

D22-00005

CITY OF OCEANSIDE ENGINEERING DIVISION	
PRIORITY DEVELOPMENT PROJECT STORM WATER QUALITY MANAGEMENT PLAN FOR West Coast Tomato Growers Farm Worker Housing Grading Plan	
ENGINEER OF WORK  Son P. Nguyen – RCE 86249	

PREPARED FOR:

West Coast Tomato Growers, Inc.
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How to Use This Template

This template, assembled by GHD Inc. on behalf of the City of Oceanside, is for the development of Storm Water Quality Management Plans (SWQMPs) for Priority Development Projects (PDPs) proposed within Oceanside, CA. It is based on requirements set forth in the Regional Water Quality Control Board's National Pollutant Discharge Elimination System MS4 Permit that covers the San Diego Region (Order No. R9-2013-0001).

All references within the template refer to the City of Oceanside BMP Design Manual dated February 2016 (Manual). Use of this template in conjunction with the Manual is intended to help a project applicant develop a SWQMP compliant with City of Oceanside and MS4 Permit requirements.

Template Date: February 16, 2016

Assembled By:



Quick Reference Guide

Item	Project Information
Project Name	WCTG Farm Worker Housing Grading Plan
Application Number(s)	D22-00005
Project Address	5780 Mission Road, Oceanside, CA 92057
Total Parcel Area	859,003 sq. ft. (19.72 ac.)
Project Description	The scope of work for this project proposed the grading of 156,005 SF of an existing site previously used as agricultural land for the construction of four new buildings, including three dormitories, kitchen, dining hall, laundry facilities, storage, and office space (totaling 29,597 square feet) to accommodate up to 338 seasonal farm workers for West Coast tomato Growers, Inc.
Proposed Disturbed Area	168,153 sq. ft. (3.86 ac.)
Created or Replaced Impervious	83,839 sq. ft. (1.92 ac.)
Project Hydrologic Unit Watershed	☐ Santa Maria ☒ San Luis Rey ☐ Carlsbad
Required to implement HMP	☐ Yes ☒ No



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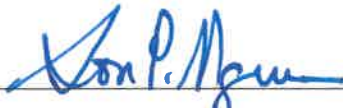
CERTIFICATION PAGE

Project Name: WCTG Farm Worker Housing Grading Plan
Permit Application Number: D22-00005

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the requirements of the City of Oceanside BMP Design Manual, which is based on the requirements of San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (MS4 Permit).

I have read and understand that the City has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable source control and site design BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this SWQMP by City staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

As Engineer of Work, I agree to indemnify, defend, and hold harmless the City of Oceanside, its officers, agents, and employees from any and all liability, claims, damages, or injuries to any person or property which might arise from the negligent acts, errors, or omissions of the Engineer of Work, my employees, agents or consultants.

 RCE 86249 EXP. 03-31-23
Engineer of Work's Signature, PE Number & Expiration Date

Son. P. Nguyen

Print Name

Snipes-Dye Associates

Company

07/20/2022

Date

Engineer's Seal:



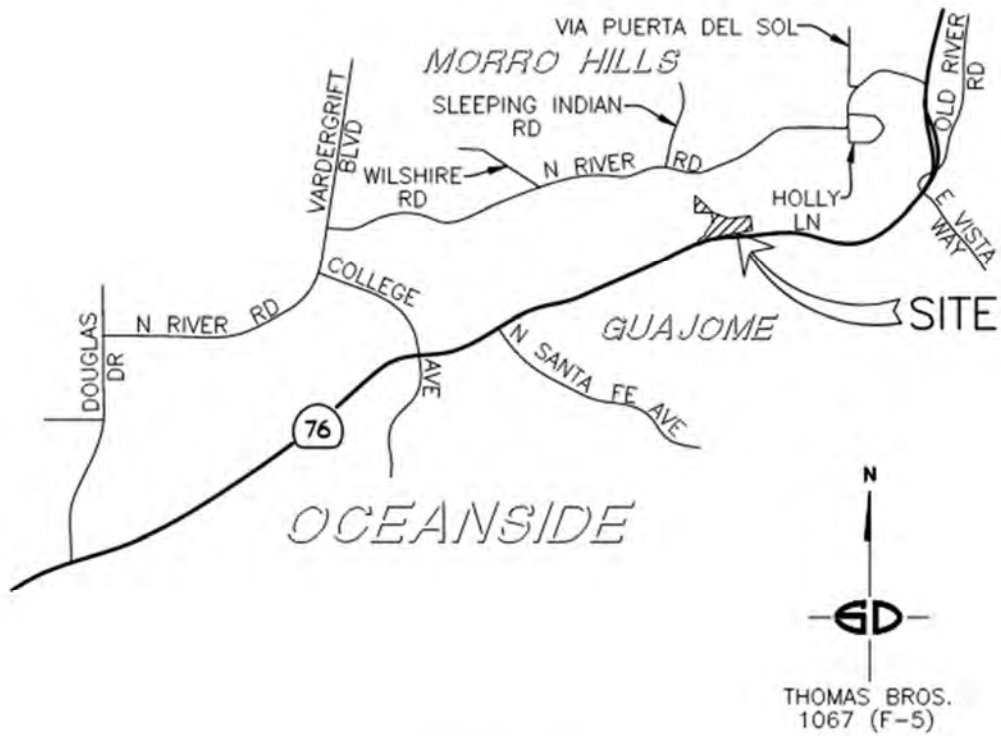
SUBMITTAL RECORD

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

Submittal Number	Date	Project Status	Changes
1	03/22/2022	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	Initial Submittal
2	TBD	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	Second Submittal



Project Vicinity Map



VICINITY MAP
NO SCALE



Applicability of Permanent, Post-Construction Storm Water BMP Requirements (Storm Water Intake Form for all Development Permit Applications)		Form I-1
Project Identification		
Project Name: WCTG Farm Worker Housing Grading Plan		
Permit Application Number: D22-00005		Date: 07/12/2022
Determination of Requirements		
The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary</u> of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements. Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop". Refer to the manual sections and/or separate forms referenced in each step below.		
Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the manual for guidance.	☒ Yes	Go to Step 2.
	☐ No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.
Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes <i>only</i> interior remodels within an existing building):		
Step 2: Is the project a Standard Project, PDP, or exception to PDP definitions? To answer this item, see Section 1.4 of the manual <i>in its entirety</i> for guidance, AND complete Form I-2, Project Type Determination.	☐ Standard Project	Stop. Standard Project requirements apply, including Standard Project SWQMP.
	☒ PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3.
	☐ Exception to PDP definitions	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below. Prepare Standard Project SWQMP.
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		



Step	Answer	Progression
Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the manual for guidance.	☐ Yes	Consult the [City Engineer] to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	☒ No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements (<i>not required if prior lawful approval does not apply</i>):		
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the manual for guidance.	☐ Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	☒ No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.
Discussion / justification if hydromodification control requirements do <u>not</u> apply:		
This project directly discharges into the San Luis Rey River.		
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the manual for guidance.	☐ Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	☐ No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.
Discussion / justification if protection of critical coarse sediment yield areas does <u>not</u> apply:		



Project Type Determination Checklist		Form I-2	
Project Information			
Project Name: WCTG Farm Worker Housing Grading Plan			
Permit Application Number: D22-00005			
Project Type Determination: Standard Project or PDP			
The project is (select one): ☒ New Development ☐ Redevelopment			
The total proposed newly created or replaced impervious area is: <u>83,839</u> ft ² (<u>1.92</u>) acres			
Is the project in any of the following categories, (a) through (f)?			
Yes ☒	No ☐	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☐	No ☒	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☒	No ☐	(c)	New and redevelopment projects that create 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption SIC code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.



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Yes ☒	No ☐	(d)	New or redevelopment projects that create or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). <u>Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and SDRWQCB; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and SDRWQCB; and any other equivalent environmentally sensitive areas which have been identified by the Copermitttees. See manual Section 1.4.2 for additional guidance.</u>
Yes ☐	No ☒	(e)	New development projects that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets. This category includes retail gasoline outlets that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic of 100 or more vehicles per day.
Yes ☒	No ☐	(f)	New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. <i>Note: See manual Section 1.4.2 for additional guidance.</i>
Does the project meet the definition of one or more of the PDP categories (a) through (f) listed above? ☐ No – the project is not a PDP (Standard Project). ☒ Yes – the project is a PDP.			
The following is for redevelopment PDPs only: The area of existing (pre-project) impervious area at the project site is: <u> N/A </u> ft² (A) The total proposed newly created or replaced impervious area is: <u> N/A </u> ft² (B) Percent impervious surface created or replaced (A/B)*100: <u> N/A </u> % The percent impervious surface created or replaced is (select one based on the above calculation): ☐ less than or equal to fifty percent (50%) – only new impervious areas are considered PDP OR ☐ greater than fifty percent (50%) – the entire project site is a PDP			



Site Information Checklist For PDPs		Form I-3B (PDPs)
Project Summary Information		
Project Name	WCTG Farm Worker Housing Grading Plan	
Project Address	5780 Mission Road, Oceanside, CA 92057	
Assessor's Parcel Number(s)	157-150-63-00	
Permit Application Number	D22-00005	
Project Watershed (Hydrologic Unit)	Select One: ☐ Santa Margarita 902 ☒ San Luis Rey 903 ☐ Carlsbad 904	
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	<u>19.72</u> Acres (<u>859,003</u> Square Feet)	
Area to be disturbed by the project (Project Area)	<u>3.86</u> Acres (<u>168,153</u> Square Feet)	
Project Proposed Impervious Area (subset of Project Area)	<u>1.92</u> Acres (<u>83,835</u> Square Feet)	
Project Proposed Pervious Area (subset of Project Area)	<u>1.94</u> Acres (<u>84,318</u> Square Feet)	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.		

Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area
Santa Margarita 902.00	☐ Ysidora 902.10	☐ Lower Ysidora 902.11
San Luis Rey 903.00	☒ Lower San Luis 903.10	☒ Mission 903.11
		☐ Bonsall 903.12
Carlsbad 904.00	☐ Loma Alta 904.10	Not Applicable
	☐ Buena Vista Creek 904.20	☐ El Salto 904.21
		☐ Vista 904.22
	☐ Agua Hedionda 4.30	☐ Los Monos 904.31



Description of Existing Site Condition and Drainage Patterns

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

- ☐ Existing development
☐ Previously graded but not built out
☒ Agricultural or other non-impervious use
☐ Vacant, undeveloped/natural

Description / Additional Information:

The site is a vacant graded lot that was previously used for agriculture.

Existing Land Cover Includes (select all that apply):

- ☒ Vegetative Cover
☒ Non-Vegetated Pervious Areas
☐ Impervious Areas

Description / Additional Information:

The current site mostly consists of a dirt pad that has been cleared of vegetation.

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

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

Approximate Depth to Groundwater:

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

PLEASE REFER TO PRELIMINARY STORM WATER INFILTRATION FEASIBILITY STUDY BY CHRISTIAN WHEELER ENGINEERING IN ATTACHMENT 6. "SEEPAGE WAS ENCOUNTERED IN BORING B-1 DURING SUBSURFACE EXPLORATIONS AT A DEPTH OF 19 FEET CORRESPONDING TO AN ELEVATION OF 107 FEET".



Description of Existing Site Topography and Drainage [How is storm water runoff conveyed from the site? At a minimum, this description should answer (1) whether existing drainage conveyance is natural or urban; (2) describe existing constructed storm water conveyance systems, if applicable; and (3) is runoff from offsite conveyed through the site? If so, describe]:

1. Existing drainage on the site was mostly for agricultural use. All onsite runoff sheet flows in the northerly direction and directly discharges into the San Luis Rey River.
2. There is an existing Caltrans 30" RCP between the project site, Mission Road, and Singh Way that under crosses the driveway on the southeastern corner of the lot. The runoff collected from that area is diverted into the natural drainage swale located on the eastern side of the property. There is no run-on from this area. Please reference Drawing NO. D-11-0008 REV 13.
3. There is no offsite run-on present at this site. The runoff from the western slope adjacent to the site will be diverted with a curb and will flow in the northerly direction without entering into the proposed biofiltration basin. The runoff from the eastern side of the site will be conveyed through an existing natural swale in the northerly direction without entering into the proposed biofiltration basin.



Description of Proposed Site Development and Drainage Patterns

Project Description / Proposed Land Use and/or Activities:

The scope of work for this project proposes the grading of 3.58 acres of an existing site previously used as agricultural land for the construction of a housing development for farm laborers. The proposed development will consist of the construction of four new buildings, including three dormitories, kitchen, dining hall, laundry facilities, storage, and office space (totaling 29,597 square feet) to accommodate up to 338 seasonal farm workers for West Coast Tomato Growers, Inc.

List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):

Proposed impervious features include building rooftops, asphalt paved driveway, associated concrete paved flatwork, a courtyard north of the kitchen, and a basketball court.

There is a proposed trench drain where the existing driveway of the packing facility meets the proposed driveway in the southwest corner of the site. The trench drain will collect runoff from the packing facility and tie into the existing 12" PVC storm drain, flow in the northerly direction, then discharged into the river.

List/describe proposed pervious features of the project (e.g., landscape areas):

Proposed pervious features include a recreation grass field and intermittent landscape areas in between and around proposed housing area.

Does the project include grading and changes to site topography?

☒ Yes

☐ No

Description / Additional Information:

Grading at the site will be balanced onsite to create level pads for the proposed development. The general direction of surface flow will be similar to pre-developed conditions and flow in the northerly direction.

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

☒ Yes

☐ No

Description / Additional Information:

Project drainage will maintain similar surface flow drainage patterns as in the current condition. Runoff will be conveyed via combination of sheet flow and pipe flow into a proposed biofiltration with partial retention basin where overflow of the peak discharges will be conveyed through a weir structure towards the San Luis Rey River. The biofiltration basin will tie into the existing 24" PVC storm drain which was part of the San Luis Rey Mitigation Design. Please see Plan Number G14-00015, WDID No. 9 37C368254, File No. D12-0004.



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

- ☒ Onsite storm drain inlets
- ☐ Interior floor drains and elevator shaft sump pumps
- ☐ Interior parking garages
- ☒ Need for future indoor & structural pest control
- ☒ Landscape/outdoor pesticide use
- ☐ Pools, spas, ponds, decorative fountains, and other water features
- ☒ Food service
- ☒ Refuse areas
- ☐ Industrial processes
- ☐ Outdoor storage of equipment or materials
- ☐ Vehicle and equipment cleaning
- ☐ Vehicle/equipment repair and maintenance
- ☐ Fuel dispensing areas
- ☐ Loading docks
- ☐ Fire sprinkler test water
- ☐ Miscellaneous drain or wash water
- ☒ Plazas, sidewalks, and parking lots



Identification of Receiving Water Pollutants of Concern

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

Site drainage consists of surface flow in a northerly direction. The flow will enter a biofiltration basin with partial retention basin and discharge through a proposed weir overflow structure towards the San Luis Rey River. The San Luis Rey River thence flows westerly towards the Pacific Ocean, just south of the Oceanside Harbor.

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

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs
San Luis Rey River, Lower	Benthic Community Effects, Bifenthrin, Chloride, Indicator Bacteria, Nitrogen, Phosphorous, Total Dissolved Solids, & Toxicity	Benthic Community Effects, Bifenthrin, Chloride, Indicator Bacteria, Nitrogen, Phosphorous, Total Dissolved Solids, & Toxicity per Final California 2018 Integrated Report (303(d) List/305(b) Report), Regional Board 9
Pacific Ocean Shoreline, San Luis Rey HU, at San Luis Rey River mouth	Indicator Bacteria	Indicator Bacteria per Basin Plan Appendix 7. Please see attached Excerpt in Section 18



Identification of Project Site Pollutants*

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

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

Pollutant	Not Applicable to the Project Site	Expected from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	N/A		
Nutrients	N/A		
Heavy Metals	N/A		
Organic Compounds	N/A		
Trash & Debris	N/A		
Oxygen Demanding Substances	N/A		
Oil & Grease	N/A		
Bacteria & Viruses	N/A		
Pesticides	N/A		

Note: Indicator Bacteria shall be addressed as a Pollutant of Concern (POC) for projects located in the Lower San Luis Hydrologic Area and for projects that discharge to the Pacific Ocean Shoreline within the boundaries of the City of Oceanside.

Note: Nutrients shall be addressed as a Pollutant of Concern (POC) for projects located in the Loma Alta Hydrologic Area.



Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the manual)?

- ☐ Yes, hydromodification management flow control structural BMPs required.
- ☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☒ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

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

Runoff from the site will discharge directly into the San Luis Rey River, which is identified as exempt water body by the WMAA. Please see attached Hydromodification Management Exemption Exhibit.

Critical Coarse Sediment Yield Areas*

***This Section only required if hydromodification management requirements apply**

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

- ☐ Yes
- ☐ No, no critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the manual been performed?

- ☐ 6.2.1 Verification of GLUs Onsite
- ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment
- ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
- ☐ No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

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

- ☐ No critical coarse sediment yield areas to be protected based on verification of GLUs onsite.
- ☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.
- ☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:



Flow Control for Post-Project Runoff*

***This Section only required if hydromodification management requirements apply**

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

NOT APPLICABLE.

PROJECT IS EXEMPT FROM HYDROMODIFICATION MANAGEMENT REQUIREMENTS.

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

☐ No, the low flow threshold is 0.1Q2 (default low flow threshold)

☐ Yes, the result is the low flow threshold is 0.1Q2

☐ Yes, the result is the low flow threshold is 0.3Q2

☐ Yes, the result is the low flow threshold is 0.5Q2

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

Discussion / Additional Information: (optional)



Other Site Requirements and Constraints

When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements.

NOT APPLICABLE.

PROJECT IS EXEMPT FROM HYDROMODIFICATION MANAGEMENT REQUIREMENTS.

Optional Additional Information or Continuation of Previous Sections As Needed

This space provided for additional information or continuation of information from previous sections as needed.



Source Control BMP Checklist for All Development Projects (Standard Projects and PDPs)		Form I-4	
Project Identification			
Project Name WCTG Farm Worker Housing Grading Plan			
Permit Application Number D22-00005			
Source Control BMPs			
All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement source control BMPs shown in this checklist. Answer each category below pursuant to the following. • "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.			
Source Control Requirement		Implemented?	
SC-1 Prevention of Illicit Discharges into the MS4		☒ Yes	☐ No ☐ N/A
Discussion / justification if SC-1 not implemented: An illicit discharge is any discharge to the MS4 that is not composed entirely of storm water except discharges pursuant to a National Pollutant Discharge Elimination System permit and discharges resulting from firefighting activities. Projects must effectively eliminate discharges of non-storm water into the MS4. This may involve a suite of housekeeping BMPs which could include effective irrigation, dispersion of non-storm water discharges into landscaping for infiltration, and controlling wash water from vehicle washing.			
SC-2 Storm Drain Stenciling or Signage		☒ Yes	☐ No ☐ N/A
Discussion / justification if SC-2 not implemented: Storm drain signs and stencils are visible source controls typically placed adjacent to the inlets. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Stamping or placards shall be provided for all storm water conveyance system inlets and catch basins within the project area. In addition to storm drain placards, projects are encouraged to post signs and prohibitive language (with graphical icons) which prohibit illegal dumping at trailheads, parks, building entrances and public access points along channels and creeks within the project area.			



SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-3 not implemented: The project does not propose outdoor material storage areas.			



Source Control Requirement	Implemented?		
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-4 not implemented: The project does not propose materials to be stored outdoors.			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-5 not implemented: Storm water runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, or creeks. All development projects must include the following structural or pollutant control BMPs, as applicable: • Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This can include berming or grading the waste handling area to prevent run-on of storm water. • Ensure trash container areas are screened or walled to prevent offsite transport of trash. • Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers. • Locate storm drains away from immediate vicinity of the trash storage area and vice versa. • Post signs on all dumpsters informing users that hazardous material are not to be disposed. • Use other methods approved by the County.			



Form I-4 Page 3 of 3

SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)	Implemented?		
Onsite storm drain inlets	☒ Yes	☐ No	☐ N/A
Interior floor drains and elevator shaft sump pumps	☐ Yes	☐ No	☒ N/A
Interior parking garages	☐ Yes	☐ No	☒ N/A
Need for future indoor & structural pest control	☒ Yes	☐ No	☐ N/A
Landscape/outdoor pesticide use	☒ Yes	☐ No	☐ N/A
Pools, spas, ponds, decorative fountains, and other water features	☐ Yes	☐ No	☒ N/A
Food service	☒ Yes	☐ No	☐ N/A
Refuse area	☒ Yes	☐ No	☐ N/A
Industrial processes	☐ Yes	☐ No	☒ N/A
Outdoor storage of equipment or materials	☐ Yes	☐ No	☒ N/A
Vehicle and equipment cleaning	☐ Yes	☐ No	☒ N/A
Vehicle/equipment repair and maintenance	☐ Yes	☐ No	☒ N/A
Fuel dispensing areas	☐ Yes	☐ No	☒ N/A
Loading docks	☐ Yes	☐ No	☒ N/A
Fire sprinkler test water	☐ Yes	☐ No	☒ N/A
Miscellaneous drain or wash water	☐ Yes	☐ No	☒ N/A
Plazas, sidewalks, and parking lots	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above. All items selected as N/A do not apply because these features are not being proposed as part of the project.			



Site Design BMP Checklist for All Development Projects (Standard Projects and PDPs)		Form I-5	
Project Identification			
Project Name WCTG Farm Worker Housing Grading Plan			
Permit Application Number D22-00005			
Site Design BMPs			
All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement site design BMPs shown in this checklist. Answer each category below pursuant to the following. • "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided.			
Site Design Requirement		Applied?	
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features		☒ Yes	☐ No ☐ N/A
Discussion / justification if SD-1 not implemented: Existing natural drainage swale on eastern side of the site will be protected. Riparian Buffer Zone for San Luis Rey River will be protected.			
SD-2 Conserve Natural Areas, Soils, and Vegetation		☒ Yes	☐ No ☐ N/A
Discussion / justification if SD-2 not implemented: Natural areas, soils, and vegetation were conserved when possible.			
SD-3 Minimize Impervious Area		☒ Yes	☐ No ☐ N/A
Discussion / justification if SD-3 not implemented: Driving aisles were designed to be the minimum width required to meet standards.			
SD-4 Minimize Soil Compaction		☒ Yes	☐ No ☐ N/A
Discussion / justification if SD-4 not implemented: Soil compaction will be avoided in landscaped areas.			



Form I-5 Page 2 of 2

Site Design Requirement	Applied?		
SD-5 Impervious Area Dispersion	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-5 not implemented: Rooftops and impervious surfaces will drain into impervious areas.			
SD-6 Runoff Collection	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-6 not implemented: Project does not propose runoff collection features. Please refer to form I-7 for feasibility conditions. Total demand of 544 cf did not meet 0.25DCV (1,325 cf). Therefore, collection/harvest and use was determined to be infeasible.			
SD-7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented: Native and drought tolerant species will be implemented in landscaped areas. Please refer to DMA Exhibit.			
SD-8 Harvesting and Using Precipitation	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-8 not implemented: Harvest and re-use features are not feasible. Please refer to form I-7 for feasibility conditions. Total demand of 544 cf did not meet 0.25DCV (1,325 cf). Therefore, collection/harvest and use was determined to be infeasible.			



Summary of PDP Structural BMPs	Form I-6 (PDPs)
Project Identification	
Project Name WCTG Farm Worker Housing Grading Plan	
Permit Application Number D22-00005	
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative to certify construction of the structural BMPs (see Section 1.12 of the manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the manual). Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).	



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

Step 1: The proposed development was determined to be comprised of one drainage management area identified as DMA #1. The proposed driveway entrance on Singh Way is identified as DMA #2, which was determined to be a de-minimis area. The trench area for proposed water and sewer lines is identified as DMA #3 which was determined to be self-mitigating.

Step 1B: Estimated DCV for DMA #1. Runoff factor was adjusted accordingly to implemented Site Design BMPs.

Step 2: Harvest and Reuse was determined to be infeasible. Refer to Form I-4 in Attachment 1.d of this report.

Step 3: Partial Infiltration was determined to be feasible. Refer to Form I-5 in Attachment 1.e of this report. Selected "Partial Infiltration" BMPs for storm water pollutant control requirements. Biofiltration Basin with Partial Retention per PR-1 will be proposed, denoted as BMP #1 on Drainage Management Area (DMA) Exhibit. The project site was determined to be exempt from hydromodification management requirements, since it will discharge directly through an existing 30" storm drain pipe onto San Luis Rey River, an exempt hydromodification water body as Identified in the WMAA.

Step 4: Sized Biofiltration with Partial Retention Basin to meet pollutant control performance standards.

Step 5: Not Applicable. Flow-thru treatment control BMPs are not needed, since proposed BMP treats entire DCV.

Step 6: This SWQMP has been prepared to document site planning and opportunity assessment activities, final site layout and storm water management design.

Step 7: BMP Operation and Maintenance requirements have been identified and documented in Attachment 3 of this report. Storm Water Control Facilities Maintenance Agreement will be prepared as part of final construction documents.

(Continue on page 2 as necessary.)



(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

(Continued from page 1)



Form I-6 Page 3 of X (Copy as many as needed)	
Structural BMP Summary Information	
(Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No. BMP #1	
Construction Plan Sheet No. C-4	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☒ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	Son P. Nguyen, P.E. Snipes-Dye Associates son@snipesdye.com (619) 697-9234
Who will be the final owner of this BMP?	Global A G Properties II USA LLC.
Who will maintain this BMP into perpetuity?	Global A G Properties II USA LLC.
What is the funding mechanism for maintenance?	Privately Maintained



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

Discussion (as needed):

BMP ID	BMP TYPE	APPROX. DIMENSIONS	PLAN AREA (SF)	PONDING SURFACE DEPTH (IN.)	MEDIA THICKNESS (IN.)	MULCH LAYER (IN.)	ASTM 3.3 WASHED SAND (IN.)	AGGREGATE STORAGE LAYER ABOVE UNDERDRAIN, INCL. 3" ASTM NO. 8 STONE (IN.)	AGGREGATE STORAGE LAYER BELOW UNDERDRAIN (IN.)
BMP #1	BIOFILTRATION BASIN WITH PARTIAL RETENTION (PR-1)	32' W X 165 ' L	5,109	6	18	3	3	12	3

Please refer to the DMA Exhibit for additional information.





City of Oceanside
300 N Coast Highway
Oceanside, CA 92054

Permanent BMP Construction

Self Certification Form

February
2016

Date Prepared:	Project No.:
Project Applicant: West Coast Tomato Growers, Inc.	Phone: (619) 993-5121
Project Address: 3780 Mission Road, Oceanside, CA 92057	
Project Engineer: Son P. Nguyen, P.E.	Phone: (619) 697-9234
The purpose of this form is to verify that the site improvements for the project, identified above, have been constructed in conformance with the approved Storm Water Quality Management Plan (SWQMP) documents and drawings. This form must be completed by the engineer and installing contractor and submitted prior to final inspection of the construction permit. Completion and submittal of this form is required for all new development and redevelopment projects in order to comply with the City's Storm Water ordinances and NDPES Permit Order No. R9-2013-0001. Final inspection for occupancy and/or release of grading or public improvement bonds may be delayed if this form is not submitted and approved by the City of Oceanside.	
ENGINEER'S CERTIFICATION: As the professional in responsible charge for the design of the above project, I certify that I have inspected all constructed Low Impact Development (LID) site design, source control and treatment control BMP's required per the approved SWQMP and Construction Permit No. Click here to enter text.; and that said BMP's have been constructed in compliance with the approved plans and all applicable specifications, permits, ordinances and Order No. R9-2013-0001 of the San Diego Regional Water Quality Control Board. I understand that this BMP certification statement does not constitute an operation and maintenance verification. Signature: _____ Date of Signature: _ _	



Printed Name: Son P. Nguyen, P.E.

Title: Principal

Phone No. (619) 697-9234

Engineer's Stamp

CONTRACTOR'S CERTIFICATION:

As the professional in responsible charge for construction of the above project, I certify that all constructed Low Impact Development (LID) site design, source control and treatment control BMP's required per the approved SWQMP and Construction Permit No. [Click here to enter text.](#); have been constructed in compliance with the approved plans and all applicable specifications, permits, and ordinances.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

Signature: _____

Date of Signature: _ _

Printed Name: _ _

Title: _ _

Phone No. _ _



ATTACHMENT 1
BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.



Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist.	☒ Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☒ Included on DMA Exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Design Capture Volume Worksheet	☒ Included
Attachment 1d	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☒ Included ☐ Not included because the entire project will use infiltration BMPs
Attachment 1e	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☒ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1f	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☒ Included

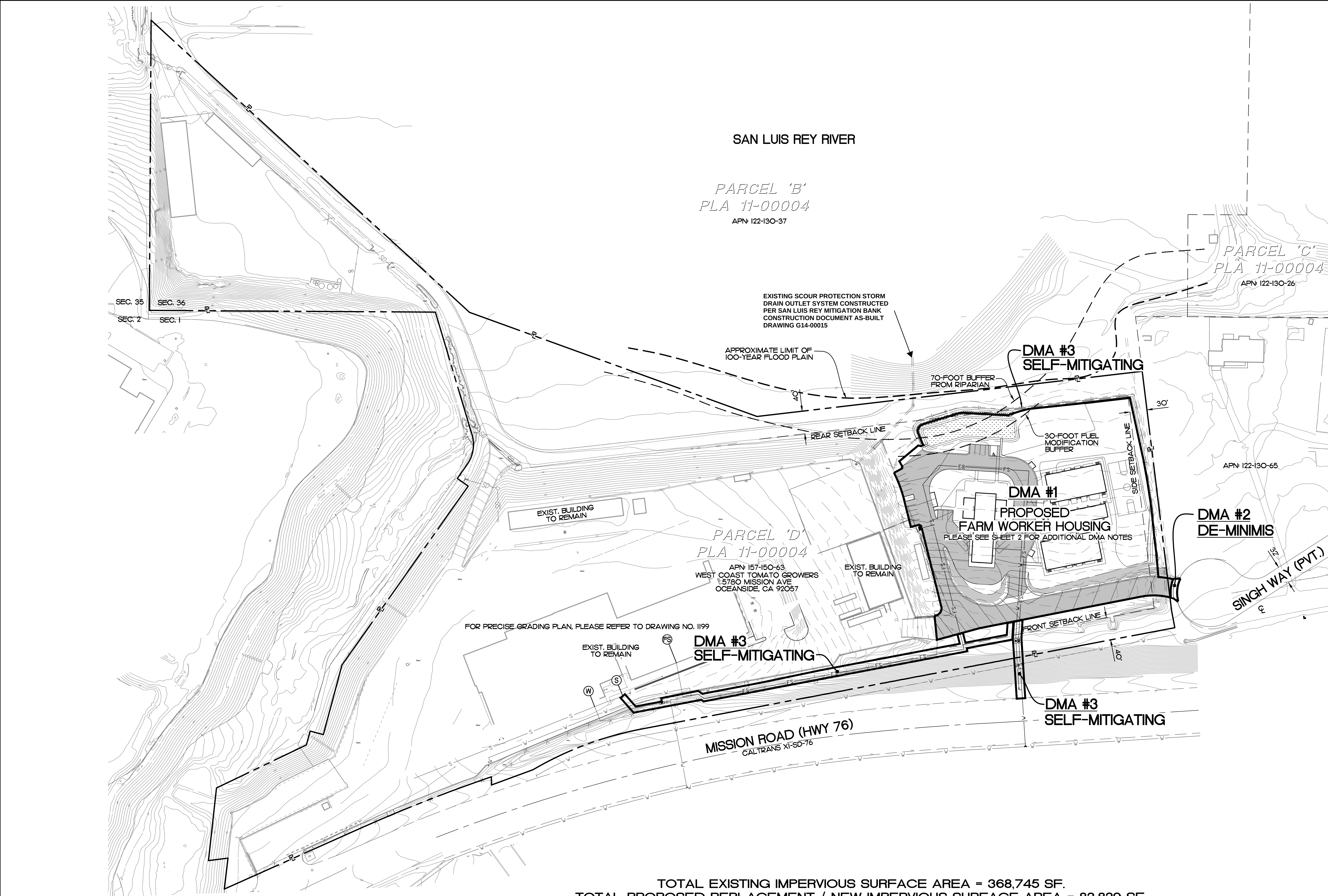


Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

- ☒ Underlying hydrologic soil group
- ☒ Approximate depth to groundwater
- ☒ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☐ Critical coarse sediment yield areas to be protected **NOT APPLICABLE**
- ☒ Existing topography and impervious areas
- ☒ Existing and proposed site drainage network and connections to drainage offsite
- ☒ Proposed grading
- ☒ Proposed impervious features
- ☒ Proposed design features and surface treatments used to minimize imperviousness
- ☒ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
- ☒ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
- ☒ Structural BMPs (identify location, type of BMP, and size/detail)





TOTAL EXISTING IMPERVIOUS SURFACE AREA = 368,745 SF.
TOTAL PROPOSED REPLACEMENT / NEW IMPERVIOUS SURFACE AREA = 83,839 SF.
PERCENTAGE OF NEW / REPLACEMENT AREA = 22.74%

50% RULES NOT APPLIED

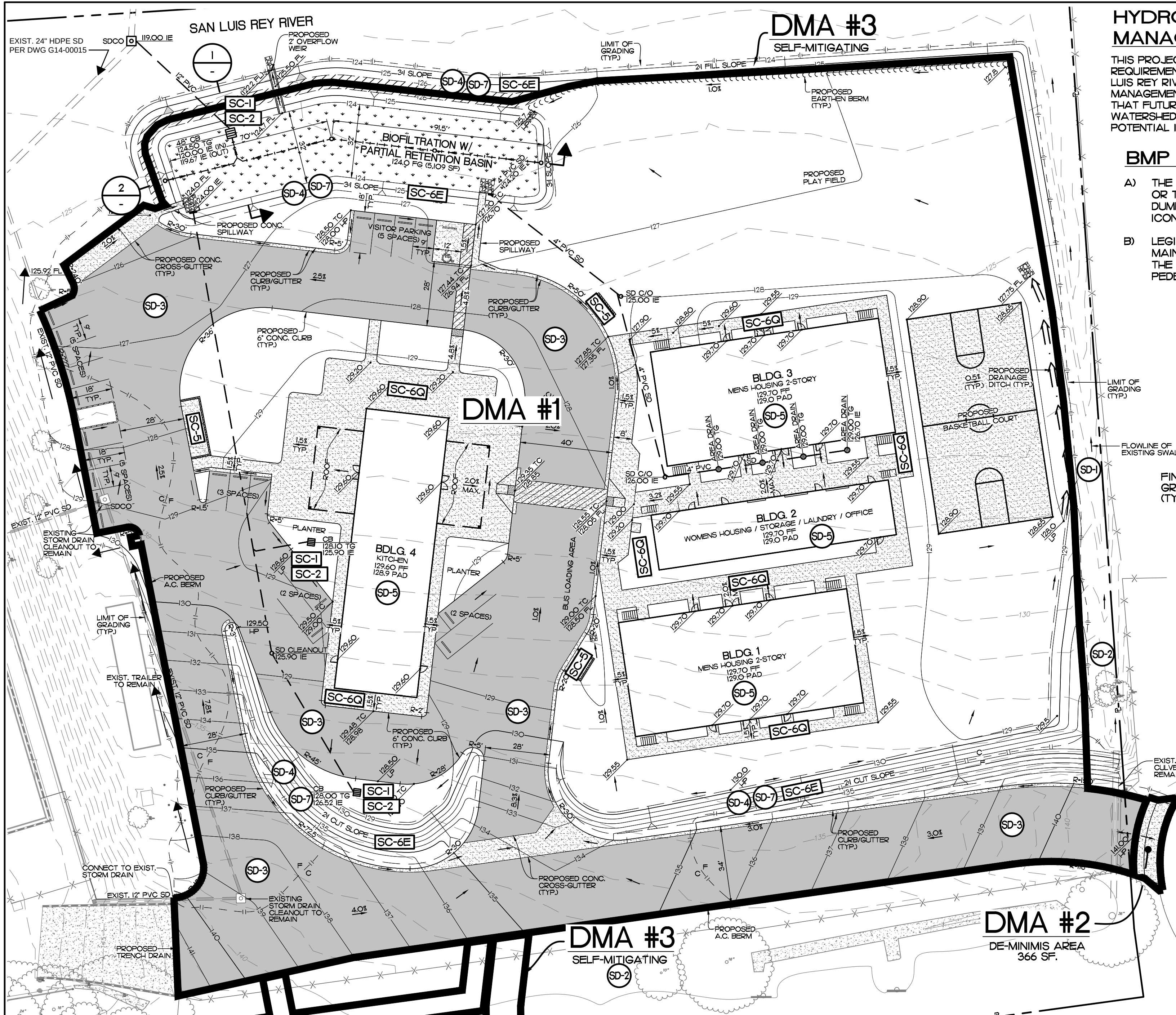
PLEASE SEE SHEET 2 FOR DMA NOTES AND BMP DETAILS

SNIPES-DYE ASSOCIATES
8348 CENTER DRIVE, SUITE G, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033

SHEET TITLE		DRAINAGE MANAGEMENT AREA (DMA) EXHIBIT	
DESIGNER	NO	JOB NAME	JOB NO.
DRN	1	FARM WORKER HOUSING	BS0141
CHECKED	1	WEST COAST TOMATO GROWERS	
DATE	07-20-2022	5780 MISSION AVE, OCEANSIDE, CA 92057	

DMA

SHEET 1 OF 2 SHEET

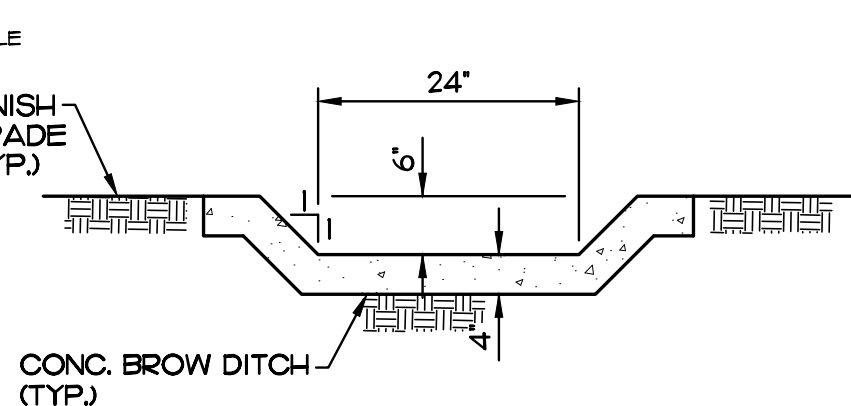


HYDROMODIFICATION MANAGEMENT EXEMPTION

THIS PROJECT IS EXEMPT FROM HYDROMODIFICATION MANAGEMENT REQUIREMENTS SINCE IT WILL DISCHARGE RUNOFF DIRECTLY TO SAN LUIS REY RIVER WHICH IS AN AREA IDENTIFIED IN THE WATERSHED MANAGEMENT AREA ANALYSIS (WMAA). THE WMAA HAS SHOWN THAT FUTURE INCREASES IN IMPERVIOUS AREAS WITHIN THE WATERSHED ARE NOT EXPECTED TO INCREASE THE EROSION POTENTIAL IN SAN LUIS REY RIVER.

BMP STENCIL PLACEMENT NOTES

- THE PROPOSED CURB INLETS SHALL HAVE A STENCIL OR TILE PLACED WITH PROHIBITIVE LANGUAGE "NO DUMPING THIS DRAINS TO OCEAN" AND/OR GRAPHICAL ICONS TO DISCOURAGE ILLEGAL DUMPING.
- LEGIBILITY OF STENCILS, TILES AND SIGNS MUST BE MAINTAINED AND TILES MUST BE PLACED FLUSH WITH THE TOP OF CONCRETE TO REDUCE TRIPPING BY PEDESTRIANS.



24" OVERFLOW WEIR
NO SCALE

SITE DESIGN BMP'S

- SD-1 MAINTAIN NATURAL DRAINAGE PATHWAYS AND HYDROLOGIC FEATURES. NATURAL SWALE ON EASTERN SIDE OF SITE WILL BE MAINTAINED.
- SD-2 CONSERVE NATURAL AREAS, SOILS AND VEGETATION. EXISTING TREES NEAR SITE TO BE CONSERVED.
- SD-3 MINIMIZE IMPERVIOUS AREAS. DRIVING AISLES DESIGNED TO MINIMUM WIDTH REQUIRED TO MEET STANDARDS.
- SD-4 MINIMIZE SOIL COMPACTION. AVOID COMPACTION IN PLANNED LANDSCAPE AREAS.
- SD-5 DISPERSE IMPERVIOUS AREAS. LANDSCAPED AND PERVIOUS AREAS DESIGNED TO RECEIVE RUNOFF FROM IMPERVIOUS AREAS PRIOR TO DISCHARGE.
- SD-7 LANDSCAPE WITH NATIVE OR DROUGHT TOLERANT SPECIES.

SOURCE CONTROL BMP'S

- SC-1 PREVENT ILLICIT DISCHARGES INTO THE MS4.
 - SC-2 IDENTIFY THE STORM DRAIN SYSTEM USING STENCILING OR SIGNAGE.
 - SC-3 PROTECT TRASH STORAGE AREAS FROM RAINFALL, RUN-ON, RUNOFF, AND WIND DISPERSAL. TRASH CONTAINERS WILL BE ROOFED AND WALLED TO MINIMIZE DIRECT PRECIPITATION AND PREVENT RAINFALL FROM ENTERING CONTAINERS.
- ### ADDITIONAL BMP'S
- SC-6E LANDSCAPE/OUTDOOR PESTICIDE USE.
 - SC-6O SIDEWALKS SHALL BE SWEEPED REGULARLY TO PREVENT THE ACCUMULATION OF LITTER AND DEBRIS.

LEGEND

- DMA BOUNDARY
- PERVIOUS AREA
- IMPERVIOUS AREA (CONCRETE)
- IMPERVIOUS AREA (ASPHALT)
- IMPERVIOUS AREA (ROOFTOPS)
- BIOFILTRATION W/ PARTIAL RETENTION BASIN
- DIRECTION OF FLOW

NOTES

- SITE IS LOCATED WITHIN OCEANSIDE RAIN GAUGE BASIN.
- UNDERLYING HYDROLOGIC SOIL GROUP "D" WITHIN PROJECT FOOTPRINT.
- SITE IS RELATIVELY FLAT TO MODERATE SLOPING LAND.
- GROUNDWATER SEEPAGE IDENTIFIED AT 19 FEET.
- PROPOSED STRUCTURAL BMP FOR POLLUTANT CONTROL CONSISTS OF A BIOFILTRATION WITH PARTIAL RETENTION BASIN.
- COUNTY OF SAN DIEGO'S 85TH PERCENTILE ISOPLUVIAL MAP WAS UTILIZED FOR SIZING STRUCTURAL BMP TO COMPLY WITH POLLUTANT CONTROL REQUIREMENTS $P_{85TH} = 0.69$ INCH.
- PROPOSED BMPS ON THIS SHEET ARE MANDATORY TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS OR THESE PLANS.
- NO CHANGES TO THE PROPOSED BMPS ON THIS SHEET WITHOUT PRIOR APPROVAL FROM THE CITY OF OCEANSIDE.
- NO SUBSTITUTIONS TO THE MATERIAL, TYPES, OR PLANTING TYPES WITHOUT PRIOR APPROVAL FROM THE CITY ENGINEER.
- NO OCCUPANCY WILL BE GRANTED UNTIL THE CITY STAFF HAS INSPECTED THIS PROJECT FOR APPROPRIATE BMP CONSTRUCTION AND INSTALLATION.
- REFER TO THE MAINTENANCE PLAN IN ATTACHMENT 3 OF SWQMP FOR ACCESS TO STRUCTURAL BMPS TO INSPECT AND PERFORM MAINTENANCE, FEATURES PROVIDED TO FACILITATE INSPECTION, MAINTENANCE THRESHOLDS, RECOMMENDED EQUIPMENT TO PERFORM MAINTENANCE, AND SPECIAL TRAINING OR CERTIFICATION REQUIREMENTS FOR INSPECTION AND MAINTENANCE PERSONNEL.
- ALL GRADING CONTOURS SHALL BE CONSISTENT WITH DMA EXHIBIT.
- SEE PROJECT SWQMP FOR ADDITIONAL INFORMATION.

POST-CONSTRUCTION BMP FACILITY SUMMARY TABLE									
BMP ID	BMP TYPE	APPROX. DIMENSIONS	PLAN AREA (SF)	PONDING SURFACE DEPTH (IN.)	MEDIA THICKNESS (IN.)	MULCH LAYER (IN.)	ASTM 3.3 WASHED SAND (IN.)	AGGREGATE STORAGE LAYER ABOVE UNDERDRAIN, INCL. 3" ASTM NO. 8 STONE (IN.)	AGGREGATE STORAGE LAYER BELOW UNDERDRAIN (IN.)
BMP #1	BIOFILTRATION BASIN WITH PARTIAL RETENTION (PR-1)	32' W X 165' L	5,109	6	18	3	3	12	3

DESCRIPTION	TRIBUTARY TO BMP	BMP TYPE	SOIL TYPE	DEPTH TO GROUNDWATER	PRE-PROJECT SLOPE	PERVIOUS DMAs		IMPERVIOUS DMAs	
						POST-PROJECT SURFACE TYPE PERVIOUS	POST-PROJECT SURFACE AREA PERVIOUS (SF)	POST-PROJECT SURFACE TYPE IMPERVIOUS	POST-PROJECT SURFACE AREA IMPERVIOUS (SF)
DMA #1	BMP #1	BIOFILTRATION WITH PARTIAL RETENTION BASIN (PR-1)	D	UNKNOWN	MODERATE (5%-10%)	LANDSCAPING/DIRT	63,895	ROOFTOPS/ PAVEMENT	83,473
DMA #2	DE-MINIMIS	DE-MINIMIS	D	UNKNOWN	MODERATE (5%-10%)	N/A	0	PCC PAVEMENT	366
DMA #3	SELF-MITIGATING	SELF-MITIGATING	D	UNKNOWN	MODERATE (5%-10%)	LANDSCAPING/DIRT	20,785	PAVEMENT	0

TOTAL EXISTING IMPERVIOUS SURFACE AREA = 368,745 SF.
TOTAL PROPOSED REPLACEMENT / NEW IMPERVIOUS SURFACE AREA = 83,839 SF.
PERCENTAGE OF NEW / REPLACEMENT AREA = 22.74%

50% RULES NOT APPLIED

KEY NOTES

- BIORETENTION SOIL MEDIA (BSM) (5% $\pm$ MIN. PERCOLATION RATE) PER BSM MIXTURE BELOW
- 3" CLEAN & WASHED ASTM 33 FINE AGGREGATE SAND
- 3" LAYER OF ASTM 8 STONE
- ASTM 57 OPEN GRADED STONE (3/4" WASHED CRUSHED ROCK)
- IMPERMEABLE LINER (30 MIL PVC GEOMEMBRANE BY EPI OR APPROVED EQUAL) PER MANUFACTURER'S SPECIFICATIONS
- PVT. 8" PVC SDR-35 • 0.5% SLOPE
- PVT. 8" PVC SDR-35 • 0.5% SLOPE

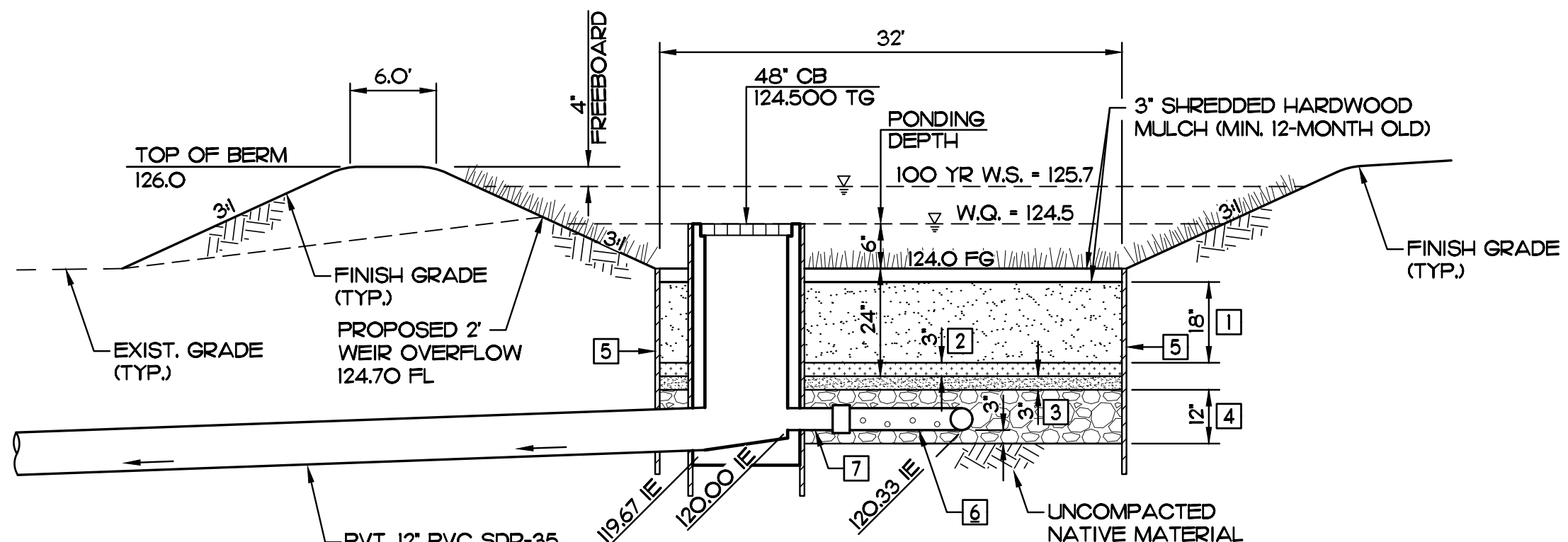
VEGETATION SPECIFICATIONS

FOR BIOFILTRATION TO FUNCTION PROPERLY AS STORMWATER TREATMENT AND BLEND INTO THE LANDSCAPING, VEGETATION SELECTION IS CRUCIAL. THIS BIOFILTRATION BASIN W/ PARTIAL RETENTION SHALL BE DESIGNED WITH NUTRIENT-SENSITIVE MEDIA W/O FLOW RESTRICTION PER BP-1 IN THE CITY OF OCEANSIDE BMP DESIGN MANUAL. APPROPRIATE VEGETATION WILL HAVE THE FOLLOWING CHARACTERISTICS:

- PLANT MATERIALS MUST BE TOLERANT OF SUMMER DROUGHT, PONDING FLUCTUATIONS, AND SATURATED SOIL CONDITIONS FOR 10 TO 48 HOURS.
- IF PLANT SPACING ALLOWS, IT IS RECOMMENDED THAT A MINIMUM OF THREE TREE SPECIES, THREE SHRUB SPECIES, AND THREE HERBACEOUS GROUNDCOVER SPECIES BE INCORPORATED TO PROTECT AGAINST FACILITY FAILURE FROM DISEASE AND INSECT INFESTATIONS OF A SINGLE SPECIES. PLANT ROOTING DEPTHS MUST NOT DAMAGE THE UNDERDRAIN. IF PRESENT, SLOTTED OR PERFORATED UNDERDRAIN PIPE MUST BE MORE THAN 5 FEET FROM TREE LOCATIONS (IF SPACE ALLOWS).
- NATIVE PLANT SPECIES OR HARDY CULTIVARS THAT ARE NOT INVASIVE AND DO NOT REQUIRE CHEMICAL INPUTS ARE RECOMMENDED TO BE USED TO THE MAXIMUM EXTENT PRACTICABLE.
- SHADE TREES SHOULD BE FREE OF BRANCHES BELOW 1/3 THEIR TOTAL HEIGHT.

PVT. BIOFILTRATION W/ PARTIAL RETENTION BASIN (BMP #1)

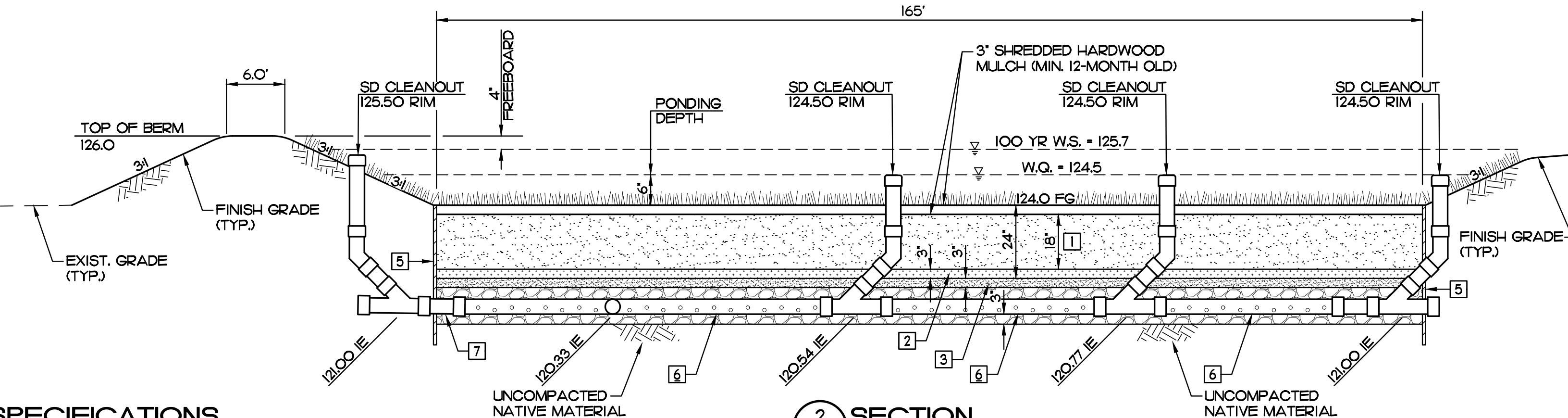
NO SCALE



SECTION 1

BSM MIXTURE*			
LOAMY SAND, TEXTURE & COMPOSITION	ASTM C33 SAND	COMPOST ¹	SANDY LOAM
BY VOLUME	65%	15% - 30%	20%

- ORGANIC MATERIAL CONTENT SHALL BE MAXIMUM 5% BY WEIGHT IN OVERALL SOIL MEDIA. ORGANIC MATTER SHOULD BE BASED FROM VEGETATION-BASED FEEDSTOCK AND INCLUDE NO ANIMAL MANURE OR BY-PRODUCTS.
- TOTAL PHOSPHORUS SHALL NOT EXCEED 15 PPM.
- BSM INFILTRATION RATE SHALL BE EQUAL TO 5 IN/HR. BSM PH 6 TO 8.
- CATION EXCHANGE CAPACITY (CEC) GREATER THAN 5 MILL-EQUIVALENTS (MEQ)/100 GRAMS SOILS.
- FOR FUTURE BSM SPECIFICATIONS, REFER TO THE COUNTY OF SAN DIEGO LID HANDBOOK, APPENDIX G.



SECTION 2

DRAINAGE MANAGEMENT
AREA (DMA) EXHIBIT

Placeholder – **Tabular Summary of DMAs (if separate from DMA Exhibit)**

Leave placeholder intact if not applicable.

☒ Not Applicable – Tabular Summary included on DMA Exhibit



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

PLEASE REFER TO AUTOMATED WORKSHEET B.1: CALCULATION OF DESIGN CAPTURE VOLUME (V2.0) AT THE END OF ATTACHMENT 1.



Harvest and Use Feasibility Checklist		Form I-7
1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season? ☒ Toilet and urinal flushing ☒ Landscape irrigation ☐ Other: _____s		
2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2. Toilet & Urinal Flushing Demand = 338 residents x 5.5 gal/day/visitor / 7.48 gal/cf = 249 cf 36-hour Landscape Irrigation Demand = 1470 gal/acre / 7.48 gal/cf x 1.50 acres of landscape = 295 cf Total Demand = 249 cf + 295 cf = 544 cf		
3. Calculate the DCV using worksheet B-2.1. DCV = 5,300 (cubic feet) 0.25 x 5,300 cf = 1,325 cf		
3a. Is the 36 hour demand greater than or equal to the DCV? ☐ Yes / ☒ No ➡ ↓	3b. Is the 36 hour demand greater than 0.25DCV but less than the full DCV? ☐ Yes / ☒ No ➡ ↓	3c. Is the 36 hour demand less than 0.25DCV? ☒ Yes ↓
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible.
Is harvest and use feasible based on further evaluation? ☐ Yes, refer to Appendix E to select and size harvest and use BMPs. ☒ No, select alternate BMPs.		



Categorization of Infiltration Feasibility Condition		Form I-8	
Part 1 - Full Infiltration Feasibility Screening Criteria Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?			
Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.	☐	☒
Provide basis: The site is underlain by soil hydrologic type D. The infiltration analysis performed by Christian Wheeler Engineering resulted in an infiltration rate of 0.03 inches/hour. Please see Attachment 6 for the Infiltration Feasibility Study. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	☐	☒
Provide basis: The site infiltration rate, determined by Christian Wheeler Engineering, is less than 0.5 inches/hour. (0.03 inches/hour.) Please see Attachment 6 for the Infiltration Feasibility Study. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			



Form I-8 Page 2 of 4

Criteria	Screening Question	Yes	No
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	☐	☒
Provide basis: The site infiltration rate, determined by Christian Wheeler Engineering, is less than 0.5 inches/hour. (0.03 inches/hour.) Please see Attachment 6 for the Infiltration Feasibility Study. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	☐	☒
Provide basis: The site infiltration rate, determined by Christian Wheeler Engineering, is less than 0.5 inches/hour. (0.03 inches/hour.) Please see Attachment 6 for the Infiltration Feasibility Study. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result *	If all answers to rows 1 - 4 are “Yes” a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is “No”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design. Proceed to Part 2	☐ Full Infiltration ☒ No	

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



Form I-8 Page 3 of 4

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

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

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

Provide basis:

Please refer to the Infiltration Feasibility Study conducted by Christan Wheeler Engineering. The Infiltration rate was determined to be 0.03 in/hr. Please see Attachment 6 for the Infiltration Feasibility Study.

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

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

Please refer to the Infiltration Feasibility Study conducted by Christan Wheeler Engineering. The Infiltration rate was determined to be 0.03 in/hr. Please see Attachment 6 for the Infiltration Feasibility Study.

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



Form I-8 Page 4 of 4

Criteria	Screening Question	Yes	No
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	☒	☐
Provide basis: Please refer to the Infiltration Feasibility Study conducted by Christan Wheeler Engineering. The Infiltration rate was determined to be 0.03 in/hr. Please see Attachment 6 for the Infiltration Feasibility Study. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	☒	☐
Provide basis: Please refer to the Infiltration Feasibility Study conducted by Christan Wheeler Engineering. The Infiltration rate was determined to be 0.03 in/hr. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration . If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration .	☒ Partial Infiltration ☐ No Infiltration	

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



Infiltration BMP Sizing

There are two available sizing calculation methods for Infiltration BMPs

1. Simple Sizing Method
2. Percent Capture Method

Please choose one. Refer to Manual Section B.4 for guidance.

Simple Sizing Method for Infiltration BMPs		Worksheet B.4-1		
1	DCV (Worksheet B-2.1)	DCV=		cubic-feet
2	Estimated design infiltration rate (Worksheet D.5-1)	K_{design} =		in/hr
3	Available BMP surface area	A_{BMP} =		sq-ft
4	Average effective depth in the BMP footprint ($\text{DCV}/A_{\text{BMP}}$)	D_{avg} =		feet
5	Drawdown time, T ($D_{\text{avg}} * 12 / K_{\text{design}}$)	T=		hours
6	Provide alternative calculation of drawdown time, if needed. NOT APPLICABLE – PROJECT PROPOSES THE USE OF BIOFILTRATION WITH PARTIAL RETENTION BMP. PLEASE SEE PREVIOUSLY ATTACHED COUNTY OF SAN DIEGO AUTOMATED WORKSHEET B.1-3 AT THE END OF ATTACHMENT 1.			



Factor of Safety and Design Infiltration Rate Worksheet			Worksheet D.5-1		
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) $p = w \times v$
A	Suitability Assessment	Soil assessment methods	0.25		
		Predominant soil texture	0.25		
		Site soil variability	0.25		
		Depth to groundwater / impervious layer	0.25		
		Suitability Assessment Safety Factor, $S_A = \sum p$			
B	Design	Level of pretreatment/ expected sediment loads	0.5		
		Redundancy/resiliency	0.25		
		Compaction during construction	0.25		
		Design Safety Factor, $S_B = \sum p$			
Combined Safety Factor, $S_{total} = S_A \times S_B$					
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)					
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$					
Supporting Data					
Briefly describe infiltration test and provide reference to test forms: Infiltration Feasibility Study was conducted by Christian Wheeler Engineering. The design infiltration rate was determined to be 0.03 in/hr. Therefore, a design infiltration rate of 0.025 in/hr was used. Please refer to attachment 6 for the geotechnical investigation & attached County Automated Worksheet v2.0 for the calculated design capture volume of the biofiltration basin with partial retention.					



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

Category	#	Description	<i>i</i>	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	DMA #1	unitless
	2	85th Percentile 24-hr Storm Depth	0.69	inches
	3	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	83,473	sq-ft
	4	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)		sq-ft
	5	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)		sq-ft
	6	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)		sq-ft
	7	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)		sq-ft
	8	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)		sq-ft
	9	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)	63,895	sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	yes/no
	11	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)		sq-ft
	12	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)		sq-ft
	13	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)		sq-ft
	14	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)		sq-ft
	15	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)		sq-ft
	16	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)		sq-ft
	17	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)		sq-ft
	18	Number of Tree Wells Proposed per SD-A		#
	19	Average Mature Tree Canopy Diameter		ft
	20	Number of Rain Barrels Proposed per SD-E		#
	21	Average Rain Barrel Size		gal
Initial Runoff Factor Calculation	22	Total Tributary Area	147,368	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.64	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	unitless
	25	Initial Weighted Runoff Factor	0.64	unitless
	26	Initial Design Capture Volume	5,384	cubic-feet
Dispersion Area Adjustments	27	Total Impervious Area Dispersed to Pervious Surface	0	sq-ft
	28	Total Pervious Dispersion Area	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.64	unitless
	32	Design Capture Volume After Dispersion Techniques	5,384	cubic-feet
Tree & Barrel Adjustments	33	Total Tree Well Volume Reduction	0	cubic-feet
	34	Total Rain Barrel Volume Reduction	0	cubic-feet
Results	35	Final Adjusted Runoff Factor	0.64	unitless
	36	Final Effective Tributary Area	94,316	sq-ft
	37	Initial Design Capture Volume Retained by Site Design Elements	0	cubic-feet
	38	Final Design Capture Volume Tributary to BMP	5,384	cubic-feet
No Warning Messages				

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

Category	#	Description	<i>i</i>	Units
Basic Analysis	1	Drainage Basin ID or Name	DMA #1	unitless
	2	85th Percentile Rainfall Depth	0.69	inches
	3	Predominant NRCS Soil Type Within BMP Location	D	unitless
	4	Is proposed BMP location Restricted or Unrestricted for Infiltration Activities?	Unrestricted	unitless
	5	Nature of Restriction	Soil Type	unitless
	6	Do Minimum Retention Requirements Apply to this Project?	Yes	yes/no
	7	Are Habitable Structures Greater than 9 Stories Proposed?	No	yes/no
Advanced Analysis	8	Has Geotechnical Engineer Performed an Infiltration Analysis?	No	yes/no
	9	Design Infiltration Rate Recommended by Geotechnical Engineer		in/hr
Result	10	Design Infiltration Rate Used To Determine Retention Requirements	0.025	in/hr
	11	Percent of Average Annual Runoff that Must be Retained within DMA	1.5%	percentage
	12	Fraction of DCV Requiring Retention	0.01	ratio
	13	Required Retention Volume	54	cubic-feet
<u>No Warning Messages</u>				

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

Category	#	Description	<i>i</i>	Units
BMP Inputs	1	Drainage Basin ID or Name	DMA #1	sq-ft
	2	Design Infiltration Rate Recommended	0.025	in/hr
	3	Design Capture Volume Tributary to BMP	5,384	cubic-feet
	4	Is BMP Vegetated or Unvegetated?	Vegetated	unitless
	5	Is BMP Impermeably Lined or Unlined?	Unlined	unitless
	6	Does BMP Have an Underdrain?	Underdrain	unitless
	7	Does BMP Utilize Standard or Specialized Media?	Standard	unitless
	8	Provided Surface Area	5,109	sq-ft
	9	Provided Surface Ponding Depth	6	inches
	10	Provided Soil Media Thickness	18	inches
	11	Provided Gravel Thickness (Total Thickness)	18	inches
	12	Underdrain Offset	3	inches
	13	Diameter of Underdrain or Hydromod Orifice (Select Smallest)	8.00	inches
	14	Specialized Soil Media Filtration Rate		in/hr
	15	Specialized Soil Media Pore Space for Retention		unitless
	16	Specialized Soil Media Pore Space for Biofiltration		unitless
	17	Specialized Gravel Media Pore Space		unitless
Retention Calculations	18	Volume Infiltrated Over 6 Hour Storm	64	cubic-feet
	19	Ponding Pore Space Available for Retention	0.00	unitless
	20	Soil Media Pore Space Available for Retention	0.05	unitless
	21	Gravel Pore Space Available for Retention (Above Underdrain)	0.00	unitless
	22	Gravel Pore Space Available for Retention (Below Underdrain)	0.40	unitless
	23	Effective Retention Depth	2.10	inches
	24	Fraction of DCV Retained (Independent of Drawdown Time)	0.18	ratio
	25	Calculated Retention Storage Drawdown Time	84	hours
	26	Efficacy of Retention Processes	0.23	ratio
	27	Volume Retained by BMP (Considering Drawdown Time)	1,238	cubic-feet
Biofiltration Calculations	28	Design Capture Volume Remaining for Biofiltration	4,146	cubic-feet
	29	Max Hydromod Flow Rate through Underdrain	2.8704	cfs
	30	Max Soil Filtration Rate Allowed by Underdrain Orifice	24.27	in/hr
	31	Soil Media Filtration Rate per Specifications	5.00	in/hr
	32	Soil Media Filtration Rate to be used for Sizing	5.00	in/hr
	33	Depth Biofiltered Over 6 Hour Storm	30.00	inches
	34	Ponding Pore Space Available for Biofiltration	1.00	unitless
	35	Soil Media Pore Space Available for Biofiltration	0.20	unitless
	36	Gravel Pore Space Available for Biofiltration (Above Underdrain)	0.40	unitless
	37	Effective Depth of Biofiltration Storage	15.60	inches
	38	Drawdown Time for Surface Ponding	1	hours
	39	Drawdown Time for Effective Biofiltration Depth	3	hours
	40	Total Depth Biofiltered	45.60	inches
	41	Option 1 - Biofilter 1.50 DCV: Target Volume	6,219	cubic-feet
	42	Option 1 - Provided Biofiltration Volume	6,219	cubic-feet
	43	Option 2 - Store 0.75 DCV: Target Volume	3,109	cubic-feet
	44	Option 2 - Provided Storage Volume	3,109	cubic-feet
	45	Portion of Biofiltration Performance Standard Satisfied	1.00	ratio
Result	46	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	yes/no
	47	Overall Portion of Performance Standard Satisfied (BMP Efficacy Factor)	1.00	ratio
	48	Deficit of Effectively Treated Stormwater	0	cubic-feet

No Warning Messages

ATTACHMENT 2
BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

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



Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 2a	1. Hydromodification Management Exhibit (Required)	☒ Included HYDROMODIFICATION MANAGEMENT EXEMPT. See Hydromodification Management Exhibit Checklist.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☐ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☐ Not performed ☐ Included ☐ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design and Structural BMP Drawdown Calculations (Required) Overflow Design Summary for each structural BMP See Chapter 6 and Appendix G of the BMP Design Manual	☐ Included ☐ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐ Included ☐ Not required because BMPs will drain in less than 96 hours



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

The Hydromodification Management Exhibit must identify:

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

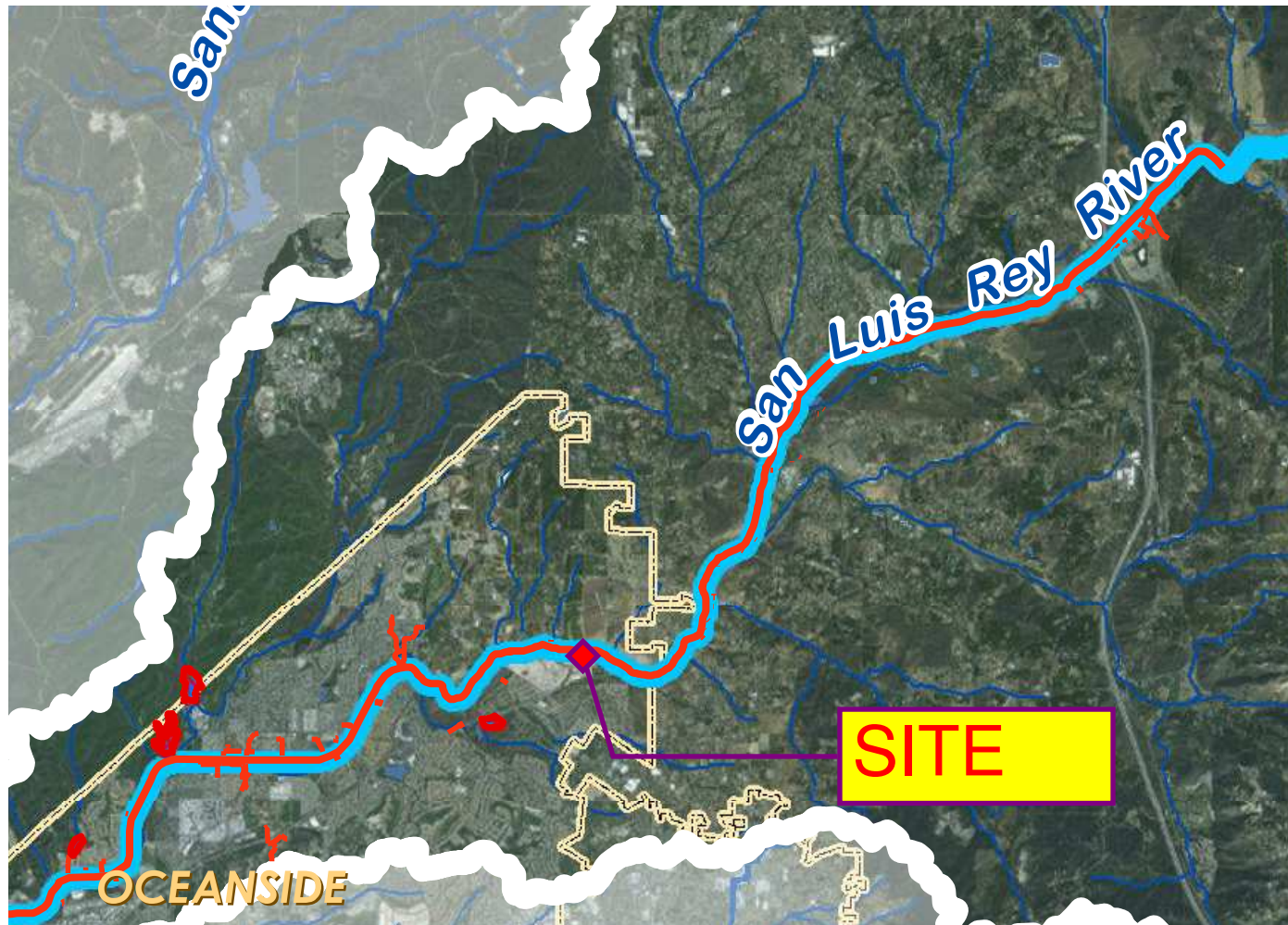
Please provide the Exhibit in 24"x36" format with map pocket, wet date, and stamp.

THIS PROJECT IS EXEMPT FROM HYDROMODIFICATION MANAGEMENT. PLEASE SEE NEXT PAGE FOR EXHIBIT.



SAN LUIS REY WATERSHED MANAGEMENT AREA
HU 903.00

WEST COAST TOMATO GROWERS
FARM WORKER HOUSING GRADING PLAN
HYDROMODIFICATION MANAGEMENT EXEMPTION EXHIBIT



Placeholder – **6.2.1 Verification of GLUs Onsite** (if applicable)

Replace placeholder with required calculations/documentation.

Leave placeholder intact if not applicable.

☒ Not Applicable



NOT APPLICABLE

Downstream Systems Sensitivity to Coarse Sediment		Form I-10	
When it has been determined that potential critical coarse sediment yield areas exist within the project site, the next step is to determine whether downstream systems would be sensitive to reduction of coarse sediment yield from the project site. Use this form to document the evaluation of downstream systems requirements for preservation of coarse sediment supply.			
Project Name:			
Project Tracking Number / Permit Application Number:			
1	Will the project discharge runoff to a hardened MS4 system (pipe or lined channel) or an un-lined channel?	Hardened MS4 system	Go to 2
		Un-lined channel	Go to 4
2	Will the hardened MS4 system convey sediment (e.g., a concrete-lined channel with steep slope and cleansing velocity) or sink sediment (e.g., flat slopes, constrictions, treatment BMPs, or ponds with restricted outlets within the system will trap sediment and not allow conveyance of coarse sediment from the project site to an un-lined system).	Convey	Go to 3
		Sink	Go to 7
3	What kind of receiving water will the hardened MS4 system convey the sediment to?	Un-lined channel	Go to 4
		Lake Reservoir Bay	Go to 7
		Lagoon Ocean	Go to 6
4	Is the un-lined channel impacted by deposition of sediment? This condition must be documented by the local agency.	Yes	Go to 7
		No	Go to 5



Form I-10 Page 2 of 2

5	End – Preserve coarse sediment supply to protect un-lined channels from accelerated erosion due to reduction of coarse sediment yield from the project site unless further investigation determines the sediment is not critical to the receiving stream. Sediment that is critical to receiving streams is the sediment that is a significant source of bed material to the receiving stream (bed sediment supply) (see Section 6.2.3 and Appendix H.2 of the manual).
6	End – Provide management measures for preservation of coarse sediment supply (protect beach sand supply).
7	End – Downstream system does not warrant preservation of coarse sediment supply, no measures for protection of critical coarse sediment yield areas onsite are necessary. Use the space below to describe the basis for this finding for the project.



Placeholder – **6.2.3 Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite** (Optional)

Replace placeholder with required calculations/documentation.

Leave placeholder intact if not applicable.

NOT APPLICABLE



Placeholder – **6.3.4 Geomorphic Assessment of Receiving Channels** (Optional)

Replace placeholder with required calculations/documentation.

Leave placeholder intact if not applicable.

NOT APPLICABLE



Placeholder - **Flow Control Facility Design and Structural BMP Drawdown Calculations**

Replace placeholder with required calculations/documentation.

See Chapter 6 and Appendix G of the BMP Design Manual

NOT APPLICABLE



Placeholder – **Vector Control Plan** (required when structural BMPs will drain in 96 hours)

Replace placeholder with required documentation.

Leave placeholder intact if not applicable.

NOT APPLICABLE



ATTACHMENT 3
STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.



Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	☒ Included See Structural BMP Maintenance Information Checklist.
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐ Included ☒ Not Applicable



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

Preliminary Design / Planning / CEQA level submittal:

- Attachment 3a must identify:

☒ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

- Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

Final Design level submittal:

Attachment 3a must identify:

☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)

☐ How to access the structural BMP(s) to inspect and perform maintenance

☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)

☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable

☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)

☐ Recommended equipment to perform maintenance

☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the City Engineer to obtain the current maintenance agreement forms).



CITY OF OCEANSIDE



BEST MANAGEMENT PRACTICES OPERATIONS AND MAINTENANCE PLAN FOR PRIORITY PROJECTS

PROJECT NAME: WCTG FARM WORKER HOUSING

PARCEL NUMBER: 157-150-63-00

PROJECT NUMBER: _____

APPLICANT NAME: WEST COAST TOMATO GROWERS, INC.

DATE: FEBRUARY 7, 2022

Prepared for:

City of Oceanside
Engineering Division
300 North Coast Hwy
Oceanside, CA 92054

Deemed Complete by the City of Oceanside
Engineering Division

Name: _____ Date: _____

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TABLE 5 Stormwater Treatment Control BMPs

ATTACHMENTS

1. Organizational Chart
2. Training Program
3. BMP Operation and Maintenance Funding Supplemental Information
4. LID BMPs Inspection Form
5. Source Control BMP Inspection Form
6. Site Map
7. Plans and Other Operation and Maintenance Requirements
8. Treatment Control BMP Inspection and Maintenance Checklist(s)
9. Maintenance Schedule
10. Service Agreement
11. Annual Inspection and Maintenance Reporting Form
12. Copy of Storm water facility maintenance Agreement (SWFMA)
13. Annual Maintenance Cost Estimate

I. COMPLIANCE WITH STORMWATER BEST MANAGEMENT PRACTICES MAINTENANCE REQUIREMENTS

All applicants are responsible for ensuring that stormwater best management practices (BMPs) or facilities installed on their property are properly maintained and that they function as designed. Tenants shall be aware of their responsibilities regarding stormwater facility maintenance and need to be familiar with the contents of this Operations and Maintenance Plan (O&M Plan). Applicants have signed and agreed to a Standard Storm Water Facilities Maintenance Agreement with Access Rights and Covenants (SWFMA). All other maintenance agreements between the applicant and their maintenance employees associated with this property shall be included in Attachment 10.

II. DESIGNATION RESPONSIBLE PARTIES

Responsible parties shall be designated and identified in Table 1.

- The Responsible BMP Party is individual, party, or parties that shall have direct responsibility for the maintenance of stormwater controls. This individual shall be the designated contact with City of Oceanside inspectors and should sign self-inspection reports and any correspondence regarding verification of inspections and required maintenance.
- The Duly Authorized Representative is the corporate officer authorized to negotiate and execute any contracts that might be necessary for future changes to operation and maintenance or to implement remedial measures if problems occur.
- The Designated Emergency Respondent is the party responsible for emergencies such as clogged drains, broken irrigation pipes, etc., that would require immediate response should they occur during off-hours.

TABLE 1 OWNERSHIP AND MAINTENANCE			
	Name	Address	Phone / Email
Responsible BMP Party (if different than above)	West Coast Tomato Growers Inc.	5780 Mission Avenue, Oceanside, CA 92057	(619) 993-5121
Employees reporting to Responsible BMP Party	TBD		
Duly Authorized Representative	Brad Edbright	5780 Mission Avenue, Oceanside, CA 92057	(619) 993-5121

Designated Emergency Respondent ¹	Brad Edbright	5780 Mission Avenue, Oceanside, CA 92057	(619) 993-5121
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¹ The Designated Emergency Respondent's phone number must be a cellular phone that is reachable 24 hours a day.

Updated contact information must be provided to City of Oceanside immediately whenever a property is sold and whenever designated individuals or contractors change.

A. Maintenance Personnel

Maintenance personnel including Responsible BMP Party, Employees Reporting to Responsible BMP Party, and the Designated Emergency Respondent, must be qualified to properly maintain stormwater BMPs (including treatment and flow-control facilities), especially for restoration or rehabilitation work. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

B. Organizational Chart

An organization chart showing the relationships of authority and responsibility between the individuals responsible for maintenance is provided in Attachment 1.

C. Training

Periodic training is conducted by the responsible BMP party for all personnel affiliated with the maintenance of stormwater BMPs. New staff and/or contractors training regarding the purpose, mode of operation, and maintenance requirements for the site's storm water facilities will be provided by the site. Necessary ongoing training for staff and/or contractors will also be provided. The site's Staff Training Program is described in Attachment 2.

TABLE 2 BMP OPERATION AND MAINTENANCE FUNDING	
Sources of Funding	PROPERTY OWNER
Budget Category for Expenditures	TO BE DETERMINED AS PART OF FINAL CONSTRUCTION DOCUMENTS
Process for establishing Annual O&M Budget	TO BE DETERMINED AS PART OF FINAL CONSTRUCTION DOCUMENTS

Process for obtaining unexpected expenditures for major corrective activities	TO BE DETERMINED AS PART OF FINAL CONSTRUCTION DOCUMENTS
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D. BMP Maintenance Funding

The funding for BMP operation and maintenance shall be described in Table 2; including sources of funds, budget category for expenditures, process for establishing the annual operations and maintenance budget, and process for obtaining authority should unexpected expenditures for major corrective maintenance be required. Any supplemental information, including calculations and documentation shall be included in Attachment 3.

III. LOW IMPACT DEVELOPMENT AND SITE DESIGN BMPS

Low Impact Development (LID) and Site Design BMPs have been incorporated into the project to minimize stormwater impacts. LID BMPs collectively minimize directly connected impervious area and promote infiltration on the project site. Site design BMPs are permanent measures and are similar to LID BMPs.

The LID and Site Design BMPs for the project which require maintenance are identified along with their locations, including Drainage Management Areas (DMAs), in the project SWQMP. A LID Inspection form for the site is provided in Attachment 4. In the event that a project use should change or maintenance considerations may require the site to become amended, Table 22 should be referenced for original site constraints and design guidelines.

IV. SOURCE CONTROL BMPS

Source control BMPs have been selected for the project in order to minimize or prevent pollutant generation. The SWQMP and Table 4 of this O&M identifies the potential pollutant sources and corresponding permanent and operational source controls as well as their locations.

Source control BMPs should be inspected routinely in order to reduce or prevent pollution from accumulating in these areas. Routine inspections of the site's source controls are discussed in the site's maintenance schedule. Source control inspection forms are in Attachment 5.

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☒ On-site storm drain inlets	All inlets shall be marked with City of Oceanside storm drain markers	- Maintain and periodically replace inlet markers, as necessary. - Review stormwater pollution prevention information applicable to the site. - Adhere to applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com - Do not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.	At new biofiltration with partial retention basin near the northerly portion of the site.
☐ Interior floor drains and elevator shaft sump pumps	Interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	- Inspect and maintain drains to prevent blockages and overflow. - Regularly clear all associated cleanouts and hand holes.	
☐ Interior parking garages	Parking garage floor drains will be plumbed to the sanitary sewer.	Inspect and maintain drains to prevent blockages and overflow.	

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☒ Landscape/ Outdoor Pesticide Use	- Final site landscape plans shall be placed in Attachment 7 and shall be used to maintain the following: - Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. - 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 landscaped areas are used to retain or detain stormwater, maintain and replace, as necessary, plants that are tolerant of saturated soil conditions. - Consider using pest-resistant plants, especially adjacent to hardscape. - To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	- Maintain landscaping using a minimum amount of or no pesticides (consider the use of organic techniques). - Review and adhere to applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com - Review IMP information and provide to landscape and maintenance personnel.	At the newly graded slopes that run parallel with the new driveway along the south portion of the site. Also at the new biofiltration with partial retention basin.
☐ Use efficient irrigation systems	- Employ rain shutoff devices to prevent irrigation after precipitation. - Design irrigation systems to each landscape area's specific water requirements. - Use flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. - Employ other comparable, equally effective, methods to reduce irrigation water runoff.	- Inspect irrigation system for leaks and/or malfunctions. - Inspect that water usage is consistent with vegetation requirements. - Inspect that irrigation shut-off controls operate correctly.	

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☒ Need for future indoor & structural pest control	Note building design features that discourage entry of pests.	Review Integrated Pest Management information and provide to other maintenance personnel.	
☐ Pools, spas, ponds, decorative fountains, and other water features.	Plumb pools to the sanitary sewer in accordance with local requirements.	Review and adhere to applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	
☒ Food service	- Describe the location and features of the designated cleaning area. - Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.		

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☒ Refuse areas	- State how site refuse will be handled and provide supporting detail to what is shown on plans. - Prohibitive signs shall be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar. - Any drains from dumpsters, compactors, and bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	- Provide adequate number of receptacles. - Inspect receptacles regularly; repair or replace leaky receptacles. - Keep receptacles covered at all times. - Prohibit/prevent dumping of liquid or hazardous wastes. - Post and replace, as necessary, "no hazardous materials" signs. - Inspect and pick up litter daily and clean up spills immediately. - Keep spill control materials available on-site. Review Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	Refuse areas will be located at each of the 3 trash designated areas: southeast of the Laundry Building, southwest of the Outdoor Dining Area, and east of the northerly visitor parking spaces.
☐ Industrial processes.	- Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system in compliance with the applicable municipal waste water district's requirements (include a copy of the waste acceptance letter from the agency accepting the waste in Attachment 10). - Grade or berm area to prevent run-on from surrounding areas. - Installation of storm drains in areas of equipment repair is prohibited. - Implement other features which are comparable or equally effective.	Review and adhere to Fact Sheet SC-10, "Non- Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Outdoor storage of equipment or materials	• Comply with all requirements of local Hazardous Materials Programs for: - o Hazardous Waste Generation - o Hazardous Materials Release Response and Inventory - o California Accidental Release (CalARP) - o Aboveground Storage Tank - o Uniform Fire Code Article 80 Section 103(b) & (c) 1991 • Underground Storage Tank • Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. • Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	• Review and adhere to the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC- 33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	
	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.		

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Vehicle and Equipment Cleaning	• If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced. • Equip wash area with a clarifier, grease trap or other pretreatment facility, as appropriate and properly connect to the sanitary sewer. • Implement other features which are comparable or equally effective • Commercial/ industrial facilities having vehicle/ equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. • Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. • Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed and permitted by proper regulatory authorities (attach permits in Attachment 10, as necessary).	• Follow operational measures to implement the following (if applicable): - o Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. - o Car dealerships and similar may rinse cars with water only. - o Review and adhere to Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	.

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Vehicle/Equipment Repair and Maintenance	• No vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. • An industrial waste discharge permit will be obtained. For floor drains connected to the sanitary sewer; design will meet the permitting agency's requirements. • An industrial waste discharge permit will be obtained for tanks, containers or sinks to be used for parts cleaning or rinsing; design will meet the permitting agency's requirements. • Accommodate all vehicle equipment repair and maintenance indoors or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. • Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.	• The following restrictions apply to use the site: - o No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinse water from parts cleaning into storm drains. - o No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. - o No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.	

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Fuel Dispensing Areas	- Fueling areas¹ shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: - Graded at the minimum slope necessary to prevent ponding - Separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. - Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area¹. The canopy [or cover] shall not drain onto the fueling area.	- The fueling area is to be dry swept routinely. - Review and adhere to the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	

¹ The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Loading Docks	• Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. • Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer. • Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible.	• Move loaded and unloaded items indoors as soon as possible. • Review and adhere to Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	
☐ Fire Sprinkler Test Water	• Provide a means to drain fire sprinkler test water to the sanitary sewer.	• Review the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	

**TABLE 3
SOURCE CONTROL BMPs**

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Miscellaneous Drain or Wash Water - Boiler drain lines - Condensate drain lines - Rooftop equipment - Drainage sumps - Roofing, gutters, and trim	- Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. - Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. - Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. - Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. - Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.		
☒ 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.	All sidewalks and walkways located adjacent to the new buildings.

V. DRAINAGE AREAS

Table 5 summarizes the drainage management areas (DMAs) on site.

TABLE 4 DRAINAGE MANAGEMENT AREAS		
DMA No.	Designation	Description
1	Subject to Pollutant Control Requirements. HMP Exempt.	Overall Project Site including New Buildings, Driveway, Landscaped Areas, and Recreation Field
2	De-Minimis	New Driveway on Singh Way Entrance/Exit
3	Self-Mitigating	Proposed utilities. Areas between limit of grading and DMA 1

The site map in Attachment 6 shows the DMAs and their flow patterns. The map indicates, using flow patterns, how the flow from each DMA is routed to the corresponding storm water facility. Impervious and pervious areas are shown on the map.

VI. STORMWATER TREATMENT CONTROL BMPS

Treatment control BMPs treating runoff from DMAs are summarized in Table 5.

TABLE 5 STORMWATER TREATMENT CONTROL BMPS			
Treatment Control BMP Type	Description	Size or Treatment Control BMP Capacity	Area Drained or Water Quality Flow
Biofiltration with Partial Retention Basin	BMP #1	5,109 sf	147,368 sf

The location and type of each of the project's stormwater facilities on site are shown on the site map in Attachment 6.

The as-built drawings², manufacturer's data, cut-sheets, manuals, and specific operation and maintenance requirements for each treatment control BMP shall be provided in Attachment 7.

VII. INSPECTING STORMWATER BMPS

The quality of stormwater entering the waters of the U.S. or waters of the state relies heavily on the proper operation and maintenance of permanent BMPs. LID, source control, and treatment control stormwater BMPs must be periodically inspected to ensure that they are functioning as designed. Inspections will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater treatment BMPs are required to be inspected a minimum of once per year. The Inspection and Maintenance Checklist(s) that is applicable to the site is provided in Attachment 8.

B. Inspection Report

The person(s) conducting the inspection activities (Responsible BMP Party, Employees reporting to Responsible BMP Party, or the Designated Emergency Respondent) shall complete the appropriate inspection checklist for the specific facility. All completed checklists are located in Attachment 8. All facilities are to be inspected on an annual basis at a minimum. A copy of each inspection form shall be kept by the applicant a minimum of 5 years.

Inspection Scoring

For each inspection item, a score is given to identify the urgency for any required maintenance. The scoring is as follows:

- 0 = No deficiencies identified.
- 1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.
- 2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program. This can include items like vegetation management or debris/trash removal.
- 3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred.

² As-built drawings must be included after construction is complete.

This could include items such as structural failure of a feature (outlet, weir, manhole, etc.), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

N/A = This is checked by an item that may not exist in a facility. Not all facilities have all of the features identified on the form (outlet, weir, manhole, etc.).

Overall Facility Rating

An overall rating is given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

C. Verification of Inspection and Checklist Submittal

The Stormwater BMP Inspection and Maintenance Checklist (in Attachment 8) provides a record of inspections and the need for maintenance activities at the facility. Verification of the inspection of the stormwater facilities and the facility inspection checklist(s) shall be available to the City of Oceanside if requested.

VIII. MAINTENANCE SCHEDULE FOR STORMWATER BMPS

A maintenance schedule for the stormwater source control and treatment control BMPs on site is provided in Attachment 9. Attachment 9 includes schedules for routine inspection and maintenance, annual inspection and maintenance, and inspection and maintenance after major storm events.

A service agreement with any contractors hired to perform stormwater treatment control BMP maintenance is also provided in Attachment 10.

IX. MAINTAINING STORMWATER BMPS

Stormwater BMPs must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

A. Maintenance Categories

Stormwater BMP maintenance programs are separated into three broad categories of work: routine, restoration, and rehabilitation. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

Routine Work

This work includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as road and parking lot sweeping, weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. These items can be completed without any prior correspondence; however, inspection and maintenance forms shall be completed.

Restoration Work

This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment. These items do not require prior correspondence. However, completed maintenance forms are required.

Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater BMP. This work requires consultation with the City of Oceanside and may require an engineering design with construction plans to be prepared for review and approval.

B. Maintenance Forms

The Stormwater BMP Inspection and Maintenance Form provides a record of maintenance activities and includes general cost information to assist in budgeting for future maintenance. Maintenance Forms for each facility type are provided in Appendix 3. Maintenance Forms shall be completed by the responsible BMP party. The form shall then be reviewed by the applicant or an authorized agent of the applicant and made available for review upon inspection by the City of Oceanside.

X. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

The most effective way to maintain a stormwater quality facility is to prevent pollutants from entering the facility. Common pollutants include sediment, trash & debris, chemicals, pet wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. This maintenance program includes measures to address these potential contaminants at the source and save time and money in the long run. The maintenance program will consider the following:

- Educate employees and patrons to be aware of how their actions affect water quality and how they can help reduce maintenance costs.

- Keep properties, streets, gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper use, storage, and disposal of hazardous wastes and chemicals. Promptly clean up spilled materials and dispose of properly.
- Plan landscape care to minimize and properly use chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Encourage pet owners to clean up pet wastes.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean any private storm drainage system components, including inlets, storm drains, and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

XI. INSPECTION & MAINTENANCE – ANNUAL REPORTING

The tenant is responsible for providing verification that the stormwater treatment control BMPs have been properly inspected and maintained unless otherwise noted. Verification includes records of inspections and maintenance performed on site. Any maintenance required will be identified and described. Records should be available at the City of Oceanside's request.

ATTACHMENT 1

ORGANIZATIONAL CHART

ATTACHMENT 2

TRAINING PROGRAM

ATTACHMENT 3

BMP OPERATION AND MAINTENANCE FUNDING SUPPLEMENTAL INFORMATION

ATTACHMENT 4

LID BMPS INSPECTION FORM

LID BMP INSPECTION FORM

Date:	Inspector:		Weather:		
Reason for Inspection:			Comments:		
LID BMP Type	Description	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
☒ Bioretention			☐ Regularly weed and water during plant establishment phase	☐ No ☐ Yes	
			☐ Area is free of litter and excess sediment	☐ No ☐ Yes	
			☐ Area free of erosion and stabilized	☐ No ☐ Yes	
			☐ Plants are healthy and thriving	☐ No ☐ Yes	
			☐ Plant types are those from original design	☐ No ☐ Yes	
☐ Filter Strips			☐ Regularly weed and water during plant establishment phase	☐ No ☐ Yes	
			☐ Plants are healthy and thriving	☐ No ☐ Yes	
			☐ Area free of erosion and stabilized	☐ No ☐ Yes	
			☐ Area is free of litter and excess sediment	☐ No ☐ Yes	
			☐ Plant types are those from original design	☐ No ☐ Yes	
			☐ Flow spreader is free of debris and is not clogged	☐ No ☐ Yes	

LID BMP INSPECTION FORM

Date:	Inspector:		Weather:		
Reason for Inspection:			Comments:		
LID BMP Type	Description	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
☐ Vegetated Buffers			☐ Regularly weed and water during plant establishment phase	☐ No ☐ Yes	
			☐ Plants are healthy and thriving	☐ No ☐ Yes	
			☐ Area free of erosion and stabilized	☐ No ☐ Yes	
			☐ Area is free of litter and excess sediment	☐ No ☐ Yes	
			☐ Plant types are those from original design	☐ No ☐ Yes	
			☐ Flow spreader is free of debris and is not clogged	☐ No ☐ Yes	
☐ Bioswale/Grassed Swale			☐ Regularly weed and water during plant establishment phase	☐ No ☐ Yes	
			☐ Plants are healthy and thriving	☐ No ☐ Yes	
			☐ Area free of erosion and stabilized	☐ No ☐ Yes	
			☐ Area is free of litter and excess sediment	☐ No ☐ Yes	
			☐ Plant types are those from original design	☐ No ☐ Yes	
☐ Green Roofs			☐ Regularly weed and water during plant establishment phase	☐ No ☐ Yes	

LID BMP INSPECTION FORM

Date:	Inspector:		Weather:		
Reason for Inspection:			Comments:		
LID BMP Type	Description	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
☐ <i>Green Roofs Cont'd</i>			☐ Plants are healthy and thriving	☐ No ☐ Yes	
☐ Rain Barrels / Cisterns			☐ Roof catchment and gutters are free of debris and sediment	☐ No ☐ Yes	
			☐ Downspouts are free of leaks and obstructions	☐ No ☐ Yes	
			☐ Rain barrel, top, and seal are free of leaks	☐ No ☐ Yes	
			☐ Overflow pipe is not causing erosion	☐ No ☐ Yes	
☐ Porous Pavement			☐ Pavement is free of debris and sediment	☐ No ☐ Yes	
			☐ Pavement is swept monthly	☐ No ☐ Yes	
			☐ Pavement is in good condition and stabilized	☐ No ☐ Yes	
			☐ Area is dry swept regularly	☐ No ☐ Yes	
☐ Soil Structure Enhancement (use of compost)			☐ Area is protected from compaction	☐ No ☐ Yes	
			☐ Limited foot traffic	☐ No ☐ Yes	
			☐ 2 to 1 ratio of compost soil and existing soil is present	☐ No ☐ Yes	

ATTACHMENT 5

SOURCE CONTROL BMP INSPECTION FORM

SOURCE CONTROL BMP INSPECTION FORM

Date:	Inspector:	Weather:		
Reason for Inspection:		Comments:		
Potential Pollutant Sources	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
☒ On-site storm drain inlets		☐ Maintain and periodically replace inlet markers, if necessary.	☐ No ☐ Yes	
		☐ Review stormwater pollution prevention information applicable to the site.	☐ No ☐ Yes	
		☐ Adhere to applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
		☐ Do not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.	☐ No ☐ Yes	
☐ Interior floor drains and elevator shaft sump pumps		☐ Inspect and maintain drains to prevent blockages and overflow.	☐ No ☐ Yes	
☐ Interior parking garages		☐ Inspect and maintain drains to prevent blockages and overflow.	☐ No ☐ Yes	
☒ Landscape/ Outdoor Pesticide Use		☐ Maintain landscaping using minimum or no pesticides.	☐ No ☐ Yes	
		☐ Review and adhere to applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM				
Date:	Inspector:	Weather:		
Reason for Inspection:		Comments:		
Potential Pollutant Sources	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
<i>Landscape/Outdoor pesticide Use Continued</i>		☐ Review IMP information and provide to landscape and maintenance personnel.	☐ No ☐ Yes	
☐ Use efficient irrigation systems		☐ Inspect irrigation system for leaks and/or malfunctions.	☐ No ☐ Yes	
☒ Need for future indoor & structural pest control		☐ Review Integrated Pest Management information and provide to other maintenance personnel.	☐ No ☐ Yes	
☐ Pools, spas, ponds, decorative fountains, and other water features.		☐ Review and adhere to applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
☒ Food service		☐ Grease traps cleaned, as necessary. ☐ See Refuse Areas.	☐ No ☐ Yes	
☒ Refuse areas		☐ Provide adequate number of receptacles.	☐ No ☐ Yes	
		☐ Inspect receptacles regularly; repair or replace leaky receptacles.	☐ No ☐ Yes	
		☐ Keep receptacles covered at all times.	☐ No ☐ Yes	
		☐ Prohibit/prevent dumping of liquid or hazardous wastes.	☐ No ☐ Yes	
		☐ Post "no hazardous materials" signs.	☐ No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM				
Date:	Inspector:	Weather:		
Reason for Inspection:		Comments:		
Potential Pollutant Sources	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
<i>Refuse areas- Continued</i>		☐ Inspect and pick up litter daily and clean up spills immediately.	☐ No ☐ Yes	
		☐ Keep spill control materials available on- site. Review Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
☐ Industrial processes.		☐ Review and adhere to Fact Sheet SC-10, "Non- Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
☐ Outdoor storage of equipment or materials		☐ Review and adhere to the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC- 33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
☐ Vehicle and Equipment Cleaning		Follow operational measures to implement the following (if applicable):		
		☐ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.	☐ No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM				
Date:	Inspector:	Weather:		
Reason for Inspection:		Comments:		
Potential Pollutant Sources	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
<i>Vehicle and Equipment Cleaning Continued</i>		☐ Car dealerships and similar may rinse cars with potable water only. Any excess water shall be drained through landscaping and dechlorinated prior to discharge to the storm drain system.	☐ No ☐ Yes	
		☐ Review and adhere to Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
☐ Vehicle/Equipment Repair and Maintenance		The following restrictions apply to use the site:		
		☐ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinse water from parts cleaning into storm drains.	☐ No ☐ Yes	
		☐ No vehicle fluid removal shall be performed outside a building, Nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.	☐ No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM				
Date:	Inspector:	Weather:		
Reason for Inspection:		Comments:		
Potential Pollutant Sources	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
Vehicle/Equipment Repair and Maintenance <i>Continued</i>		☐ No person shall leave unattended drip parts or other open containers of chemicals such as vehicle fluid, unless such containers are in use or in an area of secondary containment.	☐ No ☐ Yes	
☐ Fuel Dispensing Areas		☐ The fueling area is to be dry swept routinely.	☐ No ☐ Yes	
		☐ Review and adhere to the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
		☐ Fueling areas are covered by a canopy.	☐ No ☐ Yes	
		☐ The canopy does not drain onto the fueling area.	☐ No ☐ Yes	
		☐ Grading of the area prevents run-on of stormwater to the maximum extent practicable.	☐ No ☐ Yes	
☐ Loading Docks		☐ Move loaded and unloaded items indoors as soon as possible.	☐ No ☐ Yes	
		☐ Review and adhere to Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM				
Date:	Inspector:	Weather:		
Reason for Inspection:		Comments:		
Potential Pollutant Sources	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
☐ Fire Sprinkler Test Water		☐ Review the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐ No ☐ Yes	
☐ Miscellaneous Drain or Wash Water - Boiler drain lines - Condensate drain lines - Rooftop equipment - Drainage sumps - Roofing, gutters, and trim			☐ No ☐ Yes	
☒ 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.	☐ No ☐ Yes	

ATTACHMENT 6

SITE MAP

ATTACHMENT 7

AS-BUILT DRAWINGS

ATTACHMENT 8

TREATMENT CONTROL BMP INSPECTION AND MAINTENANCE CHECKLIST(S)

~~Detention Basin~~ BIOFILTRATION W/ PARTIAL RETENTION
INSPECTION AND MAINTENANCE CHECKLIST

Property Address: _____ Property Applicant: _____

Treatment Measure No.: _____ Date of Inspection: _____ Type of Inspection: ☐ Monthly ☐ Pre-Wet Season

Inspector(s): _____ Overall Facility Score*: _____ ☐ After heavy runoff ☐ End of Wet Season
☐ Other: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
General				
Trash & Debris	Trash and debris accumulated in basin. Visual evidence of dumping.			Trash and debris cleared from site and disposed of properly.
Poisonous Vegetation and noxious weeds	Poisonous or nuisance vegetation or noxious weeds, e.g., morning glory, English ivy, reed canary grass, Japanese knotweed, purple loosestrife, blackberry, Scotch broom, poison oak, stinging nettles, or devil's club.			Use Integrated Pest Management techniques to control noxious weeds or invasive species.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants.			No contaminants or pollutants present.

Detention Basin - Inspection and Maintenance Checklist

Property Address: _____

Date of Inspection: _____

Treatment Measure No.: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
Rodent Holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.			The design specifications are not compromised by holes. Any rodent control activities are in accordance with applicable laws and do not affect any protected species.
Insects	Insects such as wasps and hornets interfere with maintenance activities.			Insects do not interfere with maintenance activities.
Tree/Brush Growth and Hazard Trees	Growth does not allow maintenance access or interferes with maintenance activity. Dead, diseased, or dying trees.			Trees do not hinder maintenance activities. Remove hazard trees as approved by the City. (Use a certified Arborist to determine health of tree or removal requirements).

Detention Basin - Inspection and Maintenance Checklist

Property Address: _____

Date of Inspection: _____

Treatment Measure No.: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
Drainage time	Standing water remains in basin more than five days.			Correct any circumstances that restrict the flow of water from the system. Restore drainage to design condition. If the problem cannot be corrected and problems with standing water recur, then mosquitoes should be controlled with larvicides, applied by a licensed pesticide applicator.
Outfall structure	Debris or silt build-up obstructs an outfall structure.			Remove debris and/or silt build-up and dispose of properly.
Side Slopes				
Erosion	Eroded over 2 in. deep where cause of damage is still present or where there is potential for continued erosion. Any erosion on a compacted berm embankment.			Cause of erosion is managed appropriately. Side slopes or berm are restored to design specifications, as needed.

Detention Basin - Inspection and Maintenance Checklist

Property Address: _____

Date of Inspection: _____

Treatment Measure No.: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
Storage Area				
Sediment	Accumulated sediment >10% of designed basin depth or affects inletting or outletting condition of the facility.			Sediment cleaned out to designed basin shape and depth; basin reseeded if necessary to control erosion. Sediment disposed of properly.
Liner (If Applicable)	Liner is visible and has more than three 1/4-inch holes in it.			Liner repaired or replaced. Liner is fully covered.
Emergency Overflow/ Spillway and Berms				
Settlement	Berm settlement 4 inches lower than the design elevation.			Dike is built back to the design elevation.
Tree Growth	Tree growth on berms or emergency spillway >4 ft in height or covering more than 10% of spillway.			Trees should be removed. If root system is small (base less than 4 inches) the root system may be left in place. Otherwise the roots should be removed and the berm restored. A civil engineer should be consulted for proper berm/spillway restoration.

Detention Basin - Inspection and Maintenance Checklist

Property Address: _____

Date of Inspection: _____

Treatment Measure No.: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
Emergency Overflow/ Spillway	Rock is missing and soil is exposed at top of spillway or outside slope.			Rocks and pad depth are restored to design standards.
Debris Barriers (e.g., Trash Racks)				
Trash and Debris	Trash or debris is plugging openings in the barrier.			Trash or debris is removed and disposed of properly.
Damaged/ Missing Bars	Bars are missing, loose, bent out of shape, or deteriorating due to excessive rust.			Bars are repaired or replaced to allow proper functioning of trash rack.
Inlet/Outlet Pipe	Debris barrier is missing or not attached to pipe.			Debris barrier is repaired or replaced to allow proper functioning of trash rack.
Fencing and Gates				
Missing or broken parts	Any defect in or damage to the fence or gate that permits easy entry to a facility.			Fencing and gate are restored to design specifications.
Deteriorating Paint or Protective Coating	Part or parts that have a rusting or scaling condition that has affected structural adequacy.			Paint or protective coating is sufficient to protect structural adequacy of fence or gate.

Detention Basin - Inspection and Maintenance Checklist

Property Address: _____

Date of Inspection: _____

Treatment Measure No.: _____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if any needed maintenance was not conducted, note when it will be done.)	Results Expected When Maintenance Is Performed
Flow Duration Control Outlet (if included in design to meet Hydromodification Management Standard) [[==refer to any attachments with additional provisions==]]				
Risers, orifices and screens	Any debris or clogging			Restore unobstructed flow through discharge structure; to meet original design; dispose of debris properly.
Miscellaneous				
Miscellaneous	Any condition not covered above that needs attention to restore extended detention basin to design conditions.			Meets the design specifications.

*Overall Facility Score = Worst Score from all Defect Items Noted.

**Scores: 0 = OK, 1 = Monitor, 2 = Routine Maintenance, 3 = Immediate Repair Necessary

ATTACHMENT 9

MAINTENANCE SCHEDULE

TO BE PROVIDED WITH FINAL
CONSTRUCTION DOCUMENTS

ATTACHMENT 10

STORMWATER FACILITIES MAINTENANCE AGREEMENT WITH ACCESS RIGHTS AND COVENANTS (SWFMA)

TO BE PROVIDED WITH FINAL
CONSTRUCTION DOCUMENTS

ATTACHMENT 11

ANNUAL INSPECTION AND MAINTENANCE REPORTING FORM

**URBAN STORMWATER MITIGATION PLAN REPORTING FORM
ANNUAL INSPECTION AND MAINTENANCE OF TREATMENT CONTROL BMPS
(SIDE A)**

Responsible Party for Inspection Maintenance: _____ Signature: _____
Date: _____ Print Name/Title

Facility Name: _____

BMP Type	Location Lat/Lon or Inlet #	Date of Construction	Inspection Date(s)	Condition of BMP Indicate whether the BMP is present and in working condition, requires cleaning or replacement.	*Maintenance required? (Y/N) If yes, complete reverse side.
Biofiltration with Partial Retention					

* Maintenance is to be carried out as needed and in accordance with approved Operation and Maintenance Plan.

**URBAN STORMWATER MITIGATION PLAN REPORTING FORM
ANNUAL INSPECTION AND MAINTENANCE OF TREATMENT CONTROL BMPS
(SIDE B)**

BMP Type	BMP Location (lat/lon or Inlet #)	Date of Maintenance Activity	Description of maintenance performed	If applicable, describe any additional work required.

* Maintenance is to be carried out as needed and in accordance with the City of Oceanside's Operation and Maintenance Plan.

CITY OF OCEANSIDE
BMP OPERATIONS AND MAINTENANCE PLAN
WEST COAST TOMATO GROWERS FARM WORKER HOUSING

ATTACHMENT 4
Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.

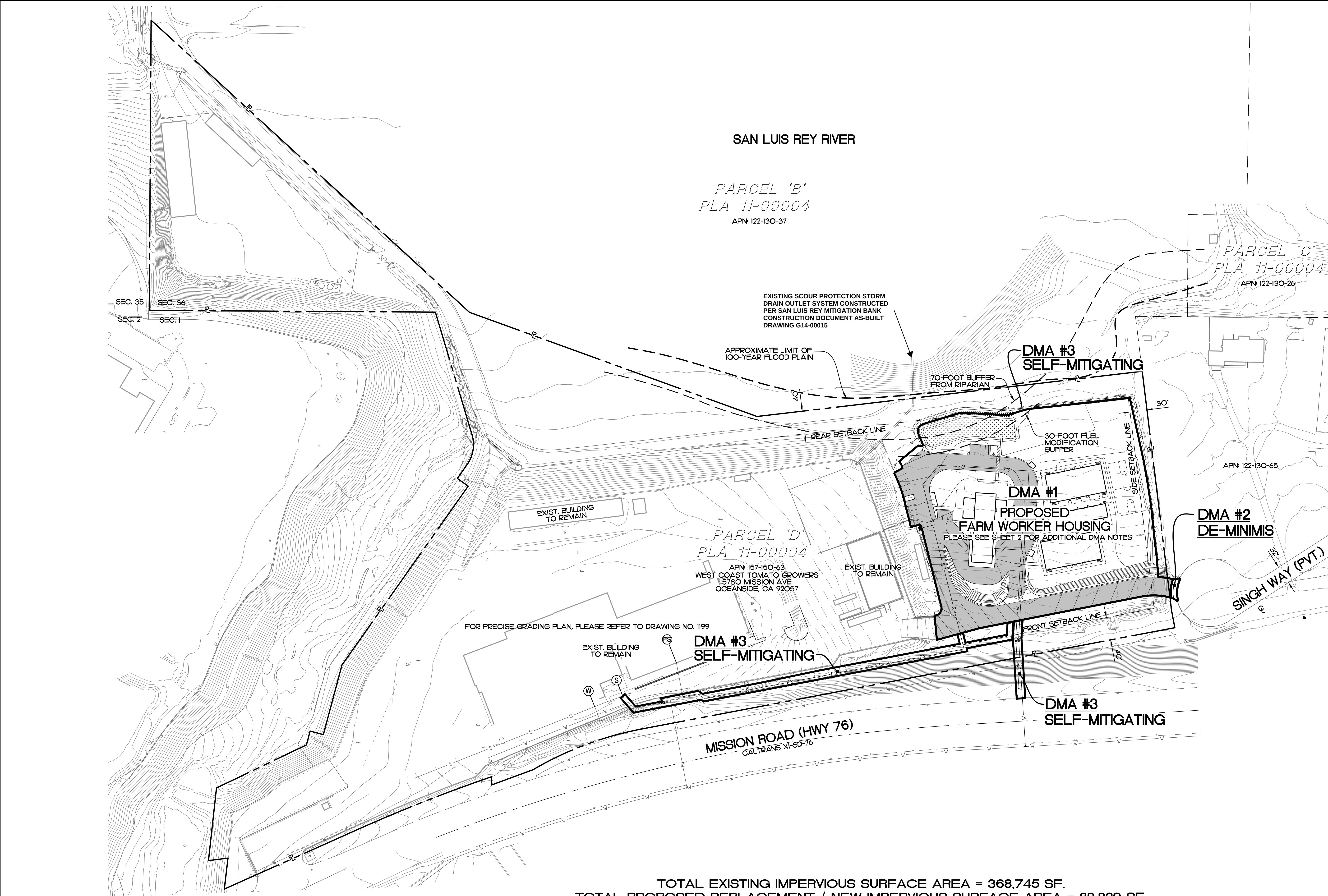


Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

- ☒ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☒ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☒ Details and specifications for construction of structural BMP(s)
- ☐ Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
- ☐ How to access the structural BMP(s) to inspect and perform maintenance
- ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☐ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☐ Recommended equipment to perform maintenance
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☐ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☒ All BMPs must be fully dimensioned on the plans
- ☐ When proprietary BMPs are used, site specific cross section with outflow, inflow and model number shall be provided. Broucher photocopies are not allowed.

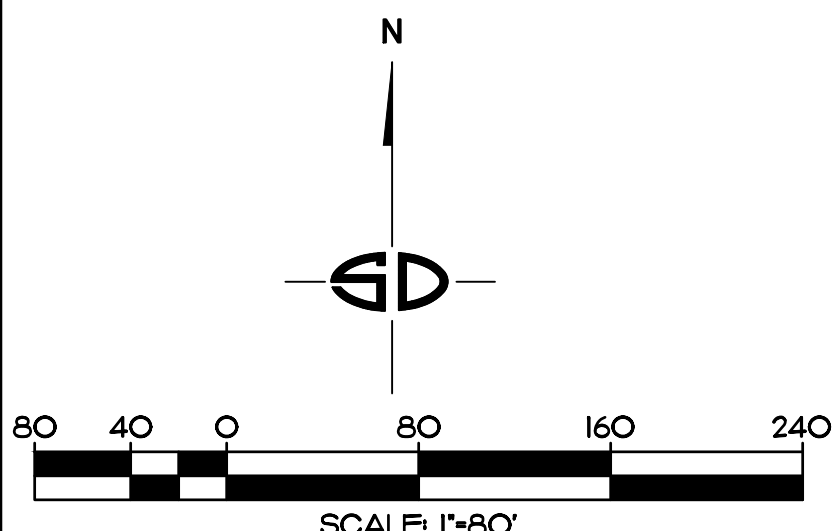




TOTAL EXISTING IMPERVIOUS SURFACE AREA = 368,745 SF.
TOTAL PROPOSED REPLACEMENT / NEW IMPERVIOUS SURFACE AREA = 83,839 SF.
PERCENTAGE OF NEW / REPLACEMENT AREA = 22.74%

50% RULES NOT APPLIED

PLEASE SEE SHEET 2 FOR DMA NOTES AND BMP DETAILS



DRAINAGE MAMNAGEMENT
AREA (DMA) EXHIBIT

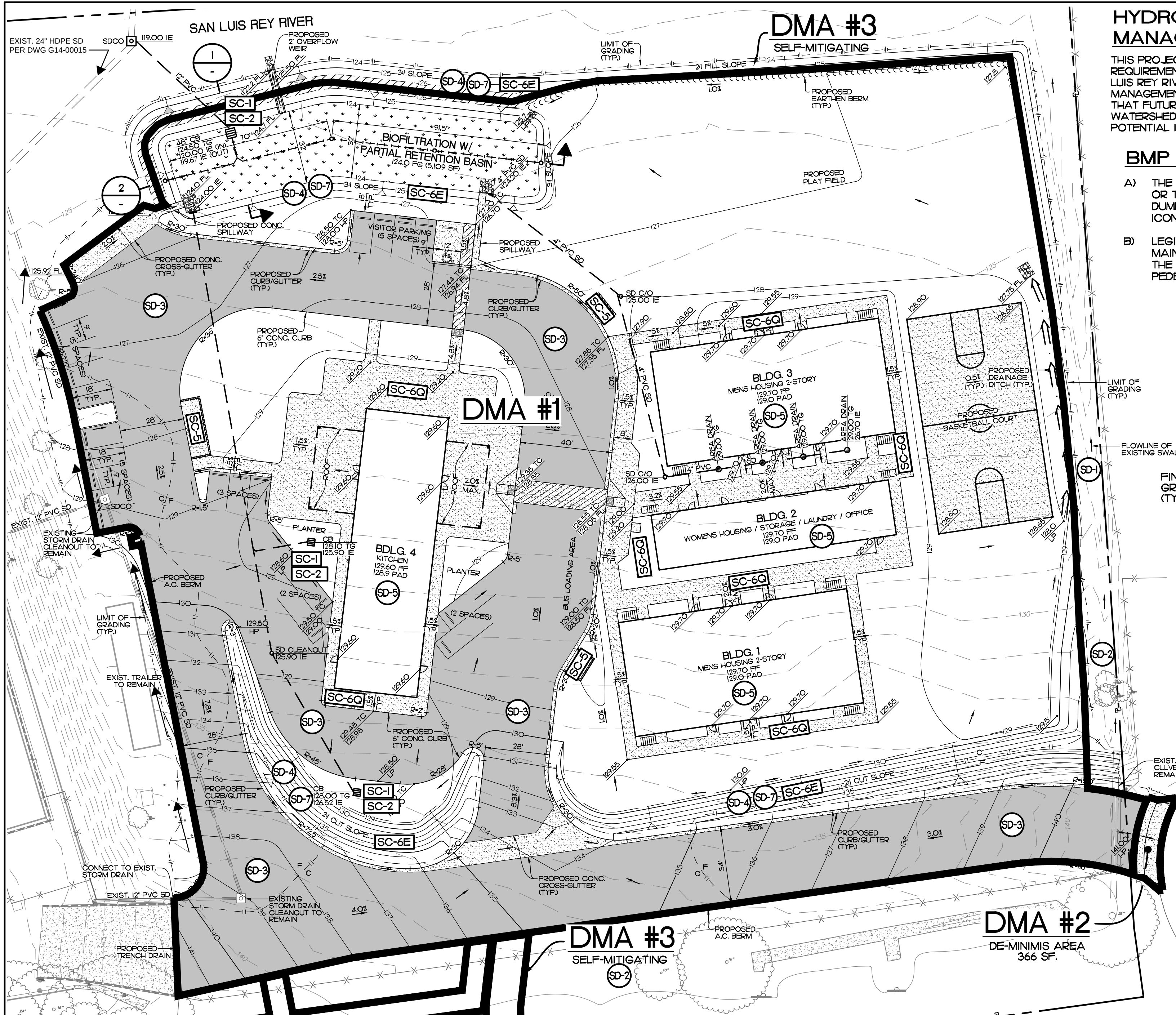
SNIPES-DYE ASSOCIATES
8348 CENTER DRIVE, SUITE G, LA MESA, CA 91942-2910 (619) 697-9234, FAX (619) 460-2033

SHEET TITLE		DRAINAGE MANAGEMENT AREA (DMA) EXHIBIT	
DESIGNER	NO	DRAWN	JGF
CHECKED	SPN	DATE	07-20-2022
JOB NAME		FARM WORKER HOUSING	
JOB NO.		WEST COAST TOMATO GROWERS	
JOB NO.		5780 MISSION AVE, OCEANSIDE, CA 92057	

DMA

SHEET 1
OF 2 SHEET

JOB NO. BSO141

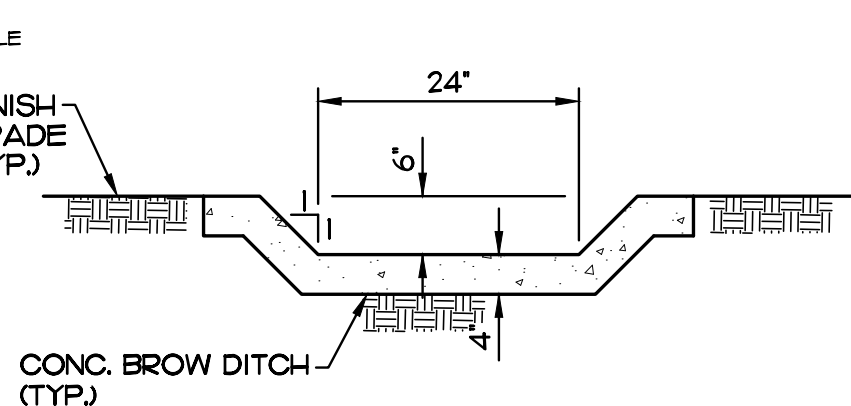


HYDROMODIFICATION MANAGEMENT EXEMPTION

THIS PROJECT IS EXEMPT FROM HYDROMODIFICATION MANAGEMENT REQUIREMENTS SINCE IT WILL DISCHARGE RUNOFF DIRECTLY TO SAN LUIS REY RIVER WHICH IS AN AREA IDENTIFIED IN THE WATERSHED MANAGEMENT AREA ANALYSIS (WMAA). THE WMAA HAS SHOWN THAT FUTURE INCREASES IN IMPERVIOUS AREAS WITHIN THE WATERSHED ARE NOT EXPECTED TO INCREASE THE EROSION POTENTIAL IN SAN LUIS REY RIVER.

BMP STENCIL PLACEMENT NOTES

- THE PROPOSED CURB INLETS SHALL HAVE A STENCIL OR TILE PLACED WITH PROHIBITIVE LANGUAGE "NO DUMPING THIS DRAINS TO OCEAN" AND/OR GRAPHICAL ICONS TO DISCOURAGE ILLEGAL DUMPING.
- LEGIBILITY OF STENCILS, TILES AND SIGNS MUST BE MAINTAINED AND TILES MUST BE PLACED FLUSH WITH THE TOP OF CONCRETE TO REDUCE TRIPPING BY PEDESTRIANS.



24" OVERFLOW WEIR
NO SCALE

SITE DESIGN BMP'S

- SD-1 MAINTAIN NATURAL DRAINAGE PATHWAYS AND HYDROLOGIC FEATURES. NATURAL SWALE ON EASTERN SIDE OF SITE WILL BE MAINTAINED.
- SD-2 CONSERVE NATURAL AREAS, SOILS AND VEGETATION. EXISTING TREES NEAR SITE TO BE CONSERVED.
- SD-3 MINIMIZE IMPERVIOUS AREAS. DRIVING AISLES DESIGNED TO MINIMUM WIDTH REQUIRED TO MEET STANDARDS.
- SD-4 MINIMIZE SOIL COMPACTION. AVOID COMPACTION IN PLANNED LANDSCAPE AREAS.
- SD-5 DISPERSE IMPERVIOUS AREAS. LANDSCAPED AND PERVIOUS AREAS DESIGNED TO RECEIVE RUNOFF FROM IMPERVIOUS AREAS PRIOR TO DISCHARGE.
- SD-7 LANDSCAPE WITH NATIVE OR DROUGHT TOLERANT SPECIES.

SOURCE CONTROL BMP'S

- SC-1 PREVENT ILLICIT DISCHARGES INTO THE MS4.
 - SC-2 IDENTIFY THE STORM DRAIN SYSTEM USING STENCILING OR SIGNAGE.
 - SC-3 PROTECT TRASH STORAGE AREAS FROM RAINFALL, RUN-ON, RUNOFF, AND WIND DISPERSAL. TRASH CONTAINERS WILL BE ROOFED AND WALLED TO MINIMIZE DIRECT PRECIPITATION AND PREVENT RAINFALL FROM ENTERING CONTAINERS.
- ## ADDITIONAL BMP'S
- SC-6E LANDSCAPE/OUTDOOR PESTICIDE USE.
 - SC-60 SIDEWALKS SHALL BE SWEEPED REGULARLY TO PREVENT THE ACCUMULATION OF LITTER AND DEBRIS.

LEGEND

- DMA BOUNDARY
- PERVIOUS AREA
- IMPERVIOUS AREA (CONCRETE)
- IMPERVIOUS AREA (ASPHALT)
- IMPERVIOUS AREA (ROOFTOPS)
- BIOFILTRATION W/ PARTIAL RETENTION BASIN
- DIRECTION OF FLOW

NOTES

- SITE IS LOCATED WITHIN OCEANSIDE RAIN GAUGE BASIN.
- UNDERLYING HYDROLOGIC SOIL GROUP "D" WITHIN PROJECT FOOTPRINT.
- SITE IS RELATIVELY FLAT TO MODERATE SLOPING LAND.
- GROUNDWATER SEEPAGE IDENTIFIED AT 19 FEET.
- PROPOSED STRUCTURAL BMP FOR POLLUTANT CONTROL CONSISTS OF A BIOFILTRATION WITH PARTIAL RETENTION BASIN.
- COUNTY OF SAN DIEGO'S 85TH PERCENTILE ISOPLUVIAL MAP WAS UTILIZED FOR SIZING STRUCTURAL BMP TO COMPLY WITH POLLUTANT CONTROL REQUIREMENTS P_{85TH} = 0.69 INCH.
- PROPOSED BMPS ON THIS SHEET ARE MANDATORY TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS OR THESE PLANS.
- NO CHANGES TO THE PROPOSED BMPS ON THIS SHEET WITHOUT PRIOR APPROVAL FROM THE CITY OF OCEANSIDE.
- NO SUBSTITUTIONS TO THE MATERIAL, TYPES, OR PLANTING TYPES WITHOUT PRIOR APPROVAL FROM THE CITY ENGINEER.
- NO OCCUPANCY WILL BE GRANTED UNTIL THE CITY STAFF HAS INSPECTED THIS PROJECT FOR APPROPRIATE BMP CONSTRUCTION AND INSTALLATION.
- REFER TO THE MAINTENANCE PLAN IN ATTACHMENT 3 OF SWQMP FOR ACCESS TO STRUCTURAL BMPS TO INSPECT AND PERFORM MAINTENANCE, FEATURES PROVIDED TO FACILITATE INSPECTION, MAINTENANCE THRESHOLDS, RECOMMENDED EQUIPMENT TO PERFORM MAINTENANCE, AND SPECIAL TRAINING OR CERTIFICATION REQUIREMENTS FOR INSPECTION AND MAINTENANCE PERSONNEL.
- ALL GRADING CONTOURS SHALL BE CONSISTENT WITH DMA EXHIBIT.
- SEE PROJECT SWQMP FOR ADDITIONAL INFORMATION.

POST-CONSTRUCTION BMP FACILITY SUMMARY TABLE

BMP ID	BMP TYPE	APPROX. DIMENSIONS	PLAN AREA (SF)	PONDING SURFACE DEPTH (IN.)	MEDIA THICKNESS (IN.)	MULCH LAYER (IN.)	ASTM 3.3 WASHED SAND (IN.)	AGGREGATE STORAGE LAYER ABOVE UNDERDRAIN, INCL. 3" ASTM NO. 8 STONE (IN.)	AGGREGATE STORAGE LAYER BELOW UNDERDRAIN (IN.)
BMP #1	BIOFILTRATION BASIN WITH PARTIAL RETENTION (PR-1)	32' W X 165' L	5,109	6	18	3	3	12	3

DRAINAGE MANAGEMENT AREAS

DESCRIPTION	TRIBUTARY TO BMP	BMP TYPE	SOIL TYPE	DEPTH TO GROUNDWATER	PRE-PROJECT SLOPE	PERVIOUS DMAs		IMPERVIOUS DMAs	
						POST-PROJECT SURFACE TYPE	POST-PROJECT SURFACE AREA (SF)	POST-PROJECT SURFACE TYPE	POST-PROJECT SURFACE AREA (SF)
DMA #1	BMP #1	BIOFILTRATION WITH PARTIAL RETENTION BASIN (PR-1)	D	UNKNOWN	MODERATE (5%-10%)	LANDSCAPING/DIRT	63,895	ROOFTOPS/ PAVEMENT	83,473
DMA #2	DE-MINIMIS	DE-MINIMIS	D	UNKNOWN	MODERATE (5%-10%)	N/A	0	PCC PAVEMENT	366
DMA #3	SELF-MITIGATING	SELF-MITIGATING	D	UNKNOWN	MODERATE (5%-10%)	LANDSCAPING/DIRT	20,785	PAVEMENT	0

TOTAL EXISTING IMPERVIOUS SURFACE AREA = 368,745 SF.
TOTAL PROPOSED REPLACEMENT / NEW IMPERVIOUS SURFACE AREA = 83,839 SF.
PERCENTAGE OF NEW / REPLACEMENT AREA = 22.74%

50% RULES NOT APPLIED

KEY NOTES

- BIORETENTION SOIL MEDIA (BSM) (5%+ MIN. PERCOLATION RATE) PER BSM MIXTURE BELOW
- 3" CLEAN & WASHED ASTM 33 FINE AGGREGATE SAND
- 3" LAYER OF ASTM 8 STONE
- ASTM 57 OPEN GRADED STONE (3/4" WASHED CRUSHED ROCK)
- IMPERMEABLE LINER (30 MIL PVC GEOMEMBRANE BY EPI OR APPROVED EQUAL) PER MANUFACTURER'S SPECIFICATIONS
- PVT. 8" PVC SDR-35 • 0.5% SLOPE
- PVT. 8" PVC SDR-35 • 0.5% SLOPE

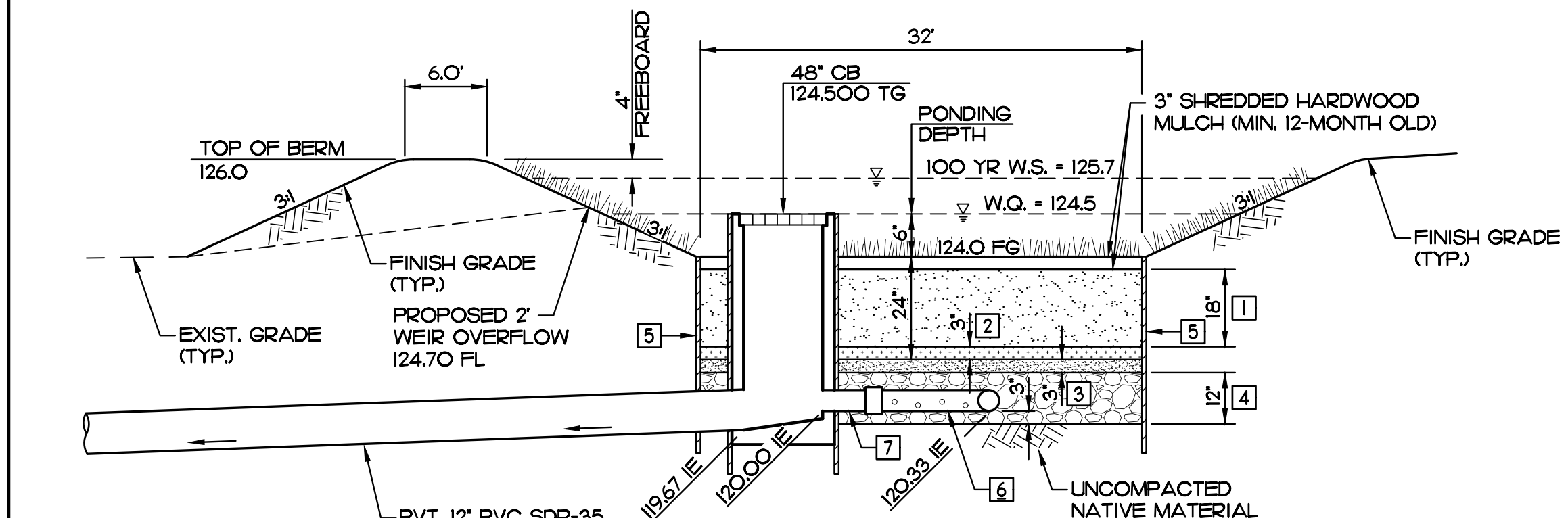
VEGETATION SPECIFICATIONS

FOR BIOFILTRATION TO FUNCTION PROPERLY AS STORMWATER TREATMENT AND BLEND INTO THE LANDSCAPING, VEGETATION SELECTION IS CRUCIAL. THIS BIOFILTRATION BASIN W/ PARTIAL RETENTION SHALL BE DESIGNED WITH NUTRIENT-SENSITIVE MEDIA W/O FLOW RESTRICTION PER BP-1 IN THE CITY OF OCEANSIDE BMP DESIGN MANUAL. APPROPRIATE VEGETATION WILL HAVE THE FOLLOWING CHARACTERISTICS:

- PLANT MATERIALS MUST BE TOLERANT OF SUMMER DROUGHT, PONDING FLUCTUATIONS, AND SATURATED SOIL CONDITIONS FOR 10 TO 48 HOURS.
- IF PLANT SPACING ALLOWS, IT IS RECOMMENDED THAT A MINIMUM OF THREE TREE SPECIES, THREE SHRUB SPECIES, AND THREE HERBACEOUS GROUNDCOVER SPECIES BE INCORPORATED TO PROTECT AGAINST FACILITY FAILURE FROM DISEASE AND INSECT INFESTATIONS OF A SINGLE SPECIES. PLANT ROOTING DEPTHS MUST NOT DAMAGE THE UNDERDRAIN. IF PRESENT, SLOTTED OR PERFORATED UNDERDRAIN PIPE MUST BE MORE THAN 5 FEET FROM TREE LOCATIONS (IF SPACE ALLOWS).
- NATIVE PLANT SPECIES OR HARDY CULTIVARS THAT ARE NOT INVASIVE AND DO NOT REQUIRE CHEMICAL INPUTS ARE RECOMMENDED TO BE USED TO THE MAXIMUM EXTENT PRACTICABLE.
- SHADE TREES SHOULD BE FREE OF BRANCHES BELOW 1/3 THEIR TOTAL HEIGHT.

PVT. BIOFILTRATION W/ PARTIAL RETENTION BASIN (BMP #1)

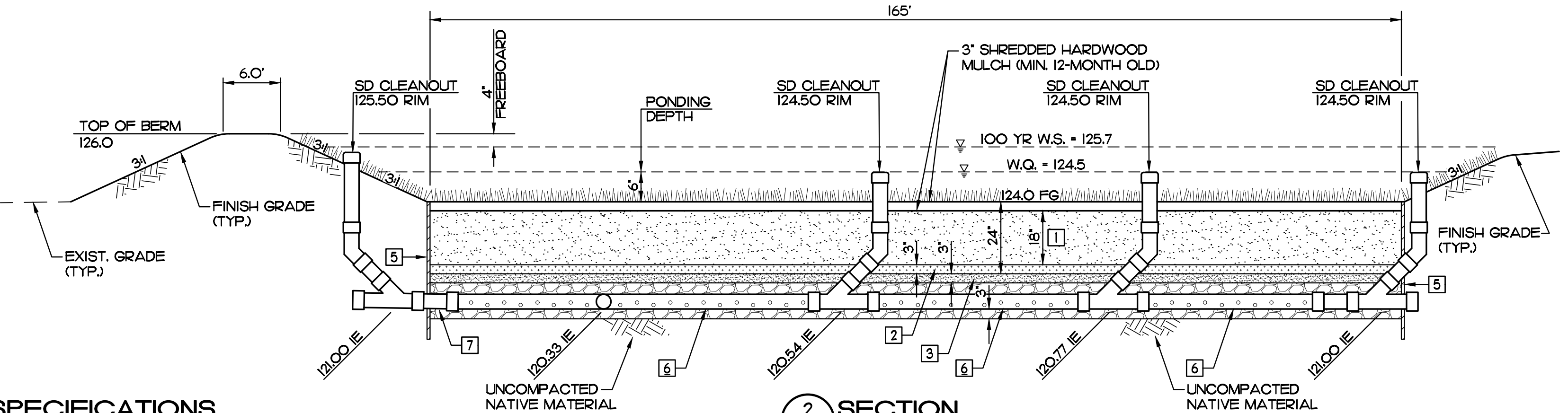
NO SCALE



SECTION 1

BSM MIXTURE*			
LOAMY SAND, TEXTURE & COMPOSITION	ASTM C33 SAND	COMPOST	SANDY LOAM
BY VOLUME	65%	15% - 30%	20%

- ORGANIC MATERIAL CONTENT SHALL BE MAXIMUM 5% BY WEIGHT IN OVERALL SOIL MEDIA. ORGANIC MATTER SHOULD BE BASED FROM VEGETATION-BASED FEEDSTOCK AND INCLUDE NO ANIMAL MANURE OR BY-PRODUCTS.
- TOTAL PHOSPHORUS SHALL NOT EXCEED 15 PPM.
- BSM INFILTRATION RATE SHALL BE EQUAL TO 5 IN/HR. BSM PH+ 6 TO 8.
- CATION EXCHANGE CAPACITY (CEC) GREATER THAN 5 MILL-EQUIVALENTS (MEQ)/100 GRAMS SOILS.
- FOR FUTURE BSM SPECIFICATIONS, REFER TO THE COUNTY OF SAN DIEGO LID HANDBOOK, APPENDIX G.



SECTION 2

DRAINAGE MANAGEMENT
AREA (DMA) EXHIBIT

ATTACHMENT 5
Drainage Report

This is the cover sheet for Attachment 5.



PRELIMINARY HYDROLOGY REPORT

For

*West Coast Tomato Growers
Farm Worker Housing
Conceptual Grading Plan
5780 Mission Avenue
Oceanside, CA 92057*

City of Oceanside

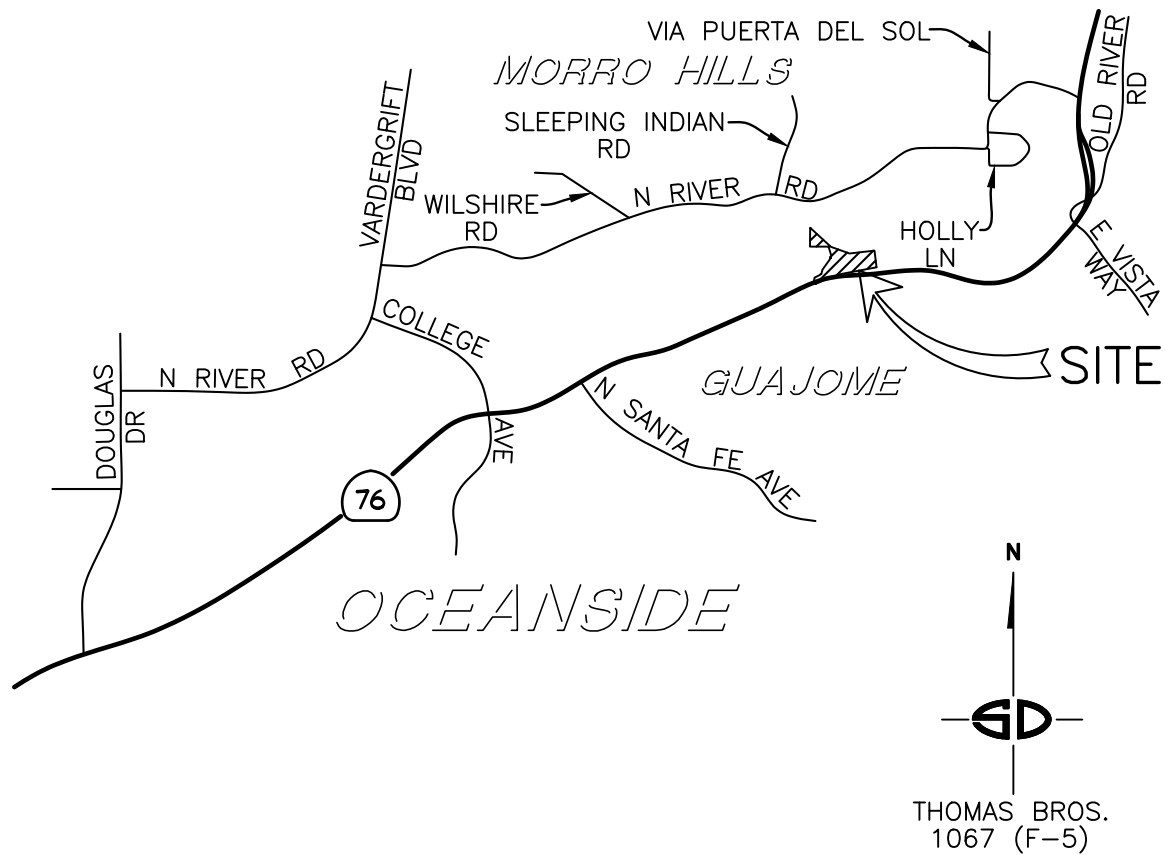
Applicant/Developer:

West Coast Tomato Growers, Inc.
5780 Mission Avenue
Oceanside, CA 92057
(619) 993-5121
Contact: Brad Ebright
brad@westcoastvineripe.com

Prepared By:

Snipes-Dye Associates
civil engineers and land surveyors
8348 Center Drive, Suite G
La Mesa, CA 91942-2910
(619) 697-9234, Fax (619) 460-2033
BS0141

Dated: July 13, 2022



VICINITY MAP
NO SCALE

Preliminary Hydrology Report
for
**West Coast Tomato Growers
Farm Worker Housing**

The following hydrology calculations are prepared for the development of dormitory housing for farm worker over the site project located on 5780 Mission Road in the city of Oceanside. The subject site is known as Assessor's Parcel Number 157-150-63-00 consisting of 19.72 acres gross. The scope of work consists of the grading of the site for the construction of four new buildings, including three dormitories, kitchen, dining hall, laundry facilities, storage, and office space (totaling 29,597 square feet) to accommodate up to 338 seasonal farm workers for West Coast Tomato Growers, Inc. The purpose of this drainage study analysis is to demonstrate that the existing hydrologic conditions will not be negatively impacted by the proposed development's grading and creation of new impervious surfaces. The area of the drainage analysis will encompass one main drainage basin approximately 3.38 acres in size. All other runoff from the surrounding properties will not enter the site since they will either by-pass through existing or new storm drain facilities and drain away from the site. The hydrology analysis was performed using the Rational Method for the 100-year, 6-hour storm event and using the criteria from the most current San Diego County Hydrology Manual (2003). A runoff coefficient was determined based on the percentage of impervious areas and the underlying hydrologic soil type. Soil type for the whole site was determined to be "D" soil and was used for the drainage analysis.

PRE-DEVELOPMENT CONDITIONS: The existing site consists of a graded vacant lot that was previously used for agricultural purposes. The site topography consists of level to gently sloping land in a general northerly direction. The elevations at the site range from 141 feet above mean sea level along the southerly portion of the lot to approximately 123 feet along the north. The existing drainage conditions across the site take the characteristic of sheet flow in a general northerly direction that to a low point along the north center of the site, where it is eventually conveyed towards San Luis Rey River. The total 100-year, 6-hour peak discharge for the pre-developed site was determined to be approximately 3.76 cfs

POST-DEVELOPMENT CONDITIONS: The proposed development will consist of 4 new buildings for housing farm laborers (2 buildings), a dining/kitchen building, and a laundry/storage/office building. Additional proposed developments include a recreation field, a courtyard, an asphalt driveway, and a basketball court. The site will maintain similar drainage patterns to the current condition with storm water runoff consisting of sheet flow in a general northerly direction. The onsite runoff is proposed to be conveyed as a combination of surface flow and pipe flow in the northerly direction to the proposed private biofiltration basin with partial retention. The proposed biofiltration basin with partial retention will mainly serve as mitigation for storm water quality requirements. The biofiltration basin will also provide peak discharge detention. The outlet structure of the biofiltration basin will tie into the existing rock and scour protection structure

constructed from WDID No. 9 37C368254, File No. D12-0004, Plan Number G14-00015, then directly discharge into the San Luis Rey River. Any overflow from the basin will outlet through a weir structure and will be directed as surface flow onto San Luis Rey River. The total 100-year, 6-hour peak discharge for the post-developed site after mitigation will be approximately 3.60 cfs, which represents a 0.16 cfs decrease from the pre-developed condition. This increase in runoff is mainly due to the increase in building rooftops and concrete pavement in the site. This increase in runoff will not present any impacts to the downstream properties and/or the San Luis Rey River, since the river has sufficient capacity to convey the existing flow. Additionally, a hydraulic analysis was conducted to verify that the existing 18" storm drain from the packing facility has the capacity for the added 3.60 cfs.

Table 1 below is a summary of the 100-year peak discharges for the pre- and post-development conditions:

Table 1: Summary of 100-year, 6- hour Storm Event

PRE & POST DEVELOPMENT 100-YR. PEAK DISCHARGES											
	PRE-DEVELOPMENT					POST-DEVELOPMENT					
BASIN	TIME OF CONCENTRATION T_c (MIN)	AREA A (ACRES)	NCRS SOIL TYPE	RUNOFF FACTOR "C"	DISCHARGE Q₁₀₀ (CFS)	TIME OF CONCENTRATION T_c (MIN)	AREA A (ACRES)	NCRS SOIL TYPE	RUNOFF FACTOR "C"	DISCHARGE Q₁₀₀ (CFS)	MITIGATED DISCHARGE Q₁₀₀ (CFS)
A	19.7	3.38	D	0.35	3.76	13.82	3.38	D	0.66	8.88	3.60

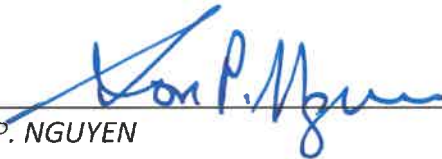
CONCLUSION:

1. The proposed discharge of surface drainage is generally consistent with the existing drainage patterns of the site. Site drainage sheet flows in an appropriate manner.
2. The proposed development of this project will not have a significant impact to the downstream drainage facilities and/or any downstream streams or rivers (i.e. San Luis Rey River) in a manner which would result in substantial erosion or siltation.
3. The site is not located within a 100-year flood hazard area or within the influence of flooding as a result of the failure of a levee or dam, therefore the proposed development will not expose people or structures to a significant risk of loss, injury or death.

DECLARATION OF RESPONSIBLE CHARGE

I, HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF OCEANSIDE IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITY FOR PROJECT DESIGN.



SON P. NGUYEN
R.C.E. 86249
EXP. 03-31-23

07-13-2022

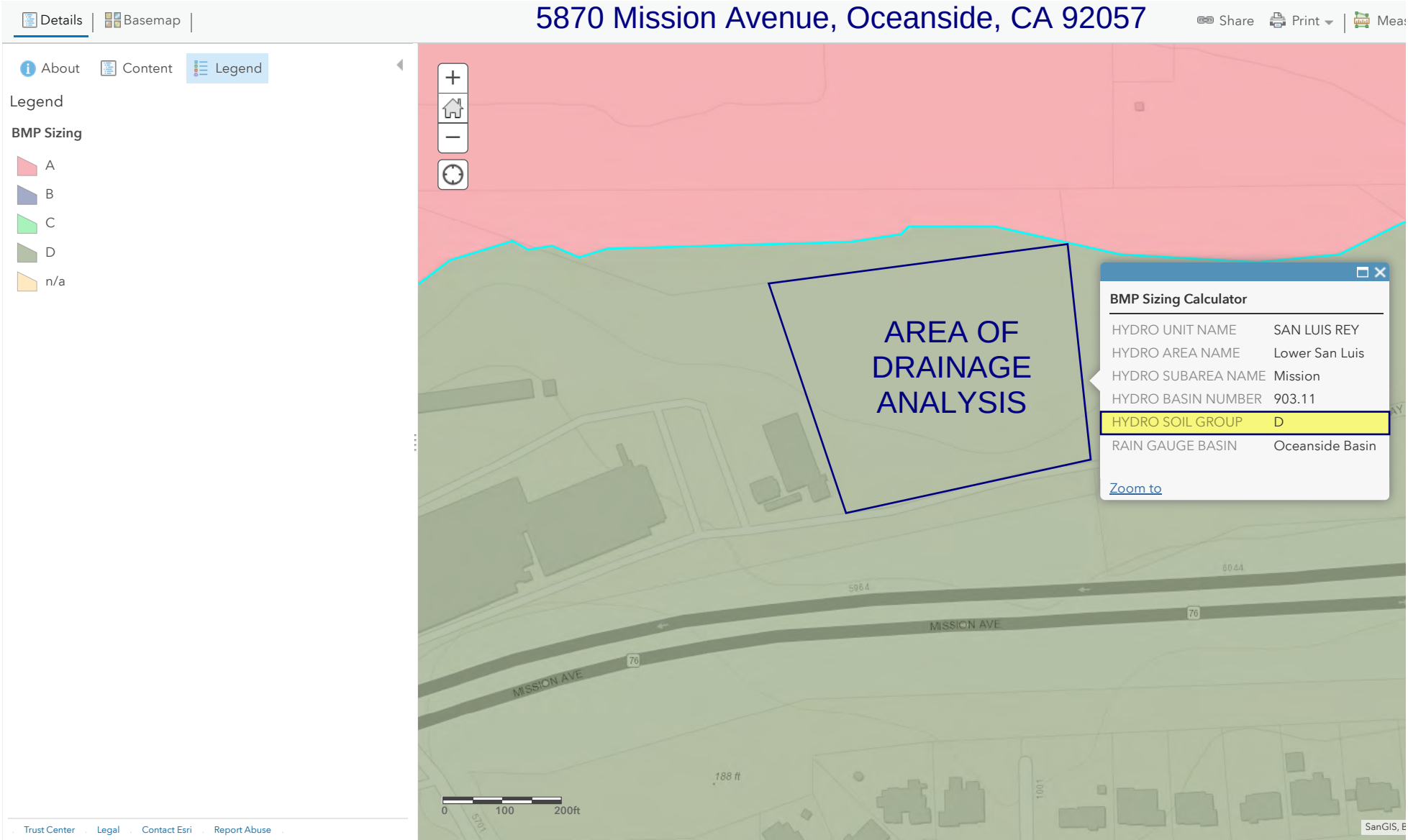
Date



ArcGIS - BMP Sizing Calculator

WCTG Farm Worker Housing Conceptual Grading Plan

5870 Mission Avenue, Oceanside, CA 92057



County of San Diego Hydrology Manual

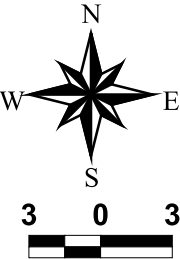
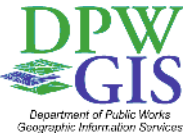


Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

2.9 Isopluvial (inches)

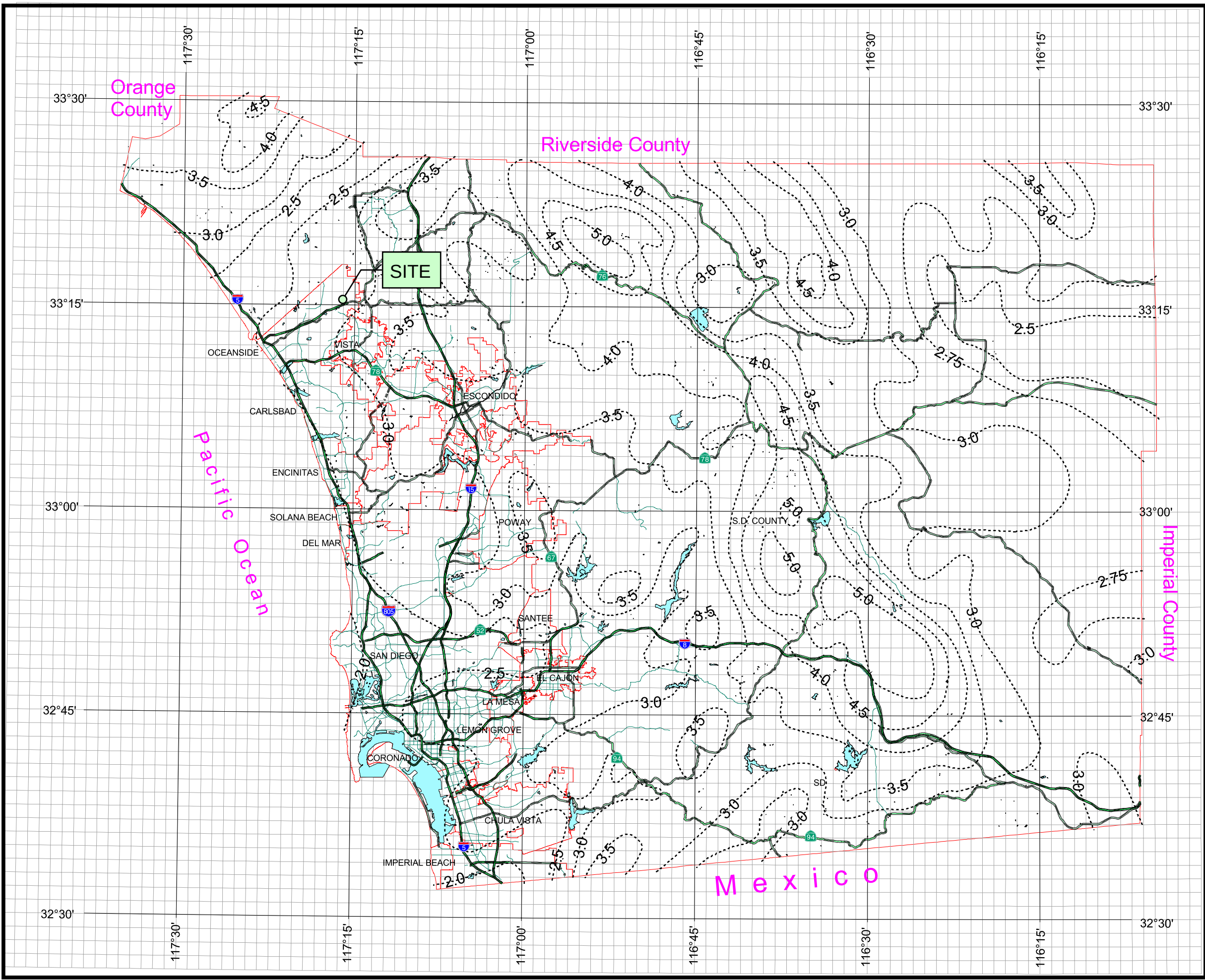
WCTG Farm Worker Housing Conceptual Grading Plan



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County of San Diego Hydrology Manual

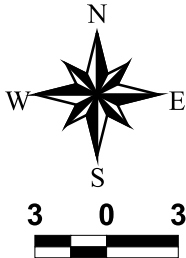
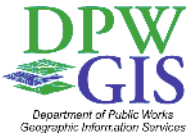


Rainfall Isophuvials

100 Year Rainfall Event - 24 Hours

5.1 Isopluvial (inches)

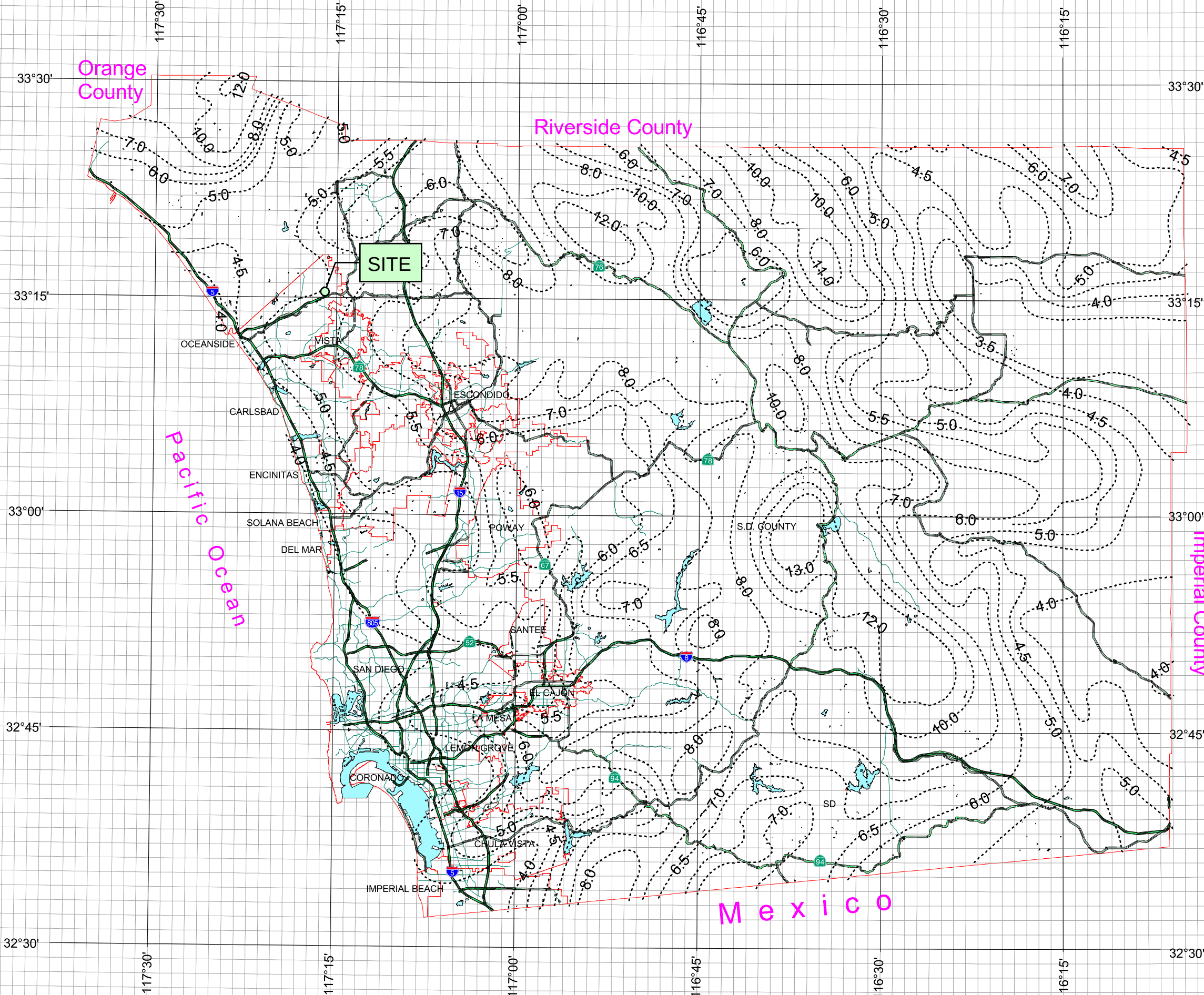
WCTG Farm Worker Housing Conceptual Grading Plan



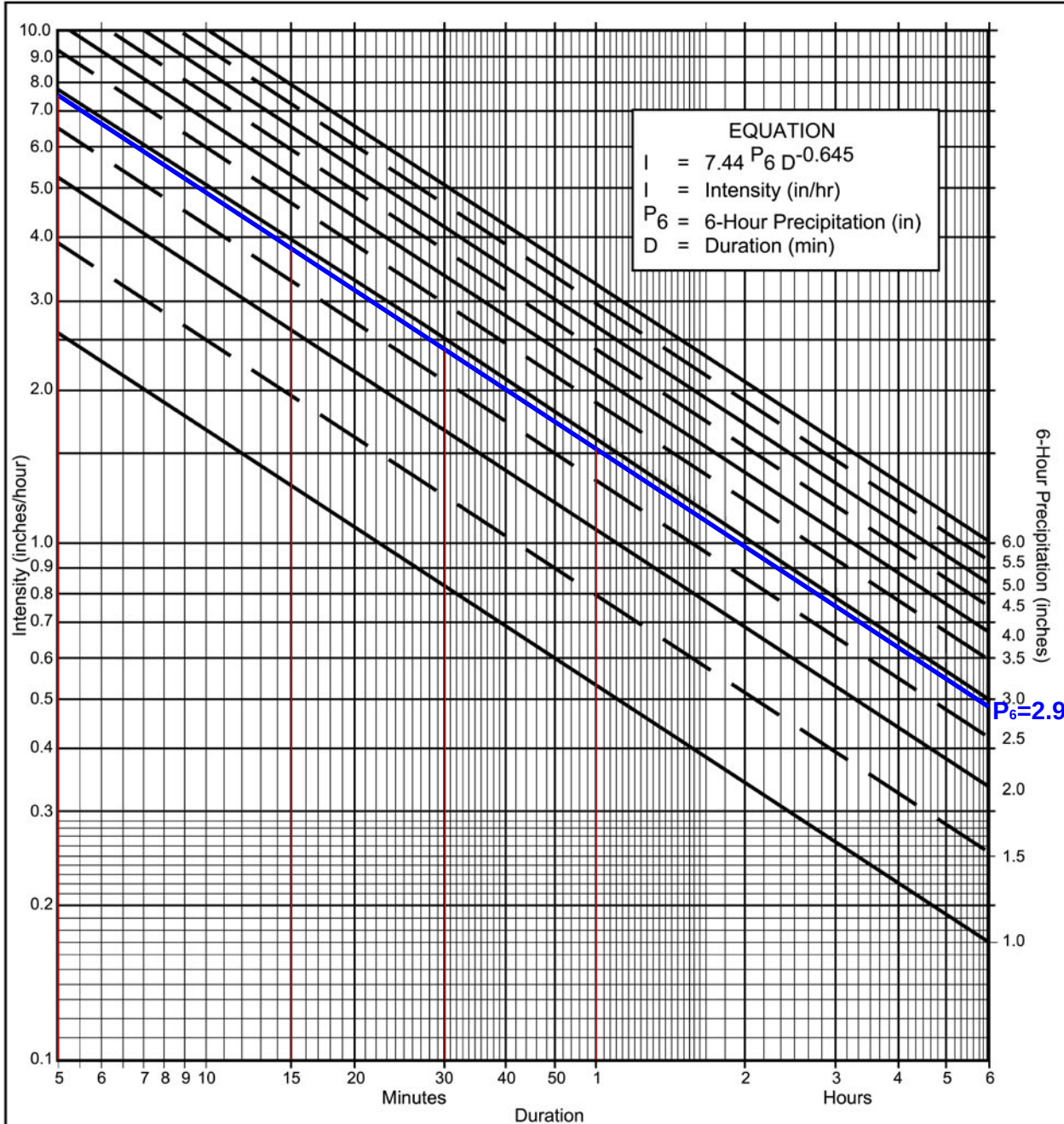
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WCTG Farm Worker Housing Conceptual Grading Plan



Directions for Application:

- (1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).
- (2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicable to Desert).
- (3) Plot 6 hr precipitation on the right side of the chart.
- (4) Draw a line through the point parallel to the plotted lines.
- (5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

- Selected frequency 100 year
- $P_6 = \underline{2.9}$ in., $P_{24} = \underline{5.1}$, $\frac{P_6}{P_{24}} = \underline{57} \%^{(2)}$
- Adjusted $P_6^{(2)} = \underline{2.9}$ in.
- $t_x = \underline{5.0}$ min.
- $I = \underline{7.64}$ in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Duration	I	I	I	I	I	I	I	I	I	I	I
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE

3-1

WGTC FARM WORKER HOUSING

5780 MISSION AVE., OCEANSIDE, CA 92057

San Diego County Hydrology Manual
Date: June 2003

Section: 3
Page: 6 of 26

**Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS**

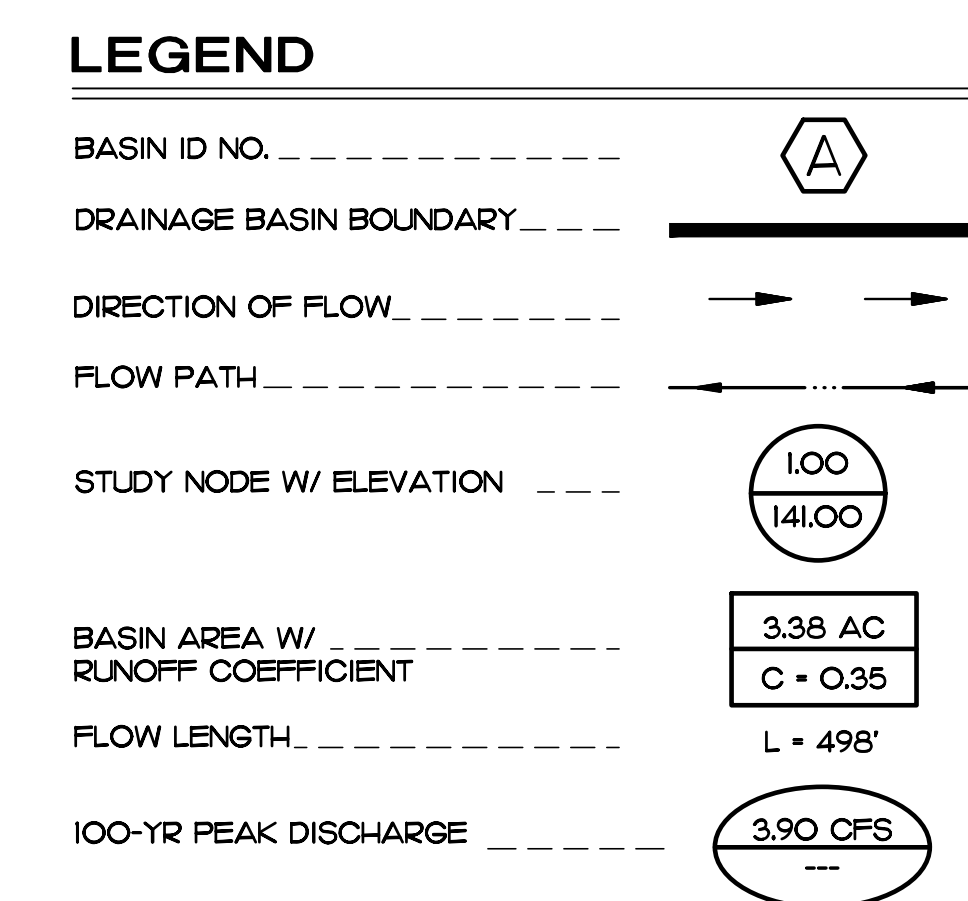
Land Use		Runoff Coefficient "C"				
		% IMPER.	Soil Type			
NRCS Elements	County Elements		A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).

DU/A = dwelling units per acre

NRCS = National Resources Conservation Service

DRAINAGE MAPS



I. UNDERLYING HYDROLOGIC SOIL GROUP "D"
WITHIN AREA OF DRAINAGE ANALYSIS.

PRE-DEVELOPMENT DRAINAGE MAP

FARM WORKER HOUSING
WEST COAST TOMATO GROWERS
5780 MISSION AVENUE, OCEANSIDE, CA 92057

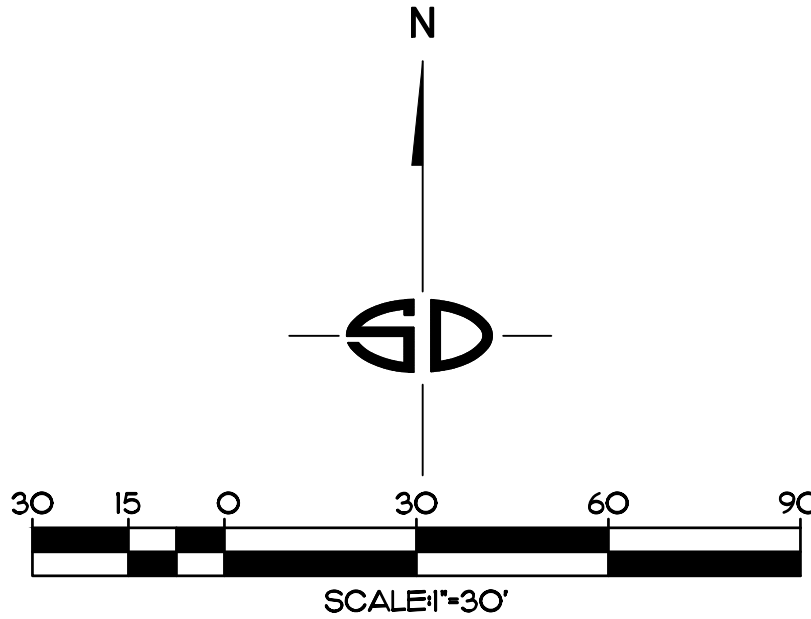


LEGEND

BASIN ID NO.	A
DRAINAGE BASIN BOUNDARY	
DIRECTION OF FLOW	
FLOW PATH	
STUDY NODE W/ ELEVATION	1.00 141.00
BASIN AREA W/ RUNOFF COEFFICIENT	3.38 AC C = 0.70
FLOW LENGTH	L = 579'
100-YR PEAK DISCHARGE MITIGATED 100-YR PEAK DISCHARGE	8.88 CFS 3.60 CFS

NOTES

1. UNDERLYING HYDROLOGIC SOIL GROUP 'D'
WITHIN AREA OF DRAINAGE ANALYSIS.



BASIN	PRE & POST DEVELOPMENT 100-YR. PEAK DISCHARGES									
	PRE-DEVELOPMENT					POST-DEVELOPMENT				
	TIME OF CONCENTRATION Tc (MIN)	AREA A (ACRES)	NRCS HYDROLOGIC SOIL TYPE 'C'	RUNOFF FACTOR 'C'	DISCHARGE Q100 (CFS)	TIME OF CONCENTRATION Tc (MIN)	AREA A (ACRES)	NRCS HYDROLOGIC SOIL TYPE 'C'	RUNOFF FACTOR 'C'	MITIGATED DISCHARGE Q100 (CFS)
A	19.7	3.38	D	0.35	3.76	13.82	3.38	D	0.66	3.60

POST-DEVELOPMENT
DRAINAGE MAP

SNIPES-DYE ASSOCIATES

8348 CENTER DRIVE, SUITE G, LA MESA, CA 91942-2910

(619) 697-9234, FAX (619) 460-2033

DESIGNER

SPN

DATE

07-13-2022

DRAWN

JCF

CHECKED

DATE

REVISION

DESCRIPTION

BY

DATE

NO.

DATE

NO.

DATE

NO.

DATE

NO.

DATE

POST-DEVELOPMENT DRAINAGE MAP

FARM WORKER HOUSING
WEST COAST TOMATO GROWERS
5780 MISSION AVE, OCEANSIDE, CA 92057

D-2

BSOI41

SHEET 2

OF 2 SHEETS

**PRE-DEVELOPMENT
DRAINAGE CALCULATIONS
100-YR, 6-HR STORM EVENT**

Farm Workers Housing
Pre-Development

PRE-DEVELOPMENT PEAK 100-YEAR DISCHARGE (Q_{100})

Basin A

RUNOFF FACTOR (C):

Land Use	Coefficient (C)	Area		
Impervious Surface	0.90	778	SF	0.02 AC
Pervious- Soil D	0.35	146,590	SF	3.37 AC

% IMP = Percent of impervious surface = 1%

Soil Group D for Undisturbed Natural Terrain in Table 3-1

Equation 3.1.2 Estimating Runoff Factor for Area

Revised C = $0.90(\% \text{ IMP}) + C_p(1 - \% \text{ IMP})$

= 0.35

RAINFALL INTENSITY (I):

100 Year-6 Hour Precipitation (See attached isopluvial map)

P_6 = 2.9 inches

ΔE = Change in elevation along the Effective Slope

= 17.5 Feet

D = Water Course Distance

= 498 Feet

S = Slope = $(\Delta E/D) \times 100\%$

= 3.5 %

T_c = Initial Time of Concentration

$T_c = [1.8(1.1 - C)(D^{1/2})]/[S^{1/3}]$

= 19.74 Minutes

FAA Rational Formula - County of San Diego

Hydrology Manual Figure 3-3

T = Total Time of Concentration

= 19.74 Minutes

Intensity = Intensity-Duration-Design Chart

County of San Diego- Hydrology Manual, Figure 3-1

= 3.15 Inches/Hour

PEAK DISCHARGES (Q):

A = Area of the basin

= 3.38 Acres

$Q = CIA$

= 3.76 ft^3/sec

**POST-DEVELOPMENT
DRAINAGE CALCULATIONS
100-YR, 6-HR STORM EVENT**

Farm Workers Housing
Post-Development

POST-DEVELOPMENT PEAK 100-YEAR DISCHARGE (Q₁₀₀)

Basin A

RUNOFF FACTOR (C):

Land Use	Coefficient (C)	Area		
Impervious Surface	0.90	83,473	SF	1.92 AC
Pervious- Soil D	0.35	63,895	SF	1.47 AC

% IMP = Percent of impervious surface = 57%

Soil Group D for Undisturbed Natural Terrain in Table 3-1

Equation 3.1.2 Estimating Runoff Factor for Area

$$\text{Revised } C = 0.90(\% \text{ IMP}) + C_p(1 - \% \text{ IMP})$$

= 0.66

RAINFALL INTENSITY (I):

100 Year-6 Hour Precipitation (See attached isopluvial map)

P₆ = 2.9 inches

ΔE = Change in elevation along the Effective Slope

= 15 Feet

D = Water Course Distance

= 579 Feet

S = Slope = (ΔE/D) X 100%

= 2.6 %

T_c = Initial Time of Concentration

$$T_c = [1.8(1.1 - C)(D^{1/2})]/[S^{1/3}]$$

= 13.82 Minutes

FAA Rational Formula - County of San Diego

Hydrology Manual Figure 3-3

T = Total Time of Concentration

= 13.82 Minutes

Intensity = Intensity-Duration-Design Chart

County of San Diego- Hydrology Manual, Figure 3-1

= 3.966 Inches/Hour

PEAK DISCHARGES (Q):

A = Area of the basin

= 3.38 Acres

Q = CIA

= 8.88 ft³/sec

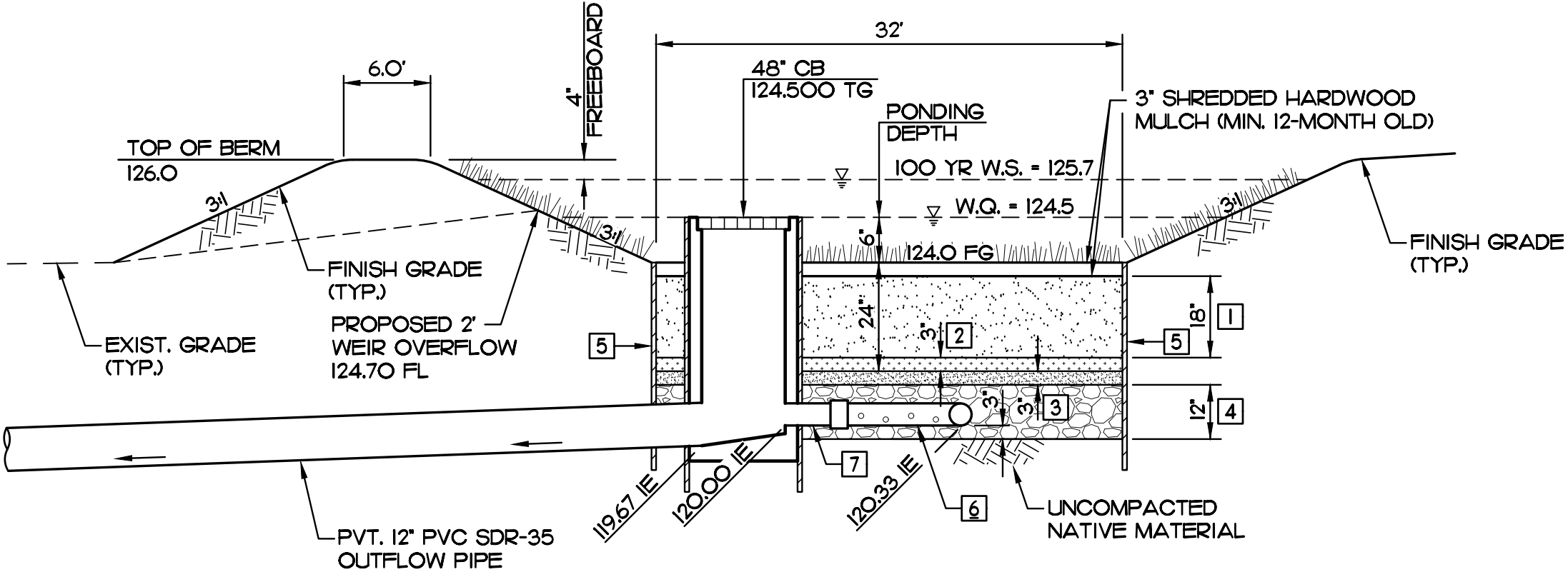
DETENTION CALCULATIONS
BMP #1: BIOFILTRATION WITH PARTIAL
RETENTION BASIN

PRELIMINARY HYDROLOGY REPORT

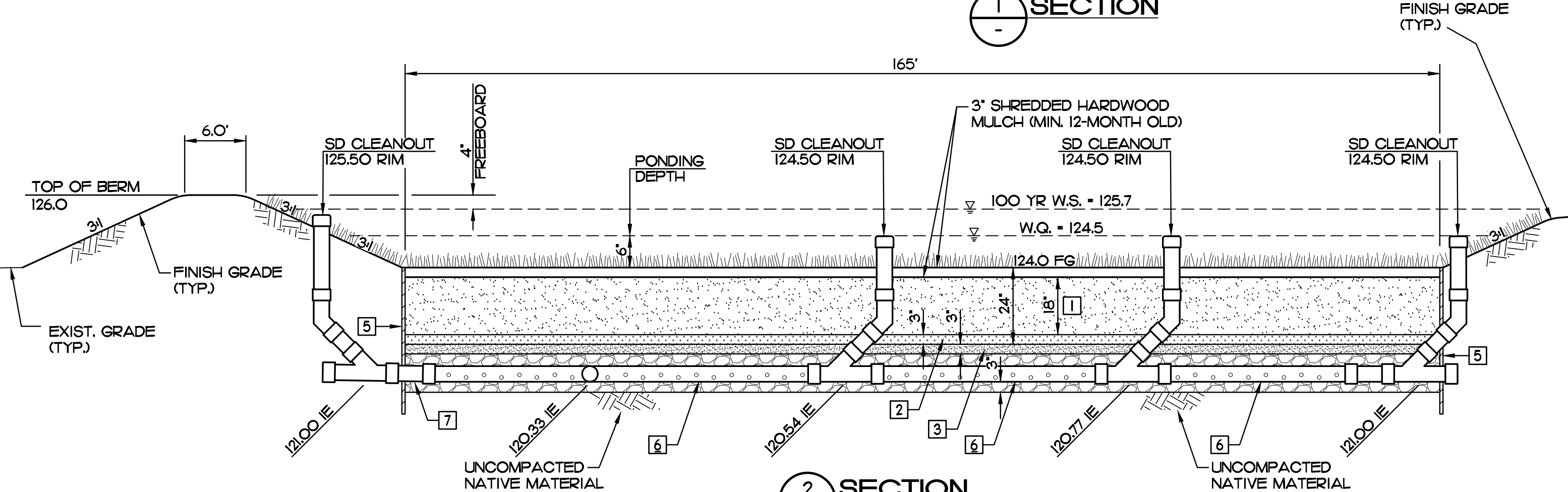


KEY NOTES

- 1 BIORETENTION SOIL MEDIA (BSM)
(5 INCH/HR MIN. PERCOLATION RATE)
PER BSM MIXTURE BELOW
- 2 3" CLEAN & WASHED ASTM 33
FINE AGGREGATE SAND
- 3 3" LAYER OF ASTM 8 STONE
- 4 ASTM 57 OPEN GRADED STONE
(3/4" WASHED CRUSHED ROCK)
- 5 IMPERMEABLE LINER (30 MIL PVC
GEOMEMBRANE BY EPI OR APPROVED
EQUAL) PER MANUFACTURER'S
SPECIFICATIONS
- 6 PVT. 8" PVC PERFORATED PIPE •
0.5% SLOPE.
- 7 PVT. 8" PVC SDR-35 • 0.5% SLOPE.



1 SECTION



2 SECTION

Hydrograph Plot

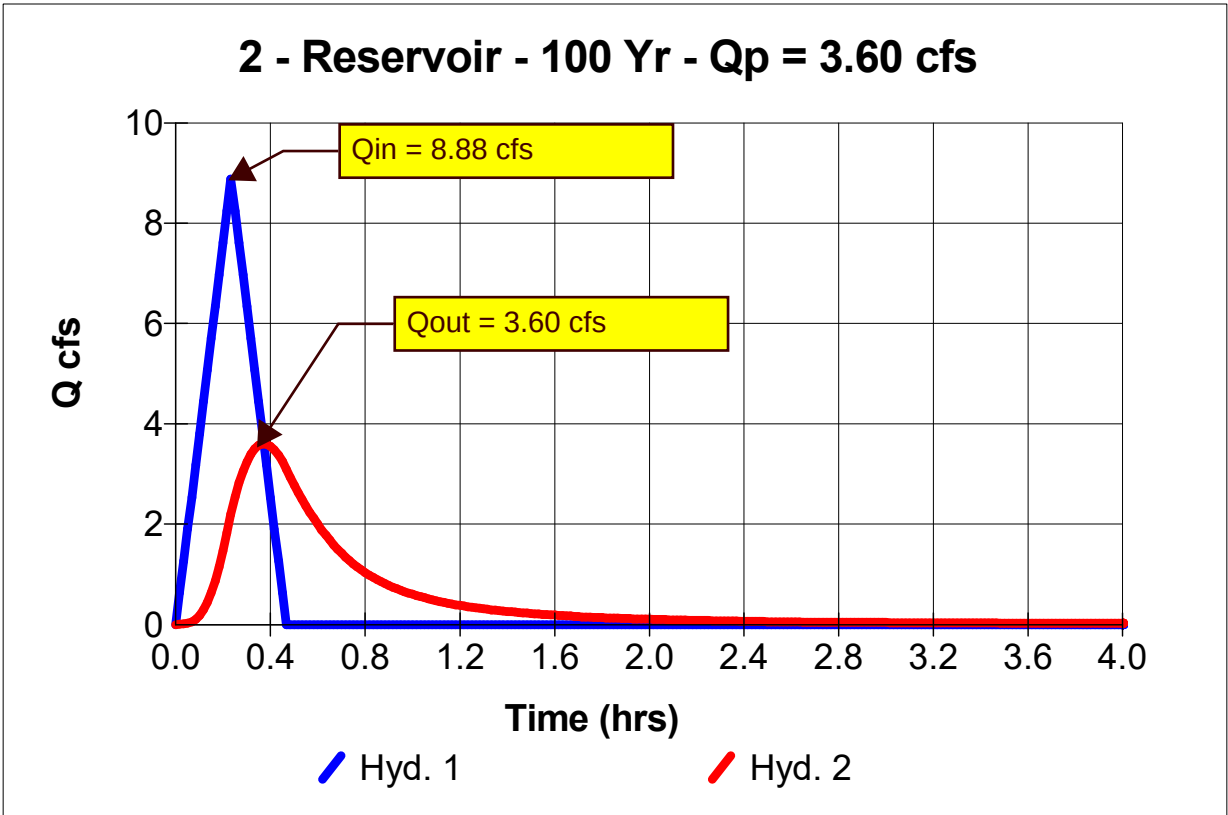
Hyd. No. 2

BMP #1

Hydrograph type	= Reservoir	Peak discharge	= 3.60 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 1	Reservoir name	= BMP #1
Max. Elevation	= 125.27 ft	Max. Storage	= 4,781 cuft

Storage Indication method used.

Hydrograph Volume = 7,452 cuft



Hydrograph Report

Hyd. No. 2

BMP #1

Hydrograph type = Reservoir
Storm frequency = 100 yrs
Inflow hyd. No. = 1
Max. Elevation = 125.27 ft

Peak discharge = 3.60 cfs
Time interval = 1 min
Reservoir name = BMP #1
Max. Storage = 4,781 cuft

Storage Indication method used.

Outflow hydrograph volume = 7,452 cuft

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
4	2.54	124.55	0.01	----	----	----	0.04	----	----	----	----	0.05
5	3.17	124.58	0.02	----	----	----	0.08	----	----	----	----	0.11
6	3.81	124.61	0.05	----	----	----	0.14	----	----	----	----	0.18
7	4.44	124.65	0.08	----	----	----	0.21	----	----	----	----	0.29
8	5.07	124.69	0.13	----	----	----	0.32	----	----	----	----	0.44
9	5.71	124.74	0.19	----	----	----	0.44	----	----	----	----	0.63
10	6.34	124.80	0.28	----	----	----	0.59	----	----	----	----	0.87
11	6.98	124.85	0.38	----	----	----	0.77	----	----	----	----	1.15
12	7.61	124.91	0.50	----	----	----	0.97	----	----	----	----	1.47
13	8.24	124.98	0.63	----	----	----	1.20	----	----	----	----	1.83
14	8.88 <<	125.04	0.75	----	----	----	1.45	----	----	----	----	2.20
15	8.24	125.09	0.86	----	----	----	1.68	----	----	----	----	2.54
16	7.61	125.14	0.94	----	----	----	1.89	----	----	----	----	2.82
17	6.98	125.18	0.99	----	----	----	2.06	----	----	----	----	3.06
18	6.34	125.21	1.04	----	----	----	2.21	----	----	----	----	3.25
19	5.71	125.24	1.07	----	----	----	2.33	----	----	----	----	3.40
20	5.07	125.26	1.09	----	----	----	2.41	----	----	----	----	3.50
21	4.44	125.27	1.11	----	----	----	2.46	----	----	----	----	3.57
22	3.81	125.27 <<	1.11	----	----	----	2.49	----	----	----	----	3.60 <<
23	3.17	125.27	1.11	----	----	----	2.48	----	----	----	----	3.59
24	2.54	125.26	1.10	----	----	----	2.45	----	----	----	----	3.55
25	1.90	125.25	1.09	----	----	----	2.39	----	----	----	----	3.48
26	1.27	125.24	1.07	----	----	----	2.31	----	----	----	----	3.38
27	0.63	125.21	1.04	----	----	----	2.21	----	----	----	----	3.25
28	0.00	125.19	1.00	----	----	----	2.09	----	----	----	----	3.10
29	0.00	125.16	0.97	----	----	----	1.97	----	----	----	----	2.94
30	0.00	125.13	0.93	----	----	----	1.85	----	----	----	----	2.78
31	0.00	125.11	0.89	----	----	----	1.75	----	----	----	----	2.64
32	0.00	125.09	0.85	----	----	----	1.65	----	----	----	----	2.49
33	0.00	125.06	0.81	----	----	----	1.55	----	----	----	----	2.36
34	0.00	125.04	0.77	----	----	----	1.47	----	----	----	----	2.23
35	0.00	125.02	0.72	----	----	----	1.39	----	----	----	----	2.11
36	0.00	125.01	0.69	----	----	----	1.31	----	----	----	----	2.00
37	0.00	124.99	0.65	----	----	----	1.24	----	----	----	----	1.89
38	0.00	124.97	0.61	----	----	----	1.17	----	----	----	----	1.78
39	0.00	124.95	0.57	----	----	----	1.11	----	----	----	----	1.68
40	0.00	124.93	0.54	----	----	----	1.05	----	----	----	----	1.59
41	0.00	124.92	0.51	----	----	----	0.99	----	----	----	----	1.50

Continues on next page...

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
42	0.00	124.90	0.48	----	----	----	0.94	----	----	----	----	1.42
43	0.00	124.89	0.45	----	----	----	0.89	----	----	----	----	1.34
44	0.00	124.88	0.43	----	----	----	0.85	----	----	----	----	1.27
45	0.00	124.86	0.40	----	----	----	0.81	----	----	----	----	1.21
46	0.00	124.85	0.38	----	----	----	0.77	----	----	----	----	1.15
47	0.00	124.84	0.36	----	----	----	0.73	----	----	----	----	1.09
48	0.00	124.83	0.34	----	----	----	0.70	----	----	----	----	1.04
49	0.00	124.82	0.32	----	----	----	0.67	----	----	----	----	0.99
50	0.00	124.81	0.30	----	----	----	0.64	----	----	----	----	0.94
51	0.00	124.80	0.29	----	----	----	0.61	----	----	----	----	0.89
52	0.00	124.79	0.27	----	----	----	0.58	----	----	----	----	0.85
53	0.00	124.78	0.26	----	----	----	0.56	----	----	----	----	0.82
54	0.00	124.78	0.25	----	----	----	0.53	----	----	----	----	0.78
55	0.00	124.77	0.23	----	----	----	0.51	----	----	----	----	0.75
56	0.00	124.76	0.22	----	----	----	0.49	----	----	----	----	0.71
57	0.00	124.75	0.21	----	----	----	0.47	----	----	----	----	0.68
58	0.00	124.75	0.20	----	----	----	0.45	----	----	----	----	0.65
59	0.00	124.74	0.19	----	----	----	0.44	----	----	----	----	0.63
60	0.00	124.74	0.18	----	----	----	0.42	----	----	----	----	0.60
61	0.00	124.73	0.18	----	----	----	0.40	----	----	----	----	0.58
62	0.00	124.72	0.17	----	----	----	0.39	----	----	----	----	0.56
63	0.00	124.72	0.16	----	----	----	0.37	----	----	----	----	0.53
64	0.00	124.71	0.15	----	----	----	0.36	----	----	----	----	0.51
65	0.00	124.71	0.15	----	----	----	0.35	----	----	----	----	0.49
66	0.00	124.70	0.14	----	----	----	0.34	----	----	----	----	0.47
67	0.00	124.70	0.13	----	----	----	0.32	----	----	----	----	0.46
68	0.00	124.69	0.13	----	----	----	0.31	----	----	----	----	0.44
69	0.00	124.69	0.12	----	----	----	0.30	----	----	----	----	0.43
70	0.00	124.69	0.12	----	----	----	0.29	----	----	----	----	0.41
71	0.00	124.68	0.11	----	----	----	0.28	----	----	----	----	0.40
72	0.00	124.68	0.11	----	----	----	0.28	----	----	----	----	0.38
73	0.00	124.67	0.10	----	----	----	0.27	----	----	----	----	0.37
74	0.00	124.67	0.10	----	----	----	0.26	----	----	----	----	0.36
75	0.00	124.67	0.10	----	----	----	0.25	----	----	----	----	0.35
76	0.00	124.66	0.09	----	----	----	0.24	----	----	----	----	0.33
77	0.00	124.66	0.09	----	----	----	0.23	----	----	----	----	0.32
78	0.00	124.66	0.08	----	----	----	0.23	----	----	----	----	0.31
79	0.00	124.65	0.08	----	----	----	0.22	----	----	----	----	0.30
80	0.00	124.65	0.08	----	----	----	0.21	----	----	----	----	0.29
81	0.00	124.65	0.08	----	----	----	0.21	----	----	----	----	0.28
82	0.00	124.64	0.07	----	----	----	0.20	----	----	----	----	0.28
83	0.00	124.64	0.07	----	----	----	0.20	----	----	----	----	0.27
84	0.00	124.64	0.07	----	----	----	0.19	----	----	----	----	0.26
85	0.00	124.64	0.07	----	----	----	0.19	----	----	----	----	0.25
86	0.00	124.63	0.06	----	----	----	0.18	----	----	----	----	0.25
87	0.00	124.63	0.06	----	----	----	0.18	----	----	----	----	0.24
88	0.00	124.63	0.06	----	----	----	0.17	----	----	----	----	0.23
89	0.00	124.63	0.06	----	----	----	0.17	----	----	----	----	0.23
90	0.00	124.62	0.06	----	----	----	0.16	----	----	----	----	0.22
91	0.00	124.62	0.05	----	----	----	0.16	----	----	----	----	0.21
92	0.00	124.62	0.05	----	----	----	0.16	----	----	----	----	0.21

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Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
93	0.00	124.62	0.05	----	----	----	0.15	----	----	----	----	0.20
94	0.00	124.62	0.05	----	----	----	0.15	----	----	----	----	0.20
95	0.00	124.61	0.05	----	----	----	0.14	----	----	----	----	0.19
96	0.00	124.61	0.05	----	----	----	0.14	----	----	----	----	0.19
97	0.00	124.61	0.04	----	----	----	0.14	----	----	----	----	0.18
98	0.00	124.61	0.04	----	----	----	0.13	----	----	----	----	0.18
99	0.00	124.61	0.04	----	----	----	0.13	----	----	----	----	0.17
100	0.00	124.61	0.04	----	----	----	0.13	----	----	----	----	0.17
101	0.00	124.60	0.04	----	----	----	0.12	----	----	----	----	0.16
102	0.00	124.60	0.04	----	----	----	0.12	----	----	----	----	0.16
103	0.00	124.60	0.04	----	----	----	0.12	----	----	----	----	0.15
104	0.00	124.60	0.04	----	----	----	0.11	----	----	----	----	0.15
105	0.00	124.60	0.03	----	----	----	0.11	----	----	----	----	0.15
106	0.00	124.60	0.03	----	----	----	0.11	----	----	----	----	0.14
107	0.00	124.59	0.03	----	----	----	0.11	----	----	----	----	0.14
108	0.00	124.59	0.03	----	----	----	0.11	----	----	----	----	0.14
109	0.00	124.59	0.03	----	----	----	0.10	----	----	----	----	0.14
110	0.00	124.59	0.03	----	----	----	0.10	----	----	----	----	0.13
111	0.00	124.59	0.03	----	----	----	0.10	----	----	----	----	0.13
112	0.00	124.59	0.03	----	----	----	0.10	----	----	----	----	0.13
113	0.00	124.59	0.03	----	----	----	0.10	----	----	----	----	0.12
114	0.00	124.59	0.03	----	----	----	0.09	----	----	----	----	0.12
115	0.00	124.58	0.03	----	----	----	0.09	----	----	----	----	0.12
116	0.00	124.58	0.03	----	----	----	0.09	----	----	----	----	0.12
117	0.00	124.58	0.03	----	----	----	0.09	----	----	----	----	0.11
118	0.00	124.58	0.03	----	----	----	0.09	----	----	----	----	0.11
119	0.00	124.58	0.02	----	----	----	0.09	----	----	----	----	0.11
120	0.00	124.58	0.02	----	----	----	0.08	----	----	----	----	0.11
121	0.00	124.58	0.02	----	----	----	0.08	----	----	----	----	0.11
122	0.00	124.58	0.02	----	----	----	0.08	----	----	----	----	0.10
123	0.00	124.58	0.02	----	----	----	0.08	----	----	----	----	0.10
124	0.00	124.57	0.02	----	----	----	0.08	----	----	----	----	0.10
125	0.00	124.57	0.02	----	----	----	0.08	----	----	----	----	0.10
126	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.10
127	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.09
128	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.09
129	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.09
130	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.09
131	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.09
132	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.08
133	0.00	124.57	0.02	----	----	----	0.07	----	----	----	----	0.08
134	0.00	124.57	0.02	----	----	----	0.06	----	----	----	----	0.08
135	0.00	124.56	0.02	----	----	----	0.06	----	----	----	----	0.08
136	0.00	124.56	0.02	----	----	----	0.06	----	----	----	----	0.08
137	0.00	124.56	0.02	----	----	----	0.06	----	----	----	----	0.08
138	0.00	124.56	0.02	----	----	----	0.06	----	----	----	----	0.07
139	0.00	124.56	0.02	----	----	----	0.06	----	----	----	----	0.07
140	0.00	124.56	0.01	----	----	----	0.06	----	----	----	----	0.07
141	0.00	124.56	0.01	----	----	----	0.06	----	----	----	----	0.07
142	0.00	124.56	0.01	----	----	----	0.06	----	----	----	----	0.07
143	0.00	124.56	0.01	----	----	----	0.05	----	----	----	----	0.07

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[illegible]

...End

Reservoir Report

Reservoir No. 1 - BMP #1

Hydraflow Hydrographs by Intelisolve

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	124.50	5,690	0	0
0.50	125.00	6,272	2,990	2,990
1.00	125.50	6,878	3,287	6,278
1.50	126.00	7,484	3,590	9,868

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 8.0	0.0	0.0	0.0
Span in	= 8.0	0.0	0.0	0.0
No. Barrels	= 1	0	0	0
Invert El. ft	= 124.50	0.00	0.00	0.00
Length ft	= 0.0	0.0	0.0	0.0
Slope %	= 0.00	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 1.10	0.00	0.00	0.00
Crest El. ft	= 124.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	124.50	0.00	---	---	---	0.00	---	---	---	---	0.00
0.05	299	124.55	0.01	---	---	---	0.04	---	---	---	---	0.05
0.10	598	124.60	0.04	---	---	---	0.12	---	---	---	---	0.15
0.15	897	124.65	0.08	---	---	---	0.21	---	---	---	---	0.29
0.20	1,196	124.70	0.13	---	---	---	0.33	---	---	---	---	0.46
0.25	1,495	124.75	0.20	---	---	---	0.46	---	---	---	---	0.66
0.30	1,794	124.80	0.28	---	---	---	0.60	---	---	---	---	0.89
0.35	2,093	124.85	0.37	---	---	---	0.76	---	---	---	---	1.13
0.40	2,392	124.90	0.47	---	---	---	0.93	---	---	---	---	1.40
0.45	2,691	124.95	0.57	---	---	---	1.11	---	---	---	---	1.68
0.50	2,990	125.00	0.68	---	---	---	1.30	---	---	---	---	1.97
0.55	3,319	125.05	0.78	---	---	---	1.49	---	---	---	---	2.27
0.60	3,648	125.10	0.87	---	---	---	1.70	---	---	---	---	2.58
0.65	3,977	125.15	0.95	---	---	---	1.92	---	---	---	---	2.87
0.70	4,305	125.20	1.02	---	---	---	2.15	---	---	---	---	3.16
0.75	4,634	125.25	1.08	---	---	---	2.38	---	---	---	---	3.46
0.80	4,963	125.30	1.15	---	---	---	2.62	---	---	---	---	3.77
0.85	5,292	125.35	1.21	---	---	---	2.87	---	---	---	---	4.08
0.90	5,620	125.40	1.27	---	---	---	3.13	---	---	---	---	4.39
0.95	5,949	125.45	1.32	---	---	---	3.39	---	---	---	---	4.71
1.00	6,278	125.50	1.37	---	---	---	3.66	---	---	---	---	5.04
1.05	6,637	125.55	1.42	---	---	---	3.94	---	---	---	---	5.36
1.10	6,996	125.60	1.47	---	---	---	4.23	---	---	---	---	5.70
1.15	7,355	125.65	1.52	---	---	---	4.52	---	---	---	---	6.04
1.20	7,714	125.70	1.56	---	---	---	4.82	---	---	---	---	6.38
1.25	8,073	125.75	1.61	---	---	---	5.12	---	---	---	---	6.73
1.30	8,432	125.80	1.65	---	---	---	5.43	---	---	---	---	7.08
1.35	8,791	125.85	1.69	---	---	---	5.75	---	---	---	---	7.44
1.40	9,150	125.90	1.74	---	---	---	6.07	---	---	---	---	7.80
1.45	9,509	125.95	1.78	---	---	---	6.40	---	---	---	---	8.17
1.50	9,868	126.00	1.82	---	---	---	6.73	---	---	---	---	8.54

INFLOW

**BMP #1: BIOFILTRATION WITH PARTIAL
RETENTION BASIN**

Hydrograph Plot

Hydraflow Hydrographs by Intelisolve

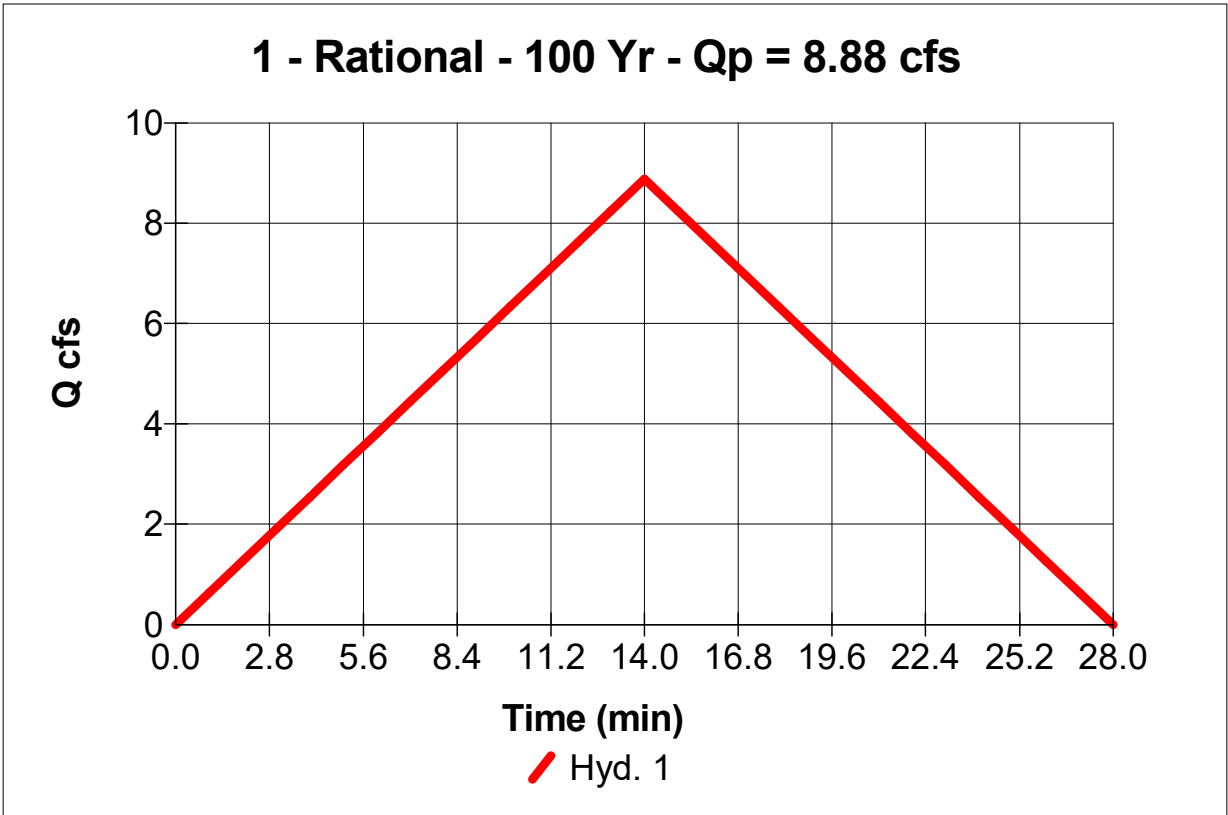
Hyd. No. 1

DMA 1

Hydrograph type = Rational
Storm frequency = 100 yrs
Drainage area = 3.4 ac
Intensity = 3.980 in/hr
IDF Curve = DZ0031_ND_2.idf

Peak discharge = 8.88 cfs
Time interval = 1 min
Runoff coeff. = 0.66
Time of conc. (Tc) = 14 min
Asc/Rec limb fact = 1/1

Hydrograph Volume = 7,458 cuft



Hydrograph Report

Page 1

Hydraflow Hydrographs by Intelisolve

Hyd. No. 1

DMA 1

Hydrograph type = Rational
Storm frequency = 100 yrs
Drainage area = 3.4 ac
Intensity = 3.980 in/hr
IDF Curve = DZ0031_ND_2.idf

Peak discharge = 8.88 cfs
Time interval = 1 min
Runoff coeff. = 0.66
Time of conc. (Tc) = 14 min
Asc/Rec limb fact = 1/1

Hydrograph Volume = 7,458 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

1	0.63
2	1.27
3	1.90
4	2.54
5	3.17
6	3.81
7	4.44
8	5.07
9	5.71
10	6.34
11	6.98
12	7.61
13	8.24
14	8.88 <<
15	8.24
16	7.61
17	6.98
18	6.34
19	5.71
20	5.07
21	4.44
22	3.81
23	3.17
24	2.54
25	1.90
26	1.27
27	0.63

...End

HYDRAULIC ANALYSIS

EXISTING 24-INCH HDPE
DOWNSTREAM STORM DRAIN

SNIPES-DYE ASSOCIATES

8348 CENTER DR. #G

LA MESA, CA 91942

(619) 697-9234 FAX (619) 460-2033

JOB _____

SHEET NO. _____

OF _____

CALCULATED BY

SON

DATE

8-2-22

CHECKED BY _____

DATE _____

SCALE _____

EXISTING 24" HDPE CONSTRUCTED PER GIA-00015

PIPE SLOPE = 3.33%

$$N = 0.013$$

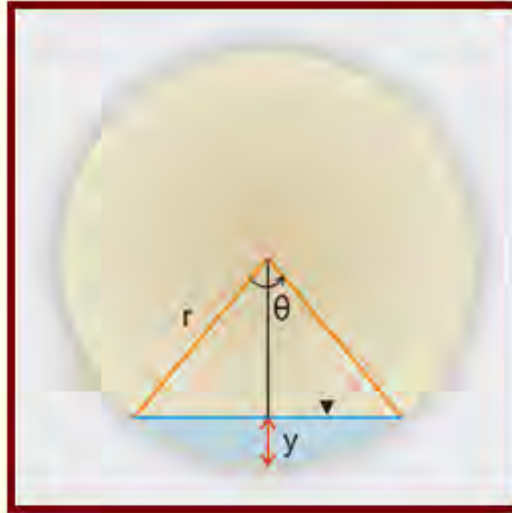
$$A = 3.14 \text{ ft}^2$$

$$P = 6.283 \text{ ft}$$

$$Q_{\text{CAPACITY}} = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

$$\underline{Q_{24} = 41.1 \text{ CFS Greater than } Q_{100} (38.1 \text{ CFS})}$$

 $\therefore$ OK



Formulas

$$\theta = 2 \cos^{-1}[1 - 2(y/D)]$$

$$A = (D^2/8) (\theta - \sin\theta)$$

$$P = r\theta$$

$$R = A/P$$

$$Q = (k/n) AR^{2/3} S^{1/2}$$

$$V = Q/A$$

INPUT DATA:

Select:

Pipe diameter D: ft

Flow depth y: ft

Bottom slope S: ft/ft

Manning's n:

INTERMEDIATE CALCS:

Constant k: 1.485

Flow area A: 3.141 ft²

Wetted perimeter P: 6.283 ft

Hydraulic radius R: 0.5 ft

Relative depth y/D: 1

Froude number [based on y]: 1.630

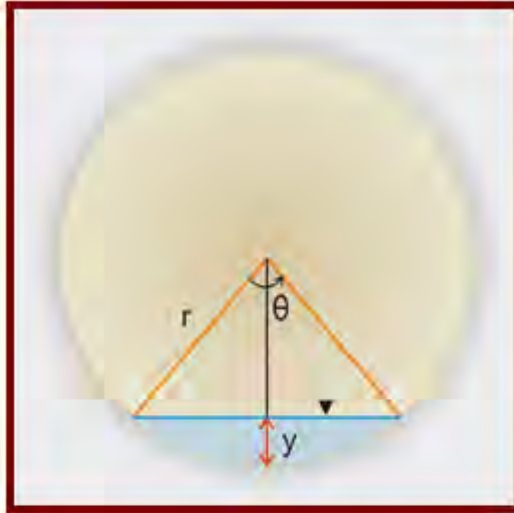
OUTPUT:

Discharge Q: 41.093 cfs

Flow velocity V: 13.080 fps

Your request was processed at 07:59:49 am on August 2nd, 2022 [220802 07:59:49].

Thank you for running onlinechannel_03. Please call again. [140618]



Formulas

$$\theta = 2 \cos^{-1}[1 - 2(y/D)]$$

$$A = (D^2/8) (\theta - \sin\theta)$$

$$P = r\theta$$

$$R = A/P$$

$$Q = (k/n) AR^{2/3} S^{1/2}$$

$$V = Q/A$$

INPUT DATA:

Select: SI units (metric)
U.S. Customary units

Pipe diameter D: ft

Discharge Q: cfs

Bottom slope S: ft/ft

Manning's n:

INTERMEDIATE CALCS:

Constant k: 1.486

Flow area A: 2.565 ft²

Wetted perimeter P: 4.239 ft

Hydraulic radius R: 0.604 ft

Relative depth y/D: 0.760

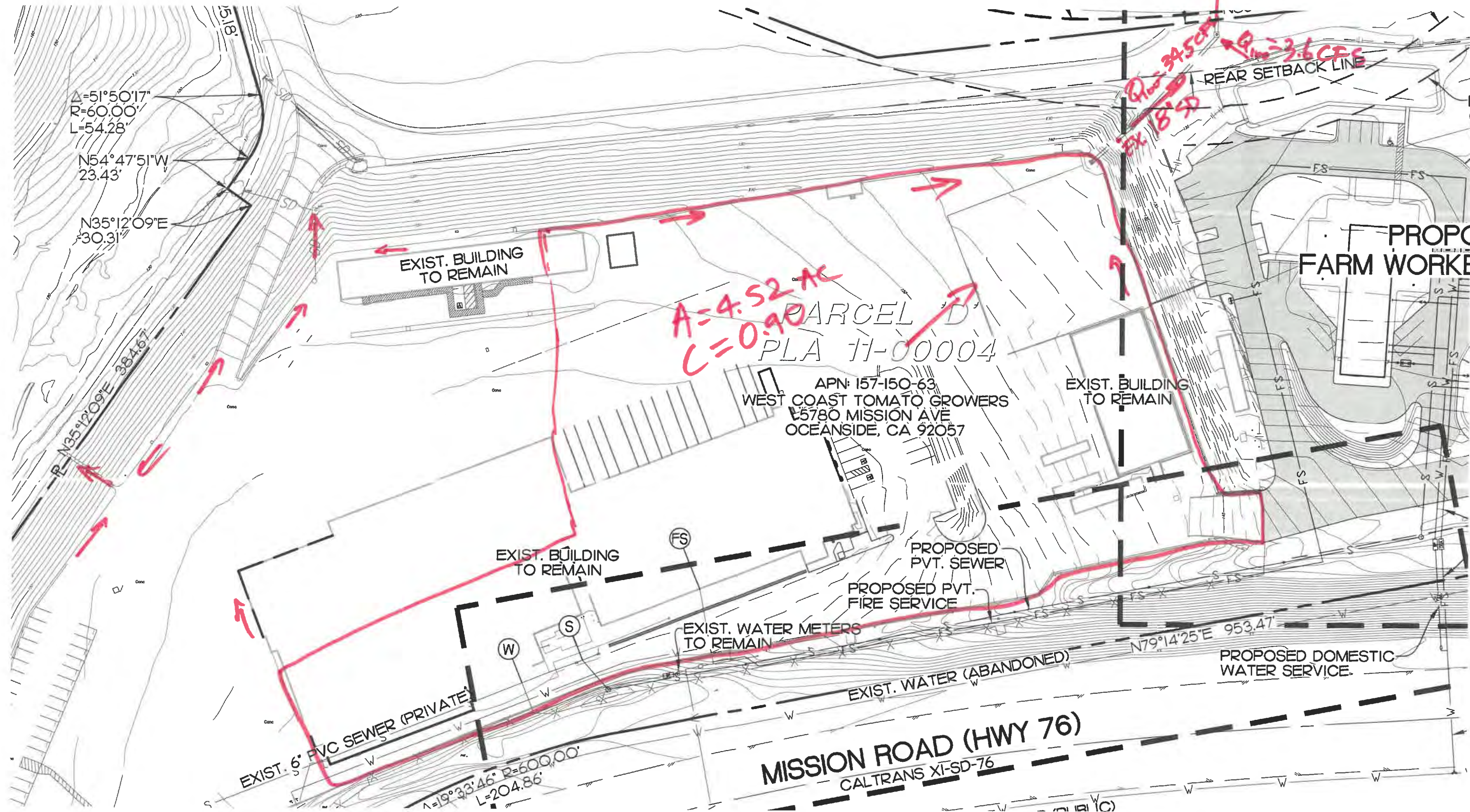
Froude number [based on y]: 2.122

OUTPUT:

Flow depth y: 1.521 ft

Flow velocity V: 14.85 fps

Your request was processed at 09:54:01 am on July 29th, 2022 [220729 09:54:01].



PRE-DEVELOPMENT PEAK 100-YEAR DISCHARGE (Q)

Offsite: Q_{100}

RUNOFF FACTOR (C):

Soil Group D for Undisturbed Natural Terrain in Table 3-1

Equation 3.1.2 Estimating Runoff Factor for Area

$$\text{Revised } C = 0.90(\% \text{ IMP}) + C_p(1 - \% \text{ IMP})$$

$$= 0.90$$

RAINFALL INTENSITY (I):

100 Year-6 Hour Precipitation (See attached isopluvial map)

$$P_6 = 2.9 \text{ inches}$$

ΔE = Change in elevation along the Effective Slope

$$= 2 \text{ Feet}$$

D = Water Course Distance

$$= 100 \text{ Feet}$$

S = Slope = $(\Delta E/D) \times 100\%$

$$= 2.0 \%$$

T_c = Initial Time of Concentration

$$T_c = [1.8(1.1 - C)(D^{1/2})]/[S^{1/3}] =$$

$$= 2.9 \text{ Minutes}$$

FAA Rational Formula - County of San Diego

Hydrology Manual Figure 3-3

ΔE_2 = Change in elevation along the Effective Slope

$$= 17 \text{ Feet}$$

L = Water Course Distance

$$= 930 \text{ Feet}$$

T_t = Travel Time

$$T_t = (11.9L^3 / \Delta E_2)^{0.385}$$

$$= 7.04 \text{ Minutes}$$

Figure 3-4 Nomograph for Determination of Time of Concentration

T = Total Time of Concentration

$$= 9.9 \text{ Minutes}$$

Intensity = Intensity-Duration-Design Chart

County of San Diego- Hydrology Manual, Figure 3-1

$$= 8.50 \text{ Inches/Hour}$$

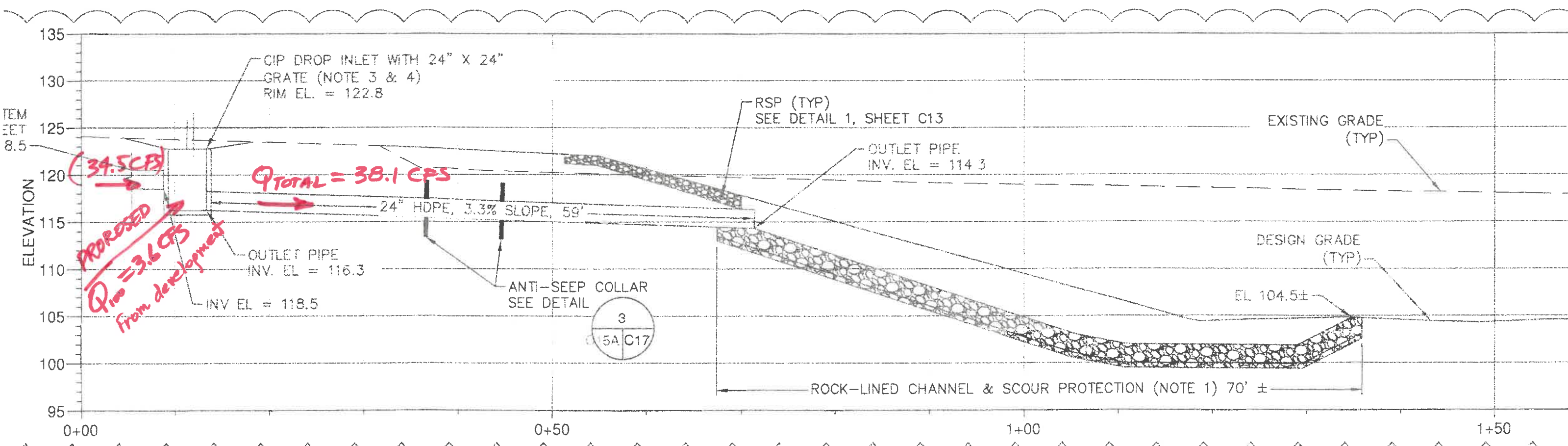
PEAK DISCHARGES (Q):

A = Area of the basin

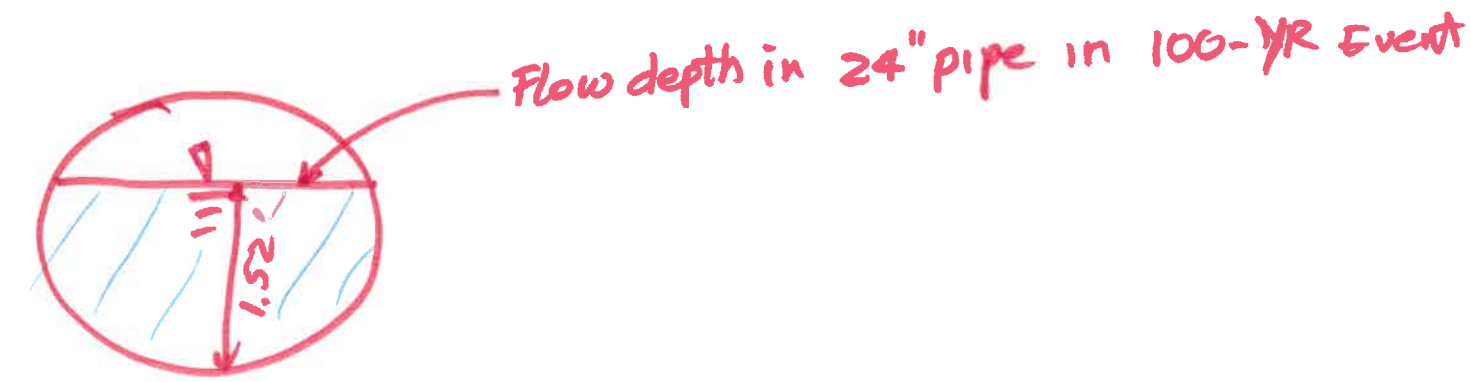
$$= 4.52 \text{ Acres}$$

$Q = CIA$

$$= 34.58 \text{ ft}^3/\text{sec}$$



1 SOIL PLACEMENT SITE 1 - LOWER DRAINAGE SYSTEM 1" = 10'

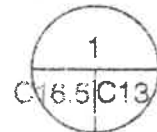


1

MITIGATION SITE
(SEE SHEET C3A)

SLOPE TYP.
5:1 (H:V)

SCOUR PROTECTION
SEE DETAIL



29 52 53 75
PARCELS
A2 & B2 59 78

51 74

EX. 24" HDPE

DRAINAGE SYSTEM
SEE SHEET C15A

DROP INLET
SEE DETAIL PLAN
THIS SHEET

DROP INLET (NOTE 1)

DRAINAGE SYSTEM
SEE PROFILE
THIS SHEET

EX 19" RCP
(PIP)

PARCELS A2 & B2

75 53
52 29

UNPAVED
ROAD