUCTION ENTRANCE PER DETAIL HEREON TC-1, TC-3
 - SILT FENCE PER DETAIL HEREON SE-1
 - CHECK DAM PER DETAIL HEREON SE-6



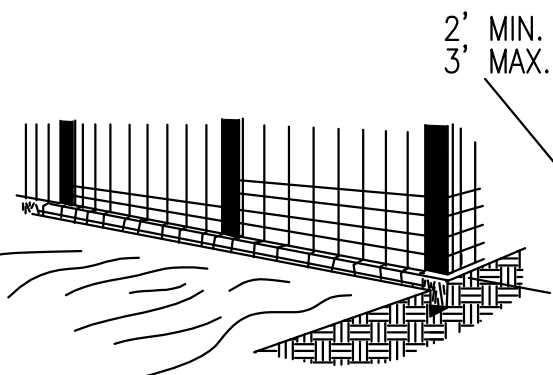
1. SET POSTS AND EXCAVATE A 6 INCH BY 6 INCH TRENCH UPSLOPE FROM AND ALONG THE LINE OF POSTS.



2. STAPLE THE FILTER FABRIC TO THE FENCE.



3. EXTEND THE FILTER FABRIC INTO THE 6" x 6" TRENCH.

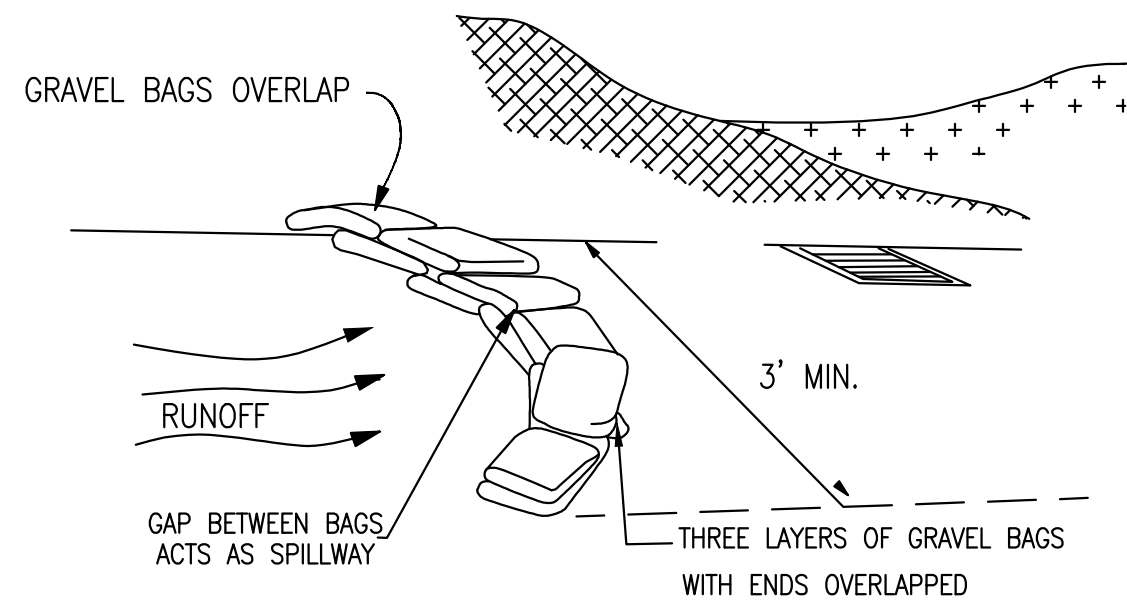


4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

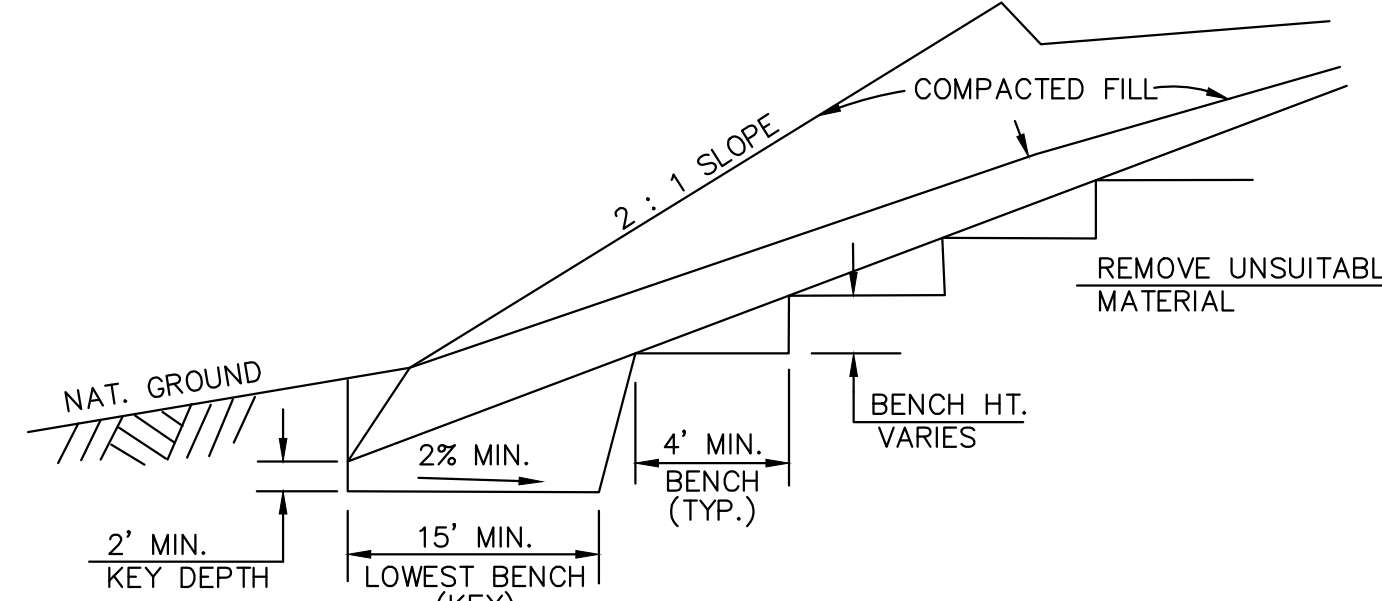
2 SILT FENCE DETAIL

NO SCALE

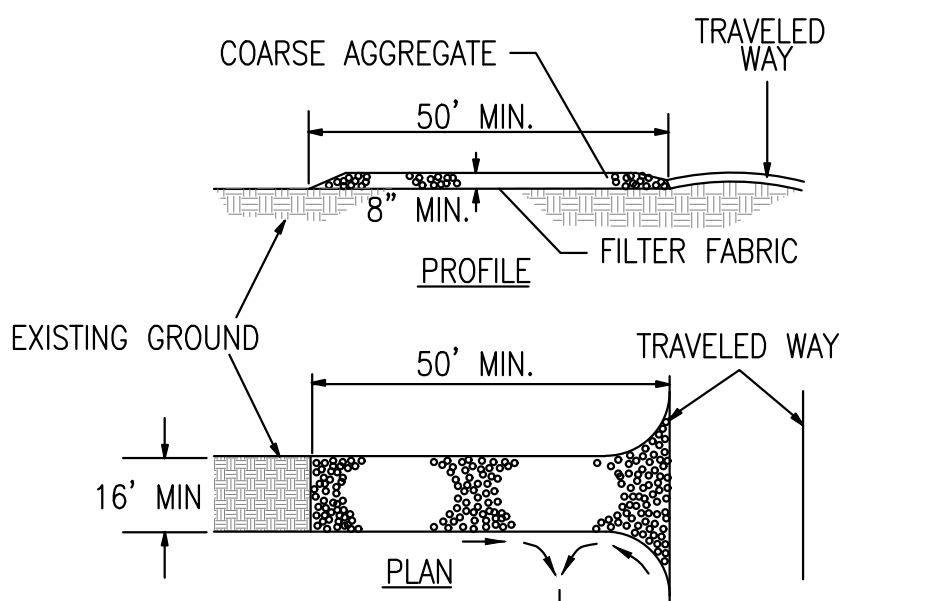
THE SILT FENCE SHOULD BE SUPPORTED BY A WIRE MESH IF THE FILTER FABRIC DOES NOT HAVE SUFFICIENT STRENGTH AND BURSTING STRENGTH CHARACTERISTICS (AS RECOMMENDED BY THE FABRIC MANUFACTURER)



3 GRAVEL BAGS NO SCALE



1 STABILIZED CONSTRUCTION ENTRANCE AND CONSTRUCTION ROADWAY NO SCALE



1 STABILIZED CONSTRUCTION ENTRANCE AND CONSTRUCTION ROADWAY NO SCALE

DIG ALERT
 DIAL TOLL FREE
 1-800-227-2600
 AT LEAST TWO DAYS BEFORE YOU DIG
 UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

MARK	BY	DATE	REVISIONS	APPR.	COUNTY

SEAL-COUNTY

SEAL-ENGINEER

ENGINEER OF WORK

Ventura Engineering Inland, INC
 27393 Ynez Road, Suite 159
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 WILFREDO S.D. VENTURA
 R.C.E. 66532 EXP. 06/30/22

BENCHMARK:

DRAWN VEY
 DESIGNED VEY
 CHECKED WV
 SCALE AS SHOWN
 JOB NUMBER VEI 2020-200

COUNTY OF RIVERSIDE
 CANNABIS CULTIVATION FACILITY
 APN 933-020-005-6
 SITE EROSION AND CONTROL PLAN

SHEET NO. 3
 OF 3 SHEETS
 FILE NO.

WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

DATE 2/12/21

Appendix 3: Soils Information

Geotechnical Study, Other Infiltration Testing Data, and/or Other Documentation

Please see the attached geotechnical information from the for the project site's NRCS report.



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Western Riverside Area, California

Carancho Road



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

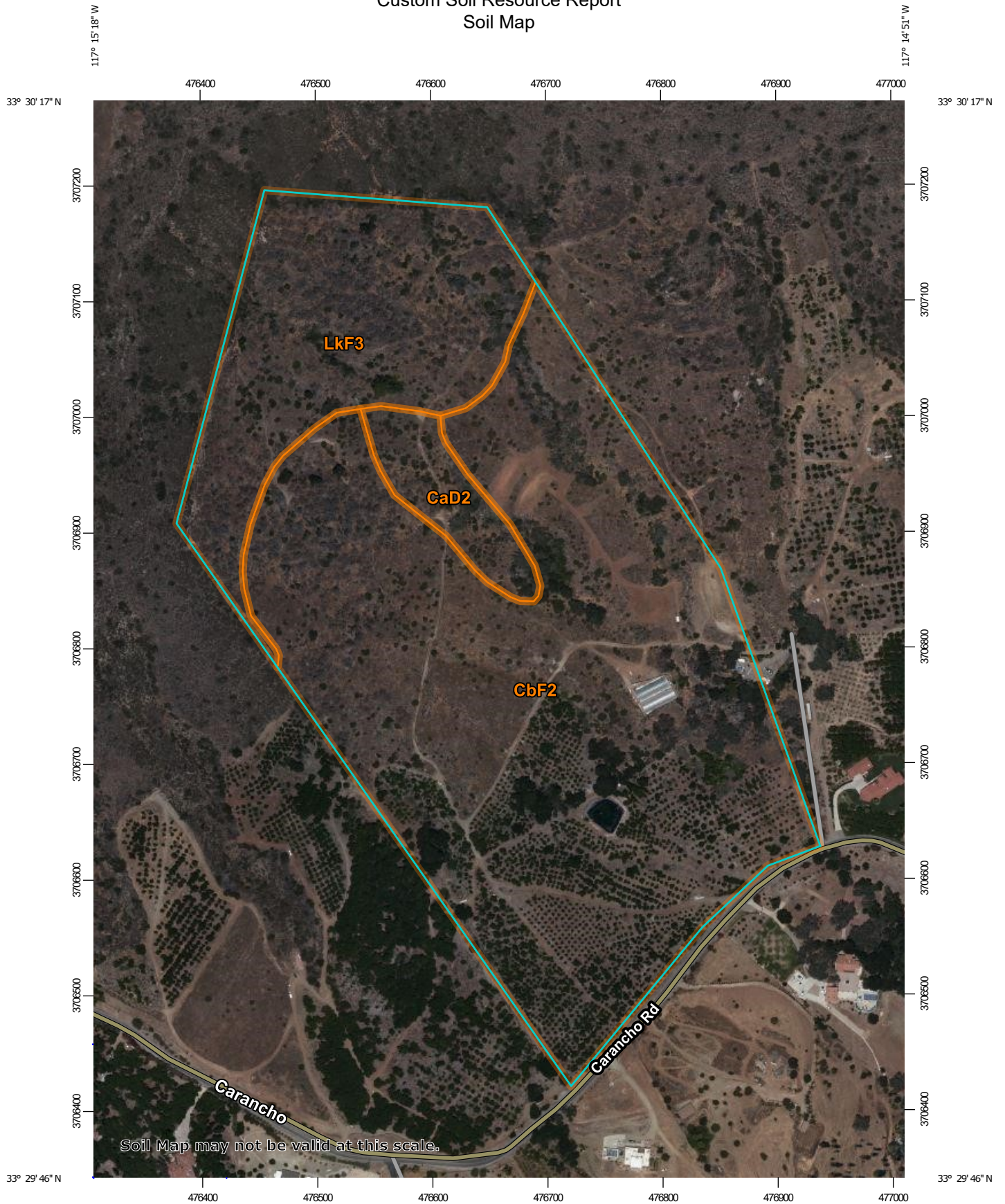
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

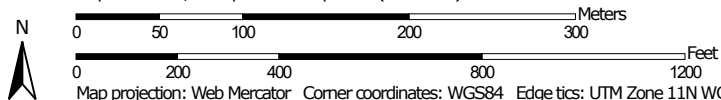
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:4,540 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
 Survey Area Data: Version 13, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 15, 2018—Jun 25, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaD2	Cajalco fine sandy loam, 8 to 15 percent slopes, eroded	2.6	4.4%
CbF2	Cajalco rocky fine sandy loam, 15 to 50 percent slopes, eroded	43.0	72.8%
LkF3	Las Posas rocky loam, 15 to 50 percent slopes, severely eroded	13.5	22.8%
Totals for Area of Interest		59.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

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pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Western Riverside Area, California

CaD2—Cajalco fine sandy loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcrz
Elevation: 900 to 3,500 feet
Mean annual precipitation: 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Cajalco and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cajalco

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Residuum weathered from gabbro

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 22 inches: loam
H3 - 22 to 62 inches: weathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Cajalco

Percent of map unit: 5 percent
Hydric soil rating: No

Honcut

Percent of map unit: 5 percent
Hydric soil rating: No

Las posas

Percent of map unit: 2 percent
Hydric soil rating: No

Temescal

Percent of map unit: 2 percent
Hydric soil rating: No

Wyman

Percent of map unit: 1 percent
Hydric soil rating: No

CbF2—Cajalco rocky fine sandy loam, 15 to 50 percent slopes, eroded

Map Unit Setting

National map unit symbol: hcs2
Elevation: 900 to 3,500 feet
Mean annual precipitation: 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Cajalco and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cajalco

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from gabbro

Typical profile

H1 - 0 to 13 inches: fine sandy loam
H2 - 13 to 18 inches: loam
H3 - 18 to 62 inches: weathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 16 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High

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Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: D

Ecological site: SHALLOW LOAMY (1975) (R019XD060CA)

Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 10 percent

Hydric soil rating: No

Honcut

Percent of map unit: 5 percent

Hydric soil rating: No

Las posas

Percent of map unit: 5 percent

Hydric soil rating: No

Wyman

Percent of map unit: 5 percent

Hydric soil rating: No

LkF3—Las Posas rocky loam, 15 to 50 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: hcwp

Elevation: 200 to 3,000 feet

Mean annual precipitation: 12 to 18 inches

Mean annual air temperature: 63 degrees F

Frost-free period: 240 to 300 days

Farmland classification: Not prime farmland

Map Unit Composition

Las posas and similar soils: 75 percent

Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Las Posas

Setting

Landform: Hills

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Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from gabbro

Typical profile

H1 - 0 to 6 inches: stony loam
H2 - 6 to 20 inches: clay loam
H3 - 20 to 24 inches: weathered bedrock

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: SHALLOW LOAMY (1975) (R019XD060CA)
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 10 percent
Hydric soil rating: No

Murrieta

Percent of map unit: 5 percent
Hydric soil rating: No

Cajalco

Percent of map unit: 5 percent
Hydric soil rating: No

Tumescal

Percent of map unit: 5 percent
Hydric soil rating: No

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Please see the attached references.



Riverside County Parcel Report

APN(s):933020005

DISCLAIMER

Maps, permit information and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

MAPS/IMAGES



PARCEL

APN	933-020-005-6	Supervisory District	KEVIN JEFFRIES, DISTRICT 1
Previous APN	933020005 903190002	Township/Range	T8SR4W SEC 1 RHO
Owner Name	933020005 SAMUEL D HAZELIP BRET L SCHOTT	Elevation	1576 ft
Address	933020005 NOT AVAILABLE	Thomas Bros. Map Page/Grid	PAGE: 957, GRID: E6 PAGE: 957, GRID: E7 PAGE: 957, GRID: F6 PAGE: 957, GRID: F7
Mailing Address	933020005 PO BOX 890153 TEMECULA CA 92589	Indian Tribal Land	NOT IN A TRIBAL LAND
Legal Description	933020005 Recorded Book/Page: / Subdivision Name: Lot/Parcel: Block: Tract Number:	City Boundary	NOT IN A CITY
		City Spheres of influence	NOT IN A CITY SPHERE
Lot Size	933020005 Recorded lot size is 72.15	March Joint Powers Authority	NOT IN THE JURISDICTION OF THE MARCH JOINT POWERS AUTHORITY

acres

Property	933020005	County Service Area	NOT IN A COUNTY SERVICE AREA
Characteristics	Year Constructed: Baths: Bedrooms: Construction Type: Garage Type: Property Area (sq ft): Roof Type: Stories: Pool: NO Central Cool: NO Central Heat: NO		

Annexation Date	N/A	LAFCO Case	N/A
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Proposals	N/A		
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PLANNING more...

Specific Plans	NOT IN A SPECIFIC PLAN	Historic Preservation Districts	NOT IN A HISTORIC PRESERVATION DISTRICT
Land Use Designations	RM	Agricultural Preserve	NOT IN AN AGRICULTURAL PRESERVE
General Plan Policy Overlays	N/A		
Area Plan (RCIP)	Southwest Area	Airport Influence Areas	NOT IN AN AIRPORT INFLUENCE AREA
General Plan Policy Areas	SANTA ROSA PLATEAU POLICY AREA	Airport Compatibility Zones	NOT IN AN AIRPORT COMPATIBILITY AREA
Zoning Classifications (ORD. 348)	A-1-10	Zoning Districts and Zoning Areas	RANCHO CALIFORNIA AREA
Zoning Overlays	NOT IN A ZONING OVERLAY	Community Advisory Councils	NOT IN A COMMUNITY ADVISORY COUNCIL

Residential Permit Stats

N/A

ENVIRONMENTAL more...

CVMSHCP (Coachella Valley Multi-Species Habitat Conservation Plan) Plan Area	NOT IN A COACHELLA VALLEY MSHCP FEE AREA	WRMSHCP (Western Riverside County Multi-Species Habitat Conservation Plan) Cell Group	NOT IN A CELL GROUP
CVMSHCP (Coachella Valley Multi-Species Habitat Conservation Plan) Conservation Area	NOT COACHELLA VALLEY CONSERVATION AREA	WRMSHCP Cell Number	7051
CVMSHCP Fluvial Sand Transport Special Provision Areas	NOT IN A FLUVIAL SAND TRANSPORT SPECIAL PROVISION AREA	HANS/ERP (Habitat Acquisition and Negotiation Strategy/Expedited Review Process)	Project: HANS01835 Conserve: NO Status: JPR Approval Notes: Development Intake Num: 01835 LMS Case: HANS01835
WRMSHCP (Western Riverside County Multi-Species Habitat Conservation Plan) Plan Area	WESTERN RIVERSIDE COUNTY	Vegetation (2005)	AGRICULTURE MAPPING UNIT CHAMISE - LAUREL SUMAC ASSOCIATION CHAMISE PURE ASSOCIATION COAST LIVE OAK ALLIANCE LAUREL SUMAC - CALIFORNIA BUCKWHEAT - WHITE SAGE ASSOCIATION

Fire

Fire Hazard Classification (Ord. 787)	MODERATE	Fire Responsibility Area	SRA
---------------------------------------	----------	--------------------------	-----

DEVELOPMENT FEES

CVMSHCP (Coachella Valley Multi-Species Habitat Conservation Plan) Fee Area (Ord 875)	NOT IN A COACHELLA VALLEY MSHCP FEE AREA	RBBD (Road & Bridge Benefit District)	NOT IN A ROAD BRIDGE BENEFIT DISTRICT
WRMSHCP (Western Riverside County Multi-Species Habitat Conservation Plan) Fee Area (Ord. 810)	WESTERN RIVERSIDE COUNTY	DIF (Development Impact Fee Area Ord. 659)	SOUTHWEST AREA, AREA 19
Western TUMF (Transportation Uniform Mitigation Fee Ord. 824)	IN OR PARTIALLY WITHIN A TUMF FEE AREA	SKR Fee Area (Stephen's Kagaroo Rat Ord. 663.10)	NOT IN THE SKR FEE AREA
Eastern TUMF (Transportation Uniform Mitigation Fee Ord. 673)	NOT IN THE EASTERN TUMF FEE AREA	DA (Development Agreements)	NOT IN A DEVELOPMENT AGREEMENT

TRANSPORTATION more...

Circulation Element Ultimate Right-of-Way	NOT IN A CIRCULATION ELEMENT RIGHT-OF-WAY	Road Book Page	83B
		Transportation Agreements	NOT IN A TRANS AGREEMENT
		CETAP (Community and Environmental Transportation Acceptability Process) Corridors	NOT IN A CETAP CORRIDOR

HYDROLOGY

Flood Plan Review	OUTSIDE FLOODPLAIN, REVIEW NOT REQUIRED	Watershed	SANTA MARGARITA
Water District	WESTERN MUNICIPAL WATER DISTRICT		
Flood Control District	RIVERSIDE COUNTY FLOOD CONTROL DISTRICT		

GEOLOGIC

Fault Zone	NOT IN A FAULT ZONE	Paleontological Sensitivity	LOW POTENTIAL (L): FOLLOWING A LITERATURE SEARCH, RECORDS CHECK AND A FIELD SURVEY, AREAS MAY BE DETERMINED BY A QUALIFIED VERTEBRATE PALEONTOLOGIST AS HAVING LOW POTENTIAL FOR CONTAINING SIGNIFICANT PALEONTOLOGICAL RESOURCES SUBJECT TO ADVERSE IMPACTS.
Faults	NOT IN A FAULT LINE		
Liquefaction Potential	NOT IN A LIQUEFACTION AREA		
Subsidence	NOT IN A SUBSIDENCE AREA		

MISCELLANEOUS

School District	MURRIETA VALLEY UNIFIED
Communities	SANTA ROSA
Lighting (Ord. 655)	ZONE: B
2010 Census Tract	497
Farmland	OTHER LANDS UNIQUE FARMLAND
Special Notes	NO SPECIAL NOTES
Tax Rate Areas	082016 - CO FREE LIBRARY 082016 - CO STRUCTURE FIRE PROTECTION 082016 - CO WASTE RESOURCE MGMT DIST 082016 - CSA 152 082016 - DE LUZ COMMUNITY SERVICE 082016 - ELS MURRIETA ANZA RESOURCE CONS 082016 - ELSINORE AREA ELEM SCHOOL FUND 082016 - FLOOD CONTROL ADMIN

082016 - FLOOD CONTROL ZN 7
 082016 - GENERAL
 082016 - GENERAL PURPOSE
 082016 - MT SAN JACINTO JR COLLEGE
 082016 - MURRIETA CEMETERY
 082016 - MURRIETA UNIFIED
 082016 - MURRIETA UNIFIED B&I
 082016 - MWD WEST 1302999
 082016 - RCWD JT WATER
 082016 - RCWD SAN R DIV DS
 082016 - RIV CO REGIONAL PARK & OPEN SP
 082016 - RIVERSIDE CO OFC OF EDUCATION
 082016 - SO. CALIF, JT(19,30,33,36,37,56)
 082016 - VALLEY HEALTH SYSTEM HOSP DIST
 082016 - WMWD 9TH FR

Department of Environmental Health Permits

Septic Permits

Record Id	Application Date	Plan Check Approved Date	Final Inspection Date	Approved Date
N/A	N/A	N/A	N/A	N/A

Well Water Permits

Record Id	PE	Permit Paid Date	Permit Approved Date	Well Finaled Date
WP0023058	Well Permit - Individual	14 Mar 2013	13 Mar 2013	
WP0023074	Well Permit - Individual	28 Mar 2013	28 Mar 2013	
WP0023075	Well Permit - Individual	28 Mar 2013	28 Mar 2013	
WP0024599	Well Permit - Agricultural	06 Aug 2014	05 Aug 2014	

PLUS PERMITS & CASES

Administrative Cases

Case	Case Description	Status
N/A	N/A	N/A

Building and Safety Cases

Case	Case Description	Status
014946	ELECTRIC TO WELL	FINAL
279721	100 AMP SERVICE	FINAL

Code Cases

Case	Case Description	Status
CV1600755		Closed - RMAP Field
CV1600825		Closed-Verified Billable

Fire Cases

Case	Case Description	Status
N/A	N/A	N/A

Planning Cases

Case	Case Description	Status
CAN190118	RFP FOR COMMERCIAL CANNABIS	APPROVED

CEQ190128	CANNABIS	VOID
CEQ190129	CANNABIS CULTIVATION FACILITY	APPLIED
CFG05763	EA42399	PAID
CUP190038	CANNABIS CULTIVATION FACILITY	LDC REVIEW
DA1900027	CANNABIS CULTIVATION FACILITY	APPLIED
EA42399	EA FOR PM35471	WITHDRAWN
HANS01835	HANS01835 - PAR01151 - PARCEL SPLIT	APPROVED
PAR01151	HANS01835	APPROVED
PDB05238	MSHCP COMPLIANCE REPORT AND NEPS, CRITERIA AREA SPECIES AND CA RED-LEGGED FROG HA REPORT:9/14/07 SURVEY:6/28/07, 7/30/07, 8/1,3,10/07 PREPARED BY:PRINCIPE AND ASSOCIATES	APPROVED
PDB05573	FOCUSED SURVEY SAN MIGUEL SAVORY REPORT:6/2009 PREPARED BY: PRINCIPE AND ASSOCIATES	APPROVED
PM35471	SCHEDULE H DIVISION OF 72 ACRES INTO 4 PARCELS WITH A MINIMUM SIZE OF 10 ACRES.	WITHDRAWN

Survey Cases

Case	Case Description	Status
MAP35471		ISSUED

Transportation Cases

Case	Case Description	Status
N/A	N/A	N/A

Appendix 5: LID Feasibility Supplemental Information

Information that supports or supplements the determination of LID technical feasibility documented in Section D

Please see the attached references.

August 11, 2020

Project No. 203306-12A

Mr. Willy Ventura
Ventura Engineering
27393 Ynez Rd., Suite 159
Temecula, CA 92591

Subject: Infiltration Feasibility and Site Reconnaissance for Proposed Cannabis Cultivation Facility, APN 933-020-005-6, Located at 22750 Carancho Rd, Temecula, Riverside County, California

Pursuant to your request, Earth Strata Geotechnical Services has performed a site reconnaissance visit to evaluate infiltration. The purpose of the site reconnaissance was to perform an evaluation of the subject site with respect to infiltration. The subject property referenced above is located on Carancho Road. This area is mapped out on the Geologic Map of the Preliminary geologic map of the Murrieta 7.5' Quadrangle (see attached Fig 1.) as Mzu - Mesozoic Metamorphic rocks. The site visit revealed that there are numerous rock outcrops and the bedrock is approximately 3 feet below existing grade. The site does not meet the required infiltration separation criteria due to the presence of bedrock within the upper 10 feet. Additionally, it is our opinion that infiltration of storm water into the existing earth materials at this site will create ponding due to lack of infiltration. This would be considered a hazard when combined with the existing and proposed steep slopes.

The opportunity to be of service is appreciated. Should you have any questions or require further clarification, please notify our office at your earliest convenience.

Respectfully submitted,

EARTH STRATA GEOTECHNICAL SERVICES , INC.

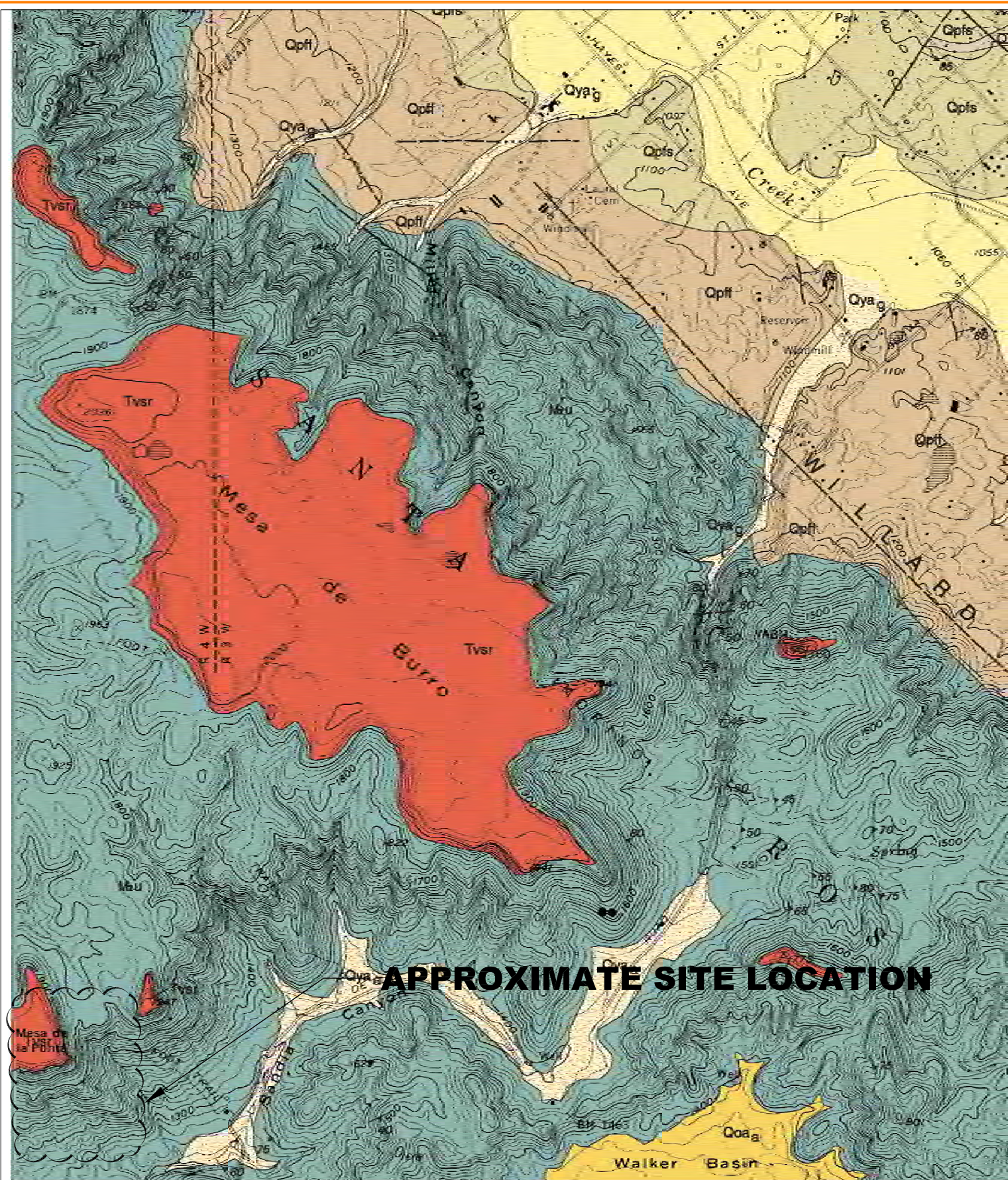


Principal Engineer

SMP



Distribution: (2) Addressee



REFERENCES: Michael P. Kennedy, and Douglas M. Morton, PRELIMINARY GEOLOGIC MAP OF THE MURRIETA 7.5' QUADRANGLE, RIVERSIDE COUNTY, CALIFORNIA, Digital preparation by Rachel M. Alvarez and Greg Morton
 Prepared in cooperation with CALIFORNIA GEOLOGICAL SURVEY

Appendix 6: LID BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation to supplement Section D

VBMP WORKSHEETS

The following pages are the DMA Subarea VBMP Worksheets.

Santa Margarita Watershed		Legend:	Required Entries
BMP Design Volume, V_{BMP} (Rev. 03-2012)			Calculated Cells
(Note this worksheet shall only be used in conjunction with BMP designs from the LID BMP Design Handbook)			
Company Name	Ventura Engineering Inland, Inc.	Date	2/4/2021
Designed by	Robert	County/City Case No	CUP190038
Company Project Number/Name	Carancho Road Cultivation		
Drainage Area Number/Name	DMA1-R18		
Enter the Area Tributary to this Feature	$A_T = 0.11$ acres		
85 th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E			
Site Location	Township	T8S	
	Range	R4W	
	Section	1	
Enter the 85 th Percentile, 24-hour Rainfall Depth	$D_{85} =$	0.82	
Determine the Effective Impervious Fraction			
Type of post-development surface cover (use pull down menu)	Roofs		
Effective Impervious Fraction	$I_f =$	1.00	
Calculate the composite Runoff Coefficient, C for the BMP Tributary Area			
Use the following equation based on the WEF/ASCE Method			
$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$		$C =$	0.89
Determine Design Storage Volume, V_{BMP}			
Calculate V_U , the 85% Unit Storage Volume $V_U = D_{85} \times C$		$V_u =$	0.73 (in*ac)/ac
Calculate the design storage volume of the BMP, V_{BMP} .			
$V_{BMP} (ft^3) = \frac{V_U (in\text{-}ac/ac) \times A_T (ac) \times 43,560 (ft^2/ac)}{12 (in/ft)}$		$V_{BMP} =$	291 ft^3
Notes:			

Santa Margarita Watershed		Legend:	Required Entries
BMP Design Volume, V_{BMP} (Rev. 03-2012)			Calculated Cells
(Note this worksheet shall only be used in conjunction with BMP designs from the LID BMP Design Handbook)			
Company Name	Ventura Engineering Inland, Inc.	Date	2/4/2021
Designed by	Robert	County/City Case No	CUP190038
Company Project Number/Name	Carancho Road Cultivation		
Drainage Area Number/Name	DMA1-IP1		
Enter the Area Tributary to this Feature	$A_T = 0.57$ acres		
85 th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E			
Site Location	Township	T8S	
	Range	R4W	
	Section	1	
Enter the 85 th Percentile, 24-hour Rainfall Depth	$D_{85} =$	0.82	
Determine the Effective Impervious Fraction			
Type of post-development surface cover (use pull down menu)	Concrete or Asphalt		
Effective Impervious Fraction	$I_f =$	1.00	
Calculate the composite Runoff Coefficient, C for the BMP Tributary Area			
Use the following equation based on the WEF/ASCE Method			
$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$	$C =$	0.89	
Determine Design Storage Volume, V_{BMP}			
Calculate V_U , the 85% Unit Storage Volume $V_U = D_{85} \times C$	$V_u =$	0.73	(in*ac)/ac
Calculate the design storage volume of the BMP, V_{BMP} .			
$V_{BMP} (ft^3) = \frac{V_U (in\text{-}ac/ac) \times A_T (ac) \times 43,560 (ft^2/ac)}{12 (in/ft)}$	$V_{BMP} =$	1,510	ft ³
Notes:			

Santa Margarita Watershed		Legend:	Required Entries
BMP Design Volume, V_{BMP} (Rev. 03-2012)			Calculated Cells
(Note this worksheet shall <u>only</u> be used in conjunction with BMP designs from the <u>LID BMP Design Handbook</u>)			
Company Name	Ventura Engineering Inland, Inc.	Date	2/4/2021
Designed by	Robert	County/City Case No	CUP190038
Company Project Number/Name	Carancho Road Cultivation		
Drainage Area Number/Name	DMA1-IP2		
Enter the Area Tributary to this Feature	$A_T = 0.172$ acres		
85 th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E			
Site Location	Township	T8S	
	Range	R4W	
	Section	1	
Enter the 85 th Percentile, 24-hour Rainfall Depth	$D_{85} =$	0.82	
Determine the Effective Impervious Fraction			
Type of post-development surface cover (use pull down menu)	Concrete or Asphalt		
Effective Impervious Fraction	$I_f =$	1.00	
Calculate the composite Runoff Coefficient, C for the BMP Tributary Area			
Use the following equation based on the WEF/ASCE Method			
$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$	$C =$	0.89	
Determine Design Storage Volume, V_{BMP}			
Calculate V_U , the 85% Unit Storage Volume $V_U = D_{85} \times C$	$V_u =$	0.73	(in*ac)/ac
Calculate the design storage volume of the BMP, V_{BMP} .			
$V_{BMP} (ft^3) = \frac{V_U (in\text{-}ac/ac) \times A_T (ac) \times 43,560 (ft^2/ac)}{12 (in/ft)}$	$V_{BMP} =$	456	ft ³
Notes:			

Santa Margarita Watershed		Legend:	Required Entries
BMP Design Volume, V_{BMP} (Rev. 03-2012)			Calculated Cells
(Note this worksheet shall <u>only</u> be used in conjunction with BMP designs from the <u>LID BMP Design Handbook</u>)			
Company Name	Ventura Engineering Inland, Inc.	Date	2/4/2021
Designed by	Robert	County/City Case No	CUP190038
Company Project Number/Name	Carancho Road Cultivation		
Drainage Area Number/Name	DMA1-LS2		
Enter the Area Tributary to this Feature	$A_T = 0.036$ acres		
85 th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E			
Site Location	Township	T8S	
	Range	R4W	
	Section	1	
Enter the 85 th Percentile, 24-hour Rainfall Depth	$D_{85} =$	0.82	
Determine the Effective Impervious Fraction			
Type of post-development surface cover (use pull down menu)	Ornamental Landscaping		
Effective Impervious Fraction	$I_f =$	0.10	
Calculate the composite Runoff Coefficient, C for the BMP Tributary Area			
Use the following equation based on the WEF/ASCE Method			
$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$		$C =$	0.11
Determine Design Storage Volume, V_{BMP}			
Calculate V_U , the 85% Unit Storage Volume $V_U = D_{85} \times C$		$V_u =$	0.09 (in*ac)/ac
Calculate the design storage volume of the BMP, V_{BMP} .			
$V_{BMP} (ft^3) = \frac{V_U (in\text{-}ac/ac) \times A_T (ac) \times 43,560 (ft^2/ac)}{12 (in/ft)}$		$V_{BMP} =$	12 ft ³
Notes:			

Santa Margarita Watershed		Legend:	Required Entries
BMP Design Volume, V_{BMP} (Rev. 03-2012)			Calculated Cells
(Note this worksheet shall only be used in conjunction with BMP designs from the LID BMP Design Handbook)			
Company Name	Ventura Engineering Inland, Inc.	Date	2/4/2021
Designed by	Robert	County/City Case No	CUP190038
Company Project Number/Name	Carancho Road Cultivation		
Drainage Area Number/Name	DMA1-LS3		
Enter the Area Tributary to this Feature	$A_T = 0.016$ acres		
85 th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E			
Site Location	Township	T8S	
	Range	R4W	
	Section	1	
Enter the 85 th Percentile, 24-hour Rainfall Depth	$D_{85} =$	0.82	
Determine the Effective Impervious Fraction			
Type of post-development surface cover (use pull down menu)	Ornamental Landscaping		
Effective Impervious Fraction	$I_f =$	0.10	
Calculate the composite Runoff Coefficient, C for the BMP Tributary Area			
Use the following equation based on the WEF/ASCE Method			
$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$		$C =$	0.11
Determine Design Storage Volume, V_{BMP}			
Calculate V_U , the 85% Unit Storage Volume $V_U = D_{85} \times C$		$V_u =$	0.09 (in*ac)/ac
Calculate the design storage volume of the BMP, V_{BMP} .			
$V_{BMP} (ft^3) = \frac{V_U (in\text{-}ac/ac) \times A_T (ac) \times 43,560 (ft^2/ac)}{12 (in/ft)}$		$V_{BMP} =$	5 ft ³
Notes:			

BMP DESIGN WORKSHEETS

The following pages are the BMP Design Worksheets.

BMP Sizing Spreadsheet V3.0

Project Name:	Carancho Road Cultivation
Project Applicant:	Sam Hazelip
Jurisdiction:	Riverside County
Parcel (APN):	933-202-005-06
Hydrologic Unit:	902.22
Rain Gauge:	Lake Wohlford
Total Project Area (sf):	39,323
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.0

Project Name:	Carancho Road Cultivation	Hydrologic Unit:	902.22
Project Applicant:	Sam Hazelip	Rain Gauge:	Lake Wohlford
Jurisdiction:	Riverside County	Total Project Area:	39,323
Parcel (APN):	933-202-005-06	Low Flow Threshold:	0.102
BMP Name:	BMP1	BMP Type:	Cistern
BMP Native Soil Type:	N/A - Impervious Liner	BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP				HMP Sizing Factors		Minimum BMP Size
DMA Name	Area (sf)	Pre-Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Volume
DMA1: R18	4,800	D	Moderate	Roofs	1.0	0.12
DMA1: IP1	24,814	D	Moderate	Concrete	1.0	0.12
DMA1: IP2	7,476	D	Moderate	Concrete	1.0	0.12
DMA1: LS2	1,556	D	Moderate	Landscape	0.1	0.12
DMA1: LS2	677	D	Moderate	Landscape	0.1	0.12
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
BMP Tributary Area	39,323					Minimum BMP Size 4478
						Proposed BMP Size* 4500

* Assumes standard configuration

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

Standard Cistern Depth (Overflow Elevation)	3.5	ft
Provided Cistern Depth (Overflow Elevation)	3.5	ft
Minimum Required Cistern Footprint	1279	CF

BMP Sizing Spreadsheet V3.0

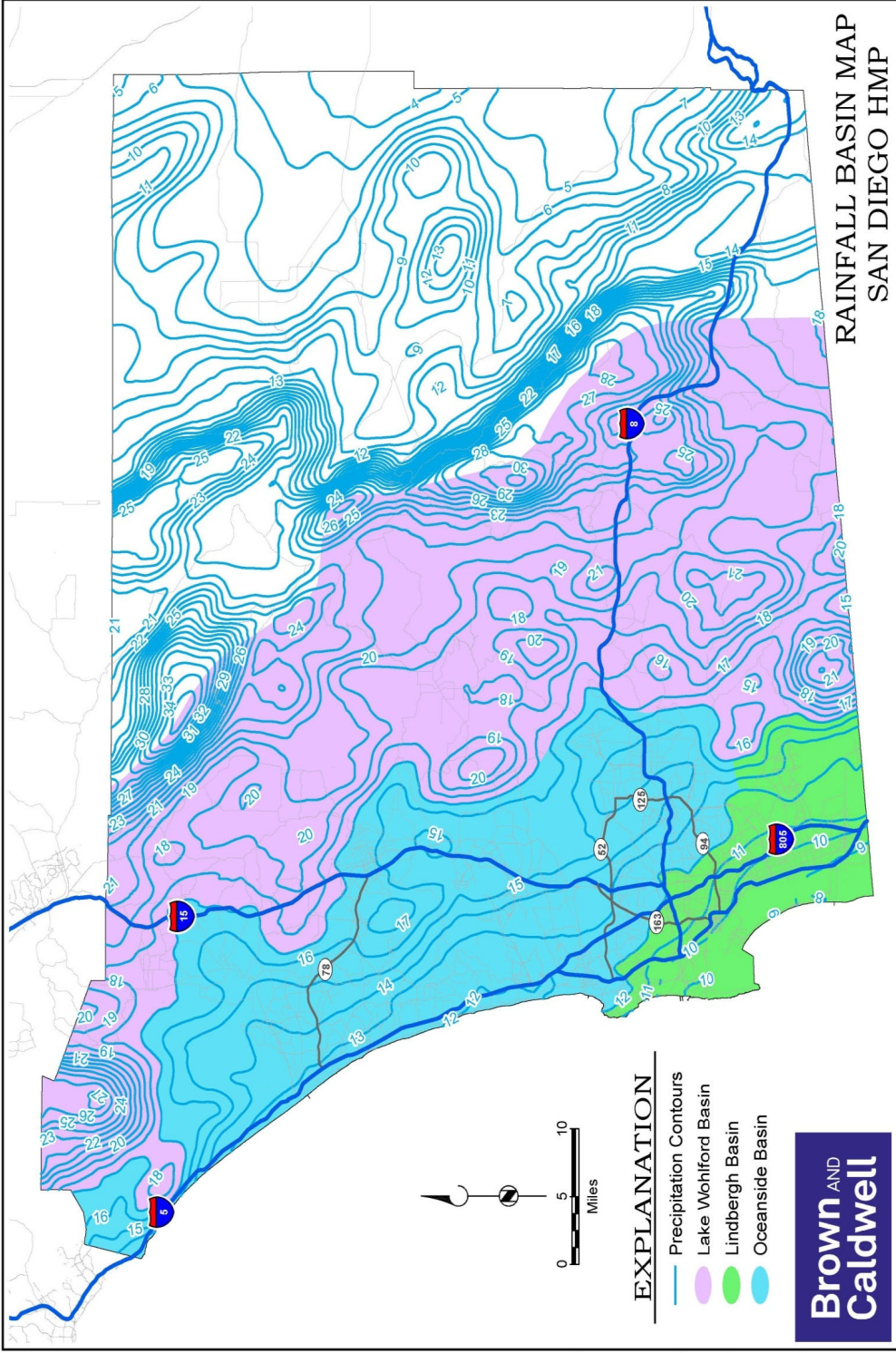
Project Name:	Carancho Road Cultivation	Hydrologic Unit:	902.22
Project Applicant:	Sam Hazelip	Rain Gauge:	Lake Wohlford
Jurisdiction:	Riverside County	Total Project Area:	39,323
Parcel (APN):	933-202-005-06	Low Flow Threshold:	0.1Q2
BMP Name	BMP1	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - %Q ₂ (cfs)	Orifice Area (in ²)
		Soil Type	Slope				
DMA1: R18	Lake Wohlford	D	Moderate	0.554	0.110	0.006	0.09
DMA1: IP1	Lake Wohlford	D	Moderate	0.554	0.570	0.032	0.47
DMA1: IP2	Lake Wohlford	D	Moderate	0.554	0.172	0.010	0.14
DMA1: LS2	Lake Wohlford	D	Moderate	0.554	0.036	0.002	0.03
DMA1: LS2	Lake Wohlford	D	Moderate	0.554	0.016	0.001	0.01

3.50	0.050	0.74	0.97
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in ²)	Max Orifice Diameter (in)

Provide Hand Calc.	0.050	0.74	0.970
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in ²)	Selected Orifice Diameter (in)

Drawdown (Hrs)
Provide Hand Calculation



**RAINFALL BASIN MAP
SAN DIEGO HMP**

EXPLANATION

- Precipitation Contours
- Lake Wohlford Basin
- Lindbergh Basin
- Oceanside Basin



Table G.2-3: Sizing Factors for Hydromodification Flow Control Infiltration BMPs Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A
0.1Q2	A	Flat	Lindbergh	0.055
0.1Q2	A	Moderate	Lindbergh	0.055
0.1Q2	A	Steep	Lindbergh	0.055
0.1Q2	B	Flat	Lindbergh	0.045
0.1Q2	B	Moderate	Lindbergh	0.045
0.1Q2	B	Steep	Lindbergh	0.045
0.1Q2	C	Flat	Lindbergh	0.035
0.1Q2	C	Moderate	Lindbergh	0.035
0.1Q2	C	Steep	Lindbergh	0.035
0.1Q2	D	Flat	Lindbergh	0.03
0.1Q2	D	Moderate	Lindbergh	0.03
0.1Q2	D	Steep	Lindbergh	0.03
0.1Q2	A	Flat	Oceanside	0.06
0.1Q2	A	Moderate	Oceanside	0.06
0.1Q2	A	Steep	Oceanside	0.06
0.1Q2	B	Flat	Oceanside	0.05
0.1Q2	B	Moderate	Oceanside	0.05
0.1Q2	B	Steep	Oceanside	0.05
0.1Q2	C	Flat	Oceanside	0.05
0.1Q2	C	Moderate	Oceanside	0.05
0.1Q2	C	Steep	Oceanside	0.045
0.1Q2	D	Flat	Oceanside	0.035
0.1Q2	D	Moderate	Oceanside	0.035
0.1Q2	D	Steep	Oceanside	0.035
0.1Q2	A	Flat	Lake Wohlford	0.085
0.1Q2	A	Moderate	Lake Wohlford	0.085
0.1Q2	A	Steep	Lake Wohlford	0.085
0.1Q2	B	Flat	Lake Wohlford	0.07

0.1Q2	B	Moderate	Lake Wohlford	0.07
0.1Q2	B	Steep	Lake Wohlford	0.07
0.1Q2	C	Flat	Lake Wohlford	0.055
0.1Q2	C	Moderate	Lake Wohlford	0.055
0.1Q2	C	Steep	Lake Wohlford	0.055
0.1Q2	D	Flat	Lake Wohlford	0.04
0.1Q2	D	Moderate	Lake Wohlford	0.04
0.1Q2	D	Steep	Lake Wohlford	0.04

Table G.2-4: Sizing Factors for Hydromodification Flow Control Biofiltration with Partial Retention Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	below low orifice inv	Rain Gauge	A
0.1Q2	A	Flat	18	Lindbergh	0.08
0.1Q2	A	Moderate	18	Lindbergh	0.08
0.1Q2	A	Steep	18	Lindbergh	0.08
0.1Q2	B	Flat	18	Lindbergh	0.065
0.1Q2	B	Moderate	18	Lindbergh	0.065
0.1Q2	B	Steep	18	Lindbergh	0.06
0.1Q2	C	Flat	6	Lindbergh	0.05
0.1Q2	C	Moderate	6	Lindbergh	0.05
0.1Q2	C	Steep	6	Lindbergh	0.05
0.1Q2	D	Flat	3	Lindbergh	0.05
0.1Q2	D	Moderate	3	Lindbergh	0.05
0.1Q2	D	Steep	3	Lindbergh	0.05
0.1Q2	A	Flat	18	Oceanside	0.08
0.1Q2	A	Moderate	18	Oceanside	0.075
0.1Q2	A	Steep	18	Oceanside	0.075
0.1Q2	B	Flat	18	Oceanside	0.07
0.1Q2	B	Moderate	18	Oceanside	0.07
0.1Q2	B	Steep	18	Oceanside	0.07
0.1Q2	C	Flat	6	Oceanside	0.07
0.1Q2	C	Moderate	6	Oceanside	0.07

0.1Q2	C	Step	6	Oceanside	0.07
0.1Q2	D	Flat	3	Oceanside	0.07
0.1Q2	D	Moderate	3	Oceanside	0.07
0.1Q2	D	Step	3	Oceanside	0.07
0.1Q2	A	Flat	18	Lake Wohlford	0.11
0.1Q2	A	Moderate	18	Lake Wohlford	0.11
0.1Q2	A	Step	18	Lake Wohlford	0.105
0.1Q2	B	Flat	18	Lake Wohlford	0.09
0.1Q2	B	Moderate	18	Lake Wohlford	0.085
0.1Q2	B	Step	18	Lake Wohlford	0.085
0.1Q2	C	Flat	6	Lake Wohlford	0.065
0.1Q2	C	Moderate	6	Lake Wohlford	0.065
0.1Q2	C	Step	6	Lake Wohlford	0.065
0.1Q2	D	Flat	3	Lake Wohlford	0.06
0.1Q2	D	Moderate	3	Lake Wohlford	0.06
0.1Q2	D	Step	3	Lake Wohlford	0.06

Table G.2-5: Sizing Factors for Hydromodification Flow Control Biofiltration BMPs Designed Using Sizing

Lower Flow Threshold	Soil Group	Factor Method			A
		Slope	Rain Gauge	A	
0.1Q2	A	Flat	Lindbergh	0.32	
0.1Q2	A	Moderate	Lindbergh	0.3	
0.1Q2	A	Step	Lindbergh	0.285	
0.1Q2	B	Flat	Lindbergh	0.105	
0.1Q2	B	Moderate	Lindbergh	0.1	
0.1Q2	B	Step	Lindbergh	0.095	
0.1Q2	C	Flat	Lindbergh	0.055	
0.1Q2	C	Moderate	Lindbergh	0.05	
0.1Q2	C	Step	Lindbergh	0.05	
0.1Q2	D	Flat	Lindbergh	0.05	
0.1Q2	D	Moderate	Lindbergh	0.05	
0.1Q2	D	Step	Lindbergh	0.05	
0.1Q2	A	Flat	Oceanside	0.15	
0.1Q2	A	Moderate	Oceanside	0.14	
0.1Q2	A	Step	Oceanside	0.135	

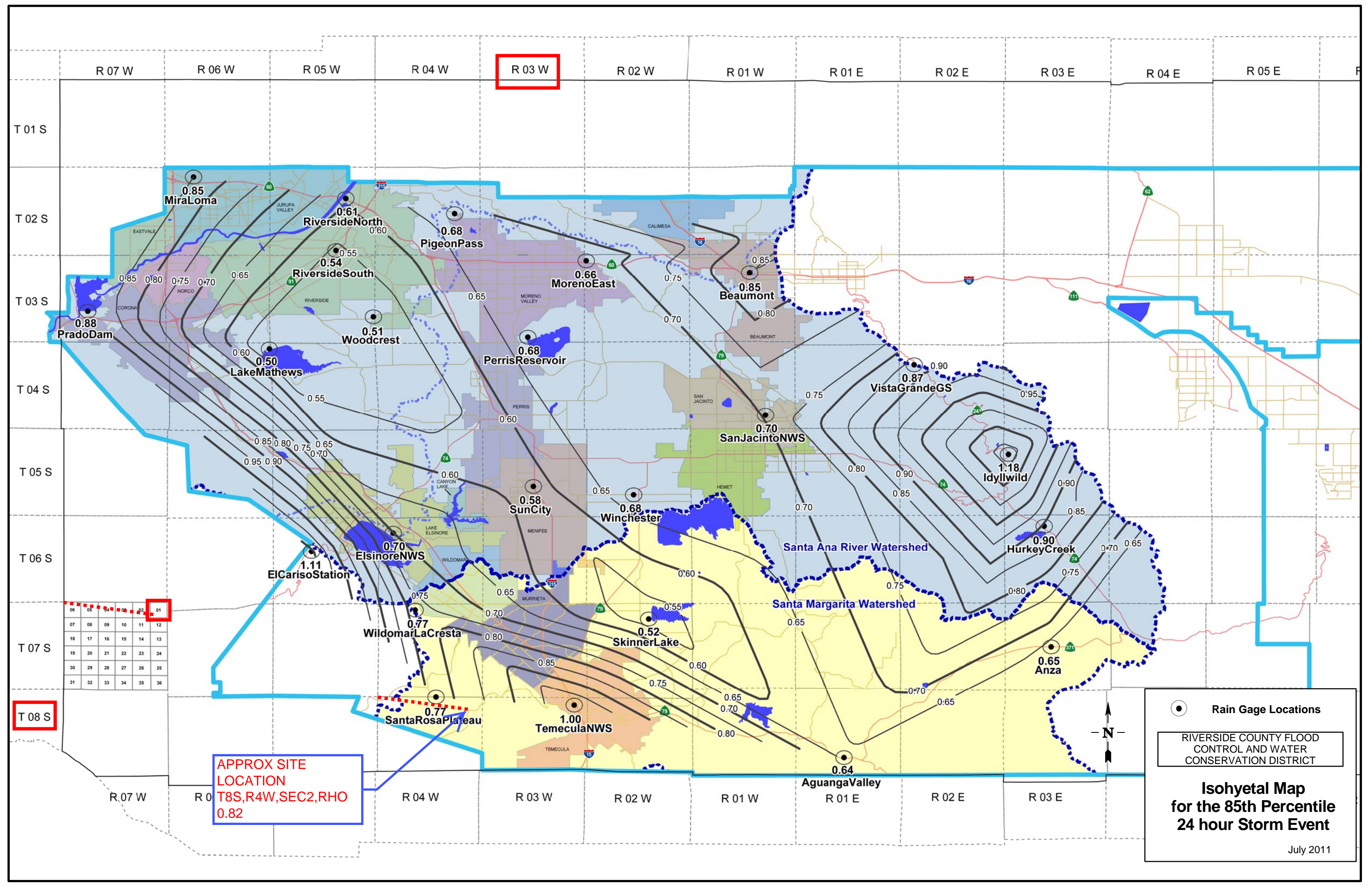
0.1Q2	B	Flat	Oceanside	0.085
0.1Q2	B	Moderate	Oceanside	0.085
0.1Q2	B	Steep	Oceanside	0.085
0.1Q2	C	Flat	Oceanside	0.075
0.1Q2	C	Moderate	Oceanside	0.075
0.1Q2	C	Steep	Oceanside	0.075
0.1Q2	D	Flat	Oceanside	0.07
0.1Q2	D	Moderate	Oceanside	0.07
0.1Q2	D	Steep	Oceanside	0.07
0.1Q2	A	Flat	Lake Wohlford	0.285
0.1Q2	A	Moderate	Lake Wohlford	0.275
0.1Q2	A	Steep	Lake Wohlford	0.27
0.1Q2	B	Flat	Lake Wohlford	0.15
0.1Q2	B	Moderate	Lake Wohlford	0.145
0.1Q2	B	Steep	Lake Wohlford	0.145
0.1Q2	C	Flat	Lake Wohlford	0.07
0.1Q2	C	Moderate	Lake Wohlford	0.07
0.1Q2	C	Steep	Lake Wohlford	0.07
0.1Q2	D	Flat	Lake Wohlford	0.06
0.1Q2	D	Moderate	Lake Wohlford	0.06
0.1Q2	D	Steep	Lake Wohlford	0.06

Table G.2-6: Sizing Factors for Hydromodification Flow Control Cistern Facilities Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	V
0.1Q2	A	Flat	Lindbergh	0.54
0.1Q2	A	Moderate	Lindbergh	0.51
0.1Q2	A	Steep	Lindbergh	0.49
0.1Q2	B	Flat	Lindbergh	0.19
0.1Q2	B	Moderate	Lindbergh	0.18
0.1Q2	B	Steep	Lindbergh	0.18
0.1Q2	C	Flat	Lindbergh	0.11
0.1Q2	C	Moderate	Lindbergh	0.11
0.1Q2	C	Steep	Lindbergh	0.11
0.1Q2	D	Flat	Lindbergh	0.09

0.1Q2	D	Moderate	Lindbergh	0.09
0.1Q2	D	Steep	Lindbergh	0.09
0.1Q2	A	Flat	Oceanside	0.26
0.1Q2	A	Moderate	Oceanside	0.25
0.1Q2	A	Steep	Oceanside	0.25
0.1Q2	B	Flat	Oceanside	0.16
0.1Q2	B	Moderate	Oceanside	0.16
0.1Q2	B	Steep	Oceanside	0.16
0.1Q2	C	Flat	Oceanside	0.14
0.1Q2	C	Moderate	Oceanside	0.14
0.1Q2	C	Steep	Oceanside	0.14
0.1Q2	D	Flat	Oceanside	0.12
0.1Q2	D	Moderate	Oceanside	0.12
0.1Q2	D	Steep	Oceanside	0.12
0.1Q2	A	Flat	Lake Wohlford	0.53
0.1Q2	A	Moderate	Lake Wohlford	0.49
0.1Q2	A	Steep	Lake Wohlford	0.49
0.1Q2	B	Flat	Lake Wohlford	0.28
0.1Q2	B	Moderate	Lake Wohlford	0.28
0.1Q2	B	Steep	Lake Wohlford	0.28
0.1Q2	C	Flat	Lake Wohlford	0.14
0.1Q2	C	Moderate	Lake Wohlford	0.14
0.1Q2	C	Steep	Lake Wohlford	0.14
0.1Q2	D	Flat	Lake Wohlford	0.12
0.1Q2	D	Moderate	Lake Wohlford	0.12
0.1Q2	D	Steep	Lake Wohlford	0.12

85TH PERCENTILE MAP



R 07 W R 06 W R 05 W R 04 W **R 03 W** R 02 W R 01 W R 01 E R 02 E R 03 E R 04 E R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

APPROX SITE LOCATION
T8S, R4W, SEC2, RHO 0.82

● Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

GROUNDWATER DATA

Ground water was researched on the California State's groundwater resources website. The project site's data is not close and is old and therefore, not included at this time.

BMP DETAILS

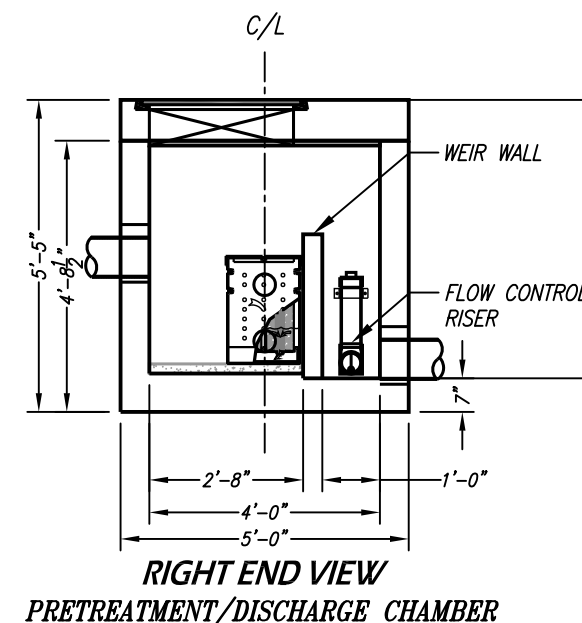
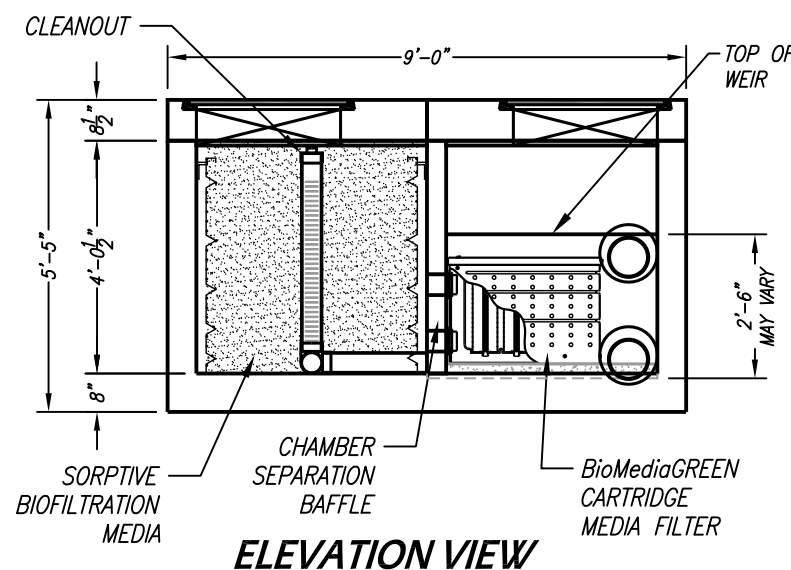
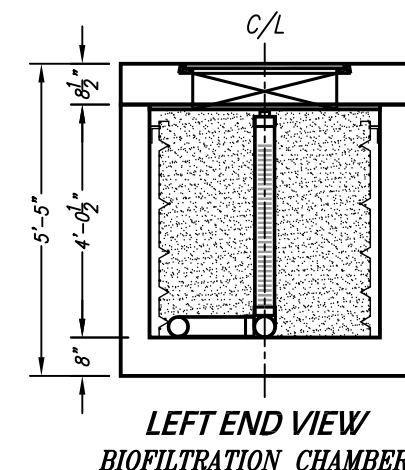
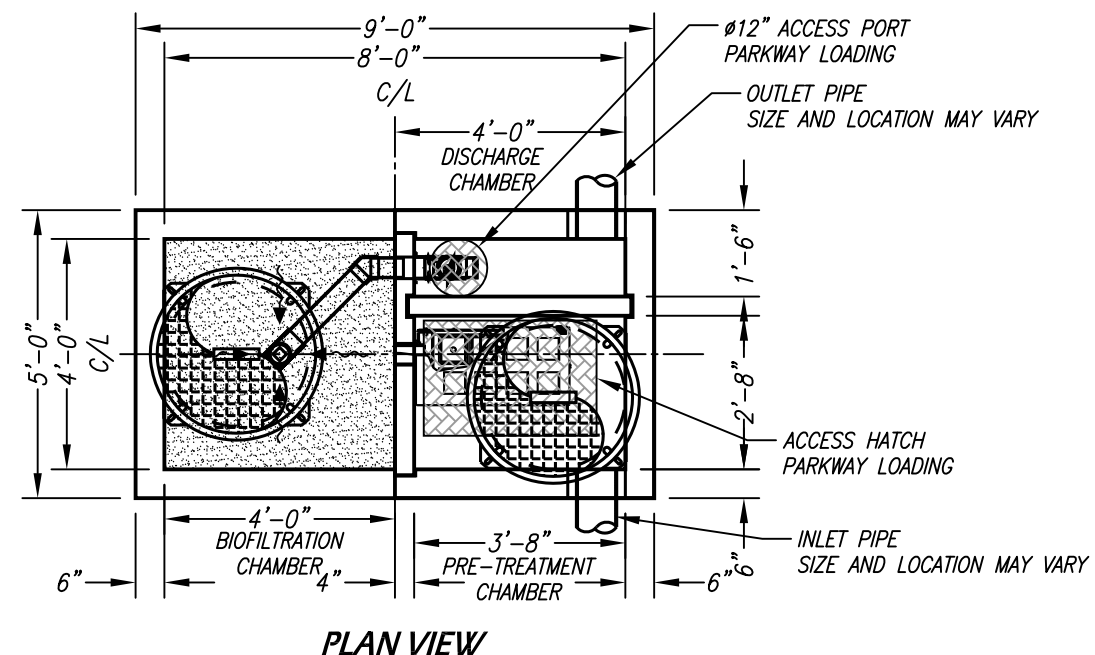
SITE SPECIFIC DATA*			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
PERFORMANCE DATA			
TREATMENT FLOW (CFS)	0.116		
TREATMENT HGL (FT)			
BYPASS FLOW RATE (CFS)	DEPENDANT ON PIPE SIZE		
PROJECT PARAMETERS			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1		PVC	8"
OUTLET PIPE	-4.13	PVC	8"
RIM ELEVATION	0.0		
SURFACE LOADING REQUIREMENT	PARKWAY		
FRAME & COVER	PRETREATMENT	BIOFILTRATION	DISCHARGE
	24"X36"	OPEN PLANTER	12"
WETLAND MEDIA VOLUME (CY)	2.4		
MEDIA DELIVERED	TBD		
ORIFICE SIZE (DIA)			
MAX PICK WEIGHT (LBS)	TBD		
NOTES:			
*PER ENGINEER OF RECORD			

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH).
4. INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR.
5. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
6. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
7. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.

GENERAL NOTES

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



MWS UNIT DESIGN DATA	
TREATMENT CAPACITY (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND LOADING RATE (GPM/SF)	1.0

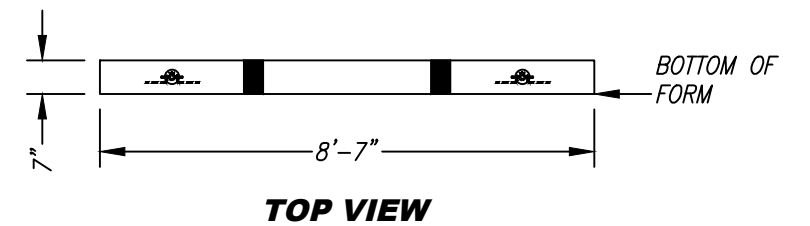
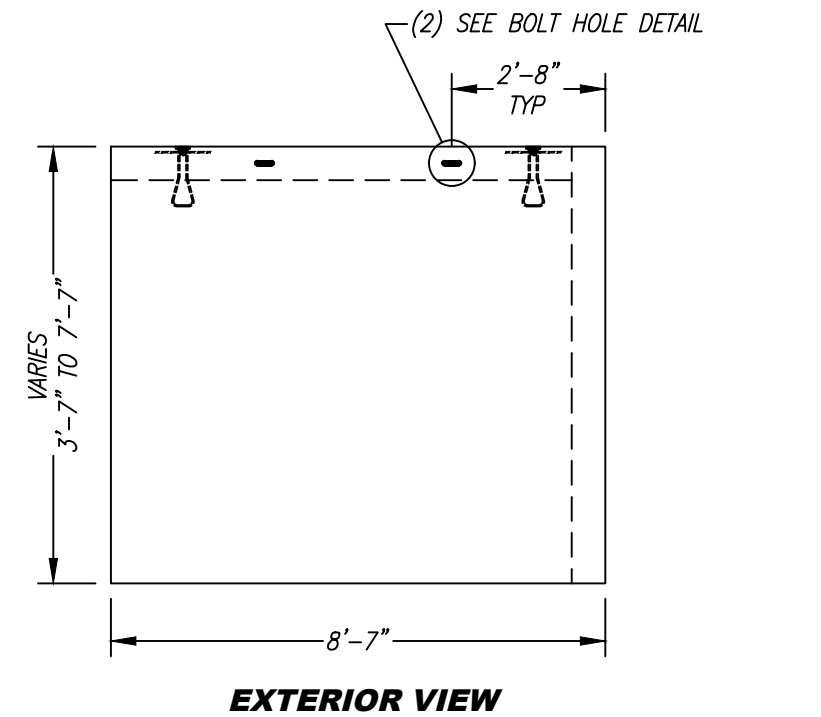
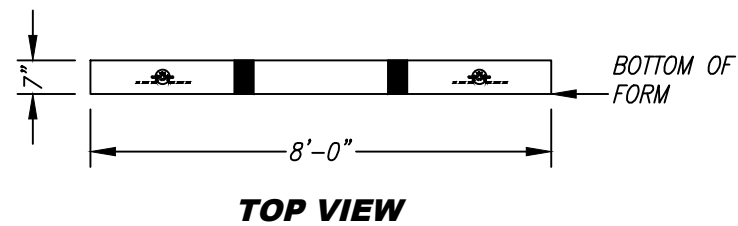
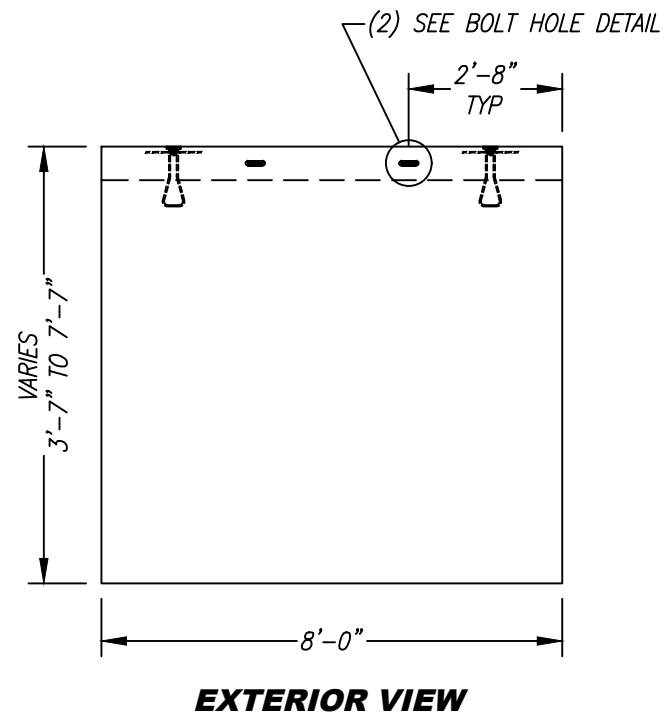
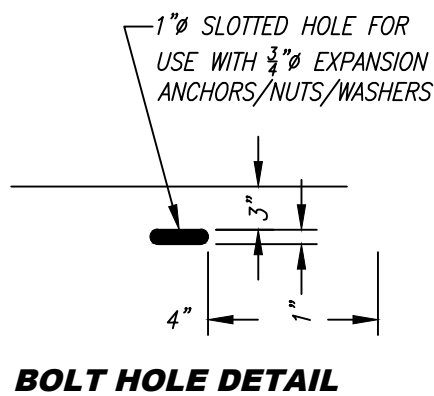
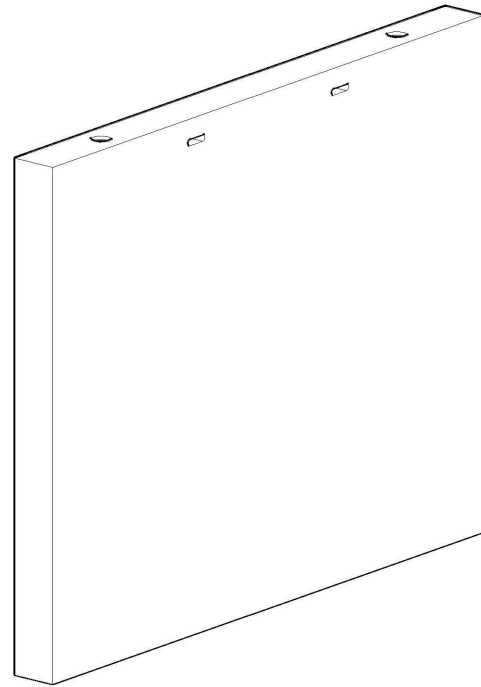
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STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

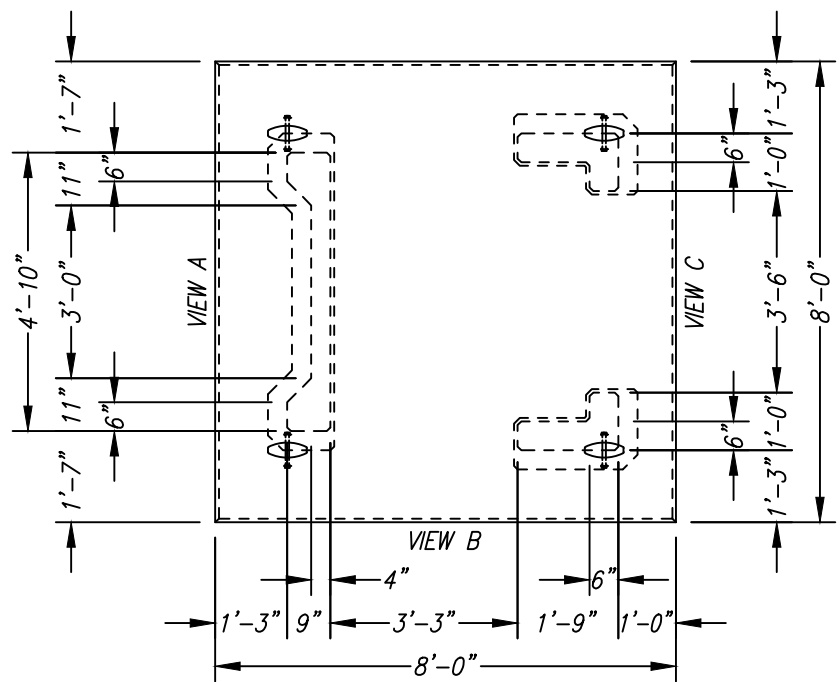
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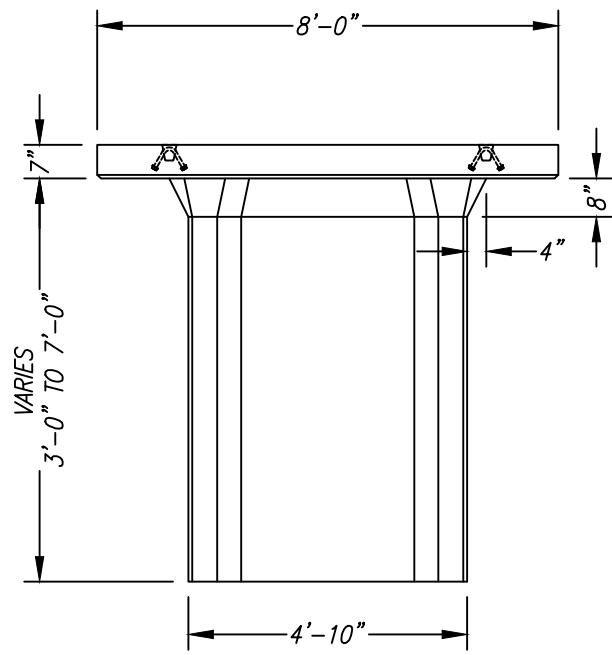
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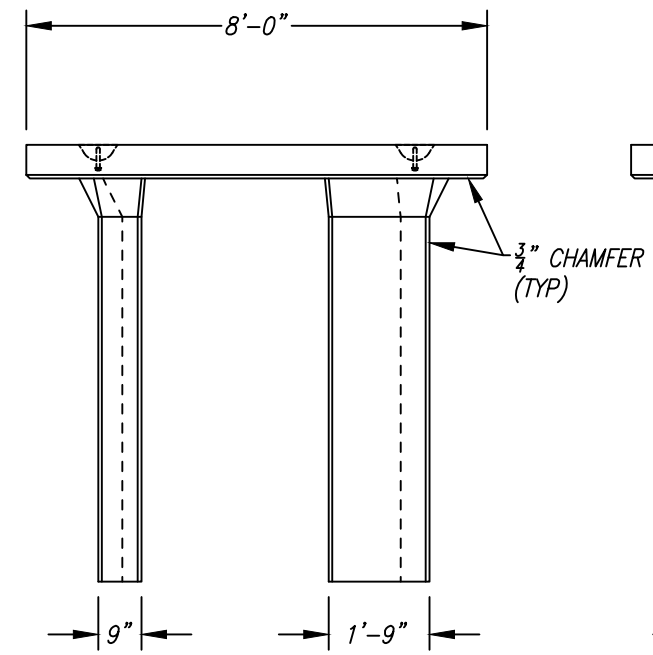




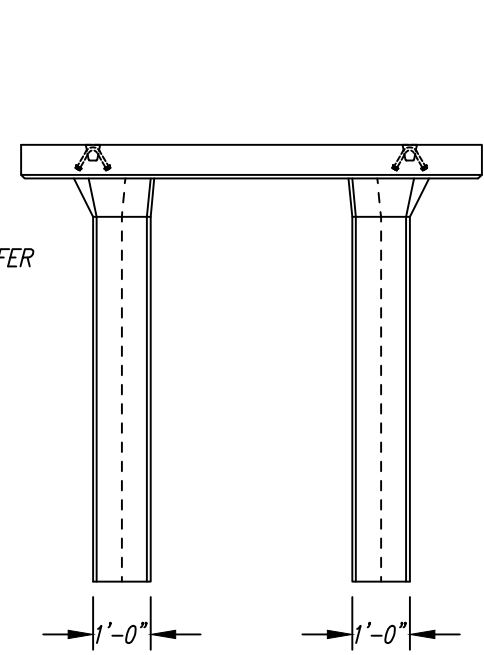
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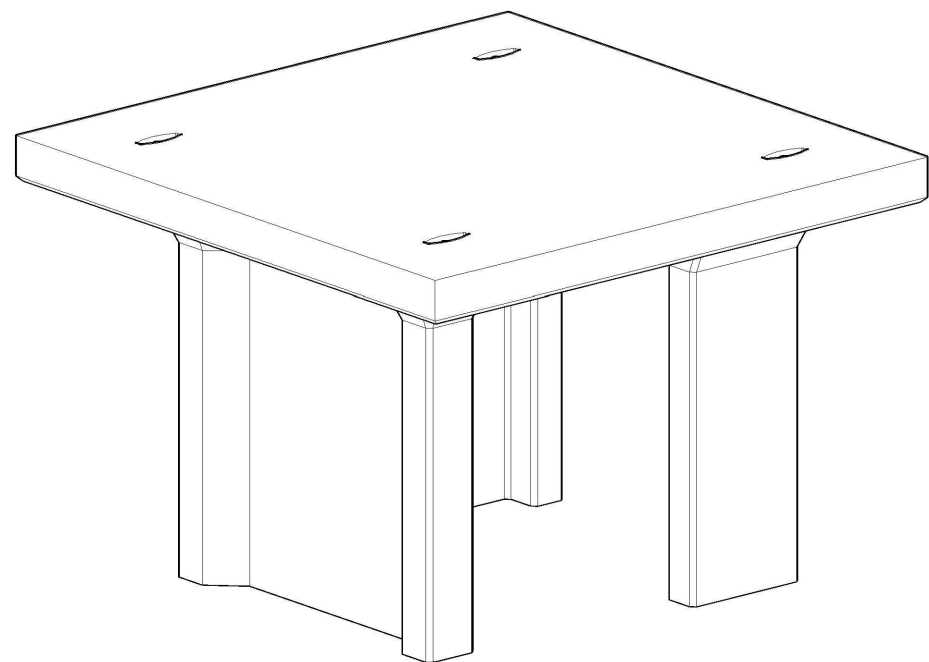
ELEVATION VIEW A



ELEVATION VIEW B



ELEVATION VIEW C



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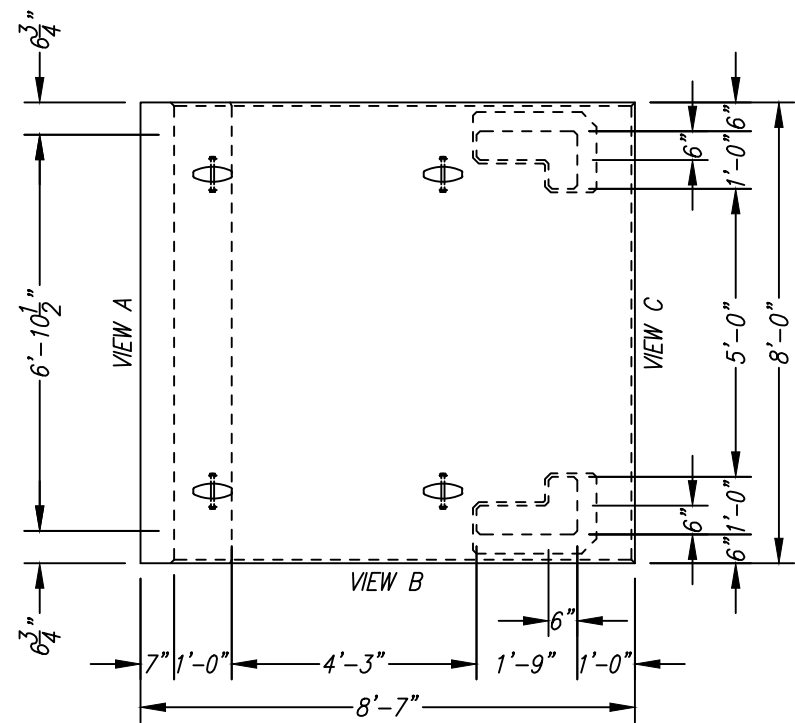
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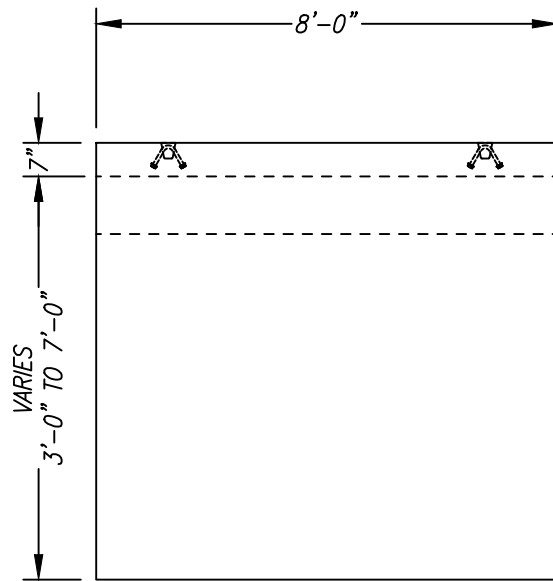
URBANPOND
PRECAST CONCRETE STORMWATER DETENTION
SINGLE MODULE - INTERIOR

Z/30/19SSERTICH

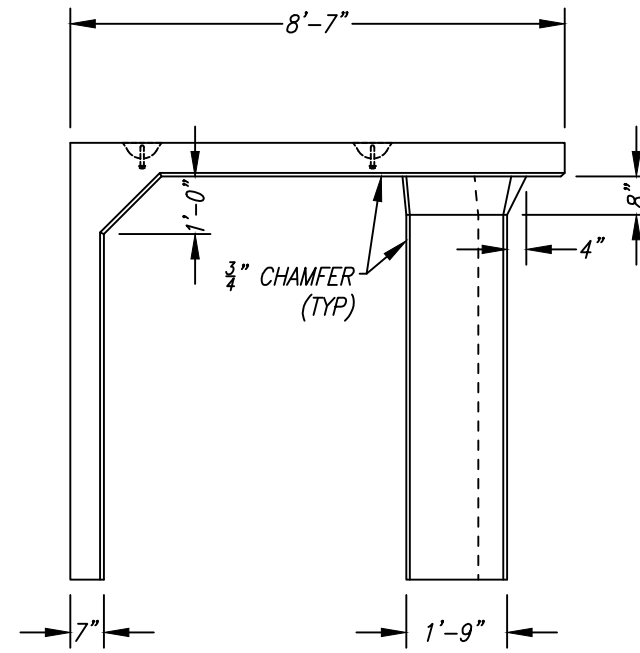
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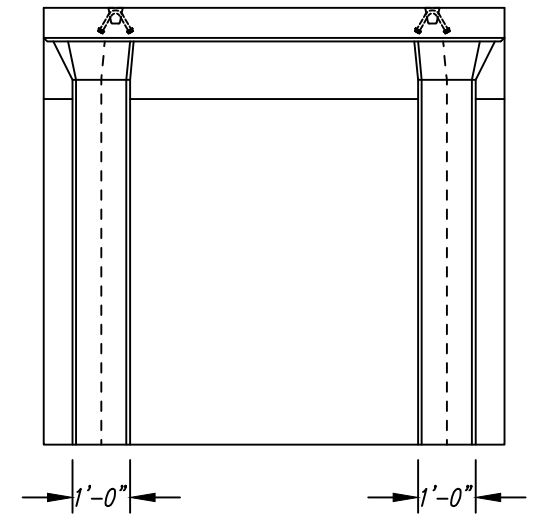
TOP VIEW



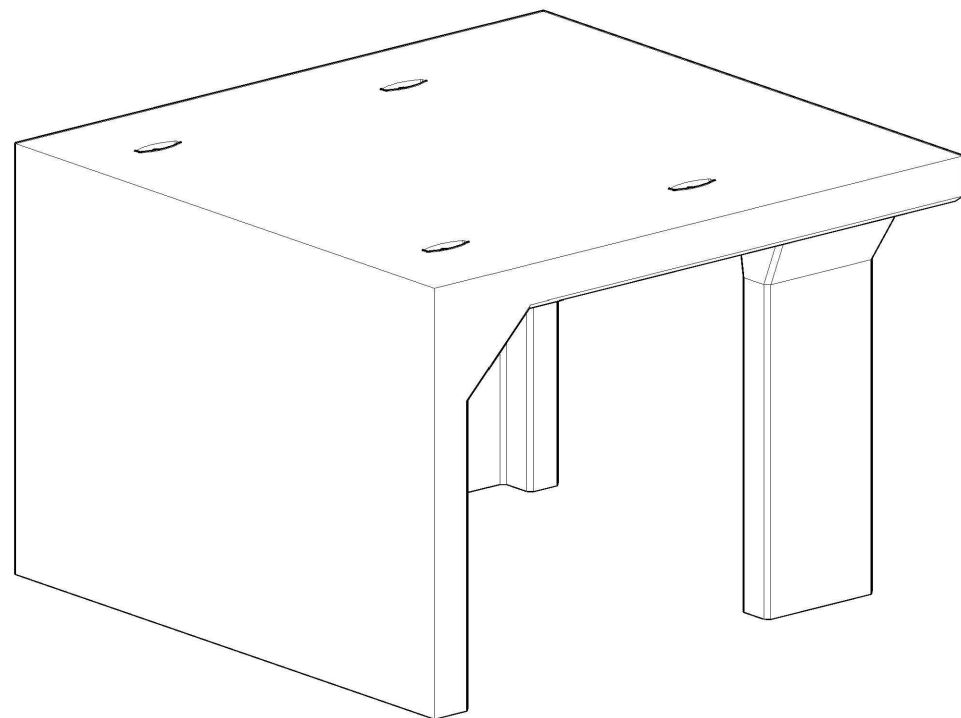
ELEVATION VIEW A



ELEVATION VIEW B



ELEVATION VIEW C



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URBANPOND
PRECAST CONCRETE STORMWATER DETENTION
SINGLE MODULE - PERIMETER

Appendix 7: Hydromodification

Supporting Detail Relating to compliance with the Hydromodification Performance Standards

BMP Sizing Spreadsheet V3.0

Project Name:	Carancho Road Cultivation
Project Applicant:	Sam Hazelip
Jurisdiction:	Riverside County
Parcel (APN):	933-202-005-06
Hydrologic Unit:	902.22
Rain Gauge:	Lake Wohlford
Total Project Area (sf):	39,323
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.0	
Project Name:	Carancho Road Cultivation
Project Applicant:	Sam Hazelip
Jurisdiction:	Riverside County
Parcel (APN):	933-202-005-06
BMP Name:	BMP1
BMP Native Soil Type:	N/A - Impervious Liner
Hydrologic Unit:	902.22
Rain Gauge:	Lake Wohlford
Total Project Area:	39,323
Low Flow Threshold:	0.102
BMP Type:	Cistern
BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP			HMP Sizing Factors		Minimum BMP Size		
DMA Name	Area (sf)	Pre-Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Volume	Volume (CF)
DMA1: R18	4,800	D	Moderate	Roofs	1.0	0.12	576
DMA1: IP1	24,814	D	Moderate	Concrete	1.0	0.12	2978
DMA1: IP2	7,476	D	Moderate	Concrete	1.0	0.12	897
DMA1: LS2	1,556	D	Moderate	Landscape	0.1	0.12	19
DMA1: LS2	677	D	Moderate	Landscape	0.1	0.12	8
						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	39,323					Minimum BMP Size Proposed BMP Size*	4478 4500

* Assumes standard configuration

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

BMP Sizing Spreadsheet V3.0

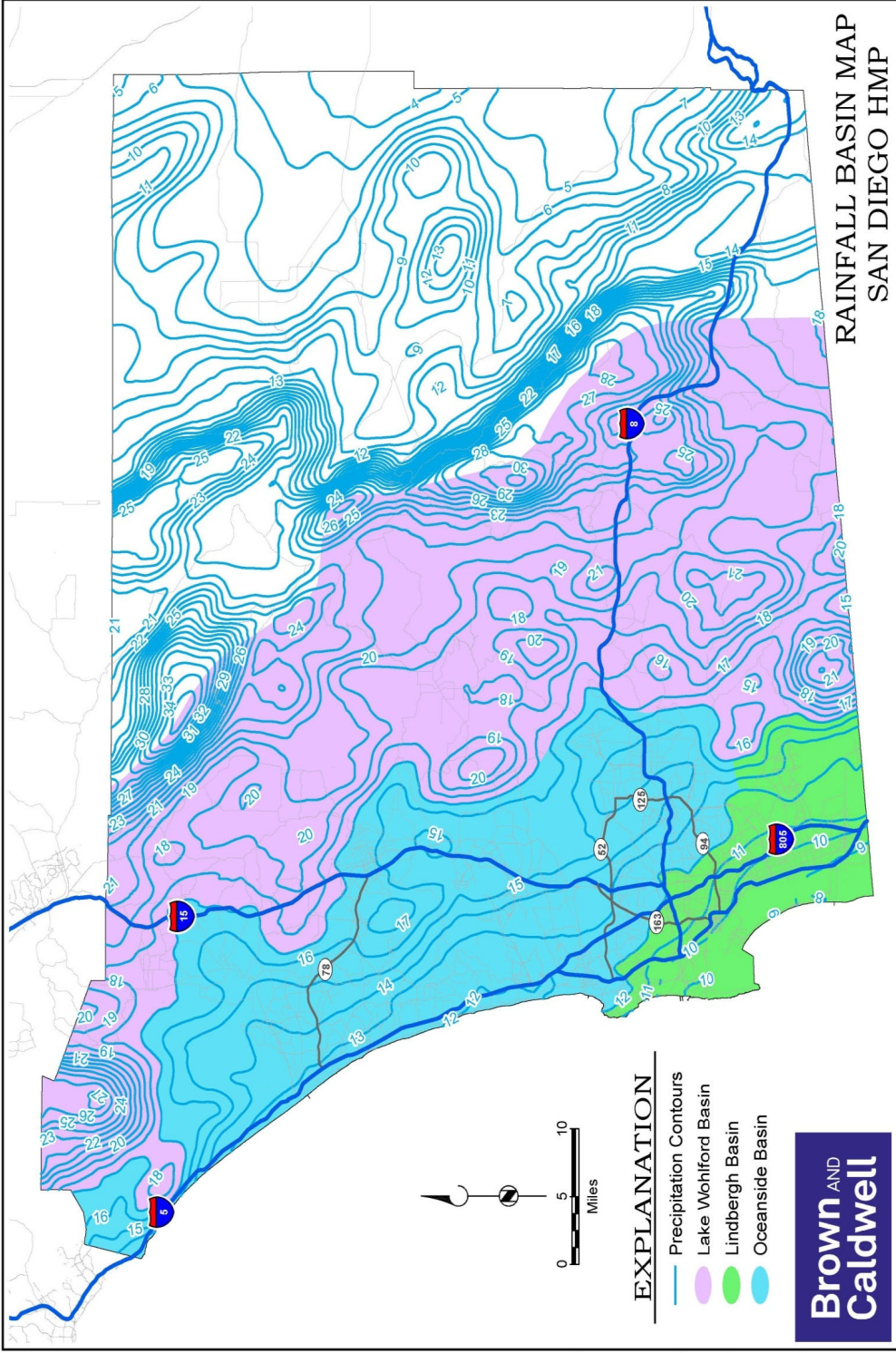
Project Name:	Carancho Road Cultivation	Hydrologic Unit:	902.22
Project Applicant:	Sam Hazelip	Rain Gauge:	Lake Wohlford
Jurisdiction:	Riverside County	Total Project Area:	39,323
Parcel (APN):	933-202-005-06	Low Flow Threshold:	0.1Q2
BMP Name	BMP1	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - %Q ₂ (cfs)	Orifice Area (in ²)
		Soil Type	Slope				
DMA1: R18	Lake Wohlford	D	Moderate	0.554	0.110	0.006	0.09
DMA1: IP1	Lake Wohlford	D	Moderate	0.554	0.570	0.032	0.47
DMA1: IP2	Lake Wohlford	D	Moderate	0.554	0.172	0.010	0.14
DMA1: LS2	Lake Wohlford	D	Moderate	0.554	0.036	0.002	0.03
DMA1: LS2	Lake Wohlford	D	Moderate	0.554	0.016	0.001	0.01

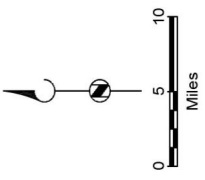
3.50	0.050	0.74	0.97
Max Orifice Head (feet)	Max Tot. Allowable Orifice Flow (cfs)	Max Tot. Allowable Orifice Area (in ²)	Max Orifice Diameter (in)

Provide Hand Calc.	0.050	0.74	0.970
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in ²)	Selected Orifice Diameter (in)

Drawdown (Hrs)	Provide Hand Calculation
----------------	--------------------------



**RAINFALL BASIN MAP
SAN DIEGO HMP**



EXPLANATION

- Precipitation Contours
- Lake Wohlford Basin
- Lindbergh Basin
- Oceanside Basin



Table G.2-3: Sizing Factors for Hydromodification Flow Control Infiltration BMPs Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	A
0.1Q2	A	Flat	Lindbergh	0.055
0.1Q2	A	Moderate	Lindbergh	0.055
0.1Q2	A	Steep	Lindbergh	0.055
0.1Q2	B	Flat	Lindbergh	0.045
0.1Q2	B	Moderate	Lindbergh	0.045
0.1Q2	B	Steep	Lindbergh	0.045
0.1Q2	C	Flat	Lindbergh	0.035
0.1Q2	C	Moderate	Lindbergh	0.035
0.1Q2	C	Steep	Lindbergh	0.035
0.1Q2	D	Flat	Lindbergh	0.03
0.1Q2	D	Moderate	Lindbergh	0.03
0.1Q2	D	Steep	Lindbergh	0.03
0.1Q2	A	Flat	Oceanside	0.06
0.1Q2	A	Moderate	Oceanside	0.06
0.1Q2	A	Steep	Oceanside	0.06
0.1Q2	B	Flat	Oceanside	0.05
0.1Q2	B	Moderate	Oceanside	0.05
0.1Q2	B	Steep	Oceanside	0.05
0.1Q2	C	Flat	Oceanside	0.05
0.1Q2	C	Moderate	Oceanside	0.05
0.1Q2	C	Steep	Oceanside	0.045
0.1Q2	D	Flat	Oceanside	0.035
0.1Q2	D	Moderate	Oceanside	0.035
0.1Q2	D	Steep	Oceanside	0.035
0.1Q2	A	Flat	Lake Wohlford	0.085
0.1Q2	A	Moderate	Lake Wohlford	0.085
0.1Q2	A	Steep	Lake Wohlford	0.085
0.1Q2	B	Flat	Lake Wohlford	0.07

0.1Q2	B	Moderate	Lake Wohlford	0.07
0.1Q2	B	Steep	Lake Wohlford	0.07
0.1Q2	C	Flat	Lake Wohlford	0.055
0.1Q2	C	Moderate	Lake Wohlford	0.055
0.1Q2	C	Steep	Lake Wohlford	0.055
0.1Q2	D	Flat	Lake Wohlford	0.04
0.1Q2	D	Moderate	Lake Wohlford	0.04
0.1Q2	D	Steep	Lake Wohlford	0.04

Table G.2-4: Sizing Factors for Hydromodification Flow Control Biofiltration with Partial Retention Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	below low orifice inv	Rain Gauge	A
0.1Q2	A	Flat	18	Lindbergh	0.08
0.1Q2	A	Moderate	18	Lindbergh	0.08
0.1Q2	A	Steep	18	Lindbergh	0.08
0.1Q2	B	Flat	18	Lindbergh	0.065
0.1Q2	B	Moderate	18	Lindbergh	0.065
0.1Q2	B	Steep	18	Lindbergh	0.06
0.1Q2	C	Flat	6	Lindbergh	0.05
0.1Q2	C	Moderate	6	Lindbergh	0.05
0.1Q2	C	Steep	6	Lindbergh	0.05
0.1Q2	D	Flat	3	Lindbergh	0.05
0.1Q2	D	Moderate	3	Lindbergh	0.05
0.1Q2	D	Steep	3	Lindbergh	0.05
0.1Q2	A	Flat	18	Oceanside	0.08
0.1Q2	A	Moderate	18	Oceanside	0.075
0.1Q2	A	Steep	18	Oceanside	0.075
0.1Q2	B	Flat	18	Oceanside	0.07
0.1Q2	B	Moderate	18	Oceanside	0.07
0.1Q2	B	Steep	18	Oceanside	0.07
0.1Q2	C	Flat	6	Oceanside	0.07
0.1Q2	C	Moderate	6	Oceanside	0.07

0.1Q2	C	Step	6	Oceanside	0.07
0.1Q2	D	Flat	3	Oceanside	0.07
0.1Q2	D	Moderate	3	Oceanside	0.07
0.1Q2	D	Step	3	Oceanside	0.07
0.1Q2	A	Flat	18	Lake Wohlford	0.11
0.1Q2	A	Moderate	18	Lake Wohlford	0.11
0.1Q2	A	Step	18	Lake Wohlford	0.105
0.1Q2	B	Flat	18	Lake Wohlford	0.09
0.1Q2	B	Moderate	18	Lake Wohlford	0.085
0.1Q2	B	Step	18	Lake Wohlford	0.085
0.1Q2	C	Flat	6	Lake Wohlford	0.065
0.1Q2	C	Moderate	6	Lake Wohlford	0.065
0.1Q2	C	Step	6	Lake Wohlford	0.065
0.1Q2	D	Flat	3	Lake Wohlford	0.06
0.1Q2	D	Moderate	3	Lake Wohlford	0.06
0.1Q2	D	Step	3	Lake Wohlford	0.06

Table G.2-5: Sizing Factors for Hydromodification Flow Control Biofiltration BMPs Designed Using Sizing

Lower Flow Threshold	Soil Group	Factor Method			A
		Slope	Rain Gauge	A	
0.1Q2	A	Flat	Lindbergh	0.32	
0.1Q2	A	Moderate	Lindbergh	0.3	
0.1Q2	A	Step	Lindbergh	0.285	
0.1Q2	B	Flat	Lindbergh	0.105	
0.1Q2	B	Moderate	Lindbergh	0.1	
0.1Q2	B	Step	Lindbergh	0.095	
0.1Q2	C	Flat	Lindbergh	0.055	
0.1Q2	C	Moderate	Lindbergh	0.05	
0.1Q2	C	Step	Lindbergh	0.05	
0.1Q2	D	Flat	Lindbergh	0.05	
0.1Q2	D	Moderate	Lindbergh	0.05	
0.1Q2	D	Step	Lindbergh	0.05	
0.1Q2	A	Flat	Oceanside	0.15	
0.1Q2	A	Moderate	Oceanside	0.14	
0.1Q2	A	Step	Oceanside	0.135	

0.1Q2	B	Flat	Oceanside	0.085
0.1Q2	B	Moderate	Oceanside	0.085
0.1Q2	B	Steep	Oceanside	0.085
0.1Q2	C	Flat	Oceanside	0.075
0.1Q2	C	Moderate	Oceanside	0.075
0.1Q2	C	Steep	Oceanside	0.075
0.1Q2	D	Flat	Oceanside	0.07
0.1Q2	D	Moderate	Oceanside	0.07
0.1Q2	D	Steep	Oceanside	0.07
0.1Q2	A	Flat	Lake Wohlford	0.285
0.1Q2	A	Moderate	Lake Wohlford	0.275
0.1Q2	A	Steep	Lake Wohlford	0.27
0.1Q2	B	Flat	Lake Wohlford	0.15
0.1Q2	B	Moderate	Lake Wohlford	0.145
0.1Q2	B	Steep	Lake Wohlford	0.145
0.1Q2	C	Flat	Lake Wohlford	0.07
0.1Q2	C	Moderate	Lake Wohlford	0.07
0.1Q2	C	Steep	Lake Wohlford	0.07
0.1Q2	D	Flat	Lake Wohlford	0.06
0.1Q2	D	Moderate	Lake Wohlford	0.06
0.1Q2	D	Steep	Lake Wohlford	0.06

Table G.2-6: Sizing Factors for Hydromodification Flow Control Cistern Facilities Designed Using Sizing Factor Method

Lower Flow Threshold	Soil Group	Slope	Rain Gauge	V
0.1Q2	A	Flat	Lindbergh	0.54
0.1Q2	A	Moderate	Lindbergh	0.51
0.1Q2	A	Steep	Lindbergh	0.49
0.1Q2	B	Flat	Lindbergh	0.19
0.1Q2	B	Moderate	Lindbergh	0.18
0.1Q2	B	Steep	Lindbergh	0.18
0.1Q2	C	Flat	Lindbergh	0.11
0.1Q2	C	Moderate	Lindbergh	0.11
0.1Q2	C	Steep	Lindbergh	0.11
0.1Q2	D	Flat	Lindbergh	0.09

0.1Q2	D	Moderate	Lindbergh	0.09
0.1Q2	D	Steep	Lindbergh	0.09
0.1Q2	A	Flat	Oceanside	0.26
0.1Q2	A	Moderate	Oceanside	0.25
0.1Q2	A	Steep	Oceanside	0.25
0.1Q2	B	Flat	Oceanside	0.16
0.1Q2	B	Moderate	Oceanside	0.16
0.1Q2	B	Steep	Oceanside	0.16
0.1Q2	C	Flat	Oceanside	0.14
0.1Q2	C	Moderate	Oceanside	0.14
0.1Q2	C	Steep	Oceanside	0.14
0.1Q2	D	Flat	Oceanside	0.12
0.1Q2	D	Moderate	Oceanside	0.12
0.1Q2	D	Steep	Oceanside	0.12
0.1Q2	A	Flat	Lake Wohlford	0.53
0.1Q2	A	Moderate	Lake Wohlford	0.49
0.1Q2	A	Steep	Lake Wohlford	0.49
0.1Q2	B	Flat	Lake Wohlford	0.28
0.1Q2	B	Moderate	Lake Wohlford	0.28
0.1Q2	B	Steep	Lake Wohlford	0.28
0.1Q2	C	Flat	Lake Wohlford	0.14
0.1Q2	C	Moderate	Lake Wohlford	0.14
0.1Q2	C	Steep	Lake Wohlford	0.14
0.1Q2	D	Flat	Lake Wohlford	0.12
0.1Q2	D	Moderate	Lake Wohlford	0.12
0.1Q2	D	Steep	Lake Wohlford	0.12

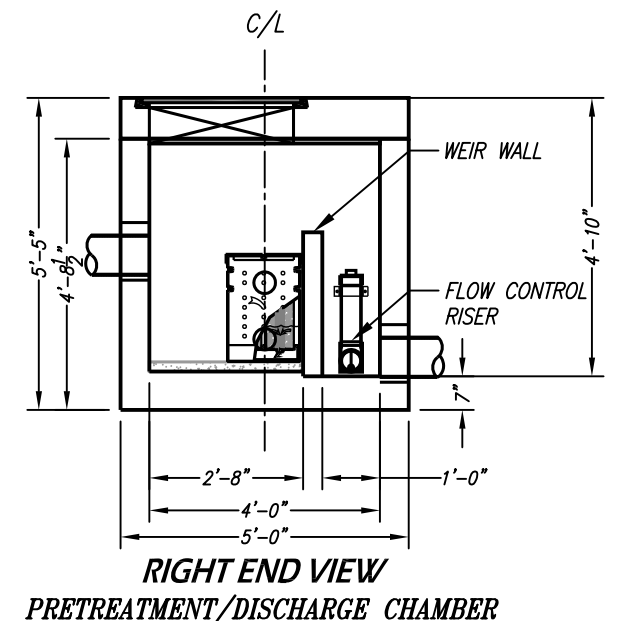
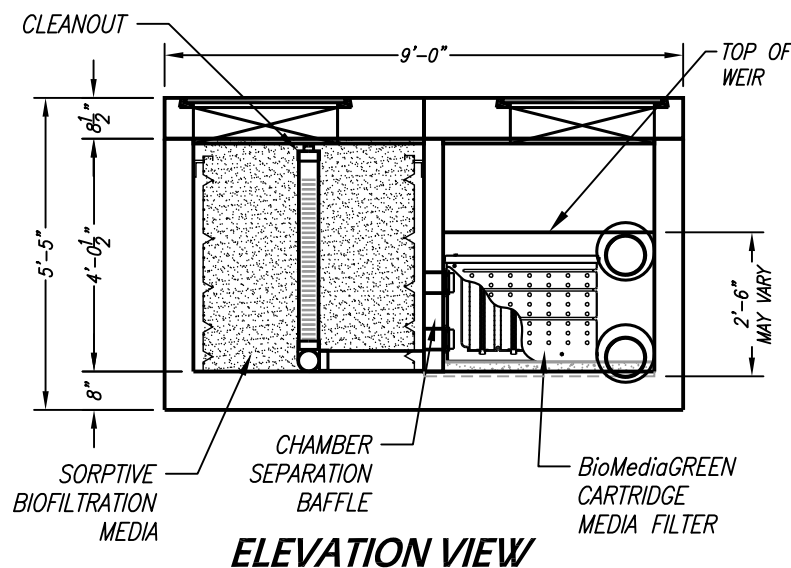
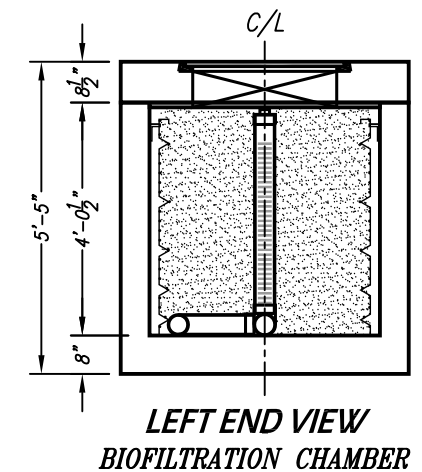
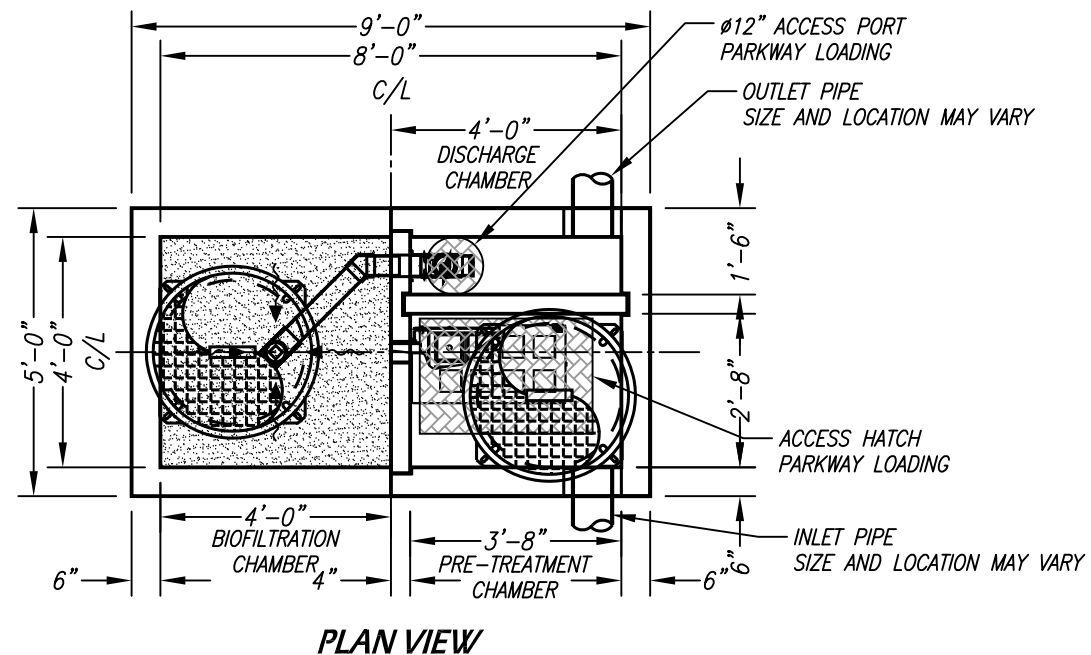
SITE SPECIFIC DATA*			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
PERFORMANCE DATA			
TREATMENT FLOW (CFS)	0.116		
TREATMENT HGL (FT)			
BYPASS FLOW RATE (CFS)	DEPENDANT ON PIPE SIZE		
PROJECT PARAMETERS			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1		PVC	8"
OUTLET PIPE	-4.13	PVC	8"
RIM ELEVATION	0.0		
SURFACE LOADING REQUIREMENT	PARKWAY		
FRAME & COVER	PRETREATMENT	BIOFILTRATION	DISCHARGE
	24"X36"	OPEN PLANTER	12"
WETLAND MEDIA VOLUME (CY)	2.4		
MEDIA DELIVERED	TBD		
ORIFICE SIZE (DIA)			
MAX PICK WEIGHT (LBS)	TBD		
NOTES:	*PER ENGINEER OF RECORD		

INSTALLATION NOTES

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
- MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
- ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH).
- INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR.
- CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
- ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.

GENERAL NOTES

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



MWS UNIT DESIGN DATA	
TREATMENT CAPACITY (CFS)	0.115
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND LOADING RATE (GPM/SF)	1.0

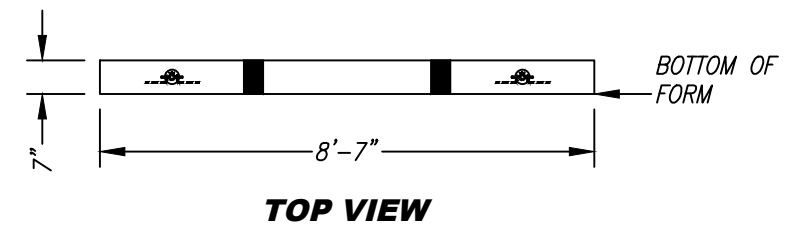
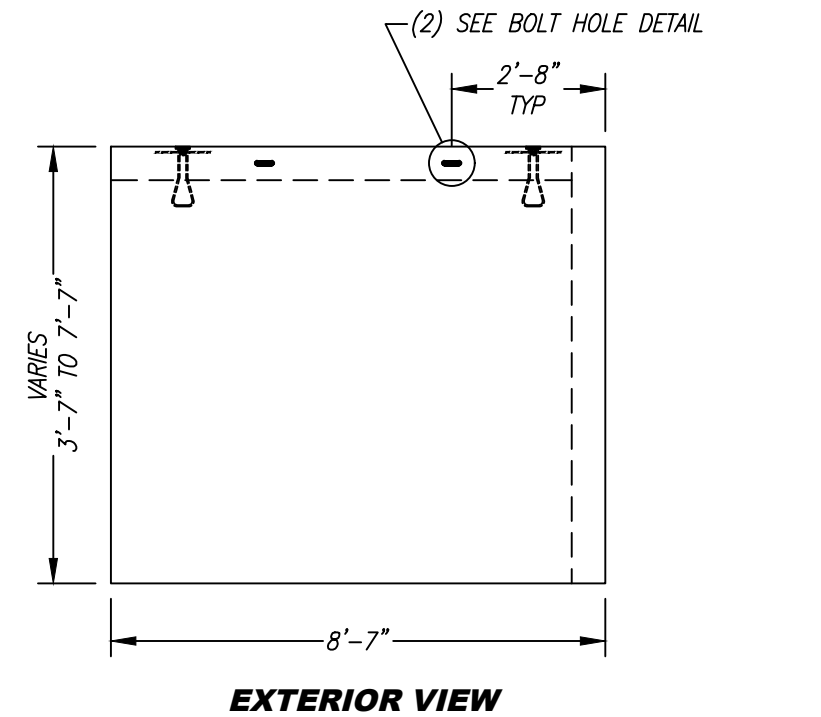
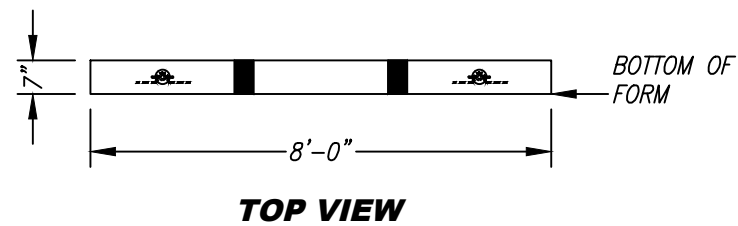
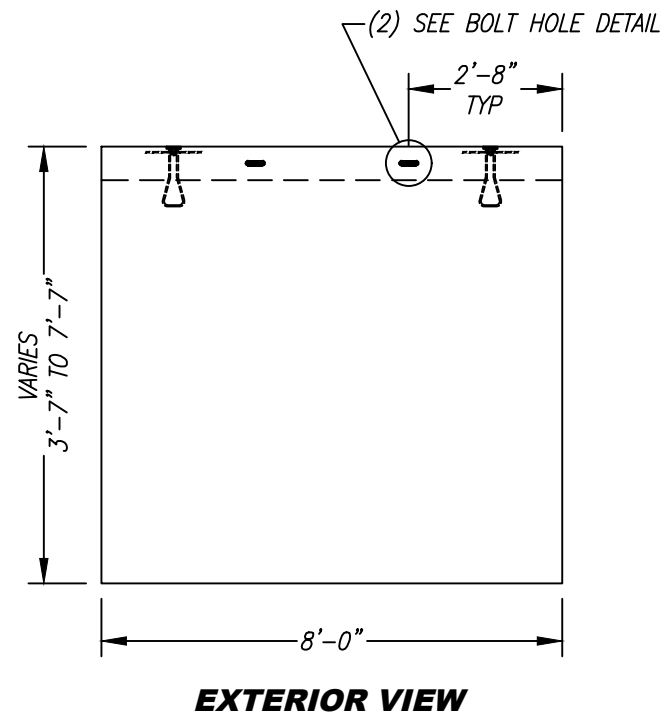
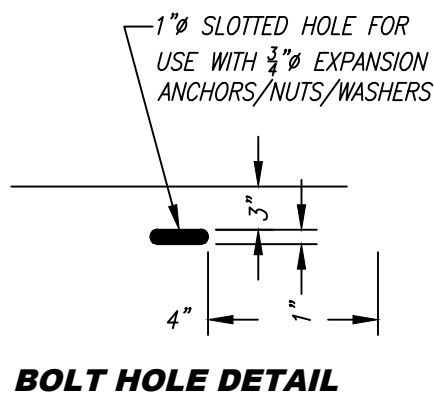
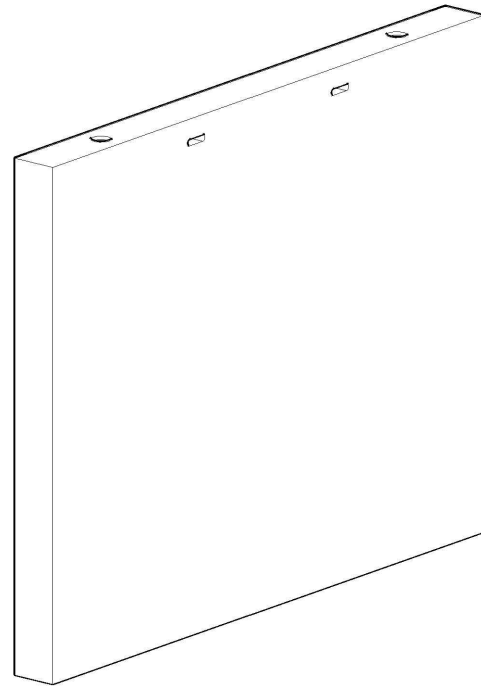
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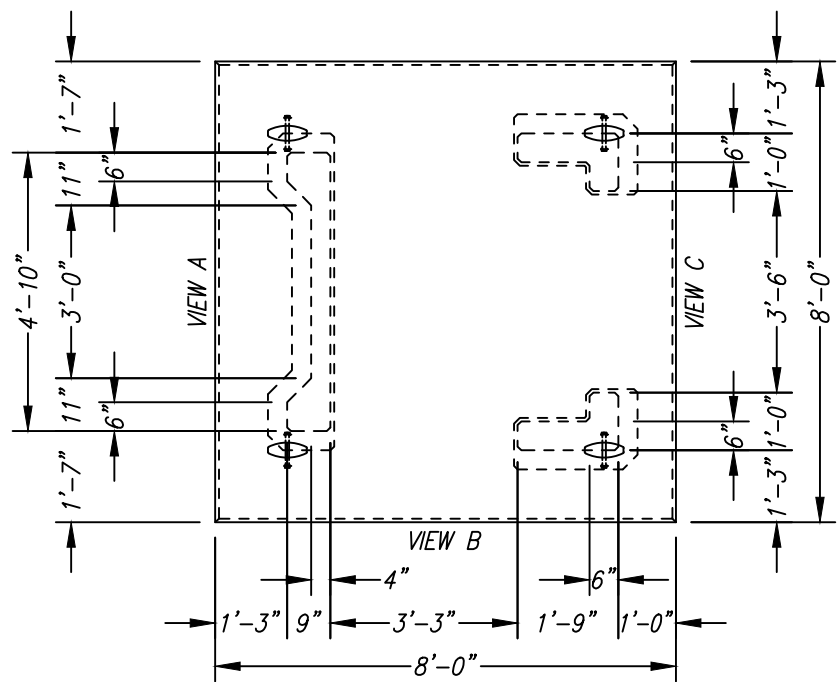
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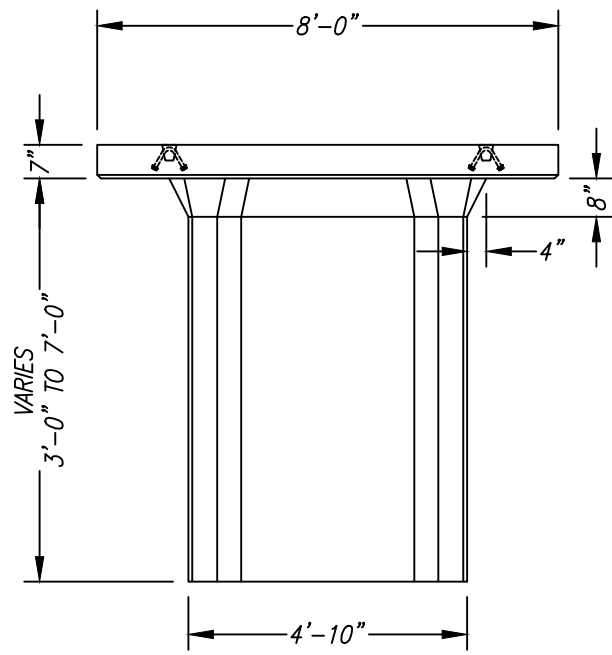


MWS-L-4-8-UG-V STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

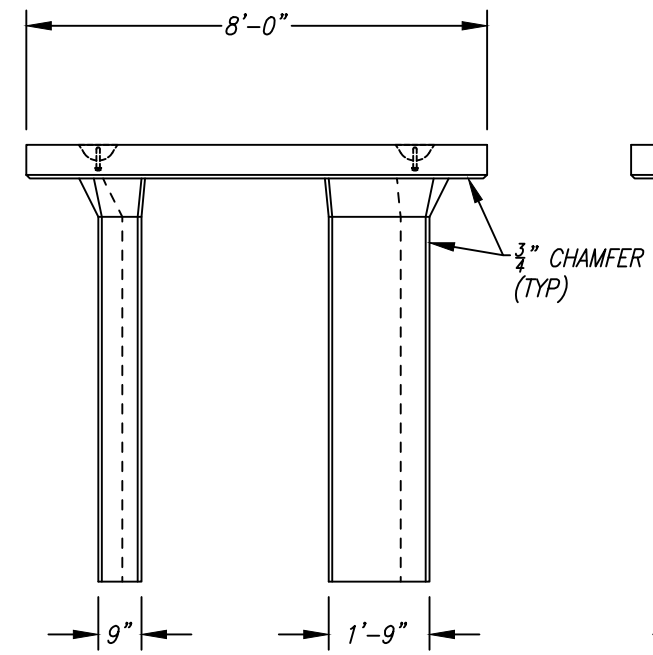




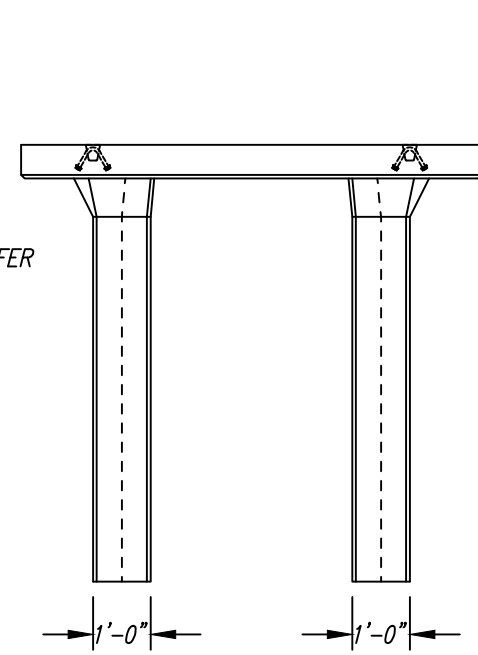
TOP VIEW



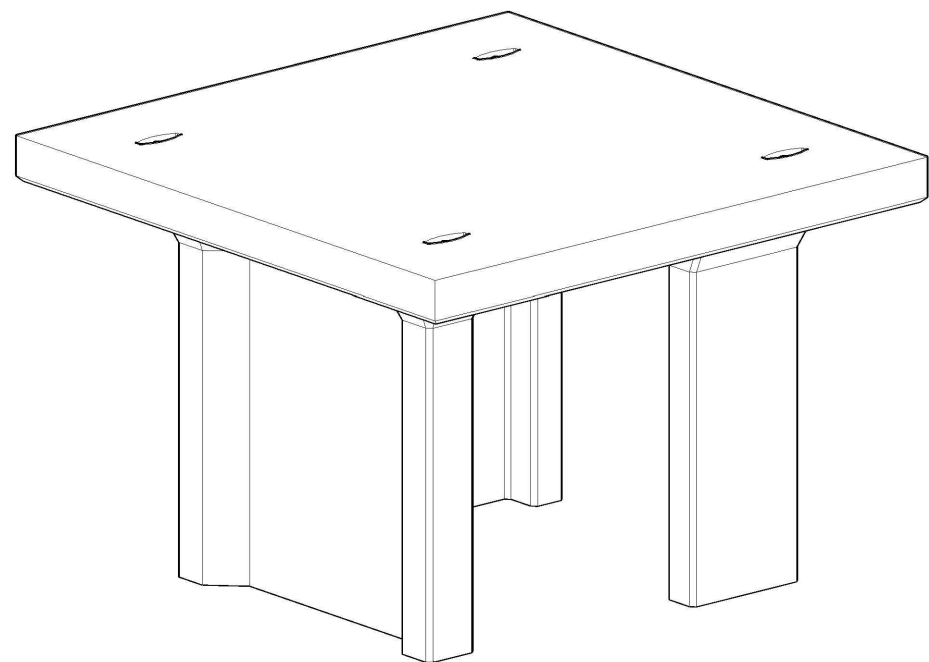
ELEVATION VIEW A



ELEVATION VIEW B



ELEVATION VIEW C



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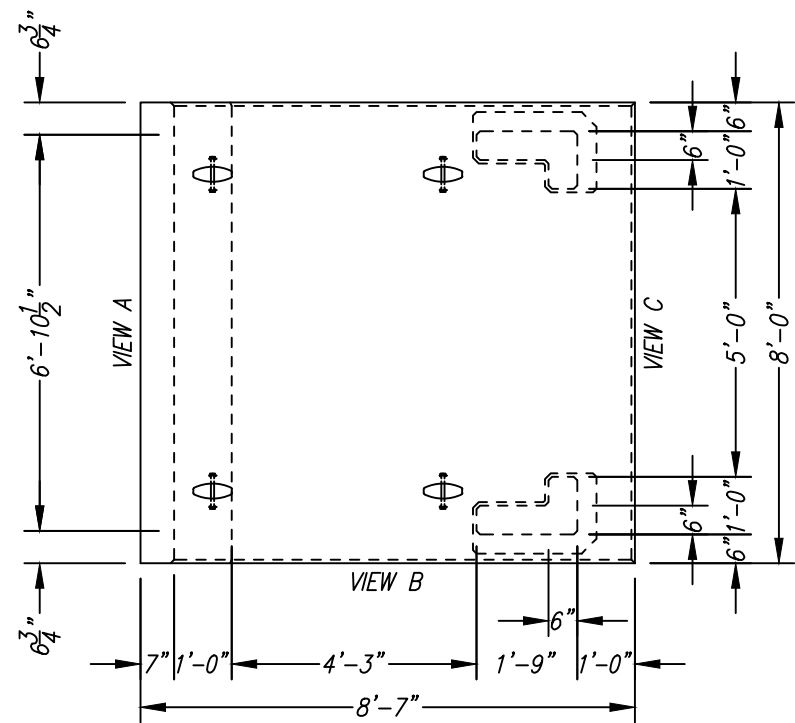
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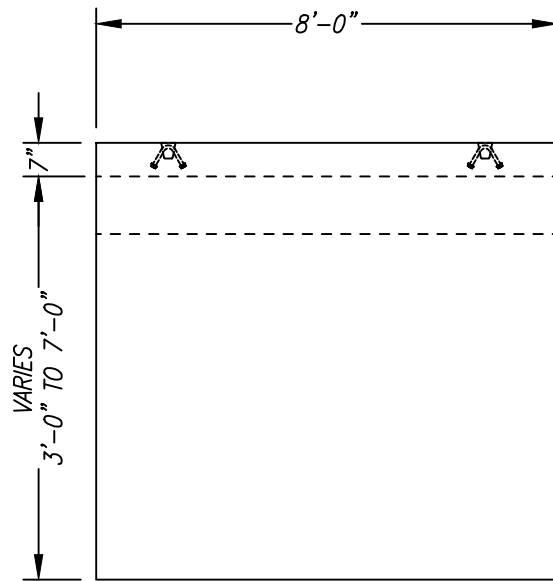
URBANPOND
PRECAST CONCRETE STORMWATER DETENTION
SINGLE MODULE - INTERIOR

Z/30/19SSERTICH

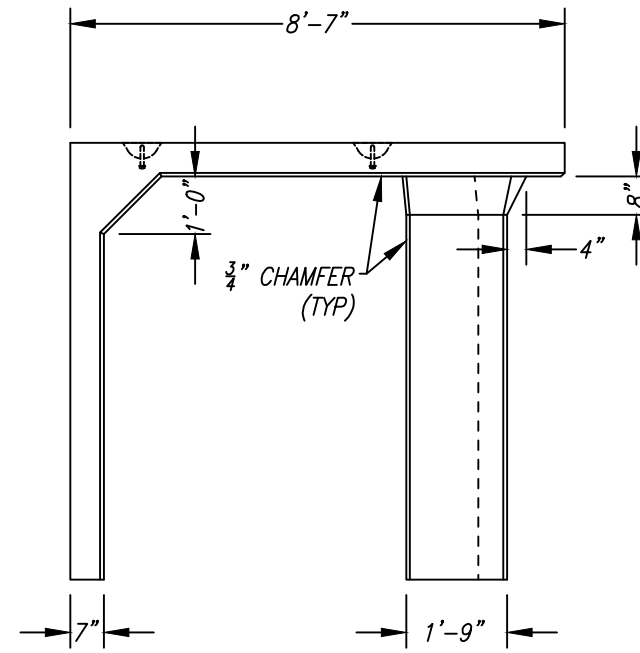
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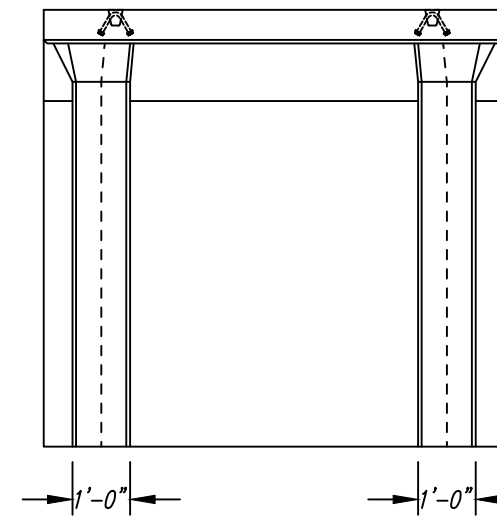
TOP VIEW



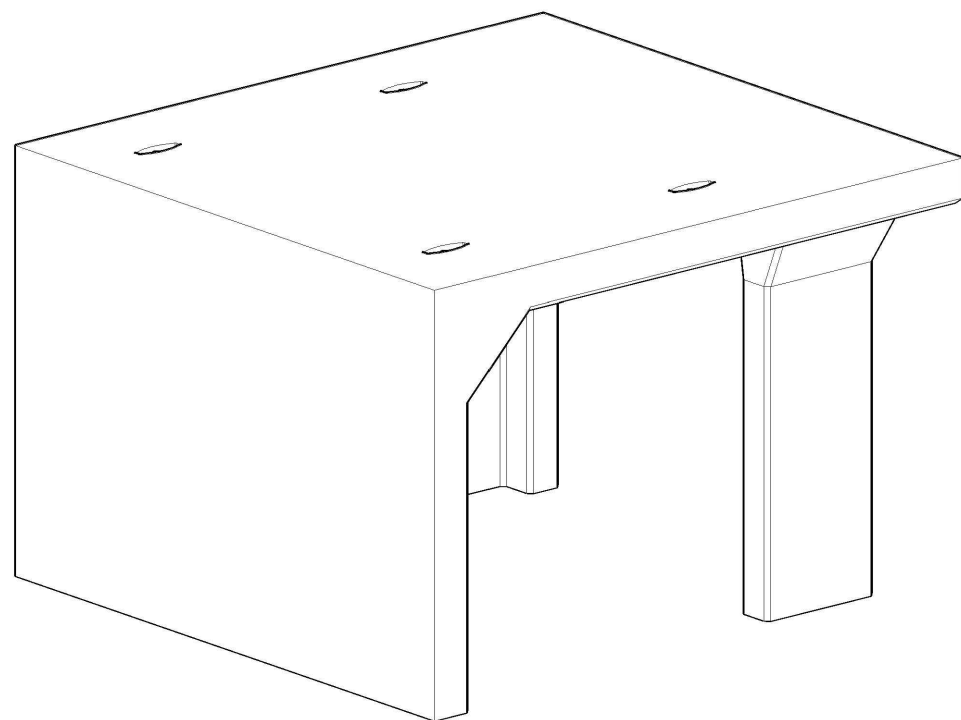
ELEVATION VIEW A



ELEVATION VIEW B



ELEVATION VIEW C



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URBANPOND
 PRECAST CONCRETE STORMWATER DETENTION
 SINGLE MODULE - PERIMETER

Section [_____] Stormwater Storage System

PART 1 – GENERAL

01.01.00 Purpose

The purpose of this specification is to establish generally acceptable criteria for underground stormwater storage systems for detention, retention, or infiltration of stormwater runoff. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to identify devices complying with this specification.

01.02.00 Description

Stormwater storage systems (SWSS) are used for detention, retention, or infiltration of storm water. The SWSS is a modular precast concrete storage system composed of multiple modules comprised of a top slab, multiple support legs and walls, maintenance access ports, and optional inlet and/or outlet pipes.

Underground detention systems are used for temporarily collecting stormwater runoff and releasing it at a specified rate. Underground retention systems are used for storing a permanent volume of stormwater runoff. This water can be re-used for a variety of purposes. Underground infiltration allows collected stormwater runoff to recharge into the underlying soils. The SWSS is a precast concrete engineered system composed of interconnected modules.

01.03.00 Manufacturer

The manufacturer of the SWSS shall be one that is regularly engaged in the engineering design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which has a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the SWSS shall be manufactured by Bio Clean A Forterra Company, or assigned distributors or licensees. Bio Clean A Forterra Company, can be reached at:

Corporate Headquarters:
398 Via El Centro
Oceanside, CA 92058
Phone: 760-433-7640
Fax: 760-433-3176
www.biocleanenvironmental.com

01.04.00 Submittals

- 01.04.01 Submittal drawings are to be submitted with each order to the contractor and consulting engineer.
- 01.04.02 Submittal drawings are to detail the SWSS and all components required and the sequence for installation, including:
- System configuration with primary dimensions
 - Interior components
 - Any accessory equipment called out on submittal drawings
 - Design loading
 - Maximum and minimum depth of cover
 - Seasonal high ground water level (if applicable)

- 01.04.03 Inspection and maintenance documentation submitted upon request.
- 01.04.04 Professional Engineer stamped and signed drawings available upon request and may require additional time for review.
- 01.04.05 Data sheets and installation instructions for lifting inserts, anchors, and other devices are available upon request.
- 01.04.06 Data sheets and installation instructions for accessory items, such as sealants, gaskets, pipe entry connectors, steps, racks, and other items installed after delivery shall be included with the submittal package.
- 01.04.07 Design data for loading and material specifications shall be shown on the submittal drawings. This shall include:
 - Live load used in design
 - Vertical and lateral earth loads used in design
 - Depth of soil fill on the structure
 - Water table depth used in calculations

01.05.00 Work Included

- 01.05.01 Specification requirements for installation of UrbanPond.
- 01.05.02 Manufacturer to supply components of the UrbanPond modules.

01.06.00 Reference Standards

Where applicable, the latest editions of the following standards shall form a part of this specification to the extent referenced. The publications referenced to in the text of this guide specification are by the basic designation only.

AASHTO – American Association of State Highway and Transportation Officials
 ACI – American Concrete Institute
 ASTM – American Society for Testing Materials
 AWS – American Welding Society
 CRSI – Concrete Reinforcing Steel Institute
 NPCA – National Precast Concrete Association

AASHTO	Standard Specifications for Highway Bridges
AASHTO	Standard Specification for Transportation Materials and Methods for Sampling and Testing
ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 304R	Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 309R	Consolidation of Concrete
ACI 318	Building Code Requirements for Structural Concrete
ACI 350	Code Requirements for Environmental Engineering Concrete Structures and Commentary
ACI 517.2R	Accelerated Curing of Concrete at Atmospheric Pressure
ASTM A 36	Specification for Carbon Structural Steel
ASTM A 82	Specification for Steel Wire, Plain, for Concrete Reinforcement

ASTM A 184	Specification for Fabricated Deformed Steel Mats for Concrete Reinforcement
ASTM A 185	Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
ASTM A 496	Specification for Steel Wire, Deformed, for Concrete Reinforcement
ASTM A 497	Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete
ASTM A 615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 706	Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A 775	Specification for Epoxy-Coated Reinforcing Steel Bars
ASTM A 884	Specification for Epoxy-Coated Steel and Welded Wire Fabric for Reinforcement
ASTM A 1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM C 31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C 33	Specification for Concrete Aggregates
ASTM C 39	Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C 40	Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C 70	Standard Test Method for Surface Moisture in Fine Aggregate
ASTM C 76	Specification for reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C 117	Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 123	Standard Test Method for Lightweight Particles in Aggregate
ASTM C 125	Standard Terminology Relating to Concrete and Concrete Aggregates
ASTM C 136	Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 138	Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C 143	Test Method for Slump of Hydraulic Cement Concrete
ASTM C 150	Specifications for Portland Cement
ASTM C 172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C 192	Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C 231	Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	Specification for Air-Entraining Admixtures for Concrete
ASTM C 403	Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance

ASTM C 494	Standard Specification for Chemical Admixtures for Concrete
ASTM C 566	Test Method for Total Evaporable Moisture content of Aggregate by Drying
ASTM C 595	Specification for Blended Hydraulic Cements
ASTM C 617	Standard Practice for Capping Cylindrical Concrete Specimens
ASTM C 618	Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 805	Test Method for Rebound Number of Hardened Concrete
ASTM C 857	Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
ASTM C 858	Specification for Underground Precast Concrete Utility Structures
ASTM C 877	Specification for External Sealing Bands for Concrete Pipe, Manholes and Precast Box Sections
ASTM C 890	Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures
ASTM C 891	Practice for Installation of Underground Precast Concrete Utility Structures
ASTM C 913	Specification for Precast Concrete Water and Wastewater Structures
ASTM C 920	Specification for Elastomeric Joint Sealants
ASTM C 923	Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
ASTM C 990	Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
ASTM C 1018	Test method for Flexural Toughness and First-Crack Strength of Fiber-Reinforced Concrete (Using Beam with Third-Point Loading)
ASTM C 1037	Practice for Inspection of Underground Precast Concrete Utility Structures
ASTM C 1064	Standard Test Method for Temperature of Freshly Mixed Concrete
ASTM C 1107	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM C 1116	Standard Specification for Fiber-Reinforced Concrete
ASTM C 1227	Standard Specification for Precast Concrete Septic Tanks
ASTM C 1231	Standard Practice for Use of Unbonded Caps in Determination of Compressive Strength of Hardened Concrete Cylinders
ASTM C 1240	Standard Specification for Use of Silica Fume for Use as a Mineral Admixture in Hydraulic-Cement Concrete, Mortar, and Grout
ASTM C 1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C 1293	Standard Test Method for Determination of Length Change of Concrete due to Alkali-Silica Reaction

ASTM C 1399	Test Method for Obtaining Average Residual-Strength of Fiber-Reinforced Concrete
ASTM C 1550	Standard Test Method for Flexural Toughness of Fiber Reinforced Concrete (Using Centrally Loaded Round Panel)
ASMT C 1582	Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete
ASTM C 1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM C 1611	Standard Test Method for Slump Flow of Self-Consolidating Concrete
ASTM C 1613	Standard Specification for Precast Concrete Grease Interceptors
ASTM G 109	Standard Test Method for Determining the Effects of Chemical Admixtures of the Corrosion of Embedded Steel Reinforcement in Concrete Exposed to Chloride Environments
AWS D 1.1	Structural Welding Code - Steel
CRSI	Manual of Standard Practice
CRSI	Placing Reinforcing Bars
NPCA	Quality Control Manual for Precast Concrete Plants

01.07.00 General Requirements

- 01.07.01 The precast concrete modules shall be designed and produced by an experienced and acceptable concrete manufacturer.
- 01.07.02 The detention, retention, or infiltration modules shall have length and width dimensions of 8' x 8', with an adjustable inside height, and three supporting legs.
- 01.07.03 The modules shall be able to withstand H2O loading with full impact at 12" minimum cover over the top of the modules.
- 01.07.04 Groundwater at or below the invert of system.
- 01.07.05 Lateral soil pressures to be based on active earth pressure. Lateral soil pressure = 35 pcf for 120 pcf backfill unit weight.
- 01.07.06 Vertical soil pressures: Live load = HS20-44. Dead load = 120 pcf cover fill unit weight.
- 01.07.07 Engineer to verify geotechnical requirements.

01.08.00 Design

- 01.08.01 Precast concrete modules shall be designed to withstand design conditions in accordance with the applicable industry design standards. Design must also consider stresses induced during handling, shipping, and installation in order to avoid product cracking or other handling damage. Design loads for precast concrete modules shall be indicated on the submittal drawings, and designed by a licensed professional engineer.
- 01.08.02 Joints and sealants between adjacent modules shall be of the type and configuration on the submittal drawings, meeting specified design and performance requirements.
- 01.08.03 Concrete mix shall be self-consolidating to minimize bugholes and not segregate.

- 01.08.04 Selections of proportions for concrete mix shall be based on current self-consolidating concrete mix design techniques. At a minimum, ACI 211.1 shall be used.
- 01.08.05 Mix designs for each strength and type of concrete that will be used are available upon request. Submitted mix designs shall include the quantity, type, brand and applicable data sheets for all design constituents as well as documentation indicating conformance with applicable reference specifications.
- 01.08.06 Concrete modules shall have a 28-day compressive strength of 6,000 psi for self-consolidating concrete.
- 01.08.07 Concrete that will be exposed to freezing and thawing shall contain air and shall have a water-cement ratio of 0.45 or less. Concrete which will not be exposed to freezing, but which is required to be leak resistant, shall have a water-cement ratio of 0.48 or less. For corrosion protection, reinforced concrete exposed to deicer salts, brackish water or seawater shall have a water-cement ratio of 0.40 or less.
- 01.08.08 The air content of concrete that will be exposed to freezing conditions shall be within the limits given below:

Nominal Maximum Aggregate Size (in)	Air Content %	
	Severe Exposure	Moderate Exposure
3/8	6.0 to 9.0	4.5 to 7.5
1/2	5.5 to 8.5	4.0 to 7.0
3/4	4.5 to 7.5	3.5 to 6.5
1	4.5 to 7.5	3.0 to 6.0
1-1/2	4.5 to 7.0	3.0 to 6.0
For specified compressive strengths greater than 5,000 psi, air content may be reduced 1%.		

PART 2 - PRODUCTS

02.01.00 Stormwater Storage

All material shall meet or exceed all applicable referenced standards, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.

- 02.01.01 Size – As indicated on plans.
- 02.01.02 Concrete – Manufacturer’s approved mix design providing a minimum compressive strength of 6,000 psi at 28 days.
- 02.01.03 Reinforcing bars – per ASTM A 615 or ASTM A 706, Grade 60.
- 02.01.04 Reinforcing mesh – per ASTM A 1064, Grade 80.
- 02.01.05 Cover for reinforcing bars – per ACI 318.

02.02.00 Accessory Items

- 02.02.01 Joint Wrap – Minimum 6” wide, self-adhesive, flexible joint sealant. Recommend ConSeal CS-212 or equivalent.
- 02.02.02 Geotextile – Non-woven, 180 lb tensile strength, minimum 7.0 ounce per square yard typical weight.

02.03.00 Concrete Foundation Slab (Provided by Contractor)

When indicated on the plans, contractor shall provide a poured-in-place, reinforced concrete foundation slab.

- 02.03.01 The foundation slab shall extend a minimum of 1 foot in each direction beyond the footprint of the UrbanPond modules.
- 02.03.02 Minimum compressive strength of 4,000 psi at 28 days, or as required by site-specific geotechnical engineer recommendations.
- 02.03.03 Reinforcing bar design as indicated on the plans.

02.04.00 Membrane Liner

When indicated on the plans, a membrane liner for watertight applications is required. The liner shall be placed in between an inner and outer layer of geotextile fabric per Section 02.02.02.

- 02.04.01 Double-scrim reinforced containment liner with high puncture resistance, UV resistance, and burst strength of 1,250 psi. Recommended BTL 40 or approved equal.
- 02.04.02 Geotextile fabric of equal area shall be placed on both the interior and exterior faces of the membrane liner to prevent punctures.
- 02.04.03 Pipe boots supplied by liner manufacturer required for all pipe penetrations.
- 02.04.04 Liner size or shape may require a liner manufacturer's representative be present for field installations.
- 02.04.05 Liner to be approved by Engineer of Record.

PART 3 – PERFORMANCE

03.01.00 General

- 03.01.01 Function - The SWSS is a pre-engineered storage device capable of capturing and retaining stormwater for an extended period of time and is designed to be installed sub-surface and handle various surface load conditions.
- 03.01.02 Loading - The SWSS must be tested in the field using a full scale stacked internal modules at its maximum height of 14' (ID) and applying loads consistent with AASHTO HL93 requirements and pass all tests as followed without any signs of cracking or failure:
 - Single wheel center of slab at 2' fill distributed – 28,000 lbs test load
 - Single wheel center of slab at 2' fill – 35,000 lbs test load
 - Single wheel center of slab at 8' fill distributed – 98,800 lbs test load
 - Single wheel "edge" of slab at 2' fill distributed – 28,000 lbs test load
 - Edge loading – 70,000 lbs load test
- 03.01.03 Storage Capacity of SWSS as indicated on the plans.

PART 4 - EXECUTION

04.01.00 General

The installation of the SWSS shall conform to all applicable national, state, state highway, municipal and local specifications.

04.02.00 Installation

The Contractor shall furnish all labor, equipment, materials and incidentals required to install the UrbanPond modules and appurtenances in accordance with the drawings and these specifications.

- 04.02.01 Grading and Excavation – Site shall be properly surveyed by a registered professional surveyor, and clearly marked with excavation limits and elevations. After site is marked it is the responsibility of the contractor to contact local utility companies to check for underground utilities. All grading permits shall be approved by governing agencies before commencement of grading and excavation. Soil conditions shall be tested in accordance with the governing agencies requirements. All earth removed shall be transported, disposed, stored, and handled per governing agencies standards. It is the responsibility of the contractor to install and maintain proper erosion control measures during grading and excavation operations.
- 04.02.02 Joint Wrap – Seal exterior vertical and horizontal seams with joint wrap in accordance with ASTM C 891. Prepare surfaces and install joint wrap in accordance with manufacturer’s instructions.
- 04.02.03 Field modifications to the modules will invalidate the product warranty and are strictly prohibited without prior written consent from Bio Clean.
- 04.02.04 Backfill shall be placed according to a registered professional soils engineer’s recommendations, and with a minimum of 6” of gravel under all concrete structures.
Deposit backfill equally around all sides of modules at the same time and same elevation.
Prevent wedging action against modules by stepping or serrating slopes.
- 04.02.05 Compaction – All soil shall be compacted per registered professional soils engineer’s recommendations prior to installation of SWSS.
Compact in even lifts.
Do not disrupt or damage joint wrap during backfilling and compaction.
- 04.02.06 Concrete Structures – After backfill has been inspected by the governing agency and approved, the concrete structures shall be lifted and placed in proper position per plans.

04.03.00 Shipping, Storage and Handling

- 04.03.01 Shipping – SWSS shall be shipped to the job site, and are the responsibility of the contractor to offload the units and place in the exact site of installation.
- 04.03.02 Storage and Handling– The contractor shall exercise care in the storage and handling of the SWSS and all components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the contractor. SWSS shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor’s workplace safety professional recommendations.

04.04.00 Inspection and Maintenance

- 04.04.01 Inspection – After installation, the contractor shall demonstrate that the SWSS has been properly installed at the correct location(s), elevations, and with appropriate components. The contractor shall demonstrate that the SWSS has been installed per the manufacturer’s specifications and recommendations. All components shall be inspected by a qualified person once at least once per year and results of inspection shall be kept in an inspection log.

- 04.04.02 Maintenance – The manufacturer recommends cleaning and debris removal maintenance of at least once a year or as site conditions require. The maintenance shall be performed by someone qualified.
- 04.04.03 Material Disposal - All debris, trash, organics, and sediments removed from the UrbanPond system shall be transported and disposed of at an approved facility for disposal in accordance with local and state requirements. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

PART 5 – QUALITY ASSURANCE

05.01.00 Warranty

The Manufacturer shall guarantee the UrbanPond modules against all manufacturing defects in materials and workmanship for a period of (3) years from the date of delivery to the job site. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The SWSS is limited to the recommended application for which it was designed.

[End of This Section]

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

This appendix contains a completed copy of the Pollutant Sources/Source Control Checklist on the subsequent pages and are summarized in the Source Control BMPs Section H of this report.

PROJECT SOURCE CONTROL BMPS

IF THESE SOURCES WILL BE ON THE PROJECT SITE...	...THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPS		
Potential Sources of Runoff Pollutants	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<input checked="" type="checkbox"/> A. On-site storm drain inlets	<input checked="" type="checkbox"/> Locations of inlets.	<input checked="" type="checkbox"/> Mark all inlets with the words “No Dumping! Flows to Bay” or similar	<input checked="" type="checkbox"/> Maintain and periodically repaint or replace inlet markings <input checked="" type="checkbox"/> Provide stormwater pollution prevention information to new site owners, lessees, or operators <input checked="" type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com <input checked="" type="checkbox"/> Include the following in lease agreements: ‘Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.’
<input type="checkbox"/> B. Interior floor drains and elevator shaft sump pumps		<input type="checkbox"/> State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.
<input type="checkbox"/> C. Interior parking garages		<input type="checkbox"/> State that parking garage floor drains will be plumbed to the sanitary sewer.	<input type="checkbox"/> Inspect and maintain drains to prevent blockages and overflow.

...THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Potential Sources of Runoff Pollutants	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative
<input checked="" type="checkbox"/>	D1. Need for future indoor & structural pest control	<input checked="" type="checkbox"/>	<p>Note building design features that discourage entry of pests.</p> <p><input checked="" type="checkbox"/> Provide Integrated Pest Management information to owners, lessees, and operators.</p>
<input checked="" type="checkbox"/>	D2. Landscape/Outdoor Pesticide Use	<p><input checked="" type="checkbox"/> Show Locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.</p> <p><input checked="" type="checkbox"/> Show self-retaining landscape areas, if any.</p> <p><input checked="" type="checkbox"/> Show stormwater treatment facilities</p>	<p><input checked="" type="checkbox"/> Maintain landscaping using minimum or no pesticides</p> <p><input checked="" type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p> <p><input checked="" type="checkbox"/> Provide Integrated Pest Management information to new owners, lessees and operators</p>
			<p>State that final landscape plans will accomplish all of the following:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. <input checked="" type="checkbox"/> Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. <input checked="" type="checkbox"/> Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. <input checked="" type="checkbox"/> Consider using pest-resistant plants, especially adjacent to hardscape. <input checked="" type="checkbox"/> To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.

... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<p><input type="checkbox"/> E. Pools, spas, ponds, decorative fountains, and other water features</p>	<p><input type="checkbox"/> Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet (per pool permit plan set).</p>	<p><input type="checkbox"/> If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.</p>	<p><input type="checkbox"/> See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
<p><input type="checkbox"/> F. Food Services</p>	<p><input type="checkbox"/> For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.</p> <p><input type="checkbox"/> On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.</p>	<p><input type="checkbox"/> If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.</p> <p><input type="checkbox"/> Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.</p>	<p><input type="checkbox"/></p>

... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<p><input checked="" type="checkbox"/> G. Refuse areas</p>	<p><input checked="" type="checkbox"/> Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.</p> <p><input checked="" type="checkbox"/> If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms.</p> <p><input checked="" type="checkbox"/> Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.</p>	<p><input checked="" type="checkbox"/> State how site refuse will be handled and provide supporting detail to what is shown on plans.</p> <p><input checked="" type="checkbox"/> State that signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.</p>	<p><input checked="" type="checkbox"/> State how the following will be implemented:</p> <p>Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs.</p> <p>Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available onsite. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>
<p><input checked="" type="checkbox"/> H. Industrial processes.</p>	<p><input checked="" type="checkbox"/> Show process area.</p>	<p><input checked="" type="checkbox"/> If industrial processes are to be located on site, state: “All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.”</p>	<p><input checked="" type="checkbox"/> See Fact Sheet SC-10, “Non- Stormwater Discharges” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>

...THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<p><input type="checkbox"/> I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)</p>	<p><input type="checkbox"/> Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent contamination.</p> <p><input type="checkbox"/> Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.</p> <p><input type="checkbox"/> Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.</p>	<p><input type="checkbox"/> Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.</p> <p>Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for:</p> <ul style="list-style-type: none"> • Hazardous Waste Generation • Hazardous Materials Release Response and Inventory • California Accidental Release (CalARP) • Aboveground Storage Tank • Uniform Fire Code Article 80 Section 103(b) & (c) 1991 • Underground Storage Tank 	<p><input type="checkbox"/> See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com</p>

... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<input type="checkbox"/> J. Vehicle and Equipment Cleaning	<input type="checkbox"/> Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shutoff to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	<input type="checkbox"/> If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): <input type="checkbox"/> Wastewater from vehicle and equipment washing operations shall not be discharged to the storm drain system. <input type="checkbox"/> Car dealerships and similar may rinse cars with water only. <input type="checkbox"/> See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

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

...THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<input type="checkbox"/> L. Fuel Dispensing Areas	<input type="checkbox"/> Fueling areas ¹ shall have impermeable floors (i.e., Portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. <input type="checkbox"/> Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area ¹ .] The canopy [or cover] shall not drain onto the fueling area.		<input type="checkbox"/> The property owner shall dry sweep the fueling area routinely. <input type="checkbox"/> See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

...THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<input type="checkbox"/> M. Loading Docks	<input type="checkbox"/> Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize runoff to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited.		<input type="checkbox"/> Move loaded and unloaded items indoors as soon as possible.
	<input type="checkbox"/> Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.		<input type="checkbox"/> See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
	<input type="checkbox"/> Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		
<input checked="" type="checkbox"/> N. Fire Sprinkler Test Water		<input checked="" type="checkbox"/> Provide a means to drain fire sprinkler test water to the sanitary sewer.	<input checked="" type="checkbox"/> See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

...THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs			
IF THESE SOURCES WILL BE ON THE PROJECT SITE...	Permanent Controls – Show on Source Control Exhibit, Appendix 1	Permanent Control – List in SUSMP Table and Narrative	Operational BMPs – Include in SUSMP Table and Narrative
<p>Potential Sources of Runoff Pollutants</p> <p>O. Miscellaneous Drain or Wash Water</p> <p><input type="checkbox"/> Boiler Drain Lines</p> <p><input checked="" type="checkbox"/> Condensate Drain Lines</p> <p><input checked="" type="checkbox"/> Rooftop Equipment</p> <p><input type="checkbox"/> Drainage Sumps</p> <p><input checked="" type="checkbox"/> Roofing, gutters, and trim</p>	<p><input type="checkbox"/> Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.</p> <p><input checked="" type="checkbox"/> Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.</p> <p><input checked="" type="checkbox"/> Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment.</p> <p><input type="checkbox"/> Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.</p> <p><input checked="" type="checkbox"/> Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.</p>	<p>Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.</p>	<p><input checked="" type="checkbox"/></p>
<p>P. Plazas, sidewalks, and parking lots</p>			<p><input checked="" type="checkbox"/></p>

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

This element will be provided with the Final WQMP during the Final WQMP design.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Please see the attached selection of site-specific educational materials.

This element will be provided with the Final WQMP during the Final WQMP design.