CASE: CUP190065
EXHIBIT: PWQMP
DATE: 5/07/2026
PLANNER: R. Brady
☐ Meeting ☑ Comment Agenda ☐ Final

Project Specific Water Quality Management Plan

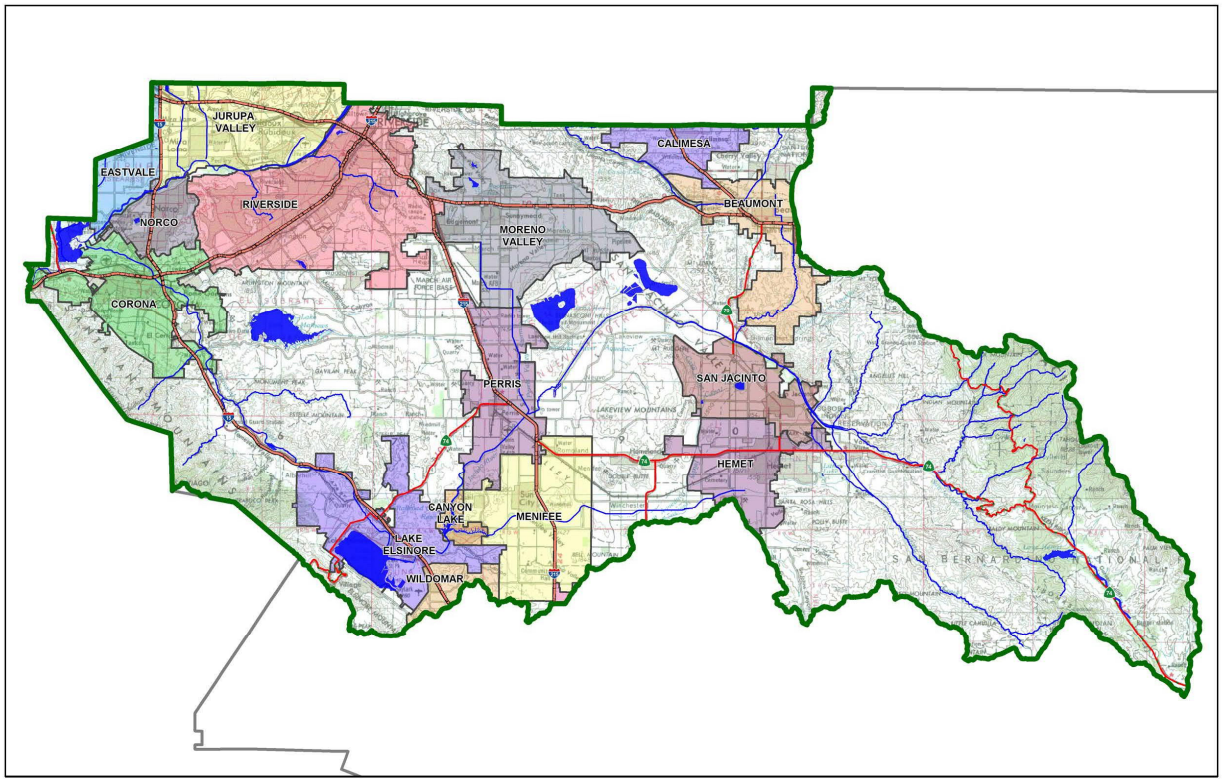
A Template for Projects located within the Santa Ana Watershed Region of Riverside County

LEGEND
BROWN = BUILDING & SAFETY GRADING DIVISION COMMENTS
PURPLE = PLANNING DEPARTMENT COMMENTS
GREEN = ENVIRONMENTAL PROGRAMS DEPARTMENT COMMENTS
LIGHT ORANGE = TRANSPORTATION DEPARTMENT COMMENTS
BLUE = FLOOD CONTROL DISTRICT COMMENTS
LIGHT GREEN = REGIONAL PARKS & OPEN SPACE DISTRICT COMMENTS
RED = FIRE DEPARTMENT COMMENTS
YELLOW = ENVIRONMENTAL HEALTH DEPARTMENT COMMENTS
LIGHT BLUE = BUILDING & SAFETY PLAN CHECK COMMENTS
ORANGE = WASTE MANAGEMENT DEPARTMENT COMMENTS

Project Title: 25840 IDYLLWILD HIGHWAY

Development No: TBD

Design Review/Case No: TBD



☒ Preliminary
☐ Final

Original Date Prepared: February 2021

Revision Date(s): #1 - May 2021

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

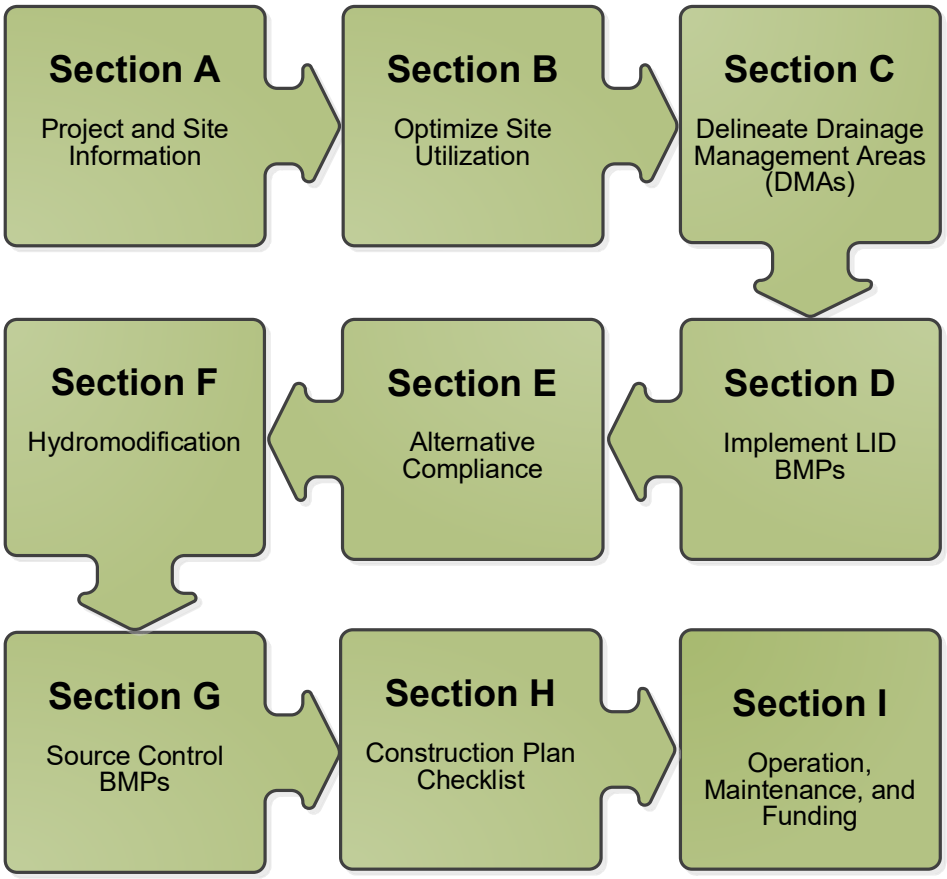
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A Brief Introduction

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



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for RUSTIC RENTALS, LLC by SITETECH INC. for the 25840 IDYLLWILD HIGHWAY project.

This WQMP is intended to comply with the requirements of RIVERSIDE COUNTY for COUNTY ORDINANCE NO. 754.2 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 RIVERSIDE COUNTY Water Quality Ordinance (Municipal Code Section 754.2).

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

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

PREPARER'S CERTIFICATION

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

Preparer's Signature	MAY 17, 2021 Date
BERNHARD K. MAYER Preparer's Printed Name	PRESIDENT Preparer's Title/Position

Preparer's Licensure:



Table of Contents

Section A: Project and Site Information 6
A.1 Maps and Site Plans 8
A.2 Identify Receiving Waters 8
A.3 Additional Permits/Approvals required for the Project: 9
Section B: Optimize Site Utilization (LID Principles) 10
Section C: Delineate Drainage Management Areas (DMAs) 12
Section D: Implement LID BMPs 14
D.1 Infiltration Applicability 14
D.2 Harvest and Use Assessment 15
D.3 Bioretention and Biotreatment Assessment 17
D.4 Feasibility Assessment Summaries 18
D.5 LID BMP Sizing 19
Section E: Alternative Compliance (LID Waiver Program) 21
E.1 Identify Pollutants of Concern 22
E.2 Stormwater Credits 23
E.3 Sizing Criteria 23
E.4 Treatment Control BMP Selection 24
Section F: Hydromodification 25
F.1 Hydrologic Conditions of Concern (HCOC) Analysis 25
F.2 HCOC Mitigation 26
Section G: Source Control BMPs 27
Section H: Construction Plan Checklist 28
Section I: Operation, Maintenance and Funding 29

List of Tables

Table A.1 Identification of Receiving Waters 8
Table A.2 Other Applicable Permits 9
Table C.1 DMA Classifications 12
Table C.2 Type 'A', Self-Treating Areas 12
Table C.3 Type 'B', Self-Retaining Areas 12
Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas 13
Table C.5 Type 'D', Areas Draining to BMPs 13
Table D.1 Infiltration Feasibility 14
Table D.2 LID Prioritization Summary Matrix 18
Table D.3 DCV Calculations for LID BMPs 19
Table E.1 Potential Pollutants by Land Use Type 22
Table E.2 Water Quality Credits 23
Table E.3 Treatment Control BMP Sizing 23
Table E.4 Treatment Control BMP Selection 24
Table F.1 Hydrologic Conditions of Concern Summary 25
Table G.1 Permanent and Operational Source Control Measures 27
Table H.1 Construction Plan Cross-reference 28

List of Appendices

Appendix 1: Maps and Site Plans 30
Appendix 2: Construction Plans 31
Appendix 3: Soils Information 32
Appendix 4: Historical Site Conditions 33
Appendix 5: LID Infeasibility 34
Appendix 6: BMP Design Details 35
Appendix 7: Hydromodification 36
Appendix 8: Source Control 37
Appendix 9: O&M 38
Appendix 10: Educational Materials ..... - 39 -

Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Village Tourist
Planning Area:	MDR - Medium Density Residential
Community Name:	Idyllwild
Development Name:	25840 Idyllwild Highway

PROJECT LOCATION
Latitude & Longitude (DMS): 33.749207°, -117.713442°
Project Watershed and Sub-Watershed: Santa Ana River Watershed & San Jacinto River Subwatershed
Gross Acres: 2.35
APN(s): 563-250-028 and 563-250-031
Map Book and Page No.: Roadbook Map, pg. no. 157

PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)	Lodging	
Proposed or Potential SIC Code(s)	6531	
Area of Impervious Project Footprint (SF)	63,272	
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	39,346	
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)	23,926	
Is the project located within any MSHCP Criteria Cell?	☐ Y	☒ N
If so, identify the Cell number:		
Are there any natural hydrologic features on the project site?	☐ Y	☒ N
Is a Geotechnical Report attached?	☒ Y	☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)		
What is the Water Quality Design Storm Depth for the project?	1.18	

This project proposes to develop a portion of an existing 2.35 acre site in an unincorporated area in Riverside County. The site project is located along the easterly side of Idyllwild Highway between the intersecting streets of Jameson Drive (north) and Pine Crest Avenue (south).

The project proposes the construction of multiple rental bulidings, landscaping, walls, infiltration basins, drainage inlets and various hardscapes.

The proposed site can be broken down into two distinct drainage areas, DA1 and DA2.

DA1 consists of the southerly portion of the development. Stormwater generated from DA1 will sheet flow southwesterly and catch basins and storm drains where stormwater will be directed to a infiltration basin at the southwest portion of this drainage area. DA1 will have emergency overflow outlet located along Idyllwild Highway.

DA2 consists of the easterly portion of the development. Stormwater generated from DA2 will sheet flow southwesterly and catch basins and storm drains where stormwater will be directed to a infiltration basin at the southerly portion of this drainage area. DA2 will have emergency overflow outlet located along Oakwood Street.

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
Strawberry Creek	None	AGR, COLD, GWR, MUN, REC1, REC2, WILD	None
San Jacinto River (Reach 7)	None	AGR, COLD, GWR, MUN, REC1, REC2, WILD	None
San Jacinto River (Reach 6)	None	AGR, GWR, MUN, REC1, REC2, WARM, WILD	None
San Jacinto River (Reach 5)	None	AGR, GWR, REC1, REC2, WARM, WILD	None
San Jacinto River (Reach 4)	None	AGR, GWR, REC1, REC2, WARM, WILD	None
San Jacinto River (Reach 3)	None	AGR, GWR, REC1, REC2, WARM, WILD	None
San Jacinto River (Reach 2)	None	AGR, GWR, REC1, REC2, WARM, WILD	None
San Jacinto River (Reach 1)	None	AGR, GWR, REC1, REC2, WARM, WILD	None
Lake Elsinore	Nutrients, Organic, PCB, Sediment, Unknown Toxicity	REC1, REC2, Warm, Wild	None

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 (Dependent on Tenant)	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other (please list in the space below as required) Riverside County Grading Permit	☒ Y	☐ N
Other (please list in the space below as required) Riverside County Building Permit	☒ Y	☐ N

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

Section B: Optimize Site Utilization (LID Principles)

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

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

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

Site Optimization

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

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

> Yes. Existing stormwater runoff generally flows from northeast to southwest. The proposed drainage will hold the general drainage pattern by capturing runoff at the southwest portion of the development.

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

> Yes. Construction activity will be limited to minimal limits and not to exceed beyond development area.

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

Yes. Natural infiltration capacity will be implemented by using proposed landscaping as self-treating areas and capturing and treating stormwater through infiltration basins.

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

Yes. The drive aisles, drive-thru and parking stalls are designed to minimim width and length requirements.

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

Yes. Roof drains will directly discharge into adjacent landscaped areas around proposed building.

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
D1	ROOF/CONC/ASPH/LS	19,934	D
D2	ROOF/CONC/ASPH/LS	23,897	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

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)

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

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

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

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

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

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

DMA Name or ID	BMP Name or ID
D1	INFILTRATION BASINS
D2	INFILTRATION BASINS

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 Co-permittee 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:		
…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:

Type of Landscaping (Conservation Design or Active Turf):

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:

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:

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:

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)

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:

Project Type:

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:

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:

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:

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)

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.

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:

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:

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:

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:

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)

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	
DA 1	☒	☐	☐	☐	☐
DA 2	☒	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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.

Drainage areas will treat stormwater through infiltration basins

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.

DA1

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	Enter BMP Name / Identifier Here: DA1 — Infiltration Chambers / BMP 1		
	[A]		[B]	[C]	[A] x [C]	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 1a	2,340	Landscaping	0.1	0.11	258.5			
DMA 1b	8,217	Roofs	1.0	0.89	7329.6			
DMA 1c	9,377	Conc/Asph	1.0	0.89	8364.3			
	$A_T = \Sigma[A]$ 19,934				$\Sigma = [D]$ 15952.4	[E] 1.18	$[F] = \frac{[D]x[E]}{12}$ 1568.7	[G] 1907

[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

DA2

Table D.4 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	Enter BMP Name / Identifier Here DA2 Infiltration Chambers / BMP 2		
	[A]		[B]	[C]	[A] x [C]			
DMA 1a	2145	Landscaping	0.1	0.11	236.9	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 1b	10360	Roofs	1.0	0.89	9241.1			
DMA 1c	11392	Conc/Asph	1.0	0.89	10161.7			
	$A_T = \Sigma[A]$ 23897				$\Sigma = [D]$ 19639.7	[E] 1.18	$[F] = \frac{[D]x[E]}{12}$ 1931.2	[G] 1943

[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

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

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]

[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			
Volume (Cubic Feet)			

[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.

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

** This site is located within the mapped HCOC exemption area as presented in the Riverside Co. geodatabase. This map was approved April 20, 2018 **

Section G: Source Control BMPs

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

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

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

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

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

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Trash & Debris	Trash Enclosure Roof & Cover	Weekly Sweeping & Housekeeping
Oils & Greases	Infiltration Basin	Weekly Inspection of Parking Lots
Sediment	Infiltration Basin	Weekly Sweeping
Metals	Infiltration Basin	
Bacteria & Viruses	Infiltration Basin	
Nutrients	Infiltration Basin	
Oxygen Demanding Substances	Infiltration Basin	

Section H: Construction Plan Checklist

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

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
TBD	TBD	TBD ON FINAL WQMP	TBD ON FINAL WQMP

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.

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

Section I: Operation, Maintenance and Funding

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

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

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

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

Maintenance Mechanism:

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

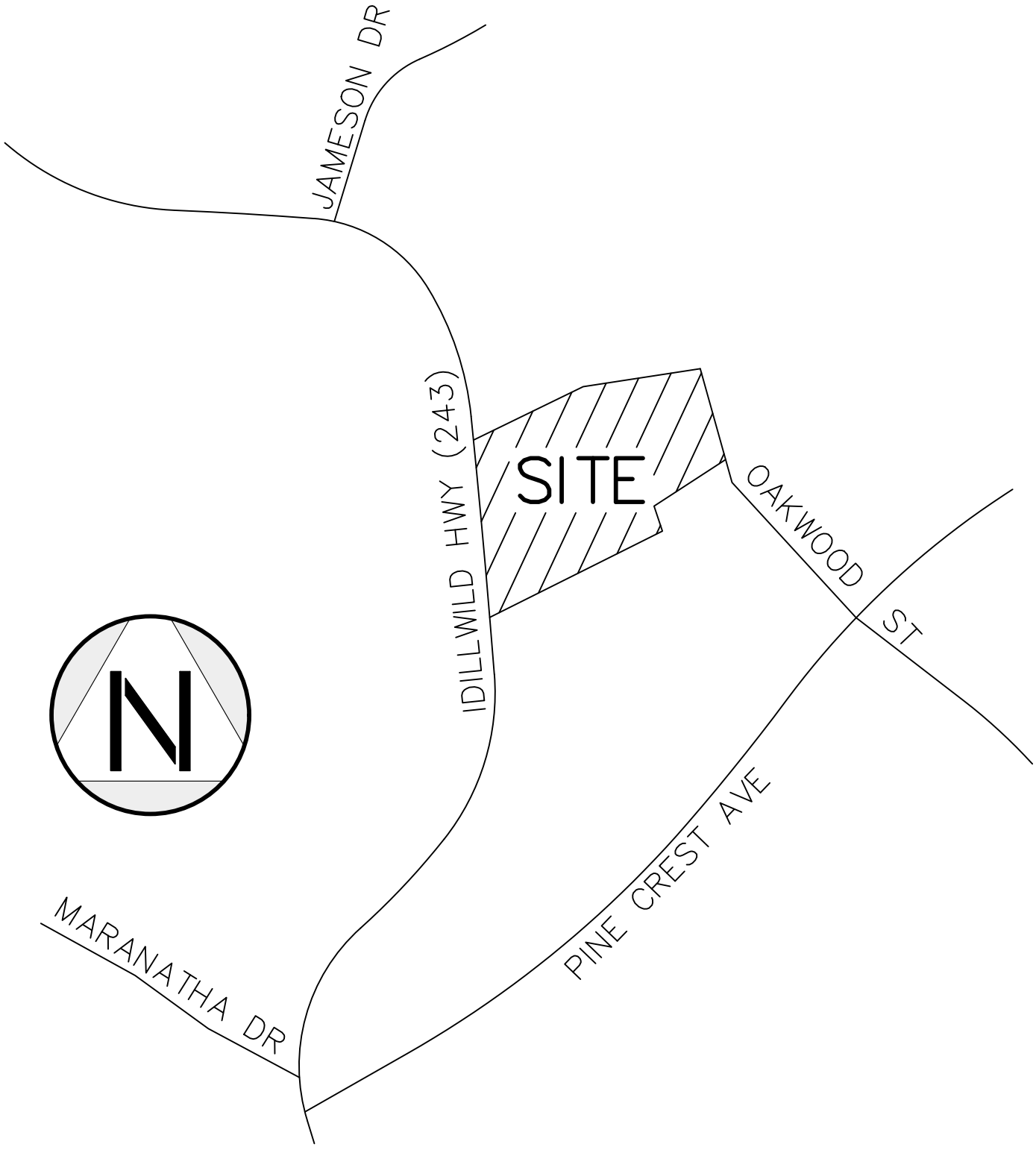
☐ Y ☒ N

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

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

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map



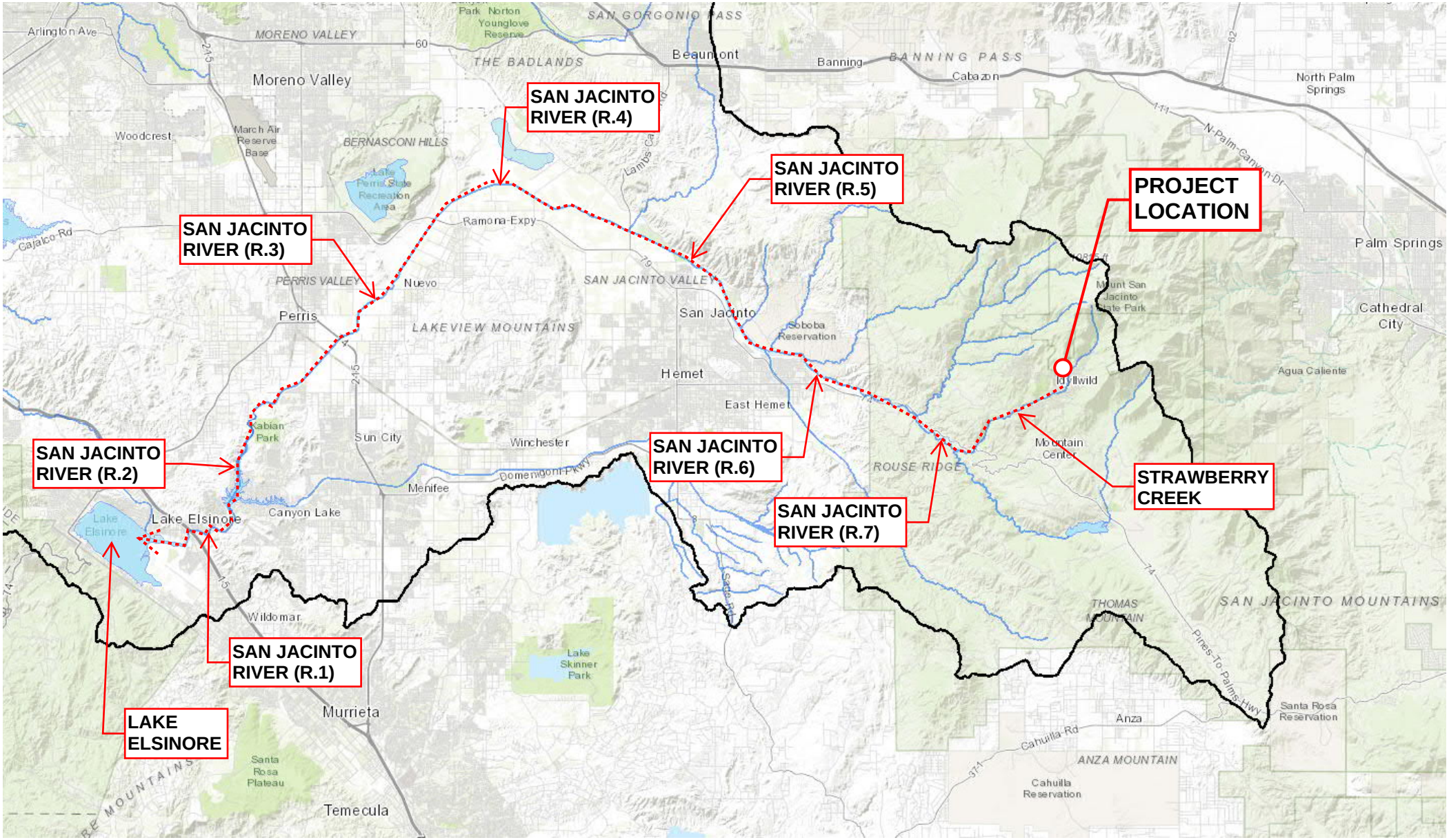
THOMAS BROTHERS GUIDE: PG. 814/D6
TOWNSHIP 5S, RANGE 3E, SEC. 7, S.B.M.

VICINITY MAP

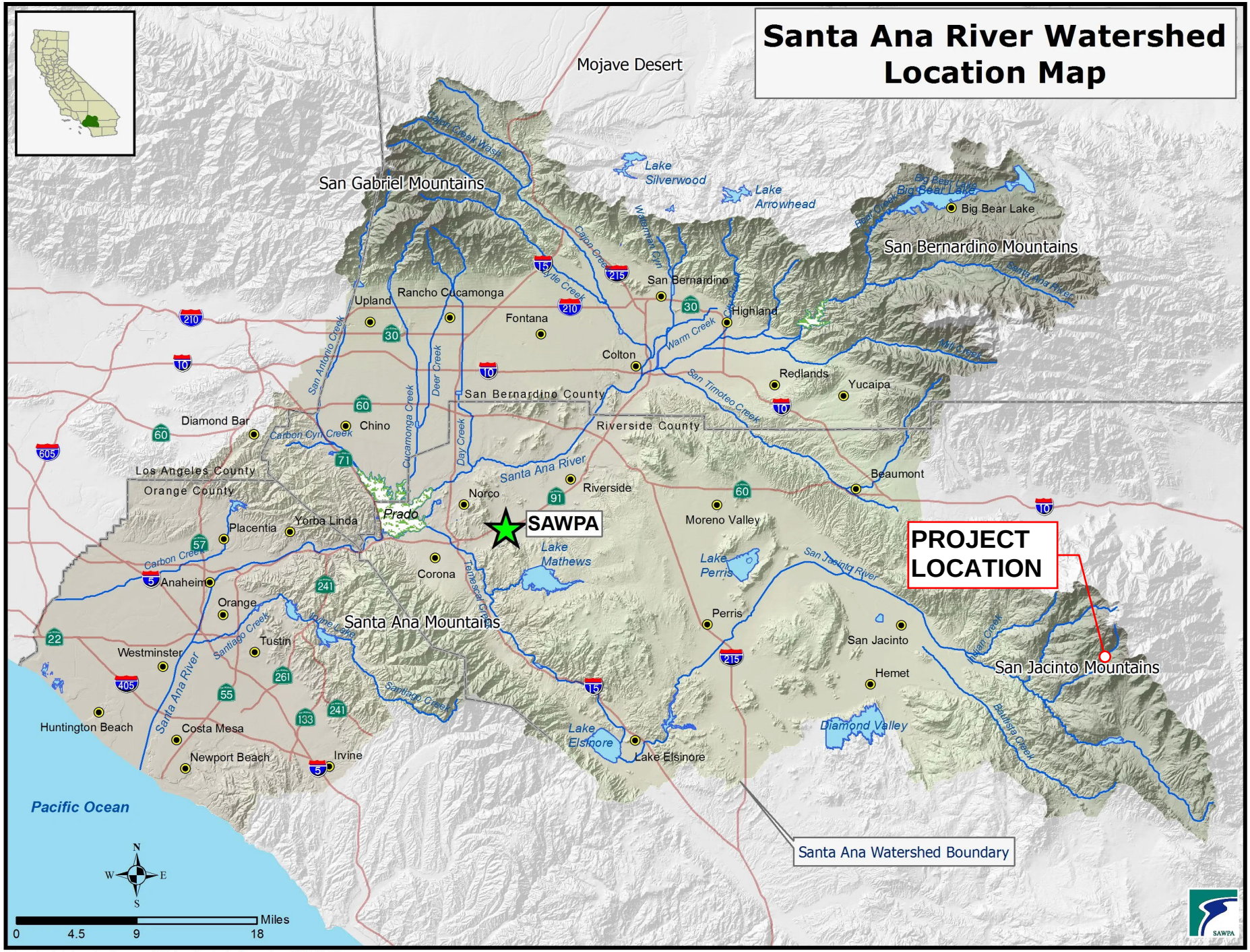
NO SCALE

RECEIVING WATERS MAP

sawpa.net

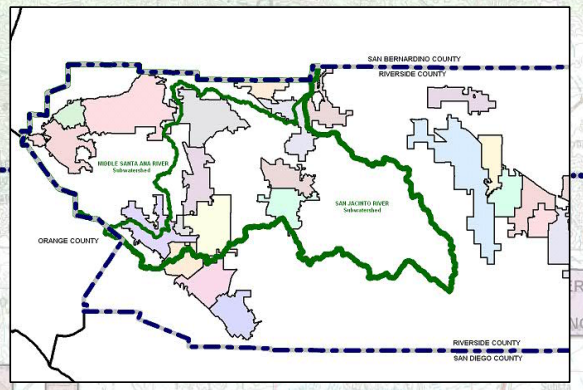


= RECEIVING WATER FLOW PATH



P:\projects\standard_maps\Watershed_1_A.mxd SW-1150

SANTA ANA REGION of Riverside County



RIVERSIDE
NORCO
CORONA
CALIMESA
MORENO VALLEY
BEAUMONT
PERRIS
SAN JACINTO
HEMET
LAKE ELSINORE
CANYON LAKE
MENIFEE
WILDOMAR
MURRIETA
BANNING

MIDDLE SANTA ANA RIVER
Subwatershed

SAN JACINTO RIVER
Subwatershed

PROJECT LOCATION

N

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
GEOGRAPHIC INFORMATION SYSTEM
June 2009

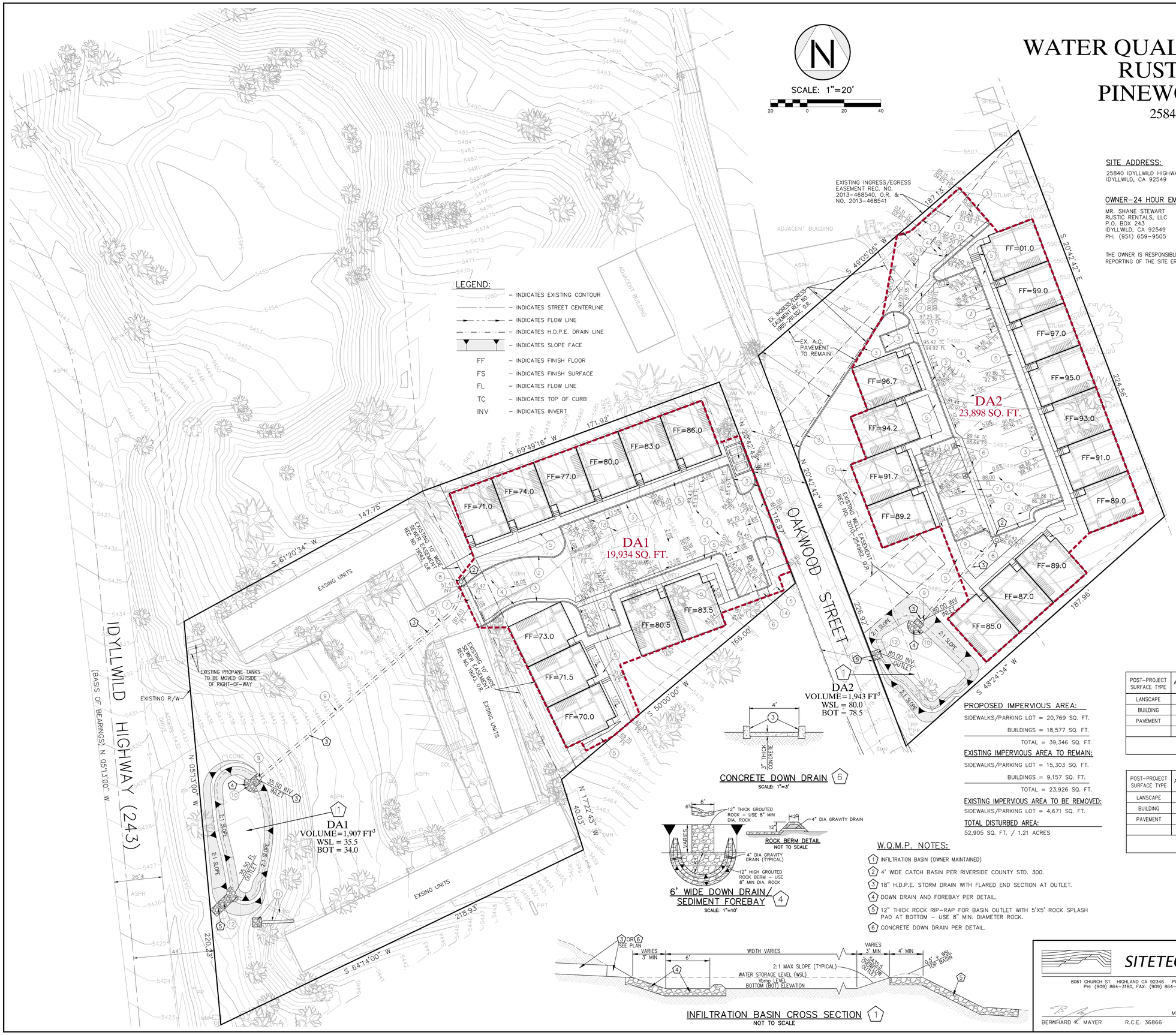
The graphical and tabular information shown on this document may be derived from a variety of public agency and/or private commercial sources such as Riverside County Transportation and Land Management Agency, Thomas Brothers Mapping, the Stephen P. Teale Data Center, GIS Technology Center, State of California, the United States Geologic Survey and the United States National Atlas. These sources may possess varying levels of accuracy and precision and this product is meant only as a guide to the relative position and scale of the depicted features. This GIS document is in no case to be interpreted as fundamental or decisive for purposes of land surveying, field engineering, plan drafting, code enforcement, land boundary determination and/or land acquisition.

COUNTY OF RIVERSIDE

PRELIMINARY
WATER QUALITY MANAGEMENT PLAN
RUSTIC RENTALS, LLC
PINEWOODS RESIDENCES

25840 IDYLLWILD HIGHWAY
IDYLLWILD, CA

SCALE: 1"=20'



CONCRETE DOWN DRAIN (6)
SCALE: 1"=3'

6' WIDE DOWN DRAIN/ SEDIMENT FOREBAY (4)
SCALE: 1"=10'

INFILTRATION BASIN CROSS SECTION (1)
NOT TO SCALE

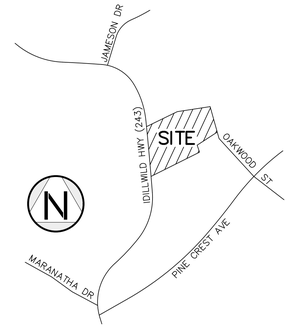
SITE ADDRESS:

25840 IDYLLWILD HIGHWAY
IDYLLWILD, CA 92549

OWNER–24 HOUR EMERGENCY CONTACT:

MR. SHANE STEWART
RUSTIC RENTALS, LLC
P.O. BOX 243
IDYLLWILD, CA 92549
PH: (951) 659–9505

THE OWNER IS RESPONSIBLE FOR IMPLEMENTING, INSPECTING, AND REPORTING OF THE SITE EROSION CONTROL PLAN REQUIREMENTS.



THOMAS BROTHERS GUIDE: PG. 814/D6
TOWNSHIP 5S, RANGE 3E, SEC. 7, S.B.M.

VICINITY MAP
NO SCALE

CONSTRUCTION NOTES:

1. CONSTRUCT A.C. DRIVE APPROACH PER RIVERSIDE COUNTY STANDARDS.
2. CONSTRUCT 6" TYPE A–6 CURB & GUTTER PER RIVERSIDE COUNTY STD. 200.
3. CONSTRUCT 6" TYPE D CURB PER RIVERSIDE COUNTY STD. 204.
4. CONSTRUCT A.C. PAVING OVER CLASS II BASE.
5. CONSTRUCT 4" THICK CONCRETE SIDEWALK AND STAIRS.
6. HANDICAP PARKING STALL PER ADA REQUIREMENTS.
7. CONSTRUCT 4' WIDE LONGITUDINAL GUTTER PER S.P.P.W.C. STD. 122–2.
8. CONSTRUCT 4' WIDE CATCH BASIN PER RIVERSIDE COUNTY STD. 300.
9. INSTALL 12" H.D.P.E. STORM DRAIN WITH FLARED END SECTION AT OUTLET.
10. CONSTRUCT DOWN DRAIN AND FOREBAY PER DETAIL ON SHT. 2
11. RELOCATE EXISTING CMP DOWN DRAIN AND ADD 5'X5' ROCK SPLASH PAD.
12. CONSTRUCT 12" THICK ROCK RIP–RAP FOR BASIN OUTLET WITH 5'X5' ROCK SPLASH PAD AT BOTTOM – USE 8" MIN. DIAMETER ROCK.
13. SAWCUT AND REMOVE EXISTING A.C PAVING
14. CONSTRUCT TYPE I, BASE B, CURB RAMP PER S.P.P.W.C. STD. 111–5
15. SAWCUT AND REMOVED EXISTING ROADWAY AND CONSTRUCT 24' WIDE ASPHALT ROADWAY PER OAKWOOD STREET TYPICAL SECTION ON SHT. 1
16. CONSTRUCT TRASH ENCLOSURE PER ARCHITECTURAL PLANS.

PROPOSED IMPERVIOUS AREA:

SIDEWALKS/PARKING LOT = 20,769 SQ. FT.
BUILDINGS = 18,577 SQ. FT.
TOTAL = 39,346 SQ. FT.

EXISTING IMPERVIOUS AREA TO REMAIN:

SIDEWALKS/PARKING LOT = 15,303 SQ. FT.
BUILDINGS = 9,157 SQ. FT.
TOTAL = 23,926 SQ. FT.

EXISTING IMPERVIOUS AREA TO BE REMOVED:

SIDEWALKS/PARKING LOT = 4,671 SQ. FT.

TOTAL DISTURBED AREA:

52,905 SQ. FT. / 1.21 ACRES

W.Q.M.P. NOTES:

1. INFILTRATION BASIN (OWNER MAINTAINED)
2. 4' WIDE CATCH BASIN PER RIVERSIDE COUNTY STD. 300.
3. 18" H.D.P.E. STORM DRAIN WITH FLARED END SECTION AT OUTLET.
4. DOWN DRAIN AND FOREBAY PER DETAIL.
5. 12" THICK ROCK RIP–RAP FOR BASIN OUTLET WITH 5'X5' ROCK SPLASH PAD AT BOTTOM – USE 8" MIN. DIAMETER ROCK.
6. CONCRETE DOWN DRAIN PER DETAIL.

DA1 L.I.D. B.M.P. SIZING TABLE

POST–PROJECT SURFACE TYPE	AREAS [A]	EFFECTIVE IMPERVIOUS FRACTION Ir [B]	DMA RUNOFF FACTOR [C]	DMA AREAS RUNOFF FACTOR [A] X [C]		
LANSCAPE	2,340	0.10	0.110	257	DESIGN STORM DEPTH (IN) [E]	DESIGN CAPTURE VOLUME, Vbmp (CUBIC FEET) [F] = [D] X [E] / 12
BUILDING	8,217	1.00	0.892	7,330		
PAVEMENT	9,377	1.00	0.892	8,354		
				[D] = 15,941	[E] = 1.18	[F] = 1,568 CUBIC FEET

DA2 L.I.D. B.M.P. SIZING TABLE

POST–PROJECT SURFACE TYPE	AREAS [A]	EFFECTIVE IMPERVIOUS FRACTION Ir [B]	DMA RUNOFF FACTOR [C]	DMA AREAS RUNOFF FACTOR [A] X [C]		
LANSCAPE	2,145	0.10	0.110	236	DESIGN STORM DEPTH (IN) [E]	DESIGN CAPTURE VOLUME, Vbmp (CUBIC FEET) [F] = [D] X [E] / 12
BUILDING	10,360	1.00	0.892	9,241		
PAVEMENT	11,392	1.00	0.892	10,161		
				[D] = 19,638	[E] = 1.18	[F] = 1,931 CUBIC FEET

BMP NO. _____ PERMIT NO. BGR _____

SITETECH INC.
8061 CHURCH ST. HIGHLAND CA 92346 PO BOX 592
PH: (909) 864–3180, FAX: (909) 864–0850
BERNHARD K. MAYER R.C.E. 36866 MAY 17, 2021 DATE

COUNTY OF RIVERSIDE
PRELIMINARY W.Q.M.P. PLAN

PREPARED FOR: RUSTIC RENTALS, LLC

DATE: MAY 17, 2021

APN 563–250–028

SCALE: AS NOTED

SITE ADDRESS: 25840 IDYLLWILD HIGHWAY IDYLLWILD, CA 92549

PHONE: (951) 659–9505

SHEET NO. C–3

Appendix 2: Construction Plans

Grading and Drainage Plans

COUNTY OF RIVERSIDE

PRELIMINARY GRADING & DRAINAGE PLAN
RUSTIC RENTALS, LLC
PINEWOODS RESIDENCES
25840 IDYLLWILD HIGHWAY
IDYLLWILD, CA

GENERAL

1. ALL GRADING SHALL CONFORM TO THE 2016 CALIFORNIA BUILDING CODE (CBC) CHAPTERS 17, 18, & APPENDIX–J AS AMENDED BY ORDINANCE 457.
2. ALL PROPERTY CORNERS, GRADING BOUNDARIES AND ALL CONSERVATION AREAS/LEAST SENSITIVE AREA (LSA) DETERMINED BY THE ENVIRONMENTAL PROGRAMS DEPARTMENT (EPD) SHALL BE CLEARLY DELINEATED AND STAKED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION/GRADING.
3. ALL WORK UNDER THIS PERMIT SHALL BE LIMITED TO WORK WITHIN THE PROPERTY LINES. ALL WORK WITHIN THE ROAD RIGHT–OF– WAY WILL REQUIRE SEPARATE PLANS AND A SEPARATE REVIEW–APPROVAL (PERMIT) FROM THE TRANSPORTATION DEPARTMENT.
4. ALL GRADING SHALL BE DONE UNDER THE SUPERVISION OF A SOILS ENGINEER IN CONFORMANCE WITH THE RECOMMENDATIONS OF THE PRELIMINARY SOILS INVESTIGATION PREPARED BY _____ DATED_____.
5. COMPACTED FILL TO SUPPORT ANY STRUCTURES SHALL COMPLY WITH SECTION 1803.5.8. PROJECTS WITHOUT A PRELIMINARY SOILS REPORT SHALL INCLUDE DETAILED SPECIFICATIONS IN ACCORDANCE WITH SECTIONS 1803.2 AND 1803.5 PREPARED BY THE ENGINEER OF RECORD.
6. THE CONTRACTOR SHALL NOTIFY THE BUILDING AND SAFETY DEPARTMENT AT LEAST 24 HOURS IN ADVANCE TO REQUEST FINISH LOT GRADE AND DRAINAGE INSPECTION. THIS INSPECTION MUST BE APPROVED PRIOR TO BUILDING PERMIT FINAL INSPECTION FOR EACH LOT.
7. THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT, TWO DAYS BEFORE DIGGING AT 1–800–422–4133.
8. PRIOR TO GRADING, A MEETING SHALL BE SCHEDULED WITH A RIVERSIDE COUNTY ENVIRONMENTAL COMPLIANCE INSPECTOR PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.

CUT/FILL

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

DRAINAGE, EROSION / DUST CONTROL

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

COMPLETION OF WORK

ROUGH GRADE

23. A REGISTERED CIVIL ENGINEER SHALL PREPARE FINAL COMPACTION REPORT/GRADING REPORT AND IT SHALL BE SUBMITTED TO THE DEPARTMENT OF BUILDING AND SAFETY FOR REVIEW AND APPROVAL. THE REPORT SHALL INCLUDE BUILDING FOUNDATION DESIGN PARAMETERS (ALLOWABLE SOIL PRESSURES, ETC.), EXPANSION INDEX (AND DESIGN ALTERNATIVES IF EI > 20), WATER SOLUBLE SULFATE CONTENT, CORROSIVITY AND REMEDIAL MEASURES IF NECESSARY.
24. EXCEPT FOR NON–TRACT SINGLE RESIDENTIAL LOT GRADING, THE COMPACTION REPORT SHALL INCLUDE THE SPECIAL INSPECTION VERIFICATIONS LISTED ON TABLE 1705.6 OF 2016 CBC.
25. THE COUNTY OF RIVERSIDE REQUIRES A LICENSED PROFESSIONAL ENGINEER TO SUBMIT A WET SIGNED AND STAMPED ROUGH GRADING CERTIFICATION WHICH INCLUDES PAD ELEVATIONS PRIOR TO REQUESTING INSPECTION AND ISSUANCE OF THE BUILDING PERMIT.
26. ROUGH GRADE ONLY PERMITS: IN ADDITION TO OBTAINING ALL REQUIRED INSPECTIONS AND APPROVAL OF ALL FINAL REPORTS, ALL SITES PERMITTED FOR ROUGH GRADE ONLY SHALL PROVIDE VEGETATIVE COVERAGE (100 PERCENT) OR OTHER MEANS OF SITE STABILIZATION APPROVED BY ENVIRONMENTAL COMPLIANCE DIVISION, PRIOR TO RECEIVING A ROUGH GRADE PERMIT FINAL.

PRECISE GRADE

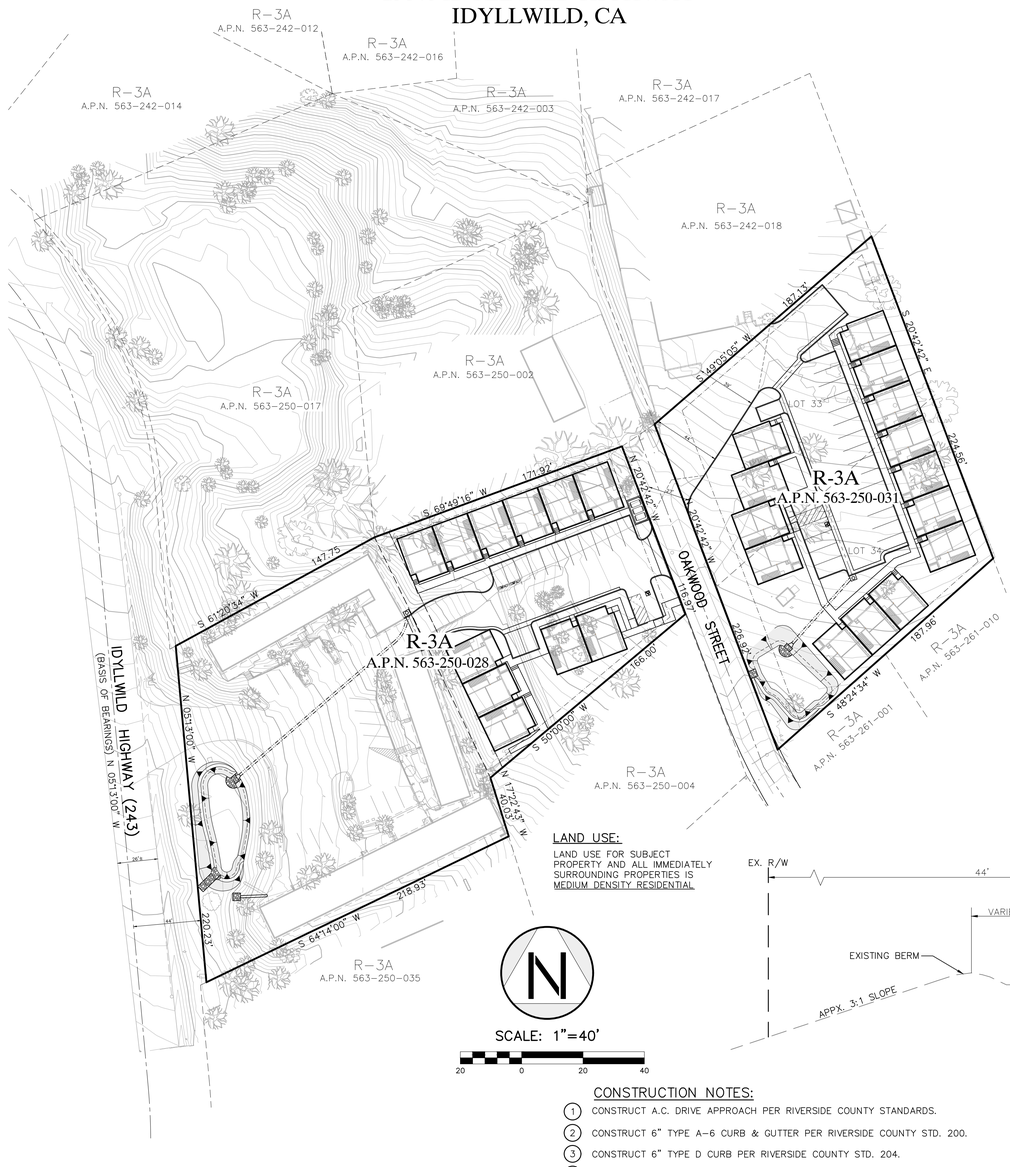
27. A REGISTERED CIVIL ENGINEER SHALL SUBMIT TO THE BUILDING AND SAFETY DEPARTMENT WRITTEN FINAL CERTIFICATION OF COMPLETION OF GRADING IN ACCORDANCE WITH THE APPROVED GRADING PLAN PRIOR TO THE REQUEST OF PRECISE GRADING INSPECTION.

PRE–GRADING/CONSTRUCTION NOTE:

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

TEMPORARY EROSION CONTROL NOTES:

1. TEMPORARY EROSION CONTROL MEASURES ARE REQUIRED FOR GRADING OPERATIONS SCHEDULED FROM OCTOBER 15TH TO APRIL 15TH. APPROVED TEMPORARY EROSION CONTROL PLANS ARE REQUIRED FOR GRADING PROJECTS INVOLVING MORE THAN 4 STRUCTURES, OR WHEN DEEMED NECESSARY BY THE BUILDING OFFICIAL.
2. IN CASE OF EMERGENCY CALL SHANE STEWART AT (951) 659–9505.
3. THE DESIGN CIVIL ENGINEER SHALL SUPERVISE THE EROSION CONTROL WORK AND VERIFY TO THE DEPARTMENT OF BUILDING AND SAFETY THAT THE WORK WAS COMPLETED IN ACCORDANCE WITH THE APPROVED TEMPORARY EROSION CONTROL PLAN.
4. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE DURING THE RAINY SEASON. NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND SHALL BE STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
5. DEVICES SHALL NOT BE MOVED OR MODIFIED WITHOUT THE APPROVAL OF THE BUILDING OFFICIAL.
6. ALL REMOVABLE PROTECTIVE DEVICES SHOWN SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN RAIN IS PREDICTED.
7. AFTER A RAINSTORM, ALL SILT AND DEBRIS SHALL BE REMOVED FROM CHECK BERMS, SILT FENCES, AND DESILTING BASINS ETC.
8. AT THE CONCLUSION OF EACH WORKING DAY GRADED AREAS AROUND THE PROJECT PERIMETER SHALL DRAIN AWAY FROM THE FACE OF SLOPES.
9. THE BUILDING OFFICIAL RESERVES THE RIGHT TO MAKE CHANGES OR MODIFICATIONS TO THE TEMPORARY EROSION CONTROL PLAN AS DEEMED NECESSARY.



LAND USE:

LAND USE FOR SUBJECT PROPERTY AND ALL IMMEDIATELY SURROUNDING PROPERTIES IS MEDIUM DENSITY RESIDENTIAL

CONSTRUCTION NOTES:

1. CONSTRUCT A.C. DRIVE APPROACH PER RIVERSIDE COUNTY STANDARDS.
2. CONSTRUCT 6" TYPE A–6 CURB & GUTTER PER RIVERSIDE COUNTY STD. 200.
3. CONSTRUCT 6" TYPE D CURB PER RIVERSIDE COUNTY STD. 204.
4. CONSTRUCT A.C. PAVING OVER CLASS II BASE.
5. CONSTRUCT 4" THICK CONCRETE SIDEWALK AND STAIRS.
6. HANDICAP PARKING STALL PER ADA REQUIREMENTS.
7. CONSTRUCT 4' WIDE LONGITUDINAL GUTTER PER S.P.P.W.C. STD. 122–2.
8. CONSTRUCT 4' WIDE CATCH BASIN PER RIVERSIDE COUNTY STD. 300.
9. INSTALL 12" H.D.P.E. STORM DRAIN WITH FLARED END SECTION AT OUTLET.
10. CONSTRUCT DOWN DRAIN AND FOREBAY PER DETAIL ON SHT. 2
11. RELOCATE EXISTING CMP DOWN DRAIN AND ADD 5'X5' ROCK SPLASH PAD.
12. CONSTRUCT 12" THICK ROCK RIP–RAP FOR BASIN OUTLET WITH 5'X5' ROCK SPLASH PAD AT BOTTOM – USE 8" MIN. DIAMETER ROCK.
13. SAWCUT AND REMOVE EXISTING A.C PAVING
14. CONSTRUCT TYPE I, BASE B, CURB RAMP PER S.P.P.W.C. STD. 111–5
15. SAWCUT AND REMOVED EXISTING ROADWAY AND CONSTRUCT 24' WIDE ASPHALT ROADWAY PER OAKWOOD STREET TYPICAL SECTION ON SHT. 1
16. CONSTRUCT TRASH ENCLOSURE PER ARCHITECTURAL PLANS.

LEGAL DESCRIPTION:

A.P.N. 563–250–17

THAT PORTION OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 7, TOWNSHIP 5 SOUTH, RANGE 3 EAST, SAN BERNARDINO BASE AND MERIDIAN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF LOT 32 OF IDYLLWILD MOUNTAIN PARK TRACT SUBDIVISION NO. 3, AS SHOWN BY MAP ON FILE IN BOOK 8 PAGE 36 OF MAPS, RIVERSIDE COUNTY RECORDS; THENCE NORTH 4° L1' WEST 38.42 FEET, FOR THE TRUE POINT OF BEGINNING; THENCE SOUTH 66° 35' WEST 170.29 FEET; THENCE SOUTH 5°47'40"EAST 150 FEET, TO THE NORTHWEST CORNER OF LOT 36 OF SAID IDYLLWILD MOUNTAIN PARK TRACT SUBDIVISION NO. 3; THENCE SOUTH 61° 00' WEST 152 FEET, TO A POINT ON THE EASTERLY LINE OF THE BANNING–IDYLLWILD HIGHWAY: THENCE NORTH 05° 31' WEST, ON THE EASTERLY LINE OF THE BANNING–IDYLLWILD HIGHWAY, 105.94 FEET; THENCE NORTHWESTERLY, ON THE EASTERLY LINE OF THE BANNING–IDYLLWILD HIGHWAY, ON A CURVE CONCAVE TO THE SOUTHWEST, HAVING A RADIUS OF 290 FEET, THROUGH AN ANGLE OF 38'30', A DISTANCE OF 194.87 FEET; THENCE NORTH 66'38' EAST 211.26 FEET, TO THE SOUTHEASTERLY CORNER OF LOT 33 OF IDYLLWILD MOUNTAIN PARK CO'S SUBDIVISION NO. 9, AS SHOWN BY MAP ON FILE IN BOOK 11 PAGE 29 OF MAPS, RIVERSIDE COUNTY RECORDS; THENCE SOUTHEASTERLY IN A STRAIGHT LINE, TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION CONDEMNED BY FINAL ORDER OF CONDEMNATION RECORDED SEPTEMBER 28, 1971 AS INSTRUMENT NO. 71–109968, OFFICIAL RECORDS

A.P.N. 563–250–028

LOT 36 OF IDYLLWILD MOUNTAIN PARK TRACT, SUBDIVISION NO. 3, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 8, PAGE 36 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

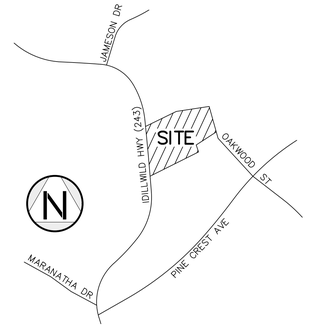
TOGETHER WITH THAT PORTION OF SECTION 7, TOWNSHIP 5 SOUTH, RANGE 3 EAST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY UNITED STATES GOVERNMENT SURVEY, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF LOT 36, AS SHOWN ON MAP OF IDYLLWILD MOUNTAIN PARK TRACT SUBDIVISION NO. 3, ON FILE IN BOOK 8, PAGE 36 OF MAPS, RIVERSIDE COUNTY RECORDS; THENCE SOUTH 25'40' EAST ALONG THE WESTERLY LINE OF SAID LOT, 174.10 FEET TO THE MOST SOUTHERLY CORNER THEREOF; THENCE SOUTH 17'46' EAST ALONG THE WESTERLY LINE OF LOT 35 OF SAID IDYLLWILD MOUNTAIN PARK TRACT SUBDIVISION NO. 3, 40.03 FEET; THENCE SOUTH 64'14' WEST 223.5 FEET TO A POINT ON THE EASTERLY LINE OF BANNING–IDYLLWILD ROAD; THENCE NORTH 05'13' WEST ALONG THE EASTERLY RIGHT OF WAY LINE OF THE SAID BANNING–IDYLLWILD ROAD 220 FEET; THENCE NORTH 61'18' EAST 152 FEET TO THE POINT OF BEGINNING.

EXCEPT THEREFROM THE WESTERLY RECTANGULAR 4 FEET OF SAID LAND CONVEYED TO THE COUNTY OF RIVERSIDE BY GRANT DEED RECORDED JUNE 22, 1977, AS INSTRUMENT NO. 115831, OFFICIAL RECORDS.

A.P.N. 563–250–031

LOTS 33 AND 34 OF IDYLLWILD MOUNTAIN PARK COMPANY'S SUBDIVISION NO. 3 , IN THE CITY OF , COUNTY OF RIVERSIDE, CALIFORNIA, AS PER MAP RECORDED IN BOOK 8, PAGE(S) 36 OF MISCELLANEOUS MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.



THOMAS BROTHERS GUIDE: PG. 814/D6
TOWNSHIP 5S, RANGE 3E, SEC. 7, S.B.M.

VICINITY MAP

NO SCALE

NOTE:

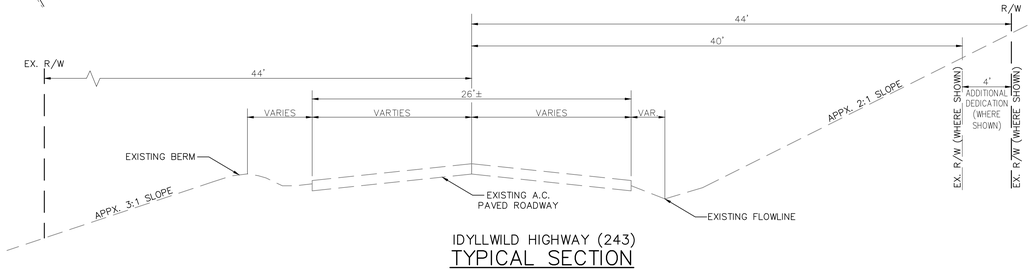
ALL INFORMATION ASSOCIATED WITH BUILDINGS (INCLUDING SETBACKS AND FINISH FLOOR ELEVATIONS) IS FOR REFERENCE ONLY AND THE APPROVAL OF THIS GRADING PLAN DOES NOT INCLUDE ANY PROVISIONS ASSOCIATED WITH THE BUILDINGS.

NOTES:

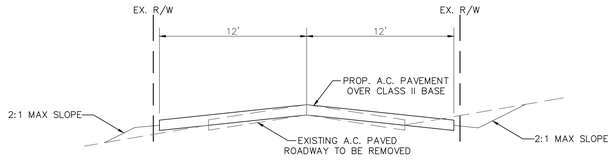
1. THE TOTAL DISTURBED AREA FOR THIS PROJECT IS 1.79 ACRES.
2. BUILDING PADS SHALL BE OVEREXCAVATED AND RE–COMPACTED A MINIMUM OF 3 FEET DEPTH, TO 5 FEET OUTSIDE THE BUILDING LINE, OR AS DIRECTED BY THE SOILS ENGINEER. SEE DETAIL ON SHEET 2.
3. AN ENCROACHMENT PERMIT ISSUED BY THE TRANSPORTATION DEPARTMENT WILL BE REQUIRED FOR ANY WORK DONE WITHIN THE PUBLIC RIGHT–OF–WAY.

BASIS OF BEARING:

THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF IDYLLWILD HIGHWAY, BEING N 05°13'00" W PER RS 60/47.



IDYLLWILD HIGHWAY (243)
TYPICAL SECTION
SCALE: 1"=5'



OAKWOOD STREET
TYPICAL SECTION
SCALE: 1"=5'

SITE ADDRESS:

25840 IDYLLWILD HIGHWAY
IDYLLWILD, CA 92549

SURVEY NOTE

THE SOURCE OF THE EXISTING GROUND SURVEY IS FROM A FIELD SURVEY COMPLETED IN OCTOBER 2018. EXISTING GROUND CONTOURS WERE DRAWN FROM SPOT ELEVATIONS OBTAINED IN A GRID FASHION AND AT GRADE BREAKS.

BENCHMARK

RIVERSIDE COUNTY BENCHMARK I–12: 165 EAST OF THE INTERSECTION OF THE PINECREST DRIVE AND SOUTH CIRCLE DRIVE AT BRIDGE NO. S–145 OVER STAWBERRY CREEK, 20 FEET SOUTH OF SOUTH CIRCLE DRIVE, ON TOP OF THE SOUTH END OF THE SOUTHEASTERLY CONCRETE WING WALL SET A BRASS DISK FLUSH, MARKED I–12.
ELEVATION = 5575.93

OWNER–24 HOUR EMERGENCY CONTACT:

MR. SHANE STEWART
RUSTIC RENTALS, LLC
P.O. BOX 243
IDYLLWILD, CA 92549
PH: (951) 659–9505

THE OWNER IS RESPONSIBLE FOR IMPLEMENTING, INSPECTING, AND REPORTING OF THE SITE EROSION CONTROL PLAN REQUIREMENTS.

SOILS ENGINEER/GEOLOGIST:

TO BE DETERMINED

PROPOSED IMPERVIOUS AREA:

SIDEWALKS/PARKING LOT = 34,301 SQ. FT.
BUILDINGS = 28,200 SQ. FT.
TOTAL = 62,501 SQ. FT.

EXISTING IMPERVIOUS AREA TO REMAIN:

SIDEWALKS/PARKING LOT = 15,303 SQ. FT.
BUILDINGS = 9,157 SQ. FT.
TOTAL = 23,926 SQ. FT.

EXISTING IMPERVIOUS AREA TO BE REMOVED:

SIDEWALKS/PARKING LOT = 4,671 SQ. FT.

DRAINAGE NOTES:

1. THE ENGINEER OF RECORD WHO PREPARED AND SIGNED THE GRADING PLAN HAS VERIFIED THAT THE PROPOSED DRAINAGE SYSTEM IS CONSISTENT WITH THE NATURAL DRAINAGE PATTERN OF THE SITE AND WILL NOT ADVERSELY AFFECT THE ADJACENT PROPERTIES.
2. THE ENGINEER OF RECORD WHO PREPARED AND SIGNED THE GRADING PLAN HAS VERIFIED THAT THE PROPOSED DRAINAGE SYSTEM AND CONFIGURATION COMPLIES WITH SECTION J109.4 OF THE CBC WHICH STATES THAT DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING OR CONSTRUCTION. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ONSITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY.

C.U.P. 190065

BMP NO. _____ PERMIT NO. BGR _____

SITETECH INC.
8061 CHURCH ST. HIGHLAND CA 92346 PO BOX 592
PH: (909) 864–3180, FAX: (909) 864–0850

MAY 17, 2021
BERNHARD K. MAYER R.C.E. 36866 DATE

COUNTY OF RIVERSIDE
PRELIMINARY GRADING/DRAINAGE PLAN
PREPARED FOR: RUSTIC RENTALS, LLC
DATE: MAY 17, 2021
SITE ADDRESS: 25840 IDYLLWILD HIGHWAY IDYLLWILD, CA 92549
APN 563–250–028
PHONE: (951) 659–9505
SCALE: AS NOTED
SHEET NO. C–1

EX. FEATURES LEGEND

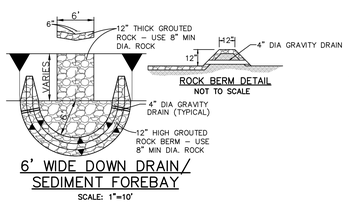
	AL	AREA LIGHT
	APN	ASSESSOR'S PARCEL NUMBER
	ASPH	ASPHALT
	CMP	CONCRETE METALLIC PIPE
	COL	COLUMN
	FD	FOUND MONUMENT – AS NOTED
	FH	FIRE HYDRANT
	FP	FENCE POST
	GR	GRATE
	LS	LIGHT STANDARD
	PP	POWER POLR
	PPT	PROPANE TANK
	SMH	SEWER MANHOLE
	SN	SIGN
	UB	UTILITY BOX
	WH	WELLHEAD
	WM	WATER METER
	WV	WATER VALVE
		BLOCK WALL – TYPICAL
		FENCE – TYPICAL
111		CONTOURS
		TREE OAK – TYPICAL
		TREE PINE – TYPICAL
		TREE DECIDUOUS – TYPICAL

LEGEND:

- 3280 – INDICATES EXISTING CONTOUR
- INDICATES STREET CENTERLINE
- INDICATES FLOW LINE
- INDICATES H.D.P.E. DRAIN LINE
- INDICATES SLOPE FACE
- FF – INDICATES FINISH FLOOR
- FS – INDICATES FINISH SURFACE
- FL – INDICATES FLOW LINE
- TC – INDICATES TOP OF CURB
- INV – INDICATES INVERT

CONSTRUCTION NOTES:

1. CONSTRUCT A.C. DRIVE APPROACH PER RIVERSIDE COUNTY STANDARDS.
2. CONSTRUCT 6" TYPE A–6 CURB & GUTTER PER RIVERSIDE COUNTY STD. 200.
3. CONSTRUCT 6" TYPE D CURB PER RIVERSIDE COUNTY STD. 204.
4. CONSTRUCT A.C. PAVING OVER CLASS II BASE.
5. CONSTRUCT 4" THICK CONCRETE SIDEWALK AND STAIRS.
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9. INSTALL 12" H.D.P.E. STORM DRAIN WITH FLARED END SECTION AT OUTLET.
10. CONSTRUCT DOWN DRAIN AND FOREBAY PER DETAIL ON SHT. 2
11. RELOCATE EXISTING CMP DOWN DRAIN AND ADD 5'X5' ROCK SPLASH PAD.
12. CONSTRUCT 12" THICK ROCK RIP–RAP FOR BASIN OUTLET WITH 5'X5' ROCK SPLASH PAD AT BOTTOM – USE 8" MIN. DIAMETER ROCK.
13. SAWCUT AND REMOVE EXISTING A.C PAVING
14. CONSTRUCT TYPE I, BASE B, CURB RAMP PER S.P.P.W.C. STD. 111–5
15. SAWCUT AND REMOVED EXISTING ROADWAY AND CONSTRUCT 24' WIDE ASPHALT ROADWAY PER OAKWOOD STREET TYPICAL SECTION ON SHT. 1
16. CONSTRUCT TRASH ENCLOSURE PER ARCHITECTURAL PLANS.



6' WIDE DOWN DRAIN/ SEDIMENT FOREBAY

SCALE: 1"=10'

SCALE: 1"=20'

C.U.P. 190065

BMP NO. _____ PERMIT NO. BGR _____

SITETECH INC.

8061 CHURCH ST. HIGHLAND CA 92346 PO BOX 592
PH: (909) 864–3180, FAX: (909) 864–0850

BERNHARD K. MAYER R.C.E. 36866 MAY 17, 2021 DATE

COUNTY OF RIVERSIDE

PRELIMINARY GRADING/DRAINAGE PLAN

PREPARED FOR: RUSTIC RENTALS, LLC

DATE: MAY 17, 2021

APN 563–250–028

SCALE: AS NOTED

SITE ADDRESS: 25840 IDYLLWILD HIGHWAY IDYLLWILD, CA 92549

PHONE: (951) 659–9505

SHEET NO. C–2

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

GEODYNE
ENGINEERING, INC.

Geotechnical & Environmental Consultants
Phone: (949) 636-8316
45 Post, Irvine, CA 92618
Mailing Address: 6 Bienvenido, Aliso Viejo, CA 92656
anoori@geodyne-engineering.com

Geotechnical Investigation Report Update
Proposed Extended Stay Lodges at:
25840 Idyllwild Road
Idyllwild, Riverside County, California

Project No. GD19G508-1 **July 7, 2020**

GEODYNE
ENGINEERING, INC.

Geotechnical & Environmental Consultants
Phone: (949) 636-8316
45 Post, Irvine, CA 92618
Mailing Address: 6 Bienvenido, Aliso Viejo, CA 92656
anoori@geodyne-engineering.com

July 7, 2020

WSCS
2501 E Guasti Rd Suite 201
Ontario, Ca 91761
PH:909-544-9118
CE:909-262-9766
Wade@WSCSdesign.com
www.WSCSdesign.com

Geodyne Project No.GD19G508-1

Attention: Mr. Wade Shuey
Principal - Owner

Subject: **Geotechnical Investigation Report Update**
Proposed Expansion of Extended Stay Lodges at:
25840 Idyllwild Road, Idyllwild, Riverside County, CA 92549

Reference: *Limited Geotechnical Investigation by Geodyne Engineering, Inc. Dated November 11, 2019, Geodyne Project No.GD19G508 (Attached as Appendix D)*

Dear Mr. Shuey:

In accordance with your request, this report has been prepared to update our referenced limited geotechnical investigation report to 2019 CBC and to provide recommendations for the currently proposed development. It is our opinion that the recommendations provided in our referenced report are still applicable to the currently proposed development unless revised herein.

Based on this study, it is also our opinion that the currently proposed construction is feasible from the geotechnical standpoint provided the recommendations contained herein are incorporated into the project plans and specifications. This report should be reviewed in detail prior to proceeding further with the planned development.

We appreciate and wish to thank you for the opportunity to serve you on this project. Please do not hesitate to contact us if we can be of additional assistance during subsequent phases of this project.

Respectfully submitted,
Geodyne Engineering, Inc.





A. Wahab Noori., P. E.
Principal Engineer / (RCE C 081696)
Registration Exp. Date: 03-31-2022

Craig C. Chase, P.G., C.E.G.
Certified Engineering Geologist
Registration Exp. Date: 06-30-2021

APPENDIX A
Vicinity Map
Geotechnical Map

APPENDIX B
Logs of Exploratory Test Pits

APPENDIX C
ASCE 7 Hazards Tools Detailed Output Report Per ASCE/SEI 7-16 Standard

APPENDIX D
Limited Geotechnical Investigation by Geodyne Engineering, Inc.
Dated November 11, 2019, Geodyne Project No.GD19G508

INTRODUCTION

Purpose

The purpose of this report update and supplemental Geotechnical Investigation is to provide preliminary geotechnical information to WSCS Design ("Client") regarding the subject properties located in the unincorporated community of Idyllwild, Riverside County, California. There are three (3) noncontiguous properties in close proximity to each other that are the subject of this Limited Geotechnical Investigation (herein referred to as "Lot 1", Lot "2" and Lot "3"). Geodyne Engineering, Inc. understands that the Client is considering developing the subject properties and requires a Limited Geotechnical Investigation.

The information gathered in this Limited Geotechnical Investigation is intended to provide the Client with an understanding of the physical conditions of site-specific subsurface soils, groundwater, and the regional geologic setting which could affect the cost or design of the proposed development at the subject properties (Vicinity Map, Site Plan – **Appendix A**).

This Limited Geotechnical Investigation has been conducted in general accordance with accepted geotechnical engineering principles and in general conformance with the discussed scope and verbal authorization by the Client.

Geodyne Engineering, Inc. conducted the first phase of our onsite field exploration for Lot "1" which was completed on November 5, 2019 that included excavation of four (4) backhoe test pits (designated TP-1 through TP-4) for the proposed development at the subject property. Geodyne Engineering, Inc. conducted the second phase of our onsite field exploration on June 23, 2020 that included the excavation of five (5) additional backhoe test pits (designated TP-5 through TP-9) for Lot "2"; and seven (7) additional backhoe test pits (designated TP-10 through TP-16) for Lot "3". A total of sixteen (16) backhoe test pits were excavated for our Limited Geotechnical Investigation of the subject properties. This Limited Geotechnical Investigation has been prepared for the sole use of WSCS Design. Other parties, without the express written consent of Geodyne Engineering, Inc. should not rely upon this Limited Geotechnical Investigation.

Project Description

Based on information provided by the Client, we understand that the development of the subject properties will include:

- Lot "1" – Proposed development of Lot "1" will consist of the construction of three (3) new single-story buildings for a total of eleven (11) lodging units for seasonal stay lodging within the rear, northeast portion of the subject property. Each building will contain six (6),

three (3) and two (2) lodging units, respectively. Other proposed improvements include paved parking and drive areas and other related improvements. An existing shed and several trees will be removed prior to constructing the new development.

- Lot "2" – Proposed development of Lot "2" will consist of the construction of five (5) new single-story buildings for a total of sixteen (16) lodging units also for seasonal stay lodging spread across the subject property. Each building will contain seven (7), three (3), two (2), two (2) and two (2) lodging units, respectively. Other proposed improvements include paved parking and drive areas and other related improvements. An existing outbuilding and several trees will be removed prior to constructing the new development.

- Lot "3" – Proposed development of Lot "3" will consist of the construction of three (3) new single-story buildings for a total of thirteen (13) lodging units for more seasonal stay lodging, mainly spread over the western two-thirds of the subject property. Each building will contain six (6), four (4) and three (3) lodging units, respectively. Other proposed improvements include paved parking and drive areas and other related improvements. Lot "3" is currently undeveloped but has a moderate cover of large trees spread across the site, some of which will need to be removed prior to constructing the new development.

No detailed grading plans were provided to Geodyne Engineering, Inc. at the time of our preparation of this report; however, grading within each individual lot is anticipated to include cuts and fills of less than 5 feet across the subject property (exclusive of remedial grading). No foundation plans were provided to Geodyne Engineering, Inc. at the time of report preparation; however, foundation loads are assumed to be typical for the type of construction. No other information is known at this time.

Scope of Services

The scope of our services included:

- A review of readily available data pertinent to the subject property, including published and unpublished geologic reports/maps, and soils data for the area (**References**).

- Conducting a geotechnical reconnaissance of the subject property and nearby vicinity.

- Excavation and logging of sixteen (16) exploratory test pits (designated TP-1 through TP-16) by means of a backhoe excavator in readily accessible areas of the subject properties to depths ranging from approximately 1 foot to 8 feet below the existing ground surface (bgs) **(Appendix B)**.

- An evaluation of seismicity and geologic hazards to include an evaluation of faulting and liquefaction/seismic-induced settlement potential.

- Completion of limited laboratory testing (moisture & desnity) of representative earth materials encountered onsite to ascertain their pertinent soils engineering properties

- The preparation of this report which presents our preliminary findings, conclusions, and recommendations.

BACKGROUND

Subject Properties Descriptions

Based on information provided by Client (WSCS Designs – Site Plan Concept, 2019), we understand that the proposed seasonal lodging development is composed of three (3) separate noncontiguous but adjacent properties east of Idyllwild Road (State Route 243) and southeast of Jameson Drive in the unincorporated community of Idyllwild, Riverside County, California. For clarity, the three subject properties are referred to as Lot "1" (APN: 563-250-028), Lot "2" (APN: 563-250-031) and Lot "3" (APN: 563-250-017). Lot "1" is associated with an address of 25840 Idyllwild Road, is located approximately 450 feet southeast of Jameson Drive, along and immediately east of Idyllwild Road. The boundary of Lot "2" is located about 20 feet east of the boundary of Lot "1", separated by Oakwood Street. Lot "3" is located immediately northwest of Lot "1" along the east side of Idyllwild Road and also southeast of Jameson Drive. Lot "1" is essentially located between Lot "2" to the east and Lot "3" to the northwest.

Lot "1" - Based on our review of online aerial photography (GoogleEarth®, 2019) and our site reconnaissance, the irregularly-shaped subject property is currently partially developed. The subject property covers an area of approximately 1.45-acres and can be divided into two parcels or sections. The southwestern portion of the subject property covers an area of slightly less than 1-acre and is currently developed with three (3) single floor buildings and paved parking and drive areas comprising an old motel business that has been converted into apartments. The presently developed portion of Lot "1" is not a part of the subject proposed site development. The proposed seasonal lodging development is located on the northeastern portion of the subject Lot "1" property covering an area of approximately 0.5-acre, located approximately 200 feet northeast of Idyllwild Road. The subject parcel to be developed has generally bare ground that has been cleared with minor leveling for use as a parking area. This portion of the property also has an existing storage shed and scattered large evergreen trees with sparse forest cover. The surface gradient of the

subject property appears to be less than 5:1 (horizontal to vertical). The site is accessible via a driveway from Idyllwild Road and Oakwood Street.

The center of the subject Lot "1" property is approximately situated at 33.748788° degrees North latitude and 116.713981° degrees West longitude (Google Earth®, 2019). The property is bounded by Idyllwild Road (State Route 243) on the west, the Idyllwild Bible Church (54400 Pine Crest Avenue) with residential properties and open space forest to the north and northeast.

Lot "2" - Based on our review of online aerial photography (GoogleEarth®, 2019) and our site reconnaissance, the roughly rectangular-shaped subject property is generally undeveloped and covers an area of approximately 0.98-acres. Lot "2" is generally located immediately east of Lot "1" approximately 400 feet east of Idyllwild Road and 250 feet northwest of Pine Crest Avenue with Oakwood Street forming the southwestern boundary of the property. The subject parcel generally has a bare ground surface that appears to have been cleared with minor leveling of the ground surface. A small outbuilding and several parked fifth-wheel type trailers are present on the site. Scattered large evergreen trees with sparse forest cover is also present. The surface gradient of the subject property appears similar to the adjacent Lot "1" at less than approximately 5:1 (horizontal to vertical). The site is accessible through Lot "1" and from Oakwood Street via Pine Crest Drive.

The center of the subject Lot "2" property is approximately situated at 33.749283° degrees North latitude and 116.712648° degrees West longitude (Google Earth®, 2019). The property is bounded by Oakwood Street (across from Lot "1") on the southwest with the remainder of the property surrounded by residential properties and open space forest.

Lot "3" - Based on our review of online aerial photography (GoogleEarth®, 2019) and our site reconnaissance, the irregularly-shaped subject property appears to be undeveloped and covers an area of approximately 1.3-acres. Lot "3" is generally located immediately northwest of the northwest corner of Lot "1" and is located along the east side of Idyllwild Road and approximately 150 feet southeast of Jameson Drive. The subject parcel is undeveloped with possible minor areas of clearing. No structures are present on the subject property. Scattered large evergreen trees with sparse forest cover is present across the property. The surface gradient of the subject property appears to be generally steeper than the adjacent Lot "1" at approximately 3:1 to 4:1 (horizontal to vertical). Low cut slopes of approximately 5 feet in height with exposed granitic bedrock are present along at the western edge of the property along Idyllwild Road.

The center of the subject Lot "3" property is approximately situated at 33.749747° degrees North latitude and 116.713876° degrees West longitude (Google Earth®, 2019). The property is bounded by Idyllwild Road on the west, unimproved forest land on the north and northwest, residential

properties and open space forest to the northeast and east, the existing "developed" portion of Lot "1" to the south and the "undeveloped" portion of Lot "1" to the southeast.

Topography

The subject properties are located in Section 7 of Township 5 South, Range 3 East within the Idyllwild, California 7.5-minute Quadrangle (USGS, 2018). For Lot "1", the ground surface at the property gently slopes from northeast to southwest and ranges in elevation from roughly 5,490 feet to 5,465 feet above mean sea level (amsl). Surface drainage across the site is through sheetflow, generally to the southwest. For Lot "2", the ground surface at the subject property also gently slopes to the southwest with surface elevations ranging from approximately 5,515 feet to 5,490 feet above mean sea level (amsl) with surface drainage across the subject property by sheetflow. For Lot "3", the ground surface at the subject property also slopes relatively gently from northeast to southwest with surface elevations ranging from approximately 5,500 feet to 5,455 feet above mean sea level (amsl) with the lowest site elevations along Idyllwild Road.

FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

Field work for our Limited Geotechnical Investigation was conducted on November 1 and 5, 2019 (Lot "1") and June 23, 2020 (Lots "2" and "3"). For Lot "1", our initial field work on November 1, 2019 at the site consisted of attempting the excavation of hand-dug exploratory test pits at the subject property. Due to difficult hand digging conditions and shallow refusal, field work was terminated and, with the concurrence of the Client, it was decided to use a backhoe at a later date to excavate the test pits. On November 5, 2019, a total of four (4) exploratory test pits (designated TP-1 through TP-4) were excavated at the subject property. The test pit excavations ranged in depth from approximately 2.5 feet to 7.5 feet below the existing ground surface (bgs). For Lots "2" and "3", a total of twelve (12) additional exploratory test pits (designated TP-5 through TP-16) were excavated at the subject properties on June 23, 2020. The test pit excavations ranged in depth from approximately 1 foot to 8 feet below the existing ground surface (bgs). All test pit excavations were logged under the supervision of a Registered Professional Engineer and Certified Engineering Geologist at Geodyne Engineering, Inc. The approximate locations of the test pits are shown in Figure B, **Appendix A**.

A small CAT, track backhoe excavator was used to excavate the exploratory test pits. Equipment refusal was encountered within test pit excavations due to the presence of hard, granitic bedrock at depth. The subsurface lithology is recorded on the test pit logs, which are presented in

Appendix B. The soils were classified in accordance with the Unified Soil Classification System (ASTM, 2015). Representative bulk samples were also collected for appropriate laboratory testing. Attempts were made to retrieve undisturbed ring samples. However, the samples were either disturbed or there was no recovery due to the friable nature of the underlying soil and bedrock. During our investigation on June 23, 2020, we were able to retrieve bedrock's ring samples generally from the lower depths only at lot 2.

Laboratory Testing

Selected samples obtained from our test pits were tested to evaluate pertinent soil classification and engineering properties and to enable development of geotechnical conclusions and recommendations. The laboratory tests of samples retrieved during our investigation on June 23, 2020 were limited to moisture and density determination. Due to the general similarities of soil and bedrock encountered in our geotechnical investigation on November 5, 2019, additional testing deemed unnecessary.

SUBSURFACE CONDITIONS

Geologic Setting

Regionally, the subject properties lie within the Peninsular Ranges Geomorphic Province of southern California. This province consists of a series of ranges separated by northwest trending valleys; sub parallel to branches of the San Andreas Fault (CGS, 2002). The Peninsular Ranges geomorphic province, one of the largest geomorphic units in western North America, extends from the Transverse Ranges geomorphic province and the Los Angeles Basin, south to Baja California. It is bound on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province. The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks (CGS, 2002). Major fault zones and subordinate fault zones found in the Peninsular Ranges Province typically trend in a northwest-southeast direction. Locally, the subject properties are located on the southwest flank of the San Jacinto Mountains.

Regional geologic maps of the subject properties and vicinity (Dibblee and Minch, 2008) indicate the properties are underlain by older surficial sediments mapped as Pleistocene-age alluvial fan gravel (map unit Qof), which is described as weakly indurated and dissected. Map unit Qof was not encountered within our exploratory test pits at the subject properties. However, the subject site properties are located near a geologic contact with Cretaceous-age plutonic rocks which compose the Peninsular Ranges Batholith. These plutonic rocks were encountered within our test pits and are described as Cretaceous-age quartz diorite or granodiorite (i.e. "granitic") that is grayish-white in color and massive to slightly gneissoid with minor xenoliths.

Subsurface Conditions

The materials encountered in our test pits consisted of undocumented artificial fill and weathered ("decomposed") granitic bedrock. A brief description of the subsurface conditions is provided in the following section. Detailed descriptions of the subsurface conditions are provided on the test pit logs included in **Appendix B**.

Artificial Fill – For Lot "1" **-** Artificial fill was encountered in three (3) of our test pits at the ground surface and extended to depths ranging from 2 to 3 feet below the existing ground surface in test pits TP-1, TP-2 and TP-3. Artificial fill was not encountered within test pit TP-4. For Lot "2" – Artificial fill was encountered within all five test pits (TP-5 through TP-9) at the ground surface and extended to depths of 3.5 to 4 feet below the existing ground surface. For Lot "3" – Artificial fill was encountered within test pit TP-15 only at the ground surface and extended to a depth of approximately 3 feet below existing grade. As encountered within all three of the subject properties, the artificial fill generally consists of light grayish-brown or brownish-gray, dry to damp, medium dense, fine to coarse grained sand with pebbles and minor silt with tree roots up to 3-inches in diameter at the time of our subsurface exploration.

The artificial fill was likely placed in conjunction with the existing motel/apartment development (western portion of Lot "1") and during minor site grading and re-leveling for parking areas and also the adjacent grading associated with the nearby existing residential developments.

Decomposed Granite ("DG") – For Lot "1" - Decomposed granite bedrock (appears to be weathered granodiorite) was encountered beneath the existing artificial fill within test pits TP-1, TP-2 and TP-3 and was encountered at the ground-surface in test pit TP-4, and extended to the maximum explored depth of 7.5 feet below the existing ground surface. For Lot "2" - Decomposed granite bedrock (appears to be weathered granodiorite) was encountered beneath the existing artificial fill within all five test pits (TP-5 through TP-9), and extended to the maximum explored depth of 8 feet below the existing ground surface. For Lot "3" - Decomposed granite bedrock (appears to be weathered granodiorite) was encountered generally at the ground surface (except for a thin veneer of topsoil) within six of seven test pits (TP-10 through TP-14, TP-16) and extended to the maximum explored depth of 5 feet below the existing ground surface. In test pit TP-15, decomposed granite bedrock was encountered at a depth of 3 feet below the existing ground surface underlying the artificial fill. The decomposed granite materials at the time of our subsurface exploration can be described as tan or light brown to grayish-brown, highly weathered, friable with medium to coarse texture and moderately hard to hard becoming hard and relatively unweathered at approximate depths ranging from 2.5 to 8 feet below existing ground surface.

Groundwater

Static groundwater or seepage was not encountered in any of our exploratory test pits to a maximum depth of 8 feet bgs at the time of exploration. Based on the presence of shallow, hard granitic bedrock at the ground surface to very shallow depths, static groundwater is not anticipated beneath the site. It should be noted that variations in groundwater may result from fluctuations in the ground surface topography, subsurface stratification, rainfall, irrigation, and other factors that may not have been evident at the time of our subsurface exploration.

GEOLOGIC HAZARDS

California Building Code Seismic Design Parameters

Geodyne Engineering, Inc. utilized seismic design criteria provided in the CBC (2019) and ASCE 7-16. Final selection of the appropriate seismic design coefficients should be made by the structural consultant based on the local laws and ordinances, expected building response, and desired level of conservatism. The site coefficients and adjusted maximum considered earthquake spectral response accelerations in accordance with the 2019 California Building Code are presented in **Table 1**.

TABLE 1
2019 CBC Seismic Parameters and Peak Ground Acceleration

Parameter	Value
Site Coordinates (Lot 1)	Latitude 33.748788° Longitude -116.713981°
Mapped Spectral Acceleration Value at Short Period: S_S	1.5g
Mapped Spectral Acceleration Value at 1-Second Period: S_1	0.6g
Site Classification	C
Short Period Site Coefficient: F_a	1.2
1-Second Period Site Coefficient: F_v	1.4
Site-Modified Spectral Acceleration Value: S_{MS}	1.8g
Site-Modified Spectral Acceleration Value: S_{M1}	0.84g
Design Spectral Response Acceleration at Short Periods: S_{DS}	1.2g
Design Spectral Response Acceleration at 1-Second Period: S_{D1}	0.56g
Peak Ground Acceleration adjusted for Site Class Effects: PGA_M	0.651g

ASCE 7 Hazards Report per ASCE/SEI 7-16 Standard is attached in Appendix C. Final selection of the appropriate seismic design coefficients should be made by the structural consultant based on the local laws and ordinances, expected building response, and desired level of conservatism.

Faulting and Surface Rupture

The subject properties are located within an area of California known to contain a number of active and potentially active faults. There are no known active faults crossing the subject properties (Jennings and Bryant, 2010) and the properties are not within a State of California Earthquake Fault Zone (CDMG, 1974). The closest known active fault is the San Jacinto Valley segment of the San Jacinto Fault Zone, located approximately 7.41 miles (11.93 km) southwest of the subject properties (USGS, 2008). Therefore, the potential for surface rupture at the properties is considered low. Three of the closest faults along with their distance from the property (Lot "1") and Maximum Magnitude are shown in **Table 2.**

TABLE 2
Nearby Active Faults

Fault	Distance in Miles (Kilometers)[1]	Maximum Magnitude[1]
San Jacinto SJV+A+CC+B	7.41 (11.93)	7.70
San Jacinto SBV+SJV+A+CC	7.41 (11.93)	7.76
San Jacinto SJV+A	7.41 (11.93)	7.47

1. USGS Online Fault Search (2008)

Landslides and Slope Stability

The subject properties and surrounding areas are generally relatively flat with near-surface or surface exposures of granitic bedrock. As a result, we consider the potential for landslides or slope instabilities to occur at the properties to be negligible.

Liquefaction Potential and Lateral Spreading

Liquefaction occurs when loose, saturated, generally cohesionless fine sands and non-plastic silts are subjected to strong ground shaking. The soils lose shear strength and become liquid; potentially resulting in large total and differential ground surface settlements as well as possible lateral spreading during an earthquake. Seismically induced settlement can occur in response to liquefaction of saturated loose granular soils, as well as the reorientation of soil particles during strong shaking of loose, unsaturated sands.

Due to the lack of shallow groundwater at the subject site, and the presence of near-surface to surface granitic bedrock, the probability of liquefaction, seismically induced settlement, and lateral

spreading at the subject site is considered to be negligible.

Tsunamis, Flooding and Seiches

The subject property is not located within a Tsunami Evacuation Area; therefore, damage due to tsunamis is considered low.

Geodyne reviewed the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) online database (FEMA, 2019) to determine if the subject property was in a flood zone. According to Panel No. 06065C2155G - effective August 28, 2008, the subject property is located within Flood Zone X. FEMA defines Zone X as an area of minimal flood hazard, usually depicted on FIRMs as outside the 500-year flood plain.

Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays, or reservoirs. The subject property is not located immediately adjacent to any lakes or confined bodies of water; therefore, the potential for a seiche to affect the site is considered low.

FOUNDATION RECOMMENDATIONS
Foundation on Expansive Soils

Expansive soils change in volume with change in moisture content. Shrinking and swelling of the clays can cause heaving and cracking on slab-on-grade and structures founded on shallow foundations. The results of our exploration, laboratory testing and engineering tactile evaluation indicate the soils underlying this site have a Very Low Expansion Potential characteristics. As such, special measures per 2019 California Building Code (CBC) Section 1803.5.3 are not required to mitigate expansive soil. However, we recommend the expansion index to be verified during the rough grading/earthwork of the site.

SHALLOW FOUNDATION

Foundation support for the proposed construction could be derived by utilizing a shallow conventional continuous or spread foundation system extended below frost zone or insulated, embedded within the underlying bedrock or engineered fill compacted to 90%. An ultimate bearing capacity of 6000 psf and an allowable bearing capacity of 2000 psf may be used for foundation bearing on bedrock or compacted fill. The recommended values are for a footing 18" wide and 18 inch deep. It may be increased by 300 psf for every additional foot of width or depth (3500 psf Max). A one-third increase in bearing capacity may be used for resistance against seismic and wind loading.

The recommended passive earth pressure (equivalent fluid weight) is 250 pcf (Max. 3000 pcf). Minimum reinforcement for 18-inch-deep and 18-inch-wide continuous footings should consist of four No. 4 steel reinforcing bars; two placed near the top of the footing and two near the bottom.

FRICTION PILES

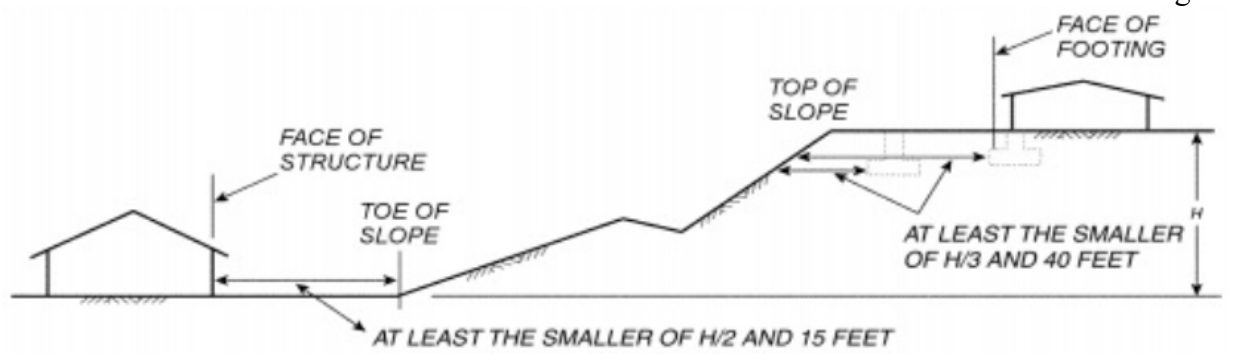
As an option, foundation support for the proposed construction could be derived by utilizing a friction pile foundation system. A minimum 24-inch diameter piers embedded a minimum of 5 ft into the underlying bedrock should be considered. The capacity of fill should be ignored unless certified. Greater embedment may be necessary to resist lateral loads due to wind and seismic forces. An allowable skin friction resistance of 400 psf may be used for the design of friction pile system. The piers should not be spaced more than three diameters on center each way. For piers with closer spacing, a load capacity reduction factor of 0.75 due to pile group effects may be considered.

Retaining Wall

Embedded structural walls should be designed for lateral earth pressures exerted on the walls. The magnitude of these earth pressures will depend on the amount of deformation that the wall can yield under the load. If the wall can yield sufficiently to mobilize the full shear strength of the soils, it may be designed for the active condition. If the wall cannot yield under the applied load, then the shear strength of the soil cannot be mobilized, and the earth pressures will be higher. These walls such as basement walls and swimming pools should be designed for the at rest condition. If a structure moves towards the retained soils, the resulting resistance developed by the soil will be the passive resistance. For design purposes, the recommended equivalent fluid pressure for each case for walls constructed above the static groundwater table and backfilled with very low-expansive soils is provided below. Retaining wall backfill should be compacted to at least 95% relative compaction based on the maximum density of select import defined by ASTM D1557.

A conventional shallow minimum 24-inch square spread or minimum 24-inch diameter pier foundation system embedded within the underling compacted fill or bedrock may be used to support the proposed retaining wall. Spread or pier foundation system should be properly reinforced, embedded a minimum of 36” below the finished sub grade elevation. Greater embedment may be necessary to resist lateral loads due to wind and seismic forces.

In cases where the ground surface slopes away from the foundation, passive resistance will be developed below an imaginary horizontal line that intersects the ground surface. As such, the requirements of 2019 CBC, Figure 1808.7.1 Foundation Clearances from Slopes should be adhered to as illustrated below:



For SI: 1 foot = 304.8 mm.

FIGURE 1808.7.1

FOUNDATION CLEARANCES FROM SLOPES

Retaining structure may be designed per the following geotechnical parameters:

- Allowable Bearing Pressure: 2000 psf

The bearing value may be increased by 250 psf per foot increase in width or depth to a maximum allowable bearing pressure of 3500 psf.

- Coefficient of Friction: 0.40
- Soil Unit Weight: 120 pcf
- Allowable skin friction resistance: 400 psf
- Passive Earth Pressure - equivalent fluid weight of 250 pcf (Max. 3000 pcf)

Frictional resistance and passive pressure resistance may be used in combination if friction coefficient is reduced by one-third. A one-third increase in passive pressure may be used for resistance against seismic and wind loading.

Active earth pressures behind walls depend on wall movement, backfill slope, surcharge loads and back fill material.

Table No. 4

Equivalent Fluid Density (PCF)	**Level backfill**
Active Condition	40
At-rest Condition	65

Lateral resistance parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer. In addition to the above lateral forces due to retained earth, surcharge due to improvements, such as an adjacent structure should be considered in the design of the retaining wall. Loads applied within a 1:1 projection from the surcharging structure on the stem of the wall should be considered in the design. A third of uniform vertical surcharge-loads should be applied at the surface as a horizontal pressure on cantilever (active) retaining walls, while half of uniform vertical surcharge-loads should be applied as a horizontal pressure on braced (at-rest) retaining walls.

The backfill behind the wall should be drained properly. The simplest drainage system consists of a drain system located near the bottom of the wall. The drain collects the water that enters the backfill and this may be disposed of through outlets along the base of the wall. To ensure that the drains are not clogged by fine particles, they should be surrounded by a granular filter wrapped in a geofabric such as Mirafi 140N or equivalent. Despite a well-constructed toe drain, substantial water pressure may develop behind the wall if the backfill consists of clays or silts. A more satisfactory drainage system, consisting of a back drain of 12 inches to 24 inches width gravel may be provided behind the wall to facilitate the drainage. All back drains should be provided with outlet to suitable drainage facilities.

SEISMICALLY INDUCED LATERAL EARTH PRESSURES

Retaining wall design calculations for lateral earth pressure due to earthquake motions for walls higher than 6 feet, as required by section 1803.5.12 of the 2019 CBC is discussed below.

We have used ½ of 2/3 the PGA_M in our analysis (2/6) (0.651 g) = 0.217g. Evaluation of lateral earth pressures under static and seismic loading conditions is based on using the Coulomb (1776) and Mononobe-Okabe (1929) Methods for frictional backfill materials with little to zero cohesion. For a level backfill, we recommend using a granular frictional soil material which exhibits friction angle 30 degrees or better. If this material is used, we recommend using combined of static and dynamic active equivalent earth pressure 60 pcf. For walls with a retained height over 6 feet, or where otherwise required by Code or deemed appropriate by the structural engineer, we recommend that the wall designs be checked seismically using an additive seismic Equivalent Fluid Pressure (EFP) of 22 pcf. Such walls that are to be designed in the static case assuming the at-rest condition should be checked seismically using this additive seismic EFP added to the active condition (i.e., the additive seismic EFP is not added to the at-rest EFP). The additive seismic EFP should be applied with a standard EFP pressure distribution (i.e., it is not an inverted triangle).

Slab on Grade

Slabs on grade should be underlain by a layer of four (4) inches free drainage 3/4" crushed rocks over firm native or approved structural fill. For the design of the slab on grade, modulus of subgrade reaction (k1) of 100 kcf is recommended. Slab thickness, reinforcement etc., should be selected by the structural engineer based on the analysis performed considering the loads anticipated, sub grade expansion potential and the modulus of subgrade reaction of the soil. As minimum, we recommend a 4.0-inch thick slab thickness, reinforced with #4 bars at 18 inch on center. The subgrade for the new slab should be prepared as recommended under Section 8.2 "Site Preparation." A vapor barrier over the crushed rock or approved subgrade soil should be considered in areas where the migration of moisture through the floor slab would be detrimental. To protect the vapor barrier (Visqueen) from punctures during placement, it is recommended that the Visqueen be placed over two-inch thick, clean sand layer. The vapor barrier should be at least 10-mil plastic (STEGO or Equivalent) and should be sealed at all splices, around plumbing, and at the perimeter of slab areas. Every effort should be made to provide a continuous barrier and care should be taken not to puncture the membrane. Some contractors exercising special care use heavier membranes or double layers of 10-mil plastic with splices staggered and sealed. All new slab design should be in compliance with the applicable sections of 2019 Cal Green.

SITE GRADING

As per 2019 CBC Section 1804.4, the ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than one unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 2 percent where located within 10 feet of the building foundation. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building.

PLAN REVIEWS

It is recommended that copies of the final grading and foundation plans, when they become available, be provided to our office for review.

CLOSURE

This report may serve as an update to our referenced geotechnical report. Provided that the updated recommendations contained within this report are properly implemented, our referenced geotechnical investigation report is considered valid for the currently proposed development.

It is recommended that a complete copy of this update report, along with the original geotechnical report, be provided to all contractors and consultants associated with this project.

We sincerely appreciate the opportunity to be of continued service on this project. We look forward to providing additional consulting services during the course of the project.

REFERENCES

American Society of Civil Engineers (ASCE), 2016, Minimum Design Loads for Buildings and Other Structures, ASCE Document ASCE/SEI 7-16.

American Society for Testing and Materials (ASTM), 2015, Annual Book of ASTM Standards, Volume 04.08, Construction: Soil and Rock (I), Standards D 420 - D 5876.

California Building Code (CBC), 2019, California Code of Regulations, Title 24, Part 2, Volume 2 of 2, California Building Standards Commission, Based on 2018 International Building Code; 2019 California Historical Building Code, Title 24, Part 8; and 2016 California Existing Building Code, Title 24, Part 10, effective January 1, 2020.

California Green Code (CGC 2019)

California Geological Survey (CGS) Seismic Hazard Information
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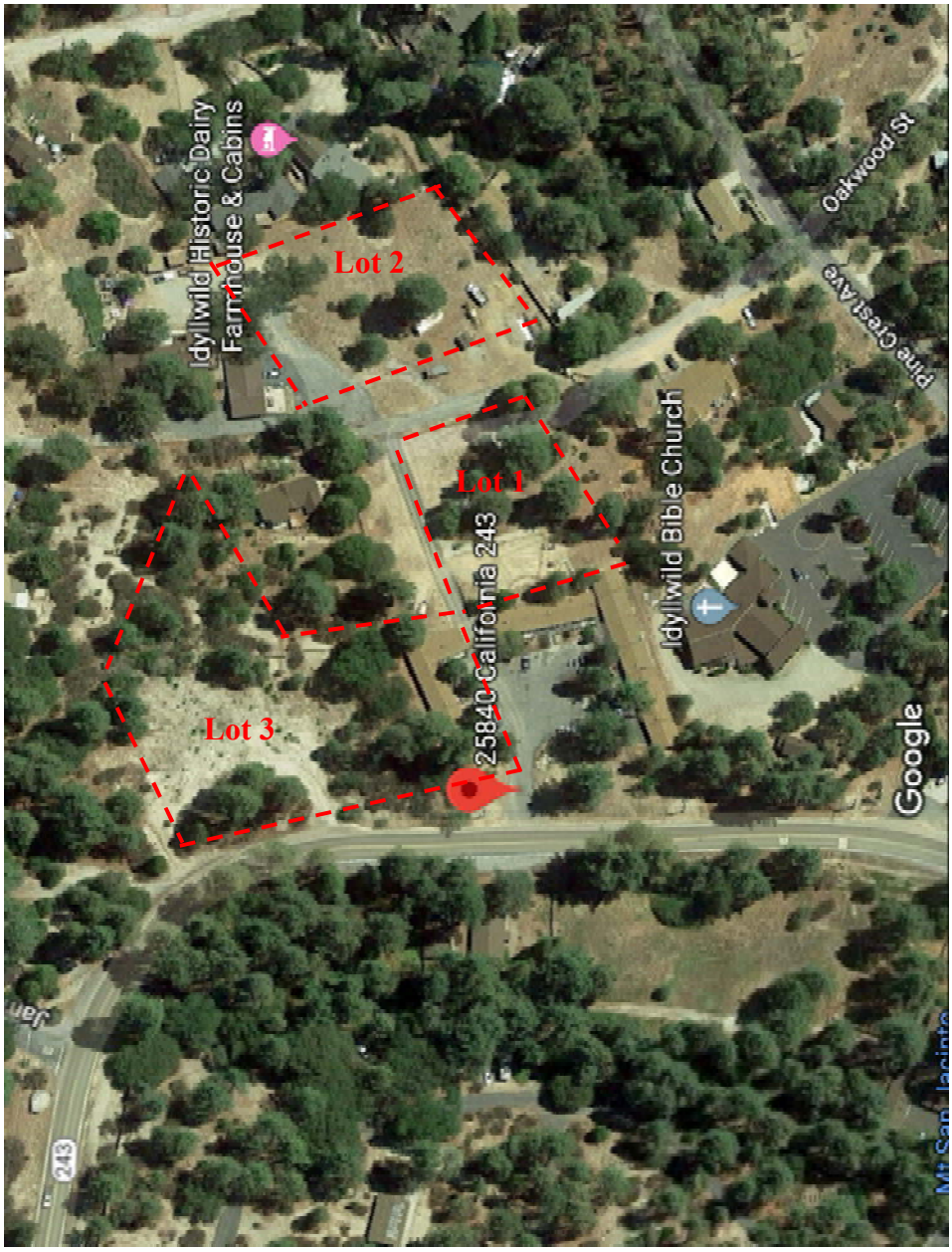
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APPENDIX A

Vicinity Map
Geotechnical Map



NORTH
NTS

Proposed Expansion of Extended Stay Lodges at:
25840 Idyllwild Road, Idyllwild, California

GEODYNE ENGINEERING, INC.

Vicinity Map

Project No. GD19G508-1

Figure: A

WSG DESIGN
2501 E GUASTI RD #201
ONTARIO CA, 91764
909-544-9118
WWW.WSGDESIGN.COM

Number	Revision Description	Date

Riverside County PAR
Application and Design
Concepts for:

Shane Stewart

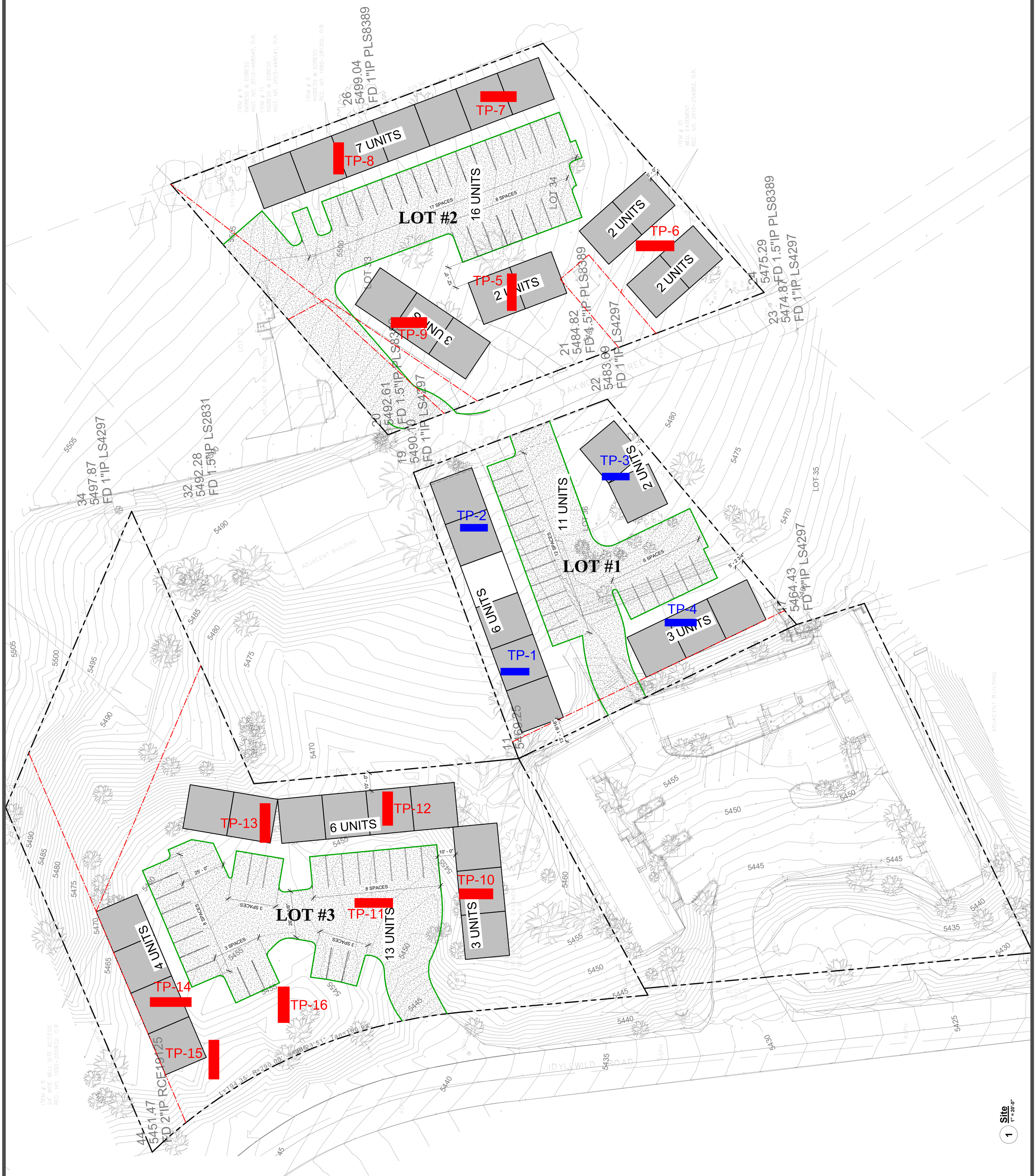
19-324

5-13-2019

APN: 563-250-017,028,031
Idyllwild Rd. Idyllwild, CA.

A100

Site Plan Concept



Site
1" = 20'-0"
1

GEODNEYE ENGINEERING, INC.
Geotechnical Map
Geodyne Project No. GD19G508-1

Figure: B

LEGENDS:

TP-4 Approximate Test Pit Locations by Geodyne Engineering, Inc. Excavated on 11-05-2019

TP-16 Approximate Test Pit Locations by Geodyne Engineering, Inc. Excavated on 06-23-2020

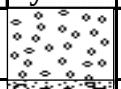
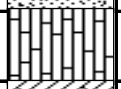
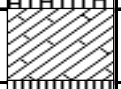
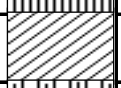
NORTH

Scale: 1" = 40"

APPENDIX B

Logs of Exploratory Test Pits

Unified Soil Classification System

Major Divisions			Letter	Symbol	Description
Coarse-grained Soils More than ½ retained on the No. 200 Sieve	**Gravels** More than ½ coarse fraction retained on the No. 4 sieve	Clean Gravels	GW		Well-graded gravels and gravel-sand mixtures, little or no fines.
			GP		Poorly-graded gravels and gravel-sand mixtures, little or no fines.
		Gravels With Fines	GM		Silty gravels, gravel-sand-silt mixtures.
			GC		Clayey gravels, gravel-sand-clay mixtures.
	Sands More than ½ passing through the No. 4 sieve	Clean Sands	SW		Well-graded sands and gravelly sands, little or no fines.
			SP		Poorly-graded sands and gravelly sands, little or no fines.
		Sands With Fines	SM		Silty sands, sand-silt mixtures
			SC		Clayey sands, sandy-clay mixtures.
Fine-grained Soils More than ½ passing through the No. 200 Sieve	**Silts and Clays** Liquid Limit less than 50%		ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL		Organic clays of medium to high plasticity.
	Silts and Clays Liquid Limit greater than 50%		MH		Inorganic silts, micaceous or diatomaceous fines sands or silts, elastic silts.
			CH		Inorganic clays of high plasticity, fat clays.
			OH		Organic clays of medium to high plasticity.
Highly Organic Soils			PT		Peat, muck, and other highly organic soils.

Consistency Classification

Granular Soils			***Cohesive Soils***		
Description - Blows Per Foot (Corrected)			Description - Blows Per Foot (Corrected)		
	MCS	SPT		MCS	SPT
Very loose	<5	<4	Very soft	<3	<2
Loose	5 – 15	4 – 10	Soft	3 – 5	2 – 4
Medium dense	16 – 40	11 – 30	Firm	6 – 10	5 – 8
Dense	41 – 65	31 – 50	Stiff	11 – 20	9 – 15
Very dense	>65	>50	Very Stiff	21 – 40	16 – 30
			Hard	>40	>30

MCS = Modified California Sampler

SPT = Standard Penetration Test Sampler

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**

Date: 6/23/2020

TP No: 5
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching
CA. Mod. Manual Sampling

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
	SW			Bareground, **0.0'-3.5': Topsoil/Artificial FILL (Qaf)** Brownish gray fine-coarse SAND, slightly silty, with pebbles, loose, dry-damp, tree roots,						
5		☒		**3.5'-8.0': Decompsed granite (DG)** Brown to light olive brown,weathered, friable,		2.8	117.3			
				End of Test Pit @ 8.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						

Thin Wall Tube ☒ 2.5" Ring Sample
Bulk Sample ◫ Standard Split Spoon Sample ▽ Static Water Table



LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**

Date: 6/23/2020

TP No: 6
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching
CA. Mod. Manual Sampling

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table						
				Bareground,						
	SW			**0.0'-4.0': Topsoil/Artificial FILL (Qaf)** Brown, fine-coarse SAND, with pebbles, loose, dry-damp,						
5		X		**4.0'-6.0': Decompsed granite (DG)** Brownish olive gray,weathered, friable, massive,		3.8	113.7			
				End of Test Pit @ 6.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						



LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**

Date: 6/23/2020

TP No: 7
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching
CA. Mod. Manual Sampling

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground,						
	SW			**0.0'-3.5': Topsoil/Artificial FILL (Qaf)** Brownish gray, fine-coarse SAND, trace silt,with pebbles, loose, dry-damp, rootlets,						
5		X		**4.0'-6.0': Decompsed granite (DG)** White,weathered, friable, massive,		2.9	115.1			
				End of Test Pit @ 6.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						
10										
15										

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**

Date: 6/23/2020

TP No: 8
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching
CA. Mod. Manual Sampling

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
	SW			Bareground, **0.0'-3.5': Topsoil/Artificial FILL (Qaf)** Brownish olive gray, fine-coarse SAND, trace silt,with pebbles, loose, dry-damp,						
5		☒		**4.0'-6.0': Decompsed granite (DG)** Yellow, white, gray ,weathered, massive,		2.8	117.2			
				End of Test Pit @ 6.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						
10										
15										



Thin Wall Tube ☒ 2.5" Ring Sample
Bulk Sample ◫ Standard Split Spoon Sample ▽ Static Water Table

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**

Date: 6/23/2020

TP No: 9
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching
CA. Mod. Manual Sampling

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
	SW			Bareground, **0.0'-3.5': Topsoil/Artificial FILL (Qaf)** Brownish gray fine-coarse SAND, slightly silty, with pebbles, loose, dry-damp, tree roots,						
5		☒		**3.5'-7.0': Decompsed granite (DG)** Light gray, white, brown,weathered, massive,		1.8	119.5			
				End of Test Pit @ 7.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						
10										
15										



Thin Wall Tube ☒ 2.5" Ring Sample ☒ Bulk Sample ☒ Standard Split Spoon Sample ▽ Static Water Table

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**
Date: 6/23/2020

TP No: 10
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground/Topsoil **0.5'-2.0': Decompsed granite (DG)** Light gray, white, brown, hard, slightly weathered,						
				End of Test Pit @ 2.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table



LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**
Date: 6/23/2020

TP No: 11
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground/Topsoil **0.0'-1.0' Decompsed granite (DG)** Light gray and brown, hard, slightly weathered,						Proposed Parking Area
				End of Test Pit @ 1.0-ft						



LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**
Date: 6/23/2020

TP No: 12
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground/Topsoil **0.5'-3.0': Decompsed granite (DG)** Light brownish gray, hard, slightly weathered,						
5				**End of Test Pit @ 3.0-feet** **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table



LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**
Date: 6/23/2020

TP No: 13
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground/Topsoil **0.5'-2.0': Decompsed granite (DG)** White to Light gray, hard, slightly weathered,						
				End of Test Pit @ 2.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table



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LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**
Date: 6/23/2020

TP No: 14
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground/Topsoil **0.5'-2.0': Decompsed granite (DG)** White to Light gray, hard, weathered,						
				End of Test Pit @ 2.0-feet **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table



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LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**
Date: 6/23/2020

TP No: 15
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				0.0'-3.0': Topsoil/Artificial FILL (Qaf) Brown, fine-coarse SAND, slightly silty, with pebbles, loose, dry-damp, tree roots,						
				0.3'-5.0': Decompsed granite (DG) White to Light gray, hard, slightly weathered,						
5				**End of Test Pit @ 5.0-feet** **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						
10										
15										

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table

Geodyne Engineering Inc.

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**
Date: 6/23/2020

TP No: 16
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavation/Trenching

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground/Topsoil **0.5'-2.0': Decompsed granite (DG)** White to Light gray, hard, slightly weathered, **End of Test Pit @ 2.0-feet** **No groundwater or caving** **Excavation backfilled wih cutting spoil,**						

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table



5
10
15

APPENDIX C

ASCE 7 Hazards Tools Detailed Output Report Per ASCE/SEI 7-16 Standard

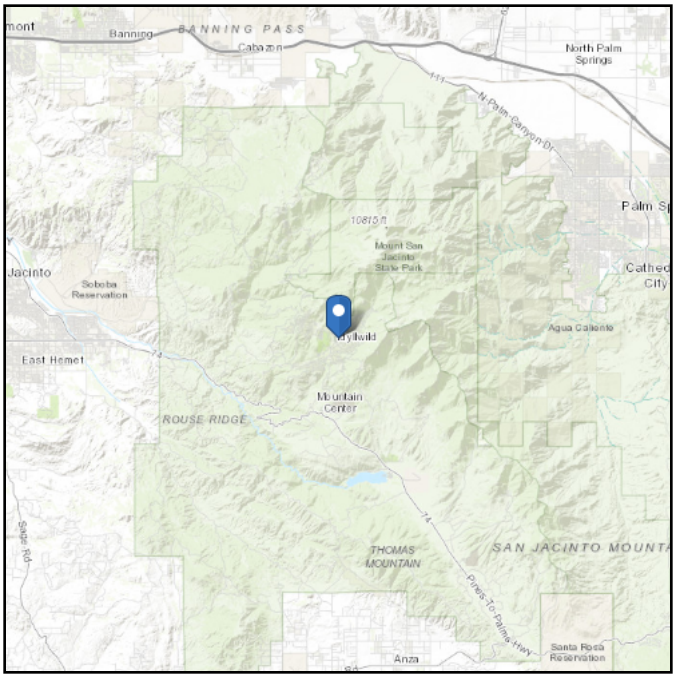
ASCE 7 Hazards Report

Address:
25840 Idyllwild Rd
Idyllwild, California
92549

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: C - Very Dense Soil and Soft Rock

Elevation: 5422.98 ft (NAVD 88)
Latitude: 33.748788
Longitude: -116.713981





Wind

Results:

Wind Speed:	96 Vmph
10-year MRI	67 Vmph
25-year MRI	73 Vmph
50-year MRI	78 Vmph
100-year MRI	82 Vmph
Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4
Date Accessed:	Fri Jun 26 2020

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

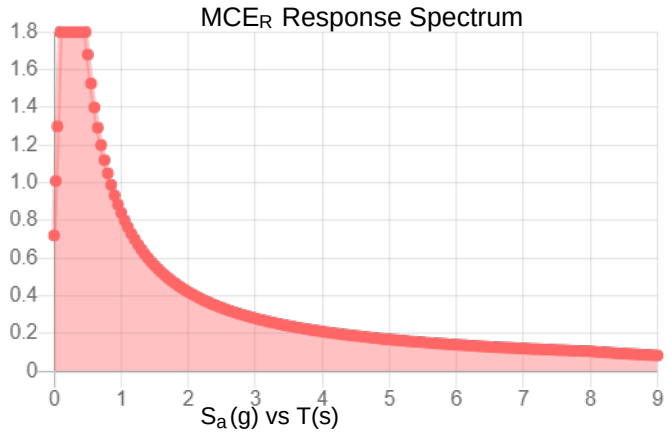
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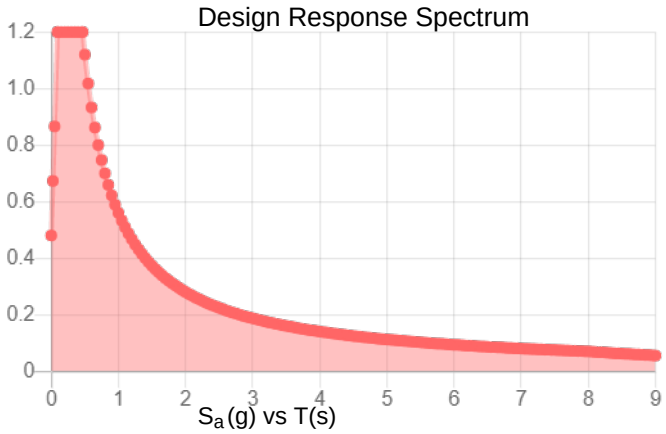
Site Soil Class: C - Very Dense Soil and Soft Rock

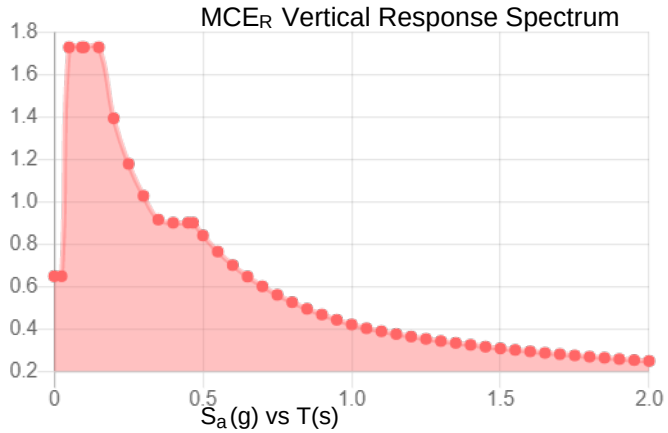
Results:

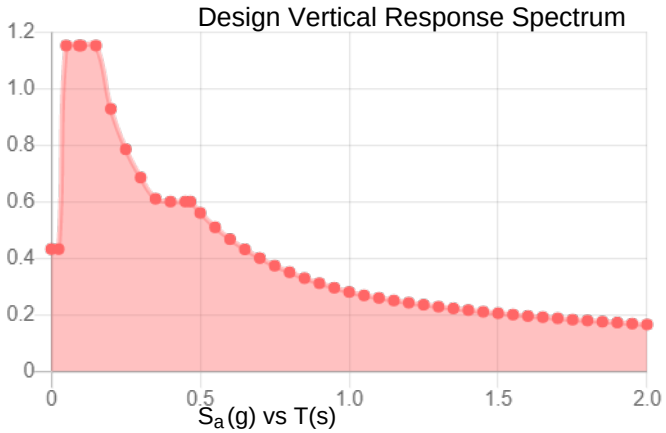
S_S :	1.5	S_{D1} :	0.56
S_1 :	0.6	T_L :	8
F_a :	1.2	PGA :	0.542
F_v :	1.4	PGA_M :	0.651
S_{MS} :	1.8	F_{PGA} :	1.2
S_{M1} :	0.84	I_e :	1
S_{DS} :	1.2	C_v :	1.2

Seismic Design Category D









Data Accessed: Fri Jun 26 2020

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.00 in.
Concurrent Temperature:	25 F
Gust Speed:	30 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Jun 26 2020

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Snow

Results:

Elevation:	5423.0 ft
Data Source:	ASCE/SEI 7-16, Table 7.2-8
Date Accessed:	Fri Jun 26 2020

In "Case Study" areas, site-specific case studies are required to establish ground snow loads. Extreme local variations in ground snow loads in these areas preclude mapping at this scale.

Ground snow load determination for such sites shall be based on an extreme value statistical analysis of data available in the vicinity of the site using a value with a 2 percent annual probability of being exceeded (50-year mean recurrence interval).

Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.

Rain

Results:

15-minute Precipitation Intensity: 3.08 in./h

60-minute Precipitation Intensity: 1.89 in./h

Data Source: NOAA National Weather Service, Precipitation Frequency Data Server, Atlas 14 (https://www.nws.noaa.gov/oh/hdsc/)

Date Accessed: Fri Jun 26 2020

Flood

Results:

Flood Zone Categorization: X (unshaded)

Base Flood Elevation:

Data Source: FEMA National Flood Hazard Layer - Effective Flood Hazard Layer for US, where modernized (https://msc.fema.gov/portal/search)

Date Accessed: Fri Jun 26 2020

FIRM Panel: If available, download FIRM panel here

Insurance Study Note: Download FEMA Flood Insurance Study for this area here



Tsunami

Results:

Tsunami: Not in mapped tsunami design zone.

Data Source: ASCE Tsunami Design Geodatabase

Date Accessed: Fri Jun 26 2020

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

APPENDIX D

Limited Geotechnical Investigation by Geodyne Engineering, Inc.
Dated November 11, 2019, Geodyne Project No.GD19G508

GEODYNE
ENGINEERING, INC.

Geotechnical & Environmental Consultants
45 Post, Irvine, CA 92618
Mailing Address: 6 Bienvenido, Aliso Viejo, CA 92656
anoori@geodyne-engineering.com
Phone: (949) 636-8316

Limited Geotechnical Investigation
Proposed Extended Stay Lodges at:
25840 Idyllwild Road
Idyllwild, CA 92549

Project No. GD19G508 **November 11, 2019**

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November 11, 2019

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Attention: Mr. Wade Shuey
Principal - Owner

Subject: **Limited Geotechnical Investigation**
Proposed Extended Stay Lodges at:
25840 Idyllwild Road, Idyllwild, Riverside County, CA 92549
Project No. GD19G508

Dear Mr. Shuey:

Per request, Geodyne Engineering, Inc. has performed a limited geotechnical investigation at the subject site. The purpose of our investigation was to evaluate the geotechnical conditions at the site in the areas of proposed construction and to provide geotechnical parameters for design and construction.

Based on our investigation, it is our opinion that the proposed construction is feasible from the geotechnical standpoint provided the recommendations contained herein are incorporated into the project plans and specifications. This report should be reviewed in detail prior to proceeding further with the planned development.

We appreciate and wish to thank you for the opportunity to serve you on this project.

Respectfully submitted,
Geodyne Engineering, Inc.



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TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY VI
1.0 INTRODUCTION 1
2.0 PROPOSED CONSTRUCTION/PROJECT DESCRIPTION 1
3.0 SCOPE OF SERVICES 2
4.0 BACKGROUND 2
4.1 SUBSURFACE SOIL AND GEOLOGIC CONDITIONS 3
5.0 FIELD EXPLORATION AND LABORATORY TESTING 4
5.1 Laboratory Testing Program 5
5.2 Corrosion Potential Screening Assessment 5
5.3 GENERAL SUBSURFACE CONDITIONS 7
6.0 GEOLOGIC HAZARDS 8
7.0 FOUNDATION RECOMMENDATIONS 10
7.1 Foundation on Expansive Soils 10
7.2 Retaining Wall 11
7.3 Slab on Grade 14
8.0 CONSTRUCTION GUIDELINES 15
8.1 Construction Monitoring 15
8.2 Preliminary Site Preparation Recommendations 15
8.3 Temporary Drainage Measures 16
8.4 Select Structural Fill (IMPORT) 17
8.5 Groundwater Seepage 17
8.6 Control Testing and Field Observation 17
8.7 Temporary Excavations 18
9.0 SITE DRAINAGE AND MAINTENANCE 18
10.0 LIMITATIONS 19

APPENDIX A

Vicinity Map
Test Pit Locations Plan
USGS Topographic Map

APPENDIX B

Key to Classification Terms and Symbols
Test Pit Logs: TP-1, TP-2, TP-3, TP-4

APPENDIX C

Laboratory Tests

APPENDIX D

ATC-127 - Applied Technology Councils/USGS Site Specific Seismic Hazards by Location

EXECUTIVE SUMMARY

The soil conditions at the site of the proposed construction at 25840 Idyllwild Road, Idyllwild, County of Riverside, California, were explored by excavating two test pits up to a depth of 7.0-ft below existing grade. Laboratory tests were performed on selected specimens to evaluate the engineering characteristics of various soil strata encountered in our exploratory test pits. This report presents a description of subsurface conditions encountered at the site, recommended foundation systems, and design and construction criteria influenced by the subsurface conditions. It is based on data obtained from field investigations, laboratory test results and our previous experience with similar sites.

- Foundation support for the proposed construction could be derived by utilizing a shallow conventional continuous or spread foundation system extended below frost zone, embedded within the underlying bedrock or engineered fill compacted to 90%. An ultimate bearing capacity of 6000 psf and an allowable bearing capacity of 2000 psf may be used for foundation bearing on bedrock or compacted fill.

- As an option, foundation support for the proposed construction could be derived by utilizing a friction pile foundation system. A minimum 24 inch diameter piers, embedded a minimum of 5 ft into the underlying bedrock should be considered. Greater embedment may be necessary to resist lateral loads due to wind and seismic forces. An allowable skin friction resistance of 300 psf may be used for the design of friction pile system. The piers should not be spaced more than three diameter on center each way. For piers with closer spacing, a load capacity reduction factor of 0.75 due to pile group effects may be considered.

- In cases where the ground surface slopes away from the foundation, passive resistance will be developed below an imaginary horizontal line that intersects the ground surface. As such, the requirements of 2016 CBC, Figure 1808.7.1 Foundation Clearances from Slopes should be adhered to as deemed appropriate.

- The project plans were not available during this investigation. Therefore, the recommendation of this report should be considered preliminary. Once the design phase proceeds to a more finalized plan, the recommendations within this report should be reviewed by our firm and revised as needed. Grading and earthwork remedial improvement recommendations will be provided based on project grading and structural plans.

Detailed descriptions of subsurface conditions, engineering analysis, and design recommendations are included in this report.

1.0 INTRODUCTION

PURPOSE

The purpose of this Limited Geotechnical Investigation is to provide preliminary geotechnical information to WSCS Design ("Client") regarding the subject property located in the unincorporated community of Idyllwild, Riverside County, California. Geodyne Engineering, Inc. understands that the Client is considering developing the subject property and requires a Limited Geotechnical Investigation.

The information gathered in this Limited Geotechnical Investigation is intended to provide the Client with an understanding of the physical conditions of site-specific subsurface soils, groundwater, and the regional geologic setting which could affect the cost or design of the proposed development at the property (Vicinity Map, Site Plan – **Appendix A**).

This Limited Geotechnical Investigation has been conducted in general accordance with accepted geotechnical engineering principles and in general conformance with the discussed scope and verbal authorization by the Client.

Geodyne Engineering, Inc. conducted onsite field exploration that was completed on November 5, 2019, that included excavation of four (4) backhoe test pits (designated TP-1 through TP-4) for the proposed development at the subject property. This Limited Geotechnical Investigation has been prepared for the sole use of WSCS Design. Other parties, without the express written consent of Geodyne Engineering, Inc. should not rely upon this Limited Geotechnical Investigation.

2.0 PROPOSED CONSTRUCTION/PROJECT DESCRIPTION

Based on information provided by the Client, we understand that development of the rear (northeast) portion of the subject property will consist of three (3) new single story buildings for a total of eleven (11) lodging units for seasonal stay lodging. Each building will contain six, three and two lodging units, respectively. Other proposed improvements include paved parking and drive areas and other related improvements. An existing shed and several trees will be removed prior to constructing the new development.

No detailed grading plans were provided to Geodyne Engineering, Inc. at the time of our preparation of this report; however, grading is anticipated to include cuts and fills of less than 5 feet across the subject property (exclusive of remedial grading). No foundation plans were provided to Geodyne Engineering, Inc. at the time of report preparation; however, foundation loads are assumed to be typical for the type of construction. No other information is known at this time.

3.0 SCOPE OF SERVICES

The scope of our services included:

- A review of readily available data pertinent to the subject property, including published and unpublished geologic reports/maps, and soils data for the area (**References**).

- Conducting a geotechnical reconnaissance of the subject property and nearby vicinity.

- Excavation and logging of four (4) exploratory test pits (designated TP-1 through TP-4) by means of a backhoe excavator in readily accessible areas of the subject property to depths ranging from approximately 2.5 feet to 7.5 feet below the existing ground surface (bgs) **(Appendix B)**.

- An evaluation of seismicity and geologic hazards to include an evaluation of faulting and liquefaction/seismic induced settlement potential.

- Completion of laboratory testing of representative earth materials encountered onsite to ascertain their pertinent soils engineering properties, including corrosion potential assessment (**Appendix C**).

- The preparation of this report which presents our preliminary findings, conclusions, and recommendations.

The Scope of Services does not include an environmental assessment of the presence or absence of wetlands and/or hazardous or toxic materials in the soil, surface water, groundwater, or air, in the proximity of this site. Any statements in this report or on the boring logs regarding odors, colors or unusual or suspicious items or conditions are strictly for the information of the client.

4.0 BACKGROUND

Subject Property Description

Based on information provided by Client (WSCS Designs – Site Plans, 2019), we understand that the proposed seasonal lodging development is associated with the address of 25840 Idyllwild Road (State Route 243), approximately 450 feet southeast of Jameson Drive, in the unincorporated community of Idyllwild, Riverside County, California. The subject property can also be identified as (APN) 563250028. Based on our review of online aerial photography (GoogleEarth®, 2018) and our site reconnaissance, the irregularly-shaped subject property is currently partially developed. The subject property covers an area of approximately 1.45-acres and can be divided

into two parcels or sections. The southwestern portion of the subject property covers an area of slightly less than 1-acre and is currently developed with three (3) single floor buildings and paved parking and drive areas comprising an old motel business that has been converted into apartments. The proposed seasonal lodging development is located on the northeastern portion of the subject property covering an area of approximately 0.5-acre, located approximately 200 feet northeast of Idyllwild Road. The subject parcel to be developed has generally bare ground that has been cleared with minor leveling for use as a parking area. This portion of the property also has an existing storage shed and scattered large evergreen trees with sparse forest cover. The surface gradient of the subject property appears to be less than 5:1 (horizontal to vertical). The site is accessible via a driveway from Idyllwild Road and Oakwood Street.

The center of the subject property is approximately situated at 33.747119° degrees North latitude and 116.711249° degrees West longitude (Google Earth®, 2018). The property is bounded by Idyllwild Road (State Route 243) on the west, the Idyllwild Bible Church (54400 Pine Crest Avenue) with residential land and open space forest to the north and east.

Topography

The subject property is located within the Idyllwild, California 7.5 minute Quadrangle (USGS, 2018). The ground surface at the property (within the subject northeast parcel) gently slopes from northeast to southwest and ranges in elevation from roughly 5,490 feet to 5,465 feet above mean sea level (amsl). Surface drainage across the site would be by sheetflow, generally to the southwest. Including the existing apartment development within the subject property, the lowest elevation is in the southwest corner of the overall property along Idyllwild Road at an elevation of approximately 5,430 feet above mean sea level (amsl).

4.1 SUBSURFACE SOIL AND GEOLOGIC CONDITIONS

The subject site is located in the central portion of the Peninsular Ranges Physiographic Province of California. A series of ranges is separated by northwest trending valleys, subparallel to faults branching from the San Andreas Fault. The trend of topography is similar to the Coast Ranges, but the geology is more like the Sierra Nevada, with granitic rock intruding the older metamorphic rocks. The Peninsular Ranges extend into Lower California and are bound on the east by the Colorado Desert. The Los Angeles Basin and the island group (Santa Catalina, Santa Barbara, and the distinctly terraced San Clemente and San Nicolas islands), together with the surrounding continental shelf (cut by deep submarine fault troughs), are included in this province.

Review of the available references (USGS, 1999), indicate that the site is located in an area underlain by Older (Pleistocene, younger than 500,000 years), marine and non-marine terrace

deposits (Qomt2-6sa), above marine wave-cut platform; moderately consolidated sediments. This unit is described as consisting of mostly of silty sand with clay and gravel. These marine and non – marine terrace deposits are underlain by the Capistrano formation. This formation consists mainly of siltstone, claystone and mudstone, typically expansive in nature and slide prone.

A description of the artificial fill and formational soils underlying this site located on a cut/fill lot is presented below from youngest to oldest:

Artificial Fill: Our exploratory excavations indicated the presence of artificial fill to the full depth explored (i.e., 6.0 feet). This material was noted to consist of silty sands and contains locally derived bedrock fragment fill. Based on review of available information, the fill is documented and ranges from 3 ft in thickness within the building pad area (lot cap) and increases to 15 ft within the rear slope as stabilized buttress fill.

Formation: Formational soils was not encountered in our exploratory excavations. Based on available information, this formation consists mainly of siltstone, claystone and mudstone, typically expansive in nature and slide prone.

GROUND WATER

Review of the available references (DWR, 2019), indicate that there are not groundwater wells in the general vicinity of the site and in a mile radius circle around the site.

It should also be recognized that minor groundwater seepage problems might occur after development of a site even where none were present before development. These are usually minor phenomena and are often the result of an alteration in drainage patterns and/or an increase in irrigation water. Based on the permeability characteristics of the soil and the anticipated usage and development, it is our opinion that any seepage problems, which may occur, will be minor in extent. It is further our opinion that these problems can be most effectively corrected on an individual basis if and when they occur.

5.0 FIELD EXPLORATION AND LABORATORY TESTING

Field work for our Limited Geotechnical Investigation was conducted on November 1 and 5, 2019. Our initial field work on November 1, 2019 at the site consisted of attempting the excavation of hand-dug exploratory test pits at the subject property. Due to difficult hand digging conditions and shallow refusal, field work was terminated and, with the concurrence of the Client, it was decided to use a backhoe at a later date to excavate the test pits. On November 5, 2019, a total of four (4) exploratory test pits were excavated at the subject property. The test pit depths ranged from

approximately 2.5 feet to 7.5 feet below the existing ground surface (bgs) and were logged under the supervision of a Registered Professional Engineer and Certified Engineering Geologist at Geodyne Engineering, Inc. The approximate locations of the test pits are shown in **Appendix A**.

A small CAT, track backhoe excavator was used to excavate the exploratory test pits, designated TP-1 through TP-4. Equipment refusal was encountered within test pit excavations due to the presence of hard, granitic bedrock at depth. The subsurface lithology is recorded on the test pit logs, which are presented in **Appendix B.** The soils were classified in accordance with the Unified Soil Classification System (ASTM, 2015). Representative bulk samples were also collected for appropriate laboratory testing. Attempts were made to retrieve undisturbed ring samples. However, the samples were either disturbed or there was no recovery due to the friable nature of the underlying soil and bedrock.

5.1 Laboratory Testing Program

In addition to field exploration, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of the subsurface materials that are necessary to evaluate the soil parameters. These tests include:

1) Moisture Content (ASTM D 2216)
2) Grain Size Distribution (ASTM D 422)
3) Corrosion Potential CT-417, CT-422, CT-532(643)
4) Maximum Density & Optimum Moisture (ASTM D 1557)
5) Direct Shear Tests (ASTM D3080 / D3080M)
6) Consolidation –Shear Test (ASTM 2435)

5.2 Corrosion Potential Screening Assessment

A near surface soil sample was tested to measure pH, soluble sulfate, soluble chloride and resistivity of the soil. The results are presented on Table No. 1.

Table No.1

Sample Location/ Depth, (ft)	pH	Soluble Sulfate (PPM)	Soluble Chloride (PPM)	Soil Resistivity (Ohm-cm)
TP-3/3.0’-7.0’	7.1	131	54	31,000

Sulfate Content

A representative near-surface soil sample was tested during our investigation for soluble sulfate content. The result of this test indicates a soluble sulfate content of (0.0131) percent by weight or negligible sulfate exposure. As such, the soils exposed are not expected to pose a potential sulfate reaction with concrete.

Resistivity, Chloride and pH

Soil corrosivity to ferrous metals can be estimated by the soil's pH level, electrical resistivity, and chloride content. In general, soil having a minimum resistivity less than 2,000 ohm-cm is considered corrosive. Soil with a chloride content of 500 ppm or more is considered corrosive to ferrous metals.

As a screening for potentially corrosive soil, a representative soil sample was tested during our investigation to determine soil resistivity, chloride content, and pH level. The soil resistivity measurement of the sample was approximately (31,000) ohm-cm, chloride content of approximately (54) ppm, and the pH level of approximately (7.1). The results indicate that the soil at the site is considered mildly corrosive to ferrous metals. However, a standard corrosion potential protection measure (applying protective wrapping, tape, sealant, paint, protective lubricants etc.) is advisable to be considered in the design phase. It should be noted that Geodyne does not practice corrosion engineering. For any specific design or further assessment, a corrosion specialist should be consulted.

Concrete

Laboratory test indicated that the subject site contains soil sulfate content in the negligible range (i.e., less than 1000 part per million). However for convenience, it is recommended that concrete for all construction at the site utilize a wide and ready, commercially available Type-II Portland cement with a maximum 0.50 water/cement ratio and should comply with all of the requirements of current Code. The minimum compressive strength of concrete shall be 3000 psi at 28 days and maximum slump during placement shall be five inches. The minimum concrete cover should be 1.5-inches. Final selection of the appropriate concrete design should be made by the project structural engineer based on the applicable local laws and ordinances, and desired level of conservatism.

5.3 GENERAL SUBSURFACE CONDITIONS

Geologic Setting

Regionally, the subject property lies within the Peninsular Ranges Geomorphic Province of southern California. This province consists of a series of ranges separated by northwest trending valleys; sub parallel to branches of the San Andreas Fault (CGS, 2002). The Peninsular Ranges geomorphic province, one of the largest geomorphic units in western North America, extends from the Transverse Ranges geomorphic province and the Los Angeles Basin, south to Baja California. It is bound on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province. The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks (CGS, 2002). Major fault zones and subordinate fault zones found in the Peninsular Ranges Province typically trend in a northwest-southeast direction. Locally, the subject property is located on the southwest flank of the San Jacinto Mountains.

Regional geologic maps of the subject property and vicinity (Dibblee and Minch, 2008) indicate the property is underlain by older surficial sediments mapped as Pleistocene-age alluvial fan gravel (map unit Qof), which is described as weakly indurated and dissected. Map unit Qof was not encountered within our exploratory test pits at the site. However, the subject site is located near a geologic contact with Cretaceous-age plutonic rocks which compose the Peninsular Ranges Batholith. These plutonic rocks were encountered within our test pits and is described as Cretaceous-age quartz diorite or granodiorite (i.e. “granitic”) that is grayish-white in color and massive to slightly gneissoid with minor xenoliths.

Subsurface Conditions

The materials encountered in our test pits consisted of undocumented artificial fill and weathered (“decomposed”) granitic bedrock. A brief description of the subsurface conditions is provided in the following section. Detailed descriptions of the subsurface conditions are provided on the test pit logs included in **Appendix B**.

Artificial Fill - Artificial fill was encountered in three (3) of our test pits at the ground surface and extended to depths ranging from 2 to 3 feet below the existing ground surface in test pits TP-1, TP-2 and TP-3. Artificial fill was not encountered within test pit TP-4. As encountered, the artificial fill consists of light grayish-brown or brownish-gray, dry to damp, medium dense, fine to coarse grained sand with pebbles and minor silt with tree roots up to 3-inches in diameter at the time of our subsurface exploration. The artificial fill was likely placed in conjunction with the adjacent motel/apartment development during minor site grading and re-leveling into a parking area.

Decomposed Granite ("DG") – Decomposed granite bedrock (appears to be weathered granodiorite) was encountered beneath the existing artificial fill within test pits TP-1, TP-2 and TP-3 and was encountered at the ground-surface in test pit TP-4, and extended to the maximum explored depth of 7.5 feet below the existing ground surface. The decomposed granite materials at the time of our subsurface exploration can be described as tan or light brown to grayish-brown, highly weathered, friable with medium to coarse texture and moderately hard to hard becoming hard and relatively unweathered at approximate depth below 7 feet.

Groundwater

Static groundwater or seepage was not encountered in any of our exploratory test pits to a depth of 7.5 feet bgs at the time of exploration. Based on the presence of shallow, hard granitic bedrock at the ground surface to very shallow depths of 3 feet, static groundwater is not anticipated beneath the site. It should be noted that variations in groundwater may result from fluctuations in the ground surface topography, subsurface stratification, rainfall, irrigation, and other factors that may not have been evident at the time of our subsurface exploration.

6.0 GEOLOGIC HAZARDS

California Building Code Seismic Design Parameters

Geodyne Engineering, Inc. utilized seismic design criteria provided in the CBC (2016) and ASCE 7-10. Final selection of the appropriate seismic design coefficients should be made by the structural consultant based on the local laws and ordinances, expected building response, and desired level of conservatism. The site coefficients and adjusted maximum considered earthquake spectral response accelerations in accordance with the 2016 California Building Code are presented in **Table 2**.

TABLE 2
2016 CBC Seismic Parameters and Peak Ground Acceleration

Parameter	Value
Site Coordinates	Latitude 33.747119° Longitude -116.711249°
Mapped Spectral Acceleration Value at Short Period: S_s	1.5g
Mapped Spectral Acceleration Value at 1-Second Period: S_1	0.6g
Site Classification	B
Short Period Site Coefficient: F_a	1
1-Second Period Site Coefficient: F_v	1
Site-Modified Spectral Acceleration Value: S_{MS}	1.5g

Site-Modified Spectral Acceleration Value: S_{M1}	0.6g
Design Spectral Response Acceleration at Short Periods: S_{DS}	1g
Design Spectral Response Acceleration at 1-Second Period: S_{D1}	0.4g
Peak Ground Acceleration adjusted for Site Class Effects: PGA_M	0.504g

Faulting and Surface Rupture

The subject property is located within an area of California known to contain a number of active and potentially active faults. There are no known active faults crossing the property (Jennings and Bryant, 2010) and the property is not within a State of California Earthquake Fault Zone (CDMG, 1974). The closest known active fault is the San Jacinto Valley segment of the San Jacinto Fault Zone, located approximately 7.41 miles (11.93 km) southwest of the subject property (USGS, 2008). Therefore, the potential for surface rupture at the property is considered low. Three of the closest faults along with their distance from the property and Maximum Magnitude are shown in **Table 3.**

TABLE 3
Nearby Active Faults

Fault	Distance in Miles (Kilometers)[1]	Maximum Magnitude[1]
San Jacinto SJV+A+CC+B	7.41 (11.93)	7.70
San Jacinto SBV+SJV+A+CC	7.41 (11.93)	7.76
San Jacinto SJV+A	7.41 (11.93)	7.47

1. USGS Online Fault Search (2008)

Landslides and Slope Stability

The subject property and surrounding areas are generally relatively flat with near-surface or surface exposures of granitic bedrock. As a result, we consider the potential for landslides or slope instabilities to occur at the property to be negligible.

Liquefaction Potential and Lateral Spreading

Liquefaction occurs when loose, saturated, generally cohesionless fine sands and non-plastic silts are subjected to strong ground shaking. The soils lose shear strength and become liquid; potentially resulting in large total and differential ground surface settlements as well as possible lateral spreading during an earthquake. Seismically induced settlement can occur in response to

liquefaction of saturated loose granular soils, as well as the reorientation of soil particles during strong shaking of loose, unsaturated sands.

Due to the lack of shallow groundwater at the subject site, and the presence of near-surface to surface granitic bedrock, the probability of liquefaction, seismically induced settlement, and lateral spreading at the subject site is considered to be negligible.

Tsunamis, Flooding and Seiches

The subject property is not located within a Tsunami Evacuation Area; therefore, damage due to tsunamis is considered low.

Geodyne reviewed the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) online database (FEMA, 2019) to determine if the subject property was in a flood zone. According to Panel No. 06065C2155G - effective August 28, 2008, the subject property is located within Flood Zone X. FEMA defines Zone X as an area of minimal flood hazard, usually depicted on FIRMs as outside the 500-year flood plain.

Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays, or reservoirs. The subject property is not located immediately adjacent to any lakes or confined bodies of water; therefore, the potential for a seiche to affect the site is considered low.

7.0 FOUNDATION RECOMMENDATIONS

7.1 Foundation on Expansive Soils

Expansive soils change in volume with change in moisture content. Shrinking and swelling of the clays can cause heaving and cracking on slab-on-grade and structures founded on shallow foundations. The results of our exploration, laboratory testing and engineering tactile evaluation indicate the soils underlying this site have a Very Low Expansion Potential characteristics. As such, special measures per 2016 California Building Code (CBC) Section 1803.5.3 are not required to mitigate expansive soil. However, we recommend the expansion index to be verified during the rough grading/earthwork of the site.

SHALLOW FOUNDATION

Foundation support for the proposed construction could be derived by utilizing a shallow conventional continuous or spread foundation system extended below frost zone or insulated, embedded within the underlying bedrock or engineered fill compacted to 90%. An ultimate bearing capacity of 6000 psf and an allowable bearing capacity of 2000 psf may be used for foundation bearing on bedrock

or compacted fill. The recommended values are for a footing 18" wide and 18 inch deep. It may be increased by 300 psf for every additional foot of width or depth (3500 psf Max). A one-third increase in bearing capacity may be used for resistance against seismic and wind loading.

The recommended passive earth pressure (equivalent fluid weight) is 250 pcf (Max. 3000 pcf). Minimum reinforcement for 18 inch deep and 18 inch wide continuous footings should consist of four No. 4 steel reinforcing bars; two placed near the top of the footing and two near the bottom.

FRICTION PILES

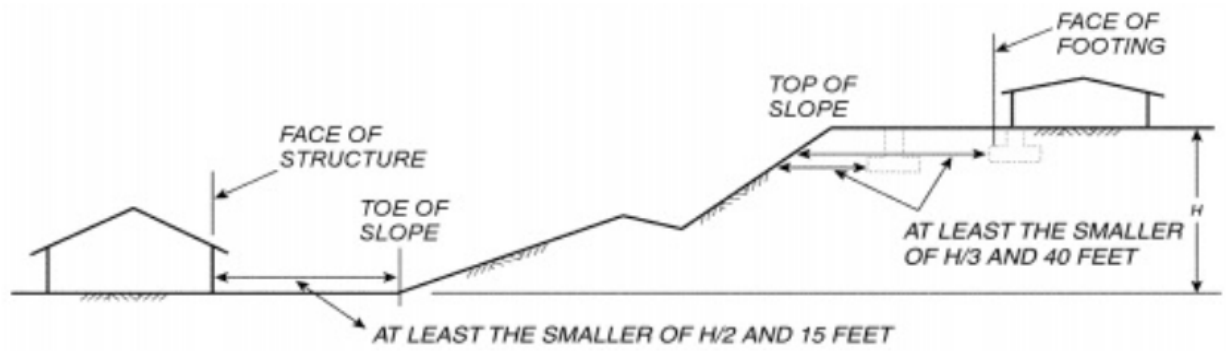
As an option, foundation support for the proposed construction could be derived by utilizing a friction pile foundation system. A minimum 24 inch diameter piers, embedded a minimum of 5 ft into the underlying bedrock should be considered. The capacity of fill should be ignored unless certified. Greater embedment may be necessary to resist lateral loads due to wind and seismic forces. An allowable skin friction resistance of 300 psf may be used for the design of friction pile system. The piers should not be spaced more than three diameter on center each way. For piers with closer spacing, a load capacity reduction factor of 0.75 due to pile group effects may be considered.

7.2 Retaining Wall

Embedded structural walls should be designed for lateral earth pressures exerted on the walls. The magnitude of these earth pressures will depend on the amount of deformation that the wall can yield under the load. If the wall can yield sufficiently to mobilize the full shear strength of the soils, it may be designed for the active condition. If the wall cannot yield under the applied load, then the shear strength of the soil cannot be mobilized and the earth pressures will be higher. These walls such as basement walls and swimming pools should be designed for the at rest condition. If a structure moves towards the retained soils, the resulting resistance developed by the soil will be the passive resistance. For design purposes, the recommended equivalent fluid pressure for each case for walls constructed above the static groundwater table and backfilled with very low-expansive soils is provided below. Retaining wall backfill should be compacted to at least 95% relative compaction based on the maximum density of select import defined by ASTM D1557.

A conventional shallow 24 inch square spread or minimum 24 inch diameter pier foundation system embedded within the underling compacted fill or bedrock may be used to support the proposed retaining wall. Spread or pier foundation system should be properly reinforced, embedded a minimum of 36" below the finished sub grade elevation. Greater embedment may be necessary to resist lateral loads due to wind and seismic forces.

In cases where the ground surface slopes away from the foundation, passive resistance will be developed below an imaginary horizontal line that intersects the ground surface. As such, the requirements of 2016 CBC, Figure 1808.7.1 Foundation Clearances from Slopes should be adhered to as illustrated below:



For SI: 1 foot = 304.8 mm.

FIGURE 1808.7.1

FOUNDATION CLEARANCES FROM SLOPES

Retaining structure may be designed per the following geotechnical parameters:

- Allowable Bearing Pressure: 2000 psf

The bearing value may be increased by 250 psf per foot increase in width or depth to a maximum allowable bearing pressure of 3500 psf.

- Coefficient of Friction: 0.40
- Soil Unit Weight: 120 pcf
- Allowable skin friction resistance: 300 psf
- Passive Earth Pressure - equivalent fluid weight of 250 pcf (Max. 3000 pcf)

Frictional resistance and passive pressure resistance may be used in combination if friction coefficient is reduced by one-third. A one-third increase in passive pressure may be used for resistance against seismic and wind loading.

Active earth pressures behind walls depend on wall movement, backfill slope, surcharge loads and back fill material.

Table No. 4

Equivalent Fluid Density (PCF)	Level backfill
Active Condition	40
At-rest Condition	65

Lateral resistance parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer. In addition to the above lateral forces due to retained earth, surcharge due to improvements, such as an adjacent structure should be considered in the design of the retaining wall. Loads applied within a 1:1 projection from the surcharging structure on the stem of the wall should be considered in the design. A third of uniform vertical surcharge-loads should be applied at the surface as a horizontal pressure on cantilever (active) retaining walls, while half of uniform vertical surcharge-loads should be applied as a horizontal pressure on braced (at-rest) retaining walls.

The backfill behind the wall should be drained properly. The simplest drainage system consists of a drain system located near the bottom of the wall. The drain collects the water that enters the backfill and this may be disposed of through outlets along the base of the wall. To insure that the drains are not clogged by fine particles, they should be surrounded by a granular filter wrapped in a geofabric such as Mirafi 140N or equivalent. In spite of a well-constructed toe drain, substantial water pressure may develop behind the wall if the backfill consists of clays or silts. A more satisfactory drainage system, consisting of a back drain of 12 inches to 24 inches width gravel may be provided behind the wall to facilitate the drainage. All back drains should be provided with outlet to suitable drainage facilities.

SEISMICALLY INDUCED LATERAL EARTH PRESSURES

Retaining wall design calculations for lateral earth pressure due to earthquake motions for walls higher than 6 feet, as required by section 1803.5.12 of the Building Code is discussed below.

We have used ½ of 2/3 the PGA_M in our analysis (2/6) (0.504 g) = 0.17g. Evaluation of lateral earth pressures under static and seismic loading conditions is based on using the Coulomb (1776) and Mononobe-Okabe (1929) Methods for frictional backfill materials with little to zero cohesion. For a level backfill, we recommend using a granular frictional soil material which exhibits friction angle 30 degrees or better. If this material is used, we recommend using combined of static and dynamic active equivalent earth pressure 55 pcf. For walls with a retained height over 6 feet, or where otherwise required by Code or deemed appropriate by the structural engineer, we recommend that the wall

designs be checked seismically using an additive seismic Equivalent Fluid Pressure (EFP) of 18 pcf. Such walls that are to be designed in the static case assuming the at-rest condition should be checked seismically using this additive seismic EFP added to the active condition (i.e., the additive seismic EFP is not added to the at-rest EFP). The additive seismic EFP should be applied with a standard EFP pressure distribution (i.e., it is not an inverted triangle).

7.3 Slab on Grade

Slabs on grade should be underlain by a layer of four (4) inches free drainage 3/4" crushed rocks over firm native or approved structural fill. Slab thickness, reinforcement etc., should be selected by the structural engineer based on the analysis performed considering the loads anticipated, sub grade expansion potential and the modulus of subgrade reaction of the soil. As minimum, we recommend a 4.0 inch thick slab thickness, reinforced with #4 bars at 18 inch on center. The subgrade for the new slab should be prepared as recommended under Section 8.2 "Site Preparation." A vapor barrier over the crushed rock or approved subgrade soil should be considered in areas where the migration of moisture through the floor slab would be detrimental. To protect the vapor barrier (Visqueen) from punctures during placement, it is recommended that the Visqueen be placed over two-inch thick, clean sand layer. The vapor barrier should be at least 10-mil plastic (STEGO or Equivalent) and should be sealed at all splices, around plumbing, and at the perimeter of slab areas. Every effort should be made to provide a continuous barrier and care should be taken not to puncture the membrane. Some contractors exercising special care use heavier membranes or double layers of 10-mil plastic with splices staggered and sealed. All new slab design should be in compliance with the applicable sections of 2016 Cal Green.

Preliminary Pavement Design

Based on site soil conditions and laboratory test results, an R-value of 35 was assumed for the preliminary flexible asphaltic concrete pavement design shown in the table below. The R-value should be verified during grading of the pavement areas.

Table 5
ASPHALT CONCRETE PAVEMENT THICKNESSES

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade*
5.0 (Parking and Vehicle Drive Areas)	3.0"	4.5"	12.0"
6.0 (Heavy Truck Areas)	3.0"	7.0"	12.0"

**95% compaction based on ASTM D1557 Test Method*

The following tabulated recommendations are for light-duty and heavy-duty Portland Cement Concrete pavement sections.

Table 6
PORTLAND CEMENT CONCRETE PAVEMENT THICKNESSES

Traffic Index	Portland Cement Concrete*	Class II Aggregate Base**	Compacted Subgrade**
5.0 (Light Duty)	5.0"	4.0"	12.0"
6.0 (Heavy Duty)	6.0"	6.0"	12.0"

** Minimum Compressive Strength of 4,000 psi*
*** 95% compaction based on ASTM D1557 Test Method*

8.0 CONSTRUCTION GUIDELINES

8.1 Construction Monitoring

As Geotechnical Engineer of Record for this project, Geodyne Engineering, should be involved in monitoring the foundation installation and earthwork activities. The performance of any foundation system is not only dependent on the foundation design, but it is strongly influenced by the quality of construction. Prior to construction, please contact our office so that a Foundation and Earthwork Monitoring Plan can be incorporated into the Project Quality Control Program.

8.2 Preliminary Site Preparation Recommendations

Prior to the start of grading operations, utility lines within the project area, should be located and marked in the field so they can be rerouted or protected during site development. All debris, vegetation, tree roots, organic matters and perishable material including remains of previous structures (if any) should be removed from the site.

When excavations deeper than five feet are made, temporary construction slopes should be no steeper than 1.5:1 (horizontal to vertical). Sheeting and bracing should be provided by the contractor, as necessary, to protect workers in the excavation. Where excavations undermine existing improvements, such as the existing walls, etc., temporary structural support should be provided to reduce the risk of damage resulting from undercutting. Permanent cut and fill slopes should not be constructed steeper than 2:1 and should be considered subject to review by the geotechnical consultant at the time of grading. These slopes should possess sufficient compacted fines to limit erosion risk. If upon construction, relatively clean, cohesionless sands are encountered, reconstruction by blending in fines to compacted fill and/or flattening of slopes will be advised. Where fill is to be placed including the bottom excavation, the upper 12 inches of the surface exposed by the excavation should be scarified, moisture-conditioned up to three (3) percent over optimum moisture content and compacted to 95 percent relative compaction. If localized areas of relatively loose soil prevent proper compaction, over-excavation, and re-compaction will be necessary.

Excavated soils generated from cut operations at the site are suitable for use as general Engineered Fill in structural areas, provided they do not contain deleterious matter, organic material, or rock material larger than 3 inches in maximum dimension. All earthwork should be conducted in accordance with the applicable codes, agency requirements, the aforementioned recommendations, and the standard grading guidelines. The minimum required compaction for the building pads is 90 percent of the maximum dry density as determined by ASTM D1557, with moisture content of up to three percentage points above the optimum moisture content of the soil.

Site grading

The ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than one unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 2 percent where located within 10 feet of the building foundation. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building.

8.3 Temporary Drainage Measures

Temporary drainage provisions should be established to minimize water runoff into construction areas. If standing water does accumulate, it should be removed by pumping as soon as possible.

Adequate protection against sloughing of soils should be provided for workers and inspectors entering the excavations. This protection should meet Cal OSHA and other applicable building codes.

8.4 Select Structural Fill (IMPORT)

Any select structural fill used at the site for general construction use should have a Liquid Limit less than 35 and a Plasticity Index between 5 and 15. The fill should contain no particles greater than one (1) inch in diameter. The percent passing U.S. Standard Sieve No. 4 should be between 40 and 80 percent and passing Sieve No. 40 between 10 and 50 percent. The percent passing Sieve No. 200 should be less than 20 percent.

Pit-run gravels (with some clay binders) and crushed limestone (with sufficient fines to bind the aggregate together) are examples of suitable select structural fill materials. The fill materials should be placed in loose lifts not to exceed 8 inches thick and compacted to 95 percent of the maximum dry density as determined by ASTM D1557, with moisture content of up to (2) percentage points above optimum.

8.5 Groundwater Seepage

In areas where significant cuts (2-feet or more) are made to establish final grades for building pads, attention should be given to possible seasonal water seepage that could occur through natural cracks and fissures in the newly exposed stratigraphy. Subsurface drains may be required to intercept seasonal groundwater seepage. The need for these, or other dewatering devices, on building pads should be carefully addressed during construction. Our office could be contacted to visually inspect final pads to evaluate the need for such drains.

Groundwater seepage may occur several years after construction if the rainfall rate or drainage changes in the vicinity of the project site. If seepage runoff occurs towards the building, an engineer from our office should be called on to evaluate its' effect and determine whether French drains are required at the location.

8.6 Control Testing and Field Observation

Subgrade preparation and structural fill placement should be monitored by the project geotechnical engineer or his representative. Field-tests for moisture content and relative compaction of the fill soils shall be performed by Geodyne Engineering, Inc. Location and frequency of tests shall be at our field representative(s) discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction. Any areas not meeting the required compaction should be re-compacted and retested until compliance is met.

8.7 Temporary Excavations

Temporary slopes on the order of 1.5H to 1V may be provided for excavations. These recommendations may require modification where loose soil or ground water is encountered. The contractor is responsible for the safety of the workers and should observe the federal and local regulations including Cal-OSHA excavation and trench safety guidelines. During wet weather, runoff water should be prevented from entering the excavation.

9.0 SITE DRAINAGE AND MAINTENANCE

Final drainage is important for the performance of the proposed construction. Landscaping, plumbing, and downspout drainage is also important. It is vital that all roof drainage be transported away from the structures so that water does not pond around it, which can result in a soil volume change underneath the structures. Plumbing leaks (if any) should be repaired as soon as possible in order to minimize the magnitude of a moisture change under the slab**.** Large trees and shrubs should not be planted in the immediate vicinity of the structures, since root systems can cause a substantial reduction in soil volume in the vicinity of the trees during dry periods.

Adequate drainage should be provided to reduce seasonal variations in moisture content of foundation soils. All pavement and sidewalks within 10-feet of the structures should be sloped away from the structures to prevent ponding of water around the foundations. Final grades within 10-feet of the structure should be adjusted to slope away from structures preferably at a minimum slope of 5 percent. Maintaining positive surface drainage throughout the life of the structure is essential.

In areas with pavement or sidewalks adjacent to the new structure, a positive seal must be provided and maintained between the structures and the pavement or sidewalk to minimize seepage of water into the underlying supporting soils. Post-construction movement of pavement and flat-work is not uncommon. Maximum grades practical should be used for paving and flatwork to prevent areas where water can pond. In addition, allowances in final grades should take into consideration post construction movement of flatwork, particularly if such movement would be critical. Normal maintenance should include inspection of all joints in paving and sidewalks, etc. as well as re-sealing where necessary.

Trench backfill for utilities should be properly placed and compacted, as outlined in this report, and in accordance with the requirements of local City, County and/or State Standards. Since granular bedding backfill is used for most utility lines, the backfilled trench should be prevented from becoming a conduit and allowing an access for surface or subsurface water to travel toward the new structures. Concrete cut-off collars or clay plugs should be provided where utility lines

cross building lines to prevent water from traveling in the trench backfill and entering beneath the structures.

Plan Review

The project geotechnical engineer should review the final plans for the proposed structures so that he may determine if changes in the foundation recommendations are required.

10.0 LIMITATIONS

Only a portion of subsurface conditions have been reviewed and evaluated. Conclusions, recommendations, and other information contained in this report are based upon the assumption that the subsurface conditions do not vary appreciably between and adjacent to the observation points. Although no significant variation is anticipated, it must be recognized that variations can occur. This report has been prepared for the sole use and benefit of our client. The intent of the report is to advise our client on geotechnical matters involving the proposed improvements. It should be understood that the geotechnical consulting provided and the contents of this report are not perfect. Any errors or omissions noted by any party reviewing this report and/or any other geotechnical aspect of the project should be reported to this office in a timely fashion. The client is the only party intended by this office to directly receive the advice. Subsequent use of this report can only be authorized by the client. Any transferring of information or other-directed use by the client should be considered "advice by the client."

Geotechnical engineering is characterized by uncertainty. Geotechnical engineering is often described as an inexact science or art. Conclusions and recommendations presented herein are partly based upon the evaluations of technical information gathered, partly on experience, and partly on professional judgment. The conclusions and recommendations presented should be considered "advice." Other consultants could arrive at different conclusions and recommendations. Typically, "minimum" recommendations have been presented. Although some risk will always remain, lower risk of future problems would usually result if more restrictive criteria were adopted. Final decisions on matters presented are the responsibility of the client and/or the governing agencies. No warranties in any respect are made as to the performance of the project.

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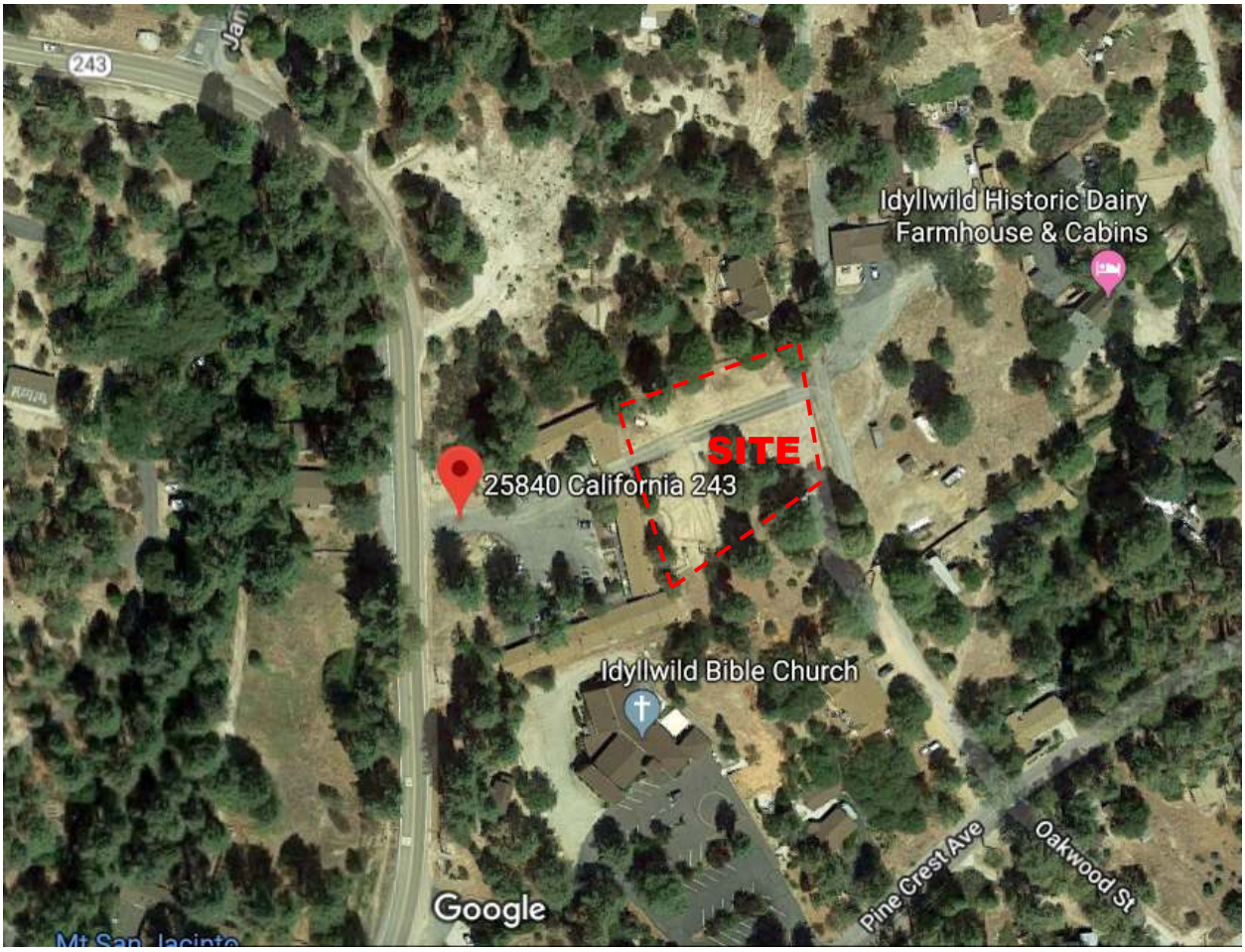
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APPENDIX A



North
NTS

Limited Geotechnical Investigation
Proposed Extended Stay Lodges at:
25840 Idyllwild Road, Idyllwild, Riverside County, CA

GEODYNE ENGINEERING, INC.

Vicinity Map

Project No. GD19G508 | Figure: A

WSC DESIGN
2501 E Guasti Rd #201
Ontario CA, 91764
909-544-9118
www.WSCSdesign.com

Design Review For:

Idyllwild Stewart Extended Stay Lodges

25840 Idyllwild Rd. Idyllwild, CA.92549

Revision		
Number	Description	Date



1 **Site Plan**
1" = 20'-0"

NOTES
1. TREES TO BE REMOVED
2. LARGE TREE TO BE REMOVED
3. SHED TO BE REMOVED
4. OLD SITE ACCESS TO BE REMOVED AND REPLACED WITH NEW PARKING LOT
5. WELL HEED TO BE UNDERGROUND IN TRAFFIC RATED BOX.
6. RAMP TO MAKE LODGE ADA ACCESSIBLE
7. ADA RAMP
8. AREA FOR TRASH CAN OR BINS AT OAKWOOD
9. NEW SIDE WAIL WITH CURB
10. 4' PATH OF TRAVEL TO THE STREET AT OAKWOOD.
11. STAIRS TO LODGES BELOW.

Legend:

TP-4

Approximate Test Pit Locations

GEODYNE ENGINEERING, INC.	
Approximate Test Pit Locations Plan	
Project No. GD19G508	Figure: B

Design Review For:
Idyllwild Stewart Extended Stay Lodges

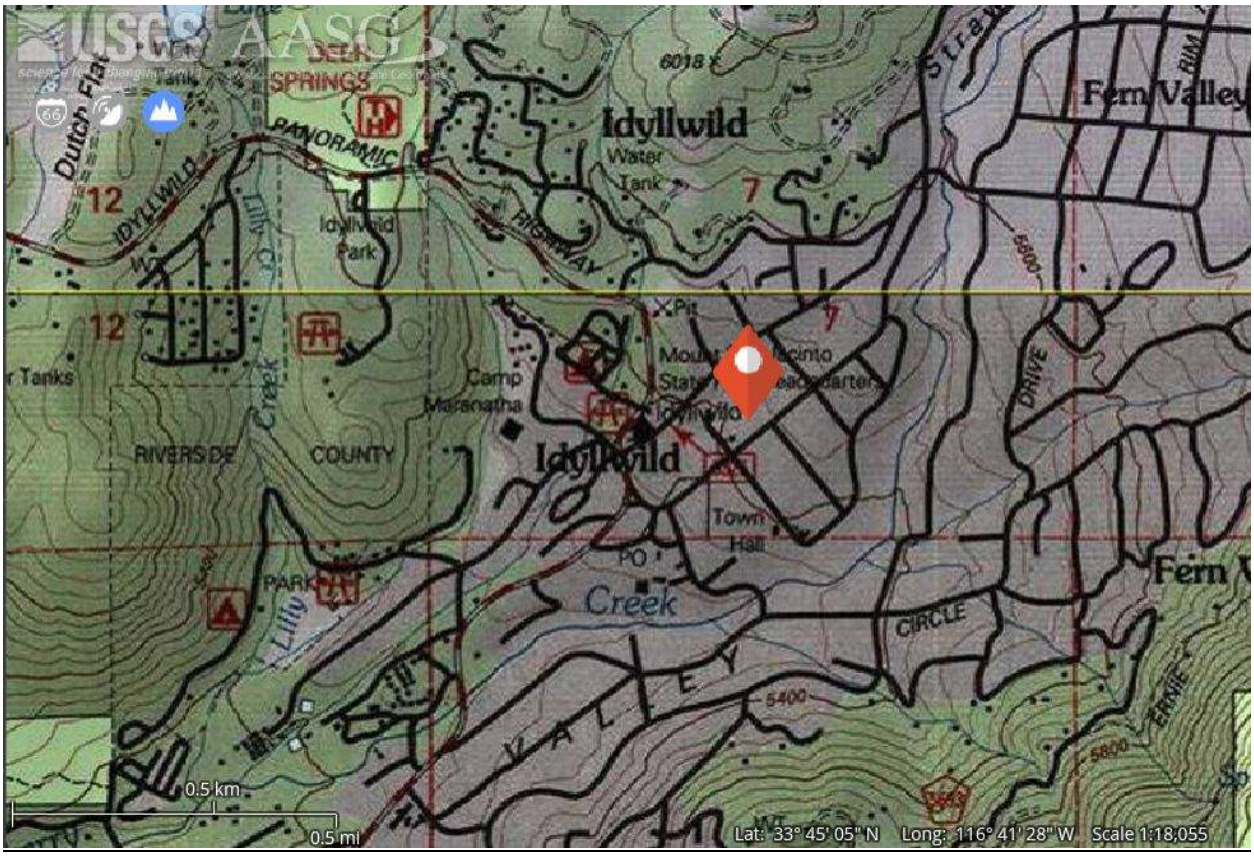
19-324

9-12-2019

25840 Idyllwild Rd. Idyllwild, CA.92549

DR100

Site Plan Concept



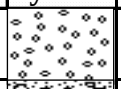
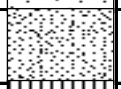
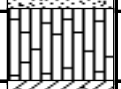
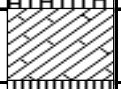
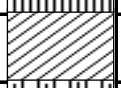
NORTH



Limited Geotechnical Investigation Proposed Extended Stay Lodges at: 25840 Idyllwild Road, Idyllwild, Riverside County, CA	***GEODYNE ENGINEERING, INC.***
	USGS Topographic Map
	Project No. GD19G508 — Figure: C

APPENDIX B

Unified Soil Classification System

Major Divisions			Letter	Symbol	Description
Coarse-grained Soils More than ½ retained on the No. 200 Sieve	**Gravels** More than ½ coarse fraction retained on the No. 4 sieve	Clean Gravels	GW		Well-graded gravels and gravel-sand mixtures, little or no fines.
			GP		Poorly-graded gravels and gravel-sand mixtures, little or no fines.
		Gravels With Fines	GM		Silty gravels, gravel-sand-silt mixtures.
			GC		Clayey gravels, gravel-sand-clay mixtures.
	Sands More than ½ passing through the No. 4 sieve	Clean Sands	SW		Well-graded sands and gravelly sands, little or no fines.
			SP		Poorly-graded sands and gravelly sands, little or no fines.
		Sands With Fines	SM		Silty sands, sand-silt mixtures
			SC		Clayey sands, sandy-clay mixtures.
Fine-grained Soils More than ½ passing through the No. 200 Sieve	**Silts and Clays** Liquid Limit less than 50%		ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL		Organic clays of medium to high plasticity.
	Silts and Clays Liquid Limit greater than 50%		MH		Inorganic silts, micaceous or diatomaceous fines sands or silts, elastic silts.
			CH		Inorganic clays of high plasticity, fat clays.
			OH		Organic clays of medium to high plasticity.
Highly Organic Soils			PT		Peat, muck, and other highly organic soils.

Consistency Classification

Granular Soils			***Cohesive Soils***		
Description - Blows Per Foot (Corrected)			Description - Blows Per Foot (Corrected)		
	MCS	SPT		MCS	SPT
Very loose	<5	<4	Very soft	<3	<2
Loose	5 – 15	4 – 10	Soft	3 – 5	2 – 4
Medium dense	16 – 40	11 – 30	Firm	6 – 10	5 – 8
Dense	41 – 65	31 – 50	Stiff	11 – 20	9 – 15
Very dense	>65	>50	Very Stiff	21 – 40	16 – 30
			Hard	>40	>30

MCS = Modified California Sampler

SPT = Standard Penetration Test Sampler

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lodges-Idyllwild**

Date: 11/5/2019

TP No: 1
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavator
CA. Mod. Manual Sampling

Thin Wall Tube | 2.5" Ring Sample | Bulk Sample | Standard Split Spoon Sample | Static Water Table

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
	SW			Bareground, 0.0'-3.0': Artificial FILL (Qaf) Light grayish brown fine-coarse SAND, slightly silty, with pebbles, medium dense, dry-damp, 3/4 inch tree roots,						No ring sample recovery
5				3.0'-6.5': Decompsed granite (DG) Tan-light brown, coarse texture, highly weathered, friable to touch, at 5.5' becomes mottled, white, black dots,						
				End of Test Pit @ 6.5-feet **No groundwater or caving** **Excavation backfilled with cutting spoil,**						
10										
15										

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lodges-Idyllwild**

Date: 11/5/2019

TP No: 2
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavator
CA. Mod. Manual Sampling

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
	SW			Bareground, 0.0'-2.0': Artificial FILL (Qaf) Light grayish brown SAND, slightly silty fine-coarse, medium dense, dry-damp,						No ring sample recovery
5				2.0'-7.0': Decompsed granite (DG) Tan-light brown, fine-coarse texture, friable, highly weathered,						
				End of Test Pit @ 7.0-feet **No groundwater or caving** **Excavation backfilled with cutting spoil,**						
10										
15										

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table

Geodyne Engineering,, Inc.

LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lodges-Idyllwild**

Date: 11/5/2019

TP No: 3
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavator
CA. Mod. Manual Sampling

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
	SW			Bareground, 0.0'-3.0': Artificial FILL (Qaf) Brownish gray SAND, slightly silty fine-coarse, medium dense, dry-damp, pebbles, tree roots size 1"-3" in diameter						No ring sample recovery
5				3.0'-7.0': Decompsed granite (DG) Grayish brown, fine-coarse texture, friable, highly weathered,						
				End of Test Pit @ 7.5-feet **No groundwater or caving** **Excavation backfilled with cutting spoil,**						
10										
15										

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table



LOG OF EXPLORATORY TEST PIT

Project No. GD19G508
Project: **Extended Stay Lounges-Idyllwild**

Date: 11/5/2019

TP No: 3
Test Pit Location: See Plot Plan
Groundwater: None
Type: Backhoe excavator

Depth in Feet	Soil Type	Sample Type: Undisturbed	Sample Type: Bulk	SOIL DESCRIPTION	Blows/foot	Moisture Content,%	Dry Density, pcf	% Heave	% Collaps	Commets
				Bareground, .0.5'-2.5': Decompsed granite (DG) Tan-light brown, brittle, hard,						
				End of Test Pit @ 2.5-feet **No groundwater or caving** **Excavation backfilled** with **cutting spoil,**						

Thin Wall Tube; 2.5" Ring Sample; Bulk Sample; Standard Split Spoon Sample; Static Water Table





Geodyne Engineering, Inc.

APPENDIX C

PARTICLE SIZE ANALYSIS

ASTM C -136

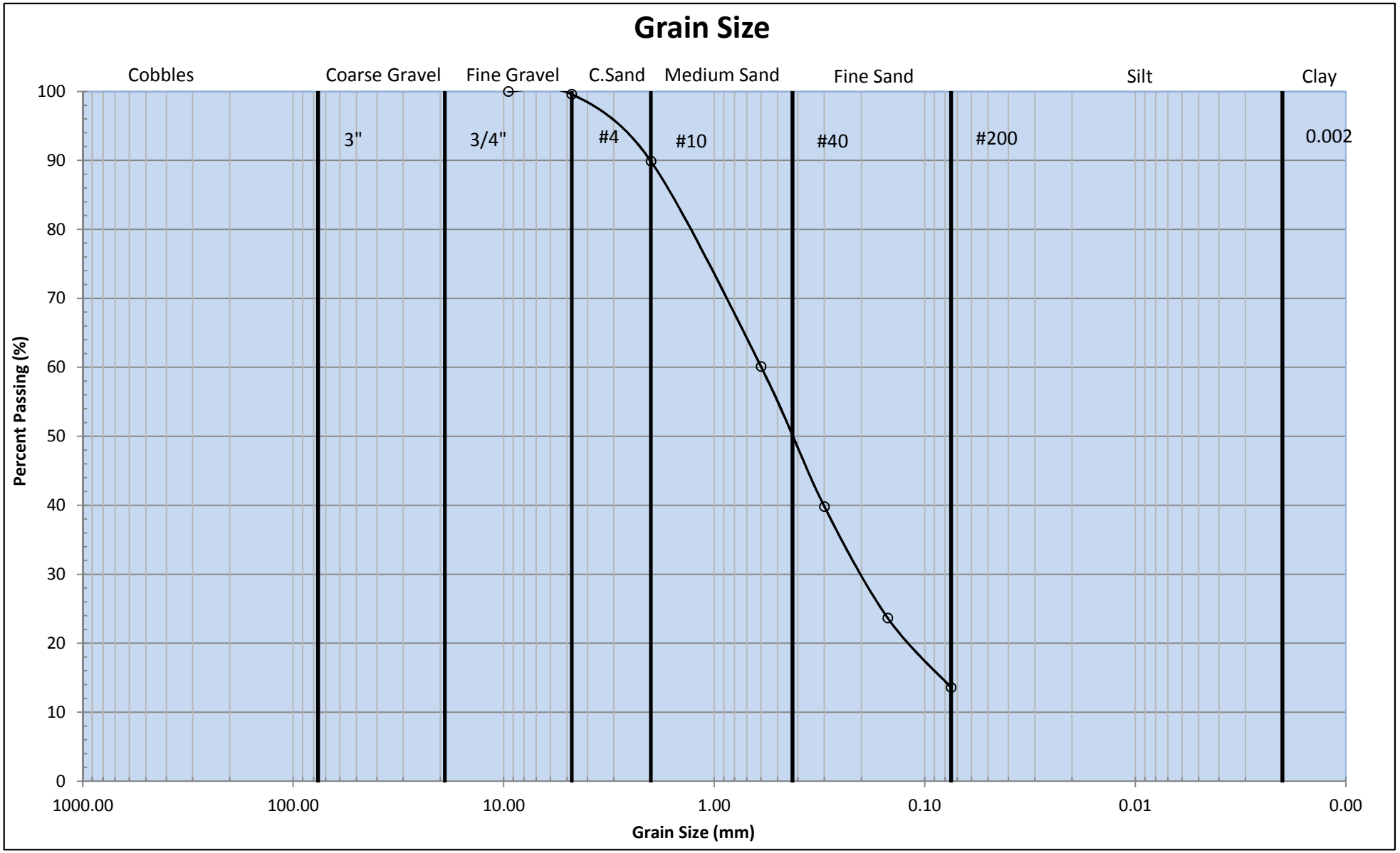
Project Name:	**Extended Stay - Idyllwild**				
Sample Type	Sand (Component Granite, Micaceeous)				
		Boring No:	**TP-1**	**Depth:**	**2-7 '**
Date Sampled	11/8/2019	Test Performed By: HM			
Dry Weight After Wash (g):	759.3				

Sieve Size	**Wet Retaine**	**Accumulated Wet Retained**	**% Retained**	**Accumulated**	**Passing**	
	(g)	(g)		%	%	
2 1/2"	0	0	0.00	0.00	100.00	
2 "	0	0	0.00	0.00	100.00	
1 1/2 "	0	0	0.00	0.00	100.00	
1"	0	0	0.00	0.00	100.00	
3/4"	0	0	0.00	0.00	100.00	
1/2"	0	0	0.00	0.00	100.00	
3/8"	0	0	0.00	0.00	100.00	
4	3	3	0.40	0.40	99.60	
10	73.8	76.8	9.72	10.11	89.89	
16	0	76.8	0.00	10.11	89.89	
30	225.9	302.7	29.75	39.87	60.13	
40		302.7	0.00	39.87	60.13	
50	154.1	456.8	20.30	60.16	39.84	
60	0	456.8	0.00	60.16	39.84	
100	122.7	579.5	16.16	76.32	23.68	
200	76.5	656	10.08	86.40	13.60	
PAN	103.3	759.3	13.60	100.00	0.00	

CEM LAB

Figure D

Grain Size



Project Name: **Exrended Stay - Idyllwild**
Location: TP-1
Sample No: **1**
Date: 11/8/2019
Job No. ST19G123
Depth: 2'-7'
By: HM

Gravel	0.0
Sand	86.4
PP-200	13.6
Total	100.0

LL= _____ PL= _____ PI= _____

Figure E

CEM Lab

DIRECT SHEAR TEST DATA

Project: Extended Stay - Idyllwild
Address:
Location:
File No.: GD19G508

Tested By: HM
Method: Drained
Consolidated: Yes
Saturated: Yes

Remolded to 90% of M.D.D.and O.M.C. ASTM D3080

BORING NO.	TP-2			TP-2			TP-2					
SAMPLE TYPE												
DEPTH (in/ft)	3.0-7.0			3.0-7.0			3.0-7.0					
LOAD (psf)	1000			2000			3000					
SOIL TYPE	Remolded			Remolded			Remolded					
DESCRIPTION	Micaceeous Silty Sand Slightly Clay			Micaceeous Silty Sand Slightly Clay			Micaceeous Silty Sand Slightly Clay					
THICKNESS (in)	1			1			1					
SAMPLE ID (in)	2.5"			2.5"			2.5"					
DATE	11/9/2019			11/9/2019			11/9/2019					
TIME START												
TIME END												
STRAIN RATE		0.005	in/min		0.005	in/min		0.005	in/min		0.005	in/min
INIT. MC & DD	8.0%	112.5	pcf	8.0%	112.5	pcf	8.0%	112.5	pcf			pcf
DEFLECTION (in)	**PROV. RING** (X .001")	**DILA-TION** (X .001")	**SHEAR STRESS** (psf)	**PROV. RING** (X .001")	**DILA-TION** (X .001")	**SHEAR STRESS** (psf)	**PROV. RING** (X .001")	**DILA-TION** (X .001")	**SHEAR STRESS** (psf)	**PROV. RING** (X .001")	**DILA-TION** (X .001")	**SHEAR STRESS** (psf)
0.00	0	0	0	0	0	0	0	0	0			
0.01	9	0	264	24	0	705	28	-1	822			
0.02	13	0	382	29	0	851	38	-3	1116			
0.03	16	1	470	32	-1	940	43	-4	1262			
0.04	19	1	558	35	-1	1028	46	-5	1351			
0.05	20	1	587	38	0	1116	49	-5	1439			
0.06	22	2	646	40	0	1174	53	-6	1556			
0.07	23	3	675	42	1	1233	58	-6	1703			
0.08	23	4	675	44	1	1292	62	-6	1820			
0.09	24	5	705	46	2	1351	66	-5	1938			
0.10	24	5	705	48	3	1409	72	-5	2114			
0.11	25	5	734	50	3	1468	74	-4	2173			
0.12	25	5	734	50	3	1468	75	-4	2202			
0.13	26	6	763	51	4	1497	76	-3	2231			
0.14	27	7	793	51	4	1497	76	-3	2231			
0.15	27	7	793	52	4	1527	77	-3	2261			
0.16	28	8	822	52	4	1527	77	-2	2261			
0.17	28	8	822	53	4	1556	77	-2	2261			
0.18	29	9	851	53	5	1556	76	-1	2231			
0.19	29	9	851	53	5	1556	76	-1	2231			
0.20	29	10	851	52	5	1527	76	0	2231			
0.21	30	10	881	52	6	1527	75	0	2202			
0.22	30	10	881	51	6	1497	75	1	2202			
0.23	29	10	851	51	6	1497	75	1	2202			
0.24	28	10	822	50	7	1468	74	2	2173			
0.25	27	10	793	50	7	1468	74	2	2173			

Maximum =	881	1556	2261	0
Minimum* =	793	1468	2173	0

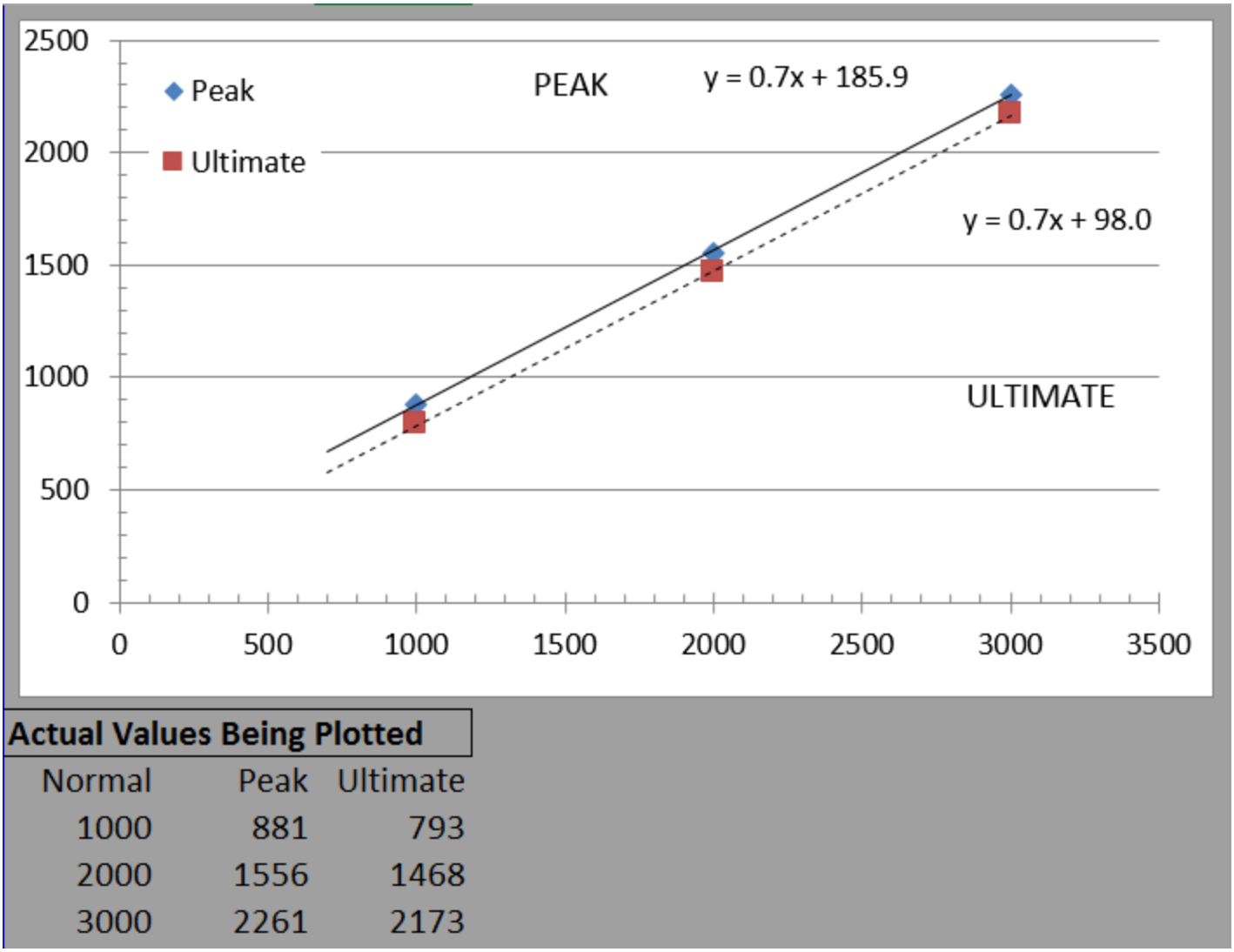
*after 0.1 in.

Proving Ring Calibration - 200 lbf

< 200 29.36

Figure F

CEM LAB



Actual Values Being Plotted

Normal	Peak	Ultimate
1000	881	793
2000	1556	1468
3000	2261	2173

Figure G

Samples Tested	1	2	3	4
Boring ID	TP-2	TP-2	TP-2	0
Depth (in/ft.)	3.0-7.0	3.0-7.0	3.0-7.0	0
Initial Dry Density (pcf)	112.5	112.5	112.5	0
Initial Moisture Content (%)	8	8	8	0
Normal Stress (psf)	1000	2000	3000	0
Maximum Shear Stress (psf)	881	1556	2261	0
Ultimate Shear Stress (psf)	793	1468	2173	0

ASTM D3080

	Peak	Ultim.
Friction, phi (Deg)	**35**	**35**
Cohesion (psf)	**186**	**98**

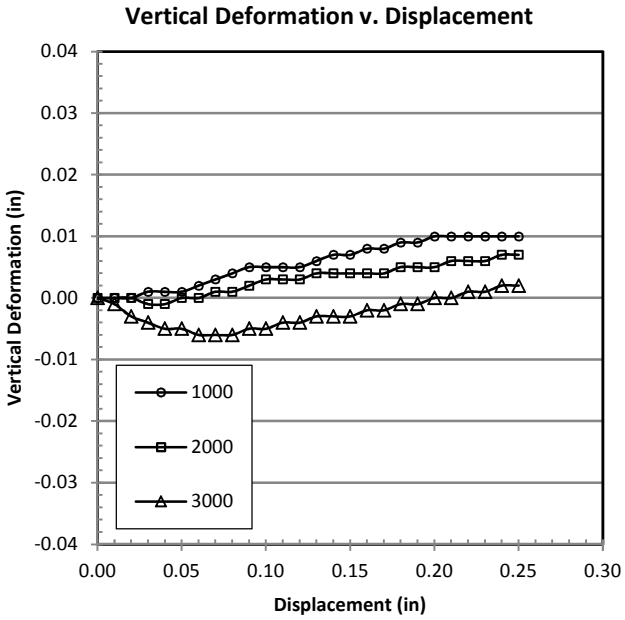
Date 11/9/2019

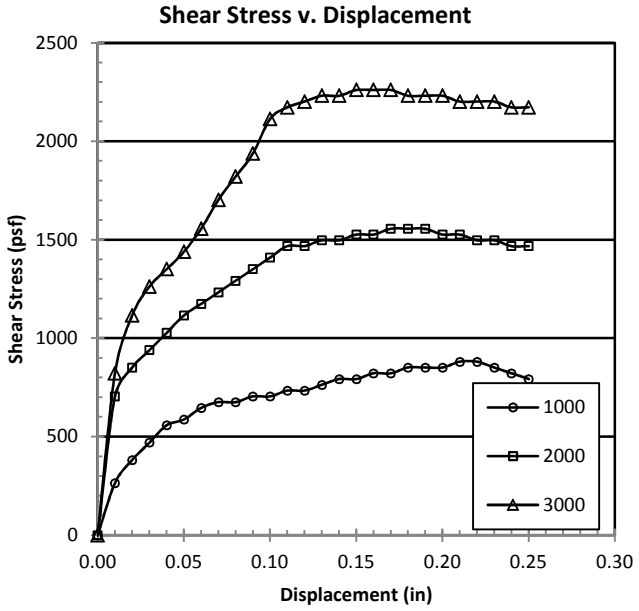
Method: Drained

Consolidation: Yes

Saturation: Yes

Strain Rate (in/min): 0.005





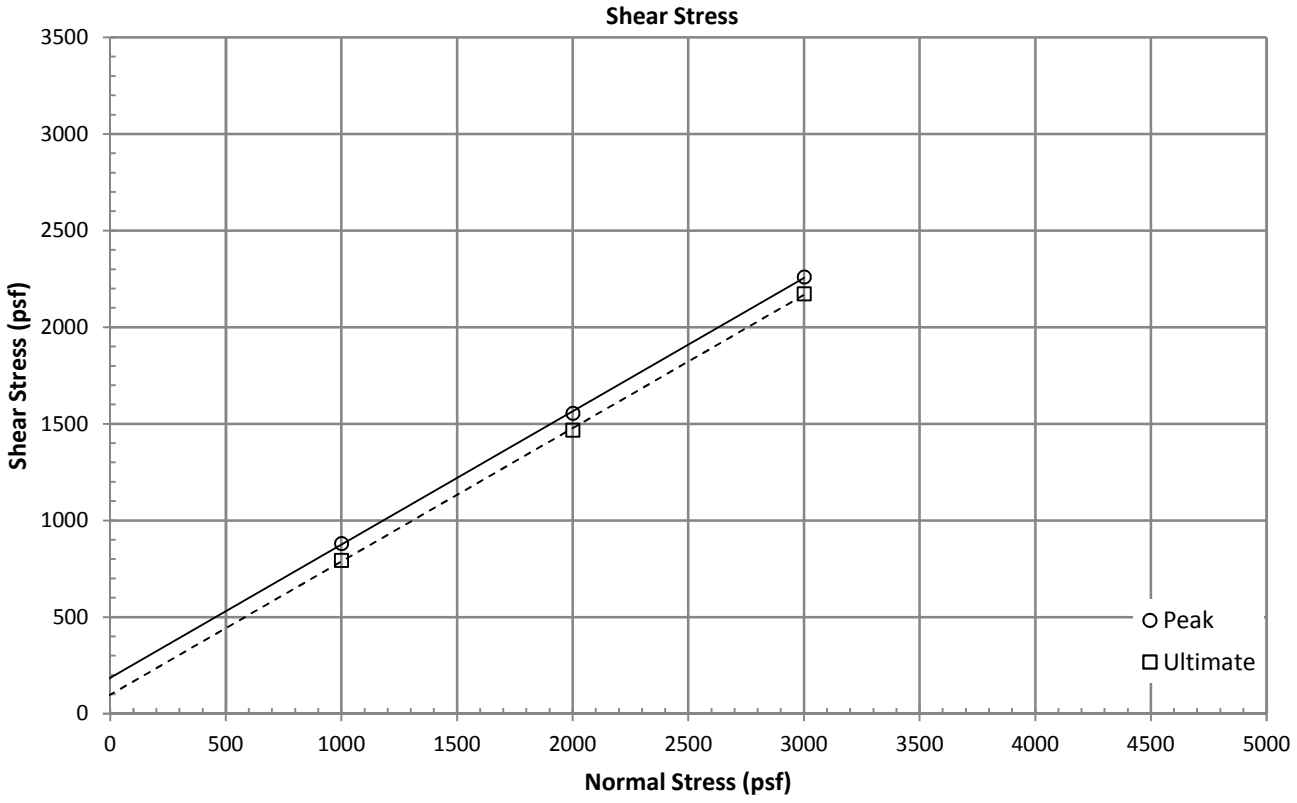


Figure H	**DIRECT SHEAR TEST RESULTS** Extended Stay - Idyllwild ,	F.N.: GD19G508 Date: Nov 2019	

Remolding Soil Sample

FORMULA		
Maximum Dry Density		125
Moisture %		8
Dry Density	90 % Of Max D.D.	112.5
Ring Volume		1.2787
(1.2787)(D.D) (100+Moist)		155.36

Wt. Wet Soil + Tere	g	132.4
Wt. Wet Dry + Tere	g	126.8
Wt of Tere	g	53.6
Moisture Lost	g	5.6
Dry Soil	g	73.2
Moisture	%	7.65

FORMULA		
Maximum Dry Density		125
Moisture %		7.65
Dry Density	90 % Of Max D.D.	112.5
Ring Volume		1.2787
(1.2787)(D.D) (100+Moist)		154.86

Total Soil For 4 Rings	g	619.4
Bowl	g	263.1
Total Mix Before Water Added	g	882.5
Total Mix For 4 Rings+ Bowl	g	884.5
Total Water added	g	**2.0**
Total Mix	g	**884.5**

P.N.
Projet : Extended Stay - Idyllwild
Excavation TP-2
Depth: 3.0'-7.0 '

Figure I

CONSOLIDATION FOR SHEAR

ASTM D-2435

Project Name: **Extended Stay - Idyllwild**
Location:
File No: GD19G508

Excavation: **TP-2**
Depth **3.0'-7.0 '**

Tested By H-M

Sample Type: **Remolded to 90 % of M.D.D and O.M.C.**

Ring I D 2.5 "

Boring No.	Depth (ft.)	Date	Time	Load (psf)	Water Added	Dial Read (in.)	Deform. (in.)	Consol %	Swell or Collapse
TP-2	0-2.5 '	11/8/2019	9.30	1000		0.4409			
		11/8/2019	9.40			0.4400			
		11/9/2019	9.30			0.4409	0.0009	0.09	Swell
TP-2	0-2.5 '	11/8/2019	9.30	2000		0.5029			
		11/8/2019	9.40			0.5021			
		11/9/2019	9.30			0.5012	-0.0009	-0.09	Collapse
TP-2	0-2.5 '	11/8/2019	9.30	3000		0.5271			
		11/8/2019	9.40			0.5265			
		11/9/2019	9.30			0.5249	-0.0016	-0.16	Collapse

SAMPLE INFORMATION FOR CONSOLIDATION AND SHEAR								
Description	Micaceeous Silty Sand Slightly Clay		Micaceeous Silty Sand Slightly Clay		Micaceeous Silty Sand Slightly Clay			
Boring No.								
Depth (ft.)								
Load (psf)	1000		4000		5000			
	Before	After	Before	After	Before	After		
Ring + Wet Soil	294.79		299.01		298.66			
Ring Wt.	139.43		143.65		143.3			
Wt. of Soil	155.36		155.36		155.36			
Factor	0.002817	0.002841	0.002817	0.002836	0.002817	0.002834		
Wet Density	121.48	120.44	121.48	120.66	121.48	120.74		
Cup No.		90		26		86		
Cup + Wet Soil		177.18		174.67		175.6		
Cup + Dry Soil		148.36		147.63		149.19		
Moist. Loss		28.82		27.04		26.41		
Cup		8.67		8.76		8.47		
Dry Soil		139.69		138.87		140.72		
Moist. Cont. (%)	8.00	20.63	8.00	19.47	8.00	18.77		
Dry Density	112.48	99.84	112.48	100.99	112.48	101.66		

CEM LAB

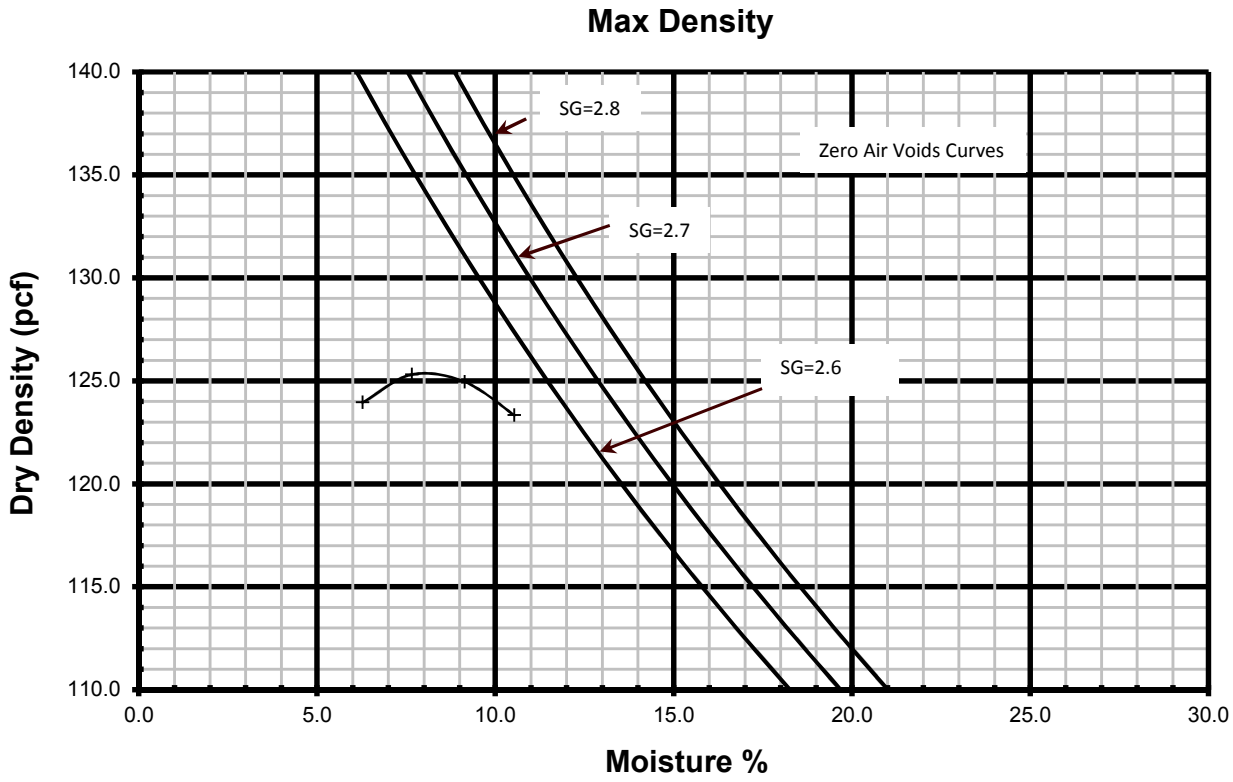
Figure J

MAXIMUM DENSITY

ASTM D-1557

Project Name: **Extended Stay - Idyllwild** Excavation: **TP-2**
Location: Depth: **2.0'-7.0'**
Description: Medium Brown Sand
File No: GD19G508
Date: 11/6/2019
Sieve Size 4
Mold Size 4" % Retained None
No. of Layers 5 Method A By: H-M

Test point number		1	2	3	4		
Wt. wet soil + mold	g	3839.4	3887.3	3909.6	3908.7		
Wt. wet soil + mold	lbs	8.46	8.56	8.61	8.61		
Wt. of mold	lbs	4.07	4.07	4.07	4.07		
Wt. wet of soil	lbs	4.39	4.49	4.54	4.54		
Wet density	pcf	131.74	134.90	136.38	136.32		
Dry density	pcf	123.95	125.31	124.96	123.33		
Moisture Determination (Oven)							
Container number		27	22	18	16		
Wt. wet of soil+tare	g	284.5	348.8	288.6	276.9		
Dry wt. soil+tare	g	268.2	324.6	265.1	251.3		
Tare wt.	g	8.62	8.62	8.04	8.27		
Wt. of moisture	g	16.30	24.20	23.50	25.60		
Dry wt. of soil	g	259.58	315.98	257.06	243.03		
Moisture Content	g	6.28	7.66	9.14	10.53		



Maximum Density **125.0** pcf Optimum Moisture **8.0** %

CEM LAB

Figure K

ANAHEIM TEST LAB, INC

196 Technology Drive, Unit D
Irvine, CA 92618
Phone (949)336-6544

DATE: 11/06/2019

P.O. NO: Transmittal

LAB NO: C-3338

SPECIFICATION: CTM-417/422/643

TP-3 @ 3'-7'

MATERIAL: Soil

Project: Idyllwild Ext. Stay
Date Sampled: 11/05/2019

ANALYTICAL REPORT

CORROSION SERIES
SUMMARY OF DATA

pH	SOLUBLE SULFATES per CT. 417 ppm	SOLUBLE CHLORIDES per CT. 422 ppm	MIN. RESISTIVITY per CT. 643 ohm-cm
7.1	131	54	31,000

RESPECTFULLY SUBMITTED

WES BRIDGER LAB MANAGER

Figure L

APPENDIX D

Hazards by Location

Search Information

Address:

Coordinates: 33.747119, -116.711249

Elevation: ft

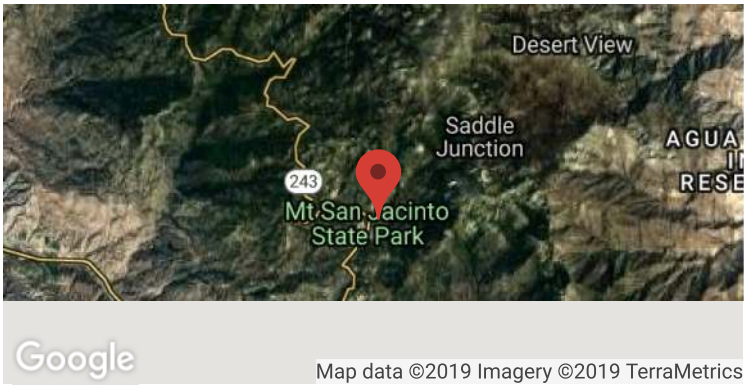
Timestamp: 2019-11-12T06:02:43.127Z

Hazard Type: Seismic

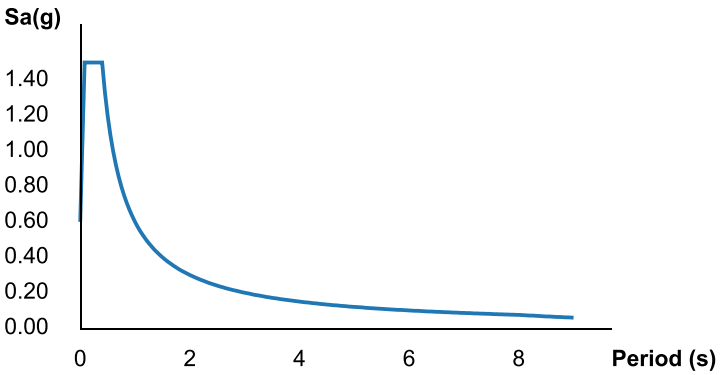
Reference Document: ASCE7-10

Risk Category: II

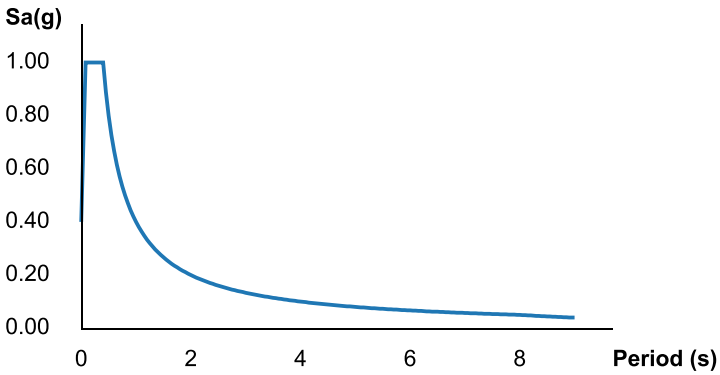
Site Class: B



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	1.5	MCE_R ground motion (period=0.2s)
S_1	0.6	MCE_R ground motion (period=1.0s)
S_{MS}	1.5	Site-modified spectral acceleration value
S_{M1}	0.6	Site-modified spectral acceleration value
S_{DS}	1	Numeric seismic design value at 0.2s SA
S_{D1}	0.4	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2s
F_v	1	Site amplification factor at 1.0s

CR_S	1.056	Coefficient of risk (0.2s)
CR_1	1.016	Coefficient of risk (1.0s)
PGA	0.504	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.504	Site modified peak ground acceleration
T_L	8	Long-period transition period (s)
SsRT	2.035	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.926	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.788	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.775	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.504	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for San Bernardino National Forest Area, California



February 9, 2021

Preface

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

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

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

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

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

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

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....12
Map Unit Descriptions.....12
San Bernardino National Forest Area, California.....14
DdDE—Pacifico-Preston families complex, 2 to 30 percent slopes.....14
KoD—Wind River-Oak Glen families association, 2 to 15 percent slopes..15
Soil Information for All Uses.....18
Soil Properties and Qualities.....18
Soil Physical Properties.....18
Saturated Hydraulic Conductivity (Ksat), Standard Classes.....18
References.....24

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,650 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: San Bernardino National Forest Area, California
Survey Area Data: Version 12, May 27, 2020

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

Date(s) aerial images were photographed: Aug 18, 2018—Aug 22, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DdDE	Pacifico-Preston families complex, 2 to 30 percent slopes	0.9	13.3%
KoD	Wind River-Oak Glen families association, 2 to 15 percent slopes	6.0	86.7%
Totals for Area of Interest		**7.0**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

San Bernardino National Forest Area, California

DdDE—Pacifico-Preston families complex, 2 to 30 percent slopes

Map Unit Setting

National map unit symbol: htrs
Elevation: 4,800 to 7,500 feet
Mean annual precipitation: 20 to 35 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Pacifico family and similar soils: 45 percent
Preston family and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pacifico Family

Setting

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

Typical profile

H1 - 0 to 3 inches: loamy coarse sand
H2 - 3 to 15 inches: loamy coarse sand
H3 - 15 to 19 inches: weathered bedrock

Properties and qualities

Slope: 2 to 30 percent
Depth to restrictive feature: 15 to 19 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Preston Family

Setting

Landform: Mountains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank

Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 4 inches: loamy sand
H2 - 4 to 19 inches: loamy sand
H3 - 19 to 28 inches: gravelly sand
H4 - 28 to 32 inches: weathered bedrock

Properties and qualities

Slope: 2 to 20 percent
Depth to restrictive feature: 28 to 32 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Hydric soil rating: No

KoD—Wind River-Oak Glen families association, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: htsp
Elevation: 4,600 to 6,000 feet
Mean annual precipitation: 20 to 35 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Wind river family and similar soils: 50 percent
Oak glen family and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wind River Family

Setting

Landform: Mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase
Down-slope shape: Concave
Across-slope shape: Convex

Parent material: Residuum weathered from granite

Typical profile

H1 - 0 to 19 inches: sandy loam
H2 - 19 to 34 inches: sandy loam
H3 - 34 to 45 inches: sandy loam
H4 - 45 to 49 inches: weathered bedrock

Properties and qualities

Slope: 5 to 10 percent
Depth to restrictive feature: 45 to 49 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Oak Glen Family

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

H1 - 0 to 15 inches: sandy loam
H2 - 15 to 30 inches: sandy loam
H3 - 30 to 60 inches: loamy sand

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Saturated Hydraulic Conductivity (Ksat), Standard Classes

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits. The classes are:

Very low: 0.00 to 0.01

Low: 0.01 to 0.1

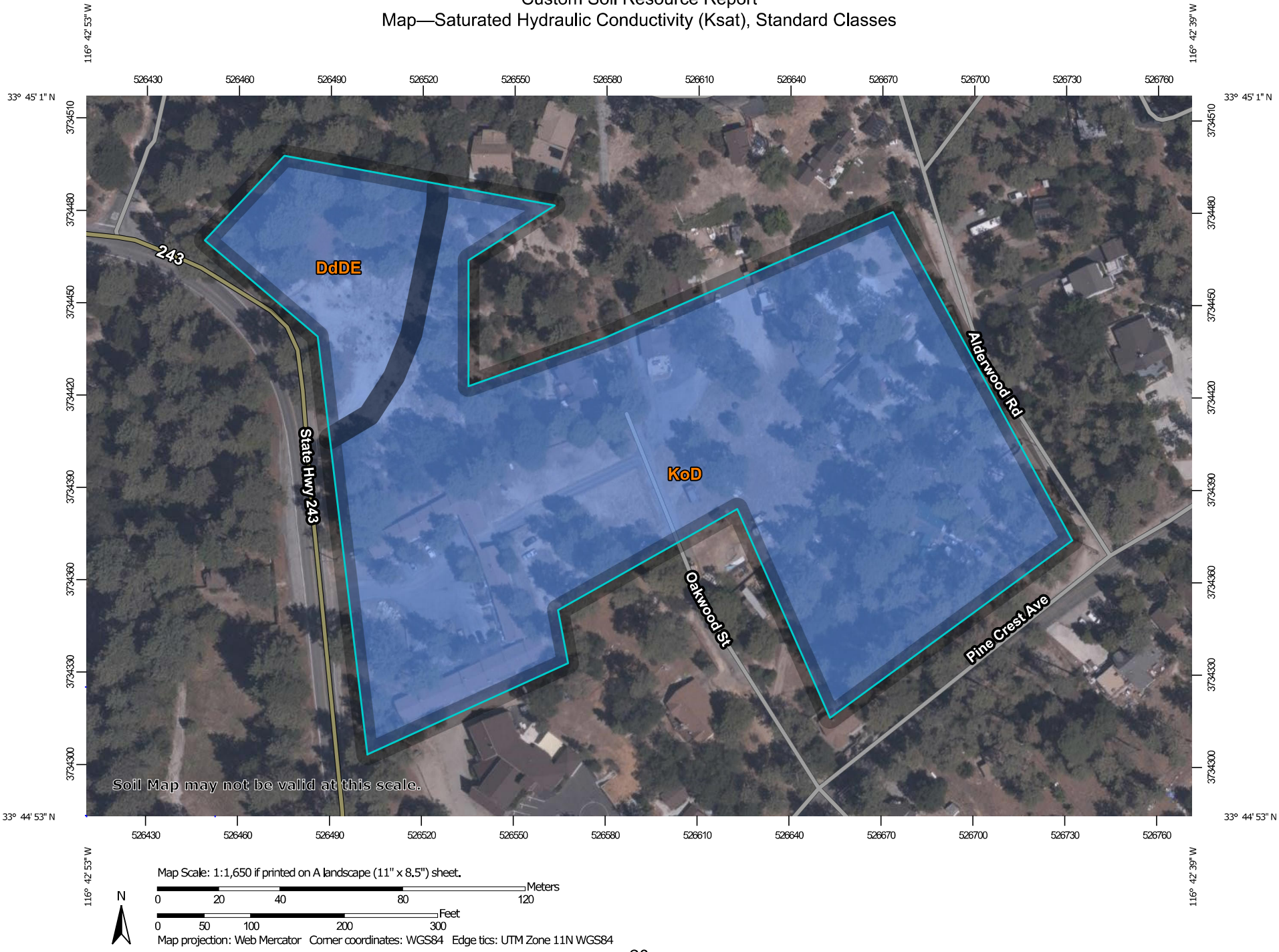
Moderately low: 0.1 to 1.0

Moderately high: 1 to 10

High: 10 to 100

Very high: 100 to 705

Custom Soil Resource Report
Map—Saturated Hydraulic Conductivity (Ksat), Standard Classes



Map Scale: 1:1,650 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Soil Rating Lines

- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Soil Rating Points

- Very Low (0.0 - 0.01)
- Low (0.01 - 0.1)
- Moderately Low (0.1 - 1)
- Moderately High (1 - 10)
- High (10 - 100)
- Very High (100 - 705)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: San Bernardino National Forest Area, California
Survey Area Data: Version 12, May 27, 2020

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

Date(s) aerial images were photographed: Aug 18, 2018—Aug 22, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Saturated Hydraulic Conductivity (Ksat), Standard Classes

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
DdDE	Pacifico-Preston families complex, 2 to 30 percent slopes	92.0000	0.9	13.3%
KoD	Wind River-Oak Glen families association, 2 to 15 percent slopes	28.0000	6.0	86.7%
Totals for Area of Interest			**7.0**	**100.0%**

Rating Options—Saturated Hydraulic Conductivity (Ksat), Standard Classes

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

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Worksheet H: Factor of Safety and Design Infiltration Rate Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	3	0.75
		Predominant soil texture	0.25	1	0.25
		Site soil variability	0.25	3	0.75
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			2.00
B	Design	Tributary area size	0.25	1	0.25
		Level of pretreatment/ expected sediment loads	0.25	3	0.75
		Redundancy	0.25	2	0.50
		Compaction during construction	0.25	1	0.25
		Design Safety Factor, $S_B = \Sigma p$			1.75
Combined Safety Factor, $S_{TOT} = S_A \times S_B$					3.5
Measured Infiltration Rate, inch/hr, K_M (corrected for test-specific bias)					5.95
Design Infiltration Rate, in/hr, $K_{DESIGN} = S_{TOT} / K_M$					1.7

Supporting Data

Briefly describe infiltration test and provide reference to test forms:

****Infiltration rate was obtained using the online resource WebSoilSurvey for this PWQMP. The soils data can be seen in Appendix 3 of this report.**

Note: The minimum combined adjustment factor shall not be less than 2.0 and the maximum combined adjustment factor shall not exceed 9.0.

Appendix 4: Historical Site Conditions

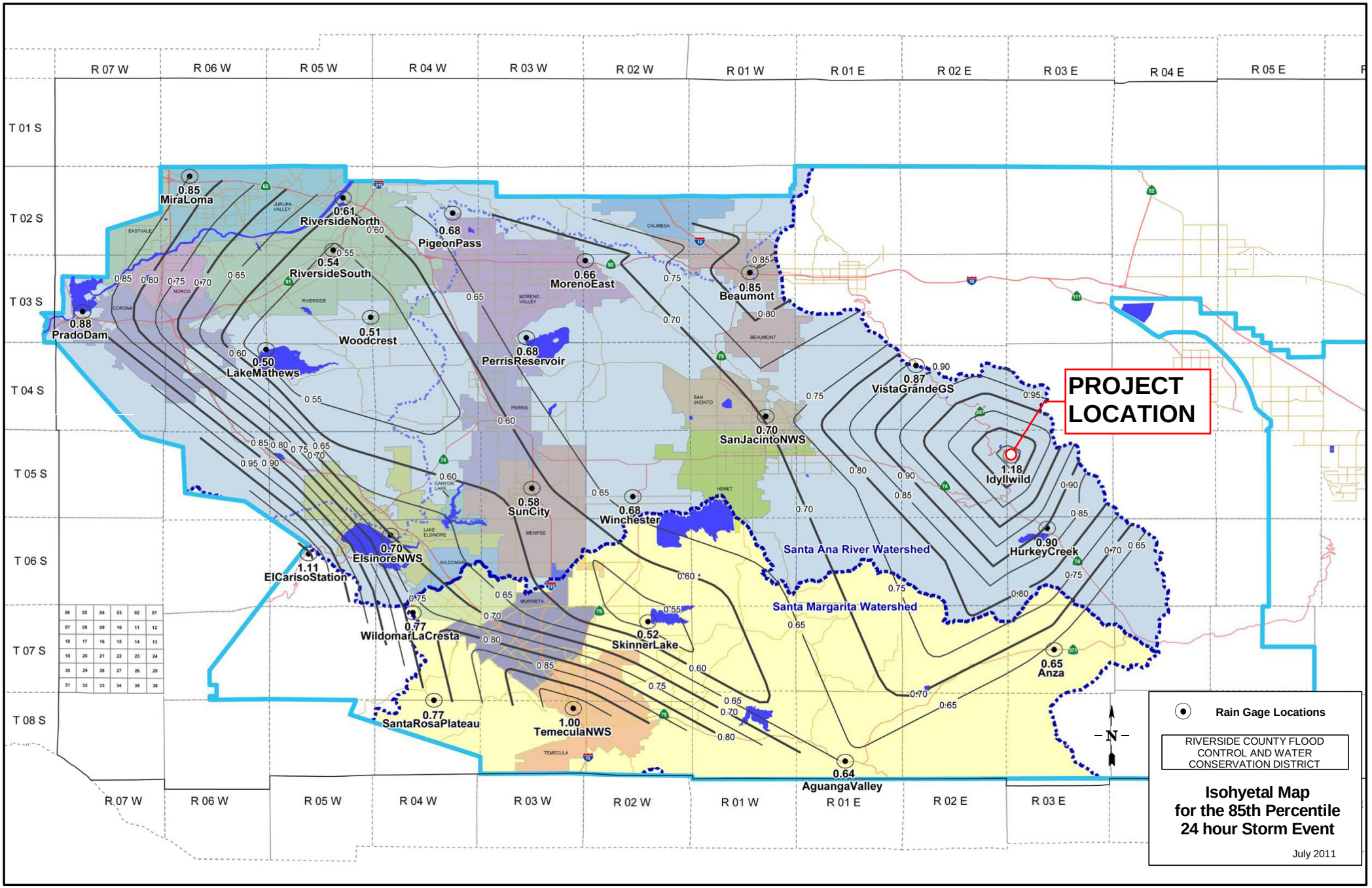
Phase I Environmental Site Assessment or Other Information on Past Site Use

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

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
0.68 PerrisReservoir
0.50 LakeMathews
0.87 VistaGrandeGS
PROJECT LOCATION
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
Santa Ana River Watershed
0.90 HurkeyCreek
Santa Margarita Watershed
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley
N
Rain Gage Locations
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
Isohyetal Map for the 85th Percentile 24 hour Storm Event
July 2011

STEWART IDYLLWILD PWQMP - DMAs					
		FT^2	AC	%	DESCRIPTION
EXISTING CONDITION	A_T=	68873	1.58	---	PARTIALLY DEVELOPED
	A_{PERV}=	67148	1.54	97.5%	
	A_{IMP}=	1725	0.04	2.5%	
DMA 1	A_T=	68873	1.58	---	PARTIALLY DEVELOPED
	A_{PERV}=	67148	1.54	97.5%	
	A_{IMP}=	1725	0.04	2.5%	
PROPOSED CONDITION	A_T=	43831	1.01	---	COMBINATION OF: COMMERCIAL LANDSCAPING AND PCC/AC PAVEMENT
	A_{PERV}=	4485	0.10	10.2%	
	A_{IMP}=	39346	0.90	89.8%	
DMA 1	A_T=	19934	0.46	---	COMBINATION OF: COMMERCIAL LANDSCAPING AND PCC/AC PAVEMENT
	A_{PERV}=	2340	0.05	11.7%	
	A_{IMP}=	17594	0.40	88.3%	
DMA 2	A_T=	23897	0.55	---	COMBINATION OF: COMMERCIAL LANDSCAPING AND PCC/AC PAVEMENT
	A_{PERV}=	2145	0.05	9.0%	
	A_{IMP}=	21752	0.50	91.0%	

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: SITETECH INC. Date:

Designed by: BAM Case No:

Company Project Number/Name: STEWART IDYLLWILD - DA1

BMP Identification

BMP NAME / ID: INFILTRATION BASIN (BMP1)

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}= 1.18 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 1a	2340	Ornamental Landscaping	0.1	0.11	258.5			
DMA 1b	8217	Roofs	1	0.89	7329.6			
DMA 1c	9377	Concrete or Asphalt	1	0.89	8364.3			
	19934	Total			15952.4	1.18	1568.7	1907

Notes:

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: SITETECH INC. | Date:

Designed by: BAM | Case No:

Company Project Number/Name: STEWART IDYLLWILD - DA2

BMP Identification

BMP NAME / ID: INFILTRATION BASIN (BMP2)

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} = 1.18 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 1a	2145	Ornamental Landscaping	0.1	0.11	236.9			
DMA 1b	10360	Roofs	1	0.89	9241.1			
DMA 1c	11392	Concrete or Asphalt	1	0.89	10161.7			
	23897	Total			19639.7	1.18	1931.2	1943

Notes:

INFILTRATION BASIN VOLUME CALCULATIONS

INFILTRATION BASIN DA1	
	DA1
Infiltration Surface Area (ft^2)	1038
Ponding Depth (ft)	1.5
Sloped Sides Area (ft^2)	467
Total Basin Volume (ft^3)	1907

INFILTRATION BASIN DA2	
	DA2
Infiltration Surface Area (ft^2)	1054
Ponding Depth (ft)	1.5
Sloped Sides Area (ft^2)	483
Total Basin Volume (ft^3)	1943

BMP DRAWDOWN TIME

INFILTRATION BASIN DA1	
	DA1
$V_{storage}$ (ft^3)	1907
Infiltration Rate (in/hr)	6.0
Factory of Safety	3.50
Design Infiltration Rate (in/hr)	1.70
Infiltration Surface Area (ft^2)	1038
BMP Drawdown Time (Hr)	13.0
	Okay

INFILTRATION BASIN DA2	
	DA2
$V_{storage}$ (ft^3)	1943
Infiltration Rate (in/hr)	6.0
Factory of Safety	3.50
Design Infiltration Rate (in/hr)	1.70
Infiltration Surface Area (ft^2)	1054
BMP Drawdown Time (Hr)	13.0
	Okay

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Tuesday, February 9, 2021

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicantï¿½s Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	563261007, 563242003, 563261001, 563250035, 563250031, 563250017, 563242018, 563250028, 563242008, 563261008, RW, 563250002, 563250004, 563242017, 563261010, RW, 563250005
Latitude/Longitude:	33.7493, -116.7131
Thomas Brothers Page:	
Project Site Acreage:	5.11
Watershed(s):	SANTA ANA
This Project Site Resides in the following Hydrologic Unit(s) (HUC):	**HUC Name** - HUC Number **Strawberry Creek-San Jacinto River** - 180702020102
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	**WBID Name** - WBID Number **Canyon Lake (Railroad Canyon Reservoir)** - CAL8021100019990208151525 **Elsinore, Lake** - CAL8023100019990208151100
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	**Bacterial Indicators** - Pathogens **Nutrients** - Nutrients, Organic Enrichment/Low Dissolved Oxygen **Other Organics** - PCBs (Polychlorinated biphenyls) **Toxicity** - Sediment Toxicity, Unknown Toxicity
Is the Site subject to Hydromodification:	No
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - A, D **Known Groundwater Contamination Plumes within 1000'** - No **Adjacent Water Supply Wells(s)** - No information available please contact your local water agency for more information. Your local contact agency is IDYLLWILD CO. WATER DISTRICT. Your local wholesaler contact agency is .
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None
Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Narrow Endemic Plants Survey Req. - Area 6,Mountain Yellow-Legged Frog
Groundwater elevation from Mean Sea Level:	No Data
85th Percentile Design Storm Depth (in):	1.172
Groundwater Basin:	No Data
MSHCP/CVMSHCP Criteria Cell(s):	No Data
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	Comprehensive Nutrient Reduction Plan IBI Scores - Southern Cal bulletin118_4-sc water_fact_3_7.11

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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

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

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

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

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

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

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ M. **Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ N. **Fire Sprinkler Test Water**		☐ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☐ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ☐ **Boiler drain lines** ☐ **Condensate drain lines** ☐ **Rooftop equipment** ☐ **Drainage sumps** ☑ **Roofing, gutters, and trim.** ☐ **Other sources**		☐ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ☐ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ☐ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ☑ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☐ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ P. **Plazas, sidewalks, and parking lots.**			☒ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

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

Operation and Maintenance

Responsible Party	BMP	Description of BMP and Method of Implementation	Maintenance Schedule
Owner	Education for Property Owners and Tenants	The property owner shall familiarize him/herself with the WQMP document and content, including BMP educational materials in Appendix 6 this WQMP and shall ensure that all occupants are also educated on stormwater BMPs.	Yearly
Owner	Activity Restrictions	Owner shall control site activities to prevent or reduce runoff pollutant. Activity restriction listed per attachment in this WQMP and owner or owner's representative shall monitor all activities on site during business hours to prevent pollutants in site runoff.	N/A
Owner	Landscape Management	Maintenance shall be conducted by a landscape contractor on a weekly basis to verify that the irrigation system is functioning properly and to repair as needed. Landscape contractor will also verify that there are no leaks or run-off from landscape areas. Adjust irrigation heads and systems run times as necessary to prevent overwatering of vegetation, overspray or run-off from landscape areas to ensure the health and aesthetic quality of the landscape. Mowing and trimming waste shall be properly removed from the site and herbicides, pesticides and fertillizers shall be properly applied to prevent storm drainage contamination.	Weekly
Owner	BMP Maintenance	The owner and/or his maintenance contractor shall regularly inspect the proposed BMP systems for signs of erosion or sediment and debris buildup and clean/repair as needed (see form 5-1 for a listing of all BMP maintenance items).	As Needed
Owner	Spill Contingency Plan	All hazardous and non-hazardous material spills will be cleaned up and disposed of immediately. The Property Owner shall report all spill incidents to the City of Perris and County Fire Hazmat and shall provide Documentation, Education of Cleanup Procedure, Notify Responsible Agency.	Yearly
Owner	Litter/Debris Control Program	Litter and debris will be collected and deposited in appropriate covered receptacles as part of the regular sweeping/cleaning program. Any accumulated trash or debris onsite will be removed and disposed of properly on a weekly basis.	Weekly or as needed
Owner	Employee Training	The owner will ensure that tenants are also familiar with onsite BMPs and necessary maintenance required by the tenants/employees. Owner will check with City and County at least once a year to obtain new or updated educational materials and provide these materials to tenants/employees. Employees shall be trained to cleanup spills and participate in ongoing maintenance. The WQMP requires annual employee training and new hires within 2 months.	Yearly
Owner	Parking Lot Sweeping	The parking lots will be swept regularly. Private onsite street entrances and parking lots will be thoroughly swept annually before the rainy season and weekly to remove accumulated sediment and debris.	Weekly or as needed

Operation and Maintenance

Responsible Party	BMP	Description of BMP and Method of Implementation	Maintenance Schedule
Owner	Comply with all other applicable NPDES	During the construction phase of this project, the applicant shall file a Notice of Intent for coverage under the GCP and acquire a WDID # to demonstrate compliance with the General Construction Permit. As necessary, future occupants of this site shall apply for coverage under the General Industrial Permit or Region 8, Sector Specific Permit.	N/A
Owner	Storm Drain Signage	All on-site drainage inlets will be stenciled or signage will be provided that indicates "NO DUMPING, DRAINS TO RIVER" or equivalent.	Annually or as needed to maintain legibility
Owner	Trash Storage Area	All trash enclosures on this site shall have a solid roof cover to prevent dumpster contents and enclosure from coming into contact with rainwater. Shall comply with CASQA SD-32.	Weekly
Owner	Efficient Irrigation	The irrigation system will include devices to prevent low head drainage, overspray and run off through the use of pressure regulating devices, check valves, flow sensors, proper spacing, low precipitation emission devices and ET or weather based controllers. Landscaping and irrigation shall be consistent with the State Model Water Efficient Landscape Ordinance and the City of Perris Landscape Development Standards. Plants installed will be arranged according to similar hydro-zones and meet the required water budget for the site. Landscape areas used for water quality swales or infiltration areas shall have proper plants for saturated soils, drought tolerance and erosion control qualities. Shade trees shall be used to intercept rainwater and reduce heat gain on paving.	Weekly or as needed for repair
Owner	Site Design and Landscape Planning	Inspect side slope of basin for erosion. Repair eroded areas. Inspect riprap at basin, replace misplaced/missing rock. Inspect depth of riprap and replace as necessary.	Annually or after storm event
Owner	Infiltration Basin (Private)	Observation of drain time for the design storm after completion to confirm desired drain time has been obtained. Inspect semi-annually at beginning and end of wet season to identify potential problems such as erosion of the basin side slopes, inlet, standing water, trash/debris, and sediment accumulation. Remove accumulated trash/debris at the start and end of the wet season Inspect for standing water at the end of the wet season and by inspecting within 48 hours of significant rain events. Trim vegetation at the beginning and end of the season. Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of the basin. If erosion is occurring within the basin, repair and revegetate immediately and stabilize with an erosion control mulch or mat until vegetation cover is established.	Semi-Annual, before Wet Season (October 1) and midway through the wet season or by Feb 1.

Operation and Maintenance			
Responsible Party	BMP	Description of BMP and Method of Implementation	Maintenance Schedule
		Replace organic compost by surface application, in swale bottoms and tilling it to prevent subsidence.	

			Maintenance Responsibility				Funding Mechanism for Maintenance			Maintenance Costs	
BMP	Used	Not Used	Owner **	City	County	Flood District	Owner	Developer	Public *	1-year ($)	2-year ($)
Hydro seeding & Mulching Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Landscape Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	1000	2000
Landscape Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	250	500
Lawns	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Impervious permanent cover (concrete/ asphalt) Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	1,000	2,000
Impervious permanent cover (concrete/ asphalt) Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	250	500
Pervious permanent cover (gravel)	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Down drains	☒	☐	☒	☐	☐	☐	☒	☐	☐	100	200
Ribbon Gutter Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Ribbon Gutter Public	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Curb & gutter Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	250	500
Curb & gutter Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	250	500
Storm Drain Private	☒	☐	☒	☐	☐	☐	☒	☐	☐	500	1000
Storm Drain Public	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Infiltration Basin	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Education Materials	☒	☐	☒	☐	☐	☐	☒	☐	☐	Free	Free
Vehicle Wash Area	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Catch Basin/Inlet Stenciling	☒	☐	☒	☐	☐	☐	☒	☐	☐	100	200

Appendix 10: Educational Materials

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