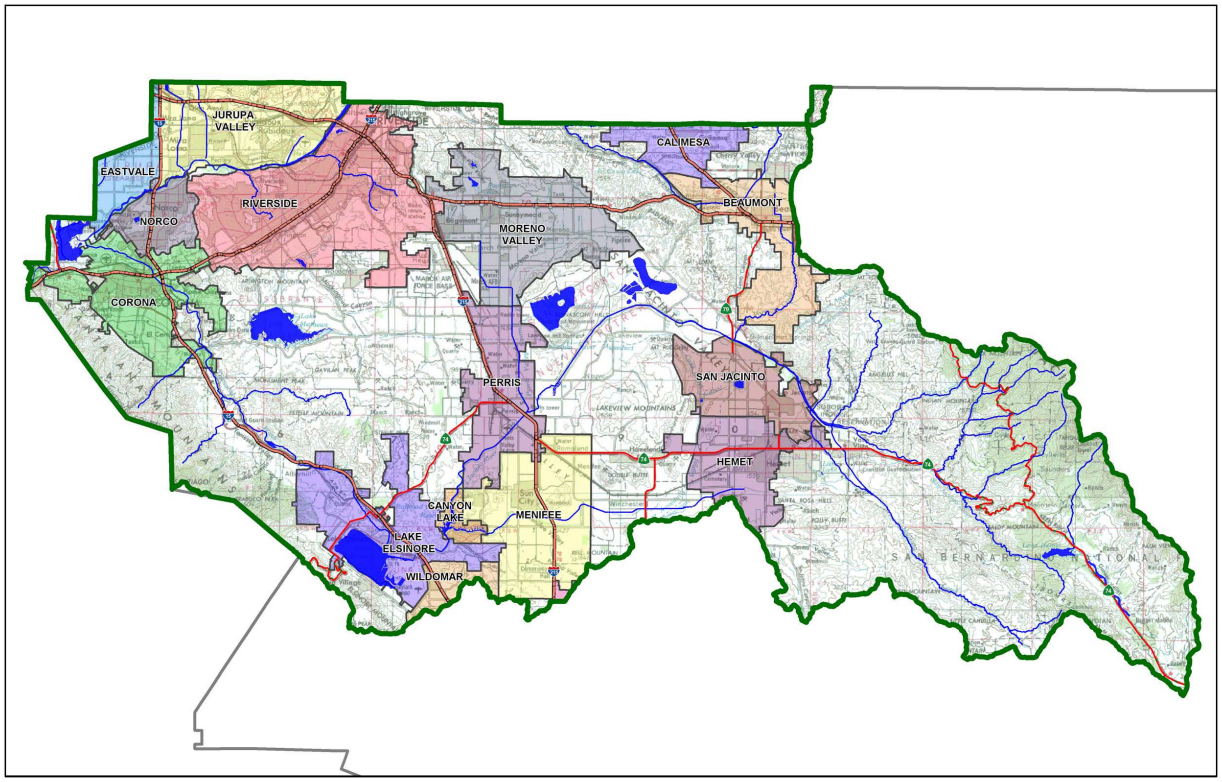
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Placentia Logistics Center

Development No: N/A

Design Review/Case No: TBD



☒ **Preliminary**
☐ **Final**

Original Date Prepared: December 20, 2019

Revision Date(s):

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

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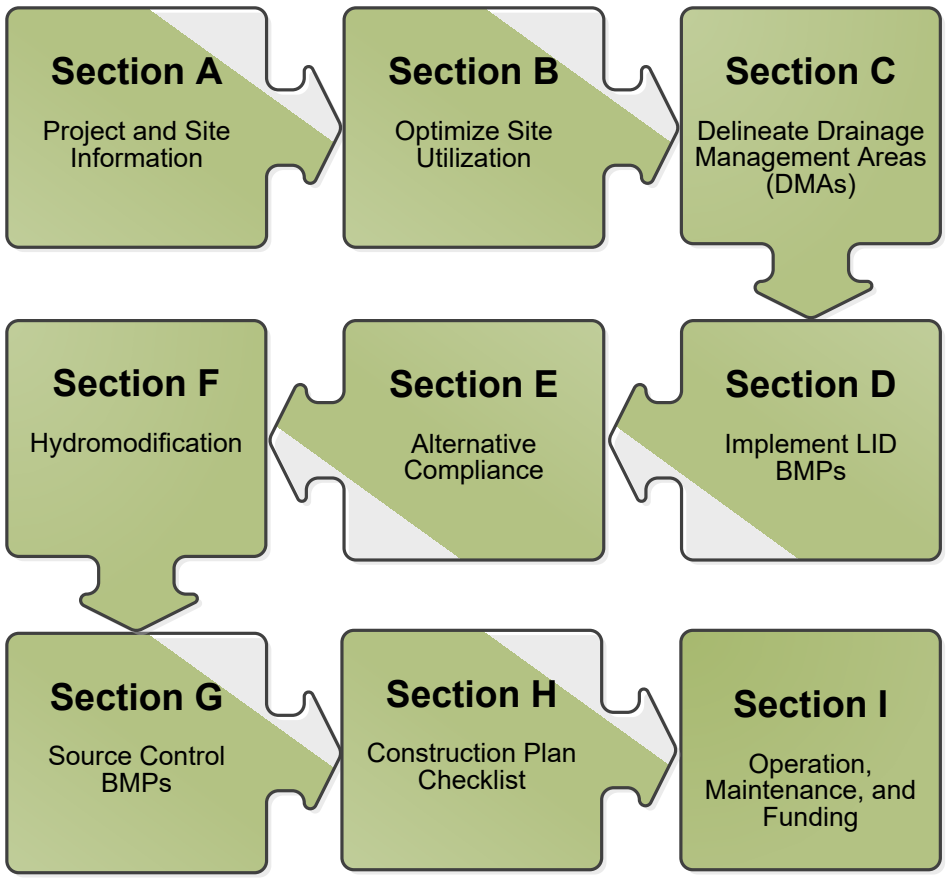
A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Orbis Real Estate Partners by Tory R. Walker Engineering for the Placentia Logistics Center project.

This WQMP is intended to comply with the requirements of County of Riverside for Ordinance No. 745 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under County of Riverside Water Quality Ordinance (Municipal Code Chapter 13.12).

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

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION		
Type of Project:	Industrial	
Planning Area:	Mead Valley Area Plan (MVAP)	
Community Name:	N/A	
Development Name:	Placentia Logistics Center	
PROJECT LOCATION		
Latitude & Longitude (DMS): 33.824° N & 117.248° W		
Project Watershed and Sub-Watershed: Santa Ana Watershed, Perris Reservoir Sub-Watershed		
Gross Acres: 11.42 APN(s): 317-240-017, 019, 020, 021, 028, 029, 039 & 041		
Map Book and Page No.: Thomas Guide, Page 58		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Industrial	
Proposed or Potential SIC Code(s)	4214	
Area of Impervious Project Footprint (SF)	433,145	
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	476,806	
Does the project consist of offsite road improvements?	☒ Y	☐ N
Does the project propose to construct unpaved roads?	☐ Y	☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y	☒ N
EXISTING SITE CHARACTERISTICS		
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0	
Is the project located within any MSHCP Criteria Cell?	☐ Y	☒ N
If so, identify the Cell number:		
Are there any natural hydrologic features on the project site?	☐ Y	☒ N
Is a Geotechnical Report attached?	☒ Y	☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A	
What is the Water Quality Design Storm Depth for the project?	0.59 inches	

Orbis Real Estate Partners is proposing to develop an industrial tilt up warehouse building on the project site, with associated office, parking stalls, and landscaping. The approximately 11-acre site consists of vacant/undeveloped land located in Riverside County, California. The site is bound by APNs 317-240-044 through 045 to the north, Harvill Avenue to the east, Placentia Avenue to the south, and APN 317-240-001 to the west. The site design proposes to maintain the existing drainage conditions, enhance vegetation, and disperse rooftop runoff to surrounding landscape areas, where feasible. To site will biotreat the water quality design storm via one lined bioretention basin.

A.1 Maps and Site Plans

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

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Perris Valley Channel	N/A	AGR, GWR, REC1, REC2, WARM, WILD	N/A
San Jacinto River, Reach 3	N/A	AGR, GWR, REC1, REC2, WARM, WILD	N/A
Canyon Lake (Railroad Canyon Reservoir)	Nutrients	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
San Jacinto River, Reach 1	N/A	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
Lake Elsinore	DDT (Dichlorodiphenyl trichloroethane), Nutrients, Organic Enrichment/Low Dissolved Oxygen, PCBs (Polychlorinated biphenyls), Toxicity	REC1, REC2, WARM, WILD	N/A

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* County of Riverside Building Permit County of Riverside Grading Permit	☒ Y	☐ N

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

Section B: Optimize Site Utilization (LID Principles)

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

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Yes, existing drainage patterns have been identified, and the overall drainage pattern will be preserved. The existing site drains easterly via overland flow and shallow concentrated flow, where runoff is then intercepted by the Harvill Avenue curb and gutter, flowing north until intercepted by a curb inlet tributary to Perris Valley MPD Lateral H-11. The proposed development drains in the same orientation but will directly discharge to Lateral H-11 via one proposed lateral. Flows will discharge offsite after being detained onsite for the 2-year, 5-year, and 10-year storms at the 1-hour, 3-hour, 6-hour, and 24-hour durations.

Did you identify and protect existing vegetation? If so, how? If not, why?

Yes, however, the site is composed of cleared land that has been previously disked or otherwise physically altered to an extent that native understory vegetation is no longer supported. The proposed landscape plan proposes native, drought-tolerant vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Yes, natural infiltration capacity has been identified as poor and therefore does not have appreciable natural infiltration capacity. The native infiltration rates range between 0.19 to 0.97 inches per hour at depths ranging from seven to ten feet below the existing ground surface per percolation testing conducted by a geotechnical professional.

Did you identify and minimize impervious area? If so, how? If not, why?

Yes, proposed impervious area has been limited to provide for essential proposed industrial functions and safety (i.e., building footprint, parking, sidewalk, ADA compliance, etc.). Paved pedestrian access, parking and drive aisles are limited to the minimum widths necessary to support the proposed vehicular traffic.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Yes, runoff will be dispersed where feasible throughout the site. Isolated pedestrian walkways are dispersed to adjacent landscaped areas and the northeastern quadrant of the building will be dispersed directly to adjacent landscaping. All remaining rooftop, parking, and drive aisle runoff will be directly connected to proposed impervious areas and ultimately routed to the bioretention basin due to parking requirements along the south face of the warehouse and the infeasibility of maintaining sizable and uncompacted landscaping within the proposed loading dock areas along the north face of the proposed warehouse.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA A/1	Mixed	6,668	Type A
DMA A/2	Mixed	13,866	Type A
DMA D/1	Mixed	476,806	Type D

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

**Mixed surface types include roof areas, paved parking, LID BMPs, and self-retaining landscaped islands. Therefore, the associated BMPs have been conservatively over-sized by assuming these self-retaining areas produce runoff. Refer to Appendix 6 for precise DMA land cover quantities.*

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

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA A/1	6,668	Landscaping	Drip
DMA A/2	13,866	Landscaping	Drip

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

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

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

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

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA D/1	BMP D/1

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

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

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		✓
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		✓
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		✓
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	✓	
If Yes, list affected DMAs: D/1		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		✓
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		✓
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 1.47 acres

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 10.95 acres

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 0.74

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 8.05 acres

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
8.05 acres	1.47 acres

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 237

Project Type: Industrial

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 10.95 acres

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 170

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 1,861

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
1,861	237

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
D/1	☐	☐	☒	☐	☐

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

N/A

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP D/1* *Bioretention (Lined)*		
	[A]		[B]	[C]	[A] x [C]			
D/1 ROOF	*251,856*	*Roofs*	*1*	*0.89*	*224,656*	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/1 CONC	*181,289*	*Concrete or Asphalt*	*1*	*0.89*	*161,710*			
D/1 LSCAPE	*43,661*	*Ornamental Landscaping*	*0.1*	*0.11*	*4,823*			
	476,806				391,188	0.59	19,233	20,127

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

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

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☐ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

List DMAs here.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P[(2)]
☐ Commercial/Industrial Development	P[(3)]	P	P[(1)]	P[(1)]	P[(5)]	P[(1)]	P	P
☐ Automotive Repair Shops	N	P	N	N	P[(4, 5)]	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P[(6)]	P	P[(1)]	P[(1)]	P[(4)]	P[(1)]	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

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

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

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	N/A
Total Credit Percentage[1]	

[1]*Cannot Exceed 50%*

[2]*Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor		*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]				
N/A						*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

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

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	N/A	N/A	N/A
Volume (Cubic Feet)	N/A	N/A	N/A

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

The site is located within the HCOC exemption area as presented in the HCOC Map, part of the WAP document, approved April 20, 2017. Therefore, HCOC mitigation is not required.

However, due to prevailing runoff increase requirements set forth by Riverside County Flood Control & Water Conservation District, the proposed BMP has been designed with flow controls to mimic pre-development conditions for the 2-year, 5-year, and 10-year storms at their 24-hour, 6-hour, 3-hour, and 1-hour storm durations. Therefore, de facto HCOC mitigation has been provided. Please refer to the site-specific drainage study for hydrograph information.

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	1. Maintain and periodically repaint or replace inlet markings. 2. Provide stormwater pollution prevention information to new site owners, lessees, or operators. 3. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbook. 4. Include the following in lease agreements: "Tenant shall now allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drain."
Landscape/outdoor pesticide use	1. Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. 2. Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. 3. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. 4. Consider using pest-resistant plants, especially adjacent to hardscape. 5. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	1. Maintain landscaping using minimum or no pesticides. 2. Prevent erosion of slopes by planting fast-growing, dense ground covering plants. 3. Plant native vegetation to reduce the amount of water, fertilizers, and pesticides applied to the landscape. 4. Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers. 5. Do not rake or blow leaves, clippings, or pruning waste into the street, gutter, or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program. 6. Provide IPM information to new owners, lessees and operators.

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Refuse areas	1. Site design features dumpster enclosures. 2. Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	1. Periodic inspections for leaky, overfilled, uncovered, or other problematic conditions will occur. Corrective action will be made upon detection, as circumstances permit. 2. Dumping of liquid or hazardous wastes will be prohibited. 3. Spill control materials will be available on-site.
Industrial processes	All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.	1. CASQA Stormwater Quality Handbook for Industrial & Commercial Facilities Best Management Practices will be referenced, as appropriate. 2. RC Flood's Industrial & Commercial Facilities BMP fact sheet will be referenced, as appropriate.
Loading Docks	N/A	Move loaded and unloaded items indoors as soon as possible.
Miscellaneous Drain or Wash Water or Other Sources • Roofing, gutters, and trim	Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	N/A
Plazas, Sidewalks, and Parking Lots	N/A	Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
BMP D/1	Biofiltration Basin, 2:1 side slopes as follows: • Comprised of three separate basins, hydraulically connected via surface drain and underdrain • 3-inch diameter orifice in riser structure located six inches above basin bottom • 24 inches of engineered soil media • 12 inches of washed aggregate • 6-inch diameter underdrain equipped with 3.25-inch diameter orifice plate for flow control	Sheets 2-3	33.824031° -117.246517°

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

Section I: Operation, Maintenance and Funding

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

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

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

Maintenance Mechanism: Property Owner

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

☐ Y ☒ N

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

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Placentia Logistics Center: Location Map
Placentia & Harvill Avenue
Perris, CA 92570

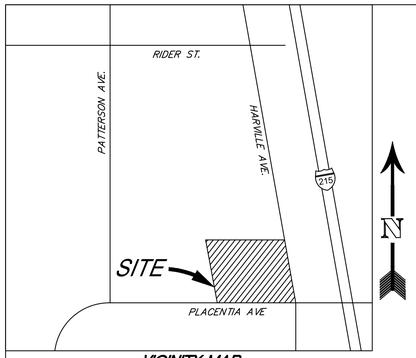
NOT TO SCALE

Feet
0 250 500 1,000

TRWE

Exhibit Date: 12/18/2019
X:\Projects2\156 (Steve Sommers)\29 (Placentia Logistics Center)\05 GIS\Spatial\156-29 - Location Map.mxd

POST-CONSTRUCTION BMP SITE PLAN
PLACENTIA LOGISTICS CENTER



VICINITY MAP
NOT TO SCALE

OWNER/APPLICANT

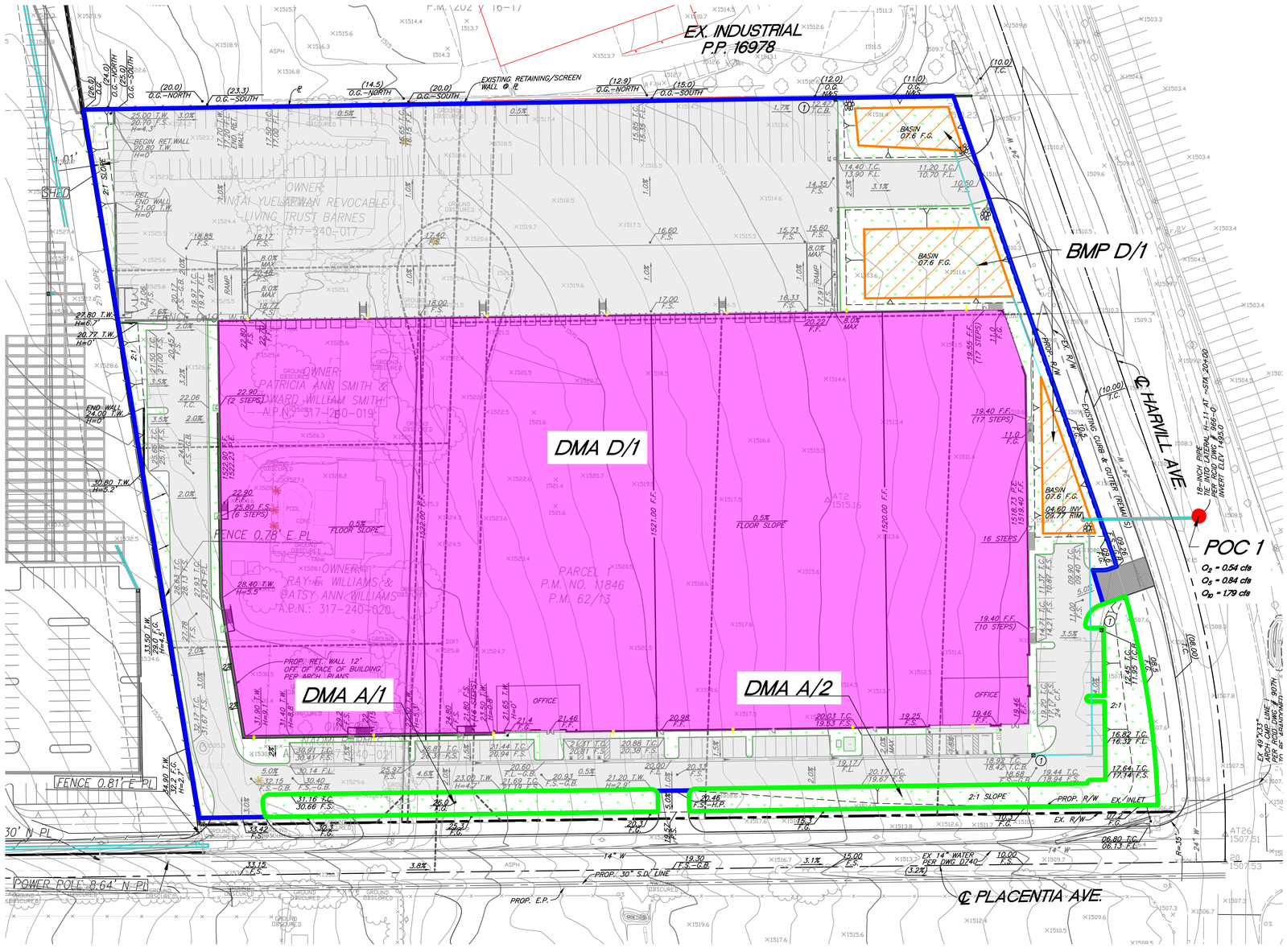
ORBIS REAL ESTATE PARTNERS
280 NEWPORT DRIVE, SUITE 240
NEWPORT BEACH, CA 92660
VOICE: (949) 330-7564

ENGINEER

TORY R. WALKER ENGINEERING, INC.
122 CIVIC CENTER DRIVE, STE. 206
VISTA, CA 92084
VOICE: (760) 414-9212
FAX: (760) 414-9277

LEGEND

- DRAINAGE MANAGEMENT AREA (DMA)
- SELF-TREATING DMA
- BMP FOOTPRINT
- PROPOSED STORM DRAIN
- CURB AND GUTTER
- RIBBON DRAIN
- 1280 EXISTING CONTOUR LINE
- SLOPE
- STORM DRAIN CATCH BASIN
- ROOF DOWNSPOUT
- DISCHARGE POINT (POINT OF COMPLIANCE, POC)
- LANDSCAPE/PERVIOUS AREA
- SELF-RETAINING LANDSCAPED AREA
- CONCRETE/IMPERVIOUS AREA
- ROOFS/IMPERVIOUS AREA



NOTES

1. NO OFFSITE RUN-ON HAS BEEN DETECTED FOR THE PROPOSED CONDITION
2. PROVIDED ATTENUATED PEAK FLOW RATES DERIVED FROM THE 24-HOUR STORM DURATION

PERMANENT SOURCE CONTROL BMPs

(1) MARK ALL INLETS WITH THE WORDS "ONLY RAIN DOWN THE STORM DRAIN" OR SIMILAR
(2) ENCLOSED REFUSE AREA WITH SIGNS POSTED NEARBY STATING "DO NOT DUMP HAZARDOUS MATERIALS HERE" OR SIMILAR

- LANDSCAPING DESIGNED TO MINIMIZE IRRIGATION AND RUNOFF, TO PROMOTE SURFACE INFILTRATION WHERE APPROPRIATE, AND TO MINIMIZE THE USE OF FERTILIZERS AND PESTICIDES THAT CAN CONTRIBUTE TO STORMWATER POLLUTION.

OPERATIONAL SOURCE CONTROL BMPs

- MAINTAIN LANDCAPING USING MINIMUM OR NO PESTICIDES
- PREVENT EROSION OF SLOPES BY PLANTING FAST-GROWING, DENSE GROUND COVERING PLANTS
- PLANT NATIVE VEGETATION TO REDUCE THE AMOUNT OF WATER, FERTILIZERS, AND PESTICIDES APPLIED TO THE LANDSCAPE
- DO NOT OVERWATER
- USE IRRIGATION PRACTICES SUCH AS DRIP IRRIGATION, SOAKER HOSES OR MICRO-SPRAY SYSTEMS
- PERIODICALLY INSPECT AND FIX LEAKS AND MISDIRECTED SPRINKLERS.
- DO NOT RAKE OR BLOW LEAVES, CLIPPINGS, OR PRUNING WASTE INTO THE STREET, GUTTER OR STORM DRAIN
- DISPOSE OF GREEN WASTE BY COMPOSTING, HAULING IT TO A PERMITTED LANDFILL, OR RECYCLING IT THROUGH YOUR CITY'S PROGRAM
- PROVIDE IPM INFORMATION TO NEW OWNERS, LESSEES AND OPERATORS
- PERIODIC INSPECTIONS FOR LEAKY, OVERFILLED, UNCOVERED, OR OTHER PROBLEMATIC CONDITIONS WILL OCCUR
- CORRECTIVE ACTION WILL BE MADE UPON DETECTION, AS CIRCUMSTANCES PERMIT
- DUMPING OF LIQUID OR HAZARDOUS WASTES WILL BE PROHIBITED
- SPILL CONTROL MATERIALS WILL BE AVAILABLE ON-SITE
- MOVE LOADED AND UNLOADED ITEMS INDOORS AS SOON AS POSSIBLE
- SWEEP PLAZAS, SIDEWALKS, AND PARKING LOTS REGULARLY TO PREVENT ACCUMULATION OF LITTER AND DEBRIS
- COLLECT DEBRIS FROM PRESSURE WASHING TO PREVENT ENTRY INTO THE STORM DRAIN SYSTEM
- COLLECT WASHWATER CONTAINING ANY CLEANING AGENT OR DEGREASER AND DISCHARGE TO THE SANITARY SEWER (NOT TO THE STORM DRAIN)

LID CONSTRAINTS

1. INSUFFICIENT DEMAND FOR HARVEST AND USE

LID OPPORTUNITIES

1. EXISTING PERVIOUS AREA THROUGHOUT SITE
2. LANDSCAPED AREAS DESIGNED TO BE SELF-RETAINING

DMA ID	BMP ID	DCV (cf)	V_{BMP} (cf)
D/1	D/1	19,233	20,127

0 25 50 100 150 200
SCALE: 1"=50'

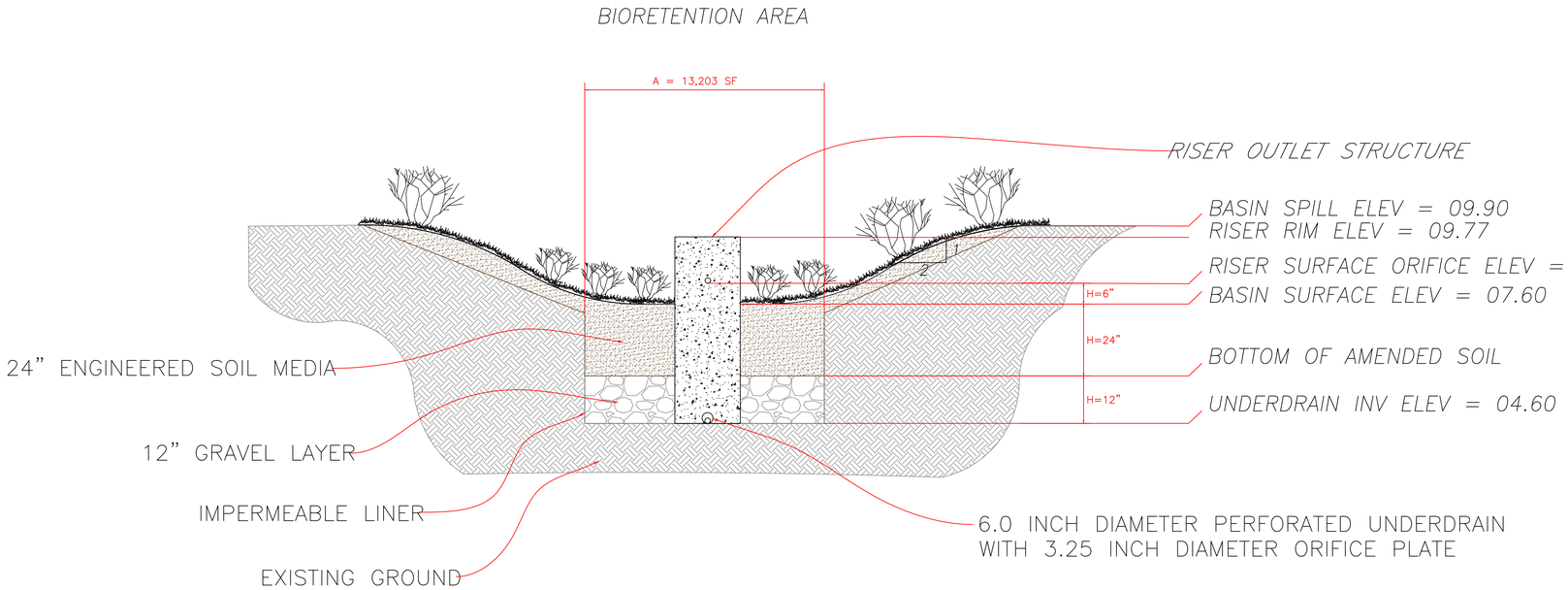
COUNTY OF RIVERSIDE

POST-CONSTRUCTION BMP SITE PLAN
PLACENTIA LOGISTICS CENTER

1 OF 2 SHEETS

POST-CONSTRUCTION BMP SECTION DETAIL
PLACENTIA LOGISTICS CENTER

BMP D/1



BASIN CROSS SECTION

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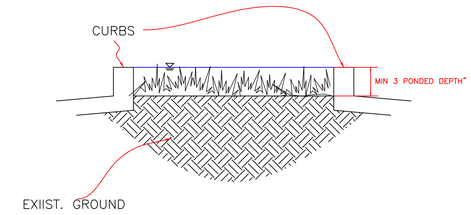
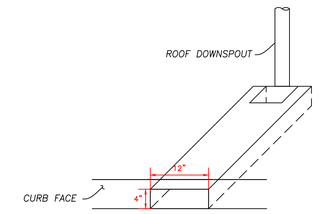


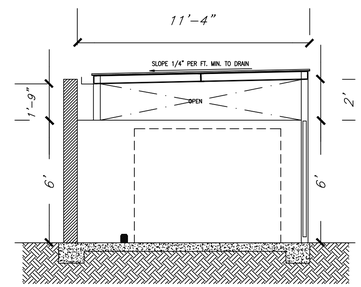
LANDSCAPED ISLAND DETAIL (TYPICAL)

NOT TO SCALE



ROOF DRAIN CURB OUTLET STRUCTURE DETAIL

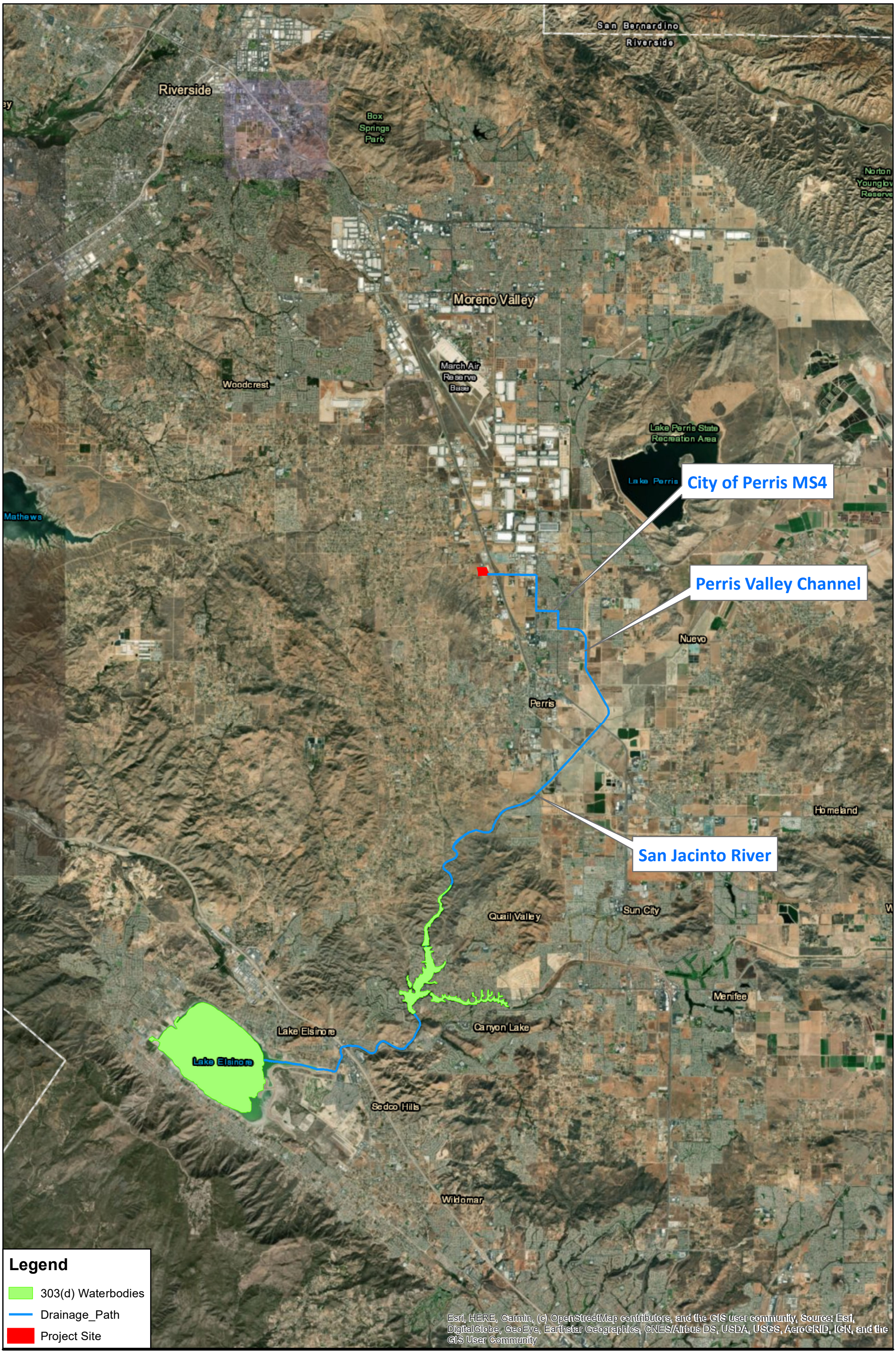
NOT TO SCALE



TRASH ENCLOSURE STRUCTURE DETAIL

NOT TO SCALE

COUNTY OF RIVERSIDE	
POST-CONSTRUCTION BMP SECTION DETAIL PLACENTIA LOGISTICS CENTER	2 OF 2 SHEETS



Placentia Logistics Center: Receiving Waters Map
Placentia & Harvill Avenue
Perris, CA 92570

Exhibit Date: 12/18/2019
X:\Projects2\156 (Steve Sommers)\29 (Placentia Logistics Center)\05 GIS\Map Docs\156-29 - Receiving Waters.mxd

NOT TO SCALE

Feet
0 5,000 10,000 20,000

Data Sources:
Esri World Imagery: October 2018
Drainage Path: USGS NHD
303(d): State Water Resources Control Board

TRWE

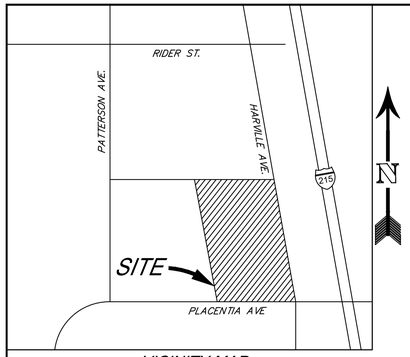
Appendix 2: Construction Plans

Grading and Drainage Plans

PLACENTIA LOGISTICS

PRELIMINARY GRADING PLAN - PPTXXXX

COUNTY OF RIVERSIDE, CA.
DECEMBER 2019



VICINITY MAP
NOT TO SCALE

OWNER/APPLICANT

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RIVERSIDE, CA. 92507
VOICE: (951) 683-3691
FAX: (951) 788-2314
EMAIL: STEFFEN@SDHINC.NET

ARCHITECT

HPA ARCHITECTS
18831 BARDEEN AVE, STE. 100
IRVINE, CA 92612
VOICE: (949) 863-1770

ASSESSOR'S PARCEL NO.

317-240-017
317-240-019
317-240-020
317-240-021
317-240-028
317-240-029
317-240-039
317-240-041

EARTHWORK

CUT: 35,000 C.Y.
FILL: 35,000 C.Y.

UTILITY PURVEYORS

WATER.....EASTERN MUNICIPAL WATER DISTRICT
GAS.....SO CAL GAS
ELECTRICAL.....SCE
TELEPHONE.....VERIZON
SEWER.....EASTERN MUNICIPAL WATER DISTRICT

WATER QUALITY NOTE

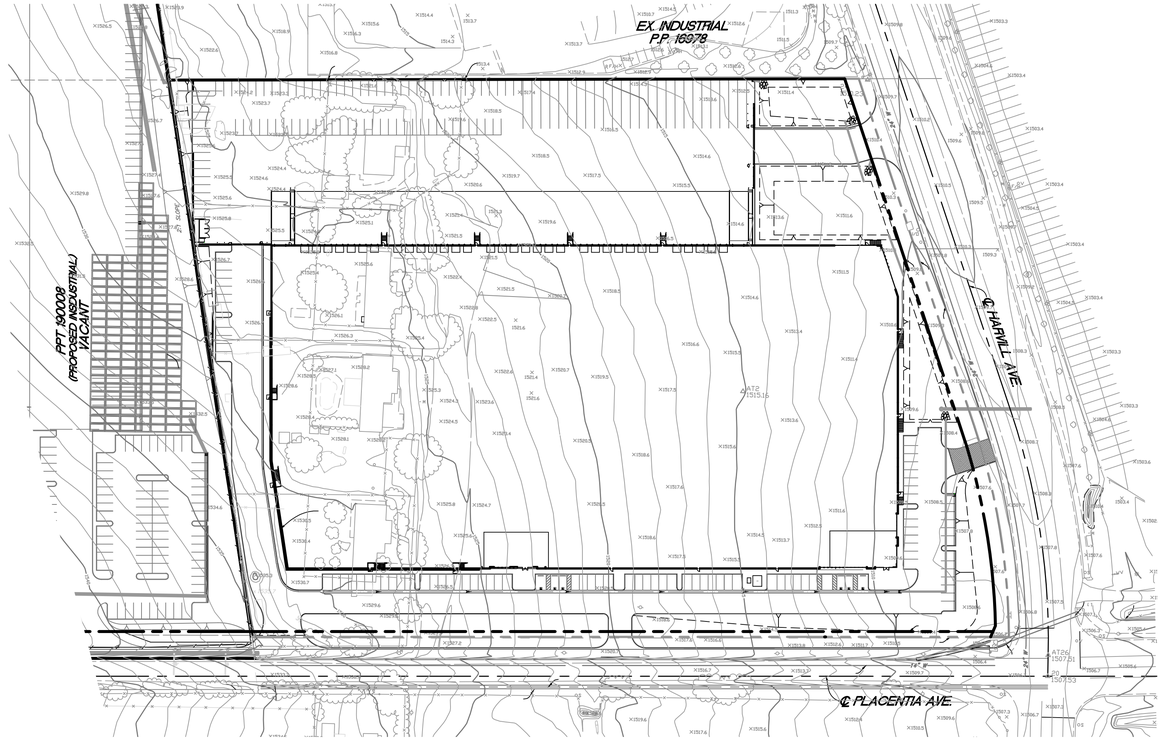
WATER QUALITY DESIGN STORM TO BE TREATED BY INFILTRATION BASIN LOCATED AT NORTH END OF SITE (SHOWN HEREON), AND 100 YEAR STORM FLOW TO BE MITIGATED OR CONVEYED TO MASTER PLAN STORM DRAIN

PROJECT DATA

SITE AREA:	513,152 S.F. (11.78 AC.)
NET AREA:	498,370 S.F. (11.44 AC.)
BUILDING AREA:	
OFFICE:	14,000 S.F.
WAREHOUSE:	245,127 S.F.
TOTAL:	259,127 S.F.

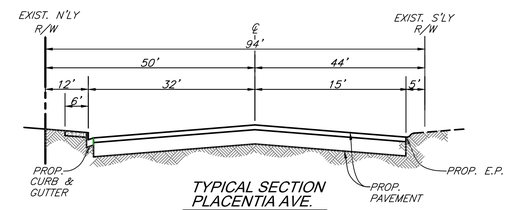
PARKING INFO

REQUIRED PARKING	
OFFICE AREA:	56 STALLS
WAREHOUSE AREA:	123 STALLS
TOTAL STALLS:	179 STALLS
PROVIDED PARKING:	179 STALLS

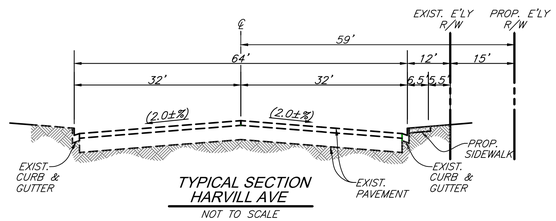


CONSTRUCTION NOTES

1. CONSTRUCT P.C.C./A.C. DRIVE ISLE, PARKING AREAS, AND TRUCK COURT
2. CONSTRUCT 6" CURB ONLY (ONSITE)
3. CONSTRUCT 6" CURB AND GUTTER (ONSITE)
4. CONSTRUCT P.C.C. SIDEWALK (FINISHED SURFACE MATERIALS PER ARCH. PLANS)
5. CONSTRUCT A.D.A. COMPLIANT HANDICAP RAMP
6. CONSTRUCT 3' WIDE CONC. RIBBON GUTTER
7. CONSTRUCT COMMERCIAL DRIVEWAY APPROACH
8. CONSTRUCT 8" CURB & GUTTER PER COUNTY STANDARDS
9. CONSTRUCT XX" A.C. OVER XX A.B. STREET SECTION PER COUNTY STANDARDS
10. CONSTRUCT RETAINING WALL
11. CONSTRUCT PVC/HDPE DRAIN PIPE (ONSITE)
12. CONSTRUCT 24" CATCH BASIN (BROOKS 2424CB OR APPROVED EQUAL)
13. REMOVE/ RELOCATE EXISTING POLE



TYPICAL SECTION
PLACENTIA AVE.



TYPICAL SECTION
HARVILL AVE
NOT TO SCALE

SHEET INDEX

SHEET 1: TITLE SHEET/ INDEX MAP
SHEET 2: PRELIMINARY GRADING PLAN
SHEET 3: CROSS SECTIONS/ DETAILS

GEOLOGIC CONDITIONS

SITE IS NOT WITHIN A GEOLOGIC HAZARD AREA, SPECIAL STUDIES ZONE, OR SUBJECT TO LIQUEFACTION

COMMUNITY FACILITIES DISTRICT

SITE IS NOT WITHIN A COMMUNITY FACILITIES DISTRICT

HAZARDOUS MATERIALS

THERE IS NO EVIDENCE OF STORED HAZARDOUS MATERIAL ABOVE OR BELOW GROUND.

FEMA NOTE

ZONE "X" DENOTES AREAS OUTSIDE THE 1-PERCENT ANNUAL CHANCE FLOOD PLAIN, AREAS OF 1% ANNUAL CHANCE SHEET FLOW FLOODING WHERE AVERAGE DEPTHS ARE LESS THAN 1 FOOT, AREAS OF 1% ANNUAL CHANCE STREAM FLOODING WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1 SQUARE MILE, OR AREAS PROTECTED FROM THE 1% ANNUAL CHANCE FLOOD BY LEVEES.

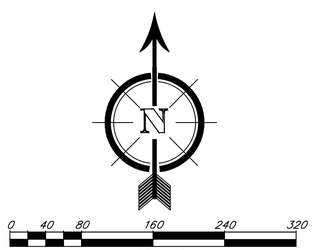
ZONING & LAND USE

EXISTING ZONING: A-1-1, R-R-1, M-SC
EXISTING LAND USE: VACANT/ RESIDENTIAL
PROPOSED ZONING: M-SC
PROPOSED LAND USE: INDUSTRIAL

SURROUNDING ZONING & LAND USE

NORTH: M-SC, COMMERCIAL
EAST: M-SC, INDUSTRIAL
SOUTH: I-P, M-SC, VACANT/ RESIDENTIAL
WEST: I-P, M-SC, VACANT/ PROP. INDUSTRIAL

LEGAL DESCRIPTION



INDEX MAP
SCALE 1"=80'

APPROVED AS TO CONFORMANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES:

RECMD | PLAN CHECK OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED

DIGALERT
DIAL BEFORE YOU DIG
TOLL FREE 1-800-227-2600
TWO WORKING DAYS BEFORE YOU DIG
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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

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

MARK	BY	DATE
ENGINEER		

REVISIONS

APPR.	DATE
COUNTY	

SEAL - ENGINEER

REGISTERED PROFESSIONAL ENGINEER
DANE A. SOMMERS
No. 90433
Exp. 9-30-21
CIVIL
STATE OF CALIFORNIA

ENGINEERING COMPANY

SDH & ASSOCIATES INCORPORATED

SDH AND ASSOCIATES INC.
14060 Meridian Parkway 102
Riverside, California 92518
TEL: (951) 683-3691 FAX (951) 788-2314

PREPARED BY: DANE SOMMERS
R.C.E. NO. 90433
DATE 9-30-21

BENCHMARK:

ELEVATIONS SHOWN HEREON ARE BASED UPON THE N.G.S. BENCHMARK DUS442, DESIGNATION "435". THE BENCHMARK IS LOCATED 1300' WEST OF THE ATSF RAILROAD ALONG RIDER STREET, ON TOP OF THE NORTH CURB FACE OF RIDER STREET, 28' NORTH OF RIDER STREET, 6' SOUTH OF GTE TELEPHONE BOX (DAMAGED). A STANDARD 3 1/4" ALUMINUM DISK SET FLUSH IN TOP OF CURB. ELEVATION 1515.12 FEET (NAVD 88).

SCALE: H: 1"=80' V: N/A

PLACENTIA LOGISTICS CENTER
PRELIMINARY GRADING PLAN
TITLE SHEET

SHEET NO. 1
1 OF 3 SHTS

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

CONSTRUCTION NOTES

1. CONSTRUCT P.C.C./A.C. DRIVE ISLE, PARKING AREAS, AND TRUCK COURT
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RECMD	PLAN CHECK OVERSIGHT ENGINEER	REGISTRATION NUMBER	DATE SIGNED

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			COUNTY	

SEAL–ENGINEER
REGISTERED PROFESSIONAL ENGINEER — DANE A. SOMMERS — No. 90433 — Exp. 9-30-21 — CIVIL — STATE OF CALIFORNIA

ENGINEERING COMPANY
SDH & ASSOCIATES INCORPORATED
SDH AND ASSOCIATES INC.
14060 Meridian Parkway 102
Riverside, California 92518
TEL: (951) 683-3691 FAX (951) 788-2314

PREPARED BY: DANE SOMMERS
R.C.E. NO. 90433
DATE 9-30-21

BENCHMARK:
ELEVATIONS SHOWN HEREON ARE BASED UPON THE N.G.S. BENCHMARK DX5442, DESIGNATION "435". THE BENCHMARK IS LOCATED 1300' WEST OF THE ATSF RAILROAD ALONG RIDER STREET, ON TOP OF THE NORTH CURB FACE OF RIDER STREET. 28' NORTH OF RIDER STREET, 6' SOUTH OF GTE TELEPHONE BOX (DAMAGED). A STANDARD 3 1/4" ALUMINUM DISK SET FLUSH IN TOP OF CURB. ELEVATION 1515.12 FEET (NAVD 88).

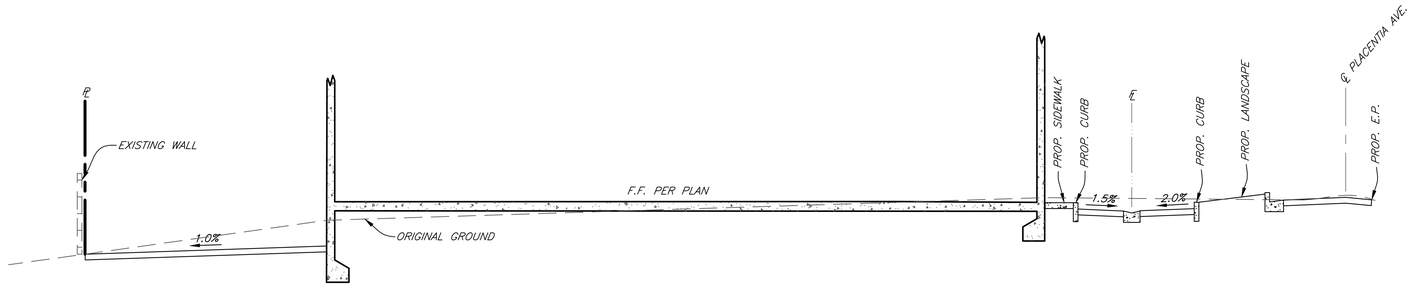
SCALE: H: 1"=40' V:

PLACENTIA LOGISTICS CENTER
PRELIMINARY GRADING PLAN

SHEET NO. 2

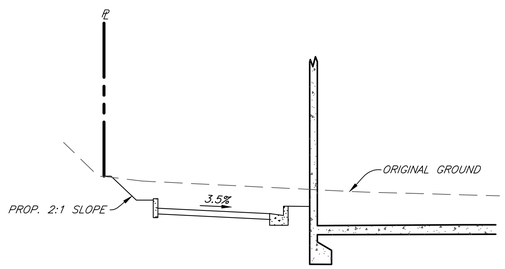
2 OF 3 SHTS

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



SECTION A-A

NOT TO SCALE



SECTION B-B

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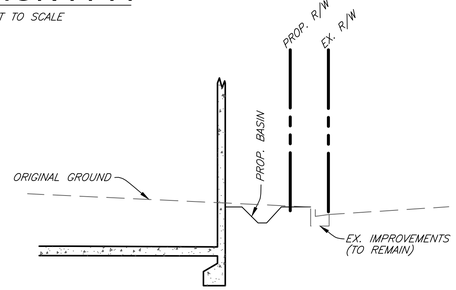

SECTION C-C

NOT TO SCALE

RECMD | PLAN CHECK OVERSIGHT ENGINEER: | REGISTRATION NUMBER | DATE SIGNED

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MARK	BY	DATE
ENGINEER		

REVISIONS

APPR.	DATE
COUNTY	

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TEL: (951) 683-3691 FAX (951) 788-2314

PREPARED BY: DANE SOMMERS
R.C.E. NO. 90433
DATE 9-30-21

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PLACENTIA LOGISTICS CENTER
PRELIMINARY GRADING PLAN
SECTIONS

SHEET NO. 3
3 OF x SHTS

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

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

geomat **GeoMat Testing Laboratories, Inc.**

Soil Engineering, Environmental Engineering, Materials Testing, Geology

September 14, 2019

Project No. 19202-01

TO: SDH and Associates
14060 Meridian Parkway
Riverside, California 92518

SUBJECT: Deep Soil Infiltration Testing Report, APN 317-240-017, 019, 020, 021, 028, 029, 039, 040, Northwest Corner of Harvill and Placentia Avenue, Riverside County, California

This report provides a summary of the geotechnical engineering services conducted to support evaluation of the feasibility of infiltration at approximate depth of 8 feet below existing ground surface, at the subject site. The purpose of our services was to complete four insitu infiltration tests utilizing the percolation testing procedure in boreholes to evaluate the feasibility of infiltration for disposal of stormwater runoff following the falling head method.

If you should have any questions regarding this report, please do not hesitate to call our office. We appreciate this opportunity to be of service.

Submitted for GeoMat Testing Laboratories, Inc.

Haytham Nabilsi, GE 2375
Project Engineer, Exp. 12/31/2020

Art Martinez
Staff Engineer

LICENSED PROFESSIONAL ENGINEER
HAYTHAM NABILSI
GE 2375
GEOTECHNICAL
STATE OF CALIFORNIA

Distribution: (3) Addressee

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1 INTRODUCTION 1
1.1 Scope of Work 1
1.2 Existing Site Conditions 1
1.3 Proposed Development 1
2 SUMMARY OF GEOTECHNICAL CONDITIONS 2
2.1 Exploratory Boreholes 2
2.2 Subsurface Findings 2
2.3 Groundwater 2
2.4 Laboratory Testing 2
3 INFILTRATION TESTING 3
3.1 Infiltration Test Results 3
3.2 Factors of Safety 3
4 CONCLUSIONS 4
5 RECOMMENDATIONS 5
5.1 Location of Infiltration Systems 5
6 LIMITATION OF INFILTRATION SYSTEMS 6
7 USE OF THIS REPORT 6

ATTACHMENTS:

Figure 1 Site Location Map

Plate 1 Exploratory Boring/Infiltration Test Location Map

APPENDIX:

Appendix A References
Appendix B Geotechnical Boring Log
Appendix C Laboratory Test Results
Appendix D Infiltration Test Data Sheets

1 INTRODUCTION

1.1 Scope of Work

GeoMat Testing Laboratories, Inc. was retained to provide geotechnical engineering services to support the project. Our scope of work consisted of the following specific tasks:

1) Drill 4 infiltration test boreholes up to a maximum depth of 10 feet below ground surface.
2) Drill one exploratory borehole to 20 feet below ground surface.
3) Complete four infiltration tests utilizing the deep percolation testing per Riverside County Guidelines.
4) Complete laboratory gradation analysis and testing of selected soil samples.
5) Complete data analysis.
6) Preparation of this report summarizing our findings, conclusions, and recommendations. The report includes:
   - Site plan showing the location of exploratory boreholes and infiltration tests.
   - Summary of site conditions observed at the testing locations.
   - Results of the laboratory testing.
   - Discussion of the results of insitu infiltration testing.
   - A discussion of the surficial soil and anticipated groundwater conditions at the site.
   - Evaluation of the feasibility of infiltration.
   - Recommendations for infiltration facility.

1.2 Existing Site Conditions

The subject site is located on the northwest corner of Harvill and Placentia Avenue, in the Peris area of Riverside County, California. The site is bordered from the west by vacant land, the north by industrial buildings, the east by Harvill Avenue, and the south by Placentia Avenue

Access onsite is from Placentia and Harvill Avenue. Placentia Avenue is paved but no curb/gutter improvements. Harvell Avenue is paved and provided with AC curb. The geographical relationship of the site and surrounding vicinity is shown on the Site Location Map, Figure 1.

The site is composed of eight parcels. The site is generally rectangular in shape, measuring approximately 11.8 acres. Four single family homes occupy the west side of the property. Access to these homes is from a dirt road named Sharon Ann lane located east of the onsite residential lots. Power poles and one file hydrant are located along Placentia Avenue and one power pole onsite. Underground drainage structure is located at the intersection of Placentia and Harvill Avenue. Verizon marker for underground line is located on the south side of the property.

1.3 Proposed Development

Based on the provided Conceptual Site Plan (scheme 1) by HPA Architecture dated June 7, 2019, the site is proposed for a large industrial building.

We understand that the site proposed for the infiltration system planned in the proposed parking area located along Placentia Avenue. This site is currently an undeveloped with the exception of the four homes. Refer to Plate 1 for the location of soil infiltration test and exploratory borehole location.

We also understand that the system may consist of chambers or corrugated metal pipe (CMP) to be located about 8 feet below ground surface. No other details were provided at the time this report was completed.

2 SUMMARY OF GEOTECHNICAL CONDITIONS

2.1 Exploratory Boreholes

The subsurface exploration conducted for this project consisted of one exploratory borehole drilled to 20 feet below ground surface on September 13, 2019 utilizing a D50 mobile drill rig equipped with 8-inch diameter hollow stem augers. Refer to Plate 1 for borehole locations. The borehole was logged during drilling by a geotechnical engineer of this firm and is presented in Appendix B of this report.

2.2 Subsurface Findings

The subsurface material encountered at the boring locations is briefly described below. Detailed descriptions are provided in the Borehole Logs (Appendix B).

Based on our exploratory boring, the site is mapped as older alluvium. The alluvium drills, predominantly, like silty fine sand (USCS “SM”).

2.3 Groundwater

Groundwater study is not within the scope of this work. Groundwater was not encountered in our exploratory borings. Depth to groundwater is not expected to impact the site development.

Please note that the potential for rain or irrigation water locally seeping through from elevated areas and showing up near grades cannot be precluded. Our experience indicates that surface or near-surface groundwater conditions can develop in areas where groundwater conditions did not exist prior to site development, especially in areas where a substantial increase in surface water infiltration results from landscape irrigation. Fluctuations in perched water elevations are likely to occur in the future due to variations in precipitation, temperature, consumptive uses, and other factors including mounding of perched water over bedrock. Mitigation for nuisance shallow seeps moving from elevated lower areas will be needed if encountered. These mitigations may include subdrains, horizontal drains, toe drains, french drains, heel drains or other devices.

2.4 Laboratory Testing

Sieve analysis was performed on select soil samples obtained from the test holes for the purpose of classification. Test results are shown in Appendix C.

3 INFILTRATION TESTING

Infiltration tests were conducted between 7.5 and 10 feet below existing ground surface. The infiltration testing was performed in general accordance with the guidelines published in the Riverside County Environmental Health Department procedures.

A Diedrich D-50 drill rig equipped with 8-inch hollow stem augers was used to drill the test holes on September 13, 2019. A 3-inch diameter perforated PVC casing wrapped with filter fabric was placed in the boreholes. Gravel was also placed in the bottom of the boreholes.

The boreholes were presoaked the day before testing. Presoaking was conducted using five-gallon water bottles.

None of the test boreholes met the sandy soil criteria. Testing for these boreholes was conducted from a fixed reference point for six hours with readings taken every 30 minutes. The measurements were taken by filling up the test hole with water and allowing the water to percolate. The drop of water level was recorded. A wrist watch was used to record the time measurements.

3.1 Infiltration Test Results

The following summarizes the result of the infiltration feasibility study.

Test No.	Test Depth Below Ground Surface	Field Percolation Rate (in/hr)	Adjusted Infiltration Rate (in/hr)
P-1	108”	5.25	0.51
P-2	114”	4.50	0.43
P-3	90”	9.50	0.97
P-4	108”	2.00	0.19

The percolation rate is the rate in horizontal and vertical direction. This rate is adjusted using Perchet Method for horizontal water infiltration. Refer to Appendix D for test results. A safety factor should be applied to this rate by the design engineer. Safety factor discussion is in the following paragraph.

3.2 Factors of Safety

Long-term infiltration rates may be reduced significantly by factors such as soil variability and inaccuracy in the infiltration rate measurement. The correction factor for site variability is between 3 and 10. Safety factors for operating the system, maintenance, siltation, biofouling, etc. should also be considered by the design civil engineer at his discretion. Minimum safety factor required by the County of Riverside for tests conducted when deep exploratory borehole has been drilled at the site is 3.

4 CONCLUSIONS

- In our opinion, low to moderate water infiltration is expected to occur at the tested depth and locations onsite.

- The test results may be utilized when the bottom of the infiltration system will be located within the native alluvial soil observed/tested. Should this system be located in the undocumented fill or a different soil type, the infiltration characteristics will be different than those observed during the infiltration testing. The infiltration rate recommended above is based on the assumption that only clean water will be introduced to the subsurface profile. Any fines, debris, or organic materials could significantly impact the infiltration rate.

- Based on the exploratory borehole, the soil in the upper 15 feet is relatively homogeneous.

- Filter fabric should be used whenever aggregates are placed against native soils. Only washed aggregates are allowed.

- Infiltration water should not be allowed to saturate pavement and concrete structures subgrade soils. Infiltration should not be allowed in fill areas.

- Please note that soils in infiltration areas should not be subject to compaction during construction.

- The proposed system by the civil engineer should be constructed and maintained in accordance with manufacturer guidelines.

- Local groundwater elevations were researched using the State Department of Water Resources, USGS Groundwater Watch, the USGS National Water Information System, and Steven Mains Well Measuring Program but no information was available for the site or adjacent properties.

- From the safety Element of October 25, 2005: “The Master Environmental Assessment, completed in 1989 for the City of Perris General Plan program identifies a suspected fault that is thought to exist half-mile east of I-215. Evidence of this suspected fault is based on groundwater anomalies noted in a USGS report compiled in 1973. Based on that data, the fault was identified by Philip Moyle of the USGS in 1974 as potentially active, but no evidence of activity or historic activity along the suspected fault has been recorded, and there have been no site specific geologic investigations to determine whether a fault exists in that area. County of Riverside General Plan Safety Element (2000) does not identify this suspected fault.” However, based on Envicom Report (old, out of print), there is groundwater barrier on the east side of I-215; where shallower groundwater is recorded on the east side of the freeway. No groundwater was encountered in the exploratory borehole drilled to 20 feet below ground surface.

5 RECOMMENDATIONS

An important consideration for infiltration facilities is that, during construction, great care must be taken not to reduce the infiltrative capacity of the soil in the facility through compaction by heavy equipment or by using the infiltration area as a sediment trap.

Infiltration facilities should be constructed late in the site development after soils (that might erode and clog the units) have been stabilized or should be protected (by flagging) until site work is completed.

Infiltration facilities should be sited with the following guidelines:

INFILTRATION FACILITY MINIMUM SETBACKS	
Setback From	Minimum Distance
Property Lines and Public Right of Way	5 feet
Structures	15 feet or within a 1:1 plane drawn up from the bottom of foundation
Slopes	H/2, 5 feet minimum (H: is slope height)
Private drinking water wells	100 feet

Ferrous metal pipes should be protected from potential corrosion by bituminous coating, etc. We recommend that all utility pipes be nonmetallic and/or corrosion resistant. Recommendations should be verified by soluble sulfate and corrosion testing of soil samples obtained from specific locations during construction.

If applicable, 4- to 6-inch diameter observation well(s), with locking cap, extending vertically into the system's bottom is suggested as an observation point. Observation well(s) should be checked regularly and after large storm event. Once performance stabilizes, frequency of monitoring may be reduced.

GeoMat Testing Laboratories should observe the subgrade of excavation. Additional laboratory testing including but not limited to grain size analysis, sand equivalent, sulfate content, etc. should be conducted during construction.

5.1 Location of Infiltration Systems

The use of on-site storm water infiltration systems carries a risk of creating adverse geotechnical conditions. Increasing the moisture content of the soil can cause the soil to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. Overlying structures and pavements in the infiltration areas could potentially be damaged due to saturation of subgrade soils. It should also be noted that utility trenches which happen to collect storm water can also serve as conduits to transmit storm water toward the structure, depending on the slope of the utility trench. Therefore, consideration should also be given to the proposed locations of underground utilities which may pass near the proposed infiltration systems.

6 LIMITATION OF INFILTRATION SYSTEMS

This report has been prepared as an instrument of service for use by the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, structural engineer, and/or civil engineer.

The reproduction and distribution of this report must be authorized by the client. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between trench locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

7 USE OF THIS REPORT

This report was prepared for the exclusive use of the owner and design team for specific application to the proposed site. The use by others, or for the purposes other than intended, is at the user's sole risk.

The findings, conclusions, and recommendations presented herein are based on our understanding of the project and on subsurface conditions observed during our site work. Within the limitations of scope, schedule, and budget, the conclusions and recommendations presented in this report were prepared in accordance with generally accepted geotechnical engineering principles and practices in the area at the time the report was prepared. We make no other warranty either expressed or implied.

We appreciate this opportunity to provide geotechnical services on this project and look forward to assisting the Project Team as the design progresses. If you have any questions or comments regarding the information contained in this report, or if we may be of further services, please call us at (951) 688-5400.

TN

MN (11.6°E)

Scale 1 : 20,800

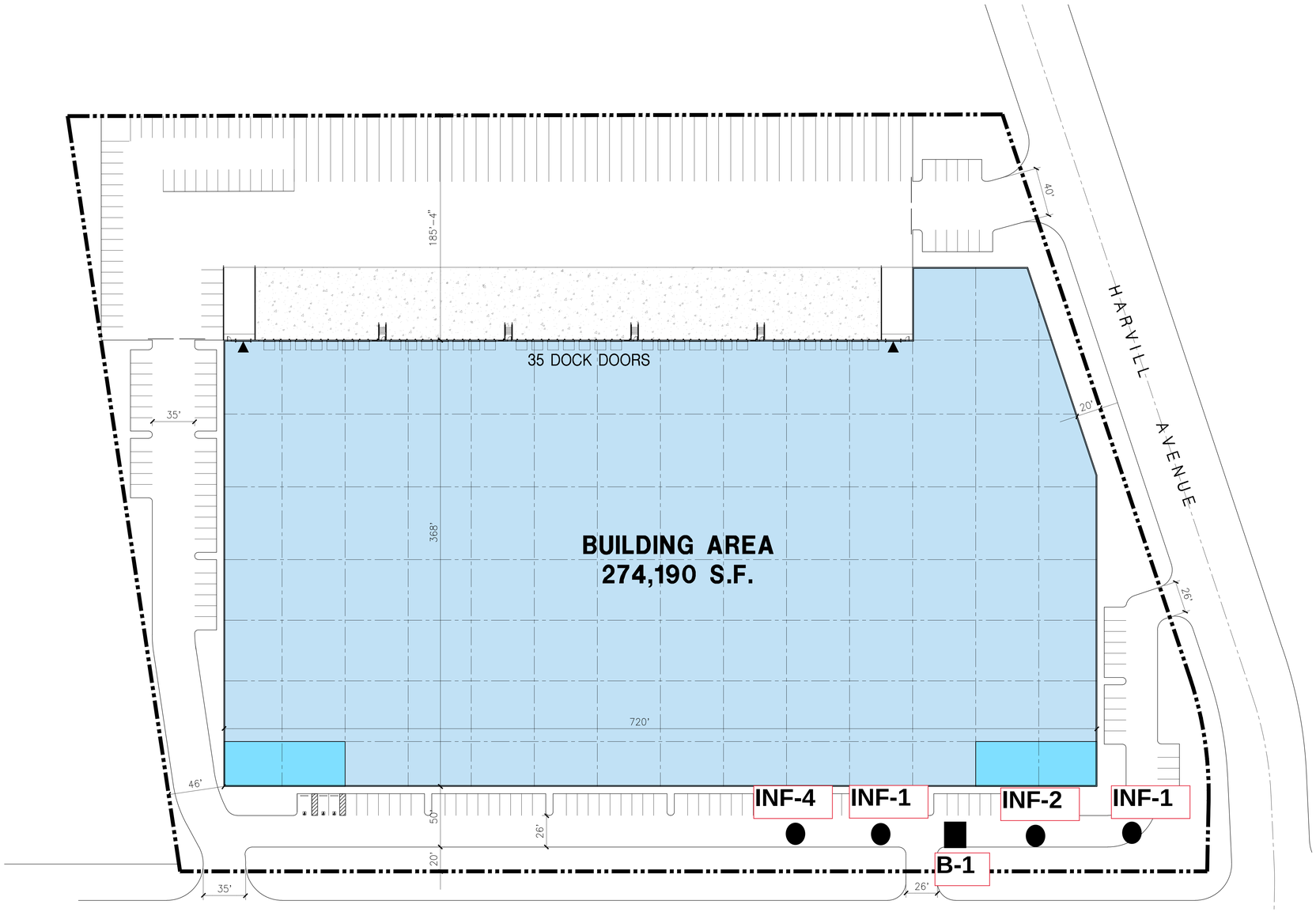
0 600 1200 1800 2400 3000 ft

0 180 360 540 720 900 m

1" = 1,733.3 ft

Data Zoom 13-3

CAUTION: IF THIS SHEET IS NOT 30"X42", IT IS A REDUCED PRINT



INF-4: Soil Infiltration Test
B-1: Exploratory Borehole

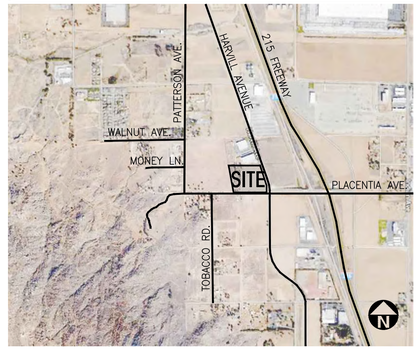
GeoMat Testing Laboratories, Inc.
Exploratory/Infiltration Test Location Map
Plate 1
Project No. 19202
9/14/2019

Note: This is a conceptual plan. It is based on preliminary information which is not fully verified and may be incomplete. It is meant as a comparative aid in examining alternate development strategies and any quantities indicated are subject to revision as more reliable information becomes available.

north

1" = 40'
0 40 80 120

Aerial Map



Tabulation

SITE AREA		
In s.f.		514,217 s.f.
In acres		11.80 ac
BUILDING AREA		
Office 1st Floor		5,000 s.f.
Office 2nd Floor		5,000 s.f.
Warehouse		264,190 s.f.
TOTAL		274,190 s.f.
COVERAGE		53.3%
AUTO PARKING REQUIRED		
Office:	1/250 s.f.	40 stalls
Whse:	1/2000 s.f.	133 stalls
TOTAL		173 stalls
AUTO PARKING PROVIDED		
Standard (9' x 18')		173 stalls
TRAILER PARKING PROVIDED		
Trailer (10' x 55')		51 stalls
ZONING ORDINANCE FOR CITY		
Zoning Designation - Light Industrial		
Mead Valley Plan		
MAXIMUM BUILDING HEIGHT ALLOWED		
Height - to be verified		
MAXIMUM FLOOR AREA RATIO		
FAR - 0.25-0.60		
LANDSCAPE REQUIREMENT		
Percentage - 10%		
LANDSCAPE PROVIDED		
In percentage -		10.2%
In s.f. -		52,689 s.f.
SETBACKS		
Building		Parking/Landscape
Front -20', 50' if abuts R zone		20'
Side/Rear - 0'		0

Legend

POTENTIAL OFFICE WITH 2ND FLOOR

WAREHOUSE

▼ DRIVE THRU DOOR

Conceptual Site Plan

Placentia Ave. & Patterson Ave

Riverside, CA

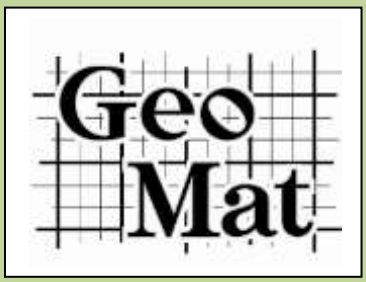
HPA architecture
18831 Bardeen Ave. - Ste. #100
Irvine, CA 92612
(949) 863-1770
www.hparchs.com

ORBIS REAL ESTATE PARTNERS

June 7, 2019 / Job #19309

Scheme 1

Appendix A



REFERENCES

HPA Architecture, Placentia Avenue and Harvill Avenue Conceptual Site Plan, June 7, 2019.

City of Perris General Plan, Safety Element, 10/25/2005.

State of California Department of Water Resources.

USGS, Groundwater Information System.

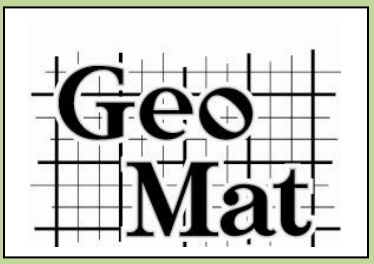
USGS, Groundwater Watch, California Active Water Level Network.

Riverside County, Stormwater Quality Best Management Practice, Design Handbook, July 21, 2006

Riverside County, Design Handbook for Low Impact Development Best Management Practices, September 2011.

Riverside County, Water Quality Management Plan for Urban Runoff, Santa Ana River Region, Santa Margarita River Region, September 17, 2004

Appendix B



SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Dual symbols are used to indicate gravels or sand with 5-12% fines and soils with fines classifying as CL-ML. Symbols separated by a slash

RELATIVE DENSITY		CONSISTENCY		UNCONFINED COMPRESSIVE
SANDS AND GRAVELS	SPT, N	SILTS AND CLAYS	SPT, N	STRENGTH, tsf
VERY LOOSE	0 - 4	VERY SOFT	0 - 2	0 - 0.25
LOOSE	4 -10	SOFT	2 - 4	0.25 - 0.50
MEDIUM DENSE	10 - 30	MEDIUM FIRM	4 - 8	0.50 - 1.00
DENSE	30 - 50	FIRM	8 - 15	1.00 - 2.00
VERY DENSE	50+	VERY FIRM	15 - 30	2.00 - 4.00
		HARD	30+	>4.00

CONSTITUENT DESCRIPTIONS	
DESCRIPTION	CRITERIA
TRACE	Less than 5%
FEW	5% to 10%
LITTLE	15% to 25%
SOME	30% to 45%
MOSTLY	50% to 100%

MOISTURE CONDITION	
DESCRIPTION	CRITERIA
DRY	Absence of moisture, dusty, dry to the touch
MOIST	Damp but no visible water
WET	Visible free water, usually soil is below water table

Sampler and Symbol Descriptions

B — Bulk "grab" sample taken from the auger cuttings

S — 1.4" I.D./2" O.D. Standard Penetration Test (ASTM D1586) sampler (SPT)

R — 2.5" I.D./3" O.D. Modified California Ring Sampler (Ring)

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KEY TO BORING LOGS

APPENDIX B

PROJECT:	NWC of Harvill and Placentia Ave, Riverside County, California	**Log of Boring**	**B-1**	PAGE 1 of 1
Project No.	**19202-01**	Boring Location:	**See Plate 1**	Logged by: **MN**
Drill Company/Rig	**D 50**	Date Started:	**9/13/2019**	Notes: No Groundwater
Drilling Method:	**GeoMat**	Date Finished:	**9/13/2019**	Total Depth 20 feet
Hammer Weight/Drop:	**140 lbs./30-inches**	Hammer Type:	**--**	LABORATORY TEST DATA
Sampler(s): California Ring (R), Standard Penetration (S), Auger Cuttings (C)				

DEPTH (FT)	SAMPLES Type	SAMPLES Sample	SAMPLES Blows / 6"	SAMPLES SPT "N" Value	Graphic Log	Classification (USCS)	MATERIAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Fines (%)	Liquid Limit	Plastic Limit	Plast. Index
0						SM	**SILTY FINE SAND** light tan brown, fine to medium graned sand, moist						
5													
10													
15							Becoming hard to drill						
20							TD= 20'	7.9		44.2			
25													
30													
35													
40													
45													
50													

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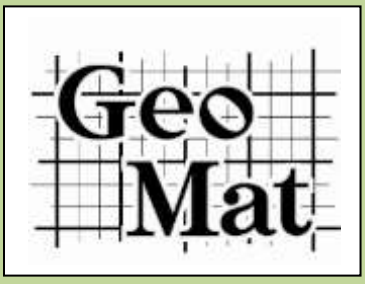
This log is part of the report prepared by GeoMat for this project and should be read together with the report. This summary applies only at the location of the exploration and at the time of drilling or excavation. Subsurface conditions may differ at other locations and may change at this location with tiume. Data presented are a simplification of actual conditions encountered.

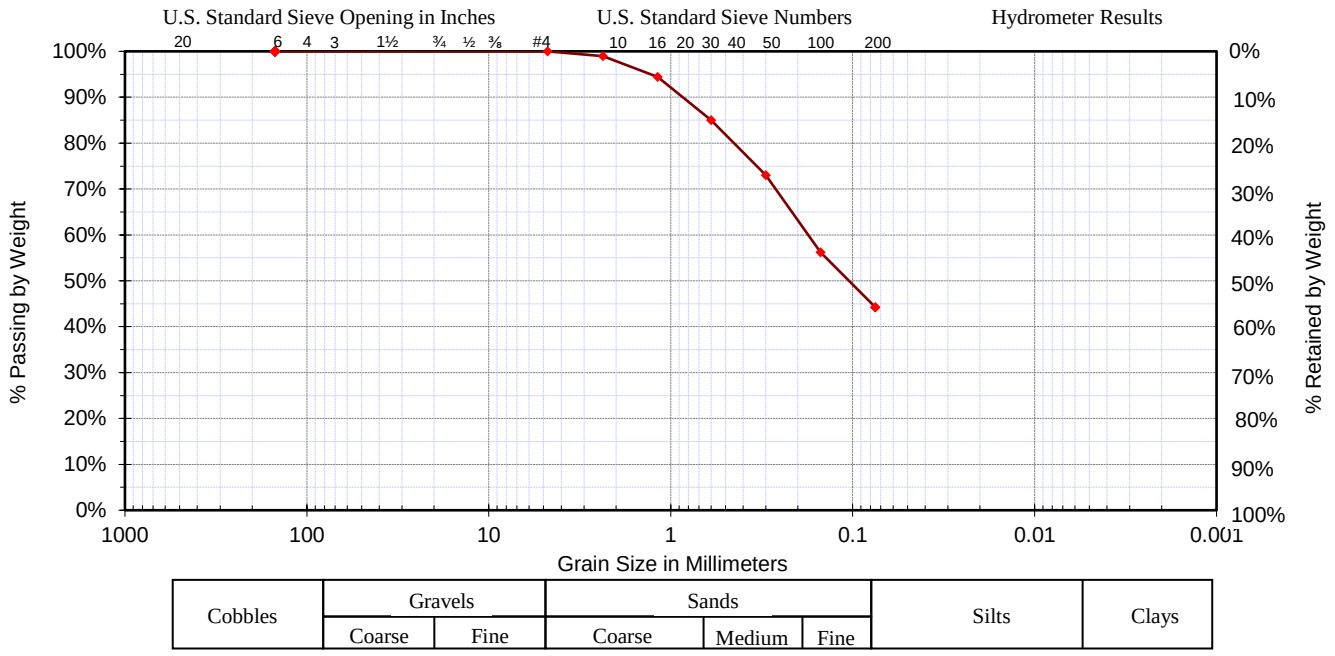
PROJECT NO. 19202-01

APPENDIX B

Appendix C



LABORATORY TEST RESULTS

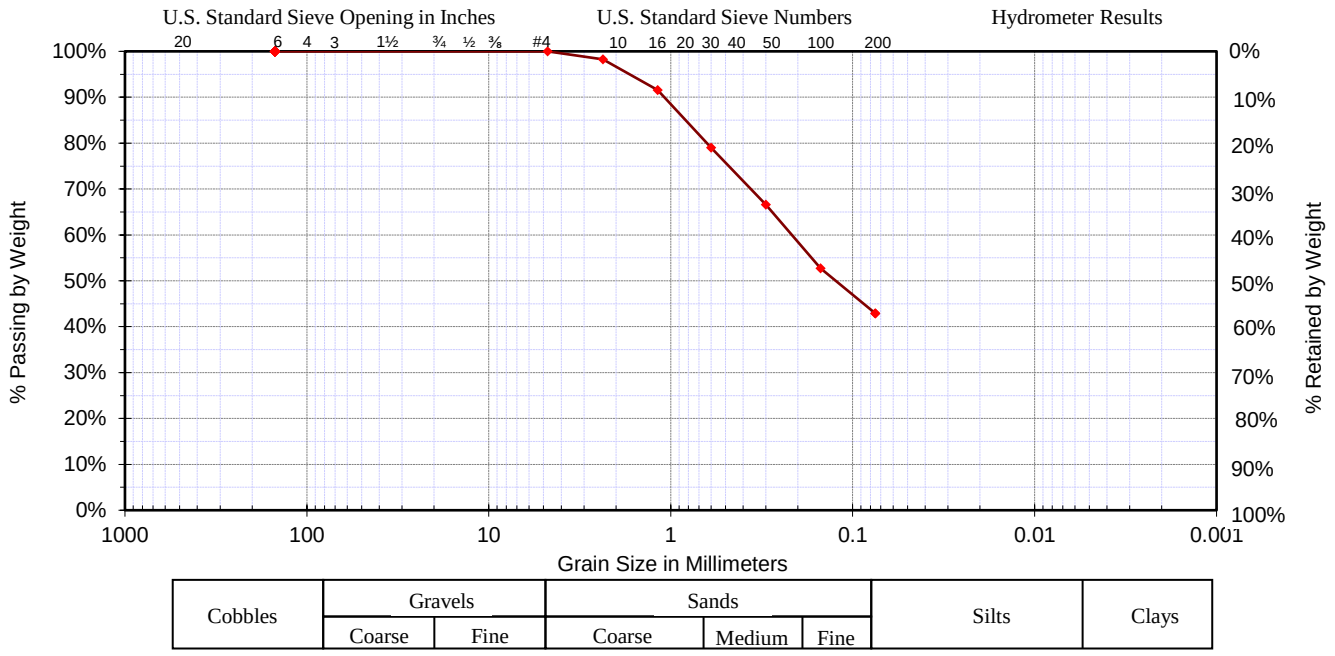


Date :	09/14/19	D_{10} =	0.02	**Classification**	% Gravel
Sample #:		D_{30} =	0.05	ML, Sandy Silt	0.00%
Sample ID:	B-1	D_{60} =	0.18		% Sand
Source:	Bulk	C_C =	0.83	**Specifications**	55.77%
Project:	NWC Harvill and Placentia Ave	$C_{U=}$	10.84	custom specs 1	% Silt & Clay
Location:	Riverside County	Liquid Limit=	n/a		44.23%
Boring #:	B-1	Plastic Limit=	n/a	Fineness Modulus	Sample Moisture
Depth:	20'	Plasticity Index=	n/a	0.92	**7.9%**

Coarse Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
6.00"	150.00		100.0%		
4.00"	100.00		100.0%		
3.00"	75.00		100.0%		
2.50"	63.00		100.0%		
2.00"	50.00		100.0%		
1.75"	45.00		100.0%		
1.50"	37.50		100.0%		
1.25"	31.50		100.0%		
1.00"	25.00		100.0%		
7/8"	22.40		100.0%		
3/4"	19.00		100.0%		
5/8"	16.00		100.0%		
1/2"	12.50		100.0%		
3/8"	9.50		100.0%		
1/4"	6.30		100.0%		
#4	4.75	100.0%	100.0%		

Fines Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
#4	4.750	100.0%	100.0%		
#8	2.360	98.9%	98.9%		
#10	2.000		97.5%		
#16	1.180	94.4%	94.4%		
#20	0.850		89.1%		
#30	0.600	85.0%	85.0%		
#40	0.425		78.0%		
#50	0.300	73.0%	73.0%		
#60	0.250		67.4%		
#80	0.180		59.6%		
#100	0.150	56.2%	56.2%		
#140	0.106		49.2%		
#170	0.090		46.6%		
#200	0.075	44.2%	44.2%		
#270	0.053				

LABORATORY TEST RESULTS

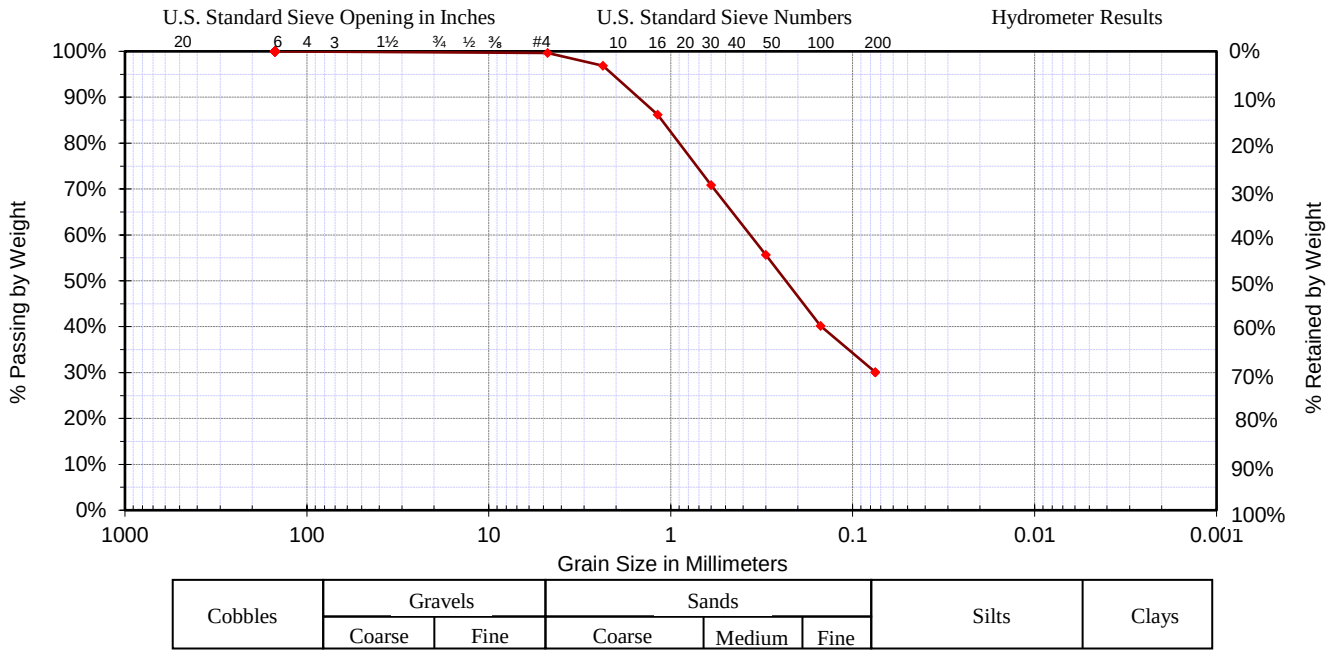


Date :	09/14/19	D_{10} =	0.02	**Classification**	% Gravel
Sample #:		D_{30} =	0.05	ML, Sandy Silt	0.00%
Sample ID:	INF1	D_{60} =	0.23		% Sand
Source:	Bulk	C_C =	0.69	**Specifications**	57.11%
Project:	NWC Harvill and Placentia Ave	$C_{U=}$	13.08	custom specs 1	% Silt & Clay
Location:	Riverside County	Liquid Limit=	n/a		42.89%
Boring #:	INF1	Plastic Limit=	n/a	Fineness Modulus	Sample Moisture
Depth:	108"	Plasticity Index=	n/a	1.12	**3.8%**

Coarse Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
6.00"	150.00		100.0%		
4.00"	100.00		100.0%		
3.00"	75.00		100.0%		
2.50"	63.00		100.0%		
2.00"	50.00		100.0%		
1.75"	45.00		100.0%		
1.50"	37.50		100.0%		
1.25"	31.50		100.0%		
1.00"	25.00		100.0%		
7/8"	22.40		100.0%		
3/4"	19.00		100.0%		
5/8"	16.00		100.0%		
1/2"	12.50		100.0%		
3/8"	9.50		100.0%		
1/4"	6.30		100.0%		
#4	4.75	100.0%	100.0%		

Fines Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
#4	4.750	100.0%	100.0%		
#8	2.360	98.2%	98.2%		
#10	2.000		96.2%		
#16	1.180	91.6%	91.6%		
#20	0.850		84.4%		
#30	0.600	79.0%	79.0%		
#40	0.425		71.8%		
#50	0.300	66.6%	66.6%		
#60	0.250		62.0%		
#80	0.180		55.5%		
#100	0.150	52.8%	52.8%		
#140	0.106		47.0%		
#170	0.090		44.9%		
#200	0.075	42.9%	42.9%		
#270	0.053				

LABORATORY TEST RESULTS

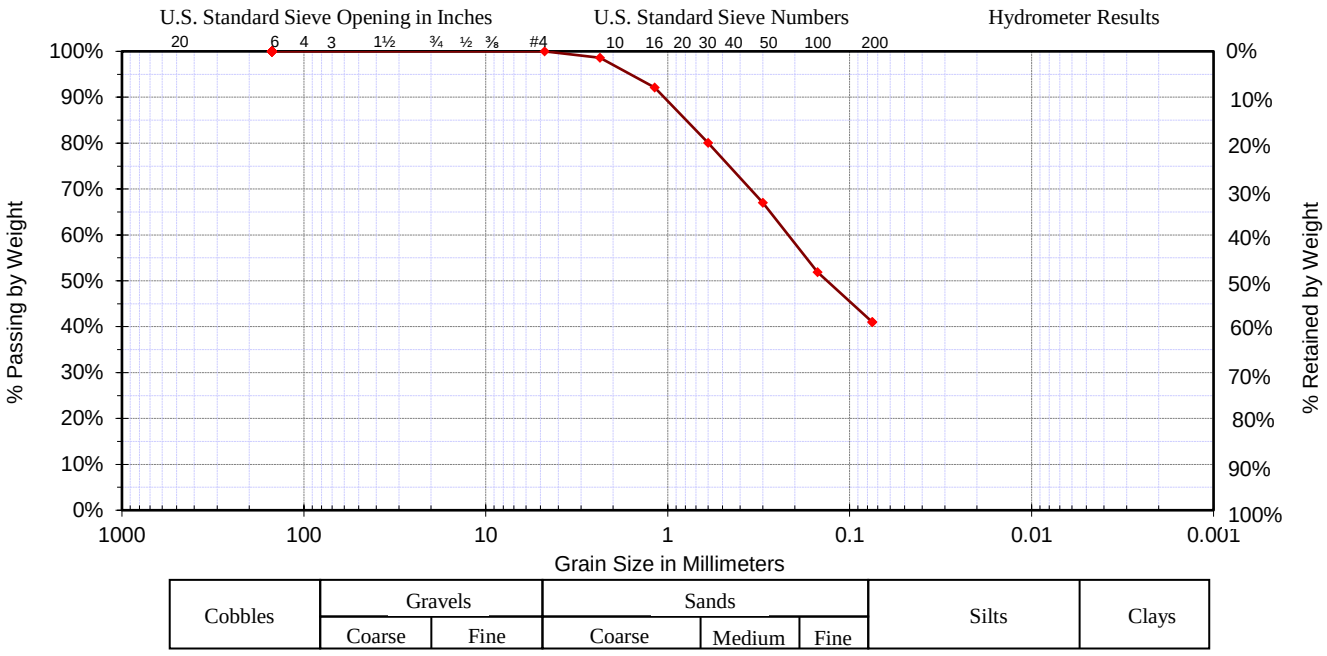


Date :	09/14/19	D_{10} =	0.02	**Classification**	% Gravel
Sample #:		D_{30} =	0.07	ML, Sandy Silt	0.32%
Sample ID:	INF2	D_{60} =	0.39		% Sand
Source:	Bulk	C_C =	0.58	**Specifications**	69.61%
Project:	NWC Harvill and Placentia Ave	$C_{U=}$	15.48	custom specs 1	% Silt & Clay
Location:	Riverside County	Liquid Limit=	n/a		30.07%
Boring #:	INF2	Plastic Limit=	n/a	Fineness Modulus	Sample Moisture
Depth:	114"	Plasticity Index=	n/a	1.51	**5.2%**

Coarse Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
6.00"	150.00		100.0%		
4.00"	100.00		100.0%		
3.00"	75.00		100.0%		
2.50"	63.00		100.0%		
2.00"	50.00		100.0%		
1.75"	45.00		100.0%		
1.50"	37.50		100.0%		
1.25"	31.50		100.0%		
1.00"	25.00		100.0%		
7/8"	22.40		100.0%		
3/4"	19.00		100.0%		
5/8"	16.00		100.0%		
1/2"	12.50		100.0%		
3/8"	9.50		100.0%		
1/4"	6.30		100.0%		
#4	4.75	99.7%	99.7%		

Fines Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
#4	4.750	99.7%	99.7%		
#8	2.360	96.8%	96.8%		
#10	2.000		93.6%		
#16	1.180	86.2%	86.2%		
#20	0.850		77.5%		
#30	0.600	70.9%	70.9%		
#40	0.425		62.0%		
#50	0.300	55.6%	55.6%		
#60	0.250		50.5%		
#80	0.180		43.3%		
#100	0.150	40.2%	40.2%		
#140	0.106		34.2%		
#170	0.090		32.1%		
#200	0.075	30.1%	30.1%		
#270	0.053				

LABORATORY TEST RESULTS

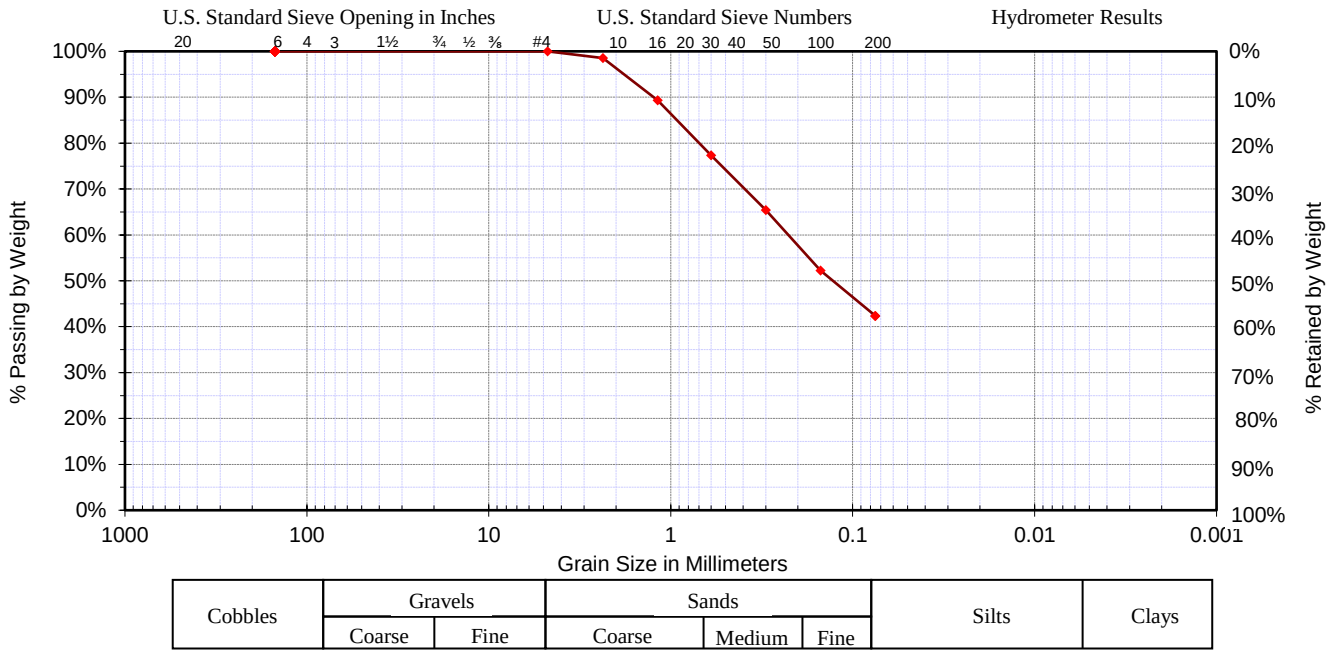


Date :	09/14/19	D_{10} =	0.02	**Classification**	% Gravel
Sample #:		D_{30} =	0.05	ML, Sandy Silt	0.00%
Sample ID:	INF3	D_{60} =	0.23		% Sand
Source:	Bulk	C_C =	0.71	**Specifications**	59.02%
Project:	NWC Harvill and Placentia Ave	$C_{U=}$	12.59	custom specs 1	% Silt & Clay
Location:	Riverside County	Liquid Limit=	n/a		40.98%
Boring #:	INF3	Plastic Limit=	n/a	Fineness Modulus	Sample Moisture
Depth:	90"	Plasticity Index=	n/a	1.10	**6.7%**

Coarse Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
6.00"	150.00		100.0%		
4.00"	100.00		100.0%		
3.00"	75.00		100.0%		
2.50"	63.00		100.0%		
2.00"	50.00		100.0%		
1.75"	45.00		100.0%		
1.50"	37.50		100.0%		
1.25"	31.50		100.0%		
1.00"	25.00		100.0%		
7/8"	22.40		100.0%		
3/4"	19.00		100.0%		
5/8"	16.00		100.0%		
1/2"	12.50		100.0%		
3/8"	9.50		100.0%		
1/4"	6.30		100.0%		
#4	4.75	100.0%	100.0%		

Fines Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
#4	4.750	100.0%	100.0%		
#8	2.360	98.6%	98.6%		
#10	2.000		96.6%		
#16	1.180	92.1%	92.1%		
#20	0.850		85.2%		
#30	0.600	80.0%	80.0%		
#40	0.425		72.4%		
#50	0.300	67.0%	67.0%		
#60	0.250		62.0%		
#80	0.180		54.9%		
#100	0.150	51.9%	51.9%		
#140	0.106		45.5%		
#170	0.090		43.2%		
#200	0.075	41.0%	41.0%		
#270	0.053				

LABORATORY TEST RESULTS

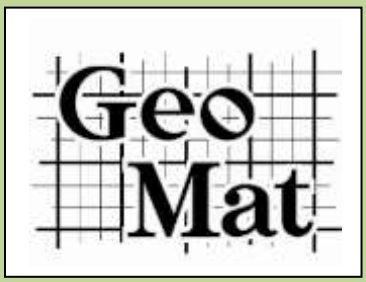


Date :	09/14/19	D_{10} =	0.02	**Classification**	% Gravel
Sample #:		D_{30} =	0.05	ML, Sandy Silt	0.00%
Sample ID:	INF4	D_{60} =	0.24		% Sand
Source:	Bulk	C_C =	0.67	**Specifications**	57.64%
Project:	NWC Harvill and Placentia Ave	C_{U} =	13.45	custom specs 1	% Silt & Clay
Location:	Riverside County	Liquid Limit=	n/a		42.36%
Boring #:	INF4	Plastic Limit=	n/a	Fineness Modulus	Sample Moisture
Depth:	120"	Plasticity Index=	n/a	1.17	**5.4%**

Coarse Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
6.00"	150.00		100.0%		
4.00"	100.00		100.0%		
3.00"	75.00		100.0%		
2.50"	63.00		100.0%		
2.00"	50.00		100.0%		
1.75"	45.00		100.0%		
1.50"	37.50		100.0%		
1.25"	31.50		100.0%		
1.00"	25.00		100.0%		
7/8"	22.40		100.0%		
3/4"	19.00		100.0%		
5/8"	16.00		100.0%		
1/2"	12.50		100.0%		
3/8"	9.50		100.0%		
1/4"	6.30		100.0%		
#4	4.75	100.0%	100.0%		

Fines Section		Actual Cumulative	Interpolated Cumulative		
Sieve Size		Percent	Percent	Specs	Specs
US	Metric	Passing	Passing	Max	Min
#4	4.750	100.0%	100.0%		
#8	2.360	98.5%	98.5%		
#10	2.000		95.7%		
#16	1.180	89.4%	89.4%		
#20	0.850		82.5%		
#30	0.600	77.3%	77.3%		
#40	0.425		70.4%		
#50	0.300	65.4%	65.4%		
#60	0.250		61.0%		
#80	0.180		54.9%		
#100	0.150	52.3%	52.3%		
#140	0.106		46.5%		
#170	0.090		44.3%		
#200	0.075	42.4%	42.4%		
#270	0.053				

Appendix D



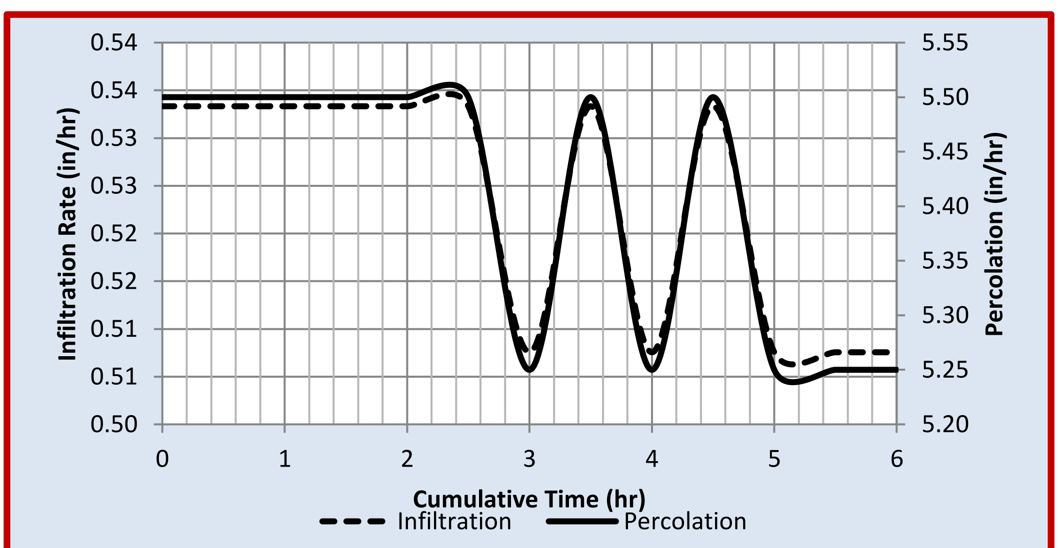
PERCOLATION TEST - INF-1

Project No.	19202-01	Project Name	Harvill and Placentia		
Project Location	NWC of Harvill and Placetia Ave, Riverside County			Soak Method	5 gallons
Drilling Date	9/13/2019	Soak Date	9/13/2019	Depth of Hole (in)	108
Testing Date	9/14/2019	Borehole Diameter (in)	8	Test Refill Depth (in)	20

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH, WATER DROP (in)	AVERAGE WETTED DEPTH (in)	PERC RATE (min/in)	PERC RATE (in/hr)	CORRECTED* INFILTRATION RATE (in/hr)
Sandy Soil Criteria						Was Sandy Soil Criteria Met?			NO
Percolation Test Data	0:00:00	0:30:00	88	90.75	2.75	18.625	10.91	5.50	0.53
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.75	2.75	18.625	10.91	5.50	0.53
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.75	2.75	18.625	10.91	5.50	0.53
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.75	2.75	18.625	10.91	5.50	0.53
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.75	2.75	18.625	10.91	5.50	0.53
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.625	2.625	18.6875	11.43	5.25	0.51
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.75	2.75	18.625	10.91	5.50	0.53
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.625	2.625	18.6875	11.43	5.25	0.51
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.75	2.75	18.625	10.91	5.50	0.53
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.625	2.625	18.6875	11.43	5.25	0.51
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.625	2.625	18.6875	11.43	5.25	0.51
	0:30:00	30.00							
	0:00:00	0:30:00	88	90.625	2.625	18.6875	11.43	5.25	0.51
	0:30:00	30.00							

*Porchet Method

Cumulative Time (hr)	Percolation (in/hr)	Infiltration (in/hr)
0	5.50	0.53
0.50	5.50	0.53
1.00	5.50	0.53
1.50	5.50	0.53
2.00	5.50	0.53
2.50	5.50	0.53
3.00	5.25	0.51
3.50	5.50	0.53
4.00	5.25	0.51
4.50	5.50	0.53
5.00	5.25	0.51
5.50	5.25	0.51
6.00	5.25	0.51



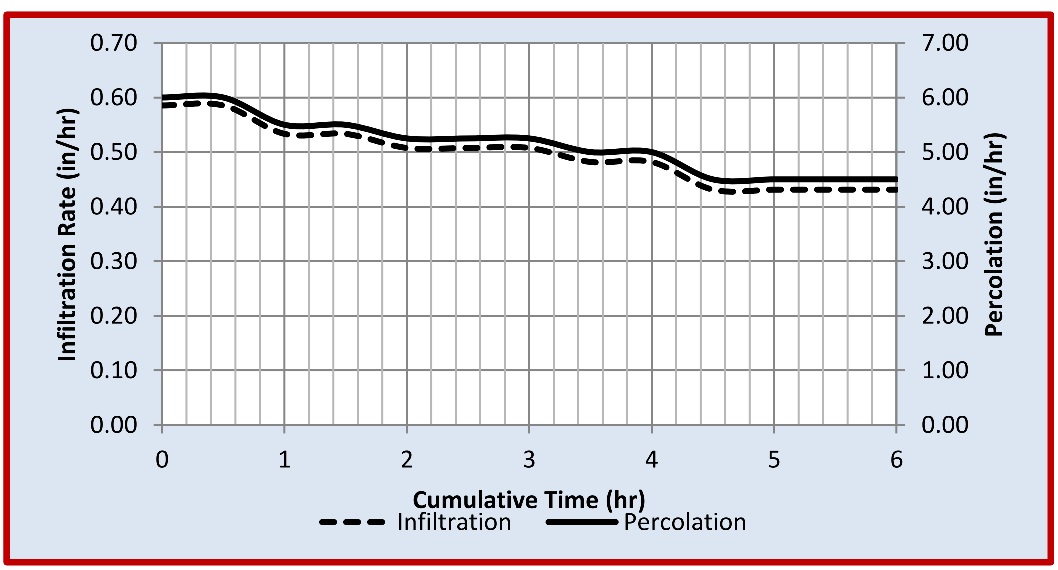
PERCOLATION TEST - INF-2

Project No.	19202-01	Project Name	Harvill and Placentia		
Project Location	NWC of Harvill and Placetia Ave, Riverside County			Soak Method	5 gallons
Drilling Date	9/13/2019	Soak Date	9/13/2019	Depth of Hole (in)	114
Testing Date	9/14/2019	Borehole Diameter (in)	8	Test Refill Depth (in)	20

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH, WATER DROP (in)	AVERAGE WETTED DEPTH (in)	PERC RATE (min/in)	PERC RATE (in/hr)	CORRECTED* INFILTRATION RATE (in/hr)
Sandy Soil Criteria						Was Sandy Soil Criteria Met?			NO
Percolation Test Data	0:00:00 0:30:00	0:30:00 30.00	94	97	3	18.5	10.00	6.00	0.59
	0:00:00 0:30:00	0:30:00 30.00	94	96.75	2.75	18.625	10.91	5.50	0.53
	0:00:00 0:30:00	0:30:00 30.00	94	96.75	2.75	18.625	10.91	5.50	0.53
	0:00:00 0:30:00	0:30:00 30.00	94	96.625	2.625	18.6875	11.43	5.25	0.51
	0:00:00 0:30:00	0:30:00 30.00	94	96.625	2.625	18.6875	11.43	5.25	0.51
	0:00:00 0:30:00	0:30:00 30.00	94	96.625	2.625	18.6875	11.43	5.25	0.51
	0:00:00 0:30:00	0:30:00 30.00	94	96.5	2.5	18.75	12.00	5.00	0.48
	0:00:00 0:30:00	0:30:00 30.00	94	96.5	2.5	18.75	12.00	5.00	0.48
	0:00:00 0:30:00	0:30:00 30.00	94	96.25	2.25	18.875	13.33	4.50	0.43
	0:00:00 0:30:00	0:30:00 30.00	94	96.25	2.25	18.875	13.33	4.50	0.43
	0:00:00 0:30:00	0:30:00 30.00	94	96.25	2.25	18.875	13.33	4.50	0.43
	0:00:00 0:30:00	0:30:00 30.00	94	96.25	2.25	18.875	13.33	4.50	0.43

*Porchet Method

Cumulative Time (hr)	Percolation (in/hr)	Infiltration (in/hr)
0	6.00	0.59
0.50	6.00	0.59
1.00	5.50	0.53
1.50	5.50	0.53
2.00	5.25	0.51
2.50	5.25	0.51
3.00	5.25	0.51
3.50	5.00	0.48
4.00	5.00	0.48
4.50	4.50	0.43
5.00	4.50	0.43
5.50	4.50	0.43
6.00	4.50	0.43



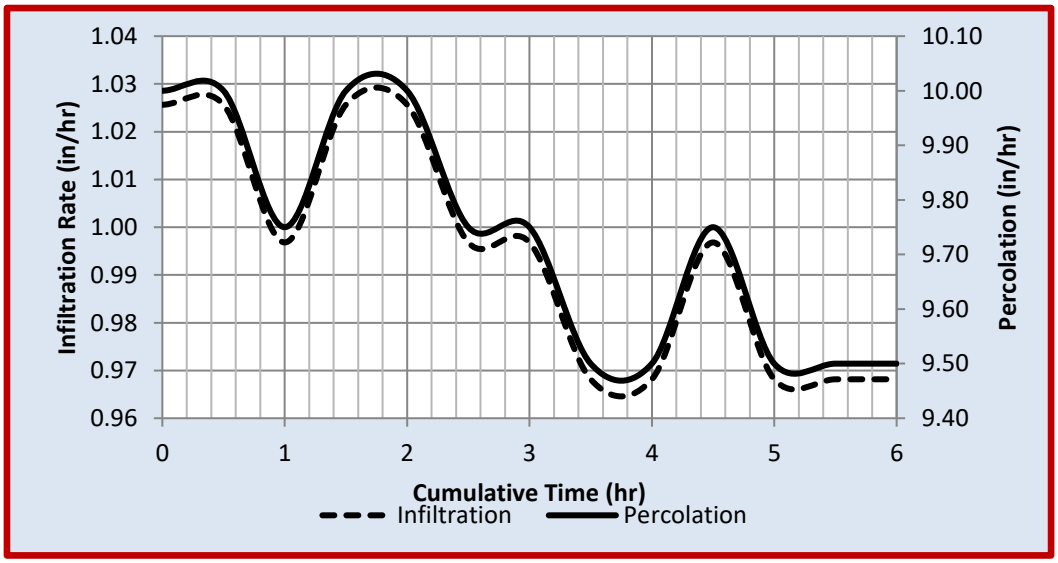
PERCOLATION TEST - INF-3

Project No.	19202-01	Project Name	Harvill and Placentia		
Project Location	NWC of Harvill and Placetia Ave, Riverside County			Soak Method	5 gallons
Drilling Date	9/13/2019	Soak Date	9/13/2019	Depth of Hole (in)	90
Testing Date	9/14/2019	Borehole Diameter (in)	8	Test Refill Depth (in)	20

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH, WATER DROP (in)	AVERAGE WETTED DEPTH (in)	PERC RATE (min/in)	PERC RATE (in/hr)	CORRECTED* INFILTRATION RATE (in/hr)
Sandy Soil Criteria						Was Sandy Soil Criteria Met?			NO
Percolation Test Data	0:00:00	0:30:00	70	75	5	17.5	6.00	10.00	1.03
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.875	4.875	17.5625	6.15	9.75	1.00
	0:30:00	30.00							
	0:00:00	0:30:00	70	75	5	17.5	6.00	10.00	1.03
	0:30:00	30.00							
	0:00:00	0:30:00	70	75	5	17.5	6.00	10.00	1.03
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.875	4.875	17.5625	6.15	9.75	1.00
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.875	4.875	17.5625	6.15	9.75	1.00
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.75	4.75	17.625	6.32	9.50	0.97
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.75	4.75	17.625	6.32	9.50	0.97
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.875	4.875	17.5625	6.15	9.75	1.00
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.75	4.75	17.625	6.32	9.50	0.97
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.75	4.75	17.625	6.32	9.50	0.97
	0:30:00	30.00							
	0:00:00	0:30:00	70	74.75	4.75	17.625	6.32	9.50	0.97
	0:30:00	30.00							

*Porchet Method

Cumulative Time (hr)	Percolation (in/hr)	Infiltration (in/hr)
0	10.00	1.03
0.50	10.00	1.03
1.00	9.75	1.00
1.50	10.00	1.03
2.00	10.00	1.03
2.50	9.75	1.00
3.00	9.75	1.00
3.50	9.50	0.97
4.00	9.50	0.97
4.50	9.75	1.00
5.00	9.50	0.97
5.50	9.50	0.97
6.00	9.50	0.97



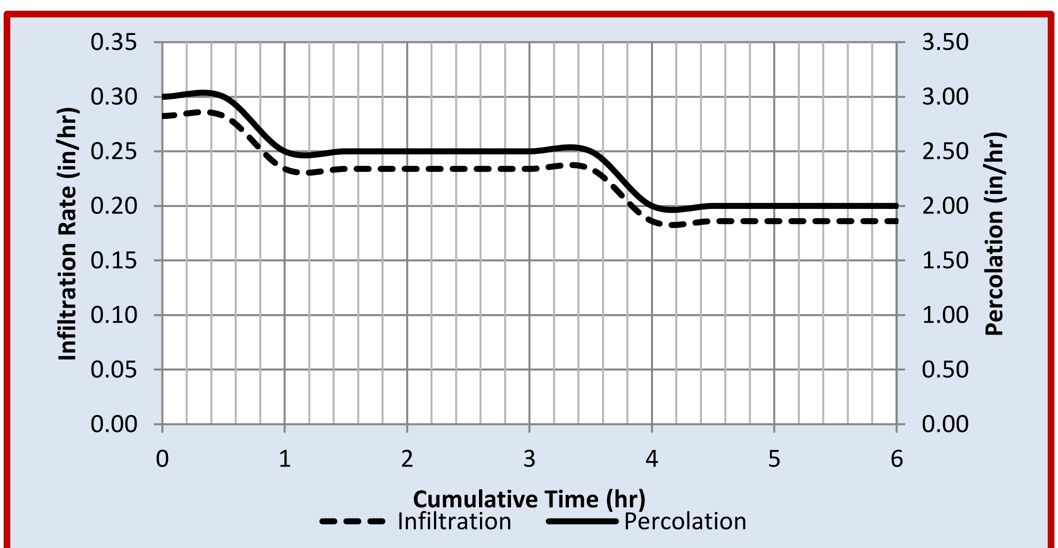
PERCOLATION TEST - INF-4

Project No.	19202-01	Project Name	Harvill and Placentia
Project Location	NWC of Harvill and Placetia Ave, Riverside County	Soak Method	5 gallons
Drilling Date	9/13/2019	Soak Date	9/13/2019
Depth of Hole (in)	120		
Testing Date	9/14/2019	Borehole Diameter (in)	8
Test Refill Depth (in)	20		

CRITERIA	TIME	TIME INTERVAL (min)	D_0, INITIAL DEPTH TO WATER (in)	D_f, FINAL DEPTH TO WATER (in)	ΔH, WATER DROP (in)	AVERAGE WETTED DEPTH (in)	PERC RATE (min/in)	PERC RATE (in/hr)	CORRECTED* INFILTRATION RATE (in/hr)
Sandy Soil Criteria						Was Sandy Soil Criteria Met?			NO
Percolation Test Data	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101.5	1.5	19.25	20.00	3.00	0.28
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101.25	1.25	19.375	24.00	2.50	0.23
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101.25	1.25	19.375	24.00	2.50	0.23
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101.25	1.25	19.375	24.00	2.50	0.23
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101.25	1.25	19.375	24.00	2.50	0.23
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101.25	1.25	19.375	24.00	2.50	0.23
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101.25	1.25	19.375	24.00	2.50	0.23
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101	1	19.5	30.00	2.00	0.19
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101	1	19.5	30.00	2.00	0.19
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101	1	19.5	30.00	2.00	0.19
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101	1	19.5	30.00	2.00	0.19
	0:00:00 / 0:30:00	0:30:00 / 30.00	100	101	1	19.5	30.00	2.00	0.19

*Porchet Method

Cumulative Time (hr)	Percolation (in/hr)	Infiltration (in/hr)
0	3.00	0.28
0.50	3.00	0.28
1.00	2.50	0.23
1.50	2.50	0.23
2.00	2.50	0.23
2.50	2.50	0.23
3.00	2.50	0.23
3.50	2.50	0.23
4.00	2.00	0.19
4.50	2.00	0.19
5.00	2.00	0.19
5.50	2.00	0.19
6.00	2.00	0.19



Appendix 4: Historical Site Conditions

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


December 2018
Placentia Logistics Center
Harvill Ave
Sharon Ann Ln
Placentia Ave
Tobacco Rd
Google Earth
900 ft
N


January 2006
Placentia Logistics Center
Harvill Ave
Sharon Ann Ln
Placentia Ave
Tobacco Rd
Google Earth
Image © 2019 Maxar Technologies
900 ft
N

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

NOT APPLICABLE

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

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

Company Name TRWE

Date 12/18/2019

Designed by AJS

Case No TBD

Company Project Number/Name Placentia Logistics Center

BMP Identification

BMP NAME / ID BMP D/1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

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

D_{85}= 0.59 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/1 ROOF	*251856*	*Roofs*	*1*	*0.89*	*224655.6*			
D/1 CONC	*181289*	*Concrete or Asphalt*	*1*	*0.89*	*161709.8*			
D/1 LSCAPE	*43661*	*Ornamental Landscaping*	*0.1*	*0.11*	*4822.7*			
	476806	***Total***			**391188.1**	**0.59**	**19233.4**	**20127**

Notes:

Bioretention Facility - Design Procedure	BMP ID: BMP D/1	Legend:	Required Entries / Calculated Cells

Company Name: TRWE | Date: #########

Designed by: AJS | County/City Case No.: TBD

Design Volume

Enter the area tributary to this feature — A_T = 10.94596 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP} = 19,233 ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer — d_S = 2.0 ft

Top Width of Bioretention Facility, excluding curb — w_T = 50.0 ft

Total Effective Depth, d_E

$d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$ — d_E = 1.49 ft

Minimum Surface Area, A_m

$$A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$$

A_M = 12,944 ft^2

Proposed Surface Area — A= 13,203 ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 2 :1

ERROR, side slopes too steep for Bioretention Facility design

Diameter of Underdrain — 6 inches

Longitudinal Slope of Site (3% maximum) — 1 %

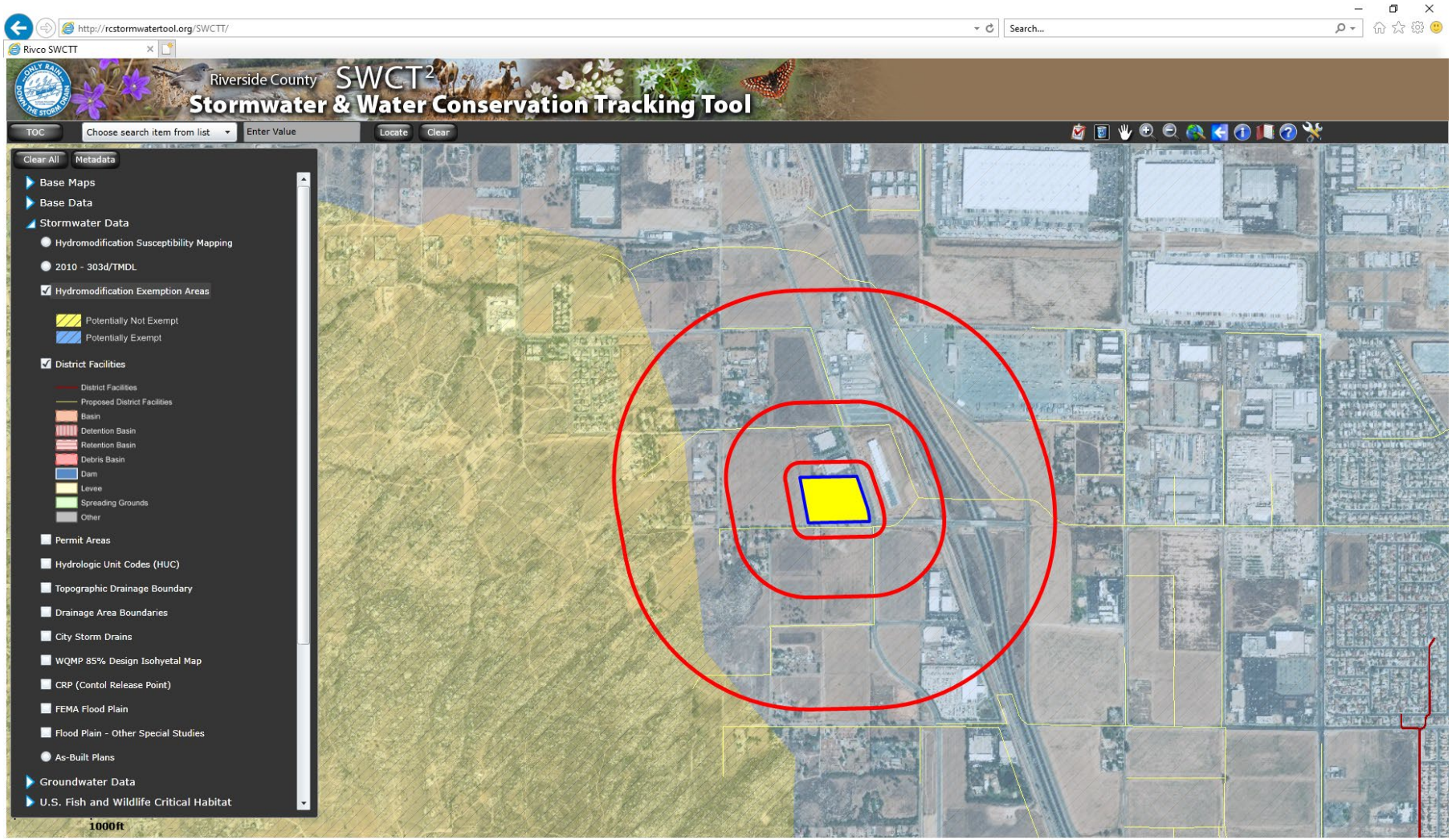
6" Check Dam Spacing — 25 feet

Describe Vegetation:

Notes: FG @ 7.60 = UD INV @ 4.60

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern


http://rcstormwatertool.org/SWCTT/
Search...
Rivco SWCTT
Riverside County SWCT²
Stormwater & Water Conservation Tracking Tool
TOC
Choose search item from list
Enter Value
Locate
Clear
Clear All
Metadata
Base Maps
Base Data
Stormwater Data
Hydromodification Susceptibility Mapping
2010 - 303d/TMDL
Hydromodification Exemption Areas
Potentially Not Exempt
Potentially Exempt
District Facilities
District Facilities
Proposed District Facilities
Basin
Detention Basin
Retention Basin
Debris Basin
Dam
Levee
Spreading Grounds
Other
Permit Areas
Hydrologic Unit Codes (HUC)
Topographic Drainage Boundary
Drainage Area Boundaries
City Storm Drains
WQMP 85% Design Isohyetal Map
CRP (Contol Release Point)
FEMA Flood Plain
Flood Plain - Other Special Studies
As-Built Plans
Groundwater Data
U.S. Fish and Wildlife Critical Habitat
1000ft

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ A. **On-site storm drain inlets**	☑ **Locations of inlets.**	☑ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☑ **Maintain and periodically repaint or replace inlet markings.** ☑ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☑ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☑ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☐ B. **Interior floor drains and elevator shaft sump pumps**		☐ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**
☐ C. **Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ D1. **Need for future indoor & structural pest control**		☐ **Note building design features that discourage entry of pests.**	☐ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☑ D2. **Landscape/ Outdoor Pesticide Use**	☐ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☐ **Show self-retaining landscape areas, if any.** ☑ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	**State that final landscape plans will accomplish all of the following.** ☑ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☑ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☑ **Consider using pest-resistant plants, especially adjacent to hardscape.** **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☑ **Maintain landscaping using minimum or no pesticides.** ☑ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☑ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ E. **Pools, spas, ponds, decorative fountains, and other water features.**	☐ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	☐ **See applicable operational BMPs in** "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ F. **Food service**	☐ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ☐ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	☐ **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.**	☐ **See the brochure, "**The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ **Provide this brochure to new site owners, lessees, and operators.**
☑ G. **Refuse areas**	☑ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☑ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☐ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☑ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☑ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	☑ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ H. **Industrial processes.**	☐ **Show process area.**	☐ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	☑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

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❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **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.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑**Car dealerships and similar may rinse cars with water only.**

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❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **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.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of 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 rinsewater from parts cleaning into storm drains.** ❑ **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 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.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

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❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **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.**

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☑ M. **Loading Docks**	☐ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ☐ **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.**		☑ **Move loaded and unloaded items indoors as soon as possible.** ☑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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☐ N. **Fire Sprinkler Test Water**		☐ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☐ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ☐ **Boiler drain lines** ☐ **Condensate drain lines** ☐ **Rooftop equipment** ☐ **Drainage sumps** ☑ **Roofing, gutters, and trim.** ☐ **Other sources**		☐ **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 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.** **Include controls for other sources as specified by local reviewer.**	

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☑ P. **Plazas, sidewalks, and parking lots.**			☑ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

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

TO BE PROVIDED AT FINAL ENGINEERING

Appendix 10: Educational Materials

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

TO BE PROVIDED AT FINAL ENGINEERING