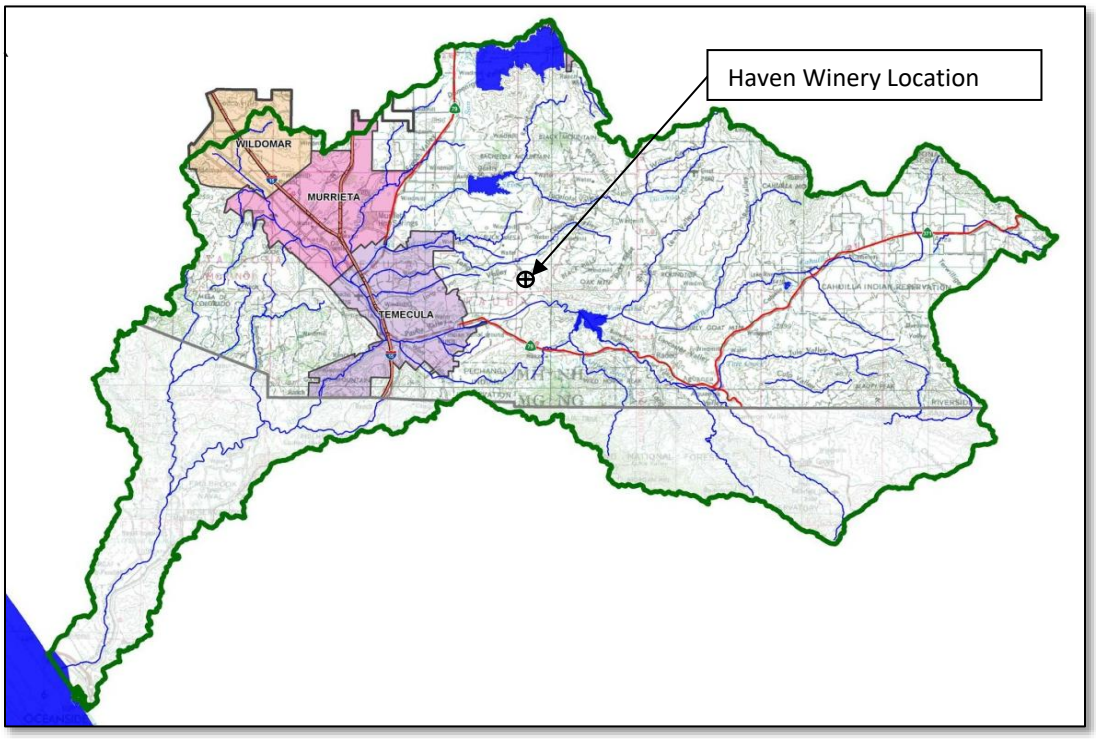
County Project Specific Water Quality Management Plan

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: Haven Winery
Development No: BGR2100126
Design Review/Case No: PPT 220029
BMP_1 (Latitude, Longitude): 33.52113, -117.02237



☐ **Preliminary**
☒ **Final**

Original Date Prepared: 11/30/23

Revision Date(s): 6/28/24
3/28/25
7/1/25

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**

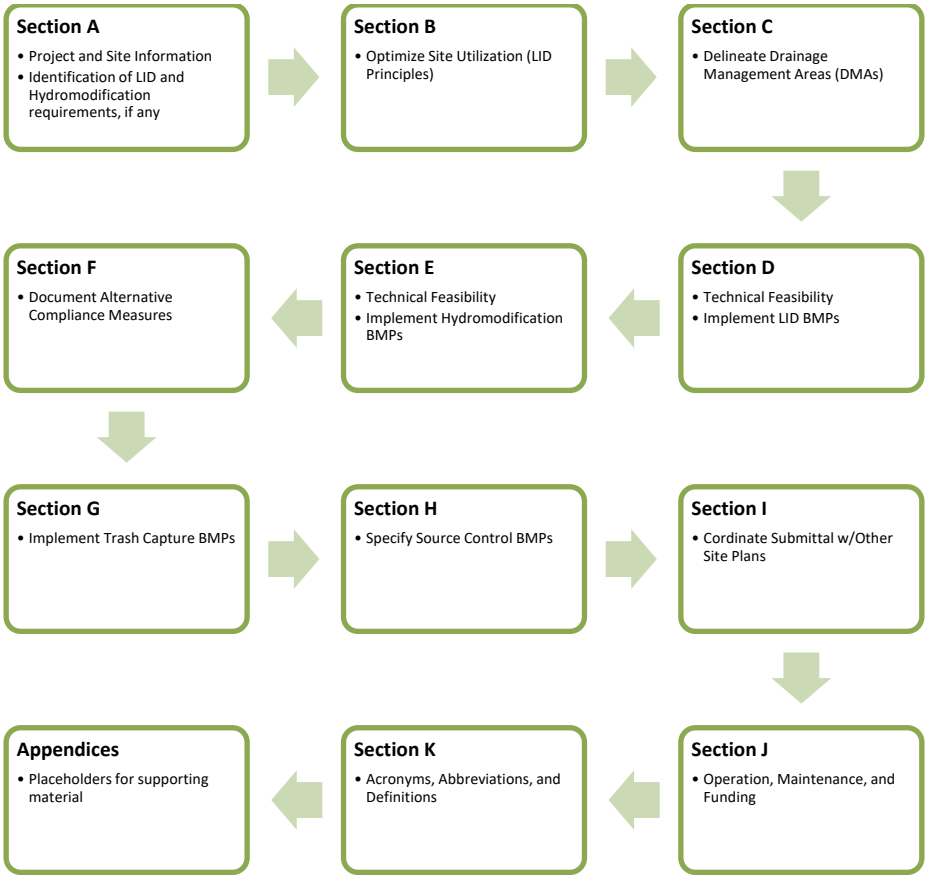
The County updated this template on July 24, 2018

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A Brief Introduction

The Regional Municipal Separate Stormwater Sewer System (MS4) Permit[1] requires that a Project-Specific WQMP be prepared for all development projects within the Santa Margarita Region (SMR) that meet the 'Priority Development Project' categories and thresholds listed in the SMR Water Quality Management Plan (WQMP). This Project-Specific WQMP Template for Development Projects in the **Santa Margarita Region** has been prepared to help document compliance and prepare a WQMP submittal. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



To ensure compliance with State permanent recordkeeping, the County of Riverside is no longer accepting hard copies of the **approved** Final or Preliminary WQMPs or Hydrology Reports. Electronic submittals are highly encouraged for submittal reviews, single PDF file submittal on two CD copies, to the Transportation Department (4080 Lemon Street, 8th Floor, Riverside, CA 92501) is preferred.

For Approved Final WQMPs, submit with the single file WQMP on CD:

- A wet-signed and notarized BMP maintenance agreement (See Appendix 9 for details)
- Owner's Certification signed and scanned into the PDF, or wet-signed hard copy, dated after approval.
- Print out of the WQMP site map (11x17") and Coversheet (8.5x11")
- The CD should include a Hydrology report when applicable. The County requires a hydrology report with hydraulics for the design of drainage facilities. Then provide a print out of the Pre- & Post-Hydrology map (11x17") and Report Coversheet (8.5x11")
- For tracts, submit the County EDA approved maintenance exhibit
- Signed Exhibit B.9 - WQMP O&M Cost Sheet.xlsx

[1] Order No. R9-2013-0001 as amended by Order Nos. R9-2015-0001 and R9-2015-0100, NPDES No. CAS0109266, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the MS4s Draining the Watersheds within the San Diego Region, California Regional Water Quality Control Board, May 8, 2013.

OWNER'S CERTIFICATION

This Project-Specific WQMP has been prepared for Haven Wineries, LLC by Robin B. Hamers & Associates, Inc. for the Haven Winery 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.

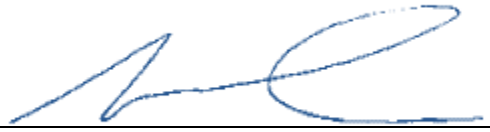
The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts 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**."



7/1/25

Preparer's Signature
Michael L. Benesh
RCE 37893

Date



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"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 08/08/2025
Owner's Printed Name CURTIS C KUCERA	Owner's Title/Position CEO/OWNER

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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:	New Development	
Type of Project:	Commercial/Agricultural	
Planning Case Number:	PPT 240015	
Rough Grade Permit No.:	BGR 2400126	
Development Name:	Haven Winery, 41625 Camino Del Vino, Temecula	
PROJECT LOCATION		
Latitude & Longitude (DMS):	33.52113, -117.02237	
Project Watershed and Sub-Watershed:	Santa Margarita River, Temecula Creek	
24-Hour 85th Percentile Storm Depth (inches):	0.65"	
Is project subject to Hydromodification requirements?	☒ Y ☐ N (Select based on Section A.3)	
APN(s):	927-670-009	
Map Book and Page No.:	960/E-3	
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Vineyard, Tasting Room & Wine Production	
Proposed or Potential SIC Code(s)	5812, 312130	
Existing Impervious Area of Project Footprint (SF)	0.00 Ac.	
Total area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	0.81 Ac.	
Total Project Area (ac)	9.26 Ac.	
Does the project consist of offsite road improvements?	☒ Y	☐ N
Does the project propose to construct unpaved roads?	☐ Y	☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y	☒ N
Has preparation of Project-Specific WQMP included coordination with other site plans?	☐ Y	☒ N
EXISTING SITE CHARACTERISTICS		
Is the project located within any Multi-Species Habitat Conservation Plan area (MSHCP Criteria Cell?)	☒ Y	☐ N
	C6807	
Is a Geotechnical Report attached?	☒ Y	☐ 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)	B	
Provide a brief description of the project:		
The project is the construction of a Wine Tasting & Production Building on a 9.26 acre parcel at the southwest corner of DePortola Road and Camino Del Vino. The construction and grading will disturb approximately 2.3 acres of the site and include 0.71 acres of paved parking and driveways, 0.27 acres of buildings and 0.29 acres of walkways and patios. There will also be 0.26 acres of pervious D.G. parking. The remainder of the disturbed area will be re-planted with drought tolerant landscaping.		

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
Temecula Creek	Metals, Nutrients, Turbidity	MUN, AGR, IND, PROC, GWR, REC1, REC2, WARM, COLD, WILD, SPWN	
Upper Santa Margarita River	Nutrients, Bacteria & Virus, Metals, Toxic Organic Compounds	MUN, AGR, IND, REC1, PROC, REC1, REC2, WARM, COLD, WILD, RARE	11.5 Miles
Lower Santa Margarita River	Nutrients, Bacteria & Virus, Toxic Organic Compounds	MUN, AGR, IND, REC1, PROC, REC1, REC2, WARM, COLD, WILD, RARE	20 Miles
Santa Margarita Lagoon	Nutrients	REC1, REC2, EST, WILD, RARE, MAR, MIGR, SPWN	30 Miles
Pacific Ocean		IND, NAV, REC1, REC2, COMM, BIOL, WILD, RARE, MAR, AQUA, MIGR, SPWN, SHELL	31 Miles

Though the above water bodies are listed as receiving waters for the runoff from this project, the runoff from the project enters an existing drainage swale that runs crosses the site and then along DePortola Road. The swale discharges into a low area south of the project and the water infiltrates into the ground. No runoff from the north end of DePortola Road has reached Temecula Creek in many, many years.

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 River[2], 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
Existing dirt swale - 1 Mile	Earthen Ditch	NONE.	☐ Y ☒ N
Temecula Creek - 2.5 Miles	Natural Riverbed	NONE.	☐ Y ☒ N
Santa Margarita River - 32 Miles	Natural Riverbed	NONE.	☐ Y ☒ N
Summary of Performance Standards			
☐ **Hydromodification Exempt** – Select if "Y" is selected in the Hydromodification Exempt column above, project is exempt from hydromodification requirements. ☒ **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.			

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	☐ Y	☒ N

[2] 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.

State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	☐ Y	☒ N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☒ Y	☐ N
Other *(please list in the space below as required)*	☐ Y	☒ N

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

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

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.

SITE DESIGN REQUIREMENTS

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.

☒ Yes ☐ No ☐ N/A

Did you identify and preserve existing drainage patterns?

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:

- 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.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.
The site is agricultural and a majority of the site has been planted as a vineyard and will not be disturbed by the proposed development. Only 2.3 acres of the site will be disturbed by the current development. The graded area is predominately on the higher section of the site with a large portion of that area being a previously graded building pad. The existing drainage pattern will not be disturbed.

☒ Yes ☐ No ☐ N/A

Did you identify and protect existing vegetation?

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.

- 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.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.
Only 2.3 acres of the 9.3 acre site will be disturbed. The remainder, including the existing vineyards and natural steep area at the south end of the site will remain unchanged.

Project- Specific WQMP Site Design BMP Checklist	
☒ Yes ☐ No ☐ N/A	**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. • 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. *The site is predominately covered with poorly graded sands. The Hydrologic Soils Group is Type B per Soils Group Map Plate C-1.53 in the Riverside County Hydrology Manual. The percolation tests done on the site indicate a good infiltration rate. The site will be predominantly preserved as-is, being used as a vineyard.*	
☒ Yes ☐ No ☐ N/A	**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. • 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. *Yes. Driveways and access roadways will be constructed to the minimum widths required and on-site parking is being held to minimum requirements to minimize impervious areas. Furthermore, most of the on-site parking spaces will be gravel or other previous surface as opposed to impervious pavement. Paved walkways are being limited to those areas in the vicinity of the proposed building. Existing agricultural dirt (D.G.) roads outside the 2.3 acres of development will be left unpaved.*	

Project- Specific WQMP Site Design BMP Checklist	
☒ Yes ☐ No ☐ N/A	**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. • 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.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *Yes. Where feasible, the runoff from the building roof will be directed to landscaped areas prior to entering the on-site storm drain system.*	
☒ Yes ☐ No ☐ N/A	**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.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *Most of the site will be planted for agricultural production. But the areas around the proposed building will be landscaped with approved drought tolerant species.*	

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.
Harvest and Use is being implemented for the stormwater runoff from the developed portion of the site. The runoff will be stored in an underground retention pipe near the agricultural building and supply irrigation for the vineyards within 72 hours. The Vineyards cover most of the 9.26 acre site.

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.
The storm drain system that collects water from the developed areas is separate from the drainage system for the rest of the site by necessity in order to minimize any sediment collecting in the storage tank.

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

Table C-1 DMA Identification

DMA Name or Identification	Surface Type(s)[1]	Area, SF (Ac.)	DMA Type
DMA-10	PAVEMENT, GRAVEL, LANDSCAPE	3,636 (0.084)	To be Determined in Step 3
DMA-20	GRAVEL	3,263 (0.075)	
DMA-30	PAVEMENT, GRAVEL, LANDSCAPE	6,671 (0.153)	
DMA-40	BUILDING, PAVEMENT, LANDSCAPE	59,364 (1.363)	
DMA-50	AGRICULTURE AND NATURAL	226,049 (5.189)	
DMA-60	AGRICULTURE AND NATURAL	104,237 (2.393)	

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*

Add Columns as Needed. Consider a separate DMA for Tree Wells or other LID principals like Self-Retaining areas are used for mitigation.

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

Tree wells are considered Type 'B' areas, and their tributary areas limited to a 10:1 ratio are considered Type 'C' areas. If Tree wells are proposed, consider grading or other features to minimize the pervious runoff to the tree wells, to avoid overwhelming the trees. Type 'A', 'B', and 'C' are considered LID Principals that can be used to minimize or potentially eliminate structural LID BMPs.

If Tree wells are proposed, a landscape architect shall be consulted on the tree selection, since compliance will be determined based on the survival of the tree. The tree type should be noted on the WQMP site map.

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

DMA Name or Identification	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA-50	226,049	AGRICULTURE, NATURAL	DRIP
DMA-60	104,237	AGRICULTURE, NATURAL	DRIP

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 ÷ 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

Self-Retaining Area				Type 'C' DMAs that are draining to the Self-Retaining Area		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C-4= [C]	Required Retention Depth (inches) [D] = $[B] + \frac{[B]\cdot[C]}{[A]}$
None						

Note: Tree well areas can extend well beyond the drip line. The Tree Well area for open top types would include the shallow depressed area at the soil surface. The Tree Well area for Structural Soil Tree Wells or Suspended Pavement Tree Wells includes the area with open-graded gravel or void space over the structural soil or structural cells. Please specify type in this table and WQMP site map. See LID handbook Tree Well factsheet for additional details.

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

(Tributary Area: Self-Retaining Area)

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

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Runoff factor [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]

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:

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*
None		☐ Yes ☐ 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

DMA Name or ID	BMP Name or ID Receiving Runoff from DMA
DMA-10	BMP-1 (HARVEST & USE)
DMA-20	BMP-1 (HARVEST & USE)
DMA-30	BMP-1 (HARVEST & USE)
DMA-40	BMP-1 (HARVEST & USE)

Note: More than one DMA may drain to a single LID BMP; however, one DMA may not drain to more than one BMP.

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 or Tree Wells 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[3]?		✓
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?		✓
If Yes, list affected DMAs:		
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		✓
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet horizontally of a water supply well?		✓
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?		✓
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?		✓
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?		✓
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 0.8in/hr to support infiltration BMPs, if the Engineer believes infiltration is appropriate and sustainable. Mark no, if this is the case.		✓
If Yes, list affected DMAs:		
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?		✓
If Yes, list affected DMAs:		
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?		✓
Describe here:		

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.

[3] 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	DMA-10, 20, 30, 40,50,60	
Expansive Soil	DMA-10, 20, 30, 40,50,60	
Slopes	DMA-10, 20, 30, 40,50,60	
Liquefaction	DMA-10, 20, 30, 40,50,60	
Low Infiltration Rate	DMA-10, 20, 30, 40,50,60	
Other		

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)
N/A		

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 publically 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
Insert BMP Name and Manufacturer Here	BMP Design worksheets and Proprietary Biofiltration Criteria are completed in Appendix 5	☐ Yes or ☐ No Insert text here
	Proposed BMP has an active TAPE GULD Certification for the project pollutants of concern[4] or equivalent 3rd party demonstrated performance.	☐ Yes or ☐ No Insert text here
	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.	☐ Yes or ☐ No If yes, provide the date of concurrence from the Co-Permittee. Insert date here
	☐ The BMP includes biological features including vegetation supported by engineered or other growing media.	Describe features here.

[4] 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

DMA Name/ID	LID Principles or Tree Wells	LID BMP Hierarchy			No LID (Alternative Compliance)
		1. Infiltration	2. Biofiltration with Partial Infiltration*	3. Biofiltration with No Infiltration*	
DMA-10	☒	☐	☐	☐	☐
DMA-20	☒	☐	☐	☐	☐
DMA-30	☒	☐	☐	☐	☐
DMA-40	☒	☐	☐	☐	☐

*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 Copermittees[5]).

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?	
b) When in the entitlement process were other investigations conducted (e.g., groundwater quality, water rights) to evaluate infiltration feasibility?	
c) What was the scope and results of testing, if conducted, or rationale for why testing was not needed to reach findings?	
d) What public health and safety requirements affected infiltration locations?	
e) What were the conclusions and recommendations of the geotechnical engineer and/or other professional responsible for other investigations?	
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?	

[5] http://www.projectcleanwater.org/download/pdp-infiltration-infeasibility/

g) What site design alternatives were considered to achieve infiltration or partial infiltration on site?	
h) What physical impairments (i.e., fire road egress, public safety considerations, utilities) and public safety concerns influenced site layout and infiltration feasibility?	
i) What LID Principles (site design BMPs) were included in the project site design?	

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-base 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

DMA Type/ID	DMA (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	BMP-1 (Dia. Storage Pipe)		
	[A]		[B]	[C]	[A] x [C]			
10, 20, 30, 40	72993	Mixed	0.58	0.39	28444	*Design Storm Depth (in)*	*DCV, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	72933				28444	0.65	1,541	1708 cf

[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

BMP Name / ID	DMA No.	BMP Type / Description	Design Capture Volume (ft^3)	Proposed Volume (ft^3)
BMP-1	10, 20, 30, 40	Harvest & Use Storage Pipe	1541	1708

Irrigation system for vineyards will draw down BMP in less than 72 hrs.

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 Vbmp. 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, including Tree Wells.

☒ 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

BMP Name / ID	DMA No.	BMP Type / Description	SMRHM* Passed	BMP Volume (ac-ft)	BMP Footprint (sf)	Drawdown time (hr)
BMP-1	10. 20, 30, 40	96"x44' Harvest and Use Storage Tank	☒Hydromod Spreadsheet	0.039	8'x44'=352	< 72

**Or other continuous simulation model, compliant with the WQMP and Permit. If Tree Wells are proposed for some or all of the project, check the box for Tree Wells in Section E.1 and enter each Tree Well DMA in Table E-1 above for the BMP Name/ID, DMA No. and BMP Type/Description. For Tree Wells, leave SMRHM* Passed Column and the columns to the left blank.*

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. Include a copy of Exhibit G - CCSY & PSS Areas in Appendix 7, with the project location marked. If the project is outside of the "Potential Critical Coarse

Sediment Yield Areas and Potential Sediment Source Areas" then check this box. **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.

Insert narrative description here

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	☐ High (3)	☐ Medium (2)	☐ Low (1)	
1.B	☐ High (3)	☐ Medium (2)	☐ Low (1)	
1.C	☐ High (3)	☐ Medium (2)	☐ 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.

NA

NA

☐ 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/

NA

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	Nutrients[1]	Metals[2]	Toxicity	Bacteria and Pathogens	Pesticides and Herbicides	Sulfate	Total Dissolved Solids
☐	De Luz Creek	X	X				X	
☐	Long Canyon Creek		X		X	X		
☐	Murrieta Creek	X	X	X		X		
☐	Redhawk Channel	X	X		X	X		X
☐	Santa Gertudis Creek	X	X		X	X		
☐	Santa Margarita Estuary	X						
☐	Santa Margarita River (Lower)	X			X			
☐	Santa Margarita River (Upper)	X		X				
☒	Temecula Creek	X	X	X		X		X
☐	Warm Springs Creek	X	X		X	X		

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

[2] Metals 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
☐	Detached Residential Development	P	N	P	P	N	P	P	P	N	N
☐	Attached Residential Development	P	N	P	P	N	P	P	P[2]	N	N
☒	Commercial/Industrial Development	P[3]	P[7]	P[1]	P[1]	P	P[1]	P	P	N	N
☐	Automotive Repair Shops	N	P	N	N	P[4, 5]	N	P	P	N	N
☐	Restaurants (>5,000 ft^2)	P	N	N	P[1]	N	N	P	P	N	N
☐	Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P	N	N
☐	Parking Lots (>5,000 ft^2)	P[6]	P[7]	P[1]	P[1]	P[4]	P	P	P	N	N
☐	Streets, Highways, and Freeways	P[6]	P[7]	P[1]	P[1]	P[4]	P	P	P	N	N
☐	Retail Gasoline Outlets	N	P[7]	N	N	P[4]	N	P	P	N	N
Project Priority Pollutant(s) of Concern		☐	☒	☒	☒	☒	☐	☐	☐	☒	☐

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]
N/A		

[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 Copermittee 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* **NONE**	
	[A]		[B]	[C]	[A] x [C]		
						Design Storm (in)	*Design Flow Rate (cfs)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{[G]}$

[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

Insert narrative description here

☐ In-Stream Restoration Project

Insert narrative description here

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)
		☐			
		☐			
		☐			
		☐			

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 Santa Margarita Regional Board has required Full Trash Capture compliance thru Order No. R9-2017-007. For the Santa Margarita Watershed, the County is requiring Track 1 full trash capture compliance for projects proposing the following uses as part of their development after **December 3, 2018**.

- High-density residential: all land uses with at least ten (10) developed dwelling units/acre.
- Industrial: land uses where the primary activities on the developed parcels involve product manufacture, storage, or distribution (e.g., manufacturing businesses, warehouses, equipment storage lots, junkyards, wholesale businesses, distribution centers, or building material sales yards).
- Commercial: land uses where the primary activities on the developed parcels involve the sale or transfer of goods or services to consumers (e.g., business or professional buildings, shops, restaurants, theaters, vehicle repair shops, etc.).
- Mixed urban: land uses where high-density residential, industrial, and/or commercial land uses predominate collectively (i.e., are intermixed).
- Public transportation stations: facilities or sites where public transit agencies' vehicles load or unload passengers or goods (e.g., bus stations and stops).

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 and furnish hydraulic analysis calculating the flowrate in the catch basin does not exceed the flowrate capacity of the trash capture device in a fully clogged condition.

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).

The project proposes Flexstorm 62HD24FTC filter inserts at each of the inlets on the site. Downstream from the inlets, the on-site storm drain empties into a harvest & use tank that is further protected by trash screens on the pumps. The overflow outlets are located several feet above the tank inlets. As the calculations on the following page indicate, the system grossly exceeds the trash capture requirements. Each of the inlets will have a flow rate that exceeds the trash capture design flowrate for the entire tributary area to the Harvest and Use BMPs.

FLEXSTORM Performance Specifications - Full Trash Capture						
ADS P/N	Basin Size	Basket Depth	Ultimate Bypass Cap. (CFS)*	Storage Volume (ft^3)	Flow Rate when Empty (CFS)*	Flow Rate when 50% Full (CFS)*
62HD12FTC	12 x 12	12"	0.5	0.7	6.8	3.0
62HD18FTC	18 x 18	12"	1.8	1.7	12.2	4.5
62HD24FTC	24 x 24	12"	3.0	3.1	18.6	6.3
62HD3618FTC	36 x 18	12"	4.0	3.5	20.8	7.3
62HD3624FTC	36 x 24	12"	4.5	5.0	25.1	8.3
62HD36FTC	36 x 36**	12"	8.0	7.1	41.6	14.6

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	*BMP-1 (1 CB Filter Inserts)*	
	[A]		[B]	[C]	[A] x [C]	*Trash Capture Design Storm Intensity (in)*	*Trash Capture Design Flow Rate (cubic feet or cfs)*
10, 20, 30, 40	72993	Mixed	0.58	0.39	28444		
	72993				28444	0.50	0.33 cfs

[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

BMP Name / ID	DMA No(s)	BMP Type / Description	Required Trash Capture Flowrate (cfs)	Provided Trash Capture Flowrate (cfs)[1]
BMP-1	DMA-40	Harvest & Use	0.33	3.0

[1] For 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 (Qweir = C x L x 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.

☒ Yes ☐ No	Storm Drain Inlets		☐ Yes ☒ No	Outdoor storage areas	
☐ Yes ☒ No	Floor Drains		☐ Yes ☒ No	Material storage areas	
☐ Yes ☒ No	Sump Pumps		☐ Yes ☒ No	Fueling areas	
☒ Yes ☐ No	Pest Control/Herbicide Application		☐ Yes ☒ No	Loading Docks	
☒ Yes ☐ No	Food Service Areas		☒ Yes ☐ No	Fire Sprinkler Test/Maintenance water	
☒ Yes ☐ No	Trash Storage Areas		☒ Yes ☐ No	Plazas, Sidewalks and Parking Lots	
☐ Yes ☒ No	Industrial Processes		☐ Yes ☒ No	Pools, Spas, Fountains and other water features	
☐ Yes ☒ No	Vehicle and Equipment Cleaning and Maintenance/Repair Areas				

STEP 2: REQUIRED SOURCE CONTROL BMPS

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.

Pollutant Source	Structural Source Control BMP	Operational Source Control BMP
On-site storm drain inlets	Mark all inlets with the words "No Dumping! Flows to River" 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

Need for future indoor & structural pest control.	The following features will be incorporated in to the design of the buildings to discourage entry of pests: • Framing 8" above finish grade. • Caulking/sealant at foundation to framing, around windows, doors, & cracks/gaps. • Waterproof membrane treated with insect killer under slab.	Provide Integrated Pest Management information to owners, lessees, and operators.
Landscape/Outdoor Pesticide Use	The final landscape plans will: • Preserve existing native trees, shrubs, and ground cover in the open space and inundation easement areas that have not been previously disturbed by agricultural uses. • 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. • Where practical, pest-resistant plants shall be used, 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.	• Maintain landscaping using minimum or no pesticides. • See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com Provide IPM information to new owners, lessees and operators.
Refuse areas	• All refuse will be stored in dumpsters with lids. • The waste management area shall have a permanent roof. • The property owner will contract with a refuse removal service to empty the dumpsters on a regular basis. • Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm or curb around the area. • Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	• The number of receptacles shall be adequate for the size of the development. • Inspect receptacles regularly; repair or replace leaky receptacles. • Keep receptacles covered. • Prohibit/prevent dumping of liquid or hazardous wastes. • Post "no hazardous materials" signs. • Sweep and clean the storage area regularly. Do not hose down the storage area. • Inspect and pick up on-site litter daily and clean up spills immediately. • Keep appropriate spill control materials available onsite. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

Vehicle and Equipment Cleaning	• The project is a commercial project. Employees and guests will not be allowed to clean their vehicles on the project site. • Employees will receive training which includes the prohibition of outdoor equipment and vehicle cleaning on-site. • There will be no facilities, i.e. hoses or water sources available for guests to clean their vehicles.	There will be no outdoor vehicle or equipment cleaning permitted on the project site.
Vehicle/Equipment Repair and Maintenance	• The project is a commercial project. Employees and guests will not be allowed to repair or maintain their vehicles on the project site. • Employees will receive training which includes the prohibition of outdoor vehicle/ equipment repair and maintenance on-site.	There will be no outdoor vehicle or equipment repair and maintenance permitted on the project site.
Fire Sprinkler Test Water	• Fire sprinkler test water is to be drained to the nearest on-site private sewer cleanout or manhole. The water from fire sprinkler line flushing can contain high levels of pollutants and is not to be drained to the storm drain, bio retention areas or landscaping.	See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Miscellaneous Drain or Wash Water • Condensate drain lines • Rooftop equipment • Roofing, gutters, and trim.	• 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 directly to the storm drain system. • Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. • 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)
BMP-1	44' x 96" Dia. Storage Pipe	Grading Plan shts. 2, 5 & 6

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 Copermittee 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 Copermittee 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	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	☐ Y	☒ N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☒ Y	☐ N
Other *(please list in the space below as required)*	☐ Y	☒ N

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 - Haven Wineries, LLC

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 sitting 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 Copermittees 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 exiting 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), with cross sections
  - ☒ Drainage Paths
  - ☒ Drainage infrastructure, inlets, overflows
  - ☒ Source Control & Site Design BMPs (notes can be used for BMPs that can't be depicted)
  - ☒ Buildings, Roof Lines, Downspouts
  - ☒ Impervious Surfaces
  - ☒ Pervious Surfaces (i.e. Landscaping)
  - ☒ Standardized 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
  - ☐ When underdrain are proposed, gravel shall be clean washed gravel, AASHTO #57 stone preferred. Underdrains shall be Schedule 40 PVC, with a minimum slope of 0.005, with cleanouts equal in diameter of the subdrain that extends 6 inches above the media with a lockable screw cap, spaced every 50 feet, at the collector drain line connection, and at any bends.
  - ☐ When BSM is proposed, BSM shall consist of 60-80% clean sand, up to 20% clean topsoil, and 20% of a nutrient-stabilized organic amendment. 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.
  - ☐ 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.

Location Map, WQMP Site Plan and Receiving Waters Map

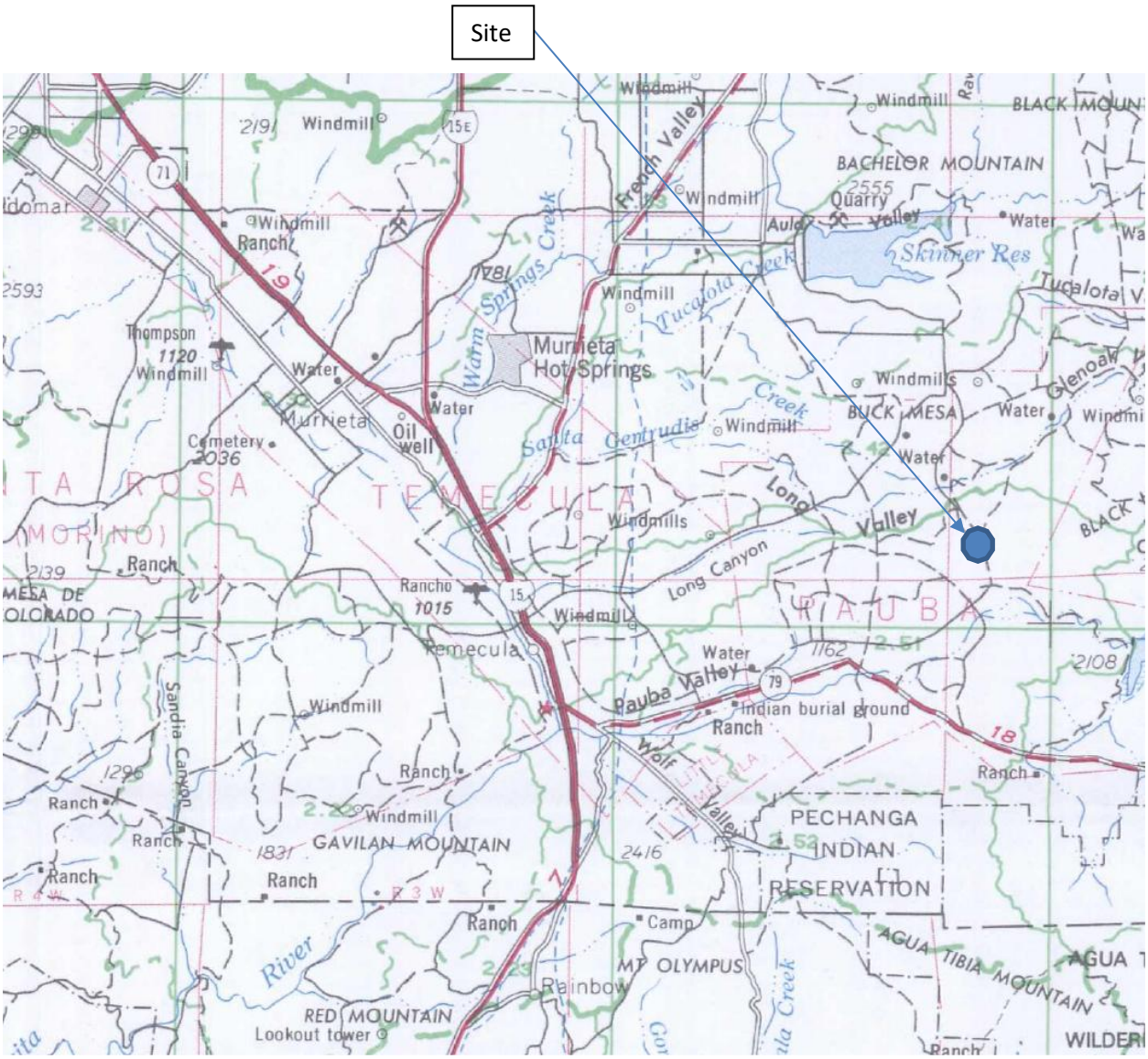


Figure 1 Vicinity & Location Map

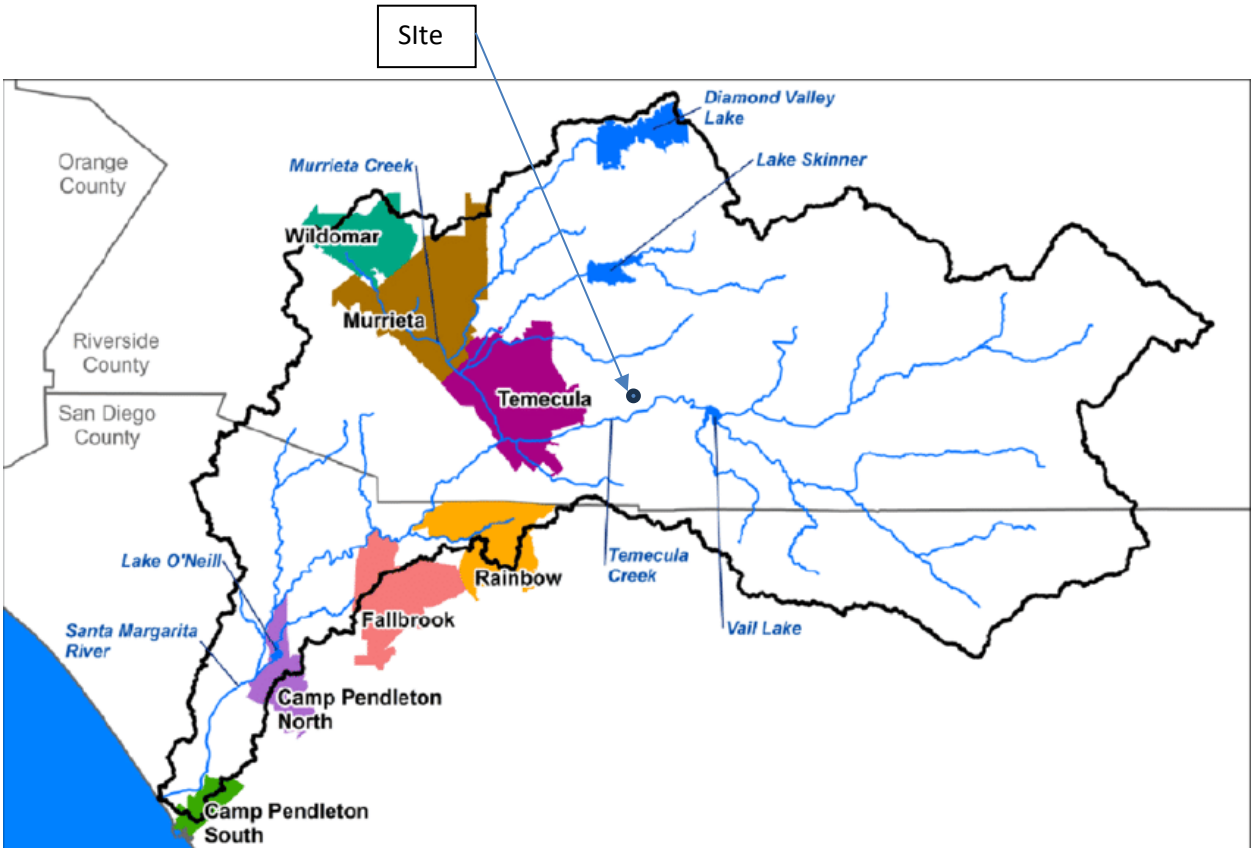
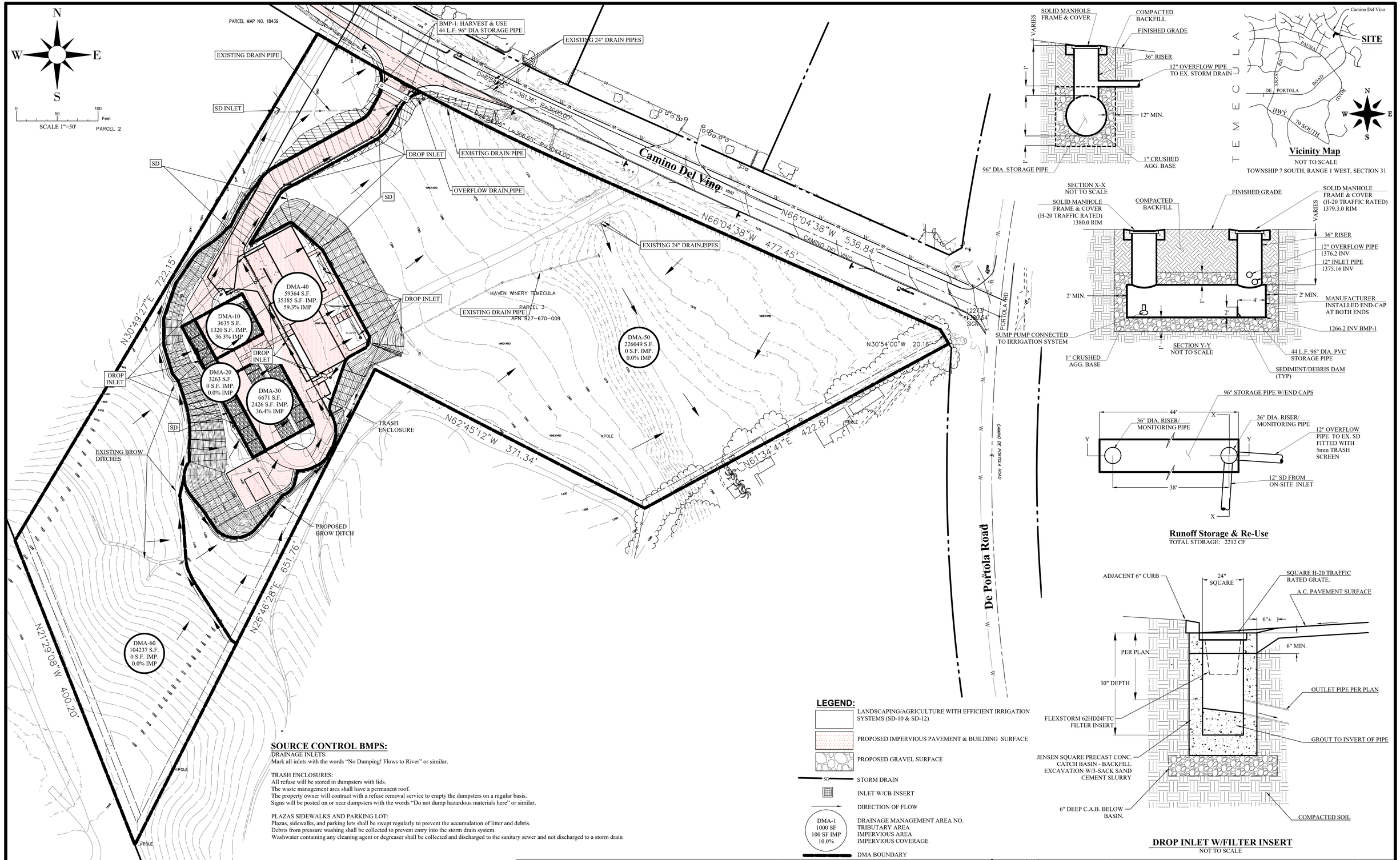


Figure 2 Receiving Waters Map



Vicinity Map
NOT TO SCALE
TOWNSHIP 7 SOUTH, RANGE 1 WEST, SECTION 31

Runoff Storage & Re-Use
TOTAL STORAGE: 2212 CF

DROP INLET W/FILTER INSERT
NOT TO SCALE

SOURCE CONTROL BMPS:

DRAINAGE INLETS:
Mark all inlets with the words "No Dumping! Flows to River" or similar.

TRASH ENCLOSURES:
All refuse will be stored in dumpsters with lids.
The waste management area shall have a permanent roof.
The property owner will contract with a refuse removal service to empty the dumpsters on a regular basis.
Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.

PLAZAS SIDEWALKS AND PARKING LOT:
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

LEGEND:

- LANDSCAPING/AGRICULTURE WITH EFFICIENT IRRIGATION SYSTEMS (SD-10 & SD-12)
- PROPOSED IMPERVIOUS PAVEMENT & BUILDING SURFACE
- PROPOSED GRAVEL SURFACE
- SD — STORM DRAIN
- INLET W/CB INSERT
- DIRECTION OF FLOW
- DMA-1 / 1000 SF / 100 SF IMP / 10.0% — DRAINAGE MANAGEMENT AREA NO. / TRIBUTARY AREA / IMPERVIOUS AREA / IMPERVIOUS COVERAGE
- DMA BOUNDARY

Notes:

Existing drainage patterns are preserved on-site in DMA-50 & 60 by preserving those areas in their existing condition.
The majority of the vegetaion on site is outside the area of improvement and will be preserved.
Runoff from roofs and walkways will be directed, as much as is feasible, to adjacent landscaped areas prior to entering the on-site storm drain system.
Disturbed areas that are not being used for agricultural purposes shall be planted with native or drought tolerant species.

NO.	DATE	DESCRIPTION
		REVISIONS

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER MICHAEL BENESH RCE 37893 CIVIL STATE OF CALIFORNIA

PREPARED BY:
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COSTA MESA, CALIFORNIA 92627
(949) 548-1192

MICHAEL BENESH, R.C.E. 37893 — 7/1/2025 DATE

Haven Winery

WQMP SITE PLAN

41625 CAMINO DEL VINO, TEMECULA, CA

SHEET 1 OF 1

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) tests shall be conducted or for every 1,200 tons or 800 cubic yards mixed on-site from a completely mixed stockpile or windrow, with a minimum of three tests. For imported material from a supplier with a quality control program the QA tests shall be conducted 2,400 tons or 1,600 cubic yards from the supplier.*
3. *The 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. Certified mitigation plans can be used for exceedances, as long as all requirements are designed to be met.*
    a. *BSM shall not be compacted. BSM shall consist of 60-80% clean sand, up to 20% clean topsoil, and 20% of a nutrient-stabilized organic amendment. The initial infiltration rate shall be greater than 8 inches per hour per laboratory test.*
    b. *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.*
    c. *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. These pollutant limits are for the amount that is leached from the sample, not from the soil sample itself. Testing may be performed after laboratory rinsing of media with up to 15 pore volumes of water. Equivalent test results will be accepted if certified by a laboratory or appropriate testing facility.*
    d. *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.*
    e. *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.*

Please notify the County if additional sources and laboratories can be added to this list. 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**: Fruit Growers Laboratory, Inc. (Santa Paula, http://www.fglinc.com/) 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/).

DEPARTMENT OF BUILDING AND SAFETY
COUNTY OF RIVERSIDE
GRADING NOTES (2022 CBC)

GENERAL

1. ALL GRADING SHALL CONFORM TO THE 2022 CALIFORNIA BUILDING CODE CHAPTER 17, 18 & APPENDIX-J AS AMENDED BY ORDINANCE 457.
2. ALL PROPERTY CORNERS, GRADING BOUNDARIES AND ALL CONSERVATION AREAS/LEAST SENSITIVE AREA (LSA) DETERMINED BY THE ENVIRONMENTAL PROGRAMS DEPARTMENT (EPD) SHALL BE CLEARLY DELINEATED AND STAKED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION/GRADING.
3. ALL WORK UNDER THIS PERMIT SHALL BE LIMITED TO WORK WITHIN THE PROPERTY LINES. ALL WORK WITHIN THE ROAD RIGHT-OF-WAY WILL REQUIRE SEPARATE PLANS AND A SEPARATE REVIEW-APPROVAL (PERMIT) FROM THE TRANSPORTATION DEPARTMENT.
4. ALL GRADING SHALL BE DONE UNDER THE SUPERVISION OF A SOILS ENGINEER IN CONFORMANCE WITH THE RECOMMENDATIONS OF THE PRELIMINARY SOILS INVESTIGATION PREPARED BY: CW SOILS , DATED JULY 2, 2024.
5. COMPACTED FILL TO SUPPORT ANY STRUCTURES SHALL COMPLY WITH SECTION 1803.5.8. PROJECTS WITHOUT A PRELIMINARY SOILS REPORT SHALL INCLUDE DETAILED SPECIFICATIONS IN ACCORDANCE WITH SECTIONS 18012 AND 1803.5 PREPARED BY THE ENGINEER OF RECORD.
6. THE CONTRACTOR SHALL NOTIFY THE BUILDING AND SAFETY DEPARTMENT AT LEAST 24 HOURS IN ADVANCE TO REQUEST FINISH LOT GRADE AND DRAINAGE INSPECTION. THIS INSPECTION MUST BE APPROVED PRIOR TO BUILDING PERMIT FINAL INSPECTION FOR EACH LOT.
7. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT, TWO DAYS BEFORE DIGGING AT 1-800-422-4133.
8. PRIOR TO GRADING, A MEETING SHALL BE SCHEDULED WITH A RIVERSIDE COUNTY ENVIRONMENTAL COMPLIANCE INSPECTOR PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.

CUT/FILL

9. MAXIMUM CUT AND FILL SLOPE = 2:1 (HORIZONAL TO VERTICAL).
10. NO FILL SHALL BE PLACED ON EXISTING GROUND UNTIL THE GROUND HAS BEEN CLEARED OF WEEDS, TOPSOIL AND OTHER DELETERIOUS MATERIAL. FILLS SHOULD BE PLACED IN THIN LIFTS (8-INCH MAX OR AS RECOMMENCED IN THE SOILS REPORT), COMPACTED AND TESTED THROUGHOUT THE GRADING PROCESS UNTIL FINAL GRADES ARE ATTAINED. ALL FILLS ON SLOPES STEEPER THAN 5 TO 1 (HORIZONTAL TO VERTICAL) AND A HEIGHT GREATER THAN 5 FEET SHALL BE KEYED AND BENCHED INTO FIRM NATURAL SOLI FOR FULL SUPPORT. THE BENCH UNDER THE TOE MUST BE 10 FEET WIDE MINIMUM.
11. THE SLOPE STABILITY FOR CUT AND FILL SLOPES OVER 30 FEET IN VERTICAL HEIGHT, OR CUT SLOPES STEEPER THAN 2:1 HAVE BEEN VERIFIED WITH A FACTOR OF SAFETY OF AT LEAST 1.5.
12. NO ROCK OR SIMILAR IRREDUCIBLE MATERIAL WITH A MAXIMUM DIMENSION GREATER THAN 12 INCHES SHALL BE BURIED OR PLACED IN FILLS CLOSER THAN 10 FEET TO THE FINISHED GRADE.

DRAINAGE, EROSION / DUST CONTROL

13. DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY. EROSION OF THE GROUND IN THE AREA OF DISCHARGE SHALL BE PREVENTED BY INSTALLATION OF NON-EROSIVE DOWN DRAINS OR OTHER DEVICES.
14. PROVIDE A PAVED SLOPE INTERCEPTOR DRAIN ALONG THE TOP OF CUT SLOPES WHERE THE DRAINAGE PATH IS GREATER THAN 40 FEET TOWARDS THE CUT SLOPE.
15. PROVIDE 5' WIDE BY 1' HIGH BERM ALONG THE TOP OF ALL FILL SLOPES STEEPER THAN 3:1 (HORIZONTAL TO VERTICAL).
16. THE GROUND SURFACE IMMEDIATELY ADJACENT TO THE BUILDING FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE) FOR A MINIMUM DISTANCE OF 10 FEET MEASURED PERPENDICULAR TO THE FACE OF THE FOUNDATION.
17. NO OBSTRUCTION OF NATURAL WATER COURSES SHALL BE PERMITTED.
18. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES TEMPORARY DRAINAGE CONTROL (BEST MANAGEMENT PRACTICES, BMPS) SHALL BE PROVIDED TO PREVENT PONDING WATER AND DRAINAGE TO ADJACENT PROPERTIES.
19. DUST CONTROL SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
20. FUGITIVE DUST CONTROL- CONSTRUCTION SITES SUBJECT TO PM10 FUGITIVE DUST MITIGATION SHALL COMPLY WITH AQMD RULE 403.1.
21. ALL EXISTING DRAINAGE COURSES AND STORM DRAIN FACILITIES SHALL CONTINUE TO FUNCTION. PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT ADJOINING PROPERTIES DURING GRADING OPERATIONS.
22. FOR ALL SLOPES STEEPER THAN 4 TO 1 (H/V): ALL SLOPES EQUAL TO OR GREATER THAN 3' IN VERTICAL HEIGHT ARE REQUIRED TO BE PLANTED WITH AN APPROVED DROUGHT-TOLERANT GROUND COVER AT A MINIMUM SPACING OF 12" ON CENTER OR AS APPROVED BY THE ENGINEER OF RECORD OR THE REGISTERED LANDSCAPE ARCHITECT AND DROUGHT-TOLERANT SHRUBS SPACED AT NO MORE THAN 10' ON CENTER. SLOPES EXCEEDING 15' IN VERTICAL HEIGHT SHALL BE PLANTED WITH APPROVED SHRUBS NOT TO EXCEED 10' ON CENTER, OR TREES SPACED NOT TO EXCEED 20' ON CENTER, OR A COMBINATION OF SHRUBS AND TREES NOT TO EXCEED 15' IN ADDITION TO THE GRASS OR GROUND COVER. SLOPES THAT REQUIRE PLANTING SHALL BE PROVIDED WITH AN IN-GROUND IRRIGATION SYSTEM EQUIPPED WITH AN APPROPRIATE BACKFLOW DEVICE PER C.P.C. CHAPTER 6. THE SLOPE PLANTING AND IRRIGATION SYSTEM SHALL BE INSTALLED AS SOON AS POSSIBLE UPON COMPLETION OF ROUGH GRADING. ALL PERMANENT SLOPE PLANTING SHALL BE ESTABLISHED AND IN GOOD CONDITION PRIOR TO SCHEDULING PRECISE GRADE INSPECTION.

COMPLETION OF WORK

ROUGH GRADE

23. A REGISTERED CIVIL ENGINEER SHALL PREPARE FINAL COMPACTION REPORT/GRADING REPORT AND IT SHALL BE SUBMITTED TO THE DEPARTMENT OF BUILDING AND SAFETY FOR REVIEW AND APPROVAL. THE REPORT SHALL INCLUDE BUILDING FOUNDATION DESIGN PARAMETERS (ALLOWABLE SOIL PRESSURES, ETC.), EXPANSION INDEX (AND DESIGN ALTERNATIVES IF EI > 20), WATER SOLUBLE SULFATE CONTENT, CORROSIVITY AND REMEDIAL MEASURES IF NECESSARY.
24. EXCEPT FOR NON-TRACT SINGLE RESIDENTIAL LOT GRADING, THE COMPACTION REPORT SHALL INCLUDE THE SPECIAL INSPECTION VERIFICATIONS LISTED ON TABLE 1705,6 OF 2022 CBC.
25. THE COUNTY OF RIVERSIDE REQUIRES A LICENSED PROFESSIONAL ENGINEER TO SUBMIT A WET SIGNED AND STAMPED ROUGH GRADING CERTIFICATION WHICH INCLUDES PAD ELEVATIONS PRIOR TO REQUESTING INSPECTION AND ISSUANCE OF THE BUILDING PERMIT.
26. ROUGH GRADE ONLY PERMITS: IN ADDITION TO OBTAINING ALL REQUIRED INSPECTIONS AND APPROVAL OF ALL FINAL REPORTS, ALL SITES PERMITTED FOR ROUGH GRADE ONLY SHALL PROVIDE VEGETATIVE COVERAGE (100 PERCENT) OR OTHER MEANS OF SITE STABILIZATION APPROVED BY ENVIRONMENTAL COMPLIANCE DIVISION, PRIOR TO RECEIVING A ROUGH GRADE PERMIT FINAL.

PRECISE GRADE

27. A REGISTERED CIVIL ENGINEER SHALL SUBMIT TO THE BUILDING AND SAFETY DEPARTMENT WRITTEN FINAL CERTIFICATION OF COMPLETION OF GRADING IN ACCORDANCE WITH THE APPROVED GRADING PLAN PRIOR TO THE REQUEST OF PRECISE GRADING INSPECTION.

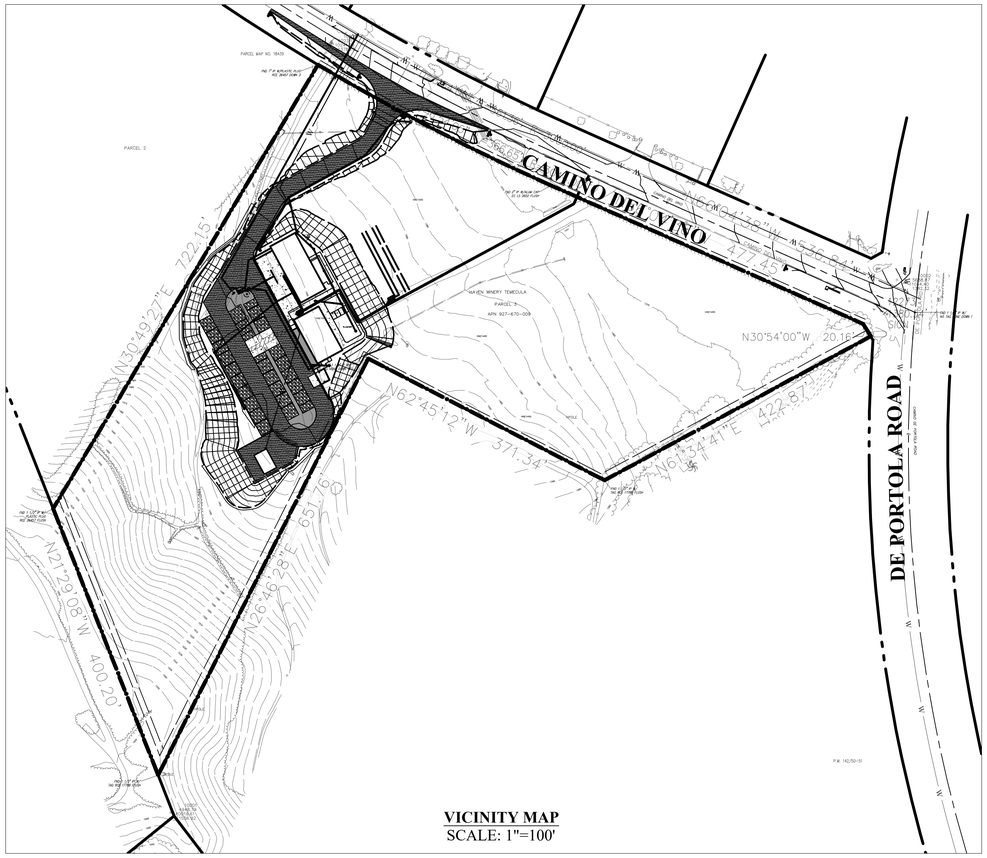
ADDITIONAL NOTES:

1. NO WORK SHALL COMMENCE WITHIN THE ROAD RIGHT-OF-WAY (RW) PRIOR TO ISSUANCE OF AN ENCROACHMENT PERMIT BY THE TRANSPORTAION DEPARTMENT.
2. THE ENGINEER OF RECORD HAS EVALUATED THE DRAINAGE AND HAS DETERMINED THAT THE DRAINAGE ACROSS THE PROPERTY LINE DOES NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING.
3. THE ENGINEER OF RECORD WHO PREPARED AND SIGNED THE GRADING PLAN HAS VERIFIED THAT THE PROPOSED DRAINAGE SYSTEM IS CONSITENT WITH THE NATURAL DRAINAGE PATTERN OF THE SITE AND WILL NOT ADVERSELY AFFECT ADJACENT PROPERTIES.

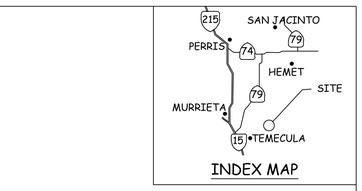
THE ENGINEER WHO PREPARED AND SIGNED THIS GRADING PLAN HAS VERIFIED THAT ALL INFORMATION ON THE DRAWINGS IS CONSISTENT WITH THE STORM DRAIN AND STREET IMPROVEMENTS PLANS APPROVED OR CLEARED TO GRADE BY THE RIVERSIDE COUNTY FLOOD CONTROL DISTRICT AND/OR TRANSPORTATION DEPARTMENT AND APPROVED TENTATIVE TRACT MAP INCLUDING CONDITIONS OF APPROVAL.

A PRE-GRADING/PRE-CONSTRUCTION MEETING AND SITE INSPECTION SHALL BE ARRANGED FOR BY THE SITE DEVELOPER PRIOR TO COMMENCING GRADING OPERATIONS. THOSE PARTIES REQUIRED TO ATTEND THE PRE-CONSTRUCTION MEETING SHALL INCLUDE BUT ARE NOT LIMITED TO THE DEVELOPER, PROJECT SUPERINTENDENT, ENGINEER OF RECORD, SOILS ENGINEER, GRADING CONTRACTOR, AND UNDERGROUND UTILITIES CONTRACTOR. REPRESENTING THE DEPARTMENT OF BUILDING AND SAFETY SHALL BE THE GRADING PLAN-CHECKER AND/OR GRADING INSPECTOR. THE FOCUS OF THE PRE-CONSTRUCTION MEETING SHALL BE TO DISCUSS THE VARIOUS ASPECTS AND RESPONSIBILITIES OF THE GRADING PROJECT AND TO PROVIDE AN APPROXIMATE TIMETABLE FOR THE COMPLETION OF ROUGH GRADING. ARRANGE FOR A PRE-GRADING/PRE-CONSTRUCTION MEETING BY CALLING THE DISTRICT OFFICE RESPONSIBLE FOR PROVIDING YOUR GRADING AND BUILDING INSPECTIONS. CALL COUNTY DISPATCH AT (951) 955-1800.

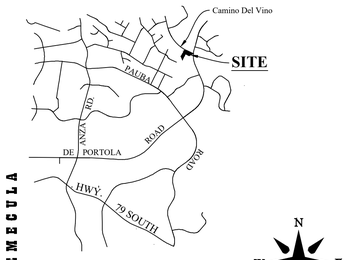
PRECISE GRADING & DRAINAGE PLAN
PPT 240015
FOR
HAVEN VINEYARDS
COUNTY OF RIVERSIDE, CALIFORNIA



VICINITY MAP
SCALE: 1"=100'



INDEX MAP



Vicinity Map
NOT TO SCALE
TOWNSHIP 7 SOUTH, RANGE 1 WEST, SECTION 31

LEGAL DESCRIPTION:
IN THE UNINCORPORATED TERRITORY OF THE COUNTY OF RIVERSIDE, CALIFORNIA, PARCEL 3, OF PARCEL MAP 18439, AS SHOWN ON A MAP RECORDED IN BOOK 142, PAGES 50 AND 51 OF PARCEL MAPS.

SOURCE OF TOPOGRAPHY:
THE TOPOGRAPHY SHOWN WAS A PHOTOGRAMMETRIC AERIAL SURVEY DATED MARCH 4, 2022 PREPARED UNDER THE DIRECTION OF ROBIN B. HAMERS & ASSOCIATES, INC.

SITE ADDRESS:
41625 CAMINO DEL VINO,
TEMECULA, CA

APN:
927-670-009

OWNER:
HAVEN VINEYARDS, LLC
c/o RTN Development
27555 Ynez Rd., Suite 208
Temecula, CA 92591
rneuge@gmail.com
(760) 594-1107

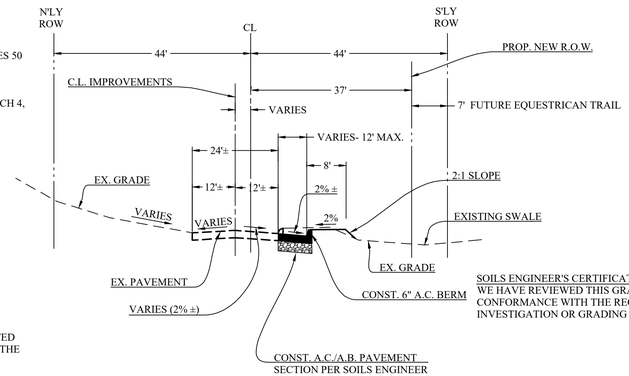
CIVIL ENGINEER:
Robin B Hamers & Assoc., Inc.
3100 Airway Avenue, Suite 124
Costa Mesa, CA 92626
mlbenesh@robhamers.com
(949) 548-1192

SOILS ENGINEER:
CW Soils
Chad Welke
23251 Kent Court
Murrieta, CA 92652
cwelke@cwsoils.com
(951) 304-3935

EXCEPT FOR THE RETAINING WALLS IN CONJUNCTION WITH THIS GRADING, ALL INFORMATION ASSOCIATED WITH BUILDINGS (INCLUDING SETBACKS AND FINISH FLOOR ELEVATIONS) IS FOR REFERENCE ONLY AND THE APPROVAL OF THIS GRADING PLAN DOES NOT INCLUDE ANY PROVISIONS ASSOCIATED WITH BUILDINGS.

CUT AREA UNDER BUILDING SHOULD BE OVER EXCAVATED (2 FEET BELOW FOOTING AND 5 FEET BEYOND THE BUILDING LINE OR PER RECOMMENDATIONS PROVIDED IN THE SOILS REPORT) AND RECOMPACTED WHEN A BUILDING FOOTPRINT CROSSES CUT-FILL TRANSITION. SHOW THIS PROVISION ON PLAN. [CBC 1808.2]

PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.



TYPICAL SECTION: CAMINO DEL VINO
PART WIDTH COLLECTOR STREET
STD. No. 103
NOT TO SCALE

LEGEND:

ABBREVIATIONS:

AC	ASPHALT CONCRETE
BW	BACK OF WALK
CB	CATCH BASIN
CC	CONCRETE
CF	CURB FACE
CLF	CHAIN LINK FENCE
CO	CLEAN OUT
E	ELECTRICAL
EC	EDGE OF CONCRETE
EG	EDGE OF GUTTER
E.P	EDGE OF PAVENMENT
EM	ELECTRIC METER
EP	EDGE OF PAVEMENT
FF	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE ELEVATION
FH	FIRE HYDRANT
FL	FLOW LINE ELEVATION
FS	FINISHED SURFACE ELEVATION
G	GAS
GM	GAS METER
INV	INVERT OF PIPE ELEVATION
LF	LINEAR FEET
NG	NATURAL GRADE
PCC	PORTLAND CEMENT CONCRETE
PL	PROPERTY LINE
PM	PARKING METER POST
PP	POWER POLE
PB	PULL BOX
PCC	PORTLAND CEMENT CONCRETE
R/W	RIGHT OF WAY
S	SEWER
SCO	SEWER CLEANOUT
SDMH	STORM DRAIN MANHOLE
SMH	SEWER MANHOLE
ST.LT.	STREET LIGHT
SW	SIDE WALK
T	TELEPHONE
TC	TOP OF CURB ELEVATION
TEL.MH	TELEPHONE MANHOLE
TF	TOP OF FOOTING ELEVATION
TG	TOP OF GRATE ELEVATION
TOE	TOE OF SLOPE
TOP	TOP OF SLOPE
TW	TOP OF WALL ELEVATION
W	WATER
WM	WATER METER
WV	WATER VALVE

SYMBOLS:

(0.1)	EXISTING ELEVATION
x103.29	EXISTING SPOT ELEVATION
	FIRE HYDRANT
	ELECTRIC
G	GAS
W	WATER
S	SEWER
T	TELEPHONE
X	FENCE
	MONUMENTS
	TREE
	WALL
	PAVEMENT (AC OR CONC)
	D.G. SURFACE
	CONCRETE BROW DITCH

EARTHWORK ESTIMATE		
CUT	7,820	CY
FILL	7,820	CY
IMPORT	0	CY
DISTURBED AREA		
GRADING	2.21	AC
TOTAL	2.21	AC
IMPERVIOUS AREA		
ON-SITE PAVEMENT	1.07	AC
BUILDING FOOTPRINT	0.27	AC
WALKWAYS	0.29	AC
TOTAL	1.63	AC

Sheet List Table	
Sheet Number	Sheet Title
1	TITLE SHEET
2	DETAILS
3	DETAILS
4	PRECISE GRADING PLAN
5	PRECISE GRADING PLAN
6	STORM DRAIN PLAN
7	SEWER & WATER - FOR REFERENCE ONLY
8	SEWER & WATER - FOR REFERENCE ONLY
9	EROSION CONTROL PLAN

SOILS ENGINEER'S CERTIFICATE:
WE HAVE REVIEWED THIS GRADING PLAN AND FOUND IT TO BE IN SUBSTANTIAL CONFORMANCE WITH THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL INVESTIGATION OR GRADING REPORT DATED JULY 2, 2024 .

CHAD WELKE, C 63712 — DATE

PG BGR2400126
RG PERMIT 485651
BMP2400124

AG EXEMPT VINEYARD - 18 YRS OLD
PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.
WDID# 9 33C407314 BFE

811 Know what's below. Call before you dig.

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

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after county approval or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for approval by the county.

MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER — COUNTY

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER MICHAEL BENESH RCE 37893 CIVIL STATE OF CALIFORNIA

PREPARED BY:
ROBIN B. HAMERS & ASSOC., INC.
CIVIL ENGINEERS
234 E. 17TH STREET, SUITE 205
COSTA MESA, CALIFORNIA 92627
(949) 548-1192

MICHAEL BENESH, R.C.E. 37893 — 7/7/25 DATE

BENCHMARK:
RIV CO BM: T-10-81 ELEV: 1342.94 (NAVD88)
DESCRIPTION: 2-1/2" BRASS DISK IN CONC CYLINDER 2.9 MILES N/E ON DE PORTOLA RD FROM THE INT OF ANZA RD, 56' E OF C.L. DE PORTOLA RD, 1.5' N/W OF POLE (NO No.), 101' E OF PP (#2112481E), 7' N/E OF 1-1/2' TREE. FIBERGLASS WITNESS POST E OF MONUMENT.

SCALE:

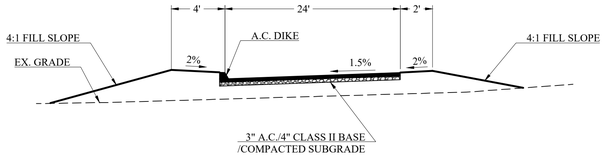
IP 240015

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
PRECISE GRADING & DRAINAGE PLAN
TITLE SHEET
41625 CAMINO DEL VINO, TEMECULA, CA

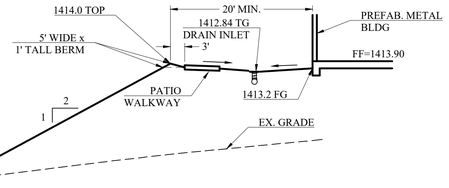
SHEET NO. 1 OF 9 SHEETS

FOR: | W.O. | COUNTY FILE NO.

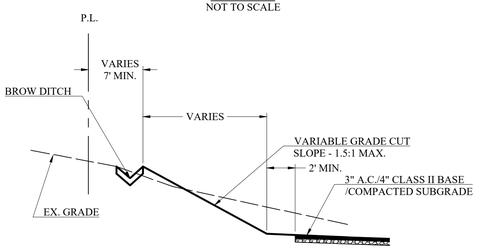
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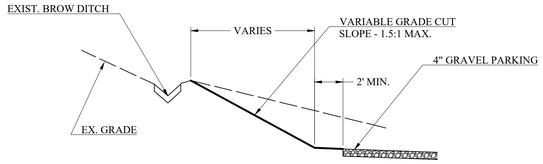
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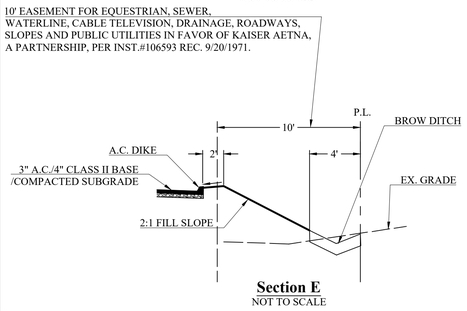
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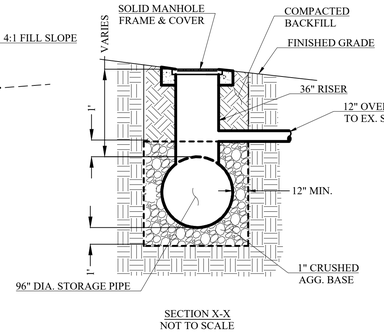
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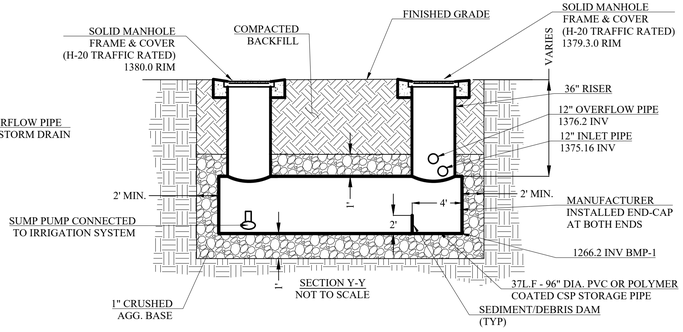
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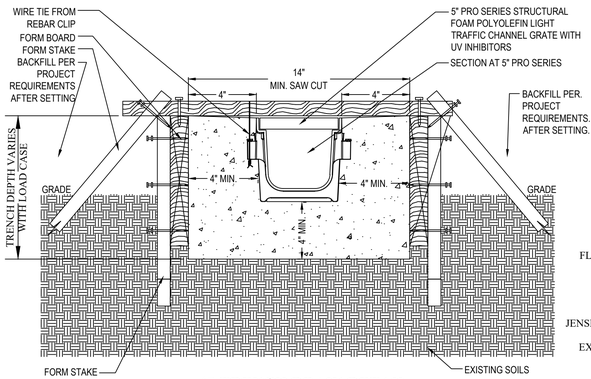
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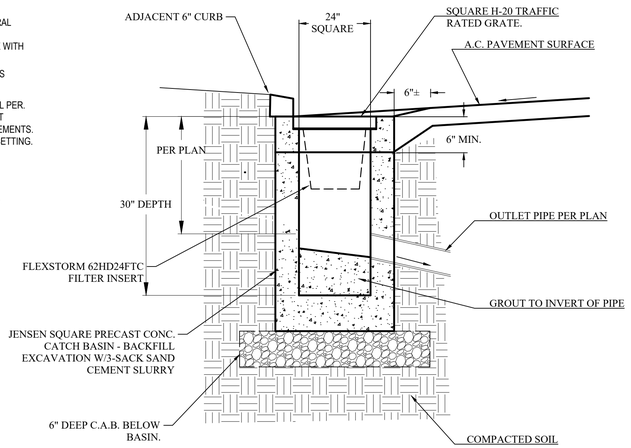
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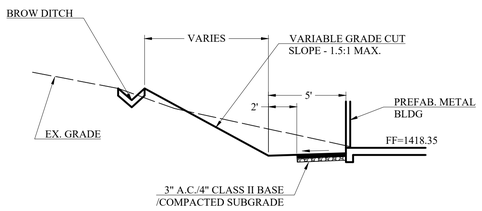
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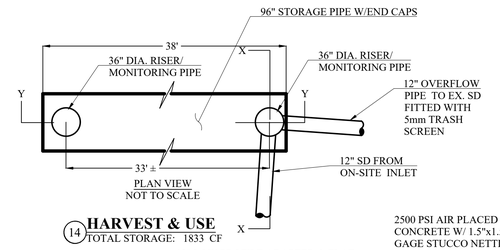
13 4" TRENCH DRAIN DETAIL
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12 DROP INLET W/FILTER INSERT
NOT TO SCALE

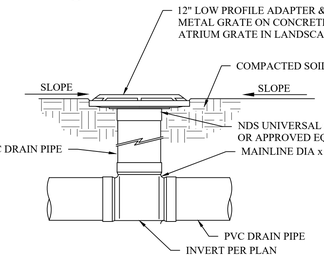


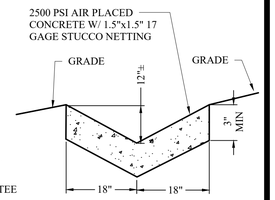
Section I
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PLAN VIEW
NOT TO SCALE

14 HARVEST & USE
TOTAL STORAGE: 1833 CF





4 Brow Ditch Detail
NOT TO SCALE
PG BGR2400126
RG PERMIT 485651
BMP2400124

11 12" SQUARE AREA DRAIN DETAIL
NOT TO SCALE

AS-BUILT PLAN
THESE PLANS HAVE BEEN AS-BUILT IN ACCORDANCE WITH SECTION 6735.6 OF THE PROFESSIONAL ENGINEER'S ACT.

BY: _____
MICHAEL L. BENESH, RCE 37893 DATE

AG EXEMPT VINEYARD - 18 YRS OLD
PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.
WDID# 9 33C407314 BFE

CONSTRUCTION NOTES

No.	DESCRIPTION	QUANTITY	UNITS
	SURFACE IMPROVEMENTS		
1	CONST. 5,000 GAL. PRODUCTION HOLDING TANK FOR NON-STORMWATER FLOWS (VERIFY SIZE WITH OWNER.)	1	EACH
2	CONST. 3" A.C./4" CLASS II BASE/COMPACTED SUBGRADE (FINAL SECTION PER SOILS ENGINEER)	23,760	SF
3	CONST. 4" GRAVEL PARKING/COMPACTED NATIVE SOILS	8,573	SF
4	CONST. BROW DITCH PER DETAIL SHEET 2	535	LF
5	CONST. 6" TYPE "D" CURB PER COUNTY OF RIVERSIDE STD. No. 204 FLUSH W/SURFACE (EVERY 2 SPACES TYP.)	414	LF
6	CONST. 6" P.C.C./4" CLASS II BASE/COMPACTED SUBGRADE (FINAL SECTION PER SOILS ENGINEER)	3,164	SF
7	CONST. 6" A.C. DIKE PER COUNTY OF RIVERSIDE STD. No. 212.	465	LF
9	CONST. 8' MAX. KEYSTONE RETAINING WALL. (PER SEPARATE PERMIT)	204	SF
10	CONST. P.C.C. WALKWAY AND PATIO LER LANDSCAPE PLANS. (FINAL SECTION PER SOILS ENGINEER)	5,292	SF
11	CONST. AREA DRAIN PER DETAIL SHEET 2	10	EACH
12	CONST. TRAFFIC RATED DROP INLET PER DETAIL SHEET 2	7	EACH
13	CONST. TRAFFIC RATED 4" TRENCH DRAIN PER DETAIL SHEET 2	20	LF
14	CONST. HARVEST & USE STORAGE TANK PER DETAIL SHEET 2	1	EACH
15	CONSTRUCT PVC SCHEDULE 40 OR HDPE DRAIN PIPE (SIZE AND LENGTH PER PLAN) W/SOLVENT WELDED JOINTS.	SEE SHEET 6	LF
16	CONST. 5'x5'x15" DEEP RIP-RAP ENERGY DISSIPATOR.	1	EACH
17	CONST. 6" TYPE "D" CURB PER COUNTY OF RIVERSIDE STD. No. 204.	56	LF
	ON-SITE WATER IMPROVEMENTS (FOR REFERENCE ONLY)		
W1	CONSTRUCT 3" PVC C-900 DR-14 DOMESTIC WATER MAIN W/RESTRAINED JOINTS PER RANCHO WATER STANDARD DRAWING RW-26B	407	LF
W2	CONSTRUCT 3" FITTINGS W/HIGH DEFLECTION COUPLINGS	6	EACH
W3	CONSTRUCT 3" x 3" x 2" TEE	1	EACH
W4	CONSTRUCT 2" PVC SCHED 80 WATER SERVICE W/30" MINIMUM COVER AND SOLVENT WELDED JOINTS	173	LF
	ON-SITE SEWER IMPROVEMENTS (FOR REFERENCE ONLY)		
S1	CONSTRUCT 6" PVC SDR-35 SEWER PIPE	465	LF
S2	CONSTRUCT 4" PVC SDR-35 SEWER PIPE	56	LF
S3	CONSTRUCT 6" SEWER CLEANOUT	8	EACH
S4	CONSTRUCT 4" SEWER CLEANOUT	2	EACH
S5	CONSTRUCT 1,200 GALLON SEPTIC TANK & DISTRIBUTION BOX.	1	EACH
S6	CONSTRUCT GREASE TRAP (ENDURA 4075AS (75 GPM/559 LB)	1	EACH

Know what's below. Call before you dig.

NOTE:
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MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER COUNTY

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER
MICHAEL BENESH
RCE 37893
CIVIL
STATE OF CALIFORNIA

PREPARED BY:
ROBIN B. HAMERS & ASSOC., INC.
CIVIL ENGINEERS
234 E. 17TH STREET, SUITE 205
COSTA MESA, CALIFORNIA 92627
(949) 548-1192

MICHAEL BENESH, R.C.E. 37893 7/7/25 DATE

BENCHMARK:
RIV CO BM: T-10-81 ELEV: 1342.94 (NAVD88)
DESCRIPTION: 2-1/2" BRASS DISK IN CONC CYLINDER 2.9 MILES N/E ON DE PORTOLA RD FROM THE INT OF ANZA RD, 56' E OF C.L. DE PORTOLA RD, 1.5' N/W OF POLE (NO No.), 101' E OF PP (#2112481E), 7' N/E OF 1-1/2' TREE. FIBERGLASS WITNESS POST E OF MONUMENT.

SCALE:

IP 240015

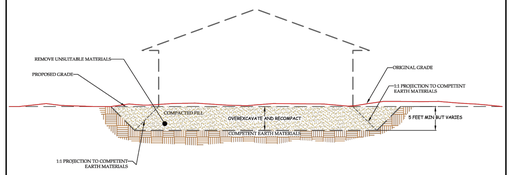
COUNTY OF RIVERSIDE
HAVEN VINEYARDS
DETAILS
41625 CAMINO DEL VINO, TEMECULA, CA

SHEET NO. 2 OF 9 SHEETS

FOR: W.O. COUNTY FILE NO.

INCHES 0 1 2 3 4

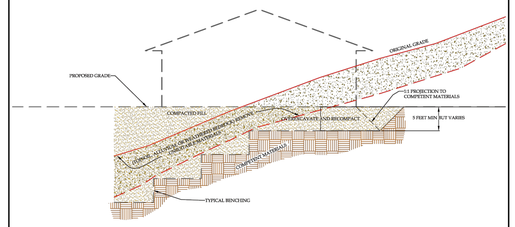
TYPICAL CUT LOT DETAIL



NOTE: REMOVAL BOTTOMS SHOULD BE GRADED WITH A MINIMUM 2% FALL TOWARDS STREET OR OTHER SUITABLE AREA AS APPROVED BY GEOTECHNICAL CONSULTANT, CONSULTANT TO AVOID PONDING BELOW THE BUILDING.

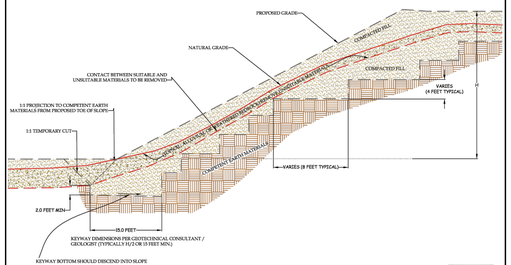
NOTE: WHERE DESIGN CUT LOTS ARE EXCAVATED ENTIRELY INTO COMPETENT EARTH MATERIALS, OVEREXCAVATION MAY STILL BY NEEDED FOR HARD ROCK CONDITIONS OR MATERIALS WITH VARIABLE EXPANSION POTENTIALS

TYPICAL CUT / FILL TRANSITION LOT DETAIL



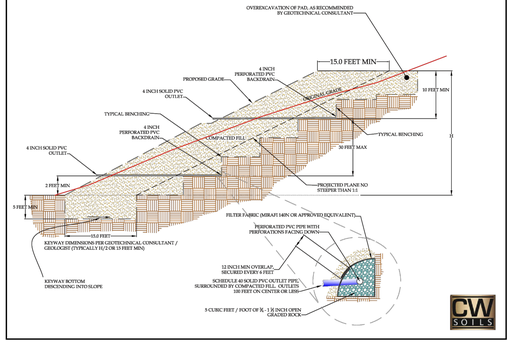
NOTE: WHERE DESIGN CUT LOTS ARE EXCAVATED ENTIRELY INTO COMPETENT EARTH MATERIALS, OVEREXCAVATION MAY STILL BY NEEDED FOR HARD ROCK CONDITIONS OR MATERIALS WITH VARIABLE EXPANSION POTENTIALS

TYPICAL KEYWAY & BENCHING DETAIL FILL SLOPE

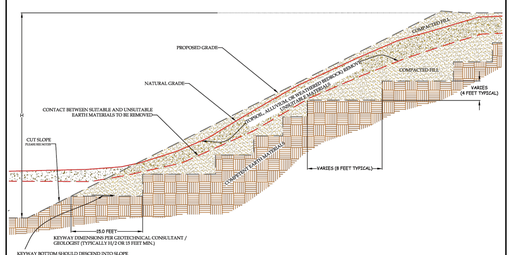


NOTES:
NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE KEYED AND BENCHED INTO COMPETENT EARTH MATERIALS

TYPICAL BUTTRESS / STABILIZATION DETAIL

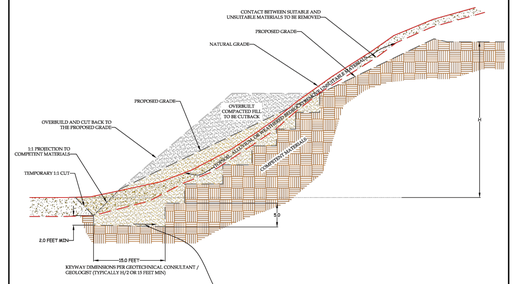


TYPICAL KEYWAY & BENCHING DETAIL FILL OVER CUT SLOPE



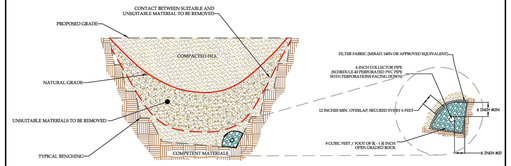
NOTES:
NATURAL SLOPES STEEPER THAN 5:1 (H:V) MUST BE KEYED AND BENCHED INTO COMPETENT EARTH MATERIALS
THE CUT SLOPE MUST BE CONSTRUCTED FIRST

TYPICAL KEYWAY & BENCHING DETAIL CUT OVER FILL SLOPE



NOTE:
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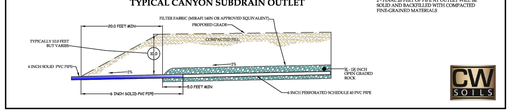
TYPICAL CANYON SUBDRAIN SYSTEM DETAIL



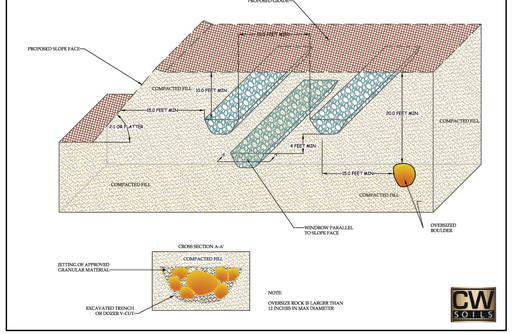
NOTES:
1 - CONTINUOUS RUNS IN EXCESS OF 500 FEET LONG WILL REQUIRE AN 8 INCH DIAMETER PIPE

2 - FINAL 20 FEET OF PIPE AT OUTLET WILL BE NON-PERFORATED AND SURROUNDED BY COMPACTED FINE-GRAINED MATERIALS

TYPICAL CANYON SUBDRAIN OUTLET



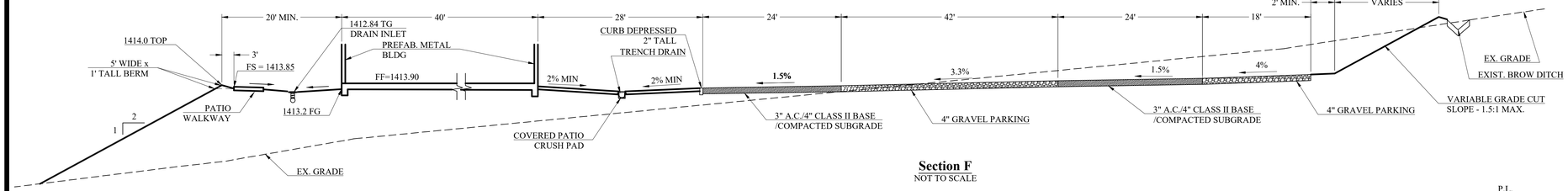
TYPICAL OVERSIZE ROCK DETAIL



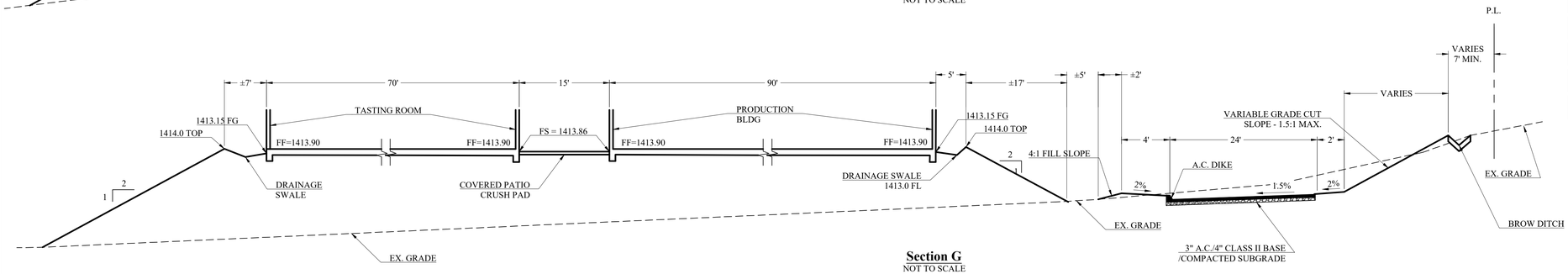
NOTE:
OVERSIZE ROCK IS LARGER THAN 12 INCHES IN MAX DIAMETER

FOUNDATION CLEARANCES FROM SLOPES DETAIL

Section F
NOT TO SCALE



Section G
NOT TO SCALE



AS-BUILT PLAN

THESE PLANS HAVE BEEN AS-BUILT IN ACCORDANCE WITH SECTION 6735.6 OF THE PROFESSIONAL ENGINEER'S ACT.

BY: _____
MICHAEL L. BENESH, RCE 37893 DATE

PG BGR2400126
RG PERMIT 485651
BMP2400124

AG EXEMPT VINEYARD - 18 YRS OLD
PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.
WDID# 9 33C407314 BFE

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ENGINEER COUNTY

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER MICHAEL BENESH RCE 37893 CIVIL STATE OF CALIFORNIA

PREPARED BY:
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(949) 548-1192

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SCALE:

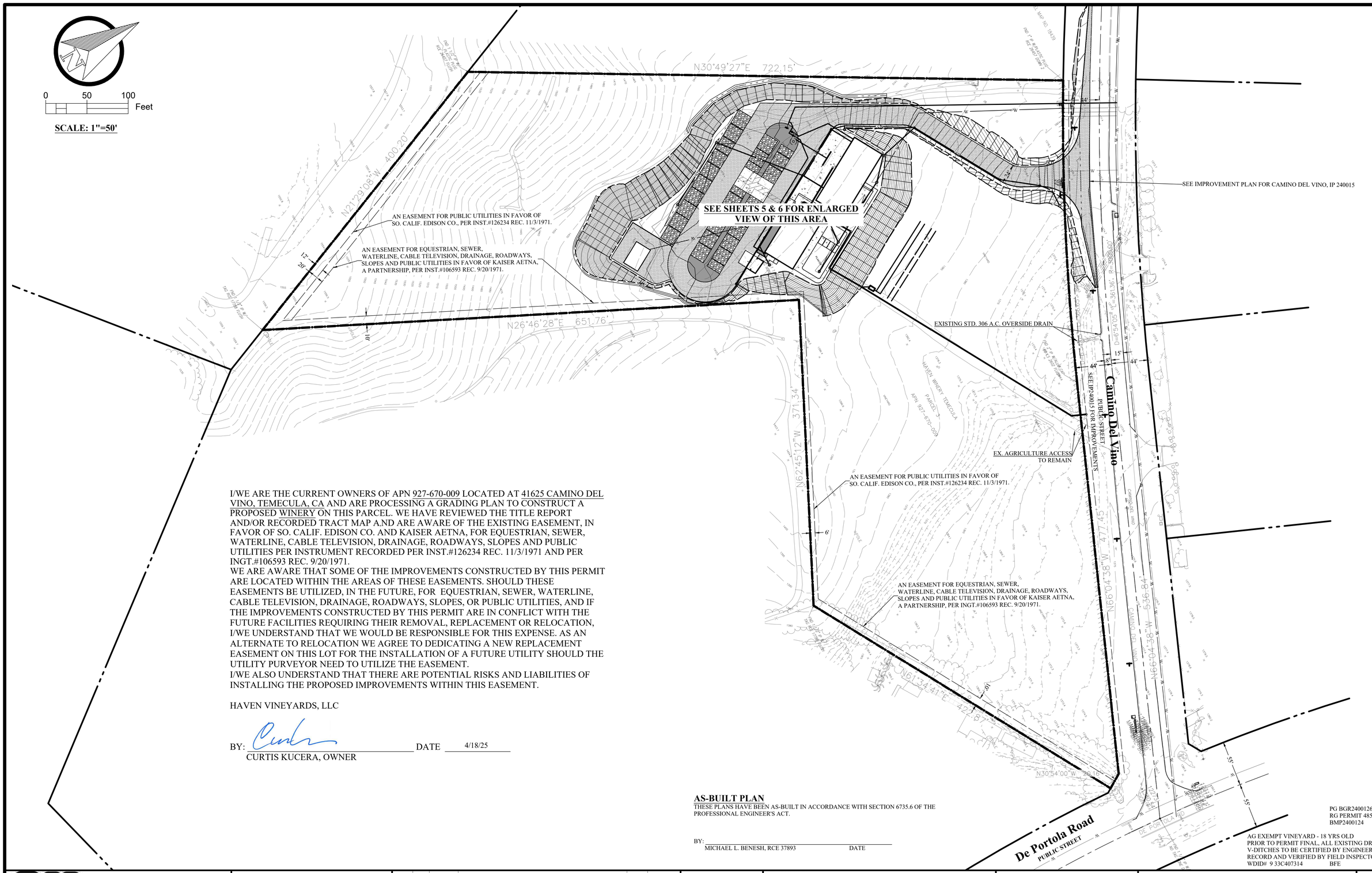
IP 240015

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
DETAILS
41625 CAMINO DEL VINO, TEMECULA, CA

SHEET NO. 3 OF 9 SHEETS

FOR: W.O. COUNTY FILE NO.

INCHES 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41



I/WE ARE THE CURRENT OWNERS OF APN 927-670-009 LOCATED AT 41625 CAMINO DEL VINO, TEMECULA, CA AND ARE PROCESSING A GRADING PLAN TO CONSTRUCT A PROPOSED WINERY ON THIS PARCEL. WE HAVE REVIEWED THE TITLE REPORT AND/OR RECORDED TRACT MAP A.ND ARE AWARE OF THE EXISTING EASEMENT, IN FAVOR OF SO. CALIF. EDISON CO. AND KAISER AETNA, FOR EQUESTRIAN, SEWER, WATERLINE, CABLE TELEVISION, DRAINAGE, ROADWAYS, SLOPES AND PUBLIC UTILITIES PER INSTRUMENT RECORDED PER INST.#126234 REC. 11/3/1971 AND PER INGT.#106593 REC. 9/20/1971.
WE ARE AWARE THAT SOME OF THE IMPROVEMENTS CONSTRUCTED BY THIS PERMIT ARE LOCATED WITHIN THE AREAS OF THESE EASEMENTS. SHOULD THESE EASEMENTS BE UTILIZED, IN THE FUTURE, FOR EQUESTRIAN, SEWER, WATERLINE, CABLE TELEVISION, DRAINAGE, ROADWAYS, SLOPES, OR PUBLIC UTILITIES, AND IF THE IMPROVEMENTS CONSTRUCTED BY THIS PERMIT ARE IN CONFLICT WITH THE FUTURE FACILITIES REQUIRING THEIR REMOVAL, REPLACEMENT OR RELOCATION, I/WE UNDERSTAND THAT WE WOULD BE RESPONSIBLE FOR THIS EXPENSE. AS AN ALTERNATE TO RELOCATION WE AGREE TO DEDICATING A NEW REPLACEMENT EASEMENT ON THIS LOT FOR THE INSTALLATION OF A FUTURE UTILITY SHOULD THE UTILITY PURVEYOR NEED TO UTILIZE THE EASEMENT.
I/WE ALSO UNDERSTAND THAT THERE ARE POTENTIAL RISKS AND LIABILITIES OF INSTALLING THE PROPOSED IMPROVEMENTS WITHIN THIS EASEMENT.

HAVEN VINEYARDS, LLC

BY: _____ DATE 4/18/25
CURTIS KUCERA, OWNER

AS-BUILT PLAN
THESE PLANS HAVE BEEN AS-BUILT IN ACCORDANCE WITH SECTION 6735.6 OF THE PROFESSIONAL ENGINEER'S ACT.

BY: _____
MICHAEL L. BENESH, RCE 37893 DATE

PG BGR2400126
RG PERMIT 485651
BMP2400124

AG EXEMPT VINEYARD - 18 YRS OLD
PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.
WDID# 9 33C407314 BFE

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ENGINEER COUNTY

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER MICHAEL BENESH RCE 37893 CIVIL STATE OF CALIFORNIA

PREPARED BY:
ROBIN B. HAMERS & ASSOC., INC.
CIVIL ENGINEERS
234 E. 17TH STREET, SUITE 205
COSTA MESA, CALIFORNIA 92627
(949) 548-1192

MICHAEL BENESH, R.C.E. 37893 7/7/25 DATE

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SCALE:

IP 240015

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
PRECISE GRADING & DRAINAGE PLAN
PRECISE GRADING PLAN
41625 CAMINO DEL VINO, TEMECULA, CA

SHEET NO. 4 OF 9 SHEETS

FOR: W.O. COUNTY FILE NO.

INCHES 0 1 2 3 4

0 20 40 Feet

SCALE: 1"=20'

CONSTRUCTION NOTES	
No.	DESCRIPTION
1	CONST. 5,000 GAL. PRODUCTION HOLDING TANK FOR NON-STORMWATER FLOWS (VERIFY SIZE WITH OWNER.)
2	CONST. 3" A.C./4" CLASS II BASE/COMPACTED SUBGRADE (FINAL SECTION PER SOILS ENGINEER)
3	CONST. 4" MIN. GRAVEL PARKING/COMPACTED NATIVE SOILS. BOTTOM OF GRAVEL TO BE LEVEL.
4	CONST. GUNITE BROW DITCH PER DETAIL SHEET 2.
5	CONST. 6" TYPE "D" CURB PER COUNTY OF RIVERSIDE STD. No. 204 FLUSH W/SURFACE (EVERY 2 SPACES TYP.)
6	CONST. 6" P.C.C./4" CLASS II BASE/COMPACTED SUBGRADE (FINAL SECTION PER SOILS ENGINEER)
7	CONST. 6" A.C. DIKE PER COUNTY OF RIVERSIDE STD. No. 212.
9	CONST. 8' MAX. KEYSTONE RETAINING WALL PER SEPARATE PERMIT
10	CONST. P.C.C. WALKWAY AND PATIO LER LANDSCAPE PLANS. (FINAL SECTION PER SOILS ENGINEER)
11	CONST. AREA DRAIN PER DETAIL SHEET 2
12	CONST. TRAFFIC RATED DROP INLET PER DETAIL SHEET 2
13	CONST. TRAFFIC RATED 4" TRENCH DRAIN PER DETAIL SHEET 2
14	CONST. HARVEST & USE STORAGE TANK PER DETAIL SHEET 2
15	CONSTRUCT PVC SCHEDULE 40 DRAIN PIPE (SIZE PER PLAN) W/SOLVENT WELDED JOINTS.
16	CONST. 5'x5'x15" DEEP RIP-RAP ENERGY DISSIPATOR.
17	CONST. 6" TYPE "D" CURB PER COUNTY OF RIVERSIDE STD. No. 204.

SEE SHEET 4

N30°49'27"E 722.15'

JOIN EXISTING BROW DITCH

PROTECT EXISTING BROW DITCH & DRAIN IN PLACE (ALL EXIST DRAINS CONSTRUCTED PER PERMIT 485651 FINALED 7/18/91)

EX. OUTLET (1389.0) INV

EX. INLET (1387.5) TG ~ (1384.0) INV

EXISTING 18" STORM DRAIN PROTECT IN PLACE

EXISTING STORM DRAIN PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

EX. INLET (1384.5) TG ~ (1381.0) INV

2:1 slope

56' ACCESS OPENING

SEE IP 240015 FOR IMPROVEMENTS IN PUBLIC ROW

Covered Patio
Crush Pad

Production Bldg.
FF=1413.90
P=1413.2

Tasting Room
FF=1413.90
P=1413.2

Storage
FF=1418.30
P=1417.6

BMP-1: 96" DIA. HARVEST & USE BMP SEE DETAIL SHEET 2

Camino Del Vino
PUBLIC STREET
SEE IP240015 FOR IMPROVEMENTS

EXISTING INLET TO BE REMOVED

EX. INLET (1375.4) TG (1371.9) INV

EXISTING STORM DRAIN PROTECT IN PLACE

EXISTING STORM DRAIN PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

EX. OUTLET (1369.9) INV

EX. 18" PIPES (1369.8) INV

FUTURE EQUESTRIAN EASEMENT

SEE SHEET 6 FOR STORM DRAIN PLAN

SEE SHEETS 7 & 8 FOR SEWER & WATER PLAN

PROTECT EXISTING BROW DITCH & DRAIN IN PLACE (ALL EXIST DRAINS CONSTRUCTED PER PERMIT 485651 FINALED 7/18/91)

RELOCATE INLET AND EXTEND STORM DRAIN IN KIND 1414.5 TG ~ 1412.5 INV

EX. INLET (1403.7) TG ~ (1400.7) INV

EXISTING STORM DRAIN & INLET PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

EXISTING STORM DRAIN & INLET PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

RETAINING WALL #1

EXISTING STORM DRAIN & INLET PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

AS-BUILT PLAN

THESE PLANS HAVE BEN AS-BUILT IN ACCORDANCE WITH SECTION 6735.6 OF THE PROFESSIONAL ENGINEER'S ACT.

BY: MICHAEL L. BENESH, RCE 37893 DATE

EXISTING STD. 306 A.C. OVERSIDE DRAIN
PG BGR2400126
RG PERMIT 485651
BMP2400124

AG EXEMPT VINEYARD - 18 YRS OLD
PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.
WDID# 9 33C407314 BFE

SEE SHEET 4

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MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				COUNTY	

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER MICHAEL BENESH RCE 37893 CIVIL STATE OF CALIFORNIA

PREPARED BY:
ROBIN B. HAMERS & ASSOC., INC.
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234 E. 17TH STREET, SUITE 205
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SCALE:

IP 240015

SHEET NO. 5 OF 9 SHEETS

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
PRECISE GRADING PLAN
41625 CAMINO DEL VINO, TEMECULA, CA

FOR: W.O. COUNTY FILE NO.

0 20 40 Feet

SCALE: 1"=20'

CONSTRUCTION NOTES	
No.	DESCRIPTION
1	CONST. PRODUCTION HOLDING TANK FOR NON-STORMWATER FLOWS
3	CONST. 4" GRAVEL PARKING/COMPACTED NATIVE SOILS
8	CONST. 6" CONCRETE CURB TYPE D PER COUNTY OF RIVERSIDE STD. No. 204.
11	CONST. AREA DRAIN PER DETAIL SHEET 2
12	CONST. TRAFFIC RATED DROP INLET PER DETAIL SHEET 2
13	CONST. TRAFFIC RATED 4" TRENCH DRAIN PER DETAIL SHEET 2
14	CONST. HARVEST & USE STORAGE TANK PER DETAIL SHEET 2
15	CONSTRUCT PVC SCHEDULE 40 DRAIN PIPE (SIZE PER PLAN) W/SOLVENT WELDED JOINTS.

SEE SHEET 4

N30°49'27"E 722.15'

PARCEL MAP NO. 18439

FND 1" IP W/PLASTIC PLUG RCE 26457 DOWN 2

EX. OUTLET (1389.0) INV

EX. INLET (1387.5) TG ~ (1384.0) INV

EXISTING 18" STORM DRAIN PROTECT IN PLACE

EXISTING STORM DRAIN PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

EX. INLET (1384.5) TG ~ (1381.0) INV

56' ACCESS OPENING

INLET 14 1396.48 INV

PIPE - 7 16.7' 12" PVC @ 5.12%

TEE 1 1408.79 INV

PIPE - 9 84.9' 12" PVC @ 14.50%

INLET 6 1409.64 INV

PIPE - 8 4.6' 4" @ 28.37%

INLET 13 1410.89 INV

INLET 7 2325.05 INV

PIPE - 16 19.9' 8" PVC @ 6.64%

VERTICAL BEND 1397.80 INV

PIPE - 17 121.6' 12" PVC @ 12.58%

PIPE - 15 31.3' 8" PVC @ 41.76%

INLET 18 1412.41 INV

HOLDING TANK INLET 1410.75 INV

HOLDING TANK LINE 42.8' 6" PVC @ 1.35%

PIPE - 21 111.5' 6" PVC @ 2.19%

PIPE - 6 66.0' 12" PVC @ 0.50%

TRENCH DRAIN OUTLET 1411.33 INV

Covered Patio Crush Pad

INLET 5 1409.97 INV

Production Bldg. FF=1413.90

PIPE - 14 32.9' 8" PVC @ 0.89%

INLET 12 1411.19 INV

PIPE - 20 88.8' 6" PVC @ 2.00%

PIPE - 5 47.9' 12" PVC @ 0.51%

INLET 8 1412.73 INV

PIPE - 13 33.7' 8" PVC @ 1.11%

INLET 17 1414.19 INV

INLET 4 1410.22 INV

INLET 11 1411.56 INV

PIPE - 12 52.7' 6" PVC @ 0.95%

PIPE - 4 40.6' 12" PVC @ 0.49%

Tasting Room FF=1413.90

PIPE - 3 11.4' 12" PVC @ 0.50%

WYE 1 1410.51 INV

INLET 3 1410.45 INV

PIPE - 11 37.4' 4" PVC @ 1.79%

INLET 10 1412.06 INV

Storage FF=1418.30

PIPE - 2 26.5' 4" PVC @ 8.64%

PIPE - 1 54.3' 12" PVC @ 0.50%

PIPE - 10 42.3' 6" PVC @ 0.95%

INLET 2 1412.80 INV

INLET 9 1412.46 INV

INLET 1 1410.78 INV

TANK INLET 2 1374.00 INV

INLET 15 1381.19 INV

TANK INLET 1 1375.16 INV

OVERFLOW PIPE 22.2' 12" PVC @ 14.42%

PIPE - 18 48.8' 12" PVC @ 7.56%

INLET 16 1377.50 INV

EXISTING INLET TO BE REMOVED

PIPE - 19 14.4' 12" PVC @ 16.21%

EX. INLET (1375.4) TG (1371.9) INV

EXISTING STORM DRAIN PROTECT IN PLACE

EXISTING STORM DRAIN PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

Camino Del Vino

SEE IP240015 'S FOR IMPROVEMENTS

PUBLIC STREET

EXISTING STD. 306 A.C. OVERSIDE DRAIN

PG BGR2400126

RG PERMIT 485651

BMP2400124

EX. INLET (1403.7) TG ~ (1400.7) INV

RELOCATE INLET AND EXTEND STORM DRAIN IN KIND 1414.5 TG ~ 1412.5 INV

EXISTING STORM DRAIN & INLET PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

EXISTING STORM DRAIN & INLET PROTECT IN PLACE OR REPLACE IN KIND AFTER GRADING

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BY: _____ DATE

MICHAEL L. BENESH, RCE 37893

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WDID# 9 33C407314 BFE

SEE SHEET 3

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ENGINEER COUNTY

SEAL-ENGINEER

REGISTERED PROFESSIONAL ENGINEER MICHAEL BENESH RCE 37893 CIVIL STATE OF CALIFORNIA

PREPARED BY:
ROBIN B. HAMERS & ASSOC., INC.
CIVIL ENGINEERS
234 E. 17TH STREET, SUITE 205
COSTA MESA, CALIFORNIA 92627
(949) 548-1192

MICHAEL BENESH, R.C.E. 37893 7/7/25 DATE

BENCHMARK:
RIV CO BM: T-10-81 ELEV: 1342.94 (NAVD88)
DESCRIPTION: 2-1/2" BRASS DISK IN CONC CYLINDER 2.9 MILES N/E ON DE PORTOLA RD FROM THE INT OF ANZA RD, 56' E OF C.L. DE PORTOLA RD, 1.5' N/W OF POLE (NO No.), 101' E OF PP (#2112481E), 7' N/E OF 1-1/2' TREE. FIBERGLASS WITNESS POST E OF MONUMENT.

SCALE:

IP 240015

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
STORM DRAIN PLAN
41625 CAMINO DEL VINO, TEMECULA, CA

FOR: W.O. COUNTY FILE NO.

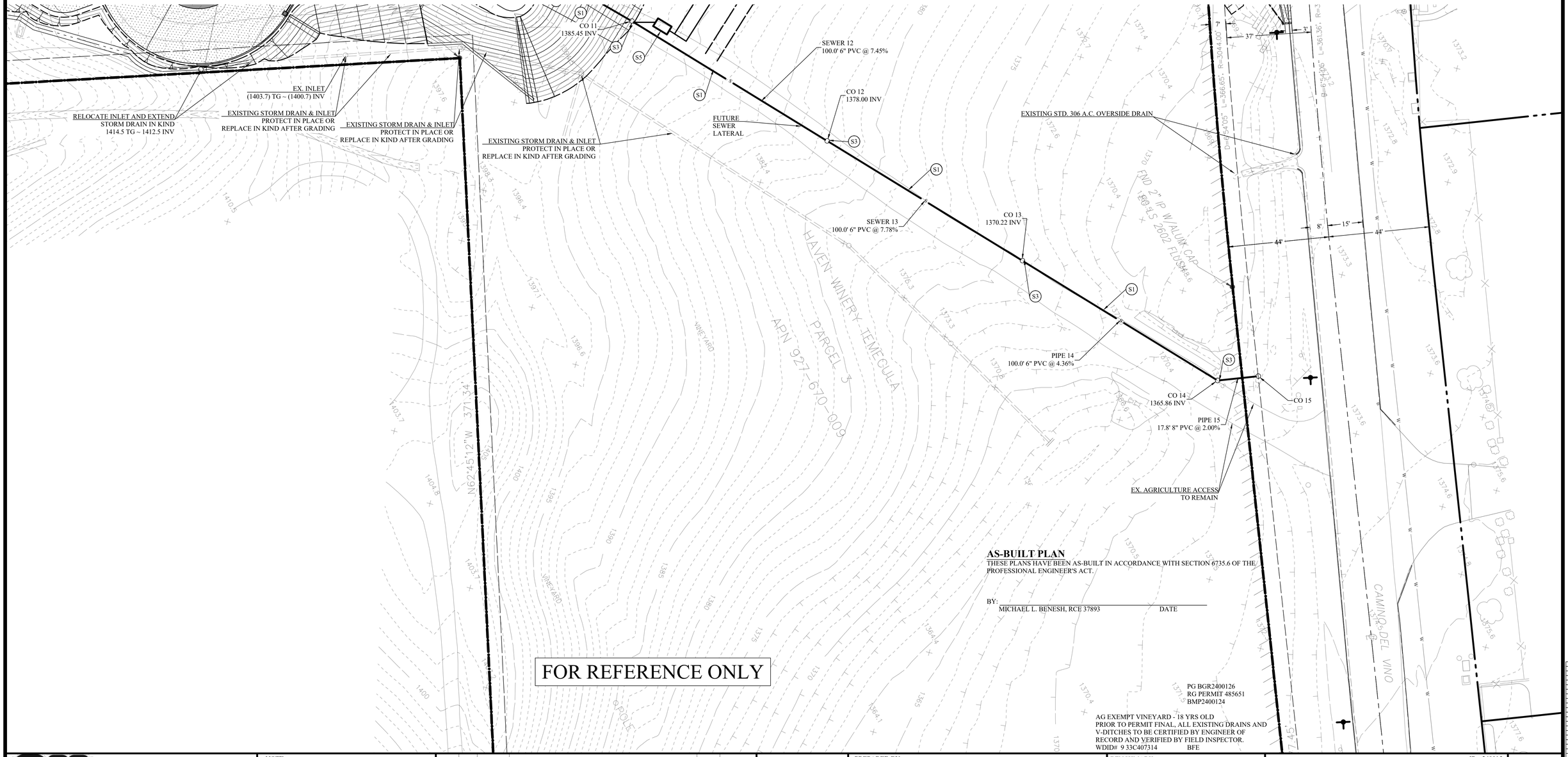
SHEET NO. 6 OF 9 SHEETS

0 20 40 Feet

SCALE: 1"=20'

CONSTRUCTION NOTES	
No.	DESCRIPTION
ON-SITE SEWER IMPROVEMENTS	
(S1)	CONSTRUCT 6" PVC SDR-35 SEWER PIPE
(S3)	CONSTRUCT 6" SEWER CLEANOUT
(S5)	CONSTRUCT 1,200 GALLON SEPTIC TANK & DISTRIBUTION BOX.

SEE SHEET 8



AS-BUILT PLAN

THESE PLANS HAVE BEEN AS-BUILT IN ACCORDANCE WITH SECTION 6735.6 OF THE PROFESSIONAL ENGINEER'S ACT.

BY: _____
MICHAEL L. BENESH, RCE 37893 DATE

FOR REFERENCE ONLY

PG BGR2400126
RG PERMIT 485651
BMP2400124

AG EXEMPT VINEYARD - 18 YRS OLD
PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.
WDID# 9 33C407314 BFE

811 Know what's below. Call before you dig.

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ENGINEER				COUNTY	

SEAL-ENGINEER

REGISTERED PROFESSIONAL ENGINEER · MICHAEL BENESH · RCE 37893 · CIVIL · STATE OF CALIFORNIA

PREPARED BY:
ROBIN B. HAMERS & ASSOC., INC.
CIVIL ENGINEERS
234 E. 17TH STREET, SUITE 205
COSTA MESA, CALIFORNIA 92627
(949) 548-1192

MICHAEL BENESH, R.C.E. 37893 7/7/25 DATE

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SCALE:

IP 240015

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
SEWER & WATER
41625 CAMINO DEL VINO, TEMECULA, CA

FOR: W.O. COUNTY FILE NO.

SHEET NO. 7 OF 9 SHEETS

1 2 3 4 INCHES

0 20 40 Feet

SCALE: 1"=20'

CONSTRUCTION NOTES

No.	DESCRIPTION
ON-SITE WATER IMPROVEMENTS	
W1	CONSTRUCT 3" PVC C-900 DR-14 DOMESTIC WATER MAIN W/RESTRAINED JOINTS PER RANCHO WATER STANDARD DRAWING RW-26B
W2	CONSTRUCT 3" FITTINGS W/HIGH DEFLECTION COUPLINGS
W3	CONSTRUCT 3" x 3" TEE
W4	CONSTRUCT 2" PVC SCHED 80 WATER SERVICE W/30" MINIMUM COVER AND SOLVENT WELDED JOINTS
ON-SITE SEWER IMPROVEMENTS	
S1	CONSTRUCT 6" PVC SDR-35 SEWER PIPE
S2	CONSTRUCT 4" PVC SDR-35 SEWER PIPE
S3	CONSTRUCT 6" SEWER CLEANOUT
S4	CONSTRUCT 4" SEWER CLEANOUT
S5	CONSTRUCT 1,500 GALLON SEPTIC TANK.
S6	CONSTRUCT GREASE TRAP (ENDURA 4075AS (75 GPM/559 LB)

PARCEL MAP NO. 18439
FND 1" IP W/PLASTIC PLUG
RCE 26457 DOWN 2

N30°49'27"E 722.15'

SEE SHEET 4

Storage
FF=1418.30

Tasting Room
FF=1413.90
SEWER 5
58.9' 6" PVC @ 2.00%

Covered Patio
Crush Pad
CO 2
1410.90 INV

Production Bldg.
FF=1413.90
SEWER 1
56.1' 4" PVC @ 2.00%

CO 5
1412.79 INV

CO 1
1409.78 INV

CO 3
1408.60 INV

SEWER 2
51.7' 6" PVC @ 2.00%

CO 10
1407.57 INV

SEWER 11
44.4' 6" PVC @ 38.89%

CO 11
1385.45 INV

SEWER 12
100.0' 6" PVC @ 7.45%

CO 12
1378.00 INV

EX. OUTLET
(1389.0) INV

EX. INLET
(1387.5) TG ~ (1384.0) INV

EXISTING 18" STORM DRAIN
PROTECT IN PLACE

EXISTING STORM DRAIN
PROTECT IN PLACE OR
REPLACE IN KIND AFTER GRADING

EX. INLET
(1384.5) TG ~ (1381.0) INV

56' ACCESS OPENING

SEE FIRE PRIVATE UNDERGROUND
PLAN FOR SPRINKLER SERVICE

EXISTING INLET
TO BE REMOVED

EX. INLET
(1375.4) TG
(1371.9) INV

EXISTING STORM DRAIN
PROTECT IN PLACE

EXISTING STORM DRAIN
PROTECT IN PLACE OR
REPLACE IN KIND AFTER GRADING

SEE FIRE PRIVATE UNDERGROUND
PLAN FOR SPRINKLER SERVICE

PRIMARY LEACH LINES

RESERVE LEACH LINES

FUTURE
SEWER
LATERAL

EX. INLET
(1403.7) TG ~ (1400.7) INV

RELOCATE INLET AND EXTEND
STORM DRAIN IN KIND
1414.5 TG ~ 1412.5 INV

EXISTING STORM DRAIN & INLET
PROTECT IN PLACE OR
REPLACE IN KIND AFTER GRADING

EXISTING STORM DRAIN & INLET
PROTECT IN PLACE OR
REPLACE IN KIND AFTER GRADING

EXISTING STORM DRAIN & INLET
PROTECT IN PLACE OR
REPLACE IN KIND AFTER GRADING

EXISTING STD. 306 A.C. OVERSIDE DRAIN
PG BGR2400126
RG PERMIT 485651
BMP2400124

Camino Del Vino
PUBLIC STREET
SEE IP240015 FOR IMPROVEMENTS

AS-BUILT PLAN
THESE PLANS HAVE BEEN AS-BUILT IN ACCORDANCE WITH SECTION 6735.6 OF THE PROFESSIONAL ENGINEER'S ACT.

BY: _____
MICHAEL L. BENESH, RCE 37893 DATE

FOR REFERENCE ONLY

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SEE SHEET 7

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ENGINEER COUNTY

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER
MICHAEL BENESH
RCE 37893
CIVIL
STATE OF CALIFORNIA

PREPARED BY:
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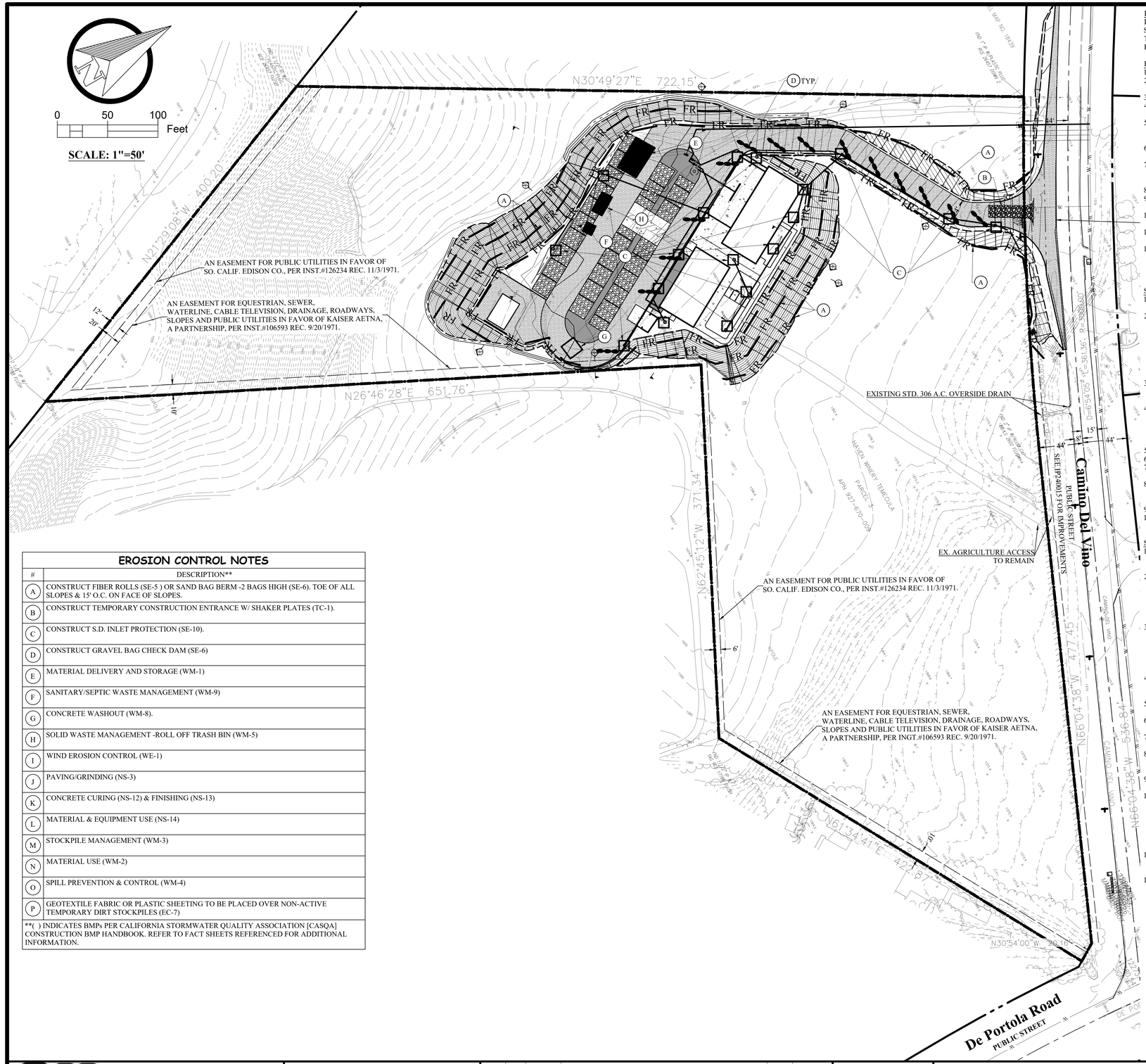
SCALE:

IP 240015

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
SEWER & WATER
41625 CAMINO DEL VINO, TEMECULA, CA

SHEET NO. 8 OF 9 SHEETS

FOR: W.O. COUNTY FILE NO.



EROSION CONTROL NOTES

#	DESCRIPTION**
A	CONSTRUCT FIBER ROLLS (SE-5) OR SAND BAG BERM -2 BAGS HIGH (SE-6). TOE OF ALL SLOPES & 15' O.C. ON FACE OF SLOPES.
B	CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE W/ SHAKER PLATES (TC-1).
C	CONSTRUCT S.D. INLET PROTECTION (SE-10).
D	CONSTRUCT GRAVEL BAG CHECK DAM (SE-6)
E	MATERIAL DELIVERY AND STORAGE (WM-1)
F	SANITARY/SEPTIC WASTE MANAGEMENT (WM-9)
G	CONCRETE WASHOUT (WM-8).
H	SOLID WASTE MANAGEMENT -ROLL OFF TRASH BIN (WM-5)
I	WIND EROSION CONTROL (WE-1)
J	PAVING/GRINDING (NS-3)
K	CONCRETE CURING (NS-12) & FINISHING (NS-13)
L	MATERIAL & EQUIPMENT USE (NS-14)
M	STOCKPILE MANAGEMENT (WM-3)
N	MATERIAL USE (WM-2)
O	SPILL PREVENTION & CONTROL (WM-4)
P	GEOTEXTILE FABRIC OR PLASTIC SHEETING TO BE PLACED OVER NON-ACTIVE TEMPORARY DIRT STOCKPILES (EC-7)

**( ) INDICATES BMPs PER CALIFORNIA STORMWATER QUALITY ASSOCIATION [CASQA] CONSTRUCTION BMP HANDBOOK. REFER TO FACT SHEETS REFERENCED FOR ADDITIONAL INFORMATION.

EROSION CONTROL

INCLUDED ON THESE SHEETS FOR EROSION CONTROL ARE GENERAL NOTES, STANDARDS AND GUIDELINES FOR THE IMPLEMENTATION OF EROSION, SILTATION AND SEDIMENT CONTROL AND OTHER BEST MANAGEMENT PRACTICES (BMPS) PROPOSED FOR THIS PROJECT. HOWEVER, THE OVERALL GOAL IS THAT ANY WATER THAT LEAVES THE SITE BE FREE AND CLEAR OF POLLUTANTS AT A RATE THAT DOESN'T CAUSE DOWN STREAM EROSION. ADDITIONAL BMPS MAY BE REQUIRED AT ANY TIME TO ACHIEVE THAT GOAL.

EROSION CONTROL NOTES:

1. IN THE CASE EMERGENCY WORK IS REQUIRED, CONTACT _____ AT PHONE NUMBER _____ .
2. ALL BUILDING PADS TO BE DIKED AND THE DIKES MAINTAINED TO PREVENT WATER FROM FLOWING FROM THE PAD UNTIL THE STREETS AND DRIVEWAYS ARE PAVED AND WATER CAN FLOW FROM THE PADS WITHOUT CAUSING EROSION.
3. TOPS OF ALL SLOPES TO BE DIKED OR TRENCHED TO PREVENT WATER FROM FLOWING OVER THE CREST OF SLOPES.
4. MANUFACTURED SLOPES AND PADS SHALL BE ROUNDED VERTICALLY AND HORIZONTALLY AS APPROPRIATE TO BLEND WITH THE SURROUNDING TOPOGRAPHY.
5. AS SOON AS CUTS OR EMBANKMENTS ARE COMPLETED, BUT NOT LATER THAN OCTOBER 1, ALL CUT AND FILL SLOPES SHALL BE STABILIZED WITH A HYDROMULCH MIXTURE OR AN EQUAL TREATMENT APPROVED BY THE CITY OF DANA POINT BETWEEN OCTOBER 1 AND APRIL 30. APPROVED SLOPE PROTECTION MEASURES SHALL PROCEED IMMEDIATELY BEHIND THE EXPOSURE OF CUT SLOPES AND/OR THE CREATION OF EMBANKMENT SLOPES.
6. SAND OR GRAVEL BAG CHECK DAMS TO BE PLACED IN UNPAVED STREETS WITH GRADIENTS IN EXCESS OF 2% AND ON OR IN OTHER GRADED OR EXCAVATED AREAS.
7. THE DEVELOPER TO MAINTAIN THE PLANTING AND EROSION AND SEDIMENTATION CONTROL MEASURES DESCRIBED ABOVE. THE DEVELOPER TO REMOVE ALL SOIL INTERCEPTED BY THE SAND/GRAVEL BAGS, CATCH BASINS AND THE DESILTING BASINS AND OTHER BMPS, AND KEEP THESE FACILITIES CLEAN AND FREE OF SILT AND SAND. THE DEVELOPER SHALL REPAIR ANY ERODED SLOPES.
8. BMPS SHOWN ON PLANS SHALL BE MOVED OR MODIFIED AS NEEDED TO ENSURE THAT ON-SITE SEDIMENT IS NOT TRANSPORTED OFF SITE.
9. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATERS CREATE A HAZARDOUS CONDITION.
10. ALL GRAVEL BAGS SHALL BE BURLAP TYPE WITH ¾ INCH MINIMUM AGGREGATE, CLEAN AND FREE OF CLAY, ORGANIC MATTER AND OTHER DELETERIOUS MATERIAL.
11. SHOULD GERMINATION OF HYDROSEEDED SLOPES FAIL TO PROVIDE EFFECTIVE COVERAGE (90%) OF GRADED SLOPES PRIOR TO NOVEMBER 15, THE SLOPES SHALL BE STABILIZED BY PUNCH STRAW.
12. PERMITTEE MAY DISCHARGE MATERIAL OTHER THAN STORMWATER ONLY WHEN NECESSARY FOR PERFORMANCE AND COMPLETION OF CONSTRUCTION PRACTICES AND WHERE THEY DO NOT: CAUSE OR CONTRIBUTE TO A VIOLATION OF ANY WATER QUALITY STANDARD; CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR NUISANCE; OR CONTAIN A HAZARDOUS SUBSTANCE IN A QUANTITY REPORTABLE UNDER FEDERAL REGULATIONS 40 CFR PARTS 117 AND 302.

SILTATION AND SEDIMENT CONTROL MEASURES:

1. SEWER OR STORM DRAIN TRENCHES THAT ARE CUT THROUGH BASIN DIKES OR BASIN INLET DIKES SHOULD BE PLUGGED WITH SANDBAGS FROM TOP OF PIPE TO TOP OF DIKE.
2. ALL UTILITY TRENCHES SHALL BE BLOCKED AT THE PRESCRIBED INTERVALS WITH A DOUBLE ROW OF SANDBAGS WITH A TOP ELEVATION TWO SANDBAGS BELOW THE GRADED SURFACE OF THE STREET. SANDBAGS ARE TO BE PLACED WITH LAPPED COURSES. THE INTERVALS PRESCRIBED BETWEEN SANDBAG BLOCKING SHALL DEPEND ON THE SLOPE OF THE GROUND SURFACE BUT NOT TO EXCEED THE FOLLOWING:

GRADE OF THE STREET	INTERVAL
LESS THAN 2%	AS REQUIRED
2% TO 4%	100 FEET
4% TO 10%	50 FEET
OVER 10%	25 FEET

3. AFTER SEWER UTILITY TRENCHES ARE BACKFILLED AND COMPACTED, THE SURFACES OVER SUCH TRENCHES SHALL BE MOUNDED SLIGHTLY TO PREVENT CHANNELING OF WATER IN THE TRENCH AREA. CARE SHOULD BE EXERCISED TO PROVIDE FOR CROSS FLOW AT FREQUENT INTERVALS WHERE TRENCHES ARE NOT ON FEE CENTERLINE OF A CROWNED STREET.
4. PROVIDE VELOCITY CHECK DAMS IN ALL UNPAVED GRADED CHANNELS AT THE INTERVALS INDICATED BELOW:

GRADE OF CHANNEL	INTERVALS BETWEEN CHECK DAMS
LESS THAN 3%	100 FEET
3% TO 6%	50 FEET
OVER 6%	25 FEET

5. PROVIDE EFFECTIVE INLET PROTECTION BY EVERY STORM DRAIN INLET TO PREVENT SEDIMENT FROM ENTERING DRAIN SYSTEM.
6. SAND/GRAVEL BAGS AND FILL MATERIAL, AND OTHER BMP MATERIALS SHALL BE STOCKPILED AT INTERVALS, READY FOR USE WHEN REQUIRED.
7. ALL EROSION AND SEDIMENTATION CONTROL DEVICES WITHIN THE DEVELOPMENT SHOULD BE MAINTAINED DURING AND AFTER EVERY RUNOFF PRODUCING STORM, IF POSSIBLE, MAINTENANCE CREWS WOULD BE REQUIRED TO HAVE ACCESS TO ALL AREAS.
8. PROVIDE ROCK RIPRAP ON CURVES AND STEEP DROPS IN ALL EROSION PRONE DRAINAGE CHANNELS DOWNSTREAM FROM THE DEVELOPMENT. THIS PROTECTION WOULD REDUCE EROSION CAUSED BY THE INCREASED FLOW THAT MAY BE ANTICIPATED FROM DENUDED SLOPES, OR FROM IMPERVIOUS SURFACES.
9. ANY PROPOSED ALTERNATE CONTROL MEASURES MUST BE APPROVED.
10. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IMPLEMENTED AS NECESSARY TO ENSURE THAT ON-SITE SEDIMENT IS NOT TRANSPORTED OFF SITE.

STORMWATER PROTECTION NOTES:

1. DURING THE RAINY SEASON, THE AMOUNT OF EXPOSED SOIL ALLOWED AT ONE TIME SHALL NOT EXCEED THAT WHICH CAN BE ADEQUATELY PROTECTED BY THE PROPERTY OWNER IN THE EVENT OF A RAINSTORM. 125% OF ALL SUPPLIES NEEDED FOR BMP MEASURES SHALL BE RETAINED ON THE JOB SITE IN A MANNER THAT ALLOWS FULL DEPLOYMENT AND COMPLETE INSTALLATION IN 48 HOURS OR LESS OF A FORECAST RAIN.
2. THE PROPERTY OWNER IS OBLIGATED TO ENSURE COMPLIANCE WITH ALL APPLICABLE STORMWATER REGULATIONS AT ALL TIMES. THE BMPS (BEST MANAGEMENT PRACTICES) THAT HAVE BEEN INCORPORATED INTO THIS PLAN SHALL BE IMPLEMENTED AND MAINTAINED TO EFFECTIVELY PREVENT THE POTENTIALLY NEGATIVE IMPACTS ON THIS PROJECT'S CONSTRUCTION ACTIVITIES ON STORMWATER QUALITY. THE INSTALLATION AND MAINTENANCE OF THE BMPS IS THE PERMITTEE'S RESPONSIBILITY, AND FAILURE TO PROPERLY INSTALL OR MAINTAIN THE BMPS MAY RESULT IN ENFORCEMENT ACTION BY THE COUNTY OF RIVERSIDE OR OTHERS. IF INSTALLED BMPS FAIL, THEY MUST BE REPAIRED OR REPLACED WITH AN ACCEPTABLE ALTERNATE WITHIN 24 HOURS, OR AS SOON AS SAFE TO DO SO.
3. A NOTICE OF INTENT (NOI) HAS BEEN, OR WILL BE FILED WITH THE STATE WATER RESOURCES CONTROL BOARD (SWRCB) AND A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN OR WILL BE PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF CALIFORNIA GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY (PERMIT NO. CAS000002) FOR ALL OPERATIONS ASSOCIATED WITH THESE PLANS. THE WASTE DISCHARGE IDENTIFICATION (WDID) NUMBER ASSIGNED BY SWRCB FOR THIS PROJECT IS [WDID##] [ALTERNATIVE: NOT YET ASSIGNED, BUT WILL BE PROVIDED BEFORE A PERMIT IS ISSUED], THE PERMITTEE SHALL KEEP A COPY OF AN UP-TO-DATE SWPPP ON SITE AND AVAILABLE FOR REVIEW BY COUNTY.
4. FLAT AREAS OF LESS THAN 5% (LIKE BUILDING PADS, PARKING AREAS, LEACH FIELDS) SHALL HAVE 100% PROTECTION USING GEOTEXTILES, MATS (SS-7 OR ESC20), OR OTHER MATERIAL FOR STABILIZING SLOPES, OR USING TRACKING AND SOIL STABILIZERS/BINDERS (SS-5), TEMPORARY SEEDING (SS-4), MULCH/WOOD CHIPS (SS-3, SS-5, SS-8), OR JUTE MATTING (SS-7).
5. STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO MINIMIZE SEDIMENT TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TRACKING, OR WIND.
6. APPROPRIATE BMPS FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS OR RESIDUES SHALL BE IMPLEMENTED TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTY BY WIND, VEHICLE TRACKING OR RUNOFF.
7. RUNOFF FROM EQUIPMENT AND VEHICLE WASHING SHALL BE CONTAINED ON CONSTRUCTION SITES UNLESS TREATED TO REMOVE SEDIMENT AND OTHER POLLUTANTS.
8. ALL CONSTRUCTION CONTRACTOR AND SUBCONTRACTOR PERSONNEL, MATERIAL SUPPLIERS, LESSOR AND THE PROPERTY OWNER ARE TO BE MADE AWARE OF THE REQUIRED BEST MANAGEMENT PRACTICES AND GOOD HOUSEKEEPING MEASURES FOR THE PROJECT SITE AND ANY ASSOCIATED CONSTRUCTION STAGING AREAS.
9. AT THE END OF EACH DAY OF CONSTRUCTION ACTIVITY, ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND PROPERTY DISPOSED IN TRASH OR RECYCLE BINS.
10. POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS; WASTE FROM PAINTS, STAINS, SEALANTS, GLUES, LIME, PESTICIDES, HERBICIDES, WOOD PRESERVATIVES AND SOLVENTS, ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS, LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; CONCRETE, DETERGENT OR FLOATABLE WASTES; WASTES FROM ANY ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING; AND SUPERCHLORINATED POTABLE WATER LINE FLUSHINGS. PERMITTEE SHALL MAINTAIN CONSTRUCTION SITE IN SUCH A CONDITION THAT POLLUTANTS ARE NOT CARRIED OFF THE SITE. DURING CONSTRUCTION, DISPOSAL OF SUCH MATERIALS SHOULD OCCUR IN A SPECIFIED AND CONTROLLED TEMPORARY AREA ON-SITE PHYSICALLY SEPARATED FROM POTENTIAL STORMWATER RUNOFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
11. DEWATERING OF CONTAMINATED GROUNDWATER, OR DISCHARGING CONTAMINATED SOILS VIA SURFACE EROSION IS PROHIBITED. DEWATERING OF NON-CONTAMINATED GROUNDWATER REQUIRES A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE RESPECTIVE STATE REGIONAL WATER QUALITY CONTROL BOARD.
12. CATCH BASINS SHALL BE MARKED WITH A STENCIL, CONCRETE STAMP, OR CERAMIC TILE TO INDICATE THAT NO DUMPING IS ALLOWED IN THE STORM DRAINAGE FACILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE COUNTY ON THE METHOD, TYPE OF MARKING, AND PLACEMENT OF THE STORM DRAIN MARKINGS. STENCILING OR LABELING MAY ALSO BE REQUIRED IN SPANISH.

PG BGR2400126
RG PERMIT 485651
BMP2400124
BWL

AG EXEMPT VINEYARD - 18 YRS OLD
PRIOR TO PERMIT FINAL, ALL EXISTING DRAINS AND V-DITCHES TO BE CERTIFIED BY ENGINEER OF RECORD AND VERIFIED BY FIELD INSPECTOR.
WDID#: BFE

811 Know what's below. Call before you dig.

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MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER | COUNTY

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER MICHAEL BENESH RCE 37893 CIVIL STATE OF CALIFORNIA

PREPARED BY:
ROBIN B. HAMERS & ASSOC., INC.
CIVIL ENGINEERS
234 E. 17TH STREET, SUITE 205
COSTA MESA, CALIFORNIA 92627
(949) 548-1192

MICHAEL BENESH, R.C.E. 37893 — 7/7/25 DATE

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FIBERGLASS WITNESS POST E OF MONUMENT.

SCALE:

IP 240015

COUNTY OF RIVERSIDE
HAVEN VINEYARDS
PRECISE GRADING & DRAINAGE PLAN
EROSION CONTROL PLAN
41625 CAMINO DEL VINO, TEMECULA, CA

SHEET NO. 9 OF 9 SHEETS

FOR: | W.O. | COUNTY FILE NO.

INCHES 0 1 2 3 4

Appendix 3: Soils Information

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

Examples of material to provide in Appendix 3 may include but are not limited to the following:

- Geotechnical Study/Report prepared for the project,
- Additional soils testing data (if not included in the Geotechnical Study),
- Exhibits/Maps/Other Documentation of the Hydrologic Soils Groups (HSG)s at the project site.

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections A and D of this Template.

The County will accept explicit recommendations from the Geotechnical Engineer, such as specifying a design infiltration rate (unfactored) when infiltration rates vary, recommendations for impermeable liners due to concerns about seepage in fill areas/near gas tanks, or other site specific recommendations based on physical conditions.

CW Soils prepared a preliminary geotechnical report dated July 8, 2019 on the project. The report is included on the following pages.

The soils engineer performed Percolation Tests on the site. The table below converts the Percolation Rate Test Results to Infiltration Rates for the site.

Haven Wineries
Porchet Method Percolation Test Conversion
Percolation Test from DGS Report Dated 6/2/22

$I = \Delta H(60r)/(\Delta T(r+2H_{AVG}))$ r=4"

Test Hole	r	ΔT	Ho	Hf	ΔH	H_{AVG}	I
	INCHES	MINUTES	INCHES	INCHES	INCHES	INCHES	IN/HR
PB1	4	30	6	0.25	5.75	3.125	4.49
PB2	4	10	6	3.125	2.875	4.5625	5.26
PB3	4	30	6	0.125	5.875	3.0625	4.64
PB4	4	30	6	1.875	4.125	3.9375	2.78

February 29, 2024 Project No. 22061-10

Mr. Rick Neugebauer
RTN DEVELOPMENT, INC.
27555 Ynez Road, Suite 208
Temecula, CA 92590

Subject: **Alternative Onsite Wastewater Treatment System Recommendations, Proposed Haven Vineyards, Assessor's Parcel Number 927-670-009, Camino Del Vino, Temecula Area, Riverside County, California**

Reference: Dynamic Geotechnical Solutions, 2022, *Onsite Wastewater Treatment System Investigation Report for the Proposed Haven Vineyard Development, APN 927-670-009, Located on Camino Del Vino, City of Temecula, Riverside County, California*, dated June 2, 2022.

In accordance with your request, CW Soils is pleased to present this alternative design for an onsite wastewater treatment system (OWTS) for the proposed Haven Vineyards Winery, Assessor's Parcel Number 927-670-009, located at 41625 Camino Del Vino in the Temecula area of Riverside County, California. We have provided guidelines for the design of an Advanced Treatment Unit (ATU) for onsite wastewater treatment. This evaluation is intended to provide adequate data to satisfy the County of Riverside, Community Health Agency, Department of Environmental Health guidelines.

SITE DESCRIPTION

The subject property consists of slightly hilly terrain. Topographic relief at the subject property is low to moderate. Elevations within a majority of the project area range from approximately 1,450 to 1,370 feet above mean sea level (msl), for a difference of about 80± feet.

PROPOSED DEVELOPMENT

Based on information provided by you, the proposed winery development includes a wine tasting room and production building, complete with onsite wastewater treatment.

SUBSURFACE EXPLORATION AND PERCOLATION TESTING

SUBSURFACE EXPLORATION

As indicated in the referenced report (DGS, 2022), the subsurface exploration consisted of one (1) deep exploratory test hole to a depth of 15 feet, conducted on May 4, 2022. The deep exploratory test hole was excavated to interpret whether groundwater or impermeable soil layers were present. Soils encountered within the deep exploratory test hole were classified and logged using the guidelines of ASTM 2487. The approximate location of the deep exploratory test hole and percolation test locations are shown on Plate 1- Percolation Location Map. The exploratory log can be found in Appendix A.

PERCOLATION TESTING

As indicated in the referenced report (DGS, 2022), a total of four (4) percolation tests were conducted on May 5, 2022 to evaluate the feasibility of utilizing leach fields for onsite wastewater treatment. The percolation tests were performed in general accordance with the reviewing agency guidelines.

The final percolation test readings are summarized in the following table and the test data recorded in the field can be found in Appendix B.

PERCOLATION TEST SUMMARY

TEST NUMBER	TEST HOLE DIAMETER (in)	HOLE DEPTH (ft)	FIELD PERCOLATION RATE (mpi)	*DESIGN PERCOLATION RATE (mpi)	SOIL DESCRIPTION
P-1 (DGS, 2022)	8	4	5	9	Poorly Graded SAND (SP)
P-2 (DGS, 2022)	8	4	4	6	Poorly Graded SAND (SP)
P-3 (DGS, 2022)	8	4	5	9	Poorly Graded SAND (SP)
P-4 (DGS, 2022)	8	4	7	13	Poorly Graded SAND (SP)

* A gravel factor was applied by (DGS, 2022) to determine the design rate.

FINDINGS

SOILS

A general description of the soils observed is provided below:

- Quaternary Pauba Formation (Qpfs): Pauba Formation was encountered from near the surface to the full depth of exploration, 15 feet. These materials consisted of silty SAND and poorly graded SAND which were various shades of brown, dry to damp, loose to medium dense, very fine to fine grained with medium grains and trace coarse grains, and micaceous (DGS, 2022).

GROUNDWATER

Groundwater was not observed during exploration of B-1, excavated to a depth of 15 feet.

PERCOLATION TEST RESULTS

Based on the final measured percolation test design rate of 13 minutes per inch (mpi), an equilibrium saturated hydraulic conductivity of 1.0 gallons per square foot per day was used for subsurface effluent dispersal system design, see Table 1 below.

TABLE 1

Geoflow Application Guidelines for Secondary Treated Effluent

SOIL TYPE	ESTIMATED SOIL PERCOLATION RATE (min/in)	HYDRAULIC CONDUCTIVITY (in/hr)	DESIGN HYDRAULIC LOADING RATE (gal/sf-day)	TOTAL AREA REQUIRED (sf/100 gal/day)
Coarse Sand	<5	>2	1.4	72
Fine Sand	5-10	1.5 - 2	1.2	83
Sandy Loam	10-20	1.0 - 1.5	1.0	100
Loam	20-30	0.75 - 1.0	0.7	143
Clay Loam	30-45	0.5 - 0.75	0.6	167
Silt - Clay Loam	45-60	0.3 - 0.5	0.4	250
Clay - non-swell	60-90	0.2- 0.3	0.2	500
Clay-swell	90 - 120	0.1 - 0.2	0.1	1,000
Poor Clay	> 120	< 0.1	0.075	1,334

Source: Geoflow Wastewater Design, Installation and Installation Guidelines

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

Based on the data presented in this report and using the recommendations herein, it is the judgment of this professional that there is sufficient area on the lot to support a primary and expansion OWTS that will meet the current standards of the Department of Environmental Health and the Regional Water Quality Control Board (RWQCB).

The onsite wastewater system herein is designed to be permanent. However, it should be noted that the proposed septic system will likely be temporary, since it is our understanding that Phase II of the De Portola sewer system is planned to be expanded into the subject property area by EMWD.

Based on the data presented in this report and the testing information accumulated, it is the judgment of this professional that the groundwater table will not encroach within the current allowable limit set forth by County and State requirements, since an advanced shallow system is recommended.

SEWAGE DISPOSAL DESIGN RECOMMENDATIONS

The proposed advanced sewage disposal system should consist of a Norweco® Singulair® TNT (Total Nitrogen Treatment System) unit of the manufacture's subsurface drip disposal system. Areas for both a primary system and a 100 percent expansion system are required. The following are descriptions of the general design and construction of the wastewater treatment system. Any design aspects not addressed herein should adhere to the Norweco® Singulair® manufacture's subsurface drip disposal system design recommendations.

Septic Tank Capacity: The fixture count totaled 48 units for the proposed improvements. Additionally, calculations based on the California Plumbing Code Appendix H Table 201.1(2), yielded a septic tank capacity of 2,250 gallons. In order to accomplish this, one (1) 1,500 gallon per day system, which is equivalent to 3,400 total gallons, may be utilized. The wine production portion of the project is under a separate permit and is not part of this OWTS.

Allowable Design Percolation Rate: To determine the approximate square footage of each drip dispersal zone, the individual percolation rate test for each area that meet the requirements may be used as a guideline.

Primary System: The proposed system is a 1,500 gallons per day system, with two (2) drip dispersal zones composed of subsurface drip lines.

The minimum drip field absorption area is based upon an equivalent 3,400 gallon capacity and the percolation rate of the proposed drip dispersal zone areas. The dimensions for individual drip dispersal zone areas are based on the Norweco® Singulair® manufacture's subsurface drip disposal system design recommendations.

Spacing, Depth, and Minimum Soil Cover: For drip dispersal zones with a 20 percent slope, a minimum soil cover of 9 inches, but no greater than 12 inches, over the drip lines is required. The maximum emitter longitudinal spacing shall be 2 feet and the maximum spacing between adjacent emitter lines, in an absorption bed configuration, shall be 2 feet.

NUMBER OF DRIP DISPERSAL ZONES: 2							
DESIGN RATE (mpi)	SOIL LOADING RATE GALLONS /FT²/DAY	MIN SQUARE FEET	MIN LINEAR FEET	MIN LINEAR FEET OF DRIP TUBING	NO. OF EMITTERS PER ZONE	NO. OF LATERALS	LENGTH OF EACH DRIP LATERAL LINE FEET
13	1.0	1500	750	375	188	4	94
13	1.0	1500	750	375	188	4	94

100 Percent Expansion System: Sufficient area must be set aside for future construction of a backup system of equal size in the event the primary system fails. The area required for the 100 percent expansion system is equal to that of the primary system area.

ADDITIONAL DESIGN CONSIDERATIONS AND RECOMMENDATIONS

In order to encourage the maximum effectiveness through evaporation and transpiration, the lines should be installed at the recommended depth and as close to the ground surface as possible. Drip dispersal emitter lines shall be designed as a continuous loop circuit with no dead ends. Vacuum release valves shall be installed at the highpoint of the emitter lines. Drip dispersal systems shall be time dosed over a 24 hour period. Demand control doing shall override timed dosing in periods of flow where timed dosing cannot accommodate the excessive flow. All drip dispersal systems shall incorporate a mechanism for backwashing or flushing the drip lines and filters.

The drip dispersal system shall be designed, located and maintained to reduce orifice clogging and root intrusion. The drip dispersal system shall be designed, located and maintained to prevent vehicular traffic over it. In the event that future access to the 100 percent expansion area is compromised by development (i.e., garden walls, etc.), consideration should be given to constructing the expansion system at the same time as the primary system. If the systems are not constructed concurrently, consideration should be given to accessibility of the 100 percent expansion area after all site improvements are constructed.

The excavations should be observed by the soils engineering consultant during the excavation and prior to construction of the wastewater treatment system. The site observations are to verify the design assumptions and the suitability of the exposed soils. Revisions or modifications may be required if unforeseen conditions are exposed during construction, such as any relatively impermeable layers. Revisions may consist of adding additional lines or a redesign of the system that better conforms to the site conditions.

The leach field areas should not be used for horse corrals or other similar uses that would compact the soils. The ground surface over the disposal areas should be planted with appropriate vegetation to allow for the uptake of nutrients from the wastewater.

Property owners should be aware that the proper use and maintenance are vital to extending the effective life of sewage disposal systems. Properly maintained sewage disposal systems can function for many years. However, a rest period of roughly 10 to 15 years is generally needed to promote bacterial decay and provide the area a chance to dry out. After being provided a resting period, the primary system can often be reactivated and alternated with the 100 percent expansion system.

PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of **RTN DEVELOPMENT, INC.** and their authorized representative. It is unlikely to contain sufficient information for other parties or other uses. CW Soils should be provided the opportunity to review the final design plans and specifications prior to construction, in order to verify that the recommendations have been properly incorporated into the project plans and specifications. If CW Soils is not accorded the opportunity to review the project plans and specifications, we are not responsibility for misinterpretation of our recommendations.

We recommend that CW Soils be retained to provide soils engineering and engineering geologic services during the grading and foundation excavation phases of work, in order to allow for design changes in the event that the subsurface conditions differ from those anticipated prior to construction.

CW Soils should review any changes in the project and modify the conclusions and recommendations of this report in writing. This report along with the drawings contained within are intended for design input purposes only and are not intended to act as construction drawings or specifications. In the event that conditions during grading or construction operations appear to differ from those indicated in this report, our office should be notified immediately, as appropriate revisions may be required.

REPORT LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists, practicing at the time and location this report was prepared. No warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Soils vary in type, strength, and other engineering properties between points of observation and exploration. Groundwater and moisture conditions can also vary due to natural processes or the works of man on this or adjacent properties. As a result, we do not and cannot have complete knowledge of the subsurface conditions beneath the proposed project. No practical study can completely eliminate uncertainty with regard to the anticipated geologic and soils engineering conditions in connection with a proposed project. The conclusions

and recommendations within this report are based upon the findings at the points of observation and are subject to confirmation by CW Soils based on the conditions revealed during grading and construction operations.

This report was prepared with the understanding that it is the responsibility of the owner, to ensure that the conclusions and recommendations contained herein are brought to the attention of the other project consultants and are incorporated into the plans and specifications. The owners' contractor should implement the recommendations in this report and notify the owner as well as our office if they consider any of the recommendations presented herein to be unsafe or unsuitable.

Respectfully submitted,

CW Soils



Chad E. Welke, CEG 2378
President

I, Chad E. Welke, am duly registered in the State of California and hereby attest that I have personally prepared this report, assume full professional responsibility for its validity, and for any errors or omissions herein.

Distribution: (1) Addressee (email)

Attachments: Appendix A – Referenced Percolation Report *(Rear of Text)*
Appendix B – Percolation Test Results *(Rear of Text)*
Plate 1 – Percolation Location Map *(Rear of Text)*

APPENDIX A

REFERENCED PERCOLATION REPORT

DYNAMIC GEOTECHNICAL SOLUTIONS

Geotechnical • Environmental • Materials Testing

ONSITE WASTEWATER TREATMENT SYSTEM INVESTIGATION REPORT FOR THE PROPOSED HAVEN VINEYARD DEVELOPMENT, APN 927-670-009, LOCATED ON CAMINO DEL VINO, CITY OF TEMECULA, RIVERSIDE COUNTY, CALIFORNIA

Dated: June 2, 2022
Project No. D21-1119-20

Prepared For:

HAMEL CONTRACTING, INC.
26431 Jefferson Avenue, Suite A
Murrieta, California 92562

27570 Commerce Center Dr., #128, Temecula, California 92590
Phone: (951) 297-2450 • Fax: (951) 719-2998

June 2, 2022 Project No. D21-1119-20

HAMEL CONTRACTING, INC.
26431 Jefferson Avenue, Suite A
Murrieta, California 92562

Subject: ***Onsite Wastewater Treatment System Investigation Report for the Proposed Haven Vineyard Development, APN 927-670-009, Located on Camino del Vino, City of Temecula, Riverside County, California.***

1.0 INTRODUCTION

Dynamic Geotechnical Solutions (DGS) is pleased to present this onsite wastewater treatment system investigation report for the proposed Haven Vineyard development, APN 927-670-009, located on Camino Del Vino, City of Temecula, Riverside County, California. The purpose of our study was to determine the preliminary percolation rates and physical characteristics of the subsurface soils existing within the subject property, per the requirements of the Riverside County Regional Water Quality Control Board (RCRWQCB) for Onsite Wastewater Treatment Systems (OWTS).

2.0 PROPERTY LOCATION AND DESCRIPTION

The subject site is rectangular in shape and is located on Camino Del Vino. The site is bounded on the north by Camino Del Vino, on the west is a single-family residence, on the east are two commercial developments (bed and breakfast and a winery), and on the south by a vacant parcel. The general location and configuration of the site is shown on the Site Location Map (Figure 1).

The subject site is currently vacant and consists of grapevines. Onsite surface elevations range from approximately 1,540 feet above mean sea level (msl) at the south easterly property line to approximately 1,370 feet above (msl) at the north westerly property line. Surface drainage appears to flow from the southeast to the northwest across the property.

3.0 PROPOSED CONSTRUCTION

Discussions with Hamel Contracting, indicate that a commercial winery building is proposed with associated driveway, detached office, and landscape and hardscape areas.

4.0 SUBSURFACE EXPLORATION AND PERCOLATION TESTING

4.1 Field Exploration

On May 4, 2022, four (4) percolation test borings, were excavated at the subject site to a depth of four (4) feet and are numbered PB-1 through PB-4. Borings PB-1 through PB-4 were excavated to the approximate depth of the proposed onsite wastewater treatment system, with percolation testing performed on the boring bottom. Boring B-1 was excavated to a depth of 15 feet during the geotechnical investigation to document the subsurface profile and show required groundwater clearance per Riverside County Department of Environmental Health requirements. All borings were logged and aided in the geologic mapping of the test area.

Prior to the subsurface work, an underground utilities clearance was obtained from Underground Service Alert of Southern California. At the conclusion of the subsurface exploration and testing, all percolation borings were backfilled with existing materials with some compactive effort. Minor settlement of the backfill soils may occur over

time. The boring logs are presented in Appendix B and the locations are indicated on the onsite sewage disposal system map (Plate 1).

4.2 Percolation Testing

Shallow percolation tests within the excavated test trenches (PT-1 through PT-4) were performed on May 5, 2022. The tests were performed as per the referenced Riverside County Department of Environmental Health's Local Agency Management Program for Onsite Wastewater Treatment Systems manual. An 8-inch diameter, 14-inch-deep test hole was excavated in each test trench. A 3-inch diameter perforated pipe was placed in each and the annular space between the pipe and hole was packed with ¾" gravel. Each test hole was presoaked the day prior to percolation testing. For the standard percolation test, the drop in water level, in inches, was measured and recorded at 30-minute intervals over a period of at least 6 hours. For soils passing the sandy soil criteria test, the drop in water level, in inches, was measured and recorded at 10-minute intervals over a period of 1 hour. The results of the percolation tests are presented in Table 1, in Section 5.3. The percolation test data sheets are presented in Appendix C.

5.0 FINDINGS

5.1 Earth Materials

Based on our review of available geological and geotechnical literature, current field mapping, and exploratory borings conducted at the site, it is our understanding that the site is primarily underlain by Pauba Formation. This unit is described below and presented in greater detail within the exploratory trench logs (Appendix B). The approximate locations of the observed geologic units are depicted on the Onsite Sewage Disposal Map (Plate 1).

- **Pauba Formation (Qpfs)** – Pauba Formation was encountered at the surface in all borings to depths up to 15 feet. These materials consisted of silty sand which were various shades of brown, dry to damp, loose to medium dense, very fine to fine grained with medium grains and trace coarse grains, and micaceous.

5.2 Groundwater

Groundwater was not encountered in any of the exploratory trenches listed in this percolation report, to a maximum depth of 15.0 feet.

A review of the California Department of Water Resources, Water Data Library online database indicates the presence of groundwater less than 1 mile away from the general site area at approximately 419 feet below the existing ground surface according to historical records from the location at an elevation of approximately 1,483 feet above mean sea level (Well ID: Station 335174N1170339W001).

5.3 Percolation Testing Results

The Percolation testing rates for the areas tested are presented in the following table:

Table 1 – Percolation Test Summary

TEST LOCATION AND NO.	*TEST DEPTH (ft)*	*FIELD PERCOLATION RATE (min./inch)*	*DESIGN PERCOLATION RATE (min./inch)*	*SOIL DESCRIPTION (USCS)*
PB-1	4.0	5.22	9.00	Poorly Graded SAND (SP)
PB-2	4.0	3.48	6.00	Poorly Graded SAND (SP)
PB-3	4.0	5.11	8.81	Poorly Graded SAND (SP)
PB-4	4.0	7.27	12.53	Poorly Graded SAND (SP)

A gravel correction reduction factor of 0.58 is applied to the field percolation rate to determine the design percolation rate, based on the following calculations (from Riverside Co. Soil Percolation Test Report Standards, page A-13):

Gravel Correction Factor = $[1+P(C^2-1)] / C^2$; $C = r_2 / r_1$ where r_2 = radius of hole and r_1 = radius of pipe; P=% of voids (gravel void). Water from full can "B' is poured into can "A" with gravel to top of can

Height of Missing Water of Can "B" = 4.1"/ Height of Can "A' with Gravel = 8.0" → **0.51 gravel void**=P
8" Diam. Boring/3" Diam. Perforated Pipe → **2.67** = C
Gravel Correction Factor = $[1+.51(2.67^2 - 1)] / 2.67^2$ → **0.58**

Leach Line Calculations

Based on current design recommendations in the RCDEH Technical Manual for onsite sewage systems, DGS has evaluated design requirements for the single-family residence in Riverside County, California. Presented below is our design based on the current RCDEH Technical Manual.

Commercial development – 48 fixture count
2,250 gallons of septic tank capacity (Uniform Plumbing Code (UPC) Table K-2)

Design MPI = 12.53 min/in → 0.30 ft^2/gal (Determined from Table 3.1 of the referenced RCDEH LAMP)

0.30 ft^2/gal x 2,250 gallons = 675 ft^2 of absorption area
675 ft^2 / 3 ft = 225 ft of total pipe length (**228 ft of total pipe length for design purposes**)

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 General

Based on the data presented in this report, it is the judgment of DGS that there are favorable soil conditions for percolation and there is sufficient area on site for an individual onsite wastewater disposal system, consisting of a primary system area and a 100% expansion system area that will meet the current codes and standards of the RCDEH and the Regional Water Quality Control Board (RWQCB) requirements. Based on the data presented in this report and the testing information accumulated, it is also the judgment of DGS that the groundwater present at the site is within the allowable clearance from the bottom of the proposed leach fields, as set forth by Riverside County and California State requirements.

- Based on the data presented in this report and using the recommendations set forth, it is the judgement of this professional that there is sufficient area on each lot to support a primary and expansion OWTS that will meet the current standards of the Department of Environmental Health and the Regional Water Board.
- The designed system shall be located in natural undisturbed soil at the depth of the tests performed.
- The natural occurring body of minerals and organic matter at the proposed wastewater disposal area contains earthen materials having more that 50% of its volume composed of particles smaller than 0.08 inches (2mm) in size.
- Based on the da presented in this report and the testing information accumulated it is the judgment of this professional that the groundwater table will no encroach within the current allowable limits set forth in Chapter 11 of the Riverside County LAMP

6.2 Leach Field System Sewage Disposal Design Recommendations

It is recommended that the proposed sewage disposal system consist of four leach lines of 45 feet of length each for the primary system. The expansion system area shall consist of an identical amount of leach line.

Areas for both a primary system and a 100 percent expansion system are required for the subject site, as indicated on the enclosed maps. The portion of the site to be utilized for the proposed leach field system provides sufficient area for both a primary system and a 100% expansion system area. Septic tanks should be located upslope from the leach fields to provide gravity flow from the septic tank to the leach lines. A description of the general design and construction of sewage disposal systems is provided in the following sections.

- Septic Tank Capacity — Per the RCDEH, the minimum septic tank capacity is determined by the proposed number of fixtures utilizing UPC Table 702.1.

- Design Percolation Rate — The individual percolation rate test results for the area tested that meet the requirements of the RCDEH, in conjunction with the septic tank capacity for the proposed design, may be used as a guideline to determine the approximate square footage of leaching absorption area required for proposed sewage disposal systems in the area.

- Primary System — Primary system should consist of at least a 2,250-gallon septic tank, for 48 proposed fixtures, and leach field composed of subsurface leach lines constructed within trenches excavated into either natural ground or cut areas only. The effective portions of leach field trenches are not permitted in proposed fill. The required minimum leach field absorption area is based upon the septic tank capacity, the estimated effluent produced and the percolation rate of the proposed leach field area. The dimensions for leach field absorption areas are based on the total trench bottom area only, and do not include the area between the leach line trenches. The total linear footage of leach lines required is determined by dividing the required leach field area by the trench bottom area, which is based on trench width and the amount of gravel to be placed underneath the leach lines. The maximum individual line length permitted is 100 feet.

Design Rate (ft^2/gal)	Absorption Area (ft^2)	No. of Lines	Length of Each Line (ft)	Trench Bottom Area (ft^2)	Amount of Gravel Below Leach Lines (ft)	Total Length of Lines (ft)
0.30	675	4	57	3	1	228

- Trench Width, Depth, and Minimum Soil Cover — Per RCDEH requirements for leach field areas with no slope, a minimum soil cover of 1 foot over the lines is required. Leach line trenches should be excavated to a depth of approximately, depending on amount of gravel specified, 3 feet below the ground surface in order to provide a minimum 1 feet of soil cover. The individual leach line trenches should also be excavated along ground contours of approximately equal elevation to maintain a relatively uniform trench depth. Leach line trench width shall be 36 inches, with a minimum center line to center line spacing of 7 feet per RCDEH LAMP.

- 100 Percent Expansion System — Per the RCDEH, sufficient area must be set aside for future construction of a backup system of equal size to the primary system leach field area in the event the primary system fails. The leach field area required for the 100 percent expansion system is identical to that of the primary system.

7.0 OTHER DESIGN CONSIDERATIONS AND RECOMMENDATIONS

7.1 Leach Line Disposal Field– Other Considerations

- A minimum horizontal distance of 5 feet between disposal field and the property line is required.
- A minimum horizontal distance of 8 feet is required between the disposal field and any structure, including porches, steps, breezeways, roofed patios, carports, covered walks and similar structures.
- A minimum horizontal distance of 4 feet is required between disposal fields.
- A minimum horizontal distance of 5 feet is required between the disposal field and domestic water service line.
- A minimum horizontal distance of 15 feet is required between the disposal field and drainage course that is found on the property.
- The disposal field must have a minimum horizontal distance of 15 feet from daylight (side of slope).

The disposal field should be installed at the recommended depth and as close to the ground surface as possible to encourage the maximum loss of sewage effluent through evaporation and transpiration. As noted above, leach lines should also be installed within trenches excavated along ground contours of equal elevation to maintain a relatively uniform trench depth. Furthermore, the minimum center-to-center spacing between the leach line trenches is 7 feet for 36-inch wide trenches plus an additional foot of spacing is required for an additional foot of gravel.

Backfill materials placed over the leach lines should not be compacted but slightly mounded to allow for settlement and to minimize infiltration of surface water. In addition, cobbles and boulders should be removed from the backfill soils and not placed directly over the perforated pipe, to prevent collapse or crushing of the pipe.

The design recommendations of the septic tank and leach line onsite wastewater treatment system is only applicable to being constructed in relatively flat ground of less than 5% slope. Minimum cover over lines and minimum depth of percolation tests required change according to the slope of natural ground and if installed in any slope greater than 5%, this analysis and design are not applicable.

Consideration should be given to construction of the 100 percent expansion system in the future, should it become necessary, with respect to accessibility after all site improvements are constructed. If future access to the 100 percent expansion area is compromised by construction of the residences or other land use (e.g., garden walls, etc.), consideration should be given to constructing the 100 percent expansion system at the same time as the primary system.

The leach line trenches should be observed by the geotechnical consultant during and after excavation, but before placing perforated pipe. This is to verify the suitability of the exposed soils or to make any necessary revisions if any unforeseen conditions are encountered or exposed, such as hard shallow rock. Revisions could include adding additional lines or a redesign of the system that conforms to the site conditions.

The disposal field areas should not be used for recreation, or other uses, which would compact the ground surface. In addition, the ground surfaces over the disposal fields should be seeded or sodded to mitigate erosion.

The owners are advised that proper use and maintenance of the sewage disposal system are critical to maintain a useful design life. The use of excessive water, introduction of detergents and chemicals and ground food waste from garbage disposals can cause premature system failures and necessitate construction of the 100 percent expansion system or reconstruction of the primary system. Properly maintained sewage disposal systems can function for many years; however, a period of rest after about 10 to 15 years is generally required to promote bacterial decay and a chance to dry up. After this resting period, the primary system can sometimes be reactivated and alternated with the 100 percent expansion system.

8.0 INVESTIGATION LIMITATIONS

This report is based upon information provided by the client, a limited number of subsurface excavations, field observations and percolation tests to which we applied various methods of analysis and interpretation. The materials encountered and tested in the field on the project site are believed representative of the project area, and the conclusions and recommendations contained herein are presented on that basis. However, soil materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect the conclusions, recommendations, and performance of possible future developments on the site. Fluctuations in the level of groundwater may occur due to variations in rainfall, irrigation, and the other factors not in evidence at the time measurements were made. If this occurs, the changed conditions must be evaluated by the project geotechnical engineer and engineering geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field.

The conclusions and opinions contained in this report are based on the results of the described geotechnical evaluations and represent our professional judgment. The findings, conclusions and recommendations contained in this report are to be considered tentative only and subject to confirmation by the undersigned during the construction process, should a future development be considered on the site. Without this confirmation, this report is to be considered incomplete and DGS or the undersigned professionals assume no responsibility for its use.

The conclusions and opinions contained in this report are valid up to a period of 2 years from the date of this report. Changes in the conditions of a property can and do occur with the passage of time, whether they be because of natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate codes or standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside our control. Therefore, if any of the above mentioned situations occur, an update of this report should be completed.

This report has not been prepared for use by parties or projects other than those named or designated above. It may not contain sufficient information for other parties or other purposes.

Closure

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by engineers and geologists practicing in this or other localities. The contents of this report are professional opinions and as such, are not to be considered a guarantee or warranty.

The opportunity to be of continuing service is appreciated. Should you have any questions regarding the content of this report, or should you require additional information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,

DYNAMIC GEOTECHNICAL SOLUTIONS, INC.



Jonathan Levario, PG 9879
Project Geologist

AR/JL

Distribution: (2) Addressee

Attachments: Figure 1 – Site Location Map
Appendix A – Percolation Test Results
Plate 1 – Onsite Sewage Disposal Map *(In Pocket)*

APPENDIX A

PERCOLATION TEST RESULTS



Project:	Haven Vineyard	Job No.:	D21-1119-20	
Test Hole No.:	PB-1	Date Excavated:	5/4/2022	
Depth of Test Hole:	4.0'	Soil Classification:	SM	
Check for Sandy Soil Criteria By:		Date of Perc Test:	5/5/2022	Diameter: 8"

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:20	HH:MM	All 5 Gallons
Stop	5/5/22 5:44	20:24	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
5:52	30	30	6	1/4	5 3/4	5.22
6:22						
6:23	30	61	6	3/8	5 5/8	5.33
6:53						
6:54	30	92	6	1/4	5 3/4	5.22
7:24						
7:25	30	123	6	1/8	5 7/8	5.11
7:55						
7:56	30	154	6	1/4	5 3/4	5.22
8:26						
8:27	30	185	6	1/4	5 3/4	5.22
8:57						
8:58	30	216	6	1/4	5 3/4	5.22
9:28						
9:29	30	247	6	1/8	5 7/8	5.11
9:59						
10:00	30	278	6	1/4	5 3/4	5.22
10:30						
10:31	30	309	6	1/4	5 3/4	5.22
11:01						
11:02	30	340	6	1/4	5 3/4	5.22
11:32						
11:33	30	371	6	1/4	5 3/4	5.22
12:03						

Project:	Haven Vineyard	Job No.:	D21-1119-20	
Test Hole No.:	PB-2	Date Excavated:	5/4/2022	
Depth of Test Hole:	4.0'	Soil Classification:	SM	
Check for Sandy Soil Criteria By:	JW	Date of Perc Test:	5/5/2022	Diameter: 8"

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)
5:55	15	6	0	> 6
6:10				
6:11	17	6	0	> 6
6:28				

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:30	HH:MM	All 5 Gallons
Stop	5/5/22 5:46	20:16	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
7:11	10	10	6	2 1/4	3 3/4	2.67
7:21						
7:22	10	21	6	3	3	3.33
7:32						
7:35	10	34	6	3 1/8	2 7/8	3.48
7:45						
7:47	10	46	6	3 1/8	2 7/8	3.48
7:57						
7:58	10	57	6	3 1/8	2 7/8	3.48
8:08						
8:09	10	68	6	3 1/8	2 7/8	3.48
8:19						

Project:	Haven Vineyard		Job No.:	D21-1119-20	
Test Hole No.:	PB-3		Date Excavated:	5/4/2022	
Depth of Test Hole:	4.0'		Soil Classification:	SM	
Check for Sandy Soil Criteria By:	JW		Date of Perc Test:	5/5/2022	Diameter: 8"

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)
5:56	25	6	0	> 6
6:21				
6:25	25	6	1/4	5 3/4
6:50				

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:40	HH:MM	All 5 Gallons
Stop	5/5/22 5:48	20:08	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
7:00	30	30	6	0	> 6	< 5
7:30						
7:31	30	61	6	0	> 6	< 5
8:01						
8:02	30	92	6	0	> 6	< 5
8:32						
8:33	30	123	6	0	> 6	< 5
9:03						
9:04	30	154	6	0	> 6	< 5
9:34						
9:35	30	185	6	1/8	5 7/8	5.11
10:05						
10:06	30	216	6	1/8	5 7/8	5.11
10:36						
10:37	30	247	6	1/8	5 7/8	5.11
11:07						
11:08	30	278	6	1/8	5 7/8	5.11
11:38						
11:39	30	309	6	1/8	5 7/8	5.11
12:09						
12:10	30	340	6	1/8	5 7/8	5.11
12:40						
12:41	30	371	6	1/8	5 7/8	5.11
13:11						

Project:	Haven Vineyard	Job No.:	D21-1119-20
Test Hole No.:	PB-4	Date Excavated:	5/4/2022
Depth of Test Hole:	4.0'	Soil Classification:	SM
Check for Sandy Soil Criteria By:		Date of Perc Test:	5/5/2022 Diameter: 8"

SANDY SOIL CRITERIA TEST

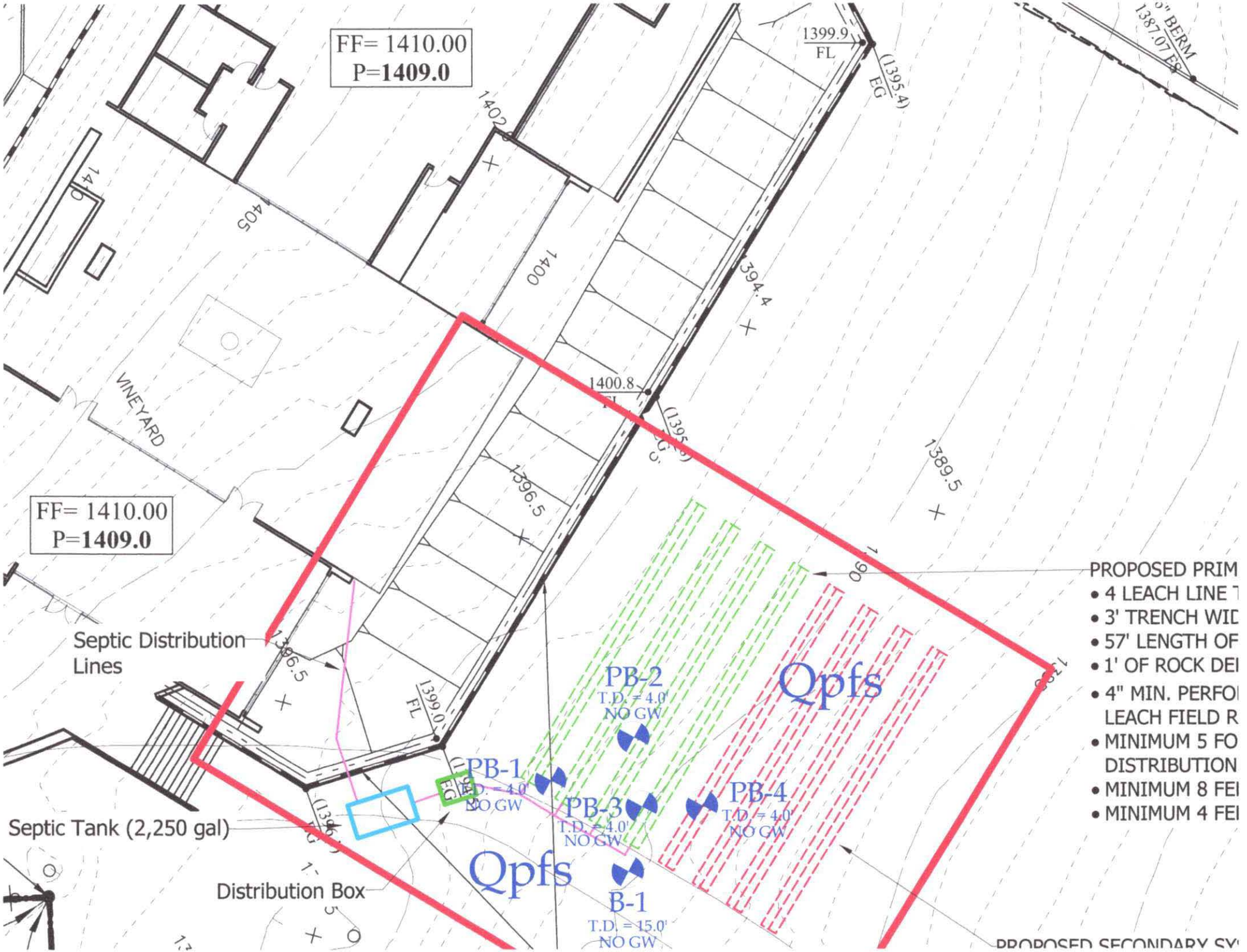
TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:50	HH:MM	All 5 Gallons
Stop	5/5/22 5:50	20:00	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
6:01	30	30	6	1 5/8	4 3/8	6.86
6:31						
6:32	30	61	6	1 7/8	4 1/8	7.27
7:02						
7:03	30	92	6	2	4	7.50
7:33						
7:34	30	123	6	2	4	7.50
8:04						
8:05	30	154	6	2	4	7.50
8:35						
8:36	30	185	6	2	4	7.50
9:06						
9:07	30	216	6	2	4	7.50
9:37						
9:38	30	247	6	2	4	7.50
10:08						
10:09	30	278	6	1 7/8	4 1/8	7.27
10:39						
10:40	30	309	6	1 7/8	4 1/8	7.27
11:10						
11:11	30	340	6	1 7/8	4 1/8	7.27
11:41						
11:42	30	371	6	1 7/8	4 1/8	7.27
12:12						


FF= 1410.00
P=1409.0
FF= 1410.00
P=1409.0
1399.9
FL
(1395.4)
EG
1387.07 FG
" BERM
1402
1405
1400
1394.4
1400.8
1389.5
1396.5
VINEYARD
Septic Distribution Lines
Septic Tank (2,250 gal)
Distribution Box
PB-1
T.D. = 4.0'
NO GW
PB-2
T.D. = 4.0'
NO GW
PB-3
T.D. = 4.0'
NO GW
PB-4
T.D. = 4.0'
NO GW
B-1
T.D. = 15.0'
NO GW
Qpfs
Qpfs
PROPOSED PRIM
• 4 LEACH LINE T
• 3' TRENCH WID
• 57' LENGTH OF
• 1' OF ROCK DEI
• 4" MIN. PERFO
LEACH FIELD R
• MINIMUM 5 FO
DISTRIBUTION
• MINIMUM 8 FEI
• MINIMUM 4 FEI
PROPOSED SECONDARY SY

APPENDIX B

PERCOLATION TEST RESULTS

Project:	Haven Vineyard	Job No.:	D21-1119-20	
Test Hole No.:	PB-1	Date Excavated:	5/4/2022	
Depth of Test Hole:	4.0'	Soil Classification:	SM	
Check for Sandy Soil Criteria By:		Date of Perc Test:	5/5/2022	Diameter: 8"

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:20	HH:MM	All 5 Gallons
Stop	5/5/22 5:44	20:24	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
5:52	30	30	6	1/4	5 3/4	5.22
6:22						
6:23	30	61	6	3/8	5 5/8	5.33
6:53						
6:54	30	92	6	1/4	5 3/4	5.22
7:24						
7:25	30	123	6	1/8	5 7/8	5.11
7:55						
7:56	30	154	6	1/4	5 3/4	5.22
8:26						
8:27	30	185	6	1/4	5 3/4	5.22
8:57						
8:58	30	216	6	1/4	5 3/4	5.22
9:28						
9:29	30	247	6	1/8	5 7/8	5.11
9:59						
10:00	30	278	6	1/4	5 3/4	5.22
10:30						
10:31	30	309	6	1/4	5 3/4	5.22
11:01						
11:02	30	340	6	1/4	5 3/4	5.22
11:32						
11:33	30	371	6	1/4	5 3/4	5.22
12:03						

Project:	Haven Vineyard	Job No.:	D21-1119-20	
Test Hole No.:	PB-2	Date Excavated:	5/4/2022	
Depth of Test Hole:	4.0'	Soil Classification:	SM	
Check for Sandy Soil Criteria By:	JW	Date of Perc Test:	5/5/2022	Diameter: 8"

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)
5:55	15	6	0	> 6
6:10				
6:11	17	6	0	> 6
6:28				

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:30	HH:MM	All 5 Gallons
Stop	5/5/22 5:46	20:16	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
7:11	10	10	6	2 1/4	3 3/4	2.67
7:21						
7:22	10	21	6	3	3	3.33
7:32						
7:35	10	34	6	3 1/8	2 7/8	3.48
7:45						
7:47	10	46	6	3 1/8	2 7/8	3.48
7:57						
7:58	10	57	6	3 1/8	2 7/8	3.48
8:08						
8:09	10	68	6	3 1/8	2 7/8	3.48
8:19						

Project:	Haven Vineyard		Job No.:	D21-1119-20	
Test Hole No.:	PB-3		Date Excavated:	5/4/2022	
Depth of Test Hole:	4.0'		Soil Classification:	SM	
Check for Sandy Soil Criteria By:	JW		Date of Perc Test:	5/5/2022	Diameter: 8"

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)
5:56	25	6	0	> 6
6:21				
6:25	25	6	1/4	5 3/4
6:50				

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:40	HH:MM	All 5 Gallons
Stop	5/5/22 5:48	20:08	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
7:00	30	30	6	0	> 6	< 5
7:30						
7:31	30	61	6	0	> 6	< 5
8:01						
8:02	30	92	6	0	> 6	< 5
8:32						
8:33	30	123	6	0	> 6	< 5
9:03						
9:04	30	154	6	0	> 6	< 5
9:34						
9:35	30	185	6	1/8	5 7/8	5.11
10:05						
10:06	30	216	6	1/8	5 7/8	5.11
10:36						
10:37	30	247	6	1/8	5 7/8	5.11
11:07						
11:08	30	278	6	1/8	5 7/8	5.11
11:38						
11:39	30	309	6	1/8	5 7/8	5.11
12:09						
12:10	30	340	6	1/8	5 7/8	5.11
12:40						
12:41	30	371	6	1/8	5 7/8	5.11
13:11						

Project:	Haven Vineyard	Job No.:	D21-1119-20
Test Hole No.:	PB-4	Date Excavated:	5/4/2022
Depth of Test Hole:	4.0'	Soil Classification:	SM
Check for Sandy Soil Criteria By:		Date of Perc Test:	5/5/2022 Diameter: 8"

SANDY SOIL CRITERIA TEST

TIME	Time Interval (Minutes)	Initial Water Level (Inches)	Final Water Level (Inches)	Change In Water Level (Inches)

PRESOAK PERIOD

	Date/Time	Interval	Amount of Water Used
Start	5/4/22 9:50	HH:MM	All 5 Gallons
Stop	5/5/22 5:50	20:00	

TEST PERIOD

Time	Time Interval (min.)	Total Elasped Time (min.)	Initial Water Level (inches)	Final Water Level (inches)	Change In Water Level (Inches)	Field Percolation Rate (minutes/inch)
6:01	30	30	6	1 5/8	4 3/8	6.86
6:31						
6:32	30	61	6	1 7/8	4 1/8	7.27
7:02						
7:03	30	92	6	2	4	7.50
7:33						
7:34	30	123	6	2	4	7.50
8:04						
8:05	30	154	6	2	4	7.50
8:35						
8:36	30	185	6	2	4	7.50
9:06						
9:07	30	216	6	2	4	7.50
9:37						
9:38	30	247	6	2	4	7.50
10:08						
10:09	30	278	6	1 7/8	4 1/8	7.27
10:39						
10:40	30	309	6	1 7/8	4 1/8	7.27
11:10						
11:11	30	340	6	1 7/8	4 1/8	7.27
11:41						
11:42	30	371	6	1 7/8	4 1/8	7.27
12:12						

Appendix 4: Historical Site Conditions

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

Examples of material to provide in Appendix 4 may include but are not limited to the following:

- Environmental Site Assessments conducted for the project,
- Other information on Past Site Use that impacts the feasibility of LID BMP implementation on the site.

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections D of this Template.

Appendix 5: LID Feasibility Supplemental Information

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

Examples of material to provide in Appendix 5 may include but are not limited to the following:

- Technical feasibility criteria for DMAs
- Site specific analysis of technical infeasibility of all LID BMPs (if Alternative Compliance is needed)
- Documentation of Approval criteria for Proprietary Biofiltration BMPs

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections D of this Template.

N/A

Appendix 6: LID BMP Design Details

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

$C=0.858I_f^3-0.78\cdot I_f^2+0.774* I_f+0.04$

Table 2-7: Impervious Fraction Based on Various Land Use Covers

Surface Type	Effective Impervious Fraction, I_f
Roofs	1.00
Concrete or Asphalt	1.00
Grouted or Gapless Paving Blocks	1.00
Compacted Soil (e.g. unpaved parking)	0.40
Decomposed Granite	0.40
Permeable Paving Blocks w/ Sand Filled Gap	0.25
Class 2 Base	0.30
Gravel or Class 2 Permeable Base	0.10
Pervious Concrete / Porous Asphalt	0.10
Open and Porous Pavers	0.10
Turf block	0.10
Ornamental Landscaping	0.10
Natural (A Soil)	0.03
Natural (B Soil)	0.15
Natural (C Soil)	0.30
Natural (D Soil)	0.40

%imp = 38931 SF/72933 SF = 0.53

I_f= 1.00 x 0.53 + 0.10 x 0.47 = 0.58

C= $0.858(0.58)^3-0.78(0.58)^2+0.774(0.58)+0.04$= 0.39

BMP-1 is a harvest and use BMP. The total storage volume of the 44 lf of 96" pipes is 2212 cf. DMA-10, DMA-20, DMA-30 and DMA-40 drain to the BMP.

DMA Type/ID	DMA (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	BMP-1 (Dia. Storage Pipe)		
	[A]		[B]	[C]	[A] x [C]	*Design Storm Depth (in)*	*DCV, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
10, 20, 30, 40	72993	Mixed	0.58	0.39	28444			
	72933				28444	0.65	1,541	2212 cf

The flows entering the BMPS will receive pre-treatment via inlet inserts designed to capture sediment, debris and oil from the runoff prior to entering the tanks. The storage tanks also have a built-in debris traps and screens to prevent debris and sediment from reaching the irrigation pumps.

Santa Margarita Watershed

BMP Design Volume, V_{BMP} (Rev. 03-2012)

Legend: Required Entries / Calculated Cells

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Robin B. Hamers & Assoc, Inc	Date	7/1/2025
Designed by	MLB	County/City Case No	
Company Project Number/Name	Haven Winery		
Drainage Area Number/Name	DMA-10, DMA-20, DMA-30, DMA-40 drains to BMP-1		

Enter the Area Tributary to this Feature A_T = 1.674 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location

Township: 7S

Range: 1W

Section: 31

Enter the 85th Percentile, 24-hour Rainfall Depth D_{85} = 0.65

Determine the Effective Impervious Fraction

Type of post-development surface cover (use pull down menu): Mixed Surface Types

Effective Impervious Fraction I_f = 0.58

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 = 0.39

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$

V_u = 0.26 (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} = 1,580 ft^3

Notes: %imp=38,931 SF / 72,933 SF = 0.53 $I_f = 0.53*1.00 + 0.47*0.10 = 0.58$

Appendix 7:
Hydromodification & Critical Coarse Sediment

Supporting Detail for Hydromodification compliance & Exhibit G - CCSY & PSS Areas with the project location.

The preparer shall include the following in this Appendix (Refer to Section 2.4 and 3.6 of the SMR WQMP and Sections E of this Template):

- Hydromodification Exemption Exhibit (if the project is in an area exempt from Hydromod)
- Potential Critical Coarse Sediment Yield Area Mapping (to show if the site is out of a CCSYA)
- Hydromodification BMP sizing calculations (i.e. County Hydromod Spreadsheet – Hydromod, and BMP Design tabs, SMRHM report files, or other acceptable Hydromod calculations)
- Site-Specific Critical Coarse Sediment Analysis (if a project impacts a CCSYA)
- Design details/drawings from manufacturers for proprietary BMPs (if proprietary BMPs are proposed)

In addition, the project shall comply with drainage law and good practices:

- Protect the Site and Roads from Q100yr, without impacting adjacent property owners.
- Pad elevations must be above the Q100yr water surface at all locations.

I. Identify Offsite Hydrology

A. If the project intends to allow the flows to pass through the project uninterrupted, the flows must remain along its natural flow-path and natural condition. The project must also:
   (1) Ensure that the existing stream is stable. If not, the design must include stabilization.
   (2) Does the 100 year flow path affect proposed project elements, such as streets and fill slopes? If so, the project must properly design for impingements, provide revetment, etc. If the water surface changes due to impingements on neighbor's properties, Permission to pond letters must be provided.

B. If the project intends to collect and convey the offsite flows, see the next section:

II. Hydraulics

A. Project must provide collection inlets that can be accessed for maintenance. If located outside of the project boundary, the project must provide a Permission Letter or drainage easement. If the inlet creates new ponding on private property, the project must provide a Permission to Pond letter or easement.

B. The project should not divert watershed areas over 1 acre. If so, Permission Letter to accept project's diversion and drainage concept must be received by the project.

C. The project should have an adequate outlet. If not, include Permission Letters and implement Increased Runoff criteria (2, 5,10 year storm events and the 1, 3, 6 and 24 hour durations). 100 year storm routing is not to be used. Runoff from the offsite plus onsite must be returned to its natural (existing) condition of velocity, peak flow-rate, flow-width and location/right of way, if permission letters have not been obtained.

D. The project must adequately convey the 100 year storm between the combination of street flow and pipe flow per County Ordinance.

E. The project should use the downstream connection as the Q100yr water surface control elevation, to ensure 6 inches minimum of freeboard in proposed drainage system.

III. Basin Layout

A. Implement Basin Guidelines as best as possible from Appendix C, Design Handbook for LID BMPs.

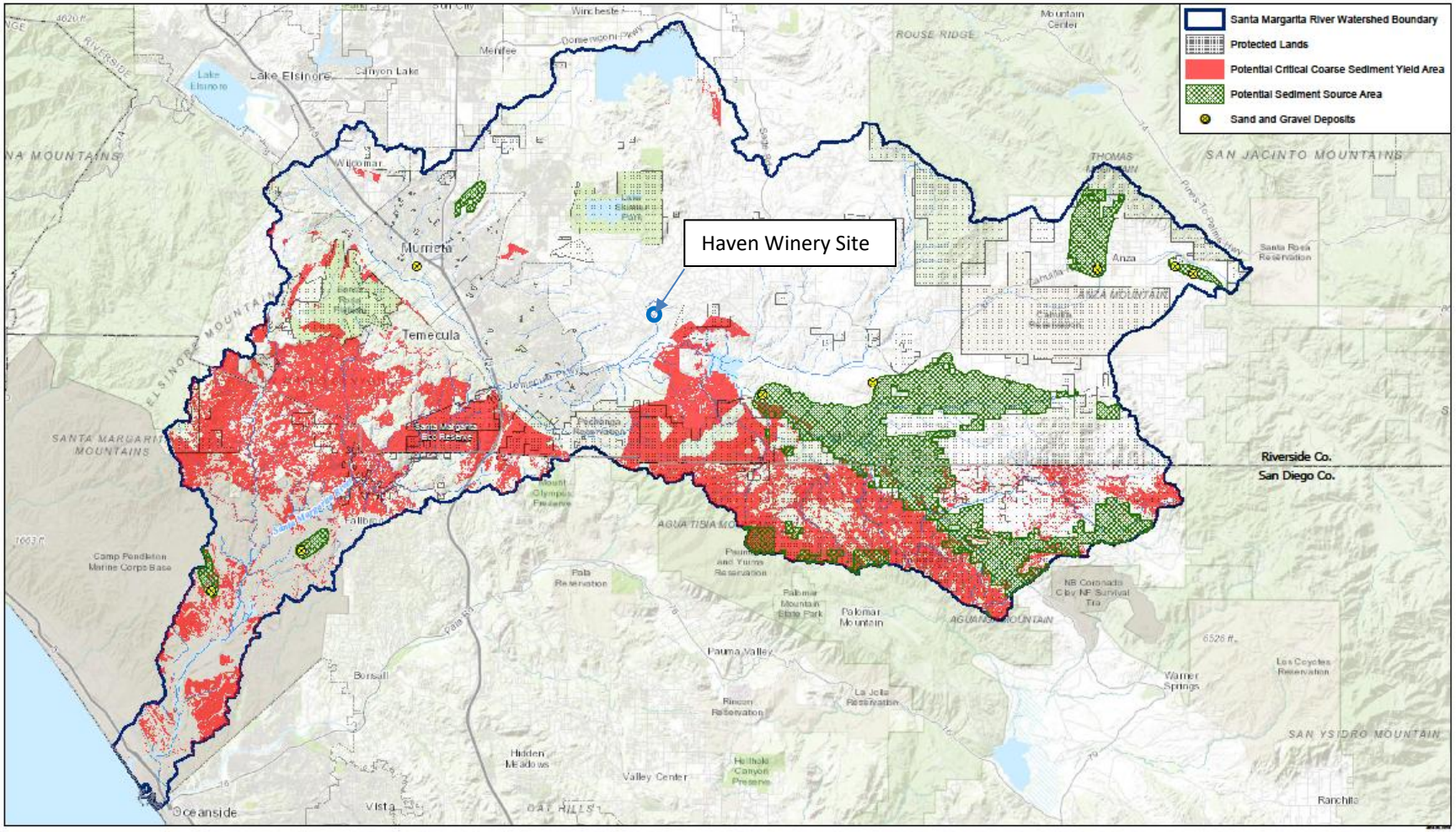


Exhibit G-1

SANTA MARGARITA RIVER WATERSHED
POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS AND POTENTIAL SEDIMENT SOURCE AREAS


Riverside County SWCT2
Stormwater & Water Conservation Tracking Tool
ONLY RAIN DOWN THE STORM DRAIN
Leaflet | Original Feature Class was created by the Riverside County Transportation Department (RCDT). State of California

WQMP Report

County of Riverside Stormwater Project

Santa Ana River Watershed Geodatabase

Report generated: Sun Jun 12 2022 07:12:50 GMT-0700 (Pacific Daylight Time)

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification. All searches will include any data found within 200 feet of the provided coordinates unless otherwise noted.

Center Point	33.51996956030321, -117.02218079586603
Map	
Parcel Number(s)	927660001, 927660002, 927660032, 927670012, 927670009, 927670008, 927530009, 927670020, 927280024, 927670013, 927280026, 927670021
Site Acreage	9.29
Watershed(s)	SANTA MARGARITA
Cities (within 1 mile)	

Hydrologic Units

HUC Number	HUC Name
180703020406	Santa Gertudis Creek
180703020302	Pechanga Creek-Temecula Creek

The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site

WBID Number	WBID Name
CAR902220002001100114105O	Santa Margarita River (Upper)
CAR902110001998091116134 6	Santa Margarita River (Lower)
CAR902420002008082500154 6	Santa Gertrudis Creek
CAR902320002001092415213 6	Murrieta Creek

These 303d listed water bodies and TMDLs have the following Pollutants of Concern (POC)

Category	Pollutants
Bacterial Indicators	Enterococcus
Bacterial Indicators	Escherichia coli (E. coli)
Bacterial Indicators	Fecal Coliform
Metals/Metalloids	Copper
Metals/Metalloids	Iron
Metals/Metalloids	Manganese
Nutrients	Nitrogen
Nutrients	Phosphorus
Nutrients	Total Nitrogen as N
Pesticides	Chlorpyrifos
Toxicity	Toxicity

Is the Project Site subject to Hydromodification?	YES

Limitations of Infiltration	**Onsite Soils Group(s)**	C A NO DATA
	Known Groundwater Contamination Plumes (within 1000 ft)	NO
	Adjacent Water Wells	YES - Applicant needs to contact the local groundwater authority (Water Master, Water District) to determine if their site requires any additional restrictions from infiltration.
	Local Supplier	EASTERN MUNICIPAL W.D. RANCHO CALIFORNIA W.D.
	Wholesale Supplier	METROPOLITAN WATER DISTRICT

Environmentally Sensitive Areas within 200 feet

Fish and Wildlife Habitat/Species	• None found
CVMSHCP	• None found
WRMSHCP	• Burrowing Owl Survey Required Area • Criteria Area Survey Req. - Area 5 • Narrow Endemic Plants Survey Req. - Area 5

Groundwater Elevation from Mean Sea Level

No data

85th Percentile Design Storm Depth

0.632 in.

Groundwater Basin

TEMECULA VALLEY

MSHCP / CVMSHCP Criteria Cell(s)

MSHCP

Retention Ordinance Information

City	Ordinance	Description	Storm Event (Required Design Capture Volume)
No ordinances found			

Related Studies and Reports

- IBI Scores - Southern Cal.pdf
- bulletin118_4-sc.pdf
- WaterFacts2022.pdf
- SMRWM Annual Report.pdf
- SMR Annual Report 2009-10.PDF

It is expressly agreed and understood by the USER of this Excel Spreadsheet file (file) released hereby (whether released in digital or hard copy form) that Riverside County (County) makes no representation as to its accuracy. Further, it is the intent of the parties hereto that the USER shall review and verify calculations, analyze results, and/or independently determine the accuracy thereof prior to placing any reliance whatsoever on the information. Further, the USER shall hold the County, together with the officers, agents and employees of each, free and harmless from any liability whatsoever, including wrongful death, based or asserted upon any act or omission of the District or County, their officers, agents, employees or subcontractors, relating to or in any way connected with the unauthorized use of these files or information; and USER agrees to protect and defend, including all attorney fees and other expenses, each of the foregoing bodies and persons in any legal action based or asserted upon any such acts or omissions. USER also agrees not to sell, reproduce or release these files to others for any purpose whatsoever, except those incidental uses for which the files were acquired, verified and combined with USER'S own work product. Reasonable effort was made to fully comply with the San Diego MS4 Permit requirements using the methods found in the Riverside County Hydrology Manual. If the user finds an error in any way, please contact the County so that the error can be corrected. Any direct tampering of the equations in this spreadsheet would be considered extremely inappropriate, and potentially fraudulent.

Santa Margarita Region - County HydroMod Iterative Spreadsheet Model

Only for use the unincorporated portions of Riverside County, unless otherwise approved by the Co-Permittee

Development Project Number(s):		Rain Gauge	Temecula Valley
Latitude (decimal format):	33.52174	BMP Type (per WQMP):	Infiltration
Longitude (decimal format):	-117.02341	BMP Number (Sequential):	BMP-1

Pre-Development

Pre-Development - Hydrology Information			
DRAINAGE AREA (ACRES) - 10 acre max[1]	1.67	2-YEAR, 1-HOUR INTENSITY (IN/HR) - Plate D-4.3	0.53
LONGEST WATERCOURSE (FT) - 1,000' max[1]	652	10-YEAR, 1-HOUR INTENSITY (IN/HR) - Plate D-4.1	0.88
UPSTREAM ELEVATION OF WATERCOURSE (FT)	1450	SLOPE OF THE INTENSITY DURATION - Plate D-4.6	0.55
DOWNSTREAM ELEV. OF WATERCOURSE (FT)	1380	CLOSEST IMPERVIOUS PERCENTAGE (%)	0% Undeveloped - Poor Cover
EXISTING IMPERVIOUS PERCENTAGE (%)	0		
Use 10% of Q2 to avoid Field Screening requirements	Yes		

Pre-Development

Pre-Development - Soils Information										
Cover Type #	Subarea Acreage	Cover Type	Vegetative Cover	Soil A %	Soil B %	Soil C %	Soil D %	RI Index AMC I	RI Index AMC II	RI Index AMC III
5	1.67 Ac.	Chaparral, Narrowleaf	Poor Cover		100			66	**82**	92
								0	**0**	0
								0	**0**	0
	1.67 Ac.						**Weighted Average RI Numbers =**	**66.0**	**82.0**	**92.0**

Per Dr. Luis Parra, the AMC condition is based on the rainfall record. Applying NEH-4 (1964) for the non-freezing conditions in Riverside County the AMC conditions are:
AMC-I for less than 0.5" of rain the previous 5 days; AMC-II for between 0.5" to 1.1" of rain the previous 5 days; or AMC-III for more than 1.1" for the previous 5 days.

Pre-Development

Pre-Development - Calculated Range of Flow Rates analyzed for Hydromod (Suceptible Range of Flows)	
Calculated Upper Flow-rate limit	**Calculated Lower Flow-rate limit**
Ex. 10-year Flowrate[1] = **1.169** cfs	Ex. 10% of the 2-year Flowrate[1] = **0.166** cfs
(Co-Permitte Approval is required) User-Defined Discharge Values with accompanying Hydrology Study[1]	
Ex. 10-year Flowrate (Attach Study) = cfs	Ex. 2-year Flowrate (Attach Study) = cfs

[1]The equations used to determine the 10-year and 10% of the 2-yr are limited to 10-acres and 1,000'. Flowrates from a separate study can be used to over-ride the calculated values so that larger areas (up to 20 acres) and longer watercourse lengths can be used. All values still need to be filled out, even when there is a user-defined discharge value entered.

Post-Project

Post-Project - Hydrograph Information		
DRAINAGE AREA (ACRES)	1.67	Go to "BMP Design" tab to design your BMP, then check results below.
LONGEST WATERCOURSE (FT)	652	Print both this "HydroMod" Sheet and the "BMP Design" sheet for your submittal.
DIFFERENCE IN ELEV (FT) - along watercourse	70	
PROPOSED IMPERVIOUS PERCENTAGE (%)	53	

Post-Project

Post-Project - Soils Information										
Cover Type #	Subarea Acreage	Cover Type	Vegetative Cover	Soil A %	Soil B %	Soil C %	Soil D %	RI Index AMC I	RI Index AMC II	RI Index AMC III
22	1.67 Ac.	Urban Landscaping	Good Cover		100			36	**56**	75
								0	**0**	0
								0	**0**	0
	1.67 Ac.						**Weighted Average RI Numbers =**	**36.0**	**56.0**	**75.0**

Per Dr. Luis Parra, the AMC condition is based on the rainfall record. Applying NEH-4 (1964) for the non-freezing conditions in Riverside County the AMC conditions are:
AMC-I for less than 0.5" of rain the previous 5 days; AMC-II for between 0.5" to 1.1" of rain the previous 5 days; or AMC-III for more than 1.1" for the previous 5 days.

Results

		First result out of compliance in the rainfall record				See below for the Height in the Basin (Stage) that is causing a non-compliant result	
Hydromod Ponded depth							
Hydromod Drain Time (unclogged)	**#DIV/0!**	Requirement		Proposed			
Is the HydroMod BMP properly sized?	**Yes, this is acceptable**	---	---	---	---		
Mitigated Q < 110% of Pre-Dev. Q?	**Yes, this is acceptable**	---	---	---	---	Issue @ Stage =	---
Mitigated Duration < 110% of Pre-Dev?*	**Yes, this is acceptable**	---	---	---	---	Issue @ Stage =	---

Responsible-in-charge: Michael Benesh Date: 12/16/2024

Signature: Spreadsheet Developed by: Benjie Cho, P.E.

It is expressly agreed and understood by the USER of this Excel Spreadsheet file (file) released hereby (whether released in digital or hard copy form) that Riverside County (County) makes no representation as to its accuracy. Further, it is the intent of the parties hereto that the USER shall review and verify calculations, analyze results, and/or independently determine the accuracy thereof prior to placing any reliance whatsoever on the information. Further, the USER shall hold the County, together with the officers, agents and employees of each, free and harmless from any liability whatsoever, including wrongful death, based or asserted upon any act or omission of the District or County, their officers, agents, employees or subcontractors, relating to or in any way connected with the unauthorized use of these files or information; and USER agrees to protect and defend, including all attorney fees and other expenses, each of the foregoing bodies and persons in any legal action based or asserted upon any such acts or omissions. USER also agrees not to sell, reproduce or release these files to others for any purpose whatsoever, except those incidental uses for which the files were acquired, verified and combined with USER'S own work product. Reasonable effort was made to fully comply with the San Diego MS4 Permit requirements using the methods found in the Riverside County Hydrology Manual. If the user finds an error in any way, please contact the County so that the error can be corrected. Any direct tampering of the equations in this spreadsheet would be considered extremely inappropriate, and potentially fraudulent.

BMP Design

Fill in **blue** shaded areas

BMP Geometry & Detention Calculations

0.25 feet, Stage Intervals

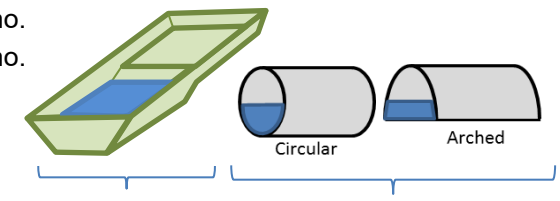
Increase intervals or decrease height

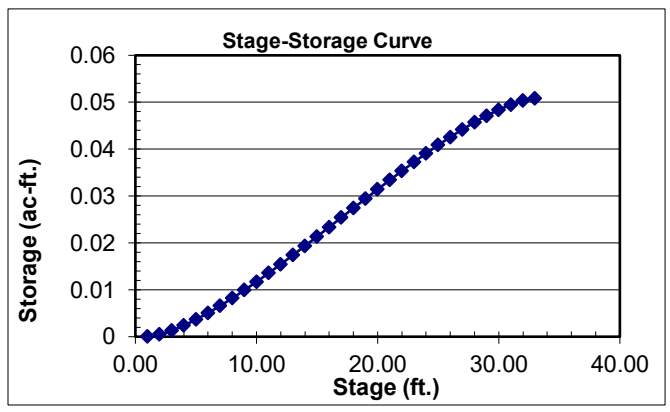
Height is above the limits of this sheet

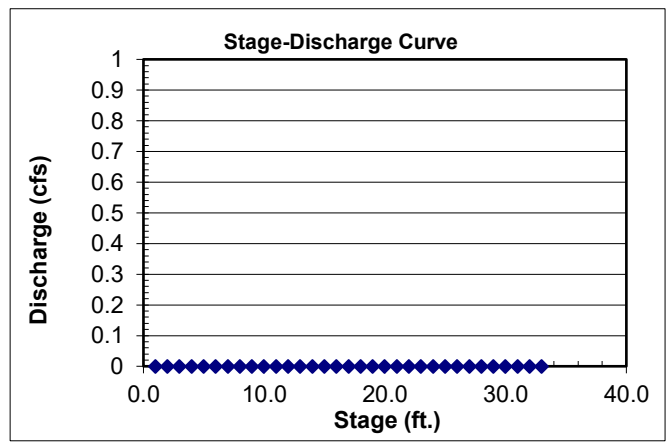
PROPOSED BMP DIMENSIONS

STEP1: Size the BMP, so that the Total Volume > Max HydroMod Vol. (Deeper is ok, it will be refined in the Design Geometry)

Tank BMP	Is the BMP a Tank shape?	1	1 for yes; 2 for no.
	Is the BMP Arched shape?	2	1 for yes; 2 for no.
	How many cells together?	1	
	Diameter (Hortz. for arch) =	96	IN
	Length =	44	FT







Prop Single-Circular Vol =	2,212	FT3
Total Prop. Volume[1] =	2,212	FT3
Max HydroMod Volume =	2,166	FT3
Total Acreage[2] =	240	FT2
BMP % of Site =	0.33%	
Max HydroMod Depth[3] =		FT

[1]Does not include forebay, or low flow trench

[2]Does not account for freeboard or access roads

[3]Does not consider Increased Runoff

MINIMUM DESIGN GEOMETRY

STEP3: Delete outlets, then propose the largest lowest orifice that does not, exceed the ex. Q or Duration. If the Q is acceptable, but the duration is exceeded, try decreasing orifice, then adding a weir slightly below the stage that has an issue.

OUTLETS (for Stage-Discharge)

Orifice Outlets			Weir Outlets		
Invert Height (ft)	Diameter (inches)	No. of Orifices	Crest Height (ft)	Crest Width (ft)	No. of Weirs
0					

Hydromod Depth =

+ 1' Freeboard = #VALUE!

STEP4: Complete an increased runoff analysis, if the project can impact downstream properties. Incorporate these designs into the WQMP site plan. Add emergency overflow weir, for flows that exceed the Hydromod volumes, sized to the 100-year peak flow rate. Add access roads (< 10% longitudnal slope) with enough width & turn around access for equipment that would be needed to scarify the bottom or remove Bioretention soil media.

Add Infiltration

Enter information from actual infiltration tests

No	**Consider Infiltration (Yes or No)?**		
	Infiltration rate (in/hr) [3]	-	ft3/sec, Infiltration (over entire bottom)
	Need greater factor of safety [3]	-	ft3/sec, Infiltration / Factor of Safety
	mins, Max. Time represented by tests		

[3]Per the RC LID Manual, Appendix A.

Only if allowed by the Co-Permittee, these infiltration inputs can be used to simulate Bioretention/Biofiltration rates with Backup Calcs and Data.

Stage-Storage-Discharge*

Stage (FT)	Storage (AC-FT)	Storage (FT3)	Q (CFS)
0	0	0	0
0.25	0.000	21	0.00
0.50	0.001	58	0.00
0.75	0.002	105	0.00
1.00	0.004	160	0.00
1.25	0.005	221	0.00
1.50	0.007	287	0.00
1.75	0.008	358	0.00
2.00	0.010	432	0.00
2.25	0.012	510	0.00
2.50	0.014	590	0.00
2.75	0.015	673	0.00
3.00	0.017	758	0.00
3.25	0.019	843	0.00
3.50	0.021	930	0.00
3.75	0.023	1018	0.00
4.00	0.025	1106	0.00
4.25	0.027	1194	0.00
4.50	0.029	1281	0.00
4.75	0.031	1368	0.00
5.00	0.033	1454	0.00
5.25	0.035	1539	0.00
5.50	0.037	1621	0.00
5.75	0.039	1702	0.00
6.00	0.041	1779	0.00
6.25	0.043	1854	0.00
6.50	0.044	1925	0.00
6.75	0.046	1991	0.00
7.00	0.047	2052	0.00
7.25	0.048	2107	0.00
7.50	0.049	2154	0.00
7.75	0.050	2191	0.00
8.00	0.051	2212	0.00
	0.051	2,212	

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

For Final WQMP, include a copy of the completed Pollutant Sources/Source Control Checklist in the subsequent pages and summarize Source Control BMPs in Section H of this Template.

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.

☒ Yes ☐ No	Storm Drain Inlets		☐ Yes ☒ No	Outdoor storage areas	
☐ Yes ☒ No	Floor Drains		☐ Yes ☒ No	Material storage areas	
☐ Yes ☒ No	Sump Pumps		☐ Yes ☒ No	Fueling areas	
☒ Yes ☐ No	Pets Control/Herbicide Application		☐ Yes ☒ No	Loading Docks	
☒ Yes ☐ No	Food Service Areas		☒ Yes ☐ No	Fire Sprinkler Test/Maintenance water	
☒ Yes ☐ No	Trash Storage Areas		☒ Yes ☐ No	Plazas, Sidewalks and Parking Lots	
☐ Yes ☒ No	Industrial Processes		☐ Yes ☒ No	Pools, Spas, Fountains and other water features	
☐ Yes ☒ No	Vehicle and Equipment Cleaning and Maintenance/Repair Areas				

STEP 2: REQUIRED SOURCE CONTROL BMPS

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.

Pollutant Source	Structural Source Control BMP	Operational Source Control BMP
On-site storm drain inlets	Mark all inlets with the words "No Dumping! Flows to River" 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
Need for future indoor & structural pest control.	The following features will be incorporated in to the design of the buildings to discourage entry of pests: • Framing 8" above finish grade.	Provide Integrated Pest Management information to owners, lessees, and operators.

	• Caulking/sealant at foundation to framing, around windows, doors, & cracks/gaps. • Waterproof membrane treated with insect killer under slab.	
Landscape/Outdoor Pesticide Use	The final landscape plans will: • Preserve existing native trees, shrubs, and ground cover in the open space and inundation easement areas that have not been previously disturbed by agricultural uses. • 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. • Where practical, pest-resistant plants shall be used, 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.	• Maintain landscaping using minimum or no pesticides. • See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com Provide IPM information to new owners, lessees and operators.
Refuse areas	• All refuse will be stored in dumpsters with lids. • The waste management area shall have a permanent roof. • The property owner will contract with a refuse removal service to empty the dumpsters on a regular basis. • Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm or curb around the area. • Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	• The number of receptacles shall be adequate for the size of the development. • Inspect receptacles regularly; repair or replace leaky receptacles. • Keep receptacles covered. • Prohibit/prevent dumping of liquid or hazardous wastes. • Post "no hazardous materials" signs. • Sweep and clean the storage area regularly. Do not hose down the storage area. • Inspect and pick up on-site litter daily and clean up spills immediately. • Keep appropriate spill control materials available onsite. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Vehicle and Equipment Cleaning	• The project is a commercial project. Employees and guests will not be allowed to clean their vehicles on the project site.	There will be no outdoor vehicle or equipment cleaning permitted on the project site.

	• Employees will receive training which includes the prohibition of outdoor equipment and vehicle cleaning on-site. • There will be no facilities, i.e. hoses or water sources available for guests to clean their vehicles.	
Vehicle/Equipment Repair and Maintenance	• The project is a commercial project. Employees and guests will not be allowed to repair or maintain their vehicles on the project site. • Employees will receive training which includes the prohibition of outdoor vehicle/ equipment repair and maintenance on-site.	There will be no outdoor vehicle or equipment repair and maintenance permitted on the project site.
Fire Sprinkler Test Water	• Fire sprinkler test water is to be drained to the nearest on-site private sewer cleanout or manhole. The water from fire sprinkler line flushing can contain high levels of pollutants and is not to be drained to the storm drain, bio retention areas or landscaping.	See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Miscellaneous Drain or Wash Water • Condensate drain lines • Rooftop equipment • Roofing, gutters, and trim.	• 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 directly to the storm drain system. • Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. • 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.

Appendix 9: O&M

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

For the Final WQMP the following information shall be provided:

1. Maintenance Plan per Section 5.3.5 of the WQMP Guidance Document. County will regularly inspect BMPs, so BMPs without access (e.g. backyards, etc) will be rejected. Due to liability, the County does not allow for overlapping private maintenance in the public right-of-way.
2. For all projects, include one wet-signed and notarized hardcopy of the BMP Maintenance agreement. Please note, references to Exhibit A and B on Page 1can be struck out if the entire parcel is mentioned in the "Legal Description" on Page 1 of the agreement. Otherwise see below for Exhibit A and B standards. For BMP agreement, ensure that the name on the agreement matches throughout and the notary sheet, Notary shall be the latest California format, the date of the agreement is the date of the notary, all text does not exceed the margins, then the County will sign, attest & record
3. For Tracts, contact County EDA regarding maintenance determinations/formations. Include a completed Exhibit B.9 - WQMP O&M Cost Sheet.xlsx that is signed by both the preparer (to ensure quantities are correct) and the owner (to understand the maintenance obligations in perpetuity) & an Approved Maintenance Exhibit from EDA.
4. For Tracts or any project , written documentation from the maintenance entity that they are willing to maintain (e.g. CFD, CSA, L&LMD, etc.)

BMP EXHIBIT "A" STANDARDS

1. Use the legal description of the parcel as shown on the tentative exhibit. If not available, use the one in the most current title report.
2. As a backup, if the project is a map the description of the future lot may be included for reference

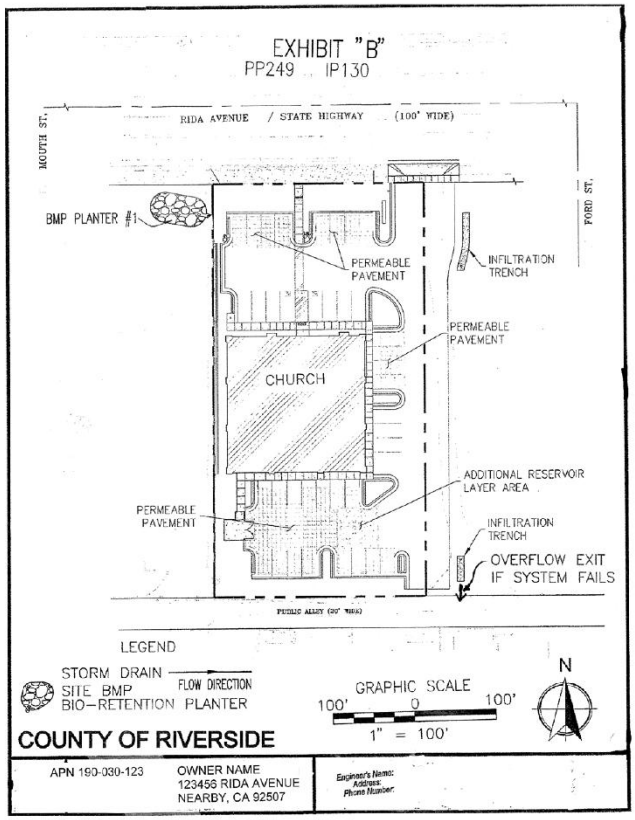
BMP EXHIBIT "B" STANDARDS

1. 0.12" minimum lettering
2. Sheet size must be 8.5" x 11"
3. Show Street names, north arrow
4. Indicate point of flow exit into street if basin system fails
5. Indicate Q100 of flow exit into street
6. Indicate direction of flow exit into street
7. Indicate by notation and/or show nearest downstream drainage facility (catch basin, culvert, riser, etc)
8. Show "Exhibit A", IP and project number (TR, PM, PUP, PP etc)
9. Title block, signature block, engineer seals, USA note is not necessary on Exhibit
10. Show scale used for drawing, provide 4" graphic scale

MAINTENANCE EXHIBIT "B" STANDARDS

1. 0.12" minimum lettering
2. Sheet size must be 8.5" x 11"
3. Show street names, north arrow
4. Show "Exhibit A", IP and project number (TR, PM, PUP, PP etc)
5. Title block, signature block, engineer seals, USA note is not necessary on Exhibit
6. Show scale used for drawing, provide 4" graphic scale

BMP EXHIBIT B EXAMPLE



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

I. Inspection, Maintenance Log

The party responsible for maintenance of the BMPs will provide annual documentation to the County of Riverside verifying that the BMPs are maintained and functioning properly.

II. Updates, Revisions and Errata

This maintenance plan is a "living document" and must be kept up-to-date.

As such, this plan must be updated whenever changes or revisions are made in the parties responsible for operation and maintenance of the BMPs and/or it is determined that additional maintenance procedures are needed.

Any updates or revisions to the maintenance plan must accompany the annual inspection report when it is transmitted to the city.

III. Introduction

A. Project Site:

The 9.26-acre site is currently has no structures, only a vineyard. There is an existing dirt driveway along the westerly edge of the site. The site is located on the south side of Camino Del Vino just west of Deportola Road. There are large residential/agricultural lots surrounding the project.

B. Site Development:

The project includes the construction of a tasting room, production building and storage building and parking lot along with the associated grading and utility services. There will be approximately 0.81 of impervious surfaces including pavement and buildings. There will also be about 0.20 acres of gravel parking on the project. The impervious surfaces comprise 9 percent of the project area. The vineyard will remain after construction.

C. Topography & Drainage:

The existing ground on the project site has been previously graded. There is a descending slope on the north edge of the site. The land slopes generally from the south to the north, with about 192 feet of fall in about 830 feet. The runoff from the site surface drains to an existing natural drainage channel that crosses the site from the north to the east.

After development, the drainage pattern will remain essentially the same with the inclusion of a Harvest & Use BMP. A sump pump will be employed to connect the BMP to the irrigation system in the vineyard.

D. BMP-1 An 1858-cubic foot storage tank for Harvest and Use .

The runoff from DMA-40 drains to BMP-1. A total of 72,933 s.f., including 38,931 s.f. of paved walkways and building roofs, drain to BMP-1 (See WQMP Site Plan). BMP-1 is a 44-foot long, 96" diameters storage tank. Construction details for BMP-1 are shown on sheets 2, 5 and 6 of the Grading Plans for the project, a copy of which is included herein.

IV. Responsibility for Maintenance

A. General

(1) Name and contact information for responsible individual(s).

The property owner will be responsible for the maintenance of the BMPs. The property owner will be responsible for maintaining records, filing annual reports and ensuring that the required maintenance is performed. At the current time, the contact party is:

HAVEN VINEYARDS, LLC
c/o RTN Development
27555 Ynez Rd., Suite 208
Temecula, CA 92591

A. Staff Training Program

The party responsible for the maintenance of the BMPs shall be familiar with the maintenance requirements as outlined in the attached "PRIVATE TREATMENT CONTROL BMP OPERATION AND MAINTENANCE VERIFICATION FORM" and ensure that personnel hired to perform the routine maintenance of the BMPs is qualified for the work.

B. Records

All records for the maintenance and operation of the BMPs will be kept by the property owner.

C. Safety

All maintenance of the BMPs will be performed by experienced personnel who are familiar with the latest OSHA safety requirements for the work being performed.

II. Summary of Drainage Areas and Stormwater Facilities

A. Drainage Areas

The WQMP Site Plan shows the location of the Treatment Control BMPs. The exhibit also indicates the pervious and impervious areas which are draining into the BMPs.

B. Treatment and Flow-Control Facilities

(1) BMP-1 The Harvest & Use LID BMP.

The runoff from DMA's-10, 20, 30 & 40 drains to BMP-1. A total of 59,364 s.f., including 35,185 s.f. of paved walkways and building roofs, drain to BMP-1 (See WQMP Site Plan). BMP-1 is a 44-foot long, 96" diameters storage tank. Construction details for BMP-1 are shown on sheets 2, 5 and 6 of the Grading Plans for the project, a copy of which is included herein.

VI. Facility Documentation

A. "As-built" drawings of the BMPs will be kept with the Maintenance Plan after the project is constructed. (See the Grading Plans in Appendix 2.)

B. The project owner will obtain and attach to this plan the Manufacturer's data, manuals, and maintenance requirements for pumps, mechanical or electrical equipment and proprietary facilities.

C. The Detention Tank BMP-1, requires proper maintenance to operate effectively. The person responsible for the routine maintenance of the BMPs should be aware of the following signs of trouble with the operation of the detention tank:

- Accumulation of sediment, litter, or debris in the storage tanks. This can lead to failure and/or clogging of the pump. Any sediment, trash and debris should be removed immediately from the BMPs and the pre-treatment filter inserts in the biofilter drains should be checked for damage and replaced.

- The sump pump and controls should be checked annually to ensure they are operating properly.

VII. Maintenance Schedule or Matrix

Detention Tank Inspection and Maintenance Matrix	
Frequency	**Frequency**
Quarterly	Inspect BMP. Repair or replace any damaged inlet or outlet structures in kind. Remove and properly dispose of accumulated materials.

All inspections, maintenance and repairs of the bio-retention BMPs shall be documented. Copies of the inspection reports shall be kept with the maintenance plan.

Recorded at the request of
COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT

THIS INSTRUMENT IS FOR THE BENEFIT
OF THE COUNTY OF RIVERSIDE AND
ENTITLED TO BE RECORDED WITHOUT
FEE.(GOV. CODE 6103)

RETURN TO:
RIVERSIDE COUNTY TRANSPORTATION
DEPARTMENT. STOP NO. 1080
4080 LEMON STREET
RIVERSIDE, CA 92501

COVENANT AND AGREEMENT REGARDING WATER QUALITY MANAGEMENT PLAN BMP, CONSENT TO INSPECT, MAINTENANCE AND INDEMNIFICATION

APN: 927-670-009

PROJECT No. BGR /PPT

IP No. _____

OWNER(S): HAVEN WINERIES, LLC

PROPERTY ADDRESS: 41625 Camino Del Vino, Temecula, CA 92590

LEGAL DESCRIPTION: Parcel 3, of Parcel Map 18439, as shown on a map recorded in Book 142, pages 50-51, of Parcel Maps, in the unincorporated territory of the County of Riverside, California, Official Records of Riverside County.

THIS AGREEMENT is made and entered into in Riverside County, California, this _____ day of _____ Year _____, by and between HAVEN WINERIES, LLC (hereinafter referred to as "Covenantor" or "Owner") and the COUNTY OF RIVERSIDE via its Department of Transportation, a political subdivision of the State of California (hereinafter referred to as "County").

RECITALS

WHEREAS, the Covenantor owns real property ("Property") in the County of Riverside, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of these exhibits is attached, and incorporated herein by this reference;

WHEREAS, the County is the owner of interests in that certain real property within the unincorporated area of the County of Riverside, State of California, containing storm drains. pipelines, and related appurtenances constituting the County's municipal separate storm sewer system (the County's "MS4");

WHEREAS, Covenantor intends to develop, improve, and/or use the Property is such a way that approval by the County for such development, improvement, and/or use is required pursuant to applicable laws;

WHEREAS, As a condition for said approval by the County. County required Covenantor. and Covenantor desires to. restrict the use of the Property according to the conditions, covenants. equitable servitudes. and restrictions contained herein for the express benefit of the County's MS4, which include requirements that the Property incorporate post construction on-site stormwater quality control measures;

WHEREAS, the Covenantor/Owner has chosen to install one or more hereinafter referred to as "Device", as the on-site control measure to minimize pollutants in urban runoff;

WHEREAS, said Device has been installed in accordance with plans and specifications accepted by the County;

WHEREAS, said Device, with installation on private property and draining only private property, is a private facility with all maintenance or replacement, therefore, the sole responsibility of the Covenantor/Owner in accordance with the terms of this Agreement;

WHEREAS, the Covenantor/Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to. filter material replacement and sediment removal, is required to assure peak performance of Device and that, furthermore. such maintenance activity will require compliance with all Local. State, or Federal laws and regulations, including those pertaining; to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, incorporating the foregoing Recitals and in consideration of the covenants and conditions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and expressly for the benefit of and to bind, their successors in interest, the parties hereto agree as follows:

1. Covenantor/Owner hereby provides the County or County's designee complete access to the Device and its immediate vicinity and such access onto the property to permit access to the devise at any time, upon twenty-four (24) hour advance notice in writing, of any duration for the purpose of inspection, sampling and testing of the Device. County shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.
2. Covenantor/Owner shall use its best efforts diligently to maintain the Device in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of material(s) from the Device and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the County / Regional Water Quality Control Board (RWQCB), the Owner shall provide the RWQCB with documentation identifying the material(s) removed, the quantity, and disposal destination.
3. In the event Covenantor/Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the County, the County is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense to the Owner or Owner's successors or assigns. including administrative costs and interest thereon at the maximum rate authorized by the Civil Code from the date of notice of expense until paid in full.
4. The County may require the Covenantor/Owner to post security in a form and for a time period satisfactory to the County to guarantee the performance of the obligations stated herein. Should the Owner fail to perform the obligations under this Agreement, the County may, in the case of a cash deposit, certificate of deposit or letter of credit, act for the Owner

using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement.

5. The County may, but shall not be obligated to, enforce this Agreement by a proceeding at law or in equity against any person or persons violating or attempting to violate any condition, covenant, equitable servitude, or restriction provided for herein, either to restrain such violation or to recover damages.
6. This Agreement constitutes the entire agreement and understanding between the parties with respect to the subject matter of this Agreement and supersedes all prior or contemporaneous agreements and understandings with respect to the subject matter hereof whether oral or written.
7. If any part of this Agreement is declared by a final decision of a court of competent jurisdiction to be invalid for any reason, such shall not affect the validity of the rest of the Agreement. The other parts of this Agreement shall remain in effect as if this Agreement had been executed without the invalid parts(s). The parties declare that they intend and desire that the remaining parts of this Agreement continue to be effective without any part(s) that have been declared invalid.
8. This Agreement may be executed in counterparts, each of which so executed shall, irrespective of the date of its execution and delivery, be deemed an original, and all such counterparts together shall constitute one and the same instrument.
9. This Agreement shall be recorded in the Office of the Recorder of Riverside County, California and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth.
10. In the event of legal action occasioned by any default or action of the Covenantor/Owner, or its successors or assigns, then the Covenantor/Owner and its successors or assigns agree(s) to pay all costs incurred by the County in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.
11. Covenantor/Owner agrees to indemnify, defend, and hold harmless the County, its elected officers, employees, agents, and contractors from and against any and all liability. expense. including costs and reasonable legal fees. and claims of damage of any nature whatsoever including. but not limited to, death. bodily injury. personal injury, or property damage arising from or connected with the County inspection of the Property except where such liability, expense, or claim for damage results from the sole negligence or willful misconduct of the County.
12. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien thereon against.
13. The obligations herein undertaken shall be binding upon the heirs. successors. executors. administrators and assigns of the parties hereto and any other present or future interest holders or estate holders in the property. The term "Owner shall include not only the present Owner, but also its heirs, successors in interest and in title to the property, executors. administrators. and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the County at the same time such notice is provided to the successor.

14. Time is of the essence in the performance of this Agreement.
15. Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

COVENANTOR/OWNER NAME:

Haven Wineries, LLC
41625 Camino Del Vino
Temecula, CA 92592

COUNTY:

Riverside County Department of Transportation
Attn: Transportation Director
4080 Lemon Street
Riverside, CA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT

Patricia Romo, P.E. Date
Director of Transportation

(Attest) Date

COVENANTOR/OWNER
Refuge Estates, LLC

Signature of Covenantor/Owner

(Print Name)

(Print Title)

Attach Notary

Appendix 10: Educational Materials

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

For the Final WQMP, examples of material to provide in Appendix 10 may include but are not limited to the following:

- BMP Fact Sheets for proposed BMPs form Exhibit C: LID BMP Design Handbook of the SMR WQMP,
- Source control information and training material for site owners and operators,
- O&M training material,
- Other educational/training material related to site drainage and BMPs.

Educational Materials can be downloaded from the following site:

Outreach Materials Library - Riverside County Watershed Protection

The following BMP Fact Sheets are included herein:

3.12 Harvest & Use BMPs
3.3 Permeable Pavement

3.12 Harvest and Use BMPs

Type of BMP	Site Design – Harvest and Use
Treatment Mechanisms	Volume Reduction
Infiltration Rate Range	Any infiltration rate, when applicable and feasible
Maximum Drainage Area	This BMP is generally limited by the cistern / detention storage volume

Description

Harvest and use BMPs include both above-ground and underground cisterns / vaults. Such BMPs collect and temporarily store runoff for later non-potable uses including the following:

- Irrigation
- Toilet flushing
- Other non-potable uses, such as industrial processes

Above-ground cisterns collect and temporarily store runoff from rooftops or other above-ground impervious surfaces. Underground cisterns include subsurface tanks, vaults and oversized pipes that temporarily store runoff for later use. These systems can include pipes that divert runoff to the cistern, an overflow system for when the cistern is full, a pump, and a distribution system to supply the intended uses.

Siting Considerations

- The primary feasibility consideration for harvest and use BMPs is the presence of a consistent and reliable demand that is sufficient to drain the BMPs between storms. When designing harvest and use systems for stormwater management, a reliable method of quickly regenerating storage capacity (through the use of the captured stormwater) must exist to ensure that there will be adequate storage capacity for subsequent storms in the wet season.
- Other feasibility considerations include potential conflicts with health and plumbing codes. Applicable health codes focus mainly on the potential impacts of long-term standing water in the BMP facility.
- For above-ground cisterns, the facilities should be installed on a level surface, either on consolidated and stable native soil, or on a concrete pad. A geotechnical analysis is required to ensure stability.
- For underground detention facilities, **pretreatment** must be provided where necessary or as directed by the Engineering Authority, to prevent accumulation of sediments within the BMP. These facilities should be installed on consolidated and stable native soil. A geotechnical analysis is required to ensure stability.

Key Design Elements

- All cisterns must:
  - Have provisions for mosquito prevention and abatement.
  - Have mechanisms to keep debris and animals from entering the cistern, and have a mechanism to easily clean any/all screens.
  - Have provisions for safe overflow of runoff when the cistern is full. Overflow shall be directed to an appropriate area as approved by the Engineering Authority. Dispersion within vegetated areas is preferred.
  - Have adequate access to maintain and/or replace the cistern and all associated equipment such as pumps. For underground cisterns / vaults, this includes access adequate to remove any/all accumulated sediment.
  - Be designed in a manner that allows for supplemental potable water to be used when there is insufficient harvested water to fully meet required demands.
  - Include measures acceptable to the local water supplier to prevent harvested storm water from being introduced into the potable water supply.

See the following figures for *examples* of common elements of above-ground and underground cisterns. The proposed design elements and configurations must be approved by the Engineering Authority.

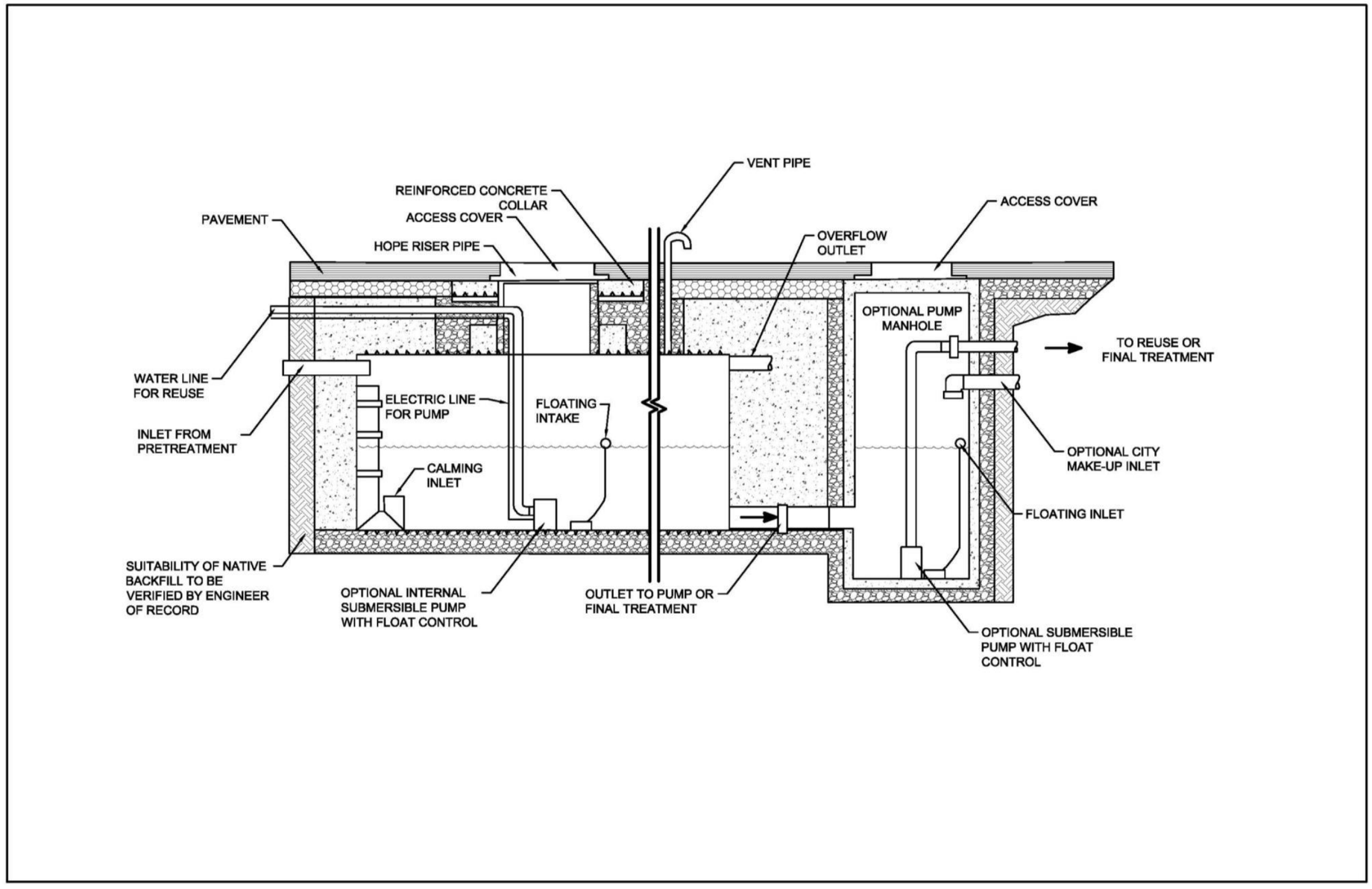


Figure 1 – Common Design Elements of Underground Cistern

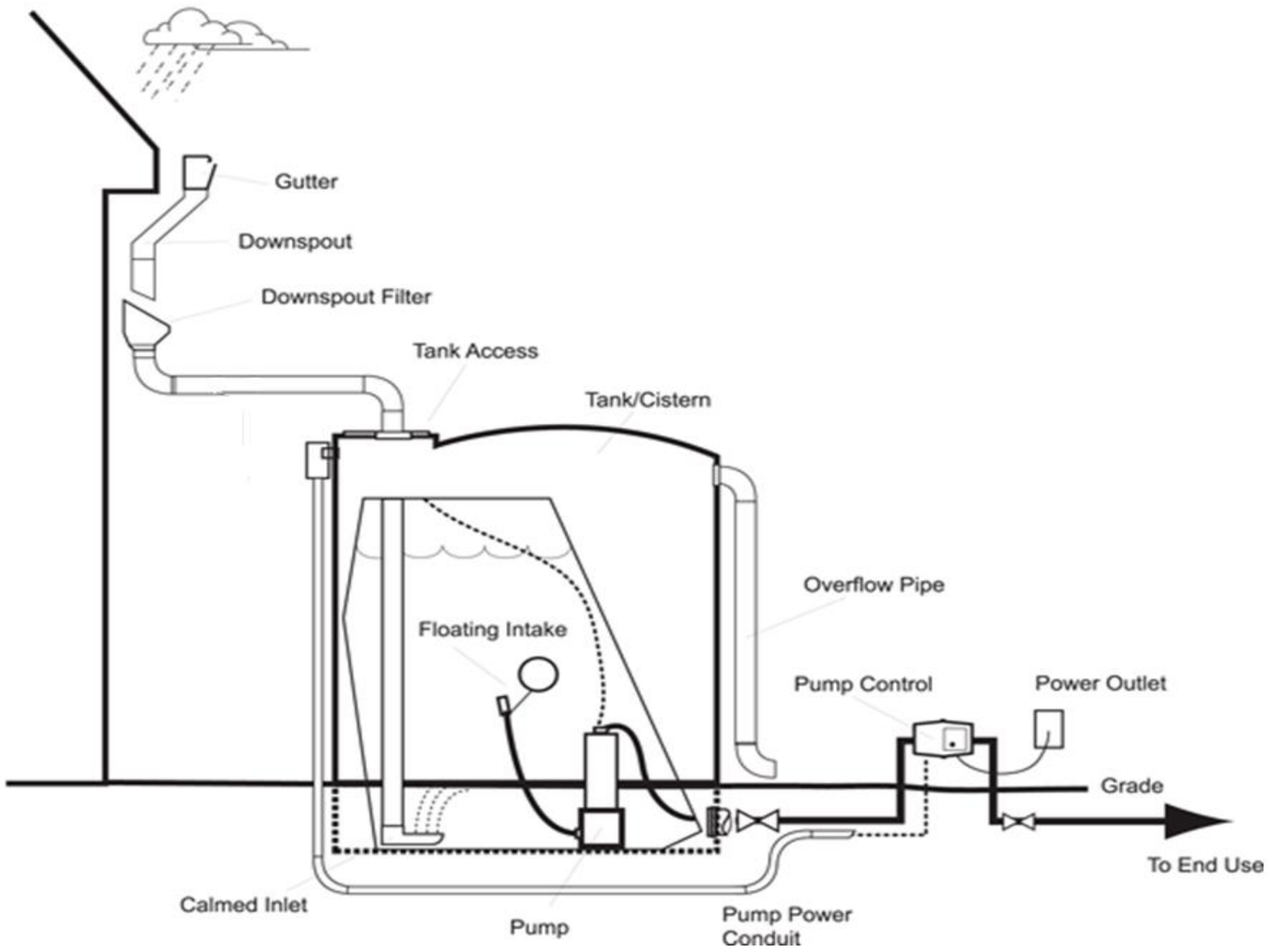


Figure 2 – Common Design Elements of Above-ground Cistern
Graphic courtesy of BRAE

Design and Sizing Criteria

1. Assess whether there is sufficient and reliable (year-round) demand for non-potable use of the runoff from the area tributary to the BMP. Consider seasonal variations in demand for harvested water, such as irrigation needs during the wet season, periodic facility closures (such as for schools), etc. Verify with the Engineering Authority (EA) and the Santa Margarita Region (SMR) Water Quality Management Plan (WQMP) for applicability requirements / restrictions for this BMP. The following potential on-site uses for harvested rainwater are typically assessed:

    a. Irrigation use
    b. Toilet use
    c. Other non-potable uses (i.e. industrial use)

2. If there is a sufficient on-site demand for harvested rainwater acceptable to the Engineering Authority, determine the Design Capture Volume, V_{BMP}, determined from Section 2.1 of this Handbook.

3. Size the cistern to hold and allow for the use of the Design Capture Volume, in accordance with any manufacturer specifications.

Inspection and Maintenance Schedule

Schedule	Activity
Annually before the wet season	• Check for debris and sediment on screens and overflow facilities and remove where observed. • Verify proper operation of all pumps. • Check integrity of downspout connections to harvest and use BMPs • Check locking mechanisms on facility entry covers • Check integrity of mosquito screens
After storm events	• Check for long-term standing water in the facility. If standing water is observed more than 72 hours after the last storm event, monitor water levels, and verify that the water is being drawn down through the intended use of the water. If water is not properly being drawn down ensure that all pumps distribution systems are functioning correctly. Under no circumstances shall water retained within a cistern be pumped or otherwise drained in a manner that could allow a discharge to a street or storm drain. • Remove debris and sediment from screens and overflow facilities

3.3 Permeable Pavement

Type of BMP	LID - Infiltration
Treatment Mechanisms	Infiltration, Evaporation
Maximum Drainage Area	10 acres
Other Names	porous pavement, pervious concrete, pervious asphalt, pervious gravel pavement, cobblestone block, modular block, modular pavement

Description

Permeable pavements can be either pervious asphalt and concrete surfaces, or permeable modular block. Unlike traditional pavements that are impermeable, permeable pavements reduce the volume and peak of stormwater runoff as well as mitigate pollutants from stormwater runoff, provided that the underlying soils can accept infiltration. Permeable pavement surfaces work best when they are designed to be flat or with gentle slopes. This factsheet discusses criteria that apply to infiltration designs.

The permeable surface is placed on top of a reservoir layer that holds the water quality stormwater volume, $V_{BMP.}$ The water infiltrates from the reservoir layer into the native subsoil. Tests must be performed according to the Infiltration Testing Section in Appendix A to be able to use this design procedure.

In some circumstances, permeable pavement may be implemented on a project as a source control feature. Where implemented as a source control feature (sometimes referred to as a 'self-retaining' area), the pavement is not considered a 'BMP' that would be required to be designed and sized per this manual. Where permeable pavement receives runoff from adjacent tributary areas, the permeable pavement *may* be considered a BMP that must be sized according to this manual. Consult the Engineering Authority and the WQMP for any applicable requirements for designing and sizing permeable pavement installations.

Siting Considerations

The WQMP applicable to the project location should be consulted, as it may include criteria for determining the applicability of this and other Infiltration-based BMPs to the project.

Permeable pavements can be used in the same manner as concrete or asphalt in low traffic parking lots, playgrounds, walkways, bike trails, and sports courts. Most types of permeable pavement can be designed to meet Americans with Disabilities Act (ADA) requirements. Permeable pavements **should not** be used in the following conditions:

- Downstream of erodible areas
- Downstream of areas with a high likelihood of pollutant spills
- Industrial or high vehicular traffic areas (25,000 or greater average daily traffic)
- Areas where geotechnical concerns, such as soils with low infiltration rates, would preclude the use of this BMP.

Sites with Impermeable Fire Lanes

Oftentimes, Fire Departments do not allow alternative pavement types including permeable pavement. They require traditional impermeable surfaces for fire lanes. In this situation, it is acceptable to use an impermeable surface for the fire lane drive aisles and permeable pavement for the remainder of the parking lot.

Where impermeable fire lanes are used in the design, the impermeable surface must slope towards the permeable pavement, and the base layers shall remain continuous underneath the two pavement types, as shown in Figure 1. This continuous reservoir layer helps to maintain infiltration throughout the pervious pavement site, and can still be considered as part of the total required storage area.

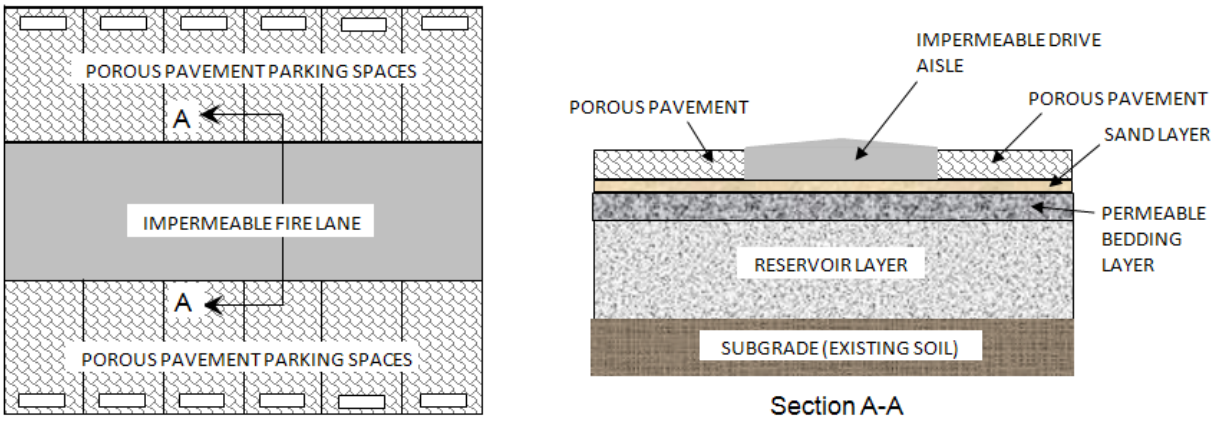


Figure 1: Impermeable Fire Lanes

Also, while a seal coat treatment may be used on the impermeable fire land, traditional seal coat treatments **shall not** be used on permeable pavement.

Setbacks

Always consult your geotechnical engineer for site specific recommendations regarding setbacks for permeable pavement. Recommended setbacks are needed to protect buildings, walls, onsite wells, streams and tanks.

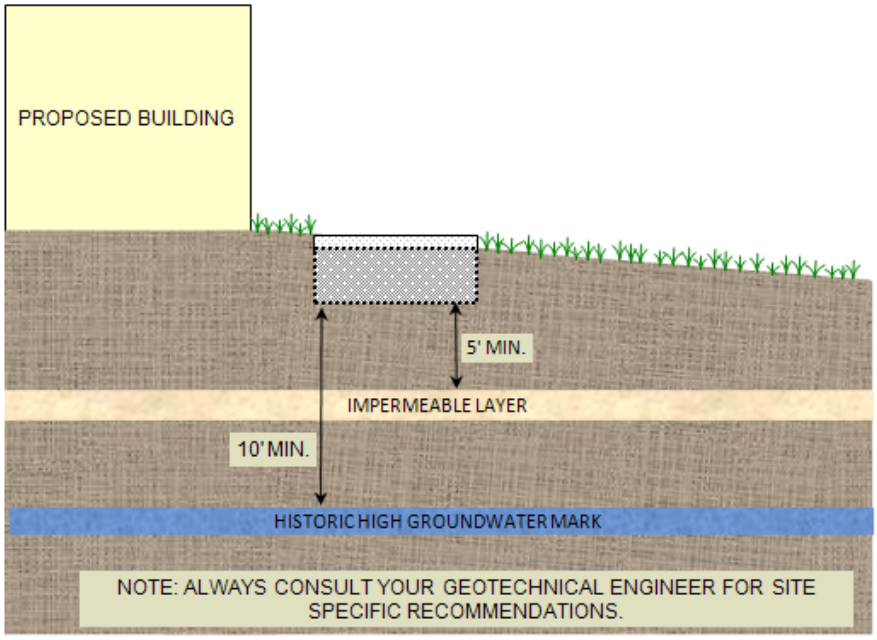


Figure 2: Permeable Pavement Setback Requirements

A minimum vertical separation of 10 feet is required from the bottom of the reservoir layer to the historic high groundwater mark, see Figure 2. A minimum vertical separation of 5 feet is required from the bottom of the reservoir layer to any impermeable layer in the soil. If the historic high groundwater mark is less than 10 feet below the reservoir layer section, or less than 5 feet from an impermeable layer, the infiltration design is not feasible.

Design and Sizing Criteria

To ensure that the pavement structural section is not compromised, a 24-hour drawdown time is utilized for this BMP instead of the longer drawdown time used for most volume based BMPs.

Reservoir Layer Considerations

Even with proper maintenance, sediment will begin to clog the soil below the permeable pavement. Since the soil cannot be scarified or replaced, this will result in slower infiltration rates over the life of the permeable pavement. Therefore, the reservoir layer is limited to a maximum of 12 inches in depth to ensure that over the life of the BMP, the reservoir layer will drain in an adequate time.

***Note**: All permeable pavement BMP installations (not including Permeable Pavement as a source control BMP i.e. a self-retaining area) must be tested by the geotechnical engineer to ensure that the soils drain at a minimum allowable rate to ensure drainage.. See the Infiltration Testing Section of this manual for specific details for the required testing and applied factors of safety.*

Sloping Permeable Pavement

Ideally permeable pavement would be level, however most sites will have a mild slope. If the tributary drainage area is too steep, the water may be flowing too fast when it approaches the permeable pavement, which may cause water to pass over the pavement instead of percolating and entering the reservoir layer. If the maximum slopes shown in Table 1 are complied with, it should address these concerns.

Table 1: Design Parameters for Permeable Pavement

Design Parameter	Permeable Pavement
Maximum slope of permeable pavement	3%
Maximum contributing area slope	5%

Regardless of the slope of the pavement surface design, the bottom of the reservoir layers **shall be flat and level** as shown in Figure 3. The design shown ensures that the water quality volume will be contained in the reservoir layer. A terraced design utilizing non-permeable check dams may be a useful option when the depth of gravel becomes too great as shown in Figure 3.

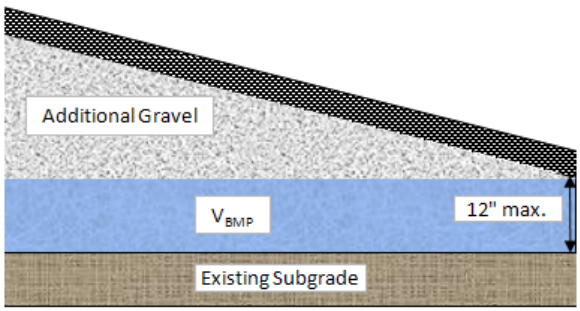


Figure 3: Sloped Cross Sections for Permeable Pavement

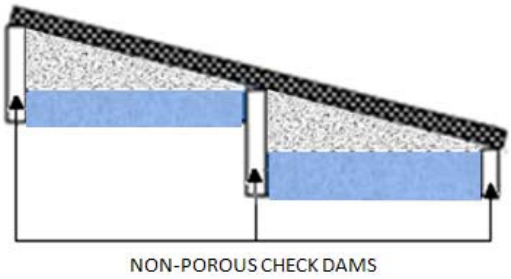


Figure 4: Permeable Pavement with Non-permeable Check Dams

In Figure 4, the bottom of the gravel reservoir layer is incorrectly sloped parallel to the pavement surface. Water would only be allowed to pond up to the lowest point of the BMP. Additional flows would simply discharge from the pavement. Since only a portion of the gravel layer can store water, this design would result in insufficient capacity. This is not acceptable.

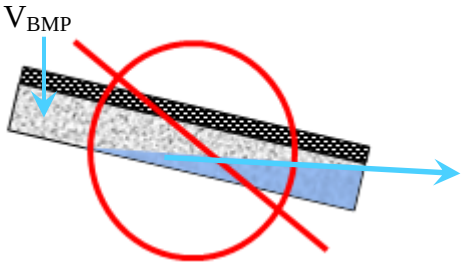


Figure 5: Incorrect Sloping of Permeable Pavement

To assure that the subgrade will empty within the 24 hour drawdown time, it is important that the maximum depth of 12 inches for the reservoir layer discussed in the design procedure is not exceeded. The value should be measured from the lowest elevation of the slope (Figure 4).

Minimum Surface Area

The minimum surface area required, A_S, is calculated by dividing the water quality volume, V_{BMP}, by the depth of water stored in the reservoir layer. The depth of water is found by multiplying the void ratio of the reservoir aggregate by the depth of the layer, b_{TH}. The void ratio of the reservoir aggregate is typically 40%; the maximum reservoir layer depth is 12".

Sediment Control

A pretreatment BMP should be used for sediment control. This pretreatment BMP will reduce the amount of sediment that enters the system and reduce clogging. The pretreatment BMP will also help to spread runoff flows, which allows the system to infiltrate more evenly. The pretreatment BMP must discharge to the surface of the pavement and not the subgrade. Grass swales may also be used as part of a treatment train with permeable pavements.

Liners and Filter Fabric

Always consult your geotechnical engineer for site specific recommendations regarding liners and filter fabrics. Filter fabric may be used around the edges of the permeable pavement; this will help keep fine sediments from entering the system. Unless recommended for the site, impermeable liners are not to be used below the subdrain gravel layer.

Overflow

An overflow route is needed in the permeable pavement design to bypass storm flows larger than the V_{BMP} or in the event of clogging. Overflow systems must connect to an acceptable discharge point such as a downstream conveyance system.

Roof Runoff

Permeable pavement can be used to treat roof runoff. However, the runoff cannot be discharged beneath the surface of the pavement directly into the subgrade, as shown in Figure 6. Instead the pipe should empty on the surface of the permeable pavement as shown in Figure 7. A filter on the drainpipe should be used to help reduce the amount of sediment that enters the permeable pavement.

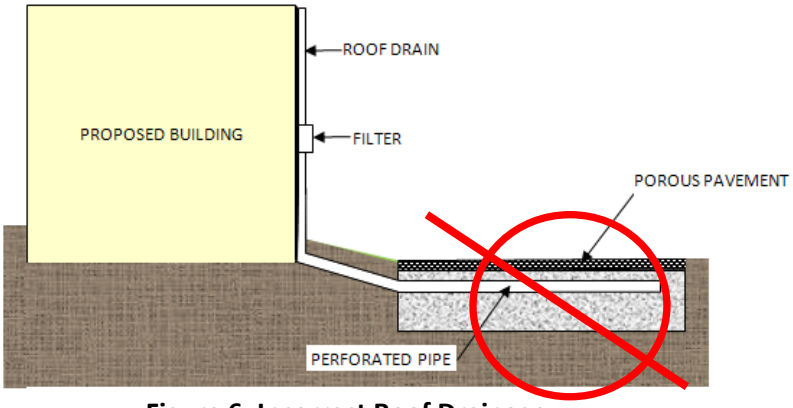


Figure 6: Incorrect Roof Drainage

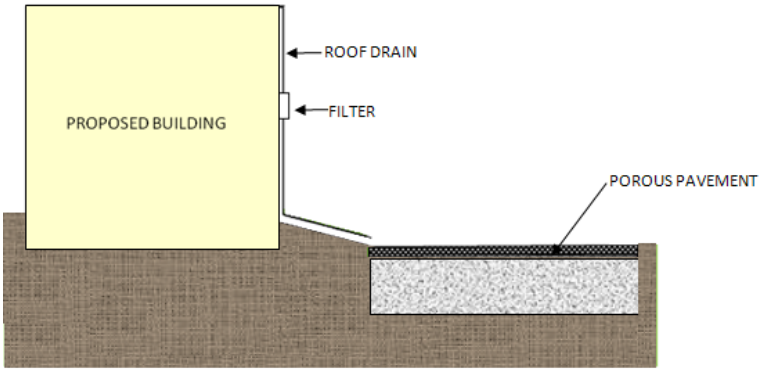


Figure 7: Correct Roof Runoff Drainage

Infiltration

Refer to the Infiltration Testing Section (Appendix A) in this manual for recommendations on testing for this BMP.

Pavement Section

The cross section necessary for infiltration design of permeable pavement includes:

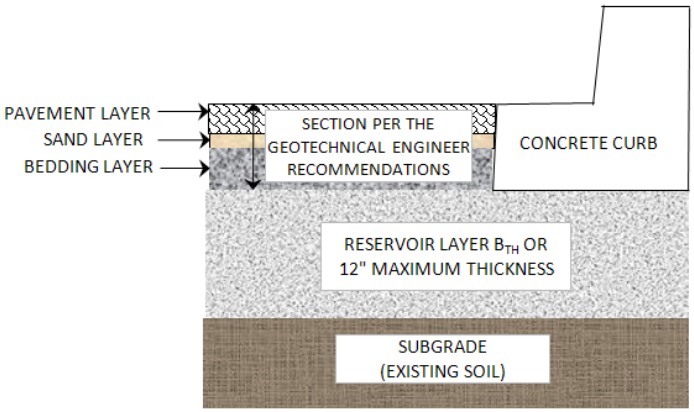


Figure 8: Infiltration Cross Section

- The thickness of the layers of permeable pavement, sand and bedding layers depends on whether it is permeable modular block or pervious pavement. A licensed geotechnical or civil engineer is required to determine the thickness of these upper layers appropriate for the pavement type and expected traffic loads.
- A 12" maximum reservoir layer consisting of AASHTO #57 gravel vibrated in place or equivalent with a minimum of 40% void ratio.

Inspection and Maintenance Schedule –Modular Block

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris
Utility Trenching and other pavement repairs	• Remove and reset modular blocks, structural section and reservoir layer as needed. Replace damaged blocks in-kind. • Do not pave repaired areas with impermeable surfaces.
After storm events	• Inspect areas for ponding
2-3 times per year	• Sweep to reduce the chance of clogging
As needed	• Sand between pavers may need to be replaced if infiltration capacity is lost

Inspection and Maintenance Schedule –Pervious Concrete/Asphalt

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris
Utility Trenching other pavement repairs	• Replace structural section and reservoir layer in kind. • Re-pave using pervious concrete/asphalt. Do not pave repaired areas with impermeable surfaces.
After storm events	• Inspect areas for ponding
2-3 times per year	• Vacuum the permeable pavement to reduce the chance of clogging
As needed	• Remove and replace damaged or destroyed permeable pavement

Design Procedure Permeable Pavement

1. Enter the Tributary Area, A_T.

2. Enter the Design Volume, $V_{BMP,}$ determined from Section 2.1 of this Handbook.

3. Enter the reservoir layer depth, b_{TH} for the proposed permeable pavement. The reservoir layer maximum depth is 12 inches.

4. Calculate the Minimum Surface Area, A_S, required.

$$A_S(\text{ft}) = \frac{V_{BMP}\ (\text{ft}^3)}{(0.4 \times b_{TH}\ (\text{in}))/12(\text{in/ft})}$$

   Where, the porosity of the gravel in the reservoir layer is assumed to be 40%.

5. Enter the proposed surface area and ensure that this is equal to or greater than the minimum surface area required.

6. Enter the dimensions, per the geotechnical engineer's recommendations, for the pavement cross section. The cross section includes a pavement layer, usually a sand layer and a permeable bedding layer. Then add this to the maximum thickness of the reservoir layer to find the total thickness of the BMP.

7. Enter the slope of the top of the permeable pavement. The maximum slope is 3%.

8. Enter whether sediment control was provided.

9. Enter whether the geotechnical approach is attached.

10. Describe the surfaces surrounding the permeable pavement. It is preferred that a vegetation buffer is used around the permeable pavement.
11. Check to ensure that vertical setbacks are met. There should be a minimum of 10 feet between the bottom of the BMP and the top of the high groundwater table, and a minimum of 5 feet between the reservoir layer the top of the impermeable layer.

Reference Materials Used to Develop this Fact Sheet:

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Atlanta Regional Commission, et. al. Georgia Stormwater Management Manual. 1st Edition. Vol. 2. Atlanta, 2001. 3 vols.

Bean, E. Z., et al. "Study on the Surface Infiltration Rate of Permeable Pavements." Water and Environment Specialty Conference of the Canadian Society for Civil Engineering. Saskatoon, 2004. 1-10.

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Camp Dresser and McKee Inc.; Larry Walker Associates. California Stormwater Best Management Practice Handbook for New Development and Redevelopment. California Stormwater Quality Association (CASQA), 2004.

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County of Los Angeles Public Works. Stormwater Best Management Practice Design and Maintenance Manual. Los Angeles, 2009.

Program, Ventura Countywide Stormwater Quality Management. Technical Guidance Manual for Stormwater Quality Control Measures. Ventura, 2002.

Sacramento Stormwater Quality Partnership and the City of Roseville. Stormwater Quality Design Manual for the Sacramento and South Placer Regions. County of Sacramento, 2007.

Taylor, Chuck. "Advanced Pavement Technology." Riverside, 2008.

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TABLE 1. Catch Basin Inserts and Other Insert Systems

Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
AbTech Industries, Inc.	**Ultra Urban Filter Curb Opening and Drop-In**	**Application 25 06/30/20**	**04/8/20**
Advanced Drainage Systems, Inc.	**FLEXSTORM PURE Full Trash Capture Inserts**	**Application 3 03/15/18 Updated 04/21/21**	**03/30/21**
Advanced Drainage Systems, Inc.	**FLEXSTORM Connector Pipe Screen**	**Fact Sheet ADS-1 Updated 06/08/21 Updated 05/20/24**	**Updated 05/20/24**
Bio Clean® Environmental Services, Inc.	**Curb Inlet and Grate Inlet Filters**	**Application 4 03/15/18 Updated 10/21/21 Updated 4/29/2024**	**Updated 04/25/24**
Hydra TMDL Systems (Previously certified as Bio Clean® Environmental Services, Inc.)	**Connector Pipe Screen**	**Fact Sheet BC-3 Updated 04/30/20 Updated 05/01/24**	**Updated 05/01/24**
BrightWater™	**Connector Pipe Screen**	**Application 29 03/15/18 Updated 12/29/20**	**11/19/20**

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Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
BrightWater™	Curb Inlet Filter	Application 26 06/30/20	04/17/20
Ecology Control Industries	Debris Dam - Catch Basin Insert for Curb Inlet Design	Fact Sheet ECI-1 12/02/15 Updated 06/17/20	04/29/20
Enviropod® International: A Stormwater 360 Group Company	Enviropod® LittaTrap™ Full Capture	Application 27 10/14/20	07/20/20
Fabco Industries, Inc.	Fabco Connector Pipe Screen	Application 36 Updated 2/07/2024 Updated 04/25/24	Updated 04/25/24
Fabco Industries, Inc.	Fabco Expanding StormRing CPS	Application 42 09/25/2023	08/28/2023
Fabco Industries, Inc.	Fabco Ready-Fit StormSack	Application 41 06/16/2023	6/12/2023
Fabco Industries, Inc.	Fabco ScreenBox	Application 37 10/13/22	10/05/22

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Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
Fabco Industries, Inc.	Fabco StormBasin	Application 38 10/13/22	10/05/22
Fabco Industries, Inc.	Fabco StormSack	Application 39 10/13/22	10/05/22
Fabco Industries, Inc.	Fabco StormTrough	Application 43 11/30/2023	11/01/2023
Filtrexx® Sustainable Technologies	StormExx® Clean	Application 16 08/10/18 Updated 11/25/19	12/06/19
Frog Creek Partners, LLC	Gutter Bin® Channel Filtration System and Mundus Bag® Water Filter	Application 22 06/26/19	04/19/19
Frog Creek Partners, LLC	Gutter Bin® Eco Curb Inlet Filter and Mundus Bag® Water Filter	Application 23 02/18/19	10/14/19
Frog Creek Partners, LLC	Gutter Bin® Eco Drop Inlet Filter and Mundus Bag® Water Filter	Application 24 02/18/20	12/06/19
G2 Construction, Inc.	G2 CPS-Mod™ and Removable CPS-Mod™ Screen	Application 18 06/26/19	03/15/19

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Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
G2 Construction, Inc.	G2 Grated Inlet Trash Screen	Application 19 06/26/19	04/10/19
Hydroworks, LLC	HydroDome TR	Application 44 04/30/24	04/18/24
Inventive Resources, Inc.	Water Decontaminator	Application 2 03/15/18 Updated 02/05/21	04/20/20
Kai Pono Solutions	Standard Basic System	Application 45 06/14/24	06/10/24
Oldcastle Infrastructure	FloGard® + Plus® Catchbasin Trash Screen Insert, Combination Inlet Style Drop in Basket	Fact Sheet OI-1 12/02/15 Updated 06/09/21	06/09/21
Oldcastle Infrastructure	FloGard® Catchbasin Trash Screen Insert, Flat Grated Inlet Style Drop in Basket	Fact Sheet OI-2 12/02/15 Updated 06/09/21	06/09/21
Oldcastle Infrastructure	FloGard® Catchbasin Outlet Trash Screen Insert Connector Pipe Screen	Fact Sheet OI-3 Updated 01/29/19	12/06/19

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Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
Revel Environmental Manufacturing, Inc.	Triton™ Bioflex Inlet Trash Guard Catchbasin Polyester Fiber Mesh Trash Filter Insert	Fact Sheet REM-1 12/02/15 Updated 09/10/21	09/07/21
Revel Environmental Manufacturing, Inc.	Triton™ Crescent Pipe Screen	Application 12 07/10/18	03/15/19
Revel Environmental Manufacturing, Inc.	Triton™ Perf-Full Trash Capture Insert	Application 13 07/10/18 Updated 12/21/21	12/20/21
Safe Drain Stormwater Holdings, Inc.	Storm Vector Guard	Application 30 02/11/21	12/17/20
Stormtek	Stormtek ST3 & ST3G Catchbasin Connector Pipe	Fact Sheet AS-1, A1S-2 12/02/15 Updated 08/12/21	08/04/21
United Stormwater, Inc.	Connector Pipe Trash Screen	Fact Sheet USW-1 12/02/15 Updated 01/29/22	01/26/22

TABLE 2. High Flow Capacity Trash Full Capture Systems

Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
Advanced Drainage Systems, Inc.	Barracuda Hydrodynamic Separator	Application 21 06/26/19 Updated 05/21/21	03/15/19 Updated 05/21/21
AquaShield, Inc.	Aqua-Swirl® Stormwater Treatment System	Application 1 08/04/17 Updated 01/06/23	12/03/20 Updated 01/06/23
Bio Clean® Environmental Services, Inc.	Debris Separating Baffle Box	Application 6 03/15/18	07/28/20
Bio Clean® Environmental Services, Inc.	Bio Clean® Deflective Screening Device	Application 20 06/26/19	07/28/20
Bio Clean® Environmental Services, Inc.	Modular Wetland System®	Application 15 07/10/18	03/15/19
Coanda Inc.	Coanda Trash Screen and Debris Fence	Fact Sheet COA-1 12/02/15 Updated 09/10/21	09/07/21

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Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
Contech Engineered Solutions	Continuous Deflective Separator Hydrodynamic Separator	Fact Sheet CCP-1HF 12/02/15 Updated 05/27/21	04/29/21
Jensen® Stormwater Systems	Jensen® Deflective Separators	Application 5 03/15/18	12/06/19
Hydro International®	Downstream Defender® (In-Line and Off-Line Configurations)	Application 14 07/10/18	03/16/20
Hydro International®	First Defense® High-Capacity Full Trash Capture Device	Application 28 10/30/20	08/20/20
Hydro International®	Hydro Up-Flo Filter®	Application 11 07/18/18	03/16/20
Hydro International®	Hydro DryScreen®	Application 10 07/10/18 Updated 05/05/21	04/29/21

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Applicant/Owner	Full Capture System Name	Date of Application Certification and Update (if applicable), or Fact Sheet Update	Date of Vector Control Accessibility Approval
Oldcastle Infrastructure	FloGard® NetTech	Fact Sheet OI-11HF 12/02/15 Updated 02/08/20	12/03/20
Oldcastle Infrastructure	Nutrient Separating Baffle Box®	Application 17 10/12/18 Updated 07/21/20	07/20/20
Roscoe Moss Company	Storm Flo® Trash Screen – Linear Radial Gross Solids Removal Device	Fact Sheet RMC-1HF 12/02/15 Updated 03/30/21	03/11/21
StormTrap®, LLC	SiteSaver®	Application 9 03/15/18 Updated 02/23/21	03/18/21
StormTrap®, LLC	TrashTrap® Net and Fixed Basket In-Line Stormwater Treatment System	Application 34 06/21/22	05/03/22
StormTrap®, LLC	TrashTrap® Net and Fixed Basket End-of-Pipe Stormwater Treatment System	Application 35 07/06/22	06/01/22

FlexStorm Pure™
Inlet Filters

FlexStorm Pure inlet filters are the preferred choice for permanent inlet protection and stormwater runoff control. Constructed of stainless steel, FlexStorm Pure inlet filters will fit any drainage structure and are available with site-specific filter bags providing various levels of filtration.

Applications

- Car washes
- Commercial
- Loading ramps
- Industrial
- Gas stations
- Parking lots
- Dock drains
- Maintenance

Features

- Custom stainless steel frames are configured to fit into any drainage structure
- Flow and bypass rates meet specific inlet requirements
- Works below grade with bypass to drain area if bag is full
- Installed and maintained by one worker, without additional equipment

Benefits

- Stainless steel frame provides extended service life
- Easily replaceable filter bags
- Meets stringent removal requirements:
  - All bags rated >80% removal efficiency of street sweep-size particles
  - Optional FXP/PCP bags can be used for hydrocarbon removal when required





ADS™

FlexStorm Pure Inlet Filters Specification

Material and Performance

The filter is comprised of a stainless steel frame and a replaceable geotextile filter bag attached to the frame with a stainless steel locking band. The filter bag hangs suspended below the grate that shall allow full bypass flow into the drainage structure if the bag is completely filled with sediment. The standard woven polypropylene "FX" filters bags are rated for 200 gpm/sqft with a removal efficiency of 82% when filtering a USDA Sandy Loam sediment load. The post-construction PCP filter bags are rated for 137 gpm/sqft and have been third-party tested at 99% TSS removal.

Installation

1. Remove the grate from the inlet.
2. Clean debris from the ledges of the inlet.
3. Place the inlet filter onto the load bearing ledges of the structure.
4. Replace the grate and confirm it is not elevated more than ⅛" (3 mm).

Frequency of Inspections

1. Inspection should occur following rain events greater than ½" (13 mm).
2. Filter inspections should occur a minimum of three times per year, and in snowfall affected regions, inspections prior to and after snowfall season.
3. Industrial application site inspections (loading ramps, wash racks & maintenance facilities) to be scheduled on a recurring basis no less than four times per year or as needed.

Maintenance Guidelines

1. Empty the filter bag manually or by industrial vacuum taking care not to damage the geotextile bag when more than half filled or during scheduled inspection period.
2. Remove compacted silt from sediment bag and flush with medium spray.
3. "PCP" style bags should be pressed or wrung to recover retained oils.
4. Oil skimmer pouches solidify and darken when saturated, indicating time for replacement.
5. Dispose of all oil-contaminated products and recovered oils in accordance with EPA guidelines. Oil skimmer pouches, since a solidifier, will not leach and can be disposed of directly.
6. Inspect and replace bag if torn or punctured.

Filter Bag Replacement

1. Remove the bag by loosening or cutting off clamping band.
2. Take the new correctly sized sediment bag and secure hose clamping band to the frame channel as previously removed.
3. Ensure bag is secure and there is no slack around perimeter.

Build America, Buy America (BABA)

For any questions related to Build America, Buy America (BABA) Act compliance contact an ADS representative.

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