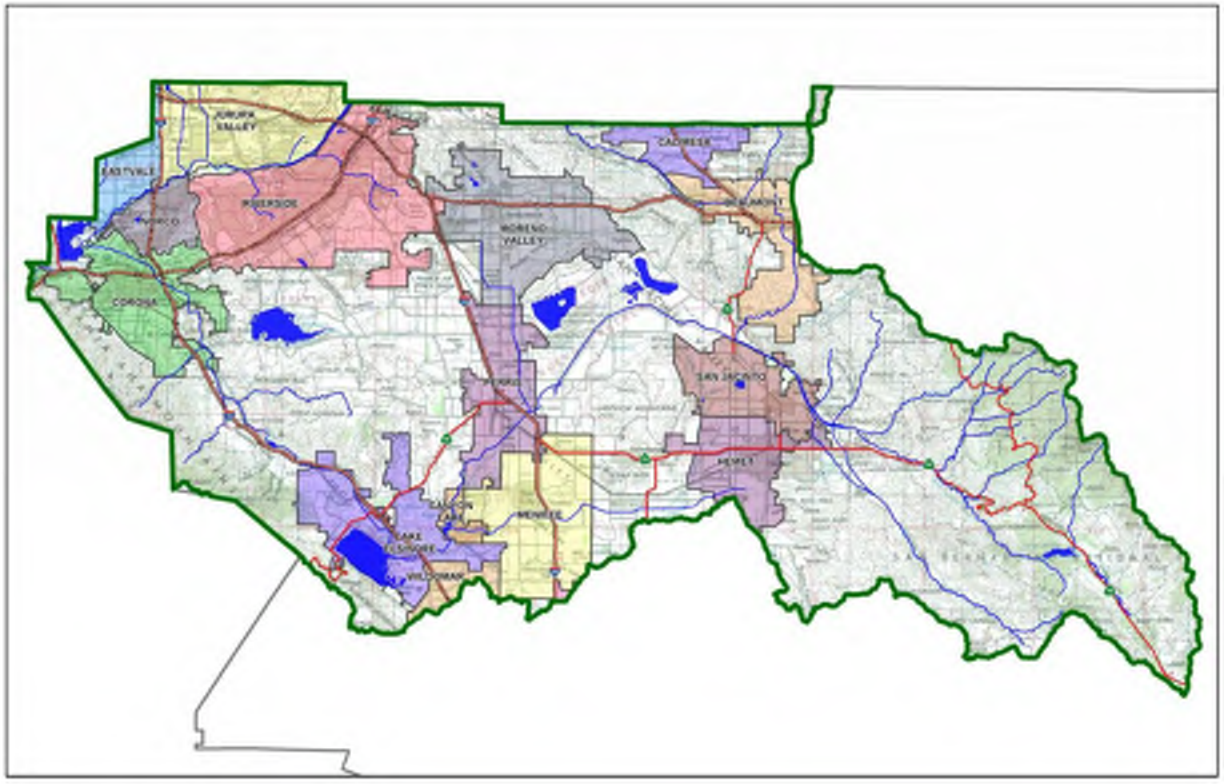
Project Specific Water Quality Management Plan

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

Project Title: Oakmont - Redlands at Nance Industrial

Development No: TBD

Design Review/Case No: 22-05040



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☒ **Preliminary**
☐ **Final**

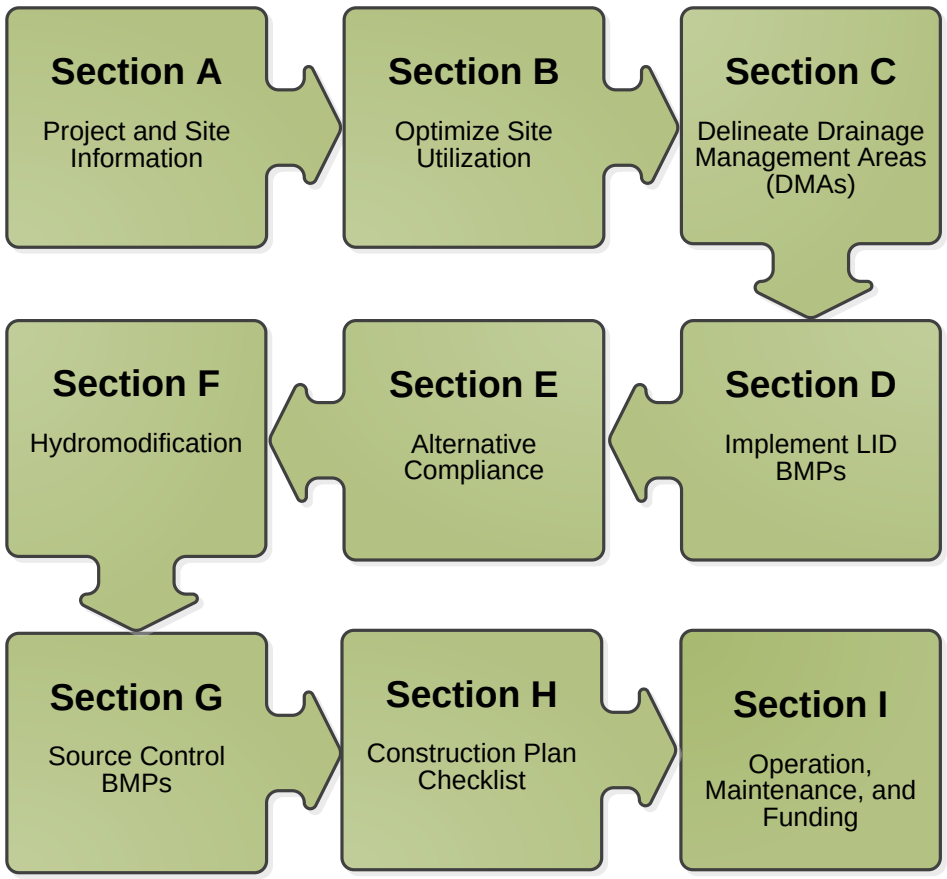
Original Date Prepared: 05-17-2022

Revision Date(s):

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

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 Oakmont Industrial Group by Huitt-Zollars, inc for the Oakmont - Redlands at Nance Industrial project # TBD.

This WQMP is intended to comply with the requirements of County of Riverside for Order No. XX-XXXX-XXXX 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 Order No. R8-2010-0033.

"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
John Atwell	Senior Vice President
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
David White, PE	Vice President
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:	Warehouse Industrial
Planning Area:	416,869 SF
Community Name:	County of Riverside
Development Name:	Oakmont - Redlands at Nance Industrial

PROJECT LOCATION

Latitude & Longitude (DMS): 33°51'17.56"N, 117°13'16.01"W

Project Watershed and Sub-Watershed: Santa Ana Watershed, San Jacinto Sub-Watershed

Gross Acres: 9.57

APN(s): 302-110-002

Map Book and Page No.: Thomas Brothers Page 747

PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Warehouse Industrial	
Proposed or Potential SIC Code(s)	4225	
Area of Impervious Project Footprint (SF)	202,500	
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	202,500	
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)	8,444	
Is the project located within any MSHCP Criteria Cell?	☐ Y	☒ N
If so, identify the Cell number:	N/A	
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?	0.64	

The proposed project is located to the south of Nance Street between Perris Boulevard and Redlands Avenue in the unincorporated area of the County of Riverside, California. The site is currently developed with residential building and industrial yards. The proposed project will consist of an industrial warehouse building totaling 202,500 +/- SF **with approximately 15.7% landscaping area** on approximately 9.57 acres. The site will also allow car parking, drive aisles, truck docks and a truck court **which comprises approximately 29% of the site**. A specific business use is not known at this time, but outdoor storage will not be allowed.

For the onsite water quality treatment, the development will have one (1) drainage area DMA A, and the storm water from the DMA A will be conveyed to the designated bio-retention basin on the east side of the project site. See Appendix 1 for Post-Construction BMP Site Plan.

The site landscaping areas will not be irrigated with recycled water, and "harvest and use" is not feasible for this development. New trash enclosures will be installed at the site, and the details will be provided in the final Post-Construction BMP Site Map.

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
Lateral D-2, Line D, Perris Valley Storm Drain	N/A	-	Not designated as RARE
San Jacinto River Reach 3, HU#802.11	NONE	AGR, GWR, REC1, REC2, WARM, WILD	Not designated as RARE
Canyon Lake (Railroad Canyon Reservoir), HU#802.11, 802.12	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not designated as RARE
San Jacinto River Reach 1, HU#802.32,802.31	NONE	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not designated as RARE
Lake Elsinore	PCBs (Polychlorinated biphenyls), Toxicity	MUN, REC1, REC2, WARM, WILD	Not designated as RARE

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)*	☐ Y	☒ N

Riverside County FCD – Connection Permit to Lateral D-2		

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 Constraint:

Base on the site specific infiltration tests and report prepared by Southern California Geotechnical, Inc, dated December 13, 2021 (see Appendix 3). The site soils have very poor infiltration characteristics and the use of infiltration facilities is not recommended.

Solution:

The site drainage design has incorporated bio-retention basins located on the east side of the project site. All site drainage will be conveyed to the bio-retention areas where the runoff will be allowed to pass through a filter media, stone section, and through perforated a pipe network beneath the basin footprint which will ultimately convey the runoff out to Lateral B-2 located west of the project site.

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. The site mimics the existing topography by draining from northwest to southeast.

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

No, existing vegetation was not protected within the developed site. Currently the site is partially developed. The developed condition will utilize drought tolerant plants within the landscaped areas to maximize water conservation.

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

Yes. Natural infiltration capacity was identified by the soil and infiltration report, however it is below the minimum rate and is not expected to be feasible on this project site as a BMP type.

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

No. However, the site maintains the minimum amount of landscape required per code.

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

Yes, runoff from impervious areas is able to drain into pervious areas. Surface flow will convey the runoff to the bio-retention basin on the east side of the project site, and the basin will treat the runoff before allowing it to exit the project site.

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	Roofs, Concrete, and asphalt	348,710	D
	Ornamental Landscaping	68,029	D
			D

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

Table C.2 Type 'A', Self-Treating Areas (Included with mixed DMA1 above)

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
Landscaped Areas (from DMA1)	51,505 + 16,524 basin = 68,029	Planted and Irrigated	Efficient

Table C.3 Type 'B', Self-Retaining Areas (N/A, included with mixed DMA1)

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]

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

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas (N/A)

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]

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

DMA Name or ID	BMP Name or ID
DMA A	Bio-retention Basin

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?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
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?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs:	A	
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
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: 68,029 SF (1.56 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: 348,710 (8.00 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: 1.05

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: 8.40 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)
8.40 Acres	1.56 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: 100

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: 8.00 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: 185

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: 1,480

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)**
1,480 Users	100 Users

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	
DMA A	☐	☐	☒	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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.

Base on the information provided in Section D, bio-retention LID BMP will be utilized for the entire site. See Appendix 1 Post-Construction BMP Site Plan for bio-retention basin detail.

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	***Bio-Retention Basin***		
	[A]		[B]	[C]	[A] x [C]			
DMA A	*348,710*	*Concrete or asphalt*	*1*	*0.89*	*310,351.9*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	68,029	*Landscaping*	*0.1*	*0.11*	*7,483.19*			
	$A_T = \Sigma[A]$ 416,739				$\Sigma=$ [D] 317,835.09	[E] 0.64	$[F] = \frac{[D]x[E]}{12}$ 16,990	[G] 21,696

[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.

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 (N/A)

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]
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 (N/A)

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]				
						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. APPLIES TO PROPRIETARY TREATMENT ONLY PER CITY COMMENTS.		

[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:

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.

Site is located within mapped HCOC Exemption area as presented in the approved WAP dated April 20, 2017.

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 /Non-Structural Source Control BMPs	Operational Source Control BMPs
Loading Docks	The project site will have truck docks which shown on the Post-Construction BMP Site Plan. The truck docks shall be inspected on a weekly basis to help ensure that any trash and debris are collected prior to being washed into the underground storm drain system. All storm water runoff from the loading dock areas will be discharged into infiltration basins and/or underground infiltration chambers prior to conveyance to the public storm drain system. Documentation of such inspection/maintenance shall be kept	• 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

	by the owner in perpetuity.	
Fire Sprinkler Test Water	Underground fire protection service and fire sprinklers test will be provided per the uniform fire code and the requirements of the County of Riverside	• Provide a means to drain fire sprinkler test water to the sanitary sewer.
Plazas, sidewalks, and parking lots.	Documentation of such sweeping shall be kept by the owner in perpetuity. Frequency of sweeping shall be adjusted as needed to maintain a clean site.	• 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 wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.
Refuse Trash Storage Areas	Trash container storage areas shall be paved with an impervious surface designed not to allow run-on from adjoining areas. They shall be designed to divert drainage from adjoining roofs and pavements from the surrounding area, and screened or walled to prevent off-site transport of trash. Trash dumpsters (containers) shall be leak proof and have attached covers and lids. Trash enclosures shall be roofed per City standards and the details on the WQMP exhibit in Appendix 1. Trash compactors shall be roofed and set on a concrete pad per City standards. The pad shall be a minimum of one foot larger all around than the trash compactor and sloped to drain to a sanitary sewer line. Connection of trash area drains to the MS4 is prohibited. See CASQA SD-32 BMP fact sheet in Appendix 10 for additional information. Signs shall be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.	• Adequate number of receptacles shall be provided. 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 onsite. See fact sheet SC-34 “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbook at www.cabmphandbooks.com and in Appendix 10.

Section H: Construction Plan Checklist

"This section will be completed and addressed at the time of the final WQMP submittal"

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)

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

"This section will be completed and addressed at the time of the final WQMP submittal"

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:

BMP	Responsible Party(s)	Inspection/Maintenance Activities Required	Minimum Frequency of Activities
Landscape and Irrigation	Owner	See CASQA BMP Fact Sheet SD-10 in Appendix 10 -Site landscaping design shall be implemented in accordance with the requirements of the site specific WQMP and local agency requirements. -Site landscaping maintenance shall begin immediately after it has been planted. -Maintenance of landscaping shall occur on a weekly basis and adjusted accordingly based on current conditions and seasonal needs. -Inspection of irrigation system shall be provided on a bi-weekly basis to ensure proper function of the irrigation system, no significant overspray is occurring. -Malfunctioning systems shall be repaired or replaced immediately. -Inspect plant health on a monthly basis. Repair or replace unhealthy plants as needed. -Inspect side slopes of basins and sloped areas on a bi-weekly basis and repair as needed. Re-plant and apply erosion protection to those areas to help prevent erosion in the future. -Landscape clippings shall be swept and picked up immediately to prevent it from entering the storm drain system or adjacent sedimentation basins and filtration basins. Dispose of landscape clippings in a legal manner	Weekly
MS4 Stenciling and Signage	Owner	See CASQA BMP Fact Sheet SD-13 in Appendix 10 -MS4 Stenciling and signage shall be placed during construction and inspection and maintenance shall begin upon completion of construction. -Inspect catch basin stenciling on a bi-monthly basis. Replace any damaged, missing or faded stencils in a timely manner.	Bi-monthly
Common area litter control, loading docks and trash storage areas	Owner	See CASQA BMP Fact Sheet SD-32 in Appendix 10 -Inspection and Maintenance of common areas, loading docks and trash storage areas shall begin upon completion of construction. -Visual inspection of trash storage areas shall take place on a weekly basis and adjusted on an as needed basis. -Inspect areas for trash and debris. Remove any found trash and debris immediately. Dispose of trash and debris in a legal manner. -Inspect areas for any spills. Pick up/clean up found spills immediately. Dispose of spill material in a legal manner.	Daily

Parking lot sweeping		See CASQA BMP Fact Sheet SE-7 in Appendix 10 -Parking lot sweeping shall being after the completion of construction and take place on a monthly basis. Dispose of picked up material in a legal manner.	Monthly
Drainage facility (including roof drains) inspection and maintenance		-Inspection and maintenance of site drainage facilities and roof drains shall begin immediately upon completion of construction. -Catch basins and roof drain inlet shall be clear of any debris - prior to any storm event to ensure proper function of the roof drains. Collected debris shall be disposed of in a legal manner. Catch basin filters shall be inspected on a monthly basis. Catch basin filters that have exceeded 50% of the storage capacity shall be cleaned immediately. -Catch basin filters shall be maintained per the manufacturer's specifications. -Damaged catch basin filters shall be replaced with an approved equal prior to the next storm event or as soon as practicable.	Monthly & after rain event
Bioretention Basin (Sand Filters)		See Appendix 10 -Once the sedimentation and sand filter basin have gone on-line, inspections should occur after every major storm for the first year to ensure that proper stabilization and function is achieved. Continuous inspection and maintenance shall be provided once every six months. Special attention should be paid to how long water remains standing in the basin after a storm; standing water within the basin more than 48 hours after a storm indicates that the filtration rates are insufficient and maintenance of the filter basin bottom is needed. If standing water remains after 48 hours, the standing water shall be removed in accordance with the local agency guidelines and maintenance of the filter basin bottom shall be scheduled immediately. Factors that are typically responsible for clogging the filter basin bottom include upstream sediment erosion and excessive compaction of the basin bottom. These should be repaired immediately to help achieve the desired filtration rates. -Observe and document evidence of collected sediments, trash, debris and oils/greases. -Sediments, trash, debris and oils/greases shall be removed and disposed of in a legal manner. -Observe and document evidence of erosion of side slopes or flowlines. -Schedule repair of eroded side slopes or flowlines immediately. -Protection measures against further erosion shall be placed until the eroded areas are repaired. Protection measures should be at a minimum placement of gravel bags and fiber rolls to prevent further erosion of the affected areas until the areas have been repaired and vegetation has been established.	Every 6 months

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

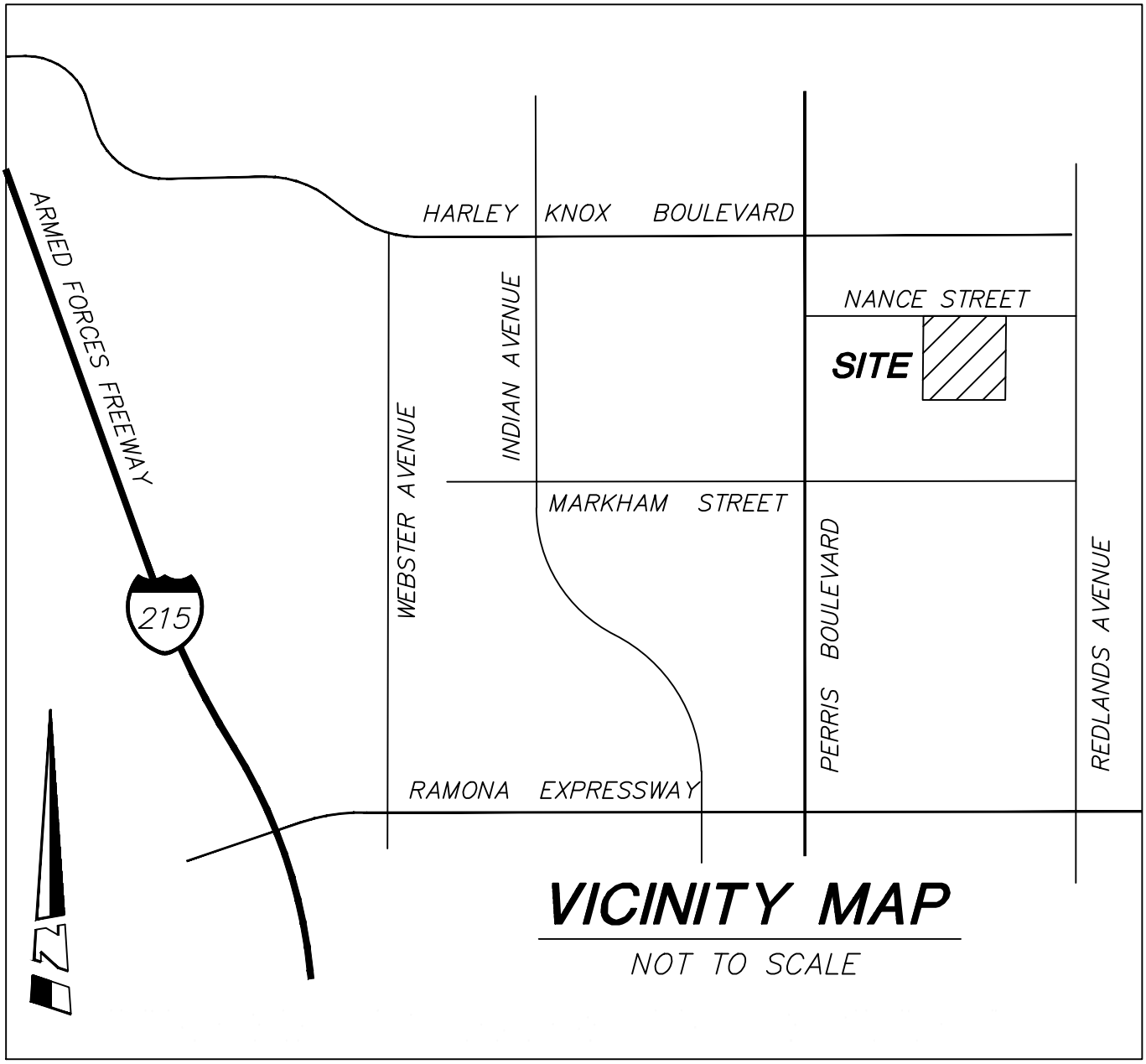
☐ Y ☒ N

Owner Information:
John Atwell
Senior Vice President
Oakmont Industrial Group
3520 Piedmont Ave Suite 100
Atlanta, GA 30305
949-215-3796

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.

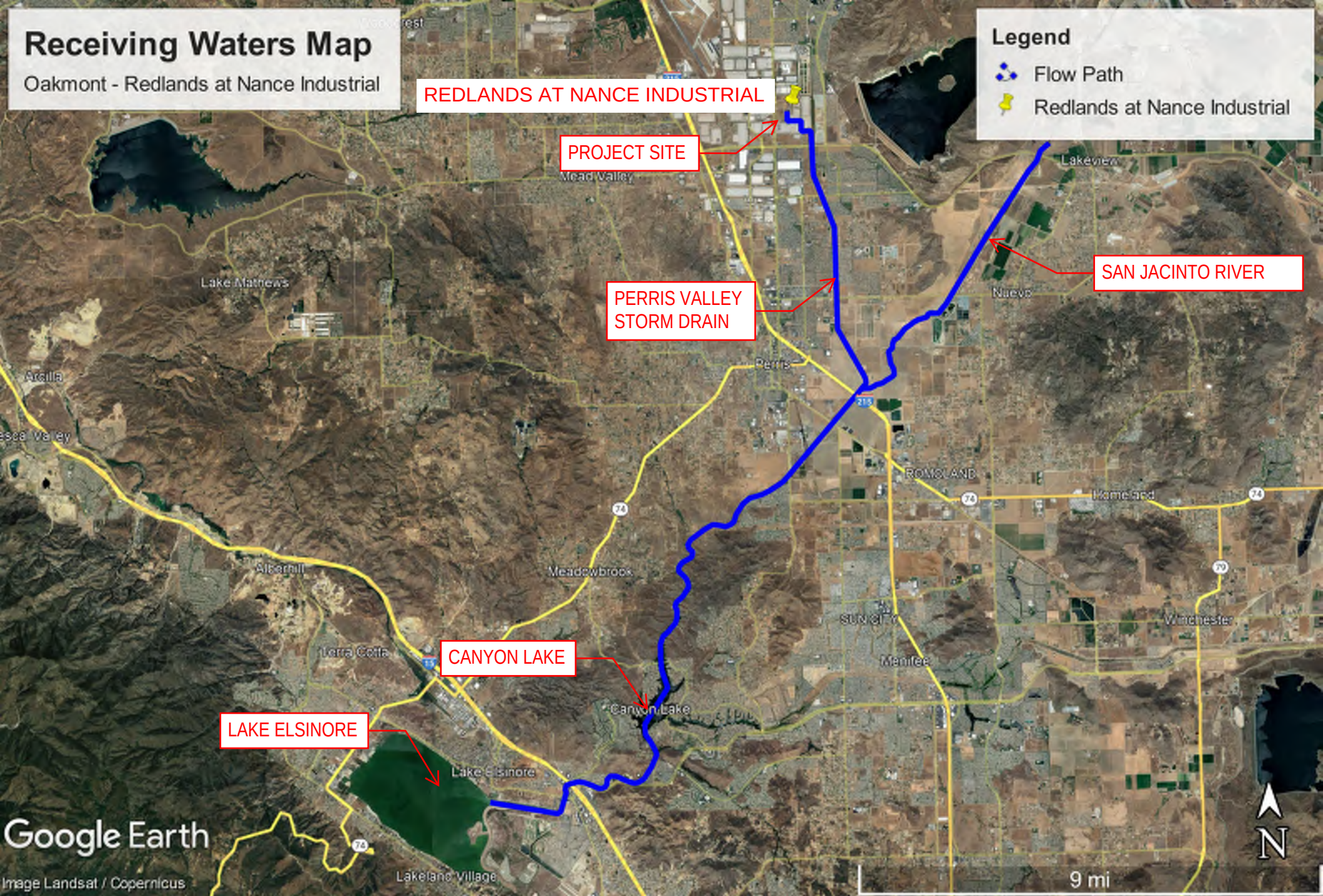
Appendix 1: Maps and Site Plans

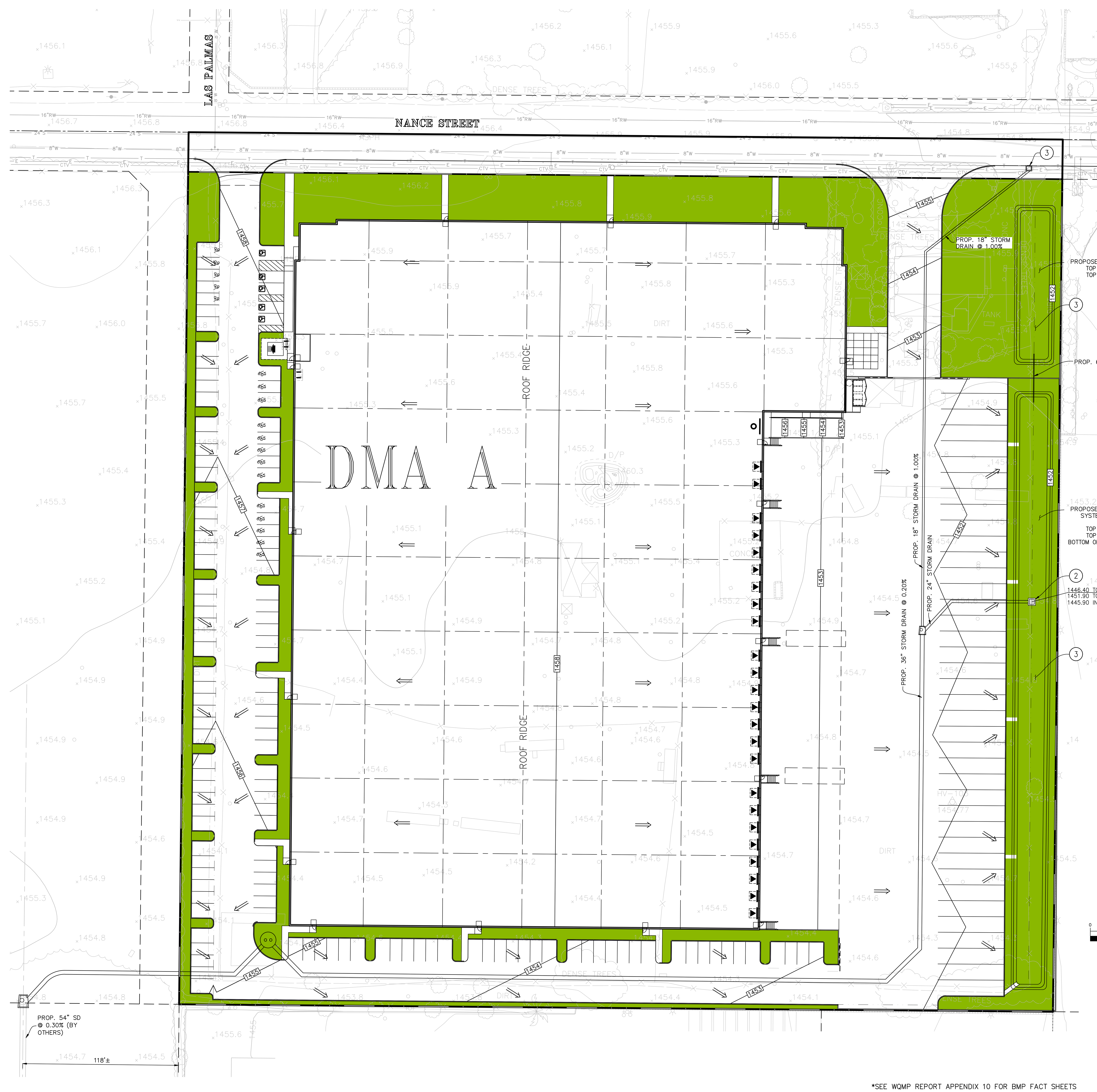
Location Map, WQMP Site Plan and Receiving Waters Map



VICINITY MAP

NOT TO SCALE


Receiving Waters Map
Oakmont - Redlands at Nance Industrial
Legend
Flow Path
Redlands at Nance Industrial
REDLANDS AT NANCE INDUSTRIAL
PROJECT SITE
PERRIS VALLEY STORM DRAIN
SAN JACINTO RIVER
CANYON LAKE
LAKE ELSINORE
Mead Valley
Lake Mathews
Perris
Lakeview
Nuevo
Romoland
Homeland
Meadowbrook
Menifee
Canyon Lake
Lake Elsinore
Lakeland Village
Google Earth
Image Landsat / Copernicus
9 mi
N



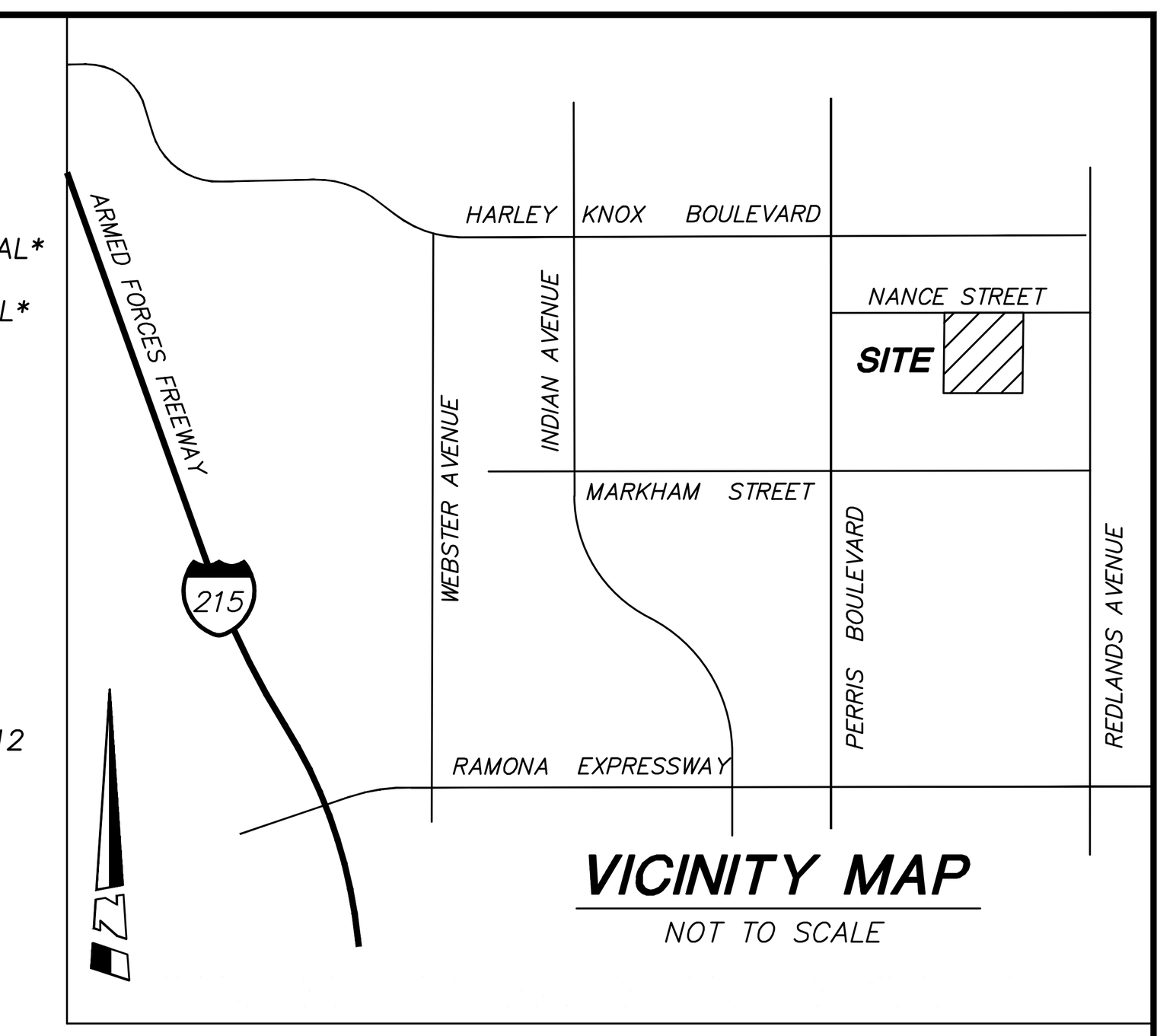
WQMP BMP NOTES

1. BIORETENTION BASIN, SEE DETAIL HEREON
2. INSTALL BIO–CLEAN GRATE INLET FILTER OR APPROVED EQUAL*
3. INSTALL BIO–CLEAN CURB INLET FILTER OR APPROVED EQUAL*

*DETAIL TO BE PROVIDED IN FINAL WQMP

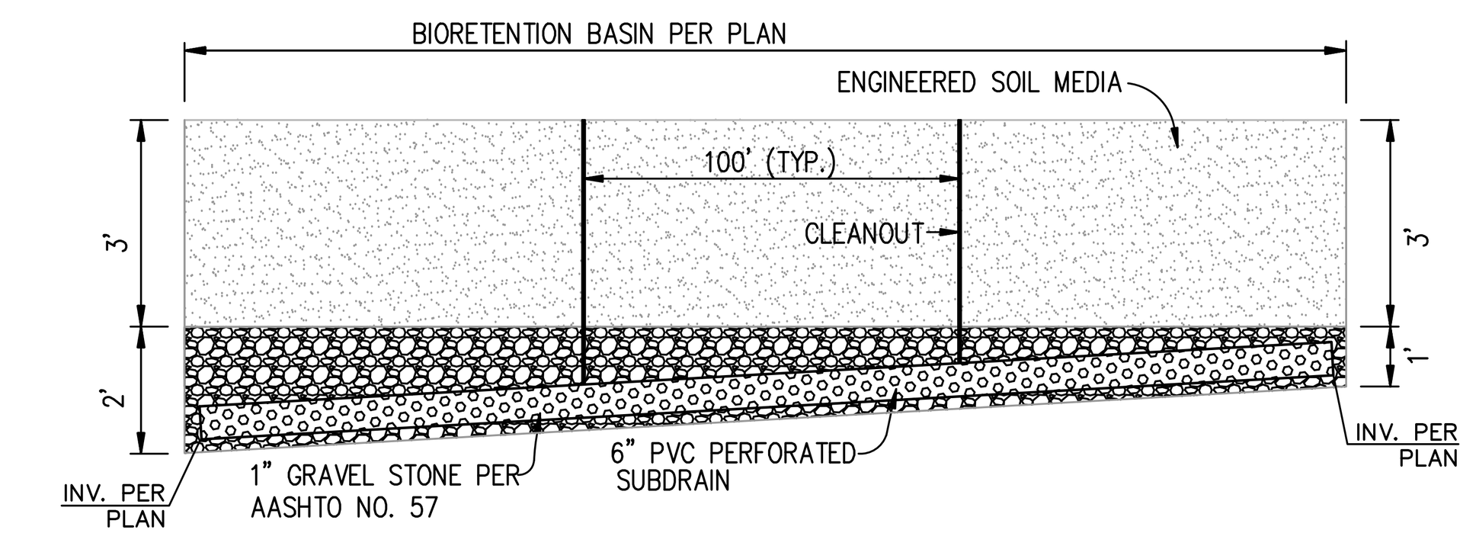
LEGEND

- PROPOSED STORM DRAIN
- WQMP BOUNDARY / LIMIT FOR *BMP SC–41 BUILDING & GROUND MAINTENANCE
- PROPOSED CURB OPENING INLET W/ FILTER INSERT
- PROPOSED LANDSCAPING AREA – *BMP SD–10 & SD–12
- CB — CATCH BASIN
- TG — TOP OF GRATE
- FLOW DIRECTION
- CLEANOUT
- TRASH ENCLOSURE WITH ROOF

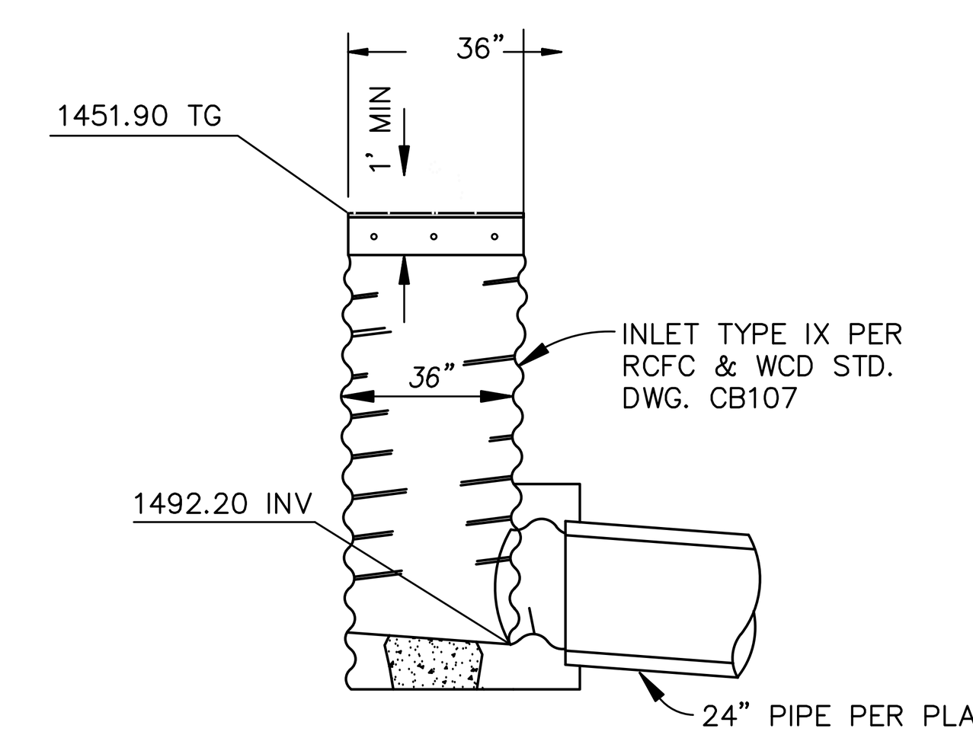


VICINITY MAP
NOT TO SCALE

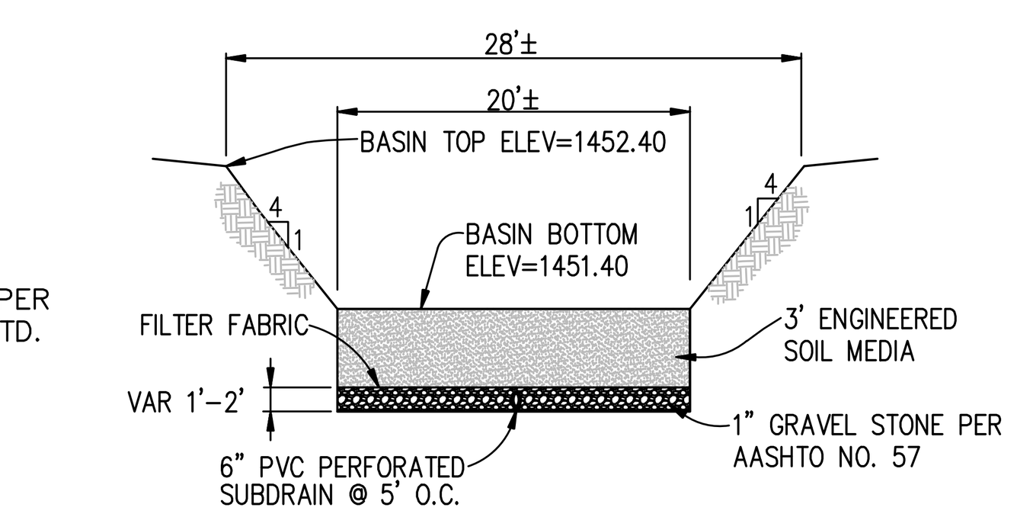
STENCIL LOGO
N.T.S.



1 BIORETENTION BASIN
N.T.S.

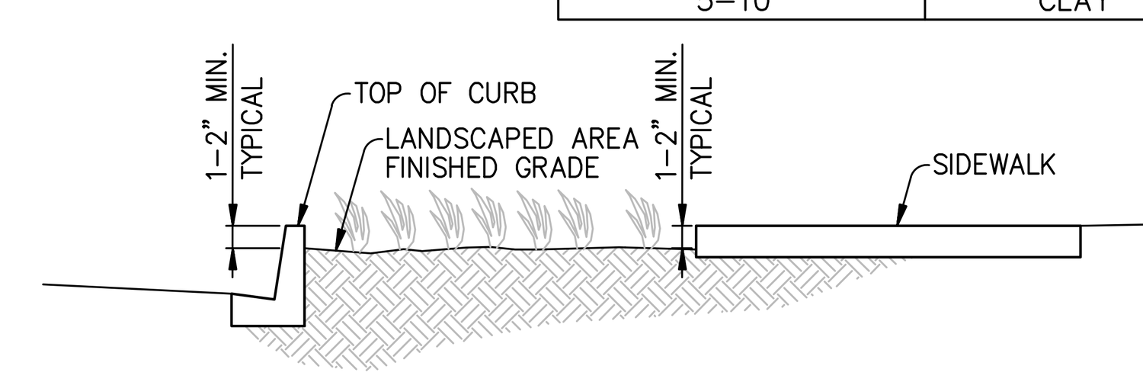


CMP INLET WITH GRATE
NOT TO SCALE

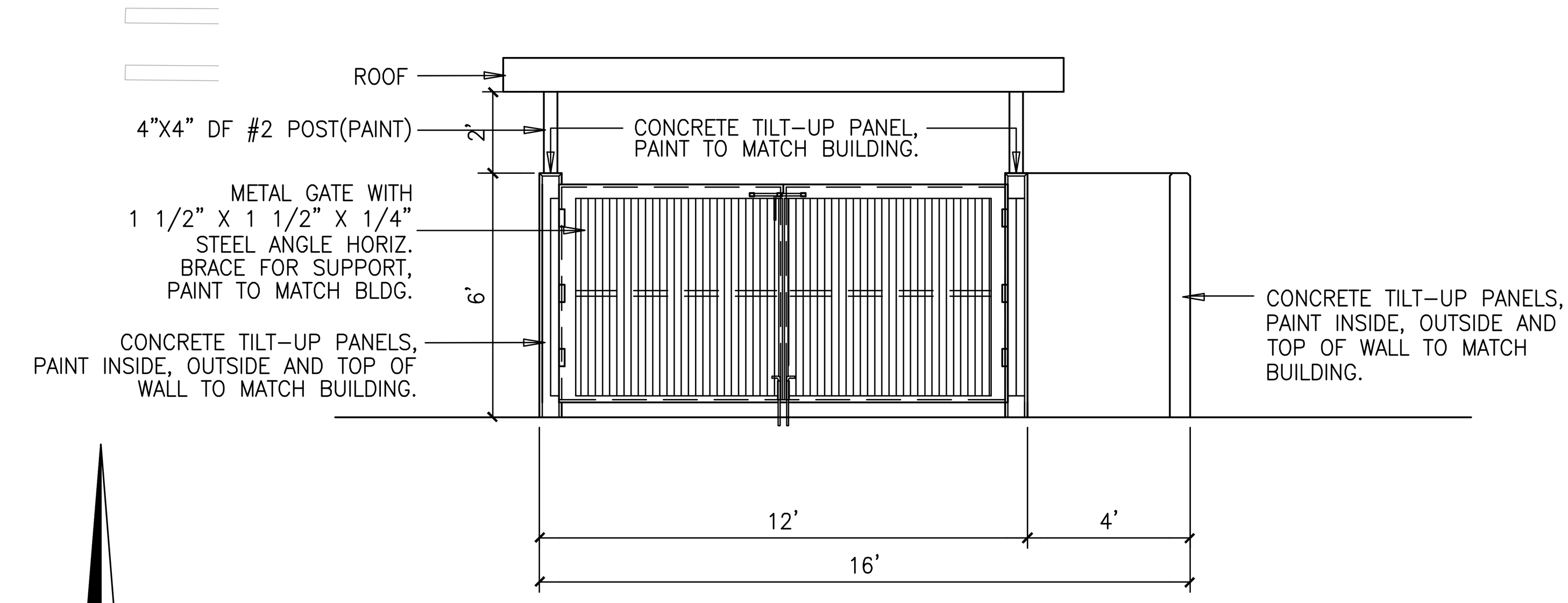


BIO-RETENTION SECTION A-A
N.T.S.

ENGINEERED SOIL MEDIA REQUIREMENTS	
PERCENT RANGE	COMPONENT
70–80	SAND
15–20	SILT
5–10	CLAY



TYPICAL SELF-RETAINING LANDSCAPE AREA ADJACENT TO CURB/SIDEWALK/PAVEMENT
N.T.S.



TRASH ENCLOSURE DETAIL
N.T.S.

SCALE 1" = 30'

NOTES

1. NO RUN–ON FLOW TO THE PROJECT SITE.
2. PROJECT AREA PLAZA, SIDEWALK, AND PARKING LOT WILL BE SWEPT REGULARLY ON A MONTHLY BASIS PER *BMP SD–7

*SEE WQMP REPORT APPENDIX 10 FOR BMP FACT SHEETS

OWNER/DEVELOPER
OAKMONT INDUSTRIAL GROUP
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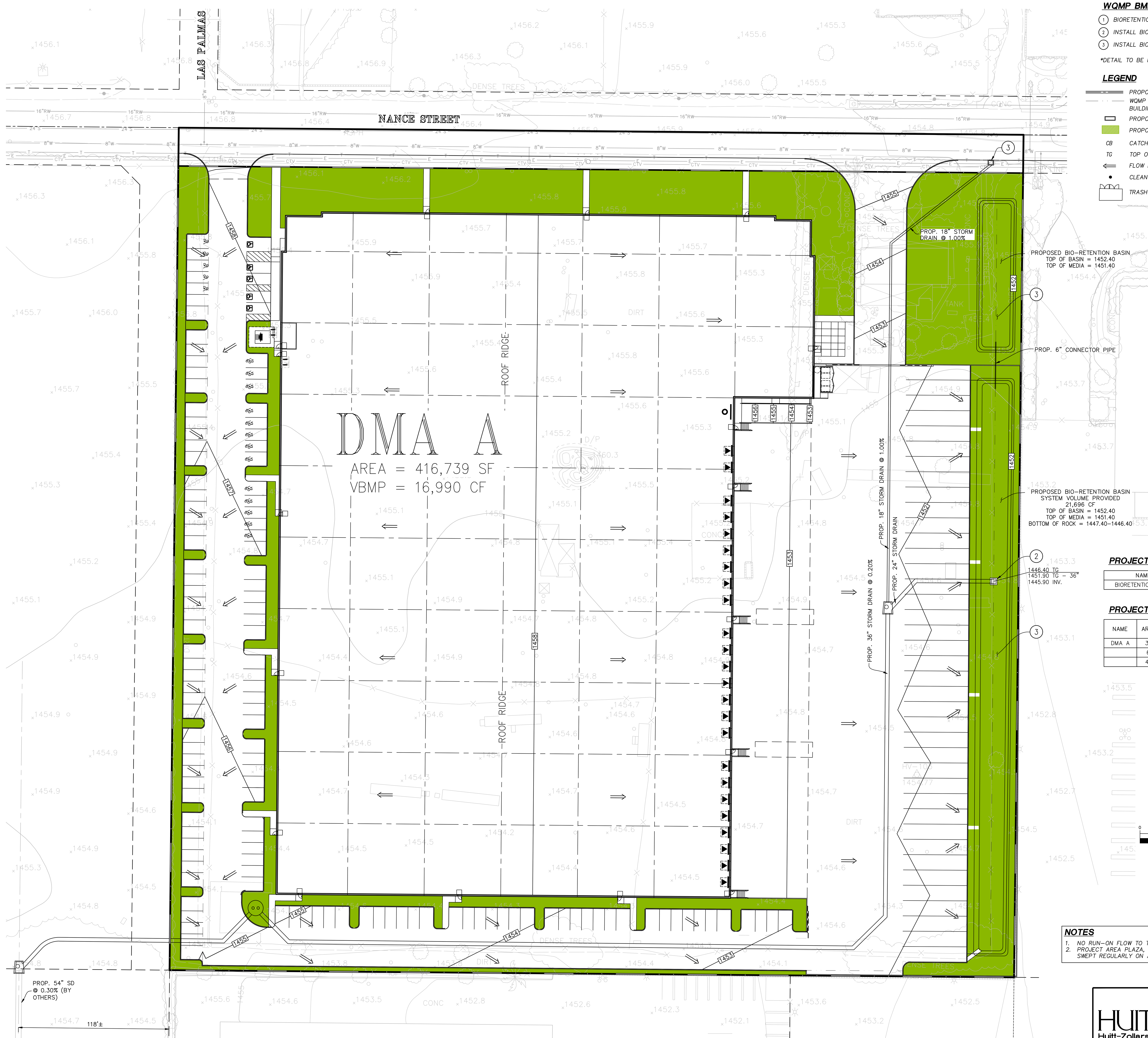
HUITT-ZOLLARS
Huitt–Zollars, Inc. Ontario
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941–7799

CITY OF PERRIS

POST-CONSTRUCTION BMP SITE MAP
22-05040
OAKMONT - NANCE STREET WAREHOUSE
255 NANCE STREET
PERRIS, CA

SHEET 1 OF 1



WQMP BMP NOTES

1. BIORETENTION BASIN, SEE DETAIL HEREON
2. INSTALL BIO-CLEAN GRATE INLET FILTER OR APPROVED EQUAL*
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*DETAIL TO BE PROVIDED IN FINAL WQMP

LEGEND

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- WQMP BOUNDARY / LIMIT FOR *BMP SC-41 BUILDING & GROUND MAINTENANCE
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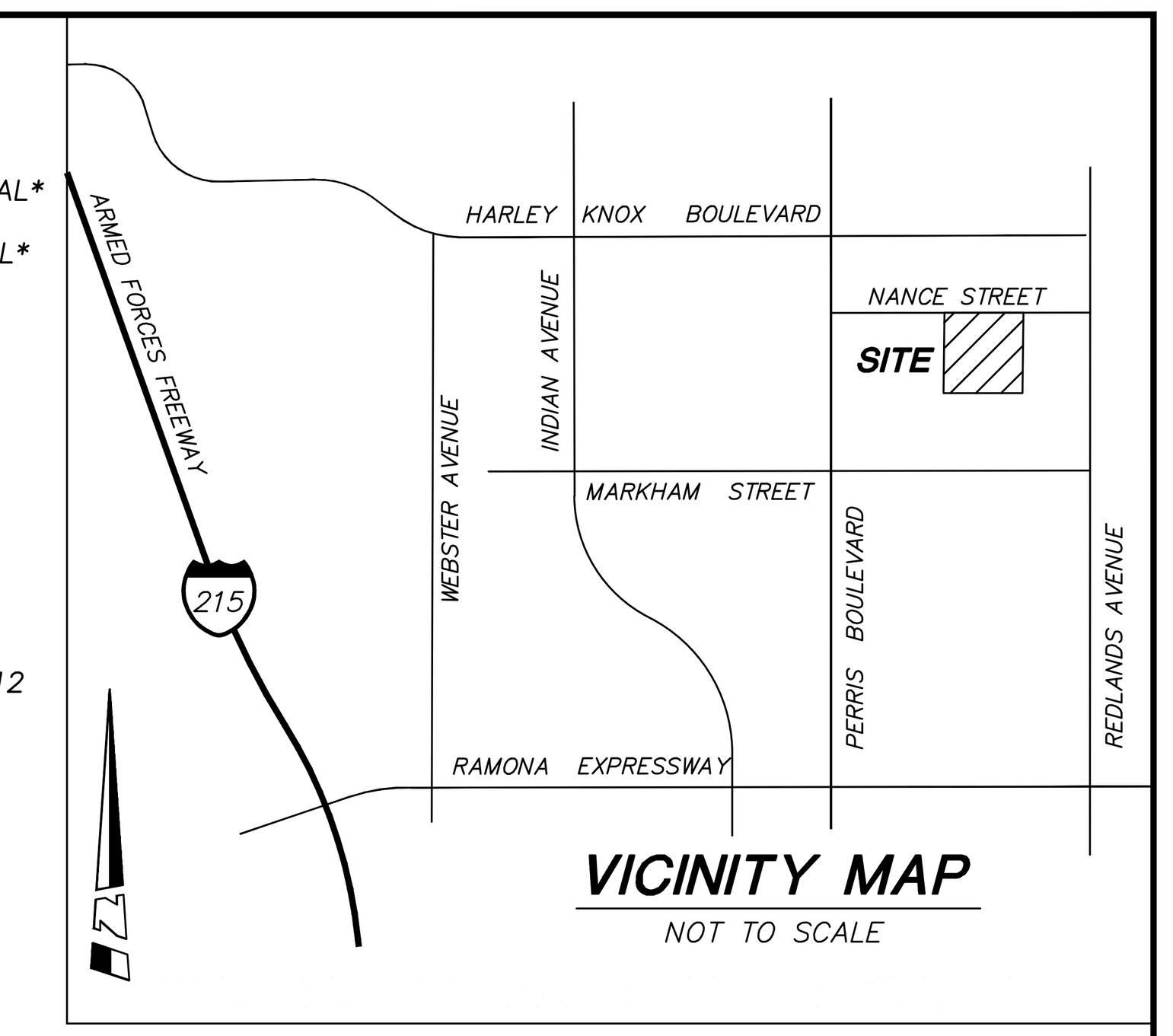


VICINITY MAP

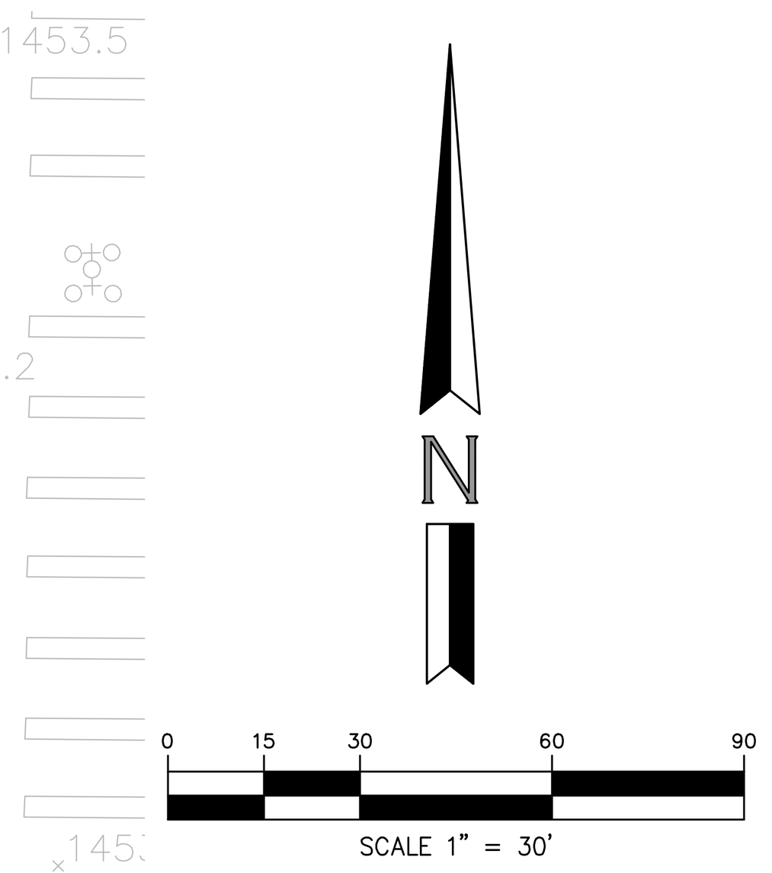
NOT TO SCALE

PROJECT BMP SIZING TABLE

NAME	d_P (FT)	d_S (FT)	W_T (FT)	d_E (FT)	$A_{REQUIRED}$ (SF)	$A_{PROVIDED}$ (SF)
BIORETENTION BASIN	0.50	3.00	20.00	1.79	9,627	**11,589**

PROJECT BMP DESIGN VOLUME

NAME	AREA (SF)	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	i	C	V_{BMP} (CF)	$V_{PROVIDE}$ (CF)
DMA A	348,710	348,710	0	1	0.89		
	68,029	0	68,029	0.1	0.11		
	416,739					**16,990**	**21,696**



NOTES

1. NO RUN-ON FLOW TO THE PROJECT SITE.
2. PROJECT AREA PLAZA, SIDEWALK, AND PARKING LOT WILL BE SWEPT REGULARLY ON A MONTHLY BASIS PER *BMP SD-7

OWNER/DEVELOPER

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*SEE WQMP REPORT APPENDIX 10 FOR BMP FACT SHEETS

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
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CITY OF PERRIS

DMA PLAN
22-05040
OAKMONT - NANCE STREET WAREHOUSE
255 NANCE STREET
PERRIS, CA

SHEET 1 OF 1

H:\projNR314482.01 - Oakmont - Redlands at Nance Ind\05 Design\05.4 WQMP\DMA Map.dwg, Layout: 01, May 19 2022 4:35pm

Appendix 2: Construction Plans

Grading and Drainage Plans

Attached Conceptual Grading and Drainage Plans

This section will be completed and addressed at the time of the final WQMP submittal

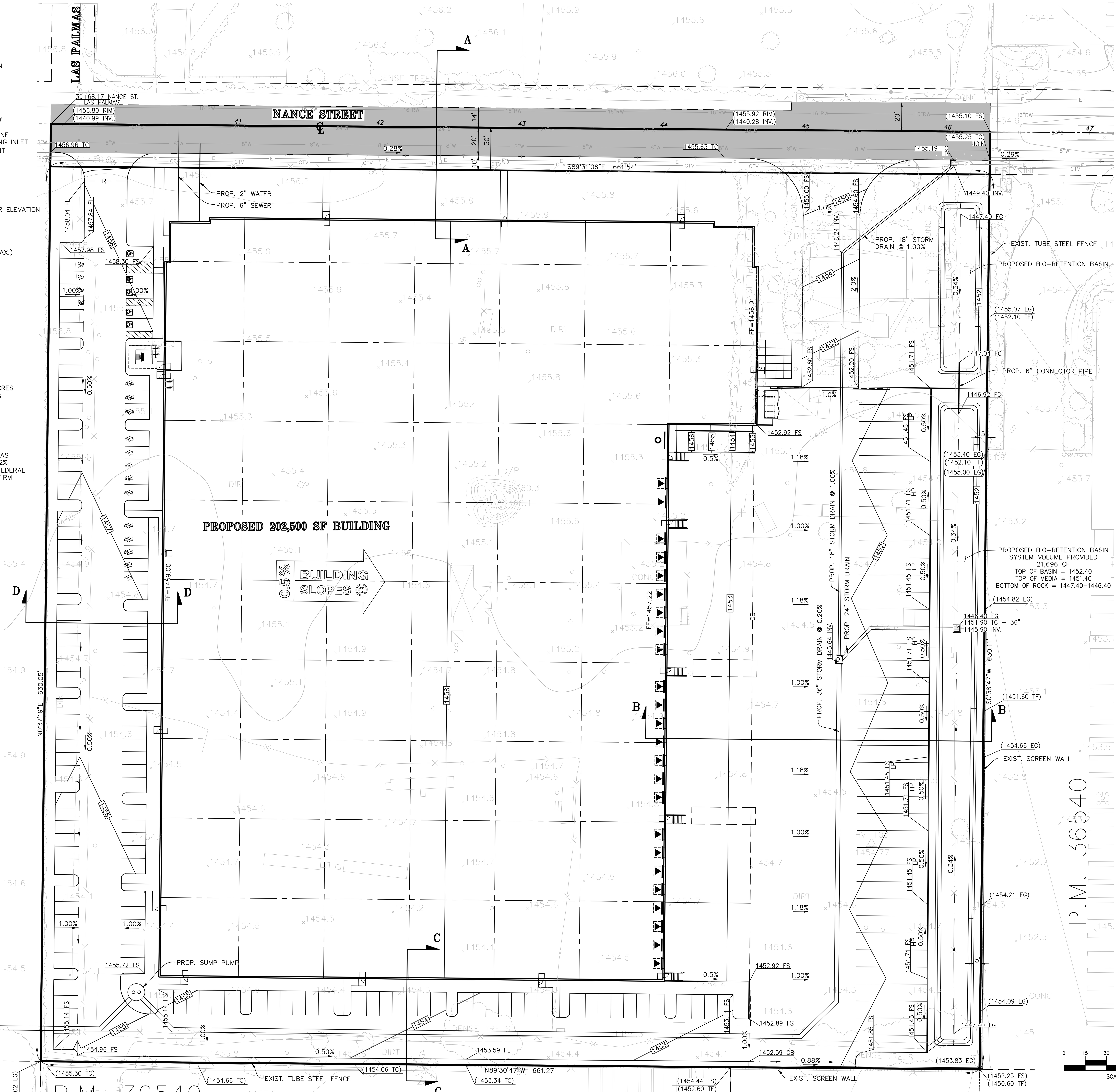
LEGEND

—E—	EXISTING ELECTRIC
—T—	EXISTING TELEPHONE
—G—	EXISTING GAS
—W—	EXISTING WATER
—CATV—	EXISTING CABLE TV
—SD—	PROPOSED STORM DRAIN
—S—	PROPOSED SEWER
—W—	PROPOSED WATER
—FW—	PROPOSED FIRE WATER
—R—	RIDGE
—GB—	GRADE BREAK
	EXISTING RIGHT-OF-WAY
	FLOWLINE
	PROPOSED PROPERTY LINE
	PROPOSED CURB OPENING INLET
	PROPOSED FIRE HYDRANT
CF	CURB FACE
CB	CATCH BASIN
C&G	CURB & GUTTER
CL	CENTERLINE
DWY	DRIVEWAY
EXIST.	EXISTING
FF	PROPOSED FINISH FLOOR ELEVATION
FS	FINISHED SURFACE
FL	FLOWLINE
GB	GRADE BREAK
INV	INVERT
LL	LEVEL LANDING (1.8% MAX.)
P.I.P.	PROTECT IN PLACE
PP	POWER POLE
P/L	PROPERTY LINE
PROP.	PROPOSED
PVMT	PAVEMENT
R/W	RIGHT-OF-WAY
SW	SIDEWALK
STL	STREET LIGHT
TP	TOP OF PAVEMENT
TC	TOP OF CURB
SD	STORM DRAIN

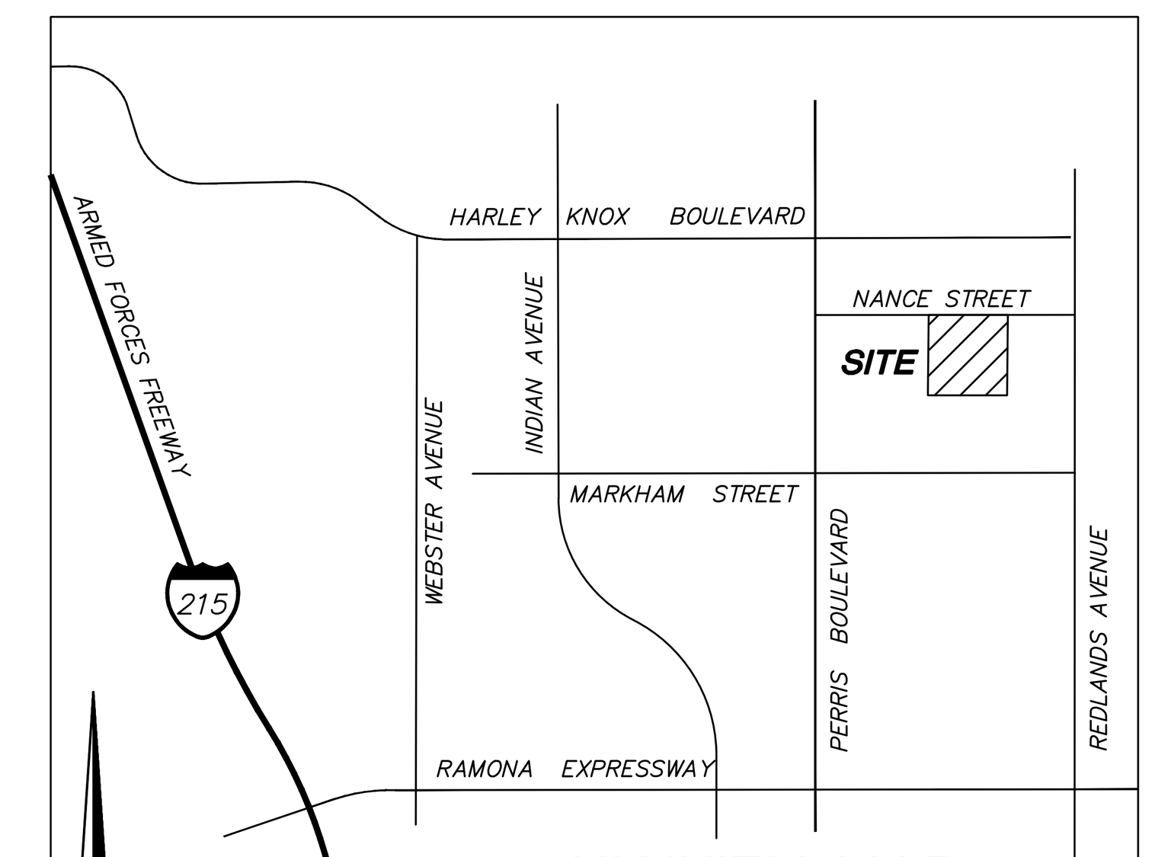
APN'S	AREA
302-110-002	GROSS = 10.02 ACRES NET = 9.57 ACRES

FLOOD ZONE:

FLOOD ZONE X,
FLOOD ZONE X IS DEFINED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN" ON FEDERAL EMERGENCY MANAGEMENT AGENCY FIRM (FLOOD INSURANCE RATE MAP)
MAP NO. 06065C1410G,
EFFECTIVE DATE AUGUST 28, 2008.



LAS PALMAS
NANCE STREET
PROPOSED 202,500 SF BUILDING
0.5% BUILDING SLOPES @
PROP. 2" WATER
PROP. 6" SEWER
PROP. 18" STORM DRAIN @ 1.00%
EXIST. TUBE STEEL FENCE
PROPOSED BIO-RETENTION BASIN
PROP. 6" CONNECTOR PIPE
PROPOSED BIO-RETENTION BASIN SYSTEM VOLUME PROVIDED 21,696 CF
TOP OF BASIN = 1452.40
TOP OF MEDIA = 1451.40
BOTTOM OF ROCK = 1447.40-1446.40
PROP. 18" STORM DRAIN @ 1.00%
PROP. 24" STORM DRAIN
PROP. 36" STORM DRAIN @ 0.20%
EXIST. SCREEN WALL
PROP. SUMP PUMP
OFFSITE EASEMENT REQUIRED FOR STORM DRAIN CONNECTION
PROP. 54" SD @ 0.30% (BY OTHERS)
S89°31'06"E 661.54'
N89°30'47"W 661.27'
N0°37'19"E 630.05'
S0°38'47"W 630.11'
FF=1459.00
FF=1457.22
FF=1456.91
P.M. 36540
SCALE 1" = 30'



VICINITY MAP

NOT TO SCALE

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF SAN BERNARDINO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1:

LOT 3 OF JACKSON'S SUBDIVISION, IN THE CITY OF SAN BERNARDINO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS PER PLAT RECORDED IN BOOK 18 OF MAPS, PAGE 77, RECORDS OF SAID COUNTY.

EXCEPT THE WEST 150 FEET THEREOF.

ALSO EXCEPT THE WEST 361.5 FEET OF THE NORTH 361.5 FEET THEREOF.

ALSO EXCEPT THAT PORTION CONVEYED TO THE COUNTY OF SAN BERNARDINO, BY DEED RECORDED OCTOBER 29, 1954, IN BOOK 3495 PAGE 381, OFFICIAL RECORDS, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT THAT IS 80.00 FEET SOUTHERLY AND 18.75 FEET WESTERLY FROM THE NORTHEAST CORNER OF LOT 3 OF JACKSON'S SUBDIVISION, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS RECORDED IN BOOK 18 PAGE 77 OF MAPS, SAID POINT BEING ALSO DESCRIBED AS A POINT 121.25 FEET SOUTHERLY AND 60.00 FEET WESTERLY FROM THE INTERSECTION OF THE CENTER LINE OF TIPPECANOE AVENUE AND NINTH STREET; AND RUNNING THENCE 180 FEET SOUTHERLY AND PARALLEL TO THE EAST LINE OF SAID LOT 1; THENCE 18.75 FEET EASTERLY AT RIGHT ANGLES TO THE EAST LINE OF SAID LOT 3; THENCE 260 FEET NORTHERLY TO THE NORTHEAST CORNER OF SAID LOT 3; THENCE 369.38 FEET WESTERLY ALONG THE NORTH LINE OF SAID LOT 3 TO A POINT THAT IS 361.5 FEET EASTERLY FROM THE NORTHWEST CORNER OF SAID LOT 3; THENCE 18.75 FEET SOUTHERLY AND PARALLEL TO THE WEST LINE OF SAID LOT 3; THENCE 289.38 FEET EASTERLY AND PARALLEL TO THE NORTH LINE OF LOT 3; THENCE 86.62 FEET SOUTHEASTERLY TO THE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION AS CONVEYED TO THE STATE OF CALIFORNIA BY DEED RECORDED MAY 7, 1971, IN BOOK 7662 PAGE 742, OFFICIAL RECORDS.

PARCEL 2:

LOT 4 OF JACKSON'S SUBDIVISION, IN THE CITY OF SAN BERNARDINO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS PER PLAT RECORDED IN BOOK 18 OF MAPS, PAGE 77, RECORDS OF SAID COUNTY.

EXCEPT THEREFROM THAT PORTION DESCRIBED AS FOLLOWS:
BEGINNING AT THE SOUTHEAST CORNER OF SAID LOT 4; THENCE NORTH ALONG THE WESTERLY LINE OF TIPPECANOE AVENUE, 90 FEET; THENCE WESTERLY PARALLEL TO THE SOUTHERLY LINE OF SAID LOT 4, 242 FEET; THENCE SOUTHERLY PARALLEL TO SAID WESTERLY LINE OF TIPPECANOE AVENUE, 90 FEET, MORE OR LESS, TO THE SOUTHERLY LINE OF SAID LOT 4; THENCE EASTERLY ALONG SAID SOUTHERLY LINE OF SAID LOT 4, 242 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

PARCEL 3:

THAT PORTION OF LOT 3 OF JACKSON'S SUBDIVISION, IN THE CITY OF SAN BERNARDINO, COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS PER PLAT RECORDED IN BOOK 18 OF MAPS, PAGE 77, RECORDS OF SAID COUNTY, LYING WESTERLY OF THE FOLLOWING DESCRIBED LINE:

BEGINNING ON THE CENTER LINE OF NINTH STREET, DISTANT NORTH 89° 15' 99" WEST 263.33 FEET FROM THE INTERSECTION OF THE CENTER LINE OF TIPPECANOE STREET, AS SAID CENTER LINES ARE SHOWN ON MAP OF JACKSON'S SUBDIVISION RECORDED IN BOOK 18 OF MAPS, PAGE 77, RECORDS OF SAID COUNTY; THENCE SOUTH 17° 31' 46" WEST TO THE SOUTH LINE OF SAID LOT 3.

EXCEPT THE WEST 150 FEET OF SAID LOT 3.

ALSO EXCEPT THE NORTH 18.75 FEET OF SAID LOT 3.

PARCEL 4:

ALL THAT PORTION OF LOT 4, JACKSON SUBDIVISION, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 18, PAGE 77, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID LOT 4; THENCE NORTH ALONG THE WESTERLY LINE OF TIPPECANOE AVENUE, 90 FEET; THENCE WESTERLY PARALLEL TO THE SOUTHERLY LINE OF SAID LOT 4, 242 FEET; THENCE SOUTHERLY PARALLEL TO SAID WESTERLY LINE OF TIPPECANOE AVENUE, 90 FEET; MORE OR LESS TO THE SOUTHERLY LINE OF SAID LOT 4; THENCE EASTERLY ALONG SAID SOUTHERLY LINE OF SAID LOT 4, 242 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

OWNER/DEVELOPER
OAKMONT INDUSTRIAL GROUP
MR. JOHN ATWELL
SENIOR VICE PRESIDENT
OAKMONT INDUSTRIAL GROUP
3520 PIEDMONT AVE SUITE 100
ATLANTA, GA 30305
PHONE: (949) 215-3796

CIVIL ENGINEER
HUITT-ZOLLARS, INC.
CONTACT: DAVID WHITE
3990 CONCOURS, SUITE 330
ONTARIO, CALIFORNIA 91764
PHONE: (909) 941-7799

BASIS OF BEARINGS: BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN SOPAC CONTROL STATION "MLFP" AND STATION "PPBF" BEING NORTH 53°20'18" WEST PER RECORDS ON FILE WITH THE COUNTY RECORDER.

BENCHMARK:
RIVERSIDE COUNTY FLOOD CONTROL BENCHMARK M-31
ELEVATION: 1474.674, NGVD29, 3 1/4" ALUMINUM DISK STAMPED "RIV. CO. BENCHMARK M-31 RESET APRIL 1996"

REGISTERED PROFESSIONAL ENGINEER DAVID L WHITE NO. 52921 EXPIRATION 12-31-22 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc.
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799

PREPARED UNDER THE SUPERVISION OF:

DAVID WHITE
R.C.E. NO. 52921 EXP. 12/31/22

DATE

CITY OF PERRIS

CONCEPTUAL GRADING & DRAINAGE PLAN

OAKMONT - NANCE STREET WAREHOUSE 255 NANCE STREET

SHEET 1 NO. 2

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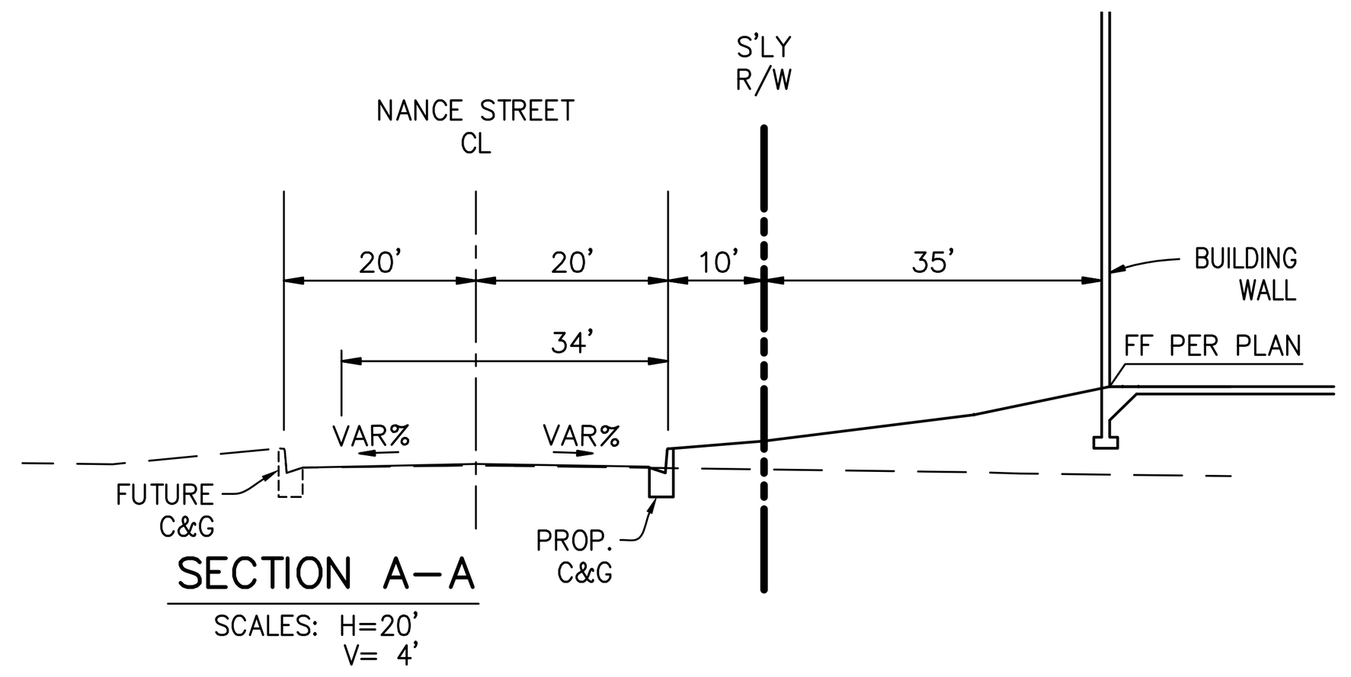

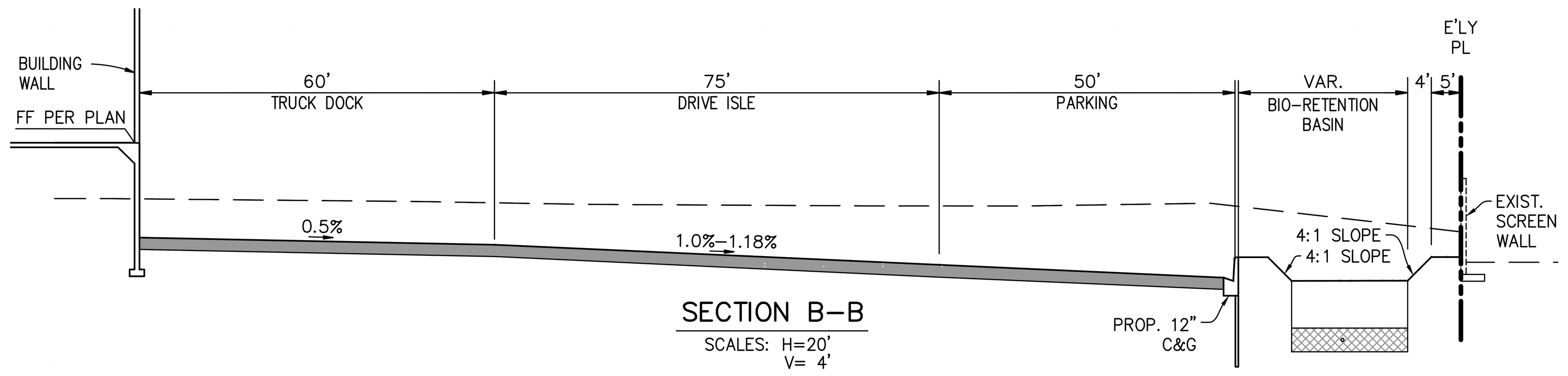

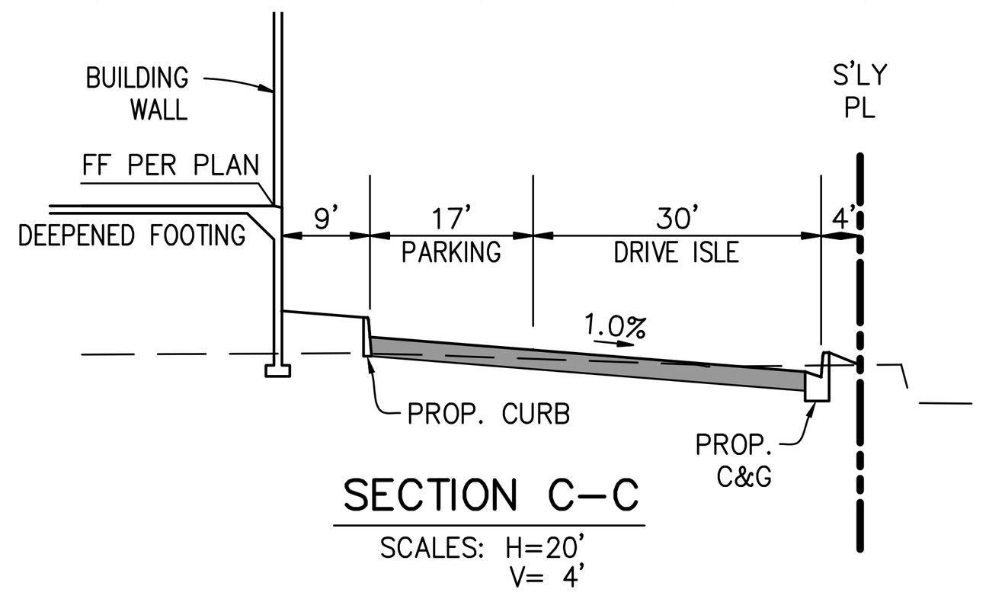

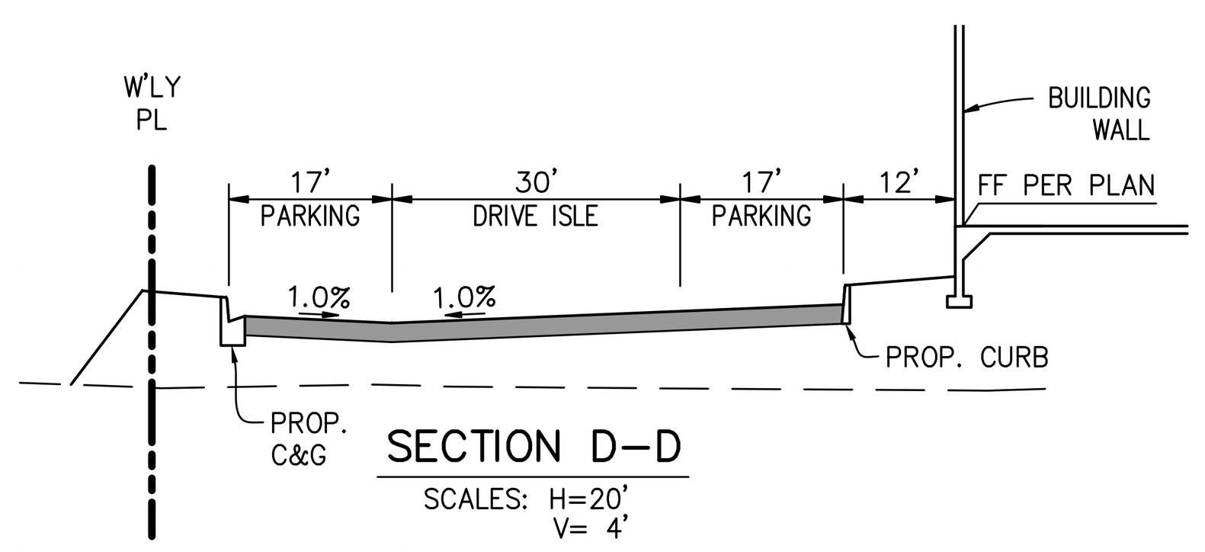

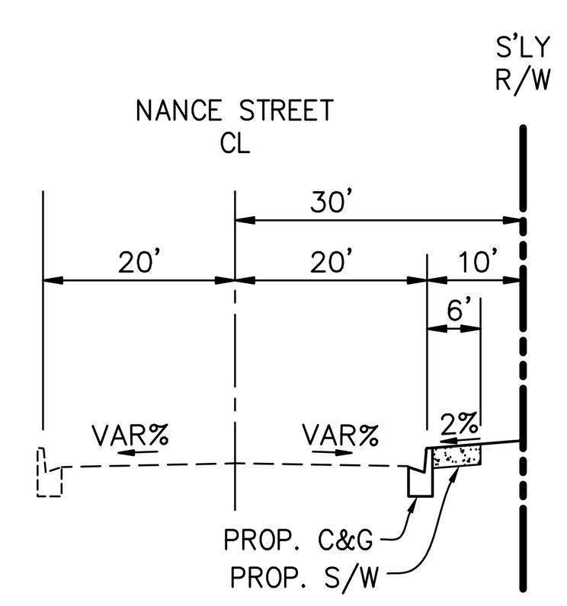

PROPOSED CROSS SECTION
NANCE STREET
N.T.S
(LOCAL)
TI=8.0

OWNER/DEVELOPER
OAKMONT INDUSTRIAL GROUP
MR. JOHN ATWELL
SENIOR VICE PRESIDENT
OAKMONT INDUSTRIAL GROUP
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BASIS OF BEARINGS: BEARINGS SHOWN HEREON ARE BASED ON THE BEARING BETWEEN SOPAC CONTROL STATION "MLFP" AND STATION "PPBF" BEING NORTH 53°20'18" WEST PER RECORDS ON FILE WITH THE COUNTY RECORDER.

BENCHMARK:
RIVERSIDE COUNTY FLOOD CONTROL BENCHMARK M–31
ELEVATION: 1474.674, NGVD29, 3 1/4" ALUMINUM DISK STAMPED "RIV. CO. BENCHMARK M–31 RESET APRIL 1996"

REGISTERED PROFESSIONAL ENGINEER
DAVID L WHITE
NO. 52921
EXPIRATION
12–31–22
CIVIL
STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc.
3990 CONCOURS, SUITE 330 * ONTARIO, CALIFORNIA 91764 * (909) 941–7799

PREPARED UNDER THE SUPERVISION OF:

DAVID WHITE   DATE
R.C.E. NO. 52921 EXP. 12/31/22

CITY OF PERRIS

CONCEPTUAL GRADING & DRAINAGE PLAN

OAKMONT - NANCE STREET WAREHOUSE
255 NANCE STREET

SHEET 2 NO. 2

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

December 13, 2021

Oakmont Industrial Group
3520 Piedmont Road, Suite 100
Atlanta, Georgia 30305

Attention: Mr. John C. Atwell
Senior Vice President

Project No.: **21G256-2**

Subject: **Results of Infiltration Testing**
Proposed Warehouse
South Side of East Nance Street, 800± feet West of Redlands Avenue
Perris, California

Reference: Geotechnical Investigation, Proposed Warehouse, South Side of East Nance Street, 800± feet West of Redlands Avenue, Perris, California, prepared for Oakmont Industrial Group, by Southern California Geotechnical, Inc. (SCG), SCG Project No. 21G256-1, dated December 10, 2021.

Mr. Atwell:

In accordance with your request, we have conducted infiltration testing at the subject site. We are pleased to present this report summarizing the results of the infiltration testing and our design recommendations.

Scope of Services

The scope of services performed for this project was in general accordance with our Proposal No. 21P367, dated August 11, 2021. The scope of services included site reconnaissance, subsurface exploration, field testing, and engineering analysis to determine the infiltration rates of the onsite soils. The infiltration testing was performed in general accordance with the guidelines published in Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A, prepared for the Riverside County Department of Environmental Health (RCDEH), dated December, 2013.

Site and Project Description

The subject site is located on the south side of East Nance Street, 800± feet west of Redlands Avenue in Perris, California. The site is bounded to the north by East Nance Street, to the west by a vacant lot, and to the south and east by existing commercial/industrial buildings. The general location of the site is illustrated on the Site Location Map, included as Plate 1 in Appendix A of this report.

The site consists of a rectangular-shaped property, 9.5± acres in size. Based on aerial photographs obtained from Google Earth and visual observations, the site is presently developed as a truck and trailer parking lot. A single-family residence (SFR) approximately 3,700 ft² in size and a 400± ft² shed are located in the northeastern region of the site. The

structures are single-story of wood frame and stucco construction, presumed to be supported on conventional shallow foundations with concrete slab-on-grade floors. The existing structures are surrounded by landscaped areas which include few large trees, and a concrete driveway. The ground surface cover throughout the site predominantly consists of a 1-inch-thick surficial layer of what appears to be open-graded gravel or heavily weathered crushed aggregate base (CAB), and exposed soil.

Detailed topographic information was not available at the time of this report. Based on elevations obtained from Google Earth and visual observations made at the time of the subsurface investigation, the site is relatively flat with an overall site topography gently sloping downward to the south-southeast at a gradient of less than 1 percent.

Proposed Development

A conceptual site plan identified as Scheme A, prepared by GAA Architects, has been provided to our office by the client. Based on this plan, the subject site will be developed with a 207,850± ft² warehouse, located in the eastern region of the site. Dock-high doors and a truck court will be constructed on the west side of the proposed building. The new building is expected to be surrounded by asphaltic concrete (AC) pavements in the parking and drive areas and Portland cement concrete (PCC) pavements in the loading dock area. Several landscaped planters and concrete flatwork are also expected to be included throughout the site.

We understand that the proposed development will include on-site storm water infiltration. The infiltration system will consist of one (1) below-grade chamber system located in the western region of the site. The bottom of the infiltration system is expected be 10± feet below the existing site grades.

Concurrent Study

SCG concurrently conducted a geotechnical investigation at the subject site, which is referenced above. As part of this study, five (5) borings were advanced to depths of 20 to 55± feet below existing site grades. Two of these borings were used as a part of a liquefaction evaluation. Artificial fill soils were encountered at the ground surface at Boring Nos. B-1, B-2, B-4 and B-5, extending to depths of 2½ to 3± feet below the existing site grades. The fill soils generally consisted of medium dense silty sands and sandy silts and stiff clayey silts. Native alluvial soils were encountered at the ground surface and beneath the fill soils at all of the boring locations, extending to at least the maximum depth explored of 50± feet below the existing site grades. The alluvial soils generally consisted of medium dense clayey sands, silty sands and sandy silts with occasional dense silty sands, and stiff to very stiff sandy clays, silty clays, and clayey silts.

Groundwater

Free water was encountered during drilling at Boring Nos. B-1 and B-4 at depths of 25½ and 20½± feet below the ground surface, respectively. Based on these observations, the static groundwater table is considered to have been present at a depth of 20½ to 25½± feet below the existing site grades at the time of the subsurface exploration.

As part of our research, we reviewed available groundwater data in order to determine the historic high groundwater level for the site. The primary reference used to determine the groundwater depths in this area is the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. The nearest monitoring well is located approximately 2,300 feet northeast of the site. Water level readings within this monitoring well indicate a high groundwater level of 9± feet below the ground surface in March 2020.

Subsurface Exploration

Scope of Exploration

The subsurface exploration conducted for the infiltration testing consisted of two (2) infiltration test borings, advanced to a depth of 10± feet below the existing site grades. The infiltration borings were advanced using a truck-mounted drilling rig, equipped with 8-inch-diameter hollow stem augers and were logged during drilling by a member of our staff. The approximate locations of the infiltration test borings (identified as I-1 and I-2) are indicated on the Infiltration Test Location Plan, enclosed as Plate 2 of this report.

Geotechnical Conditions

Native alluvium was encountered at the ground surface at both of the infiltration test locations, extending to at least the maximum explored depth of 10± feet below existing site grades. The alluvial soils consist of medium dense clayey fine sands and fine sandy silts as well as very stiff fine sandy clays. The Boring Logs, which illustrate the conditions encountered at the infiltration test locations, are presented in this report.

Infiltration Testing

As previously mentioned, the infiltration testing was performed in general accordance with the Riverside County guidelines: Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A.

Pre-soaking

In accordance with the county infiltration standards both of the infiltration test borings were pre-soaked prior to the infiltration testing. The pre-soaking process consisted of filling the test borings by inverting a full 5-gallon bottle of clear water supported over each hole so that the water level reaches a level of at least 5 times the hole's radius above the gravel at the bottom of each hole. The pre-soaking was completed after all of the water had percolated through each test hole or after 15 hours since initiating the pre-soak. Based on the results of the pre-soaking process, different infiltration procedures were used during the infiltration testing at the infiltration boring locations.

Infiltration Testing

Following the pre-soaking process of the infiltration test borings, SCG performed the infiltration testing. Each test hole was filled with water to a depth of at least 5 times the hole's radius above the gravel at the bottom of each test hole, and less than or equal to the water level used

during the pre-soaking process. In accordance with the Riverside County guidelines, since "sandy soils" were encountered at the bottom of the infiltration borings (when two-consecutive measurements show that 6 inches of water seep away in less than 25 minutes), these tests were run for an additional hour with measurements taken at 10-minute intervals. After each reading, the borings were refilled to the correct water level above the gravel at the bottom of each test hole. The water level readings are presented on the spreadsheets enclosed with this report. The infiltration rates for each of the timed intervals are also tabulated on the spreadsheets.

The infiltration rates from the test are tabulated in inches per hour. In accordance with the typically accepted practice, it is recommended that the most conservative reading from the latter part of the infiltration tests be used as the design infiltration rate. The rates are summarized below:

Infiltration Test No.	Depth (feet)	Soil Description	Infiltration Rate (inches/hour)
I-1	10	Fine Sandy Silt to Silty fine Sand	0.9
I-2	10	Fine Sandy Silt to Silty fine Sand, trace Clay	0.5

Design Recommendations

Two (2) infiltration tests were performed at the subject site. As note above, the calculated infiltration rates at the infiltration test locations range from 0.5 to 0.9 inches per hour. **Based on the results of infiltration testing, we recommend an infiltration rate of 0.7 inches per hour to be used for the design of the proposed infiltration system located in the western region of the subject site, if the bottom of the infiltration system extends to 10± feet below the existing site grades.**

We recommend that a representative from the geotechnical engineer be on-site during the construction of the proposed infiltration system to identify the soil classification at the base of the infiltration basin. It should be confirmed that the soils at the base of the proposed infiltration system corresponds with those presented in this report to ensure that the performance of the system will be consistent with the rates reported herein.

The design of the storm water infiltration system should be performed by the project civil engineer, in accordance with the City of Perris and/or County of Riverside guidelines. It is recommended that the system be constructed so as to facilitate removal of silt and clay, or other deleterious materials from any water that may enter the systems. The presence of such materials would decrease the effective infiltration rates. **It is recommended that the project civil engineer apply an appropriate factor of safety. The infiltration rates 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.** It should be noted that the recommended

infiltration rates are based on infiltration testing at two (2) discrete locations and that the overall infiltration rates of the proposed infiltration system could vary considerably.

Infiltration Rate Considerations

The infiltration rates presented herein was determined in accordance with the Riverside County guidelines and are considered valid only for the time and place of the actual test. Varying subsurface conditions will exist in other areas of the site, which could alter the recommended infiltration rates presented above. The infiltration rates will decline over time between maintenance cycles as silt or clay particles accumulate on the BMP surface. The infiltration rate is highly dependent upon a number of factors, including density, silt and clay content, grainsize distribution throughout the range of particle sizes, and particle shape. Small changes in these factors can cause large changes in the infiltration rates.

Infiltration rates are based on unsaturated flow. As water is introduced into soils by infiltration, the soils become saturated and the wetting front advances from the unsaturated zone to the saturated zone. Once the soils become saturated, infiltration rates become zero, and water can only move through soils by hydraulic conductivity at a rate determined by pressure head and soil permeability. Changes in soil moisture content will affect the infiltration rate. Infiltration rates should be expected to decrease until the soils become saturated. Soil permeability values will then govern groundwater movement. Permeability values may be on the order of 10 to 20 times less than infiltration rates. The system designer should incorporate adequate factors of safety and allow for overflow design into appropriate traditional storm drain systems, which would transport storm water off-site.

Construction Considerations

The infiltration rates presented in this report are specific to the tested locations and tested depths. Infiltration rates can be significantly reduced if the soils are exposed to excessive disturbance or compaction during construction. Compaction of the soils at the bottom of the infiltration system can significantly reduce the infiltration ability of the chamber system. Therefore, the subgrade soils within proposed infiltration system areas should not be over-excavated, undercut or compacted in any significant manner. **It is recommended that a note to this effect be added to the project plans and/or specifications.**

We recommend that a representative from the geotechnical engineer be on-site during the construction of the proposed infiltration systems to identify the soil classification at the base of each system. It should be confirmed that the soils at the base of the proposed infiltration system correspond with those presented in this report to ensure that the performance of the system will be consistent with the rates reported herein.

We recommend that scrapers and other rubber-tired heavy equipment not be operated on the basin bottom, or at levels lower than 2 feet above the bottom of the system, particularly within basins. As such, the bottom 24 inches of the infiltration system should be excavated with non-rubber-tired equipment, such as excavators.

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 area could potentially be damaged due to saturation of the subgrade soils. **The proposed infiltration system for this site should be located at least 25 feet away from any structures, including retaining walls**. Even with this provision of locating the infiltration system at least 25 feet from the building(s), it is possible that infiltrating water into the subsurface soils could have an adverse effect on the proposed or existing structures. 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 system.

The infiltration system designer should also give special consideration to the effect that the proposed infiltration system may have on nearby subterranean structures, open excavations, or descending slopes. In particular, infiltration systems should not be located near the crest of descending slopes, particularly where the slopes are comprised of granular soils. Such systems will require specialized design and analysis to evaluate the potential for slope instability, piping failures and other phenomena that typically apply to earthen dam design. This type of analysis is beyond the scope of this infiltration test report, but these factors should be considered by the infiltration system designer when locating the infiltration systems.

General Comments

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 design of the proposed storm water infiltration system is the responsibility of the civil engineer. The role of the geotechnical engineer is limited to determination of infiltration rate only. By using the design infiltration rate contained herein, the civil engineer agrees to indemnify, defend, and hold harmless the geotechnical engineer for all aspects of the design and performance of the proposed storm water infiltration system. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. 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 boring locations and testing 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.

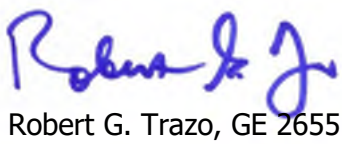
Closure

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

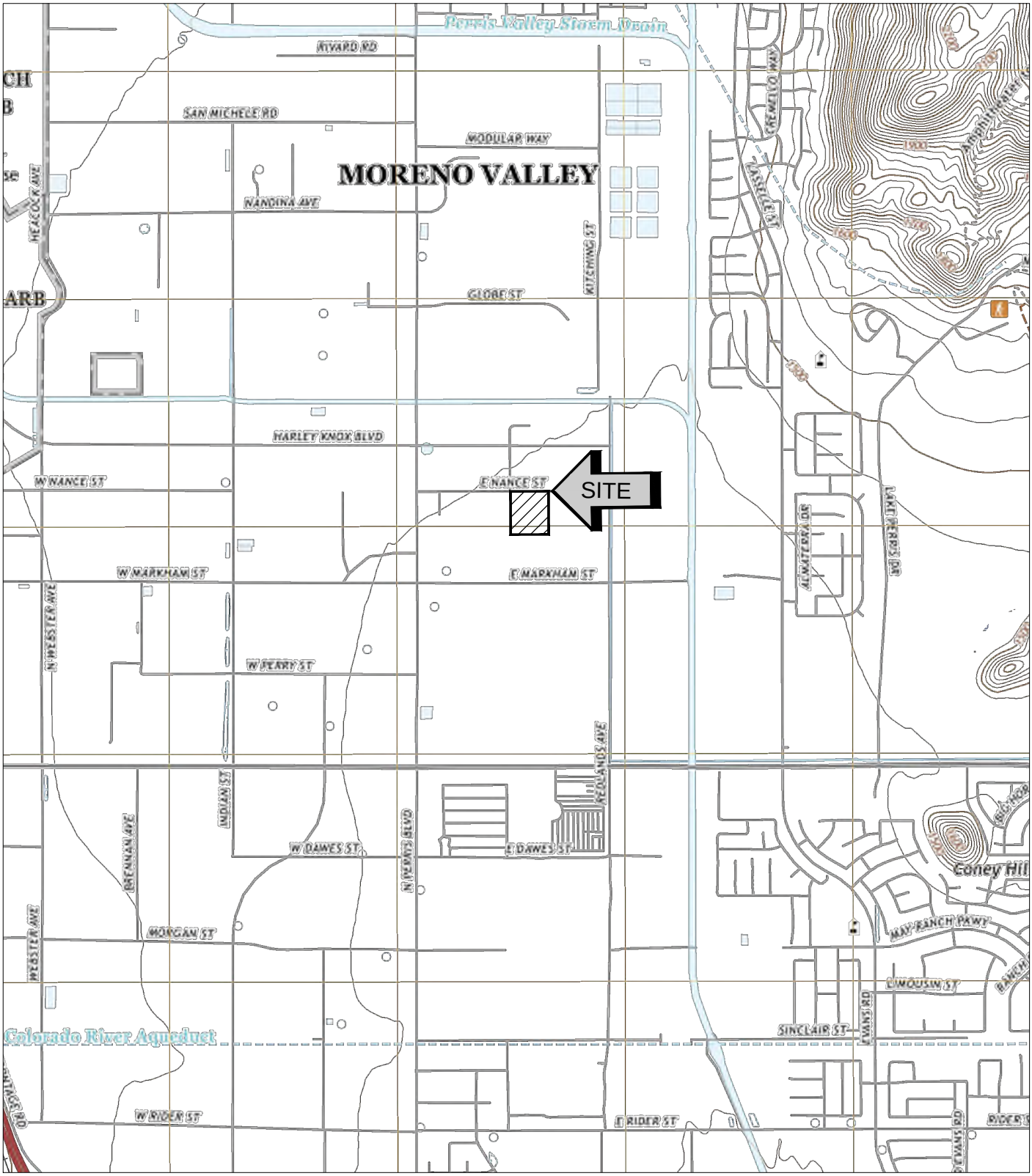
Jose A. Zuniga
Staff Engineer



Robert G. Trazo, GE 2655
Principal Engineer

Distribution: (1) Addressee

Enclosures: Plate 1 - Site Location Map
Plate 2 - Boring Location Plan
Boring Log Legend and Logs (4 pages)
Infiltration Test Results Spreadsheets (2 pages)
Grain Size Distribution Graphs (2 pages)



SOURCE: USGS TOPOGRAPHIC MAP OF THE PERRIS QUADRANGLE, RIVERSIDE COUNTY, CALIFORNIA, 2018.

SITE LOCATION MAP

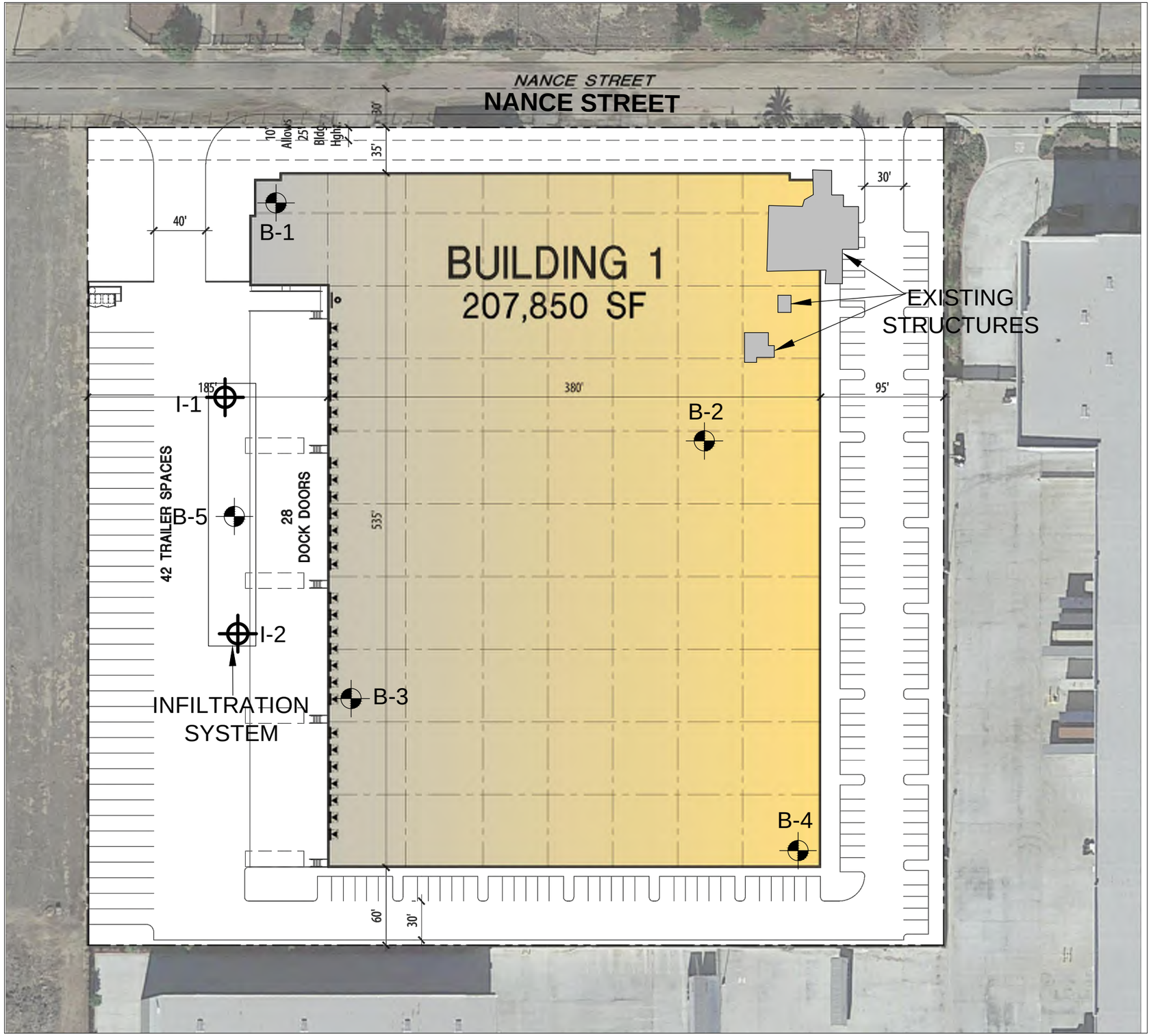
PROPOSED WAREHOUSE

PERRIS, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: JAZ CHKD: RGT	
SCG PROJECT 21G256-2	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



NORTH
SoCalGeo

GEOTECHNICAL LEGEND

- APPROXIMATE INFILTRATION TEST LOCATION
- APPROXIMATE BORING LOCATION (SCG PROJECT NO. 21G256-1)

NOTES: AERIAL PHOTO SOURCED FROM GOOGLE EARTH
SITE PLAN PROVIDED BY GAA ARCHITECTS

INFILTRATION TEST LOCATION PLAN

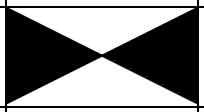
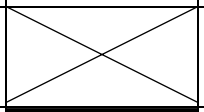
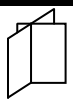
PROPOSED WAREHOUSE

PERRIS, CALIFORNIA

SCALE: 1" = 80'	
DRAWN: JAZ CHKD: RGT	
SCG PROJECT 21G256-2	
PLATE 2	

SOUTHERN CALIFORNIA GEOTECHNICAL

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

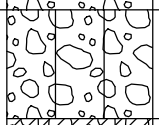
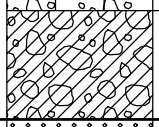
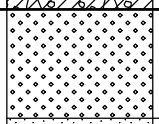
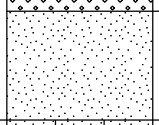
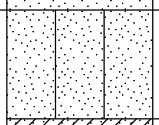
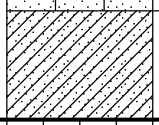
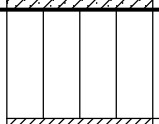
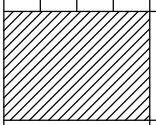
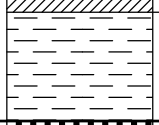
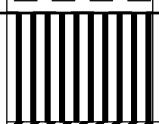
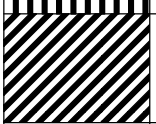
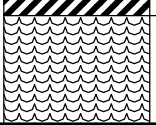
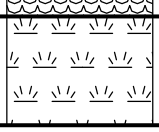
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
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 ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, 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 SAND OR SILTY SOILS
				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 BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-1

JOB NO.: 21G256-2
PROJECT: Proposed Warehouse
LOCATION: Perris, California

DRILLING DATE: 11/2/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jose Zuniga

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION:	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		22			ALLUVIUM: Brown Clayey fine Sand, trace Silt, medium dense-very moist		17					
		22			Light Brown fine Sandy Silt, little Clay, loose to medium dense-moist to very moist		12					
5		7					17					
		10			Light Brown fine Sandy Silt to Silty fine Sand, abundant calcareous veining, medium dense-very moist		23			45		
10					Boring Terminated at 10'							

TBL 21G256-2.GPJ SOCALGEO.GDT 12/13/21

TEST BORING LOG **PLATE B-1**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-2

JOB NO.: 21G256-2
PROJECT: Proposed Warehouse
LOCATION: Perris, California

DRILLING DATE: 11/2/21
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Jose Zuniga

WATER DEPTH: Dry
CAVE DEPTH: ---
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION:	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		16			ALLUVIUM: Brown Clayey fine Sand, little Silt, medium dense-very moist		16					
		26	4.5		Brown fine Sandy Clay, trace Silt, abundant calcareous veining, very stiff-very moist		23					
5												
		24			Brown fine Sandy Silt to Silty fine Sand, trace Clay, abundant calcareous veining, medium dense-very moist		21					
		28					23			51		
10					Boring Terminated at 10'							

TBL 21G256-2.GPJ SOCALGEO.GDT 12/13/21

TEST BORING LOG **PLATE B-2**

INFILTRATION CALCULATIONS

Project Name	Proposed Warehouse
Project Location	Perris, CA
Project Number	21G256-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	10.00	(ft)

Infiltration Test Hole	I-1

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	10:00 AM	25.00	6.90	6.60	YES	SANDY SOILS
	Final	10:25 AM		7.45			
2	Initial	10:40 AM	25.00	6.90	6.60	YES	SANDY SOILS
	Final	11:05 AM		7.45			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	11:34 AM	10.00	6.90	0.24	2.98	0.92
	Final	11:44 AM		7.14			
2	Initial	11:48 AM	10.00	6.90	0.24	2.98	0.92
	Final	11:58 AM		7.14			
3	Initial	12:02 PM	10.00	6.90	0.23	2.99	0.88
	Final	12:12 PM		7.13			
4	Initial	12:16 PM	10.00	6.90	0.23	2.99	0.88
	Final	12:26 PM		7.13			
5	Initial	12:30 PM	10.00	6.90	0.23	2.99	0.88
	Final	12:40 PM		7.13			
6	Initial	12:43 PM	10.00	6.90	0.23	2.99	0.88
	Final	12:53 PM		7.13			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)

ΔH = Change in Height (Water Level) over the time interval

r = Test Hole (Borehole) Radius

Δt = Time Interval

H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Proposed Warehouse
Project Location	Perris, CA
Project Number	21G256-2
Engineer	Jose Zuniga

Test Hole Radius	4	(in)
Test Depth	11.00	(ft)

Infiltration Test Hole	I-2

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	10:30 AM	25.00	7.45	6.24	YES	SANDY SOILS
	Final	10:55 AM		7.97			
2	Initial	11:00 AM	25.00	7.45	6.12	YES	SANDY SOILS
	Final	11:25 AM		7.96			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	1:20 PM	10.00	7.45	0.20	3.45	0.66
	Final	1:30 PM		7.65			
2	Initial	1:33 PM	10.00	7.45	0.19	3.46	0.63
	Final	1:43 PM		7.64			
3	Initial	1:46 PM	10.00	7.45	0.18	3.46	0.60
	Final	1:56 PM		7.63			
4	Initial	2:00 PM	10.00	7.45	0.17	3.47	0.56
	Final	2:10 PM		7.62			
5	Initial	2:12 PM	10.00	7.45	0.16	3.47	0.53
	Final	2:22 PM		7.61			
6	Initial	2:25 PM	10.00	7.45	0.16	3.47	0.53
	Final	2:35 PM		7.61			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)

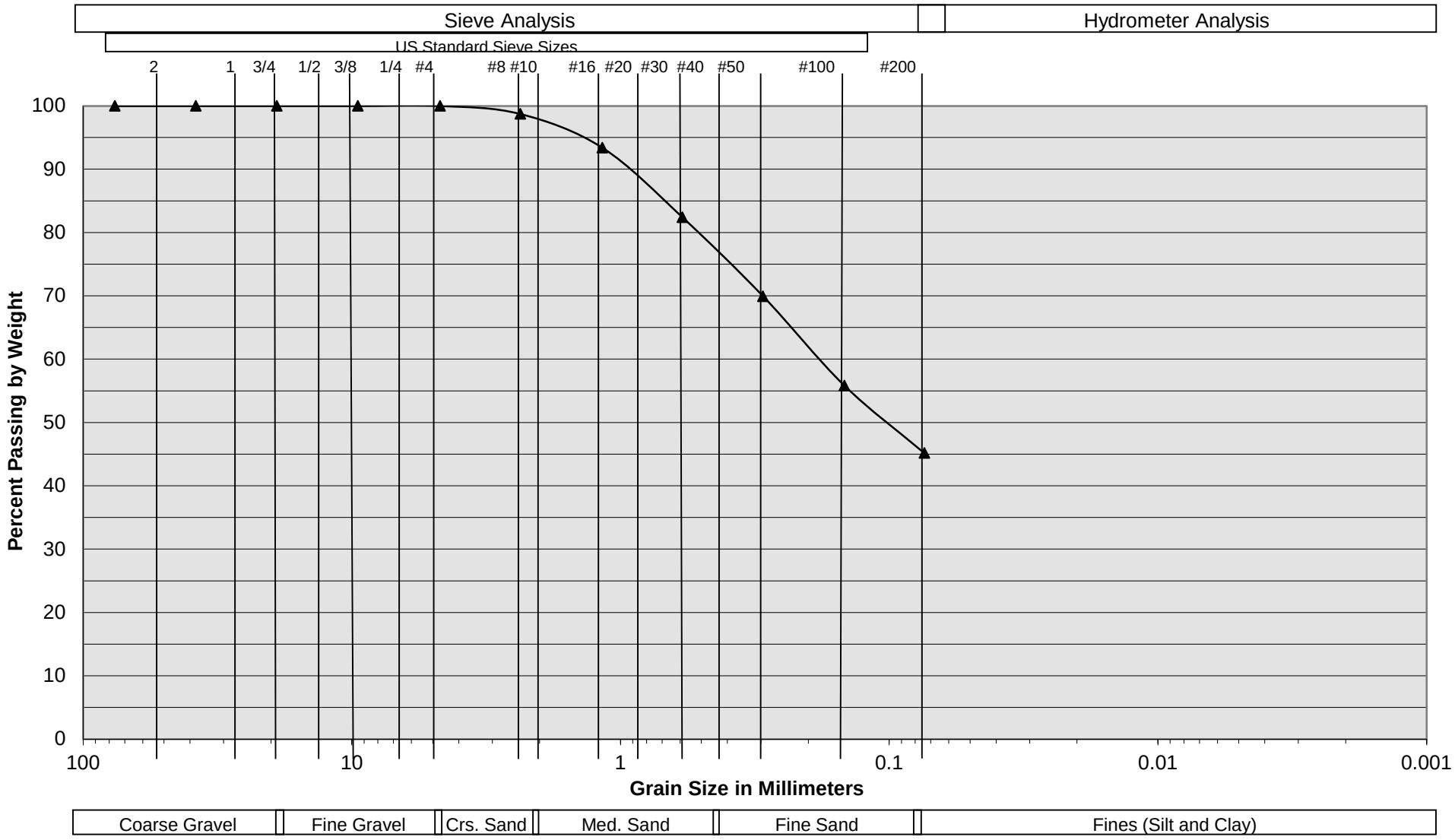
ΔH = Change in Height (Water Level) over the time interval

r = Test Hole (Borehole) Radius

Δt = Time Interval

H_{avg} = Average Head Height over the time interval

Grain Size Distribution

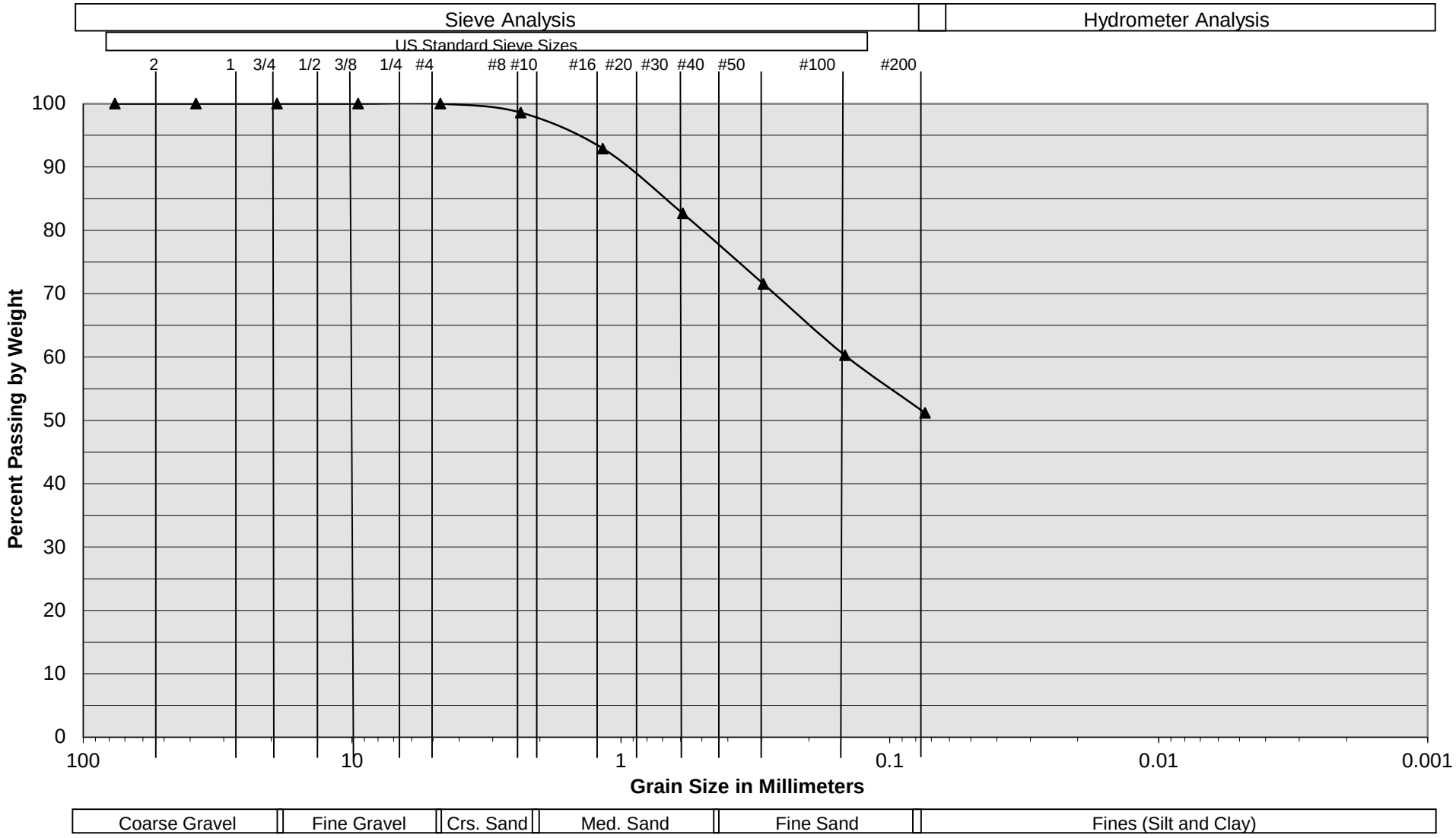


Sample Description	I-1 @ 8.5'
Soil Classification	Light Brown fine Sandy Silt to Silty fine Sand

Proposed Warehouse
Perris, California
Project No. 21G256-2
PLATE C- 1

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Grain Size Distribution



Sample Description	I-2 @ 8.5'
Soil Classification	Brown fine Sandy Silt to Silty fine Sand, trace Clay

Proposed Warehouse
Perris, California
Project No. 21G256-2
PLATE C- 2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Appendix 4: Historical Site Conditions(N/A)

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

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Reference page 59 form Riverside County WQMP Guidance

TABLE 3-4. LID BMP Applicability

LID BMP Hierarchy	A	B	C	D
	K_{SAT}> 1.6"/hr., and no restrictions on infiltration	Are Harvest and Use BMPs feasible?	0.3"/hr. < K_{SAT} < 1.6"/hr., or unpredictable or unknown	K_{SAT} < 0.3"/hr.
LID Infiltration BMPs*	✓			
Harvest and Use BMPs		✓		✓
LID Bioretention	✓		✓	✓
LID Biotreatment				✓

Notes for Table 3-5:

***See also** Figure 3-6 for guidance in selecting appropriate BMPs*

***Column A:** Selections from this column may be used in locations where the infiltration rate of underlying soils is at least 1.6" per hour and no restrictions on infiltration apply to these locations.*

***Column B:** Harvest and Use BMPs may be used where it can be shown that there is sufficient demand for harvested water and where LID Infiltration BMPs are not feasible.*

***Column C:** Selections in this column may be used in locations where the measured infiltration rate of underlying soils is between 0.3" and 1.6" per hour or where, in accordance with recommendations of a licensed geotechnical engineer, the post-development saturated hydraulic conductivity is uncertain or unknown or cannot be reliably predicted because of soil disturbance or fill, anisotropic soil characteristics, presence of clay lenses, or other factors.*

***Column D:** Selections in this column may be used in locations where the infiltration rate of underlying soils is 0.3" per hour or less. See Chapter 2 for more information.*

** Permeable Pavement, when designed with a maximum of a 2:1 ratio of impervious area to pervious pavement areas, or less, is considered a self-retaining area, and is not considered an LID BMP for the purposes of this table. This table focuses on the 'special case' included in the discussion of 'areas draining to self-retaining areas' above, where a project proponent can choose to design the pervious pavement as a LID BMP in accordance with an approved design, such as the LID BMP Design handbook, and in return drain additional impervious area onto the pervious pavement beyond the 2:1 ratio.*

3.4.2.a. Laying out your LID BMPs

Finding the right location for LID BMPs on your site involves a careful and creative integration of several factors:

- ✓ To make the most efficient use of the site and to maximize aesthetic value, **integrate BMPs with site landscaping**. Many local zoning codes may require landscape setbacks or buffers, or may specify that a minimum portion of the site be landscaped. It may be possible to locate some or all of your site's Stormwater BMPs within this same area, or within utility easements or other non-buildable areas.

- ✓ Bioretention BMPs must be **level or nearly level** all the way around. When configured in a linear fashion (similar to swales) bioretention BMPs may be gently sloped end to end, but opposite sides must be at the same

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

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

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

0.85 MiraLoma
0.61 RiversideNorth
0.68 PigeonPass
0.54 RiversideSouth
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
Project Site 0.64
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.90 HurkeyCreek
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed
Santa Margarita Watershed

N

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

Bioretention Facility - Design Procedure	BMP ID For DMA A	Legend:	Required Entries / Calculated Cells

Company Name: Huitt-Zollars, Inc — Date: 4/1/2022

Designed by: Austin Carline — County/City Case No.:

Design Volume

Enter the area tributary to this feature — A_T = 9.57 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP} = 16,990 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 = 3.0 ft

Top Width of Bioretention Facility, excluding curb — w_T = 20.0 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 = 1.77 ft

Minimum Surface Area, A_m

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

A_M = 9,627 ft^2

Proposed Surface Area — A= 11,589 ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 4 :1

Diameter of Underdrain — 6 inches

Longitudinal Slope of Site (3% maximum) — 0.5 %

6" Check Dam Spacing — 0 feet

Describe Vegetation: Natural Grasses

Notes: bio-retention basin is +/- 20' x 580' = 11,589 sf

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	Huitt-Zollars, Inc	Date	4/1/2022
Designed by	Austin Carline	Case No	
Company Project Number/Name	Oakmont - Redlands at Nance		

BMP Identification

BMP NAME / ID: DMA A

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} = 0.64 inches

Drainage Management Area Tabulation

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

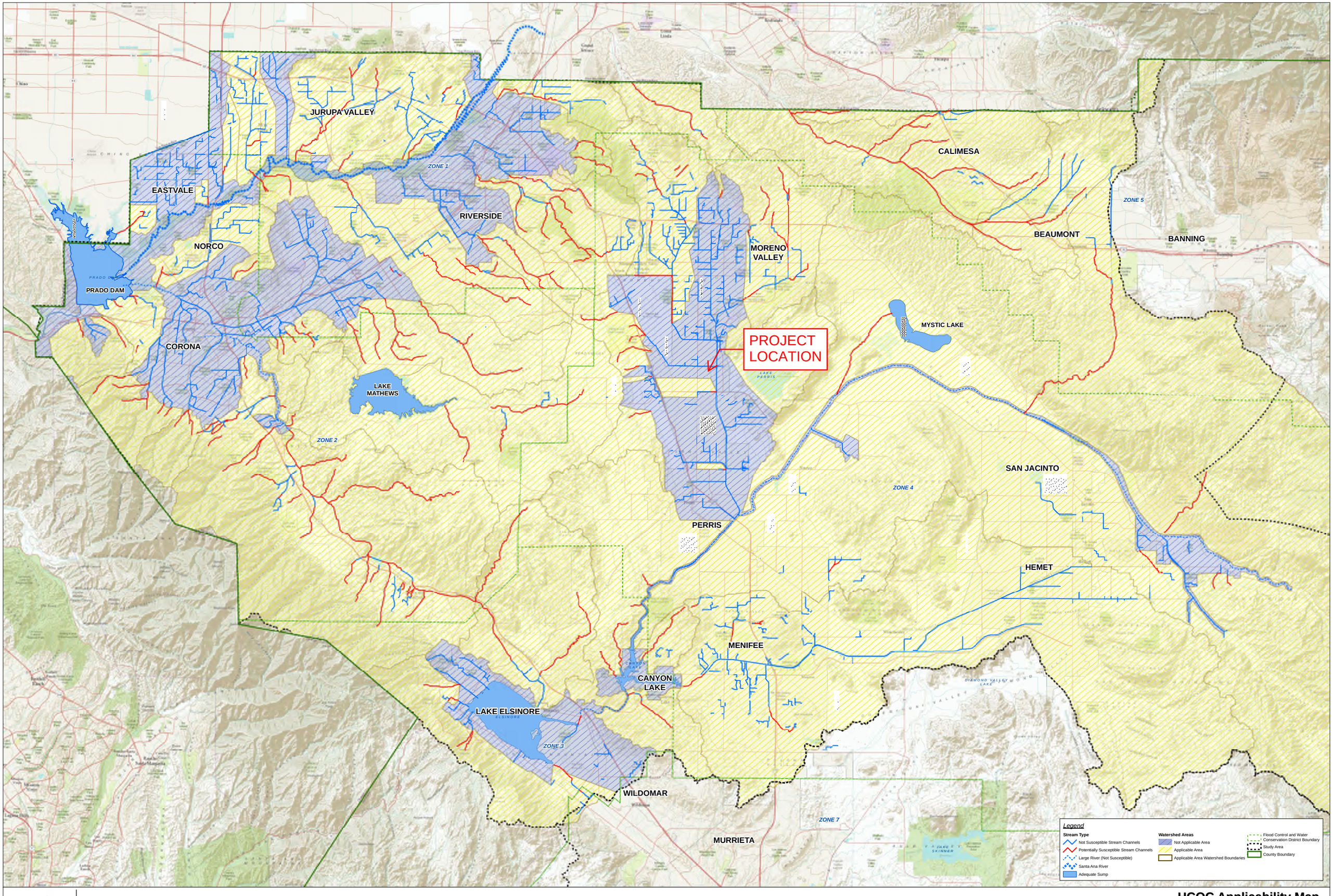
DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	Design Storm Depth (in)	Design Capture Volume, V_{BMP} (cubic feet)	Proposed Volume on Plans (cubic feet)
DMA A	68029	Ornamental Landscaping	0.1	0.11	7514.3			
	348710	Concrete or Asphalt	1	0.89	311049.3			
	416739	Total			318563.6	0.64	16990.1	21,696

Notes:

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

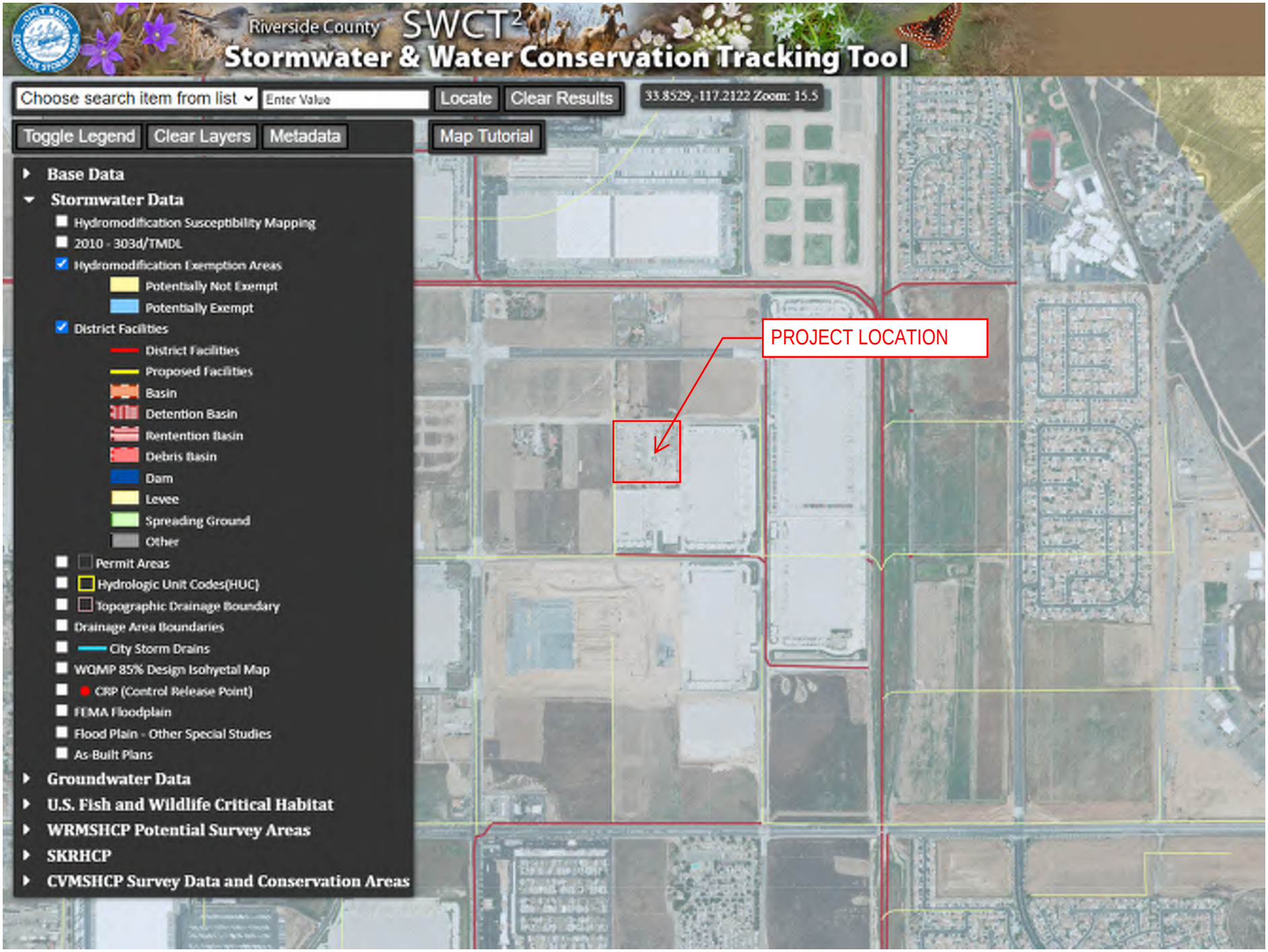
Site is located within mapped HCOC Exemption area as presented in the approved WAP dated April 20, 2017.



HCOC Applicability Map

Hydromodification Susceptibility Documentation Report and Mapping
Riverside County Flood Control and Water Conservation District

Map 2


Riverside County SWCT²
Stormwater & Water Conservation Tracking Tool
Choose search item from list
Enter Value
Locate
Clear Results
33.8529,-117.2122 Zoom: 15.5
Toggle Legend
Clear Layers
Metadata
Map Tutorial
Base Data
Stormwater Data
Hydromodification Susceptibility Mapping
2010 - 303d/TMDL
Hydromodification Exemption Areas
Potentially Not Exempt
Potentially Exempt
District Facilities
District Facilities
Proposed Facilities
Basin
Detention Basin
Rentention Basin
Debris Basin
Dam
Levee
Spreading Ground
Other
Permit Areas
Hydrologic Unit Codes(HUC)
Topographic Drainage Boundary
Drainage Area Boundaries
City Storm Drains
WQMP 85% Design Isohyetal Map
CRP (Control Release Point)
FEMA Floodplain
Flood Plain - Other Special Studies
As-Built Plans
Groundwater Data
U.S. Fish and Wildlife Critical Habitat
WRMSHCP Potential Survey Areas
SKRHCP
CVMSHCP Survey Data and Conservation Areas
PROJECT LOCATION

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

This section will be completed and addressed at the time of the final WQMP submittal

Appendix 9: O&M

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

This section will be completed and addressed at the time of the final WQMP submittal

Appendix 10: Educational Materials

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

This section will be completed and addressed at the time of the final WQMP submittal