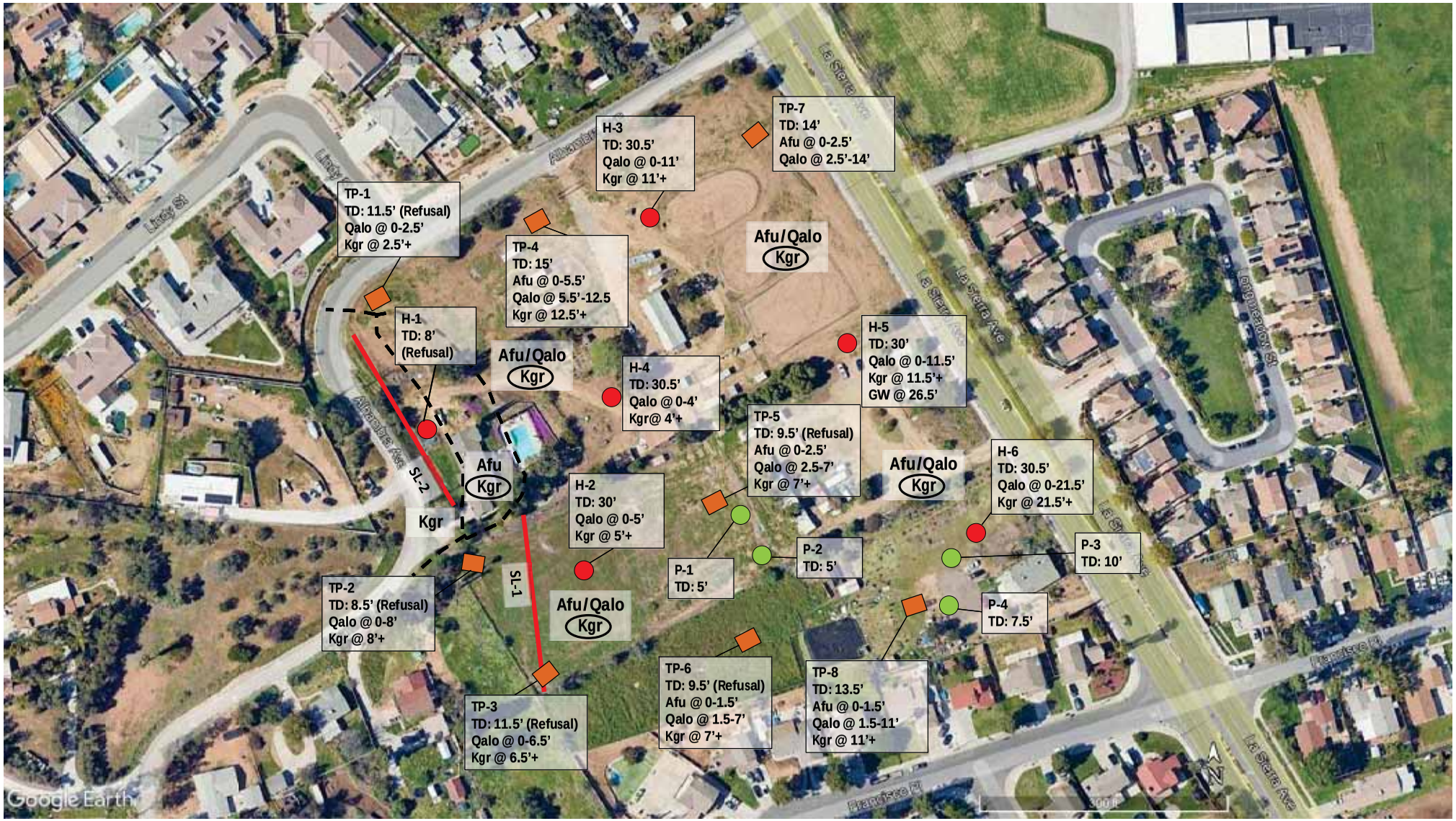


Basemap Source: Google Earth

LEGEND

- **H-6 TD: 30.5' Qalo @ 0-21.5' Kgr @ 21.5'+** — Approximate Location of Hollow Stem Auger Boring, Showing Total Depth, Depth to Earth Units, and Depth to Groundwater (if encountered) in Feet.
- **P-4 TD: 7.5'** — Approximate Location of Hollow Stem Auger Boring and Percolation Test, Showing Total Depth in Feet.
- **TP-8 TD: 13.5 Afu @ 0-1.5' Qalo @ 1.5-11' Kgr @ 11'+** — Approximate Test Pit Location, Showing Total Depth, and Depth to Earth Units in Feet.
- Geologic Contact, Dotted Where Buried
- **SL-2** — Seismic Refraction Line

Earth Units - Circled Where Buried

- **Afu** — Undocumented Artificial Fill
- **Qalo** — Older Alluvium
- **Kgr** — Granitic Bedrock

GEOTECHNICAL MAP

Meritage Homes
Proposed Residential Development
La Sierra Avenue/Alhambra Avenue
Riverside, California

Project Number: 23145-01
Date: December 22, 2023
Plate 1

S A

THIS PAGE INTENTIONALLY LEFT BLANK

F.2 - Water Quality Management Plan

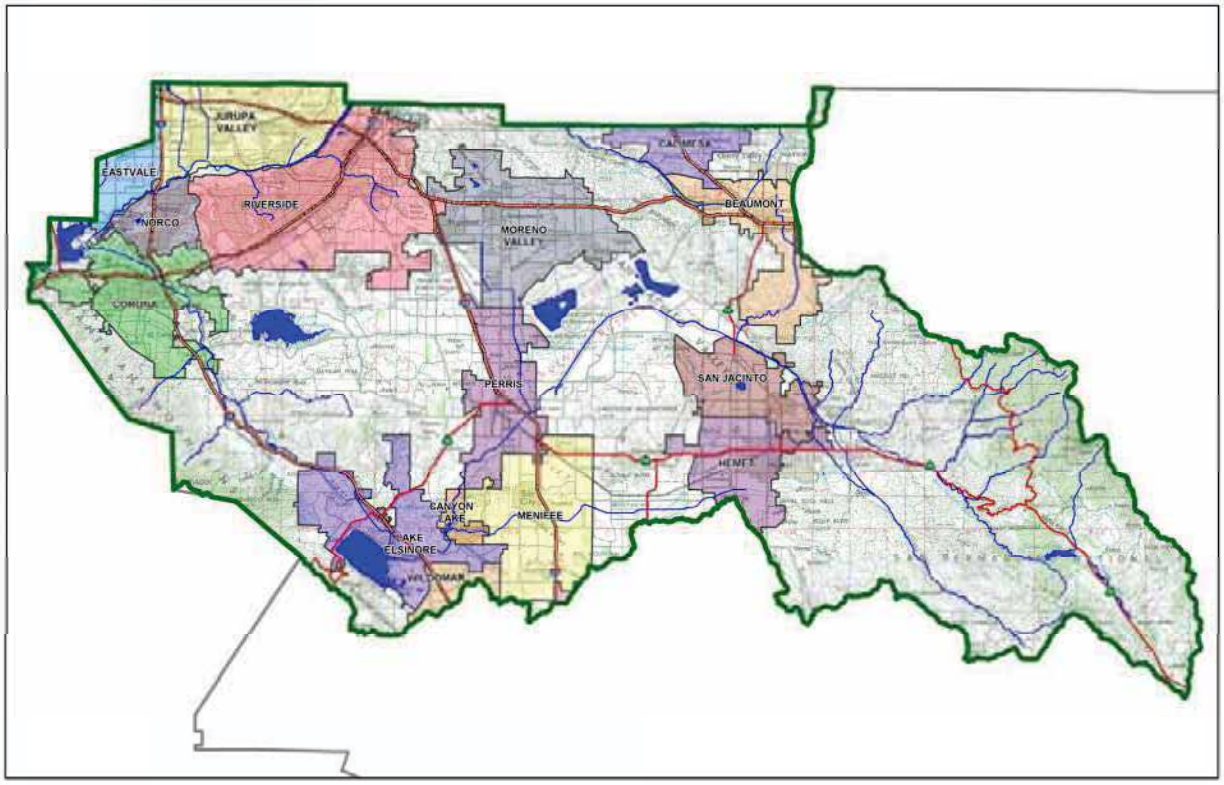
THIS PAGE INTENTIONALLY LEFT BLANK

Project Specific Water Quality Management Plan

Project Title: La Sierra Hills

Development No: GP-2024-13856

Design Review/Case No: PR 2024-001711



☒ **Preliminary**
☐ **Final**

Original Date Prepared: November 2024

Revision Date(s): April 2025

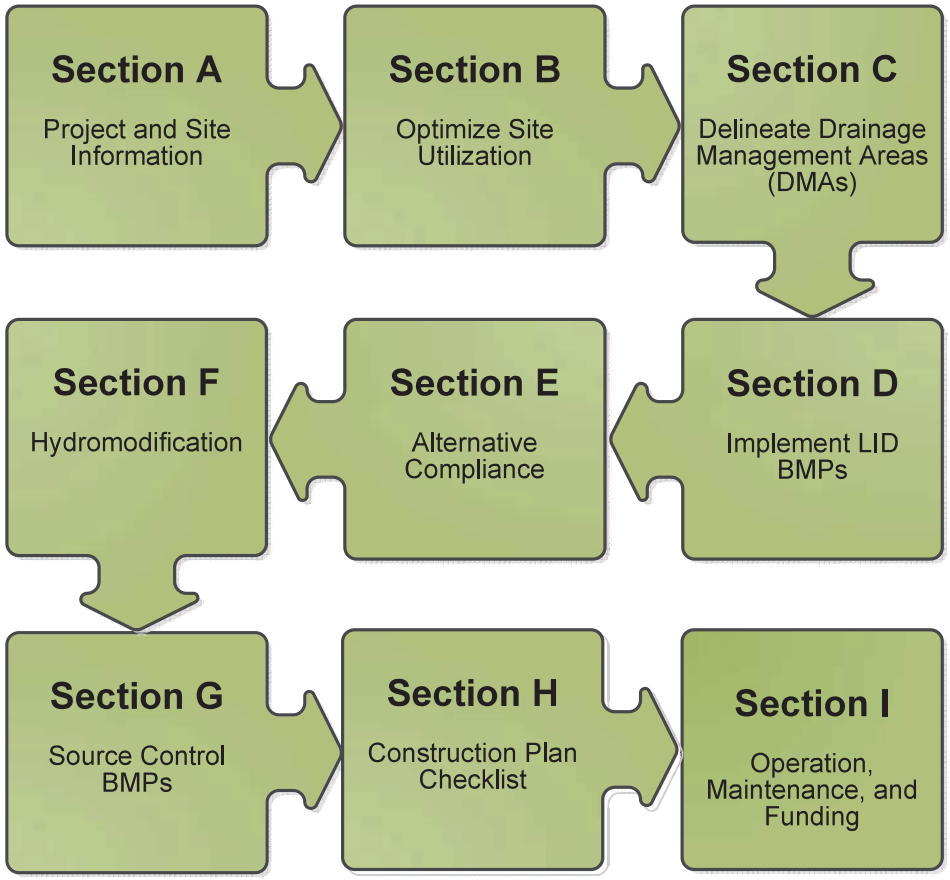
Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

Contact Information:
Prepared for:
Louisa Feletto
Meritage Homes of California, Inc.
5 Peters Canyon Road, Suite #310
Irvine, CA 92606
Telephone: (949) 299-3833
Email: Louisa.Feletto@meritagehomes.com

Prepared by:
Kirk Myers, PE
Kimley-Horn and Associates, Inc.
3801 University Avenue, Suite 300
Riverside, CA 92501
Telephone: (951) 543-9868
Email: Kirk.Myers@kimley-horn.com

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.



Docusign Envelope ID: EA983C18-6C48-4DAE-A8D8-5D6851989B20

OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for **Meritage Homes of California, Inc.** by **Kimley-Horn and Associates** for the **MLC La Sierra** project.

This WQMP is intended to comply with the requirements of City of Riverside for PR 2024-001711 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 the City of Riverside Water Quality Ordinance (Municipal Code Section 14.12.315).

"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."

	4/23/2025
Owner's Signature	Date
Louisa Feletto	Developer
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."

	2/21/25
Preparer's Signature	Date
Kirk Myers	Project Manager
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: C71470

Table of Contents

List of Tables

List of Appendices

Section A: Project and Site Information

The proposed MLC La Sierra Tract 39008 will include the construction of residential development with associated residential landscaping, concrete hardscape, and asphalt paving streets. The proposed development is approximately 9.87 acres and is located at the southeast corner of La Sierra Avenue and Alhambra Avenue in the City of Riverside. BMPs are proposed for storm water quality treatment.

PROJECT INFORMATION	
Type of Project:	**Residential**
Ward Area:	**Ward 7**
Community Name:	**La Sierra Hills**
Development Name:	**Tract 39008**
PROJECT LOCATION	
Latitude & Longitude (DMS): **33.9419°, -117.5013°**	
Project Watershed and Sub-Watershed: **Santa Ana Region Watershed, Santa Ana River Subwatershed**	
Gross Acres: **9.88 acres**	
APN(s): **149-052-004,-009,-011,-012-014**	
Map Book and Page No.: **Book 11 Maps, Page 82**	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	**SFR-Residential**
Proposed or Potential SIC Code(s)	**1521, General Builder Contractor, Single-Family Residential**
Area of Impervious Project Footprint (SF)	**429,940**
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	**223,570**
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 (SF)	**9162**
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	**B**
What is the Water Quality Design Storm Depth for the project?	**0.69**

A.1 Maps and Site Plans

Appendix 1 includes a map of the local vicinity and existing site. In addition, WQMP Site Plan, located in Appendix 1, includes 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

A.2 Identify Receiving Waters

In order of upstream to downstream, the receiving waters that the project site is tributary to are as follows. A map of the receiving waters is included 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
La Sierra 36" Storm Drain (Existing Storm Drain System)	NOT LISTED	NOT LISTED	N/A
Arlington Valley Channel	NOT LISTED	NOT LISTED	N/A
Unnamed Lined Channel Downstream of Arlington Valley Channel	NOT LISTED	NOT LISTED	N/A
Santa Ana River Reach 3	COPPER, LEAD, INDICATOR BACTERIA	AGR, GWR, RARE, REC1, REC2, WARM, WILD	7.2 MILES
Santa Ana River Reach 2	CADMIUM	AGR, GWR, RARE, REC1, REC2, WARM, WILD	9.28 MILES
Tidal Prism of Santa Ana River (Reach 1)	NOT LISTED	BIOL, REC1, WARM, REC2, WILD	21.79 MILES
Pacific Ocean Nearshore Zone	NOT LISTED	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR, SHEL, MUN	33.9 MILES
Pacific Ocean Offshore Zone	NOT LISTED	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR, MUN	34.3 MILES

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

Table A.2 Other Applicable Permits

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

Section B: Optimize Site Utilization (LID Principles)

Site Optimization

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

Yes. The proposed site grading intends to maintain the existing flow pattern by predominantly draining in the southeast direction.

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

Within the vacant portion of the site that will be developed, the existing vegetation will not be protected. The vacant portion of the project site does not have any existing vegetation, other than annual grass. The proposed development will add landscape throughout the site, making the proposed development approximately 48% pervious.

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

Yes, natural infiltration capacity will be maintained to the maximum extent possible. Compaction of soils within proposed landscaped area will be kept to a minimum to preserve natural infiltration capacity.

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

Yes. The site plan was done with the intent of maximizing the pervious area on the site to the maximum extent possible. This was accomplished by using landscape planters throughout the site and perimeter landscaped areas.

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

Yes. Roof drains and site drainage will be routed to adjacent landscaping to the maximum extent possible.

Section C: Delineate Drainage Management Areas (DMAs)

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA A	**Concrete/Asphalt/Landscape Areas**	**339,768**	**Type "D" – Area that drains to BMP**
DMA C-1	**Concrete/Asphalt/Landscape Areas**	**23,526**	**Type "D" – Area that drains to BMP**
DMA C-2	**Concrete/Asphalt/Landscape Areas**	**21,918**	**Type "D" – Area that drains to BMP**
DMA C-3	**Concrete/Asphalt/Landscape Areas**	**21,919**	**Type "D" – Area that drains to BMP**
DMA C-4	**Concrete/Asphalt/Landscape Areas**	**22,806**	**Type "D" – Area that drains to BMP**

[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]

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

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

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

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

DMA Name or ID	BMP Name or ID
DMA A	**Bioretention Basin A**
DMA C-1	**Bioretention Basin (C-1)**
DMA C-2	**Bioretention Basin (C-2)**
DMA C-3	**Bioretention Basin (C-3)**
DMA C-4	**Bioretention Basin (C-4)**

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 (ref: Chapter 2.4.4 of the WQMP Guidance Document)? ☐ Y ☒ N

Geotechnical Report

A Geotechnical Report is required by the City of Riverside to confirm present and past site characteristics that may affect the use of Infiltration BMPs, see Appendix 3.

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 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: All		
…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:		

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.

Harvest and Use BMPs need not be assessed for the site.

Irrigation Use Feasibility

Step 1:

Total Area of Irrigated Landscape: **4.74 acres**

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

Step 2:

Total Area of Impervious Surfaces: **5.13 acres**

Step 3:

Enter your EIATIA factor: **1.32**

Step 4:

Minimum required irrigated area: **5.13 acres x 1.32 = 6.77 acres**

Step 5:

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
6.77 acres	**4.74 acres**

The project proposes to use infiltration BMPs to retain the water quality volume.

Toilet Use Feasibility

Step 1:

Projected Number of Daily Toilet Users: ***58 (58 lots)***

Project Type: ***Residential***

Step 2:

Total Area of Impervious Surfaces: **5.13 acres**

Step 3:

Enter your TUTIA factor: ***116***

Step 4:

Minimum number of toilet users: **116 x 5.13 = 595 toilet users**

Step 5:

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
595 toilet users	58 toilet users

The project proposes to use infiltration BMPs to retain the water quality volume.

Other Non-Potable Use Feasibility

Step 1:

Average Daily Demand: **N/A**

Step 2:

Total Area of Impervious Surfaces: **N/A**

Step 3:

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

Step 4:

Minimum required use: **N/A**

Step 5:

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

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.

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5.

☐ N/A – Infiltration BMPs are proposed.

D.4 Feasibility Assessment Summaries

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA-A	☐	☐	☒	☐	☐
DMA-C1	☐	☐	☒	☐	☐
DMA-C2	☐	☐	☒	☐	☐
DMA-C3	☐	☐	☒	☐	☐
DMA-C4	☐	☐	☒	☐	☐

D.5 LID BMP Sizing

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	*DMA A/Basin South Underground Infiltration Basin*		
	[A]		[B]	[C]	[A] x [C]			
DMA A	*176,679*	*Concrete or Asphalt*	*1*	*0.89*	*157598*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Retention Volume on Plans (cubic feet)*
DMA A	*163,088*	*Ornamental Landscaping*	*0.1*	*0.11*	*18014*			
	339,767				175,612	0.69	10,098	***10,248***

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA C/Basin East Bioretention Basin*		
	[A]		[B]	[C]	[A] x [C]			
DMA C-1	*15630*	*Concrete or Asphalt*	*1*	*0.89*	*13942*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA C-1	*7896*	*Ornamental Landscaping*	*0.1*	*0.11*	*872*			
	23526				14814	0.69	852	***867***

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA C/Basin East Bioretention Basin*		
	[A]		[B]	[C]	[A] x [C]			
DMA C-2	*15630*	*Concrete or Asphalt*	*1*	*0.89*	*13942*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA C-2	*6288*	*Ornamental Landscaping*	*0.1*	*0.11*	*695*			
	21918				14637	0.69	842	***867***

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA C/Basin East Bioretention Basin*		
	[A]		[B]	[C]	[A] x [C]			
DMA C-3	*15630*	*Concrete or Asphalt*	*1*	*0.89*	*13942*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA C-3	*6289*	*Ornamental Landscaping*	*0.1*	*0.11*	*695*			
	21919				14637	0.69	842	***867***

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*DMA C/Basin East Bioretention Basin*		
	[A]		[B]	[C]	[A] x [C]			
DMA C-4	*15630*	*Concrete or Asphalt*	*1*	*0.89*	*13942*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA C-4	*7176*	*Ornamental Landscaping*	*0.1*	*0.11*	*793*			
	22806				14735	0.69	847	***867***

[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.

N/A

E.1 Identify Pollutants of Concern

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

Table E.2 Water Quality Credits

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

[1]Cannot Exceed 50%
[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

Table E.3 Treatment Control BMP Sizing

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

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

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

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

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

The project does not create a Hydrologic Condition of Concern, meeting the criteria for HCOC Exemption as shown below:

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

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 City of Riverside

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

Based upon the HCOC Applicability Map, the project site is located within a HCOC non applicable area in which all downstream waterbodies are considered 'not susceptible stream channels".

F.2 HCOC Mitigation

As an alternative to the HCOC Exemption Criteria above, HCOC criteria is considered mitigated if the project meets one of the following conditions, as indicated:

☐ 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.

☒ d. None of the above.

Section G: Source Control BMPs

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the word "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District.	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" provided in Appendix 10: Educational Materials. 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
Need for future indoor & structural pest control	Incorporate building design features that discourage entry of pests: For Foundations and Slabs: use corrosion resistant, pest-resistant mesh on crawl space vents: foundation vents should be at least 6 inches above finish ground level; pour concrete patios as part of the main slabs to minimize entry of pests via joints; if slab joints are necessary, consider termite barriers; use epoxy sealants, or mesh barriers, or sand barriers for utility breaks. For Siding: use non-wood siding options; use high quality caulks and sealants; siding and stucco should begin at least six inches above soil level. For Lighting: use bird-resistant light fixtures. Use gutters with downspouts; use flap valves or mesh on downspouts to prevent rodents from entering downspouts. Use metal mesh to prevent animal access under sheds, decks, and porches.	Provide Integrated Pest Management information to owners, lessees, and operators. Provided "Pest Prevention by Design" Guidelines in Appendix 10.
Landscape/Outdoor Pesticide Use	Final landscape plans will accomplish all of the following. 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,	Maintain landscaping using minimum or no pesticides. See applicable operational BMPs in "What you should know for...Landscape and Gardening" provided in Appendix 10: Educational Materials. Provide IPM information to new owners, leases, and operators.

	especially adjacent to hardscape. To ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	

Note: No outdoor material storage or outdoor vehicle/equipment maintenance shall take place for proposed project.

Section H: Construction Plan Checklist

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Plan Sheet Number(s)	Latitude / Longitude
DMA A	Bioretention Basin	5; WQMP EXHIBIT	33.94175, -117.50002
DMA C-1	Bioretention Basin	5; WQMP EXHIBIT	33.94311, -117.50101
DMA C-2	Bioretention Basin	5; WQMP EXHIBIT	33.94311, -117.50101
DMA C-3	Bioretention Basin	5; WQMP EXHIBIT	33.94311, -117.50101
DMA C-4	Bioretention Basin	5; WQMP EXHIBIT	33.94311, -117.50101

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.

Maintenance Mechanism: **Meritage Homes of California, Inc. during construction and sales period. Once construction is completed and all homes have been sold, responsibility for O&M will be transferred to the Home Owner's Association.**

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

☒ Y ☐ N

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

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

LOCATION MAP

MLC LA SIERRA

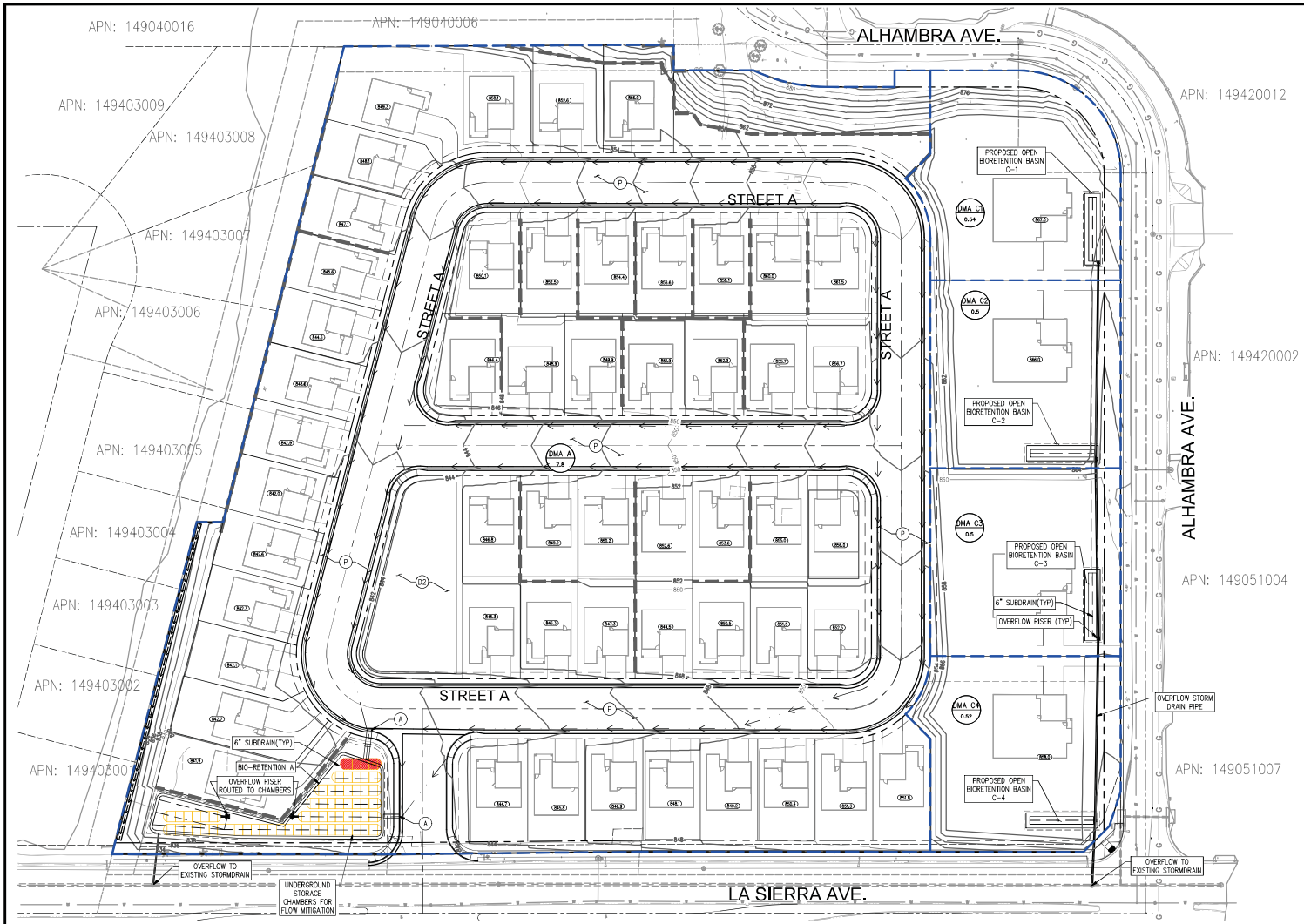
NOT TO SCALE

N

CITY OF RIVERSIDE

WQMP EXHIBIT

LA SIERRA



VICINITY MAP

LEGEND

- (XXX) — EXISTING CONTOUR
- XXX — PROPOSED CONTOUR
- PROPERTY LINE
- DMA BOUNDARY
- XX / XX — DRAINAGE MANAGEMENT AREA NAME / AREA (IN ACRES)
- ROAD CENTERLINE
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- FLOW DIRECTION

STRUCTURAL SOURCE CONTROL BMP NOTES

(A) STORM DRAIN PARKWAY DRAIN – MARK ALL INLETS WITH WORDS "ONLY RAIN DOWN THE STORM DRAIN" OR SIMILAR.

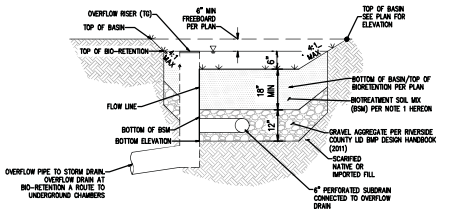
(D2) LANDSCAPE DESIGN TO MINIMIZE THE USE OF FERTILIZERS AND PESTICIDES: LANDSCAPE PALATE TO CONSIST OF PLANTS APPROPRIATE FOR SITE SOILS, SLOPES, CLIMATE, SUN, WIND, RAIN, AND LAND USE.

(G) REFUSE AREAS WHERE SITE REFUSE AND RECYCLED MATERIALS WILL BE HANDLED AND STORED FOR PICKUP.

(P) PLAZAS SIDEWALKS AND PARKING LOTS TO BE SWEPT CLEAN REGULARLY TO PREVENT THE ACCUMULATION OF LITTER AND DEBRIS.

NOTE: SOURCE CONTROL BMPS MAY ALSO INCLUDE BUT ARE NOT LIMITED TO:

- D1. NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL
- N. FIRE SPRINKLER TEST WATER



BIORETENTION NOTES

1. BIOTREATMENT SOIL MEDIA (BSM) SHALL:*
   - 1.1. PLANTING SOIL DRAIN DOWN TIME = 72 HRS
   - 1.2. CONSIST OF THE FOLLOWING MIXTURE OF FINE SAND AND COMPOST, MEASURED ON A VOLUME BASIS:
     - 60%-70% – SAND
     - 10%-20% – CLEAN TOPSOIL
     - 10%-20% – COMPOST
   - 1.3. DEPTH OF BIO RETENTION SOIL MIX ON LOTS 53-56 IS 18" AND IS 33" ON LOT 59.

*REFERENCE THE RIVERSIDE COUNTY LID BMP DESIGN HANDBOOK (2011)

TYPICAL BIO-RETENTION DETAIL

N.T.S.

DMA	SURFACE TYPE	TOTAL AREA (SF)	PERVIOUS AREA (SF)	IMPERVIOUS AREA (SF)	% PERVIOUS	% IMPERVIOUS	EFFECTIVE IMPERVIOUS FRACTION	DMA RUNOFF FACTOR	DCV (CF)	RETENTION VOLUME PROVIDED (CF)	BMP TYPE
A	CONCRETE OR ASPHALT	339,768	0	176,679	0%	100%	1	0.89	10,098	10,248	OPEN BIORETENTION BASIN
	ORNAMENTAL LANDSCAPING		163,088	0	100%	0%	0.1	0.11			
C-1	CONCRETE OR ASPHALT	23,526	0	15,630	0%	100%	1	0.89	852	867	OPEN BIORETENTION BASIN
	ORNAMENTAL LANDSCAPING		7,896	0	100%	0%	0.1	0.11			
C-2	CONCRETE OR ASPHALT	21918	0	15630	0%	100%	1	0.89	842	867	OPEN BIORETENTION BASIN
	ORNAMENTAL LANDSCAPING		6,288	0	100%	0%	0.1	0.11			
C-3	CONCRETE OR ASPHALT	21919	0	15630	0%	100%	1	0.89	842	867	OPEN BIORETENTION BASIN
	ORNAMENTAL LANDSCAPING		6,289	0	100%	0%	0.1	0.11			
C-4	CONCRETE OR ASPHALT	22806	0	15630	0%	100%	1	0.89	847	867	OPEN BIORETENTION BASIN
	ORNAMENTAL LANDSCAPING		7,176	0	100%	0%	0.1	0.11			

GRAPHIC SCALE IN FEET

0 20 40 80

REGISTERED PROFESSIONAL ENGINEER — ALEXANDRIA P. MEYERS — No. 21470 — CIVIL — STATE OF CALIFORNIA — PRELIMINARY

REVISIONS | DATE | BY

SCALE: AS SHOWN
DATE: 04/2025
DESIGNED: JS
CHECKED: KM
PLN CK REF:
F.B.

Kimley»Horn
3801 UNIVERSITY AVE, SUITE 300, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

TENTATIVE TRACT MAP 39008

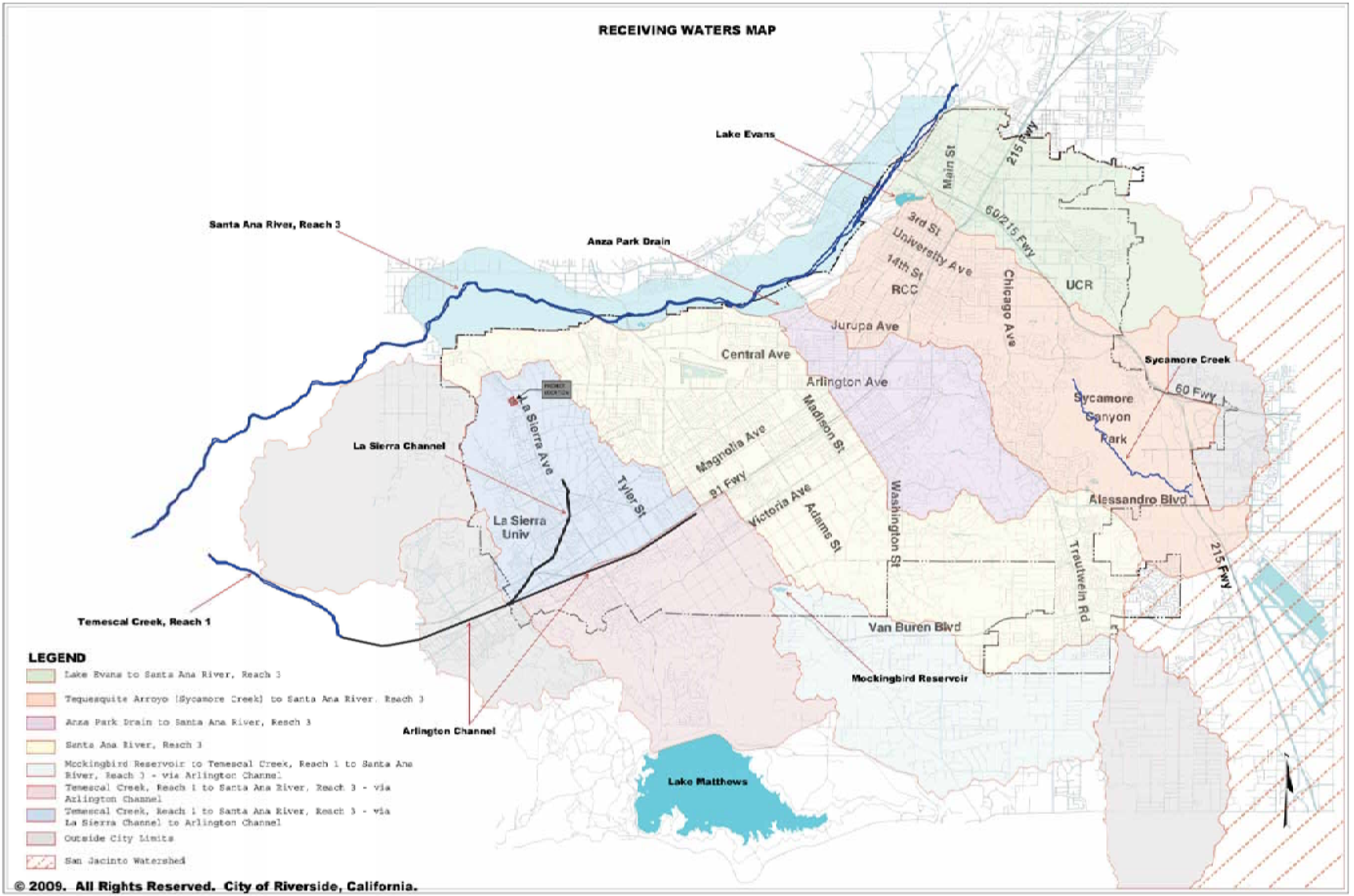
WQMP EXHIBIT

LA SIERRA AVE. & ALHAMBRA AVE.

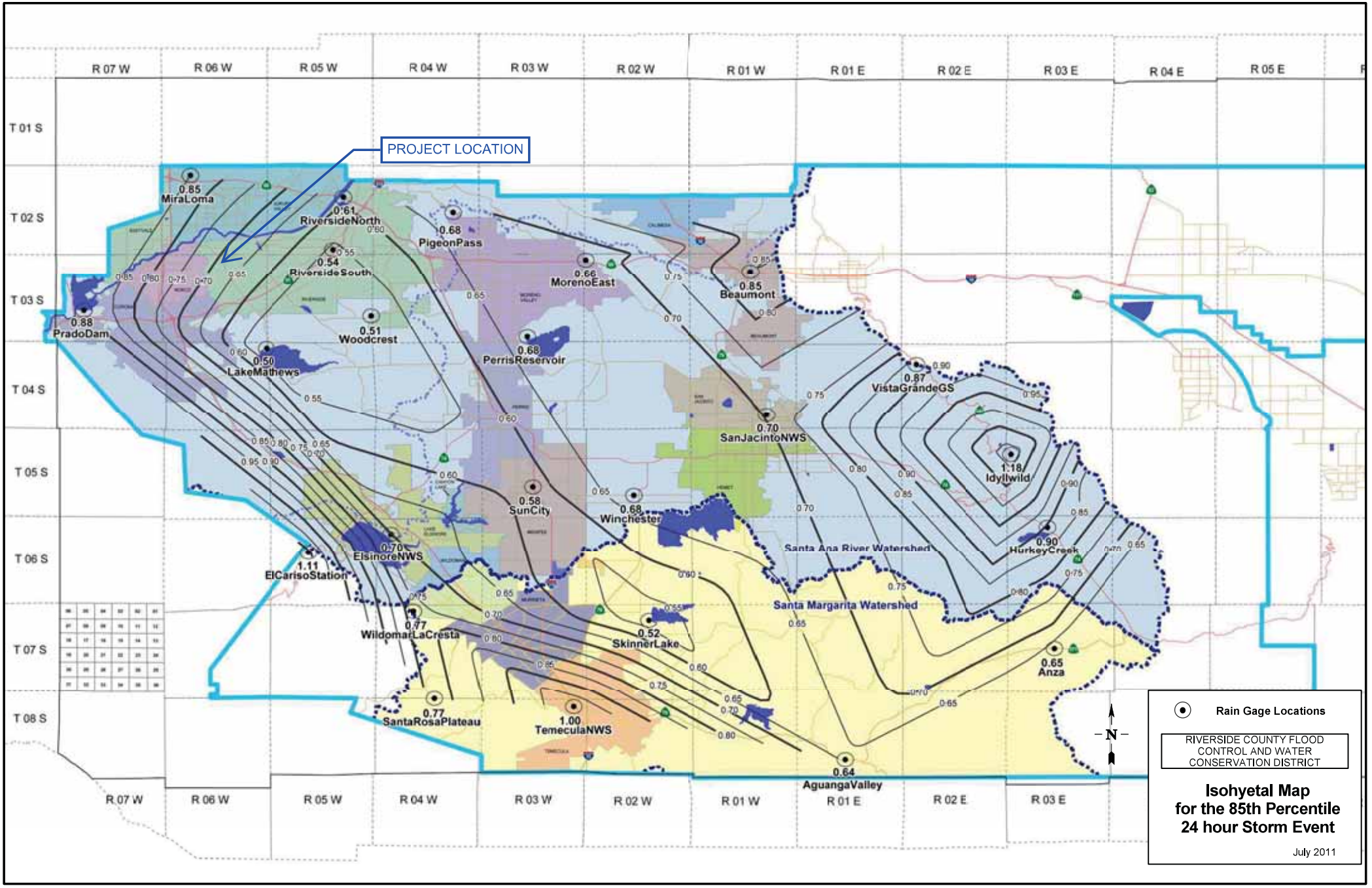
PROJ. # 195261018
SHEET 1 OF SHEETS
DWG. NO. 195261018

K:\RIV_LDEV\195261018 – MLC RIVERSIDE\REPORTS\DRAINAGE (LID + HHV)\T- CAD\WQMP EXHIBIT.DWG 4/23/2025 9:02:24 AM

RECEIVING WATERS MAP



© 2009. All Rights Reserved. City of Riverside, California.


PROJECT LOCATION
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
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

Appendix 2: Construction Plans

Grading and Drainage Plans

CITY OF RIVERSIDE

TENTATIVE TRACT MAP 39008

LA SIERRA

OWNER

ENTRUST ADMINISTRATION INC. FBO JOHN P. BURNARD IRA# 10639-SC AS TO AN UNDIVIDED 35.5% OWNER AND ENTRUST ADMINISTRATION INC FBO JOHN P. BURNARD IRA# 10640-SC AS TO AN UNDIVIDED 14.5% OWNER AND ENTRUST ADMINISTRATION INC FBO KATHLEEN BURNARD IRA #10641-SC AS TO AN UNDIVIDED 42.5% OWNER AND ENTRUST ADMINISTRATION INC FBO KATHLEEN BURNARD IRA# 10642-SC AS TO AN UNDIVIDED 7.5% OWNER, AS TO PARCELS 1 AND 2;

CHERYL C. KERSEY, AS TRUSTEE OF THE CHERYL KERSEY TRUST, DATED 3/17/10, AS TO AN UNDIVIDED ONE-HALF INTEREST AND JOHN P. AND KATHLEEN M. BURNARD, TRUSTEES OF THE BURNARD FAMILY TRUST DATED JUNE 29, 2004 AND THEIR SUCCESSOR TRUSTEES, AS TO AN UNDIVIDED ONE-HALF INTEREST, AS TO PARCELS 3 AND 4; AND

JOHN P. BURNARD AND KATHLEEN M. BURNARD, TRUSTEES OF THE BURNARD FAMILY TRUST DATED 6/29/04, AS TO PARCEL 5

C/O MLC HOLDINGS

DEVELOPER

MLC HOLDINGS, INC.
5 PETERS CANYON ROAD, SUITE 310
IRVINE CALIFORNIA 92606
ATTN: LOUISA FELETTO
PHONE: (949) 299-3833

ENGINEER

KIMLEY-HORN & ASSOCIATES, INC.
3801 UNIVERSITY AVE, SUITE 300
RIVERSIDE, CA 92501
ATTN: KIRK MYERS, PE, PLS
RCE 71470
PHONE: (951) 335-8278
EMAIL: KIRK.MYERS@KIMLEY-HORN.COM

SOILS ENGINEER

SA GEOTECHNICAL
1000 NORTH COAST HIGHWAY, SUITE 10
LAGUNA BEACH, CA 925651
ATTN: ANTHONY ZEPEDA, CEG
PHONE: (949) 403-7229

BENCHMARK

CITY OF RIVERSIDE BENCHMARK NO. G3-Y3, BEING A PK NAIL AND CITY ENGINEER TAG SET IN THE BASE OF A CONCRETE LIGHT POLE ALONG THE EASTERLY CURB OF LA SIERRA AVENUE APPROXIMATELY 200 FEET SOUTHERLY OF ARLINGTON AVENUE.
ELEVATION: 862.346' (NAVD 88, ADJUSTED BY THE CITY OF RIVERSIDE 2009)

LEGAL DESCRIPTION

ER COMMITMENT FOR TITLE INSURANCE ORDER NO. NCS-1201568-SA1 DATED NOVEMBER 28, 2023, PREPARED BY FIRST AMERICAN TITLE COMPANY, THE SUBJECT PROPERTY IS DESCRIBED AS FOLLOWS:

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

PARCEL 1:

THAT PORTION OF LOT 16 OF GOLDEN TERRACE TRACT, IN THE CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 11, PAGES 82 AND 83 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST NORTHERLY CORNER OF SAID LOT; THENCE SOUTHWESTERLY ON THE NORTHWESTERLY LINE OF SAID LOT, 276.52 FEET; THENCE SOUTHEASTERLY PARALLEL WITH THE EASTERLY LINE OF SAID LOT, 196.94 FEET; THENCE NORTHEASTERLY PARALLEL WITH THE NORTHWESTERLY LINE OF SAID LOT, 276.52 FEET TO THE EASTERLY LINE OF SAID LOT; THENCE NORTHWESTERLY ON THE NORTHEASTERLY LINE OF SAID LOT, 196.94 FEET TO THE POINT OF BEGINNING.

PARCEL 2:

THAT PORTION OF LOT 16 OF GOLDEN TERRACE TRACT AS PER MAP RECORDED IN BOOK 11, PAGES 82 AND 83, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE NORTHWESTERLY LINE OF SAID LOT 16 WHICH BEARS SOUTH 62 DEG 39' 48" WEST 276.52 FEET FROM THE MOST NORTHERLY CORNER OF SAID LOT 16; THENCE SOUTH 31 DEG 41' EAST PARALLEL WITH THE NORTHEASTERLY LINE OF SAID LOT, 196.94 FEET; THENCE SOUTH 62 DEG 39' 48" WEST PARALLEL WITH THE NORTHWESTERLY LINE OF SAID LOT, 354.22 FEET, MORE OR LESS, TO THE SOUTHWESTERLY LINE OF SAID LOT; THENCE NORTHWESTERLY ON SAID SOUTHWESTERLY LINE, 197.02 FEET, MORE OR LESS, TO THE MOST WESTERLY CORNER OF SAID LOT; THENCE ON THE NORTHWESTERLY OF SAID LOT, NORTH 62 DEG 39' 48" EAST, 355.30 FEET TO THE POINT OF BEGINNING.

TOGETHER WITH THAT PORTION OF LEVIER AVENUE VACATED AND ABANDONED BY THAT CERTAIN RESOLUTION RECORDED DECEMBER 2, 1946 IN BOOK 802 PAGE 379, OF OFFICIAL RECORDS, WHICH WOULD PASS BY OPERATION OF LAW.

PARCEL 3:

THAT PORTION OF LOT 16 OF GOLDEN TERRACE, AS SHOWN BY MAP ON FILE IN BOOK 11 PAGES 82 AND 83 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE MOST NORTHERLY CORNER OF SAID LOT 16; THENCE SOUTHEASTERLY ALONG THE NORTHEASTERLY LINE OF SAID LOT, 196.94 FEET TO THE POINT OF BEGINNING, THENCE SOUTHWESTERLY AND PARALLEL WITH THE NORTHWESTERLY LINE OF SAID LOT, 180 FEET, MORE OR LESS, TO THE EASTERLY LINE OF THAT CERTAIN PROPERTY CONVEYED TO ROY TAYLOR, BY DEED FROM FRANCES WAGNER, RECORDED JUNE 15, 1956 AS INSTRUMENT NO. 42021 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA; THENCE SOUTHEASTERLY ALONG THE EASTERLY LINE OF THE AFORESAID TAYLOR PROPERTY TO A POINT ON THE SOUTHEASTERLY LINE OF SAID LOT, SAID POINT BEING THE SOUTHEASTERLY CORNER OF THE AFORESAID TAYLOR PROPERTY; THENCE NORTHEASTERLY 216.4 FEET MORE OR LESS ALONG THE SOUTHEASTERLY LINE OF SAID LOT, TO THE MOST WESTERLY CORNER OF SAID LOT; THENCE NORTHWESTERLY ALONG THE NORTHEASTERLY LINE OF SAID LOT, TO THE POINT OF BEGINNING;

TOGETHER WITH THAT PORTION OF THE NORTHERLY HALF OF LEVIER AVENUE, AS SHOWN BY MAP ON FILE AND REFERRED TO HEREIN, VACATED BY THE ORDER OF THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY, A CERTIFIED COPY OF WHICH WAS RECORDED DECEMBER 3, 1946 AS INSTRUMENT NO. 302, OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, LYING BETWEEN THE EASTERLY LINE OF THE HEREIN DESCRIBED PROPERTY EXTENDED SOUTHERLY AND A LINE DRAWN PARALLEL WITH THE CENTER LINE OF HOLDEN AVENUE AND 285 FEET SOUTHWESTERLY OF THE SOUTHEASTERLY CORNER OF SAID LOT 16, AS MEASURED ON THE SOUTHEASTERLY LINE SAID LOT.

PARCEL 4:

THAT PORTION OF LOT 16 OF GOLDEN TERRACE, AS SHOWN BY MAP ON FILE IN BOOK 11 PAGES 82 AND 83 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF SAID LOT 16; THENCE WESTERLY ALONG THE SOUTHERLY LINE OF SAID LOT 16, A DISTANCE OF 236.40 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING WESTERLY, ALONG THE SOUTHERLY LINE OF SAID LOT 16, A DISTANCE OF 432 FEET TO THE SOUTHWEST CORNER OF SAID LOT 16; THENCE NORTHERLY ALONG THE WESTERLY LINE OF SAID LOT 16, A DISTANCE OF 85.8 FEET TO THE SOUTHWEST CORNER OF PARCEL 1 OF THE LAND CONVEYED TO DONALD LEE VAUGHAN AND CHARLINE LYNELL VAUGHAN, HUSBAND AND WIFE AS JOINT TENANTS, BY DEED RECORDED DECEMBER 9, 1968 AS INSTRUMENT NO. 119650 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA; THENCE EASTERLY ALONG THE SOUTHERLY LINE OF PARCELS 1 AND 2 OF SAID LAND CONVEYED TO DONALD LEE VAUGHAN, ET UX, 464 FEET; THENCE SOUTHERLY IN A DIRECT LINE 174 FEET TO THE TRUE POINT OF BEGINNING;

TOGETHER WITH THAT PORTION OF THE NORTHERLY HALF AND THE EASTERLY HALF OF LEVIER AVENUE, VACATED BY ORDER OF THE BOARD OF SUPERVISORS OF RIVERSIDE COUNTY, CALIFORNIA. A CERTIFIED COPY OF SAID VACATION HAVING BEEN RECORDED DECEMBER 3, 1946 AS INSTRUMENT NO. 302 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, LYING SOUTHERLY OF THE WESTERLY PROLONGATION OF THE NORTHERLY LINE OF THE ABOVE DESCRIBED PROPERTY AND LYING WESTERLY OF THE SOUTHERLY PROLONGATION OF THE EASTERLY LINE OF THE ABOVE DESCRIBED PROPERTY;

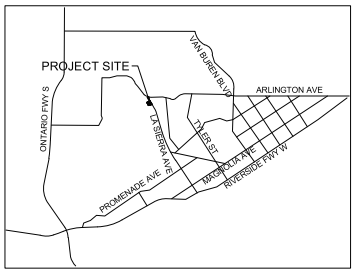
EXCEPTING THEREFROM THAT PORTION OF SAID LEVIER AVENUE, LYING EASTERLY OF A LINE DRAWN PARALLEL WITH THE CENTER LINE OF HOLDEN AVENUE, AND 285 FEET SOUTHWESTERLY OF THE SOUTHEASTERLY CORNER OF SAID LOT 16, AS MEASURED ON THE SOUTHEASTERLY LINE OF SAID LOT 16.

PARCEL 5:

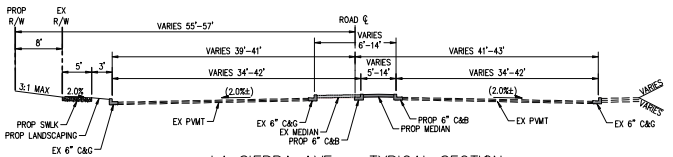
LOT 13 OF GOLDEN TERRACE, IN THE CITY OF RIVERSIDE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 11, PAGES 82 AND 83, OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE CITY OF RIVERSIDE BY DEED RECORDED JULY 9, 1976 AS INSTRUMENT NO. 99743, OF OFFICIAL RECORDS.

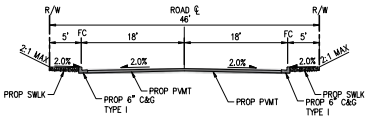
149-052-013
149-052-004
149-052-014
149-052-009
149-52-11
149-52-12



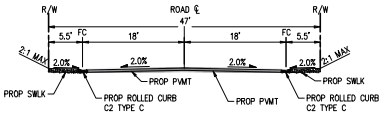
VICINITY MAP
NOT TO SCALE



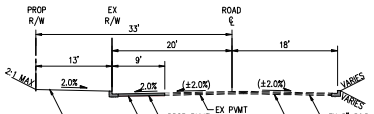
LA SIERRA AVE. – TYPICAL SECTION
N.T.S.



PRIVATE STREETS – TYPICAL SECTION 1
N.T.S.



PRIVATE STREETS – TYPICAL SECTION 2
N.T.S.



ALHAMBRA AVE – TYPICAL SECTION
N.T.S.

EXISTING EASEMENTS

ALL IN-TRACT EASEMENTS OF RECORD ON THE SUBJECT PROPERTY HAVE BEEN VACATED OR OTHERWISE EXPIRED AND THEREFORE ARE NOT SHOWN HEREON.

ZONING

EXISTING: SRR (SEMI RURAL RESIDENTIAL), MDR (MEDIUM DENSITY RESIDENTIAL)

LAND USE

EXISTING LAND USE: SINGLE FAMILY RESIDENTIAL
PROPOSED LAND USE: SINGLE FAMILY RESIDENTIAL

AREA SUMMARY

GROSS AREA:	10.2 AC
EXISTING LOTS:	6 LOTS
PROPOSED RESIDENTIAL LOTS:	56 LOTS
TOTAL RESIDENTIAL LOT AREA:	6.5 AC
OPEN SPACE AREA:	0.9 AC
TOTAL PRIVATE STREETS:	2.2 AC
RIGHT OF WAY DEDICATION:	0.4 AC
NET AREA:	9.8 AC
GROSS DENSITY:	5.5 LOTS/AC
NET DENSITY:	5.7 LOTS/AC

PERIMETER SETBACKS

REAR SETBACK (LA SIERRA):	18'
FRONT SETBACK (ALHAMBRA):	25'
REAR SETBACK (TRACT BOUNDARY)	18'

LOT SETBACKS

FRONT:	10'
GARAGE:	18'
SIDE:	5'
REAR:	15'

UTILITY PROVIDERS

WATER:	RIVERSIDE PUBLIC UTILITIES
SANITARY SEWER:	CITY OF RIVERSIDE (PUBLIC WORKS)
STORM DRAIN:	CITY OF RIVERSIDE
ELECTRICAL:	RIVERSIDE PUBLIC UTILITIES
GAS:	SOUTHERN CALIFORNIA GAS COMPANY
BROADBAND:	SPECTRUM
TELEPHONE:	AT&T

ONSITE WATER WILL BE PUBLIC.

ONSITE SANITARY SEWER WILL BE PUBLIC.

ONSITE STORM DRAIN WILL BE PRIVATELY OWNED AND MAINTAINED.

LOTS 53-56 WATER AND SEWER SERVICE WILL BE FROM ALHAMBRA AVE.

NOTES

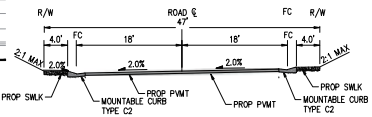
1. ALL EXISTING STRUCTURE ON-SITE ARE PROPOSED TO BE DEMOLISHED.
2. ALL EXISTING TREES ON-SITE ARE PROPOSED TO BE REMOVED. THERE ARE NO EXISTING GROVES OF TREES OR ORCHARDS ON-SITE.
3. THERE ARE NO EXISTING WATER BODIES ON OR ADJACENT TO THE SITE.
4. ALL PROPOSED ON-SITE OPEN SPACE AREAS ARE FOR THE RESIDENTS OF TRACT 39008 AND ARE NOT OFFERED FOR PUBLIC DEDICATION.
5. PER FEMA FLOOD INSURANCE RATE MAP 06065C0684G WITH AN EFFECTIVE DATE OF AUGUST 28, 2008, THE SUBJECT PROPERTY LIES WITHIN "ZONE X", AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

LEGEND

PROJECT BOUNDARY
PROP. RIGHT OF WAY
PROP. LOT LINES
PROP. WATER LINE
PROP. SEWER LINE
PROP. STORM LINE
PROP. FIRE HYDRANT
EXIST. CENTERLINE
EXIST. RIGHT OF WAY
EXIST. PARCEL LINE
EXIST. SEWER LINE
EXIST. WATER LINE
EXIST. GAS LINE
EXIST. STORM LINE
PROP. RETAINING WALL

SHEET INDEX

SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	EXISTING CONDITIONS
3	SITE PLAN
4	TENTATIVE TRACT MAP
5	PRELIMINARY GRADING PLAN
6	PRELIMINARY PARKING AND CIRCULATION PLAN



PRIVATE STREETS ENTRY – TYPICAL SECTION 3
N.T.S.

REGISTERED PROFESSIONAL ENGINEER KIRKPATRICK P. MYERS No. 71470 CIVIL STATE OF CALIFORNIA

REVISIONS	DATE	BY

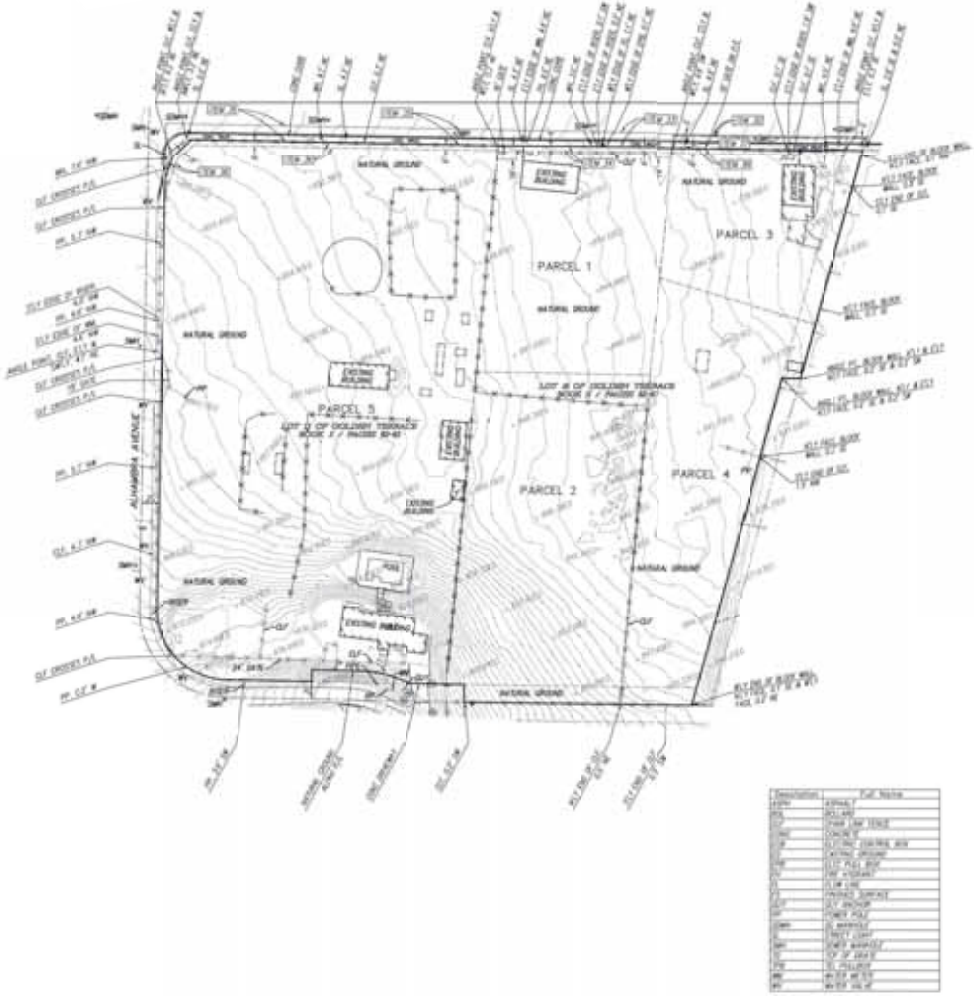
SCALE: AS SHOWN
DATE: 06/2024
DESIGNED: JS
CHECKED: KM
PLN CK REF:
F.B.

Kimley»Horn
3801 UNIVERSITY AVE. SUITE 300, RIVERSIDE, CA 92501
PHONE: (951) 543-8668 WWW.KIMLEY-HORN.COM

TENTATIVE TRACT MAP 39008
COVER SHEET
LA SIERRA AVE. & ALHAMBRA AVE.

PROJ. # 195261018
SHEET 1
OF 6 SHEETS
DWG. NO. 195261018

\\KIMLEY-HORN.COM\CA_DRV2\RIV_LDEV\195261018 - MLC RIVERSIDE\CAD\TENTATIVE MAP\C-TENTATIVE MAP.DWG 3/7/2023 3:54:54 PM



TITLE INFORMATION:

THE FOLLOWING TITLE INFORMATION WAS DERIVED FROM COMMITMENT FOR TITLE INSURANCE ORDER NO. NCS-1251664-SA1 (4/30) AMENDMENT NO. 2 (2021), PREPARED BY: FIRST AMERICAN TITLE COMPANY.

NO REPRESENTATION FOR CONCERN OR ACCURACY OF SAID PRELIMINARY REPORT IS ASSUMED BY THIS MAP, THE SURVEYOR OR CGI.

ITEM # INDICATES PLOTTABLE EASEMENTS LISTED BELOW, SHOWN HEREON AND ON SHEET 1.

1. ANY DEFECT, LIEN, ENCUMBRANCE, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHED, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE ESTATE(S) OR INTEREST(S) TO BE INSURED ARE RECORDED.

2. (A) TAXES OR ASSESSMENTS THAT ARE NOT SHOWN AS EXISTING LIENS BY THE RECORDS OF ANY TAXING AUTHORITY THAT LEVIES TAXES OR ASSESSMENTS ON REAL PROPERTY OR BY THE PUBLIC RECORDS; (B) PROCEEDINGS BY A PUBLIC AGENCY THAT MAY RESULT IN TAXES OR ASSESSMENTS, OR NOTICES OF SUCH PROCEEDINGS, WHETHER OR NOT SHOWN BY THE RECORDS OF SUCH AGENCY OR BY THE PUBLIC RECORDS.

3. ANY FACTS, RIGHTS, INTERESTS, OR CLAIMS THAT ARE NOT SHOWN BY THE PUBLIC RECORDS BUT THAT COULD BE ASCERTAINED BY AN INSPECTION OF THE LAND OR THAT MAY BE ASSERTED BY PERSONS IN POSSESSION OF THE LAND.

4. EASEMENTS, LIENS OR ENCUMBRANCES, OR CLAIMS THEREOF, NOT SHOWN BY THE PUBLIC RECORDS.

5. ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND AND NOT SHOWN BY THE PUBLIC RECORDS.

6. (S) UNENFORCED ARREST CLAIMS, (S) RESERVATIONS OR EXCEPTIONS IN PATENTS OR IN ACTS AUTHORIZING THE ISSUANCE THEREOF; (C) WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT THE MATTERS EXCEPTED UNDER (A), (B), OR (C) ARE SHOWN BY THE PUBLIC RECORDS.

7. ANY CLAIM TO (A) IMPAIRMENT OF OR RIGHTS TO MINERALS AND SIMILAR SUBSTANCES, INCLUDING BUT NOT LIMITED TO: DIRECT, METHOD, LEAK, LIQUID, OIL, GAS, GEOTHERMAL RESOURCES, URANIUM, CLAY, ROCK, SAND AND GRAVEL LOCATED IN, ON, OR UNDER THE LAND, OR PROHIBITED FROM THE LAND, WHETHER SUCH OWNERSHIP OR RIGHTS ARISE BY LEASE, GRANT, EXCEPTION, CONVEYANCE, RESERVATION, OR STATUTORY, AND (B) ANY RIGHTS, PRIVILEGES, IMMUNITIES, RIGHTS OF WAY, AND EASEMENTS ASSOCIATED THEREWITH OR APPURTENANT THERETO, WHETHER OR NOT SUCH INTERESTS OR RIGHTS EXCEPTED IN (A) OR (B) APPEAR IN THE PUBLIC RECORDS OR ARE SHOWN IN SCHEDULE B.

8 - 11. GENERAL AND SPECIAL TAXES AND LEVIES

12. A NOTICE OF ASSESSMENT RECORDED JUNE 10, 1941 AS INSTRUMENT NOS. SETTING VESTED AND FIXED ALL OF OFFICIAL RECORDS, EXECUTED BY BOARD OF SUPERVISORS.

13. A NOTICE OF ASSESSMENT RECORDED JULY 21, 2005 AS INSTRUMENT NO. 2005-0570179 OF OFFICIAL RECORDS, EXECUTED BY CITY CLERK OF THE CITY OF RIVERSIDE.

14. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE.

15. A RIGHT OF WAY RESERVED TO THE RIVERSIDE WATER COMPANY AND ITS ASSIGNS, FOR THE CONSTRUCTION AND MAINTENANCE OF ALL NECESSARY WATER DITCHES, PIPES, FLUMES AND APPURTENANCES FOR THE PURPOSES OF IRRIGATION AND DOMESTIC USE, THE EXACT LOCATION THEREOF NOT BEING DISCLOSED BY THE RECORDS.

16. AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED IN BOOK 1071 OF DEEDS, PAGE 101. (DOES NOT AFFECT SUBJECT PROPERTY AND RECORD DOES NOT DESCRIBE AN EASEMENT.)

17. AN EASEMENT IN FAVOR OF THE RIVERSIDE WATER COMPANY FOR RIGHTS OF WAY AND WATER MAINS, TOGETHER WITH RIGHT OF ENTRY FOR THE PURPOSE OF LAYING, MAINTAINING AND CONSTRUCTING WATER DITCHES, CANALS, PIPELINES, FLUMES AND CONDUITS FOR CONVEYING AND DISTRIBUTING WATER FOR DOMESTIC AND IRRIGATION AND INCIDENTAL PURPOSES, RECORDED AUGUST 15, 1894 IN BOOK 308 OF DEEDS, PAGE 100. (APPROXIMATE TO BE NOT AFFECT SUBJECT PROPERTY, BUT RECORD DOES NOT DEFINE LOCATION OF EASEMENT.)

18. AN EASEMENT IN FAVOR OF ARLINGTON MUTUAL WATER COMPANY, A CORPORATION FOR CONSTRUCTION, MAINTENANCE AND OPERATION, WITHIN OF PIPELINE OR PIPES OR CONDUITS, POLES, WIRES, DITCHES, CANALS AND OTHER MEANS OF CONVEYING ELECTRICITY, POWER AND WATER, PROVIDED SUCH ELECTRICITY SHALL BE USED FOR THE OPERATION OF PUMPING PLANTS EMPLOYED SOLE OF ELECTRICITY AND POWER FOR ALL OTHER PURPOSES AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 12, 1925 IN BOOK 629 OF DEEDS, PAGE 208 (PARTIALLY ILLEGIBLE, NOT PLOTTABLE.)

19. AN EASEMENT IN FAVOR OF SECURITY TRUST AND SAVINGS BANK FOR PIPELINES AND INCIDENTAL PURPOSES, RECORDED MAY 10, 1926 IN BOOK 677 OF DEEDS, PAGE 277. GRANTOR SECURITY TRUST AND SAVINGS BANK) RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED. AFFECTS (T) PORTION OF LOT 12, MB 11/80-81)

20. AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED MARCH 19, 1928 AS BOOK 642, PAGE 300 OF OFFICIAL RECORDS. (UNDO DOCUMENT IS A DEED, BY RECONVEYANCE RECORDED MARCH 20, 1941, COMPANY FOR TITLE REVIEWED (2015 DOCUMENT AS BEING RECORDED MARCH 19, 1928.)

21. AN EASEMENT IN FAVOR OF SECURITY TRUST AND SAVINGS BANK FOR PIPELINES, PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED AUGUST 15, 1928 IN BOOK 682 OF DEEDS, PAGE 266, GRANTOR (SECURITY TRUST AND SAVINGS BANK) RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED, AFFECTS ACUTE PORTION OF LOT 12, MB 11/80-81)

22. CONDITIONS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED SEPTEMBER 24, 1928 IN BOOK 700 OF DEEDS, PAGE 100 (BUT DELETING ANY COVENANT, CONDITION, OR RESTRICTION, IF ANY, INDICATING A PREFERENCE, LIMITATION, OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, GENDER, GENDER IDENTITY, GENDER EXPRESSION, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, VETERAN OR MILITARY STATUS, GENETIC INFORMATION, NATIONAL ORIGIN, SOURCE OF INCOME AS DEFINED IN SUBDIVISION (P) OF SECTION 12955, OR ANCESTRY, TO THE EXTENT THAT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE APPLICABLE STATE OR FEDERAL LAWS, UNLESS RESTRICTIONS UNDER STATE AND FEDERAL LAW ON THE AGE OF OCCUPANTS IN SENIOR HOUSING OR HOUSING FOR OLDER PERSONS SHALL NOT BE CONSTRUED AS RESTRICTIONS BASED ON FAMILIAL STATUS, GRANTOR (SECURITY TRUST AND SAVINGS BANK) RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED, AFFECTS PORTION OF LOT 16, MB 11/80-81)

23. CONDITIONS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED JUNE 10, 1929 AS BOOK 44 PAGE 93, JUNE 18, 1929 IN BOOK 236 PAGE 204 ALL OF OFFICIAL RECORDS, (DO DELETING ANY COVENANT, CONDITION, OR RESTRICTION, IF ANY, INDICATING A PREFERENCE, LIMITATION, OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, GENDER, GENDER IDENTITY, GENDER EXPRESSION, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, VETERAN OR MILITARY STATUS, GENETIC INFORMATION, NATIONAL ORIGIN, SOURCE OF INCOME AS DEFINED IN SUBDIVISION (P) OF SECTION 12955, OR ANCESTRY, TO THE EXTENT THAT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE APPLICABLE STATE OR FEDERAL LAWS, UNLESS RESTRICTIONS UNDER STATE AND FEDERAL LAW ON THE AGE OF OCCUPANTS IN SENIOR HOUSING OR HOUSING FOR OLDER PERSONS SHALL NOT BE CONSTRUED AS RESTRICTIONS BASED ON FAMILIAL STATUS, GRANTOR (SECURITY TRUST AND SAVINGS BANK) RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED, AFFECTS PORTION OF LOT 16, MB 11/80-81)

24. AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED SEPTEMBER 24, 1928 IN BOOK 700 OF DEEDS, PAGE 100. (DOES NOT AFFECT SUBJECT PROPERTY AND RECORD DOES NOT DESCRIBE AN EASEMENT.)

25. AN EASEMENT IN FAVOR OF SECURITY TRUST AND SAVINGS BANK FOR PIPELINES, PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED AUGUST 15, 1928 IN BOOK 682 OF DEEDS, PAGE 266, GRANTOR (SECURITY TRUST AND SAVINGS BANK) RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED, AFFECTS ACUTE PORTION OF LOT 12, MB 11/80-81)

26. CONDITIONS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED SEPTEMBER 24, 1928 IN BOOK 700 OF DEEDS, PAGE 100 (BUT DELETING ANY COVENANT, CONDITION, OR RESTRICTION, IF ANY, INDICATING A PREFERENCE, LIMITATION, OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, GENDER, GENDER IDENTITY, GENDER EXPRESSION, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, VETERAN OR MILITARY STATUS, GENETIC INFORMATION, NATIONAL ORIGIN, SOURCE OF INCOME AS DEFINED IN SUBDIVISION (P) OF SECTION 12955, OR ANCESTRY, TO THE EXTENT THAT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE APPLICABLE STATE OR FEDERAL LAWS, UNLESS RESTRICTIONS UNDER STATE AND FEDERAL LAW ON THE AGE OF OCCUPANTS IN SENIOR HOUSING OR HOUSING FOR OLDER PERSONS SHALL NOT BE CONSTRUED AS RESTRICTIONS BASED ON FAMILIAL STATUS, GRANTOR (SECURITY TRUST AND SAVINGS BANK) RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED, AFFECTS PORTION OF LOT 16, MB 11/80-81)

27. CONDITIONS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED SEPTEMBER 2, 1937 AS BOOK 44 PAGE 93, JUNE 18, 1929 IN BOOK 236 PAGE 204 ALL OF OFFICIAL RECORDS, (DO DELETING ANY COVENANT, CONDITION, OR RESTRICTION, IF ANY, INDICATING A PREFERENCE, LIMITATION, OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, GENDER, GENDER IDENTITY, GENDER EXPRESSION, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, VETERAN OR MILITARY STATUS, GENETIC INFORMATION, NATIONAL ORIGIN, SOURCE OF INCOME AS DEFINED IN SUBDIVISION (P) OF SECTION 12955, OR ANCESTRY, TO THE EXTENT THAT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE APPLICABLE STATE OR FEDERAL LAWS, UNLESS RESTRICTIONS UNDER STATE AND FEDERAL LAW ON THE AGE OF OCCUPANTS IN SENIOR HOUSING OR HOUSING FOR OLDER PERSONS SHALL NOT BE CONSTRUED AS RESTRICTIONS BASED ON FAMILIAL STATUS, GRANTOR (SECURITY TRUST AND SAVINGS BANK) RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED, AFFECTS PORTION OF LOT 16, MB 11/80-81)

28. COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS IN THE DOCUMENT RECORDED JUNE 10, 1929 AS BOOK 236, PAGE 204 OF OFFICIAL RECORDS, WHICH PROVIDE THAT A VIOLATION THEREOF SHALL NOT DEFEAT OR RENDER INVALID THE LIEN OF ANY FIRST MORTGAGE OR DEED OF TRUST MADE IN GOOD FAITH AND FOR VALUE, (BUT DELETING ANY COVENANT, CONDITION, OR RESTRICTION, IF ANY, INDICATING A PREFERENCE, LIMITATION, OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, GENDER, GENDER IDENTITY, GENDER EXPRESSION, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, VETERAN OR MILITARY STATUS, GENETIC INFORMATION, NATIONAL ORIGIN, SOURCE OF INCOME AS DEFINED IN SUBDIVISION (P) OF SECTION 12955, OR ANCESTRY, TO THE EXTENT THAT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE APPLICABLE STATE OR FEDERAL LAWS, UNLESS RESTRICTIONS UNDER STATE AND FEDERAL LAW ON THE AGE OF OCCUPANTS IN SENIOR HOUSING OR HOUSING FOR OLDER PERSONS SHALL NOT BE CONSTRUED AS RESTRICTIONS BASED ON FAMILIAL STATUS, GRANTOR RESERVES EASEMENT FOR PIPELINES, LOCATION NOT DEFINED, AFFECTS PORTION OF LOT 16, MB 11/80-81)

29. EASEMENTS FOR UTILITIES OVER AND ACROSS THE PREMISES FORMERLY INCLUDED WITHIN THE BOUNDARIES OF LOVELY AVENUE NOW VACATED, IF ANY SUCH EXISTS.

30. ANY PRIVATE EASEMENTS OR LESSOR RIGHTS IN, TO, OR OVER LOVELY AVENUE THAT WERE NOT ATTESTED BY THE PROCEEDINGS VACATING SAID LOVELY AVENUE AS THE SAME WAS VACATED BY INSTRUMENT RECORDED DECEMBER 7, 1944 IN BOOK 802 PAGE 378 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, INCLUDING BUT NOT LIMITED TO PRIVATE EASEMENTS OF ACCESS AND CONTACT TO LOTS PURCHASED BY REFERENCE TO THE MAP OF EXCELSIOR TERRACE RECORDED IN BOOK 11 PAGE 12 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA UPON WHICH SAID LOVELY AVENUE IS SHOWN, FROM OR TO SAID LOVELY AVENUE. (RESOLUTION VACATING LOVELY AVE., DOC. 2021, NOT SPECIFY REMAINING PRIVATE EASEMENTS.)

31. COVENANTS FOR UTILITIES OVER AND ACROSS THE PREMISES FORMERLY INCLUDED WITHIN THE BOUNDARIES OF LOVELY AVENUE NOW VACATED, IF ANY SUCH EXISTS.

32. AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY FOR POWER OR SIMILAR LINES, CONDUITS OR UNDERGROUND FACILITIES AND INCIDENTAL PURPOSES, RECORDED MARCH 30, 1931 AS BOOK 1242, PAGE 398 OF OFFICIAL RECORDS. (DOC 1932 DOCUMENT LIES WITHIN CURRENT LA SIERRA AVENUE. PLOTTED HEREON)

33. AN EASEMENT IN FAVOR OF THE CITY OF RIVERSIDE FOR PUBLIC STREET AND HIGHWAY PURPOSES, TOGETHER WITH ALL RIGHTS TO CONSTRUCT AND MAINTAIN COLUMNS, SIGNALS, GRADES AND OTHER IMPROVEMENTS INCIDENTAL THERETO WITH THE USE AS A PUBLIC STREET AND HIGHWAYS AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED MAY 14, 1936 AS INSTRUMENT NO. 1965 (DEED OF OFFICIAL RECORDS. PLOTTED HEREON)

34. AN EASEMENT IN FAVOR OF THE CITY OF RIVERSIDE FOR ALL PURPOSES PROPER AND CONVENIENT IN THE CONSTRUCTION AND RECONSTRUCTION OF PUBLIC IMPROVEMENTS, INCLUDING THE RIGHTS OF INGRESS AND EGRESS TO AND FROM SAID EASEMENT BY TOOLS, EQUIPMENT, MACHINERY, VEHICLES, MATERIALS AND SUPPLIES USED IN THE PERFORMANCE OF SAID WORK, AND FOR SIMILAR AND RELATED PURPOSES AND INCIDENTAL PURPOSES IN THE DOCUMENT RECORDED MAY 19, 1936 AS INSTRUMENT NO. 1965 (DEED OF OFFICIAL RECORDS. (TEMPORARY CONSTRUCTION EASEMENT, EXPIRED JUNE 30, 2006. PLOTTED VERSION)

35. AN EASEMENT IN FAVOR OF THE CITY OF RIVERSIDE FOR RIGHT OF WAY FOR PUBLIC STREET AND HIGHWAY PURPOSES, TOGETHER WITH ALL RIGHTS TO CONSTRUCT AND MAINTAIN UTILITIES, SIGNALS, GRADES AND INCIDENTAL PURPOSES, RECORDED DECEMBER 12, 1944 AS INSTRUMENT NO. 1966 (DEED OF OFFICIAL RECORDS. PLOTTED HEREON)

36. AN EASEMENT IN FAVOR OF THE CITY OF RIVERSIDE FOR RIGHT OF WAY FOR THE CONSTRUCTION AND INSTALLATION OF PUBLIC IMPROVEMENTS AND INCIDENTAL PURPOSES, RECORDED DECEMBER 12, 1944 AS INSTRUMENT NO. 1966 (DEED OF OFFICIAL RECORDS. (TEMPORARY CONSTRUCTION EASEMENT, EXPIRED DECEMBER 31, 2006. PLOTTED VERSION)

37. AN EASEMENT IN FAVOR OF THE CITY OF RIVERSIDE FOR RIGHT-OF-WAY FOR PUBLIC STREET, HIGHWAY, TOGETHER WITH ALL RIGHTS TO CONSTRUCT, MAINTAIN UTILITIES, SIGNALS, GRADES, AND OTHER IMPROVEMENTS CONSISTENT WITH THE USE AS A PUBLIC STREET, HIGHWAY AND INCIDENTAL PURPOSES, RECORDED MAY 15, 2003 AS INSTRUMENT NO. 2003-0170538 OF OFFICIAL RECORDS. (PLOTTED VERSION)

38. AN EASEMENT IN FAVOR OF THE CITY OF RIVERSIDE FOR RIGHTS-OF-WAY FOR THE CONSTRUCTION, INSTALLATION OF PUBLIC IMPROVEMENTS, TOGETHER WITH ALL NECESSARY APPURTENANCES AND INCIDENTAL PURPOSES, RECORDED MAY 15, 2003 AS INSTRUMENT NO. 2003-0170539 OF OFFICIAL RECORDS. (TEMPORARY CONSTRUCTION EASEMENT, EXPIRES MAY OF 2006. PLOTTED VERSION)

39. THE FACT THAT THE LAND LIES WITHIN THE BOUNDARIES OF THE LA SIERRA/ALHAMBRA REDEVELOPMENT PROJECT AREA, AS DISCLOSED BY THE DOCUMENT RECORDED JULY 29, 2004 AS INSTRUMENT NO. 2004-0588604 OF OFFICIAL RECORDS.

40. ANY LIEN, ASSESSMENT, AND /OR VIOLATION OR ENFORCEMENT OF ANY LIEN, ENCUMBRANCE, PERMIT OR GOVERNMENTAL REGULATION ARISING FROM THE DOCUMENT ENTITLED NOTICE OF PENDENCY OF ADMINISTRATIVE PROCEEDINGS RECORDED DECEMBER 12, 2006 AS INSTRUMENT NO. 2006-0844778 OF OFFICIAL RECORDS.

41. A DEED OF TRUST DATED FEBRUARY 3, 2010, RECORDED FEBRUARY 16, 2010 AS INSTRUMENT NO. 2010-0070381 OF OFFICIAL RECORDS.

42. A DEED OF TRUST DATED APRIL 20, 2023, RECORDED MAY 01, 2023 AS INSTRUMENT NO. 2023-0125529 OF OFFICIAL RECORDS.

43. WATER RIGHTS, CLAIMS OF TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

44. ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH WOULD BE DISCLOSED BY A CORRECT ALTA/NSPS SURVEY.

45. WE FIND NO OUTSTANDING SUBORDINATE LIENS OF RECORD AFFECTING SUBJECT PROPERTY. WE MUST/MAY SHOULD BE MADE CONCERNING THE EXISTENCE OF ANY UNRECORDED LIEN OR OTHER INDEBTEDNESS WHICH COULD GIVE RISE TO ANY EQUITY INTEREST IN THE SUBJECT PROPERTY.

46. RIGHTS OF PARTIES IN POSSESSION.

NOTES:

SEE SHEET 1 FOR BOUNDARY ESTABLISHMENT DETAILS, LEGAL DESCRIPTION, BENCHMARK INFO, AND BASIS OF BEARINGS INFO.

DESCRIPTION	SYMBOL
ASPHALT	
BOLLARD	
CURB	
CURB AND GUTTER	
CONCRETE	
ELECTRIC CONTROL BOX	
FINISH GROUND	
GAS VALVE	
GAS METER	
GUARD RAIL	
LANDSCAPE	
LIGHT	
MANHOLE	
POST	
SIGN	
SPRINKLER	
TELEPHONE	
TREE	
WATER METER	
WATER VALVE	

FOR REFERENCE ONLY

CGI

PREPARED FOR: MERITAGE HOMES

ALTA/NSPS LAND TITLE SURVEY
LA SIERRA AVENUE & ALHAMBRA AVENUE
RIVERSIDE, CA

NO.	DATE	DESCRIPTION OF REVISION

ALTA SHEET 2 OF 2
JOB NO. 23631

REGISTERED PROFESSIONAL ENGINEER — No. 24470 — CIVIL — STATE OF CALIFORNIA

REVISIONS	DATE	BY

SCALE: AS SHOWN
DATE: 06/2024
DESIGNED: JS
CHECKED: KM
PLN CK REF:
F.B.

Kimley»Horn
3801 UNIVERSITY AVE, SUITE 300, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

TENTATIVE TRACT MAP 39008
COVER SHEET
LA SIERRA AVE. & ALHAMBRA AVE.

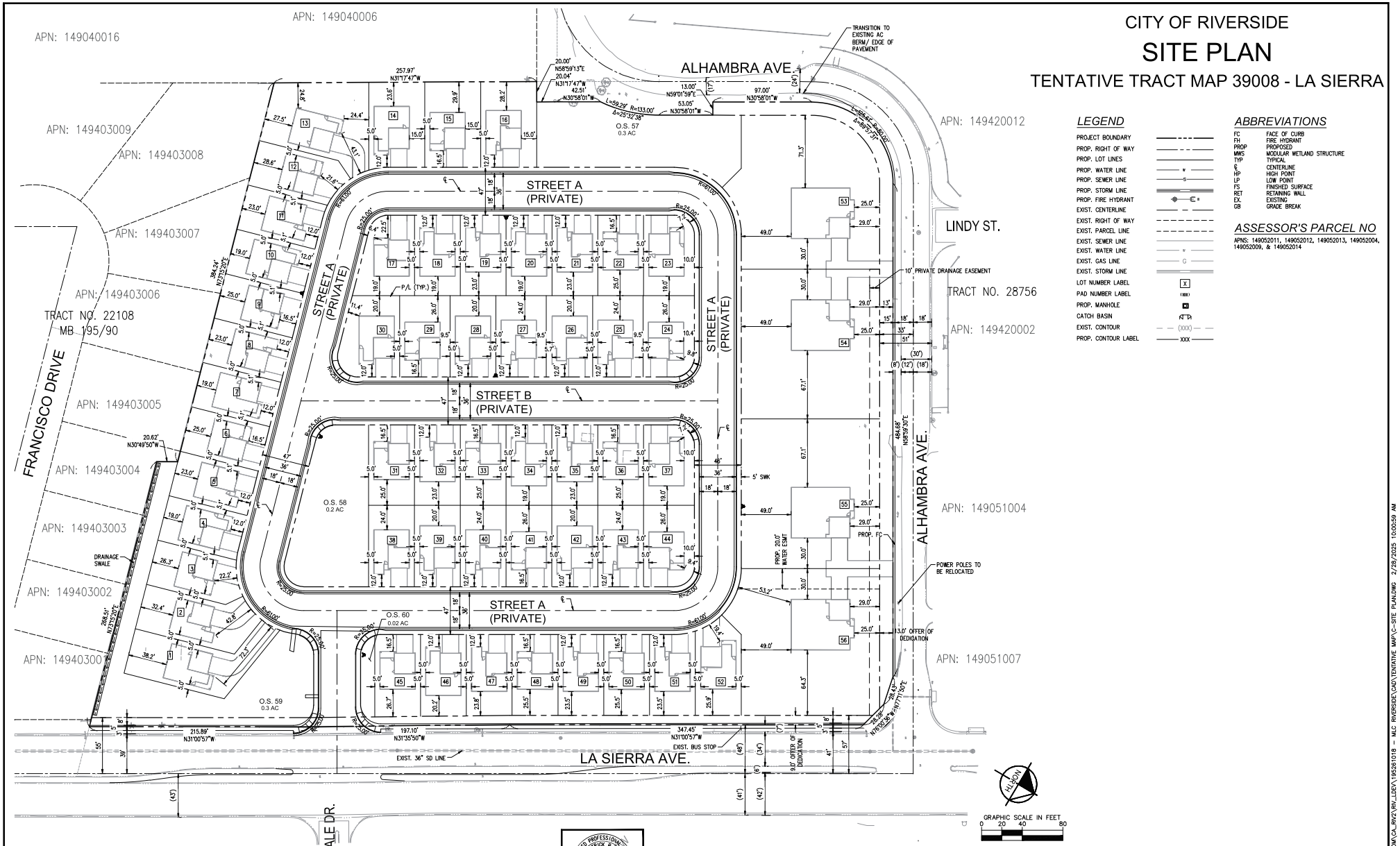
PROJ. # 195261018
SHEET 2 OF 6 SHEETS
DWG. NO. 195261018

\\KIMLEY-HORN.COM\CA_RWZ\RW_LDEV\195261018 - MLC RIVERSIDE\CAD\TENTATIVE MAP\C-TENTATIVE MAP.DWG 3/3/2023 3:04:54 PM

CITY OF RIVERSIDE

SITE PLAN

TENTATIVE TRACT MAP 39008 - LA SIERRA



LEGEND

- PROJECT BOUNDARY
- PROP. RIGHT OF WAY
- PROP. LOT LINES
- PROP. WATER LINE
- PROP. SEWER LINE
- PROP. STORM LINE
- PROP. FIRE HYDRANT
- EXIST. CENTERLINE
- EXIST. RIGHT OF WAY
- EXIST. PARCEL LINE
- EXIST. SEWER LINE
- EXIST. WATER LINE
- EXIST. GAS LINE
- EXIST. STORM LINE
- LOT NUMBER LABEL
- PAD NUMBER LABEL
- PROP. MANHOLE
- CATCH BASIN
- EXIST. CONTOUR
- PROP. CONTOUR LABEL

ABBREVIATIONS

FC	FACE OF CURB
FH	FIRE HYDRANT
PROP	PROPOSED
MWS	MODULAR WETLAND STRUCTURE
TYP	TYPICAL
℄	CENTERLINE
HP	HIGH POINT
LP	LOW POINT
FS	FINISHED SURFACE
RET	RETAINING WALL
EX.	EXISTING
GB	GRADE BREAK

ASSESSOR'S PARCEL NO

APNS: 149052011, 149052012, 149052013, 149052004, 149052009, & 149052014

REGISTERED PROFESSIONAL ENGINEER — KENNETH R. WEEKS — No. 71470 — CIVIL — STATE OF CALIFORNIA

REVISIONS	DATE	BY

SCALE: AS SHOWN
DATE: 06/2024
DESIGNED: JS
CHECKED: KM
PLN CK REF:
F.B.

Kimley»Horn
3801 UNIVERSITY AVE, SUITE 300, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

TENTATIVE TRACT MAP 39008
SITE PLAN
LA SIERRA AVE. & ALHAMBRA AVE.

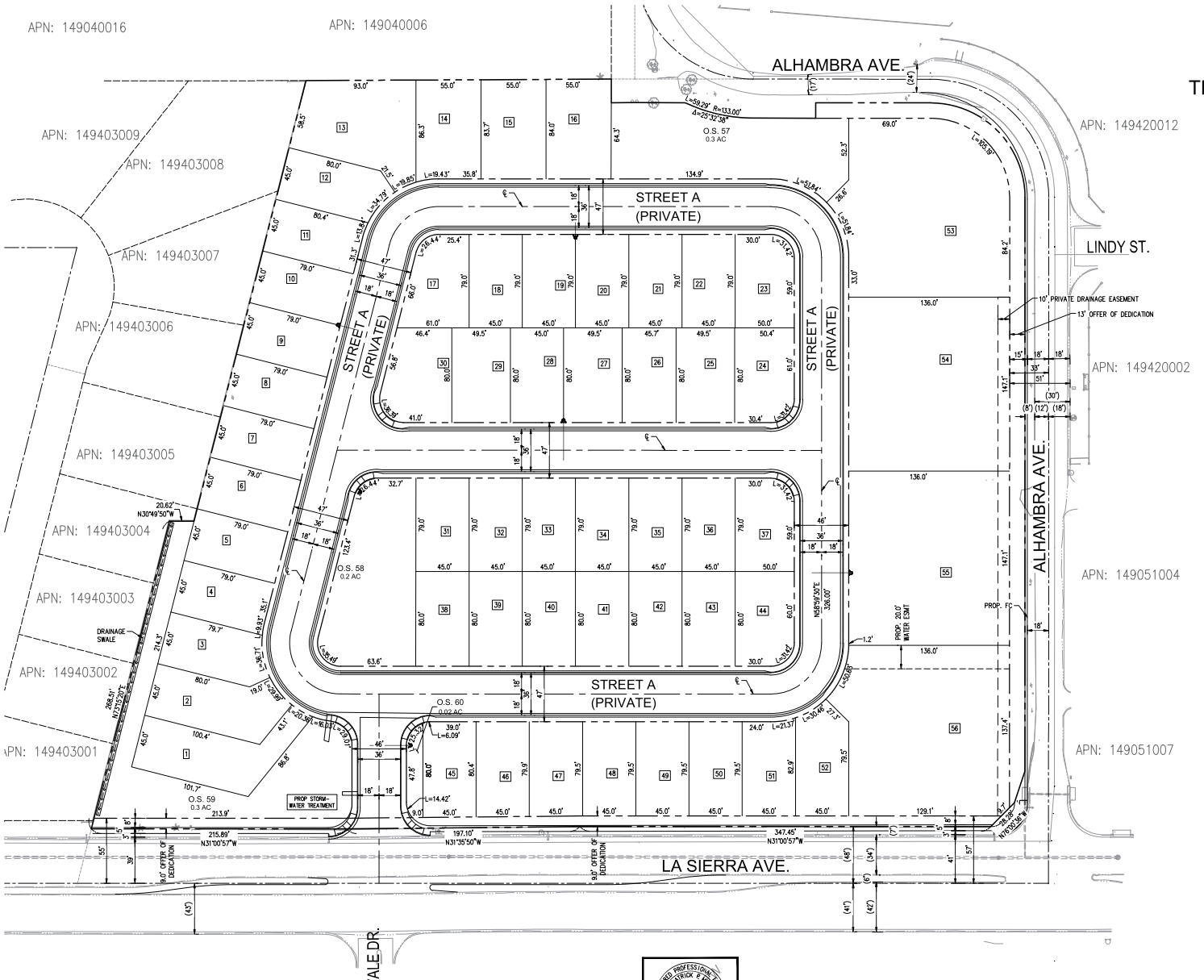
PROJ. # 195261018
SHEET 3 OF 6 SHEETS
DWG. NO. 195261018

\\KIMLEY-HORN.COM\CA_RV2\RV_LDEV\195261018 - MLC RIVERSIDE\CAD\TENTATIVE MAP\C-SITE PLAN.DWG 2/28/2025 10:00:59 AM

CITY OF RIVERSIDE

TENTATIVE TRACT MAP

TENTATIVE TRACT MAP 39008 - LA SIERRA



LEGEND

- PROJECT BOUNDARY
- PROP. RIGHT OF WAY
- PROP. LOT LINES
- PROP. WATER LINE
- PROP. SEWER LINE
- PROP. STORM LINE
- PROP. FIRE HYDRANT
- EXIST. CENTERLINE
- EXIST. RIGHT OF WAY
- EXIST. PARCEL LINE
- EXIST. SEWER LINE
- EXIST. WATER LINE
- EXIST. GAS LINE
- EXIST. STORM LINE

PARCEL AREA TABLE	
LOT #	AREA (SF)
1	5837
2	5108
3	3867
4	3558
5	3555
6	3555
7	3555
8	3555
9	3555
10	3555
11	3562
12	3915
13	7397
14	4616
15	4614
16	4629
17	3981
18	3555
19	3555
20	3555

PARCEL AREA TABLE	
LOT #	AREA (SF)
21	3555
22	3555
23	3864
24	3950
25	3960
26	3653
27	3960
28	3600
29	3960
30	4374
31	3555
32	3555
33	3555
34	3555
35	3555
36	3555
37	3864
38	3600
39	3600
40	3600

PARCEL AREA TABLE	
LOT #	AREA (SF)
41	3600
42	3600
43	3600
44	3914
45	3627
46	3608
47	3587
48	3578
49	3578
50	3577
51	3601
52	4020
53	20053
54	20006
55	20006
56	20064
57(OS)	11856
58(OS)	10700
59(OS)	13966
60(OS)	1029

GRAPHIC SCALE IN FEET
0 20 40 80

REGISTERED PROFESSIONAL ENGINEER KENNEDY R. MEEKS No. 71470 CIVIL STATE OF CALIFORNIA

REVISIONS	DATE	BY

SCALE: AS SHOWN
DATE: 06/2024
DESIGNED: JS
CHECKED: KM
PLN CK REF:
F.B.

Kimley»Horn
3801 UNIVERSITY AVE, SUITE 300, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

TENTATIVE TRACT MAP 39008
TENTATIVE TRACT MAP
LA SIERRA AVE. & ALHAMBRA AVE.

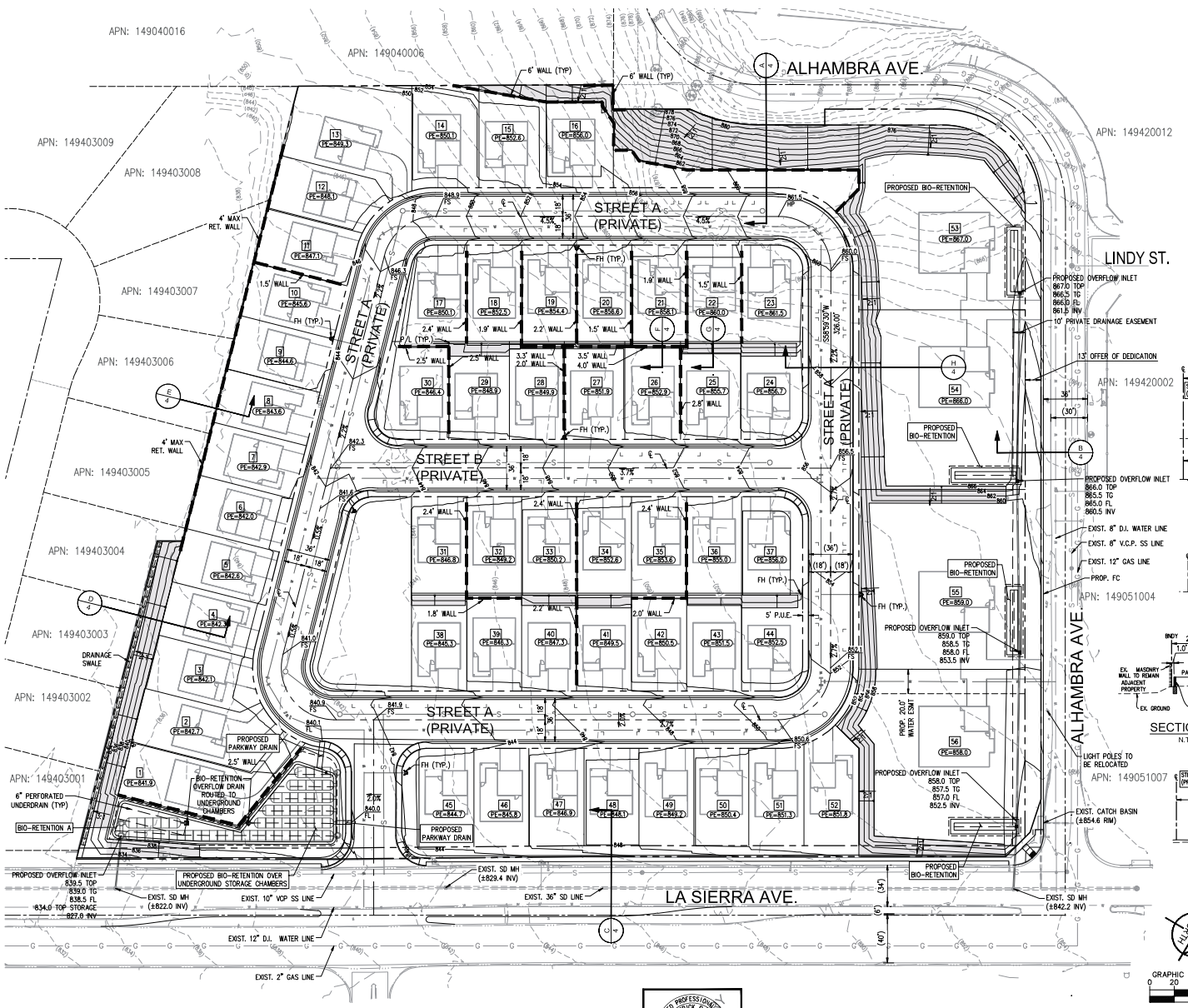
PROJ. # 195261018
SHEET 4
OF 6 SHEETS
DWG. NO. 195261018

\\KIMLEY-HORN.COM\CA_RIV2\RIV_LDEV\195261018 - MLC RIVERSIDE\CAD\TENTATIVE MAP\C-TENTATIVE MAP.DWG 3/3/2025 3:04:54 PM

CITY OF RIVERSIDE

PRELIMINARY GRADING & DRAINAGE PLAN

LA SIERRA

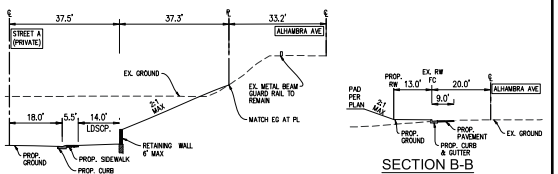


LEGEND

PROJECT BOUNDARY		EXIST. WATER LINE	W
PROP. RIGHT OF WAY		EXIST. GAS LINE	G
PROP. LOT LINES		EXIST. STORM LINE	
PROP. WATER LINE	W	PROP. RETAINING WALL	
PROP. SEWER LINE	S	LOT NUMBER LABEL	X
PROP. STORM LINE		PAD ELEVATION LABEL	(PE=XXX)
PROP. FIRE HYDRANT		PROP. MANHOLE	
EXIST. CENTERLINE		CATCH BASIN	
EXIST. RIGHT OF WAY		EXIST. CONTOUR	(XXX)
EXIST. PARCEL LINE		PROP. CONTOUR LABEL	XXX
EXIST. SEWER LINE	S		

NOTE

1. ONSITE WATER WILL BE PUBLIC.
2. ONSITE SANITARY SEWER WILL BE PUBLIC.
3. ONSITE STORM DRAIN WILL BE PRIVATELY OWNED AND MAINTAINED.
4. LOTS 53-56 WATER AND SEWER SERVICE WILL BE FROM ALHAMBRA AVE.



SECTION A-A N.T.S.

SECTION B-B N.T.S.

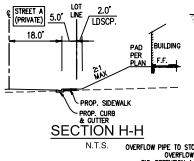
SECTION C-C N.T.S.

SECTION D-D N.T.S.

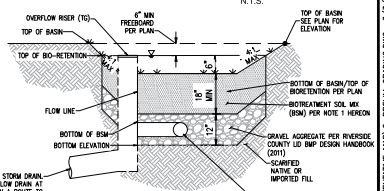
SECTION E-E N.T.S.

SECTION F-F N.T.S.

SECTION G-G N.T.S.



SECTION H-H N.T.S.



BIORETENTION NOTES

1. BIOTREATMENT SOIL MEDIA (BSM) SHALL:*
   1.1. PLANTING SOIL DRAIN DOWN TIME = 72 HRS
   1.2. CONSIST OF THE FOLLOWING MIXTURE OF FINE SAND AND COMPOST, MEASURED ON A VOLUME BASIS:
   60%-70% – SAND
   10%-20% – CLEAN TOPSOIL
   10%-20% – COMPOST
   1.3. DEPTH OF BIO RETENTION SOIL MIX ON LOTS 53-56 IS 18" AND IS 33" ON LOT 59.

*REFERENCE THE RIVERSIDE COUNTY LID BMP DESIGN HANDBOOK (2011)

TYPICAL BIO-RETENTION DETAIL N.T.S.

GRAPHIC SCALE IN FEET
0 20 40 80

REGISTERED PROFESSIONAL ENGINEER KENNERICK F. WEEKS No. 71470 CIVIL STATE OF CALIFORNIA PRELIMINARY

REVISIONS	DATE	BY

SCALE: AS SHOWN
DATE: 04/2025
DESIGNED: JS
CHECKED: KM
PLN CK REF:
F.B.

Kimley»Horn
3801 UNIVERSITY AVE, SUITE 300, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

TENTATIVE TRACT MAP 39008
CONCEPTUAL GRADING & DRAINAGE PLAN
LA SIERRA AVE. & ALHAMBRA AVE.

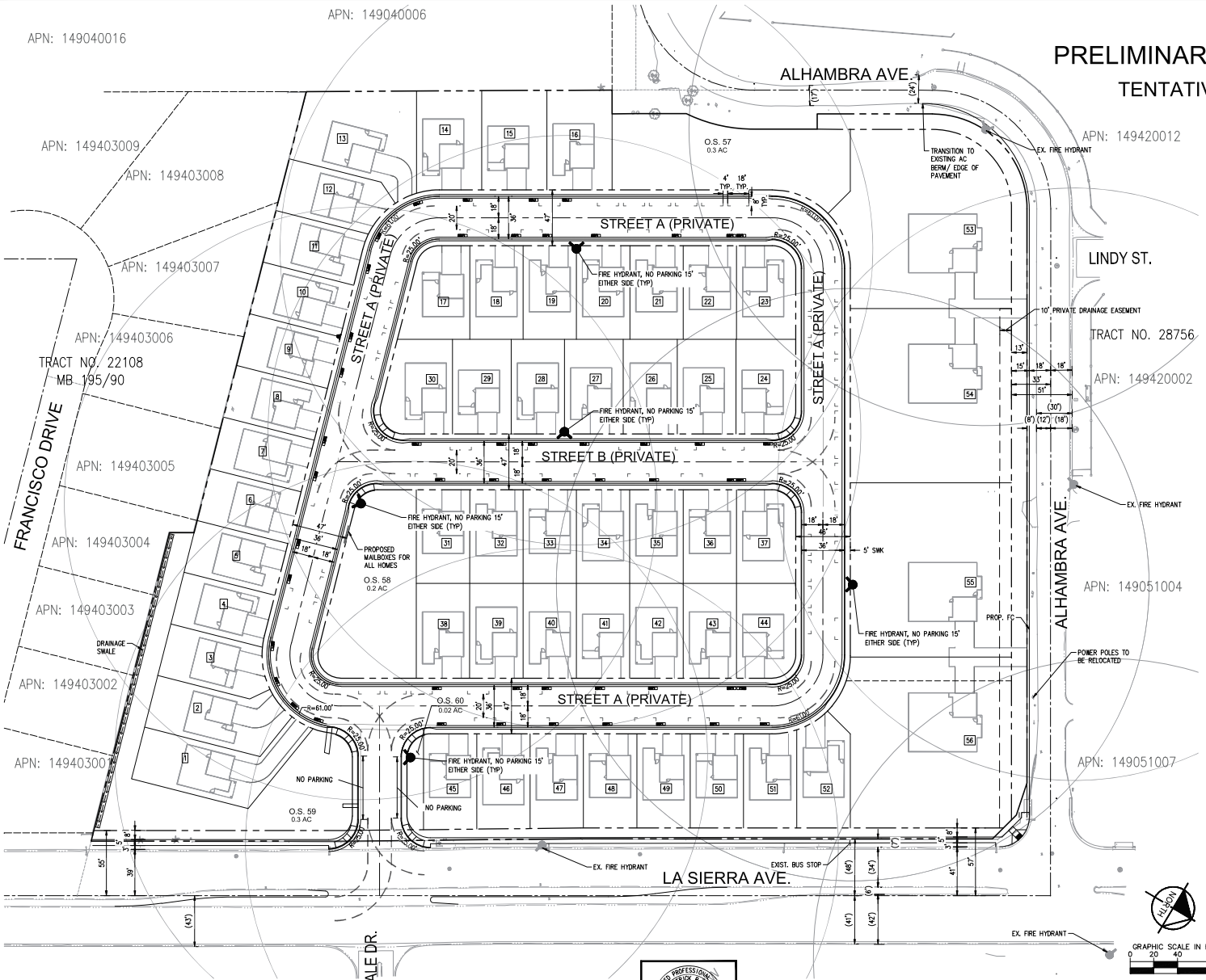
PROJ. # 195261018
SHEET 5 OF 6 SHEETS
DWG. NO. 195261018

K:\RIV_LDEV\195261018 - MLC RIVERSIDE\CAD\TENTATIVE MAP\C-PRELIM GRADING.DWG 3/3/2025 5:48:24 PM

CITY OF RIVERSIDE

PRELIMINARY PARKING CIRCULATION PLAN

TENTATIVE TRACT MAP 39008 - LA SIERRA



LEGEND

PROJECT BOUNDARY	
PROP. RIGHT OF WAY	
PROP. LOT LINES	
PROP. FIRE HYDRANT	
EXIST. CENTERLINE	
EXIST. RIGHT OF WAY	
EXIST. LOT LINE	
PROP. FIRE TRUCK TURN RADIUS	
LOT NUMBER LABEL	X
ASSIGNED TRASH CANS	

ABBREVIATIONS

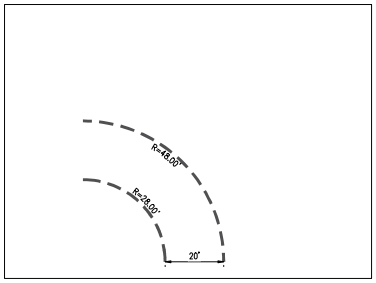
FC	FACE OF CURB
FH	FIRE HYDRANT
PROP	PROPOSED
MWS	MODULAR WETLAND STRUCTURE
TYP	TYPICAL
℄	CENTERLINE
HP	HIGH POINT
LP	LOW POINT
FS	FINISHED SURFACE
RET	RETAINING WALL
EX.	EXISTING
GB	GRADE BREAK

ASSESSOR'S PARCEL NO

APNS: 149052011, 149052012, 149052013, 149052004, 149052009, & 149052014

PARKING SUMMARY	
GARAGE PARKING (2 PER LOT)	112
DRIVEWAY PARKING (2 PER LOT)	112
ONSITE STREET PARKING	69
TOTAL	293

NOTE: THE PARALLEL PARKING STRIPING AND SHOWN ON THIS PLAN IS FOR REFERNECE ONLY THE PROJECT DOEES NOT PROPOSE TO STRIPE PARALLEL PARKING.



FIRE TRUCK TURNING CLEARANCE DETAIL

N.T.S.

REGISTERED PROFESSIONAL ENGINEER KENNERTRICK P. MEYERS No. 71470 CIVIL STATE OF CALIFORNIA

REVISIONS	DATE	BY

SCALE: AS SHOWN
DATE: 06/2024
DESIGNED: JS
CHECKED: KM
PLN CK REF:
F.B.

Kimley»Horn
3801 UNIVERSITY AVE, SUITE 300, RIVERSIDE, CA 92501
PHONE: (951) 543-9868 WWW.KIMLEY-HORN.COM

TENTATIVE TRACT MAP 39008
PRELIMINARY PARKING AND CIRCULATION PLAN
LA SIERRA AVE. & ALHAMBRA AVE.

PROJ. # 195261018
SHEET 6
OF 6 SHEETS
DWG. NO. 195261018

\\KIMLEY-HORN.COM\CA_RV2\RV_LDEV\195261018 - MLC RIVERSIDE\CAD\TENTATIVE MAP\C-CIRCULATION PLAN.DWG 3/3/2025 2:59:16 PM

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

SA GEOTECHNICAL
OPTIMIZED SOIL ENGINEERING

December 22, 2023

Project No. 23145-01

To: Meritage Homes
5 Peters Canyon Road, Suite 310
Irvine, California 92606

Attention: Ms. Louisa Feletto

Subject: Geotechnical Due Diligence Exploration and Preliminary Design Recommendations, Proposed Residential Development, Southwest Corner of La Sierra Avenue and Alhambra Avenue, City of Riverside, California

At your request, SA Geotechnical, Inc. (SA GEO) has conducted a geotechnical due diligence exploration and review for the proposed residential development located at the southwest corner of La Sierra Avenue and Alhambra Avenue in the City of Riverside, California (Figure 1). The purpose of this study was to evaluate the geotechnical site conditions in light of the proposed grading and improvements in order to provide a geotechnical summary and preliminary recommendations for project design, grading and construction. Our evaluation included review of collected geologic maps and data pertinent to the subject site; subsurface exploration; laboratory testing and analysis; and preparation of this report.

The subject site consists of a mixture of vacant/undeveloped property and rural single-family residential development. The site is composed of several conjoined parcels/lots, totaling approximately 9.8 acres. Based on our study, the primary geotechnical constraints at the site include: the presence of granitic bedrock at existing grade and/or shallow depth underlying the alluvium, the presence of undocumented artificial fills and weathered/unsuitable alluvium near-surface, and seismic shaking during a strong seismic event. The site geology generally consists of approximately 2.5 to 21.5 feet of older alluvium capping granitic bedrock. Along the central portion of the westerly boundary, granitic rock is mapped at existing grades. The older alluvium generally consists of reddish-brown silty sand and sandy silt with "Very Low" to "Medium" expansion potential. The underlying bedrock consists of fine to coarse-grained granitic bedrock (monzogranite, granodiorite, and diorite) that is generally weathered ("decomposed") in the uppermost 18 to 35 feet and considered rippable with heavy duty earthmoving equipment (i.e.: Caterpillar D9 bulldozer or equivalent). Groundwater was encountered in one boring (H-5) at a depth of 26.5 feet below ground surface. Percolation testing was also performed during this study and indicates that shallow stormwater infiltration is generally feasible at the site.

This report presents our findings, conclusions, and preliminary design recommendations for the subject residential development. Based on our review, the proposed development is considered geotechnically feasible provided the recommendations in this report are implemented during design, grading, and construction. Additional geotechnical exploration and analysis may need to be performed once the project plans for grading, foundations, and stormwater infiltration are developed.

References pertinent to the site are included in Appendix A. Boring and test pit logs are included in Appendix B. Laboratory test data is included in Appendix C. The geophysical survey/rippability report is included in Appendix D. Percolation test data is presented in Appendix E. Seismic design parameters are presented in Appendix F. General earthwork and grading specifications are presented in Appendix G.

If you have any questions regarding this report, please contact our office. We appreciate the opportunity to provide our services.

Respectfully submitted,

SA GEOTECHNICAL, INC.

Anthony Zepeda, CEG 2681
Project Geologist

Reza Saberi, GE 3071
Principal Engineer

Peter Anderson, CEG 2596
Principal Engineering Geologist

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

List of Illustrations

Appendices

Plates

EXECUTIVE SUMMARY

The subject site is generally underlain at or near-surface by granitic bedrock that is successively overlain by variable thicknesses of older alluvium, generally thickening to the east. Granitic bedrock is exposed at the surface within the western portion of the site. Undocumented artificial fill associated with prior land use/grading was encountered in several test pits across the site, ranging from 1.5 to 5.5 feet thick. The older alluvium generally consisted of yellowish-brown, reddish-brown, and brown silty fine to coarse sand, sandy silt and sandy clay that was damp to moist and medium dense/stiff where encountered, ranging in thickness from 2.5 to 21.5 feet. Bedrock was found to consist of yellowish-brown, olive brown, pale reddish-brown, and gray fine to coarse-grained granitic rock (mixtures of monzogranitic, granodiorite, and diorite) that is damp to saturated, and dense to very dense. In general, the bedrock is weathered ("decomposed") in the uppermost 18 to 35 feet and moderately weathered to unweathered below. Bedrock will be encountered during onsite grading and within excavations for utility lines throughout the site. The granitic bedrock is generally considered excavatable (rippable) with heavy duty earthmoving equipment (i.e. Caterpillar D9 bulldozer) to a minimum depth of 18 feet. However, oversize rocks will be generated during grading and excavation for utilities.

The primary geotechnical constraints for site development include the following:

- Presence of shallow granitic bedrock throughout the site;
- Presence of undocumented fill and weathered/unsuitable alluvium near surface; and,
- Potential for strong seismic shaking during an earthquake event.

The undocumented fill and near surface/highly weathered older alluvium and granitic rock are considered unsuitable for support of compacted fill material and the proposed improvements. Remedial grading for the site should consist of the removal and recompaction of all undocumented fill materials, and highly weathered or disturbed alluvium and/or bedrock. Remedial removals are anticipated to range from 2.5 to 6 feet below existing grades. Overexcavation (within cut areas) is recommended to depths of 3 to 4 feet below design grades. Remedial removals and/or overexcavation within streets or utility alignments/connections should be performed to 1 foot below the deepest utility to facilitate future utility pipeline construction. The recommended remedial removal and overexcavation will also help reduce the potential for future differential settlement at the site. Based on verbal communication with the current landowner, the existing onsite residences rely on septic tanks and leach fields for sewage management. These features should be anticipated during demolition and grading. Wells, septic tanks, seepage pits, and related appurtenances will need to be properly removed and/or abandoned in accordance with County of Riverside Department of Environmental Health requirements (or other governing agency) and the project environmental consultant’s recommendations.

Groundwater was encountered in one boring (H-5) during our exploration at a depth of 26.5 feet below ground surface. In general, groundwater is anticipated to remain more than 10 feet below design grades upon the completion of grading. However, perched groundwater may be present at shallow depths locally and along the bedrock contact. Groundwater will fluctuate on an annual and seasonal basis.

Building foundations and slabs should be designed to tolerate a total settlement of 1 inch and differential settlement of ½-inch over a span of 40 feet. The site is categorized as Site Class "C" for seismic design. Onsite soils are anticipated to have "Very Low" to "Low" expansion potential at the completion of grading. Onsite soils are not anticipated to be corrosive to concrete but are corrosive to metals.

Based on our findings, we conclude that the proposed residential development is feasible from a geotechnical viewpoint, provided it is designed and constructed in accordance with the recommendations presented in this report and any future design/plan review reports. The site is considered locally suitable for infiltration of stormwater at shallow depths.

1.0 INTRODUCTION

1.1 Introduction and Scope of Services

At your request, SA Geotechnical, Inc. (SA GEO) has conducted a geotechnical due diligence exploration and review for the proposed residential development at the subject property in the City of Riverside, California (Figure 1). The purpose of our study was to assess the onsite geologic and geotechnical conditions and provide preliminary recommendations for design, grading, and construction of the proposed improvements. We have reviewed the Conceptual Site Plan, dated November 8, 2023, which shows the generalized lot layout; however, contains no existing or proposed grades. A Google Earth satellite image was utilized as the base for our Geotechnical Map (Plate 1).

Our scope of services for this study included the following tasks:

- Review of available geologic and geotechnical maps, reports, and data for the subject site and surrounding area. A list of references is included in Appendix A.
- Review of available historic aerial photographs and topographic maps dating back to 1948.
- Notification and coordination with DigAlert to identify and clear boring and test pit locations of underground utilities.
- Subsurface exploration consisting of ten hollow-stem auger borings (H-1 through H-6 and P-1 through P-4) to depths ranging from 5 to 30.5 feet below ground surface (bgs). Eight backhoe test pits (TP-1 through TP-8) were also excavated, ranging in depth from 8.5 to 15 feet bgs. Boring and test pit logs are included in Appendix B.
- Percolation testing in four borings (P-1 through P-4) in general conformance with the 2011 Riverside County Design Handbook for Low Impact Development Best Management Practices.
- A geophysical refraction survey, which included two survey lines (SL-1 and SL-2), was performed to collect compression wave (p-wave) velocity data to assist in evaluation of hardness and rippability of the mapped granitic bedrock.
- Laboratory testing of selected samples to determine engineering properties of onsite soils, including in-situ moisture and density, grain size distribution, plasticity, consolidation, shear strength, maximum density and optimum moisture content, R-value, expansion potential, and soluble sulfate content. Laboratory test results are included in Appendix C.
- Geotechnical evaluation and analysis of the compiled data with respect to the proposed grading and development.
- Preliminary evaluation of faulting, seismicity, and seismic and static settlement in accordance with the 2022 California Building Code (CBC).
- Preparation of this report including our findings, conclusions, preliminary recommendations, and accompanying illustrations.

SA GEO's expertise and scope of services do not include assessment of potential subsurface environmental contaminants or environmental health hazards.

1.2 Site Location, Existing Conditions, and History

The subject site is located at the southwest corner of the La Sierra Avenue and Alhambra Avenue intersection, in the city of Riverside, California. The approximately 9.8-acre site is bound by La Sierra Avenue to the east, Alhambra Avenue to the north and west, and existing single family residential developments to the south and west. We understand that the subject site is composed of six conjoined lots/parcels, three of which are developed with rural single-family residences. The other parcels remain largely undeveloped and/or used for equestrian activity. The site is moderately sloping to the southeast with several mature trees throughout. Based on verbal communication with the current property owner, the existing onsite residences rely on septic systems and leach fields for sewage waste management.

Based on our review of available historic aerial photographs dating back to 1948, the following summarizes our understanding of the site history:

- **1948:** The aerial photograph depicts the northerly portion of the site used for agriculture (citrus orchard). Three residences appear to occupy the subject site, two of which are still present on site (at the east and southeast portions of the site). Various outbuildings are also located onsite. La Sierra Avenue and Alhambra Avenue are present. Neighboring properties to the south and northwest are undeveloped. Scattered rural residences are located to the north and west.
- **1959:** The subject property remained largely unchanged. A chicken farming operation was constructed to the northwest of the site, while scattered rural residences were constructed to the west.
- **1966/1967:** No significant changes were observed onsite.
- **1985:** The site appears to have been partially cleared of the orchard. The residence and swimming pool along the western boundary were present by this time. Additional outbuildings and equestrian-related features were also noted. The chicken farming operation to the northwest had been removed/demolished.
- **1994:** By 1994, the remaining portion of the orchard was removed. Additional equestrian-related features were noted in the northerly portion of the site. Otherwise, the site appears mostly unchanged. The single-family residences (offsite) adjacent to the southerly property line were constructed.
- **1998/1999:** No discernable changes to the site were observed.
- **2002-2023:** The site remained relatively unchanged during this time. Various outbuildings and equestrian features were added/removed. By 2018 the single-family residences to the northwest (Lindy Street) were under construction.

1.3 Proposed Grading and Improvements

Prior to site development and grading, the existing structures/foundations, and utilities to be abandoned will be demolished and removed from the site. Based on review of the Conceptual Site Plan, the development is proposed to include grading of 93 single-family residential lots, interior streets, a park/amenity area, stormwater infiltration features, and utility improvements to support the development. We anticipate that the proposed single-family units will be one to two-story wood-framed structures. Slopes and/or retaining walls will most likely be required to

accommodate grade changes, especially along the western property boundary. Grading cuts/fills and utility depths are not known at this time.

1.4 Subsurface Exploration

Our subsurface exploration was performed on December 6 through 13, 2023, and included drilling of 10 hollow-stem auger borings, excavation of eight backhoe test pits, field percolation testing, and a geophysical refraction survey consisting of two survey lines. The approximate boring, test pit, and seismic survey line locations are shown on the Geotechnical Map (Plate 1). Boring and test pit logs are provided in Appendix B.

Hollow-stem auger borings (H-1 through H-6 and P-1 through P-4) were drilled to depths of 5 to 30.5 feet below ground surface (bgs). All borings were geotechnically logged, and samples were taken at selected intervals. Relatively undisturbed ring samples were obtained from the exploratory borings with a 2.5-inch inside-diameter, split-barrel sampler. The samplers were driven into the soil with a 140-pound automatic safety hammer, free-falling 30-inches. The drive samples were also used to obtain a measure of resistance of the soil to penetration (recorded as blows-per-foot on our geotechnical boring logs). Bulk samples were collected for additional laboratory testing. After completion of drilling the excavations were backfilled with soil cuttings and tamped.

Following drilling, percolation testing was performed in four borings (P-1 through P-4) in general conformance with the 2011 County of Riverside Design Handbook for Low Impact Development Best Management Practices.

The test pit exploration included eight locations (TP-1 through TP-8) that were excavated with a rubber-tired backhoe (Deere 310SL) to depths ranging from 8.5 to 15 feet bgs. The excavations were geotechnically logged by an engineering geologist. Representative bulk samples of onsite soils were collected from trenching spoils and used for additional soil identification purposes.

A geophysical refraction survey was performed by GeoVision on December 13, 2023, and included two survey lines (SL-1 and SL-2), focused within the westerly portion of the site underlain by granitic bedrock at existing grades. The approximate geophysical survey line locations are shown on the Geotechnical Map (Plate 1). The refraction survey was used to measure compressional (P) wave velocities of the granitic bedrock as part of our rippability assessment. The geophysical report is provided in Appendix D.

1.5 Laboratory Testing

Laboratory testing was performed on representative samples of onsite soils collected during our field exploration to characterize their engineering properties. Laboratory tests performed on selected samples included:

- Moisture content and dry density;
- Grain-size distribution;
- Atterberg limits;
- Direct shear;
- Expansion Index;

- R-value;
- Soluble sulfate; and
- Maximum dry density and optimum moisture content.

Laboratory tests were conducted in general conformance with applicable ASTM International test methods. Laboratory test results are provided in Appendix C. In-situ moisture content and dry density data are included on the geotechnical boring logs (Appendix B).

2.0 GEOTECHNICAL FINDINGS

2.1 Geologic Setting and Earth Units

The site is located in the Peninsular Ranges geomorphic province of Southern California, characterized by series of ranges and northwest trending valleys, subparallel to regional faults. The subject site is mapped by the United States Geological Survey (USGS, 2001 & 2002) as underlain by older alluvial fan deposits overlying granitic bedrock. Granitic bedrock is also mapped at existing grade within the western-most portion of the site. Also, undocumented artificial fill material, associated with prior land use, was encountered in various test pits across the site. The Geotechnical Map (Plate 1) depicts the site earth unit distribution and estimated depth to bedrock. The earth units, as encountered during our exploration are described below from oldest to youngest.

Granitic Bedrock (Map Symbol - Kgr): The site is underlain by Cretaceous-age intrusive igneous bedrock that is generally described as yellowish-brown, olive brown, pale reddish-brown, and gray fine to coarse-grained granitic rock (monzogranite, granodiorite, and diorite) that is damp to saturated, and dense to very dense. In general, the bedrock is weathered ("decomposed") in the uppermost 18 to 35 feet. Boring H-1 was terminated due to hard rock and difficult drilling conditions at a depth of 8 feet bgs; the remainder of borings were drilled 10 to 27 feet into bedrock without encountering refusal. The backhoe test pits were generally excavated 2.5 to 9 feet into bedrock before encountering difficulty digging and/or refusal. Test pit location TP-2 was terminated less than 1 foot into bedrock due to hard rock conditions. The depth to bedrock, as encountered during our subsurface exploration, is provided on the Geotechnical Map (Plate 1).

Older Alluvium (Map Symbol – Qalo): Older alluvium is mapped covering most of the site and generally varies in thickness from 2.5 to 11.5 feet. Locally, along the easterly property line, older alluvium was encountered to a depth of 21.5 feet bgs. The alluvium generally consisted of yellowish-brown, reddish-brown, and brown silty fine to coarse sand, sandy silt, and sandy clay that was damp to moist and medium dense/stiff.

Undocumented Artificial Fill (Map Symbol – Afu): Undocumented artificial fill material was encountered in several test pits across the site, varying in thickness from 1.5 to 5.5 feet. The undocumented artificial fill material generally consists of brown to reddish brown silty fine-to-coarse sand that was damp to moist and loose to medium dense. Undocumented artificial fill is also mapped overlying bedrock in the western portion of the site (beneath the existing home/pool) as a result of grading and terracing for home construction.

2.2 Geotechnical Conditions

Based on our review of the geotechnical exploration and laboratory testing data (Appendix C), the geotechnical conditions are generally as follows:

Soil Moisture Content and Dry Density: Laboratory testing performed on samples collected from the borings indicate that the native older alluvium had moisture contents in the range of 1.9 to 14.6 percent and dry densities varying from 110.1 to 123.0 pounds per cubic foot (pcf). The blow counts in the alluvium varied from 9 to 61 blows per foot. The granitic bedrock samples had

dry densities in the range of 105.0 to 118.9 pcf and moisture contents in the range of 3.5 to 15.5 percent. Blow counts in bedrock were well over 50 blows per foot.

Soil Properties: Grain-size distribution tests were conducted on two bulk samples collected from the uppermost 5 feet and seven ring samples collected at depths of 5, 7.5, 10, and 15 feet. The near-surface bulk samples were classified in accordance with the Unified Soil Classification System (USCS) as sandy clay (CL) and silty sand (SM), with fines contents (passing No. 200 sieve) of 63 and 30 percent, respectively. Soil plasticity testing performed on the bulk samples indicates that the sandy clay soil has a Liquid Limit of 30 percent and Plasticity Index of 13 (USCS classification of CL). The silty sand sample was non-plastic.

The ring samples were found to have fines contents ranging from 44 to 50 percent (at a depth of 5 feet), 12 and 54 percent (at a depth of 7.5 feet), 67 percent (at a depth of 10 feet), and 79 percent (at a depth of 15 feet). The samples were given USCS classifications of SM and SM/ML (5 feet), SP-SM and ML (7.5 feet), CL (10 feet), and ML (15 feet). The Liquid Limit of the ring sample collected at a depth of 10 feet (CL) was 25 percent with Plasticity Index of 9.

Maximum dry density of the near-surface silty/sandy soil indicates a maximum dry density of 132.0 pounds per cubic foot (pcf) at an optimum moisture content of 8.0 percent.

Consolidation: Tests were performed on four samples collected at depths of 5, 7.5, and 15 feet. In general, the testing showed that the materials have relatively low compressibility potential. The samples had minor collapse potential (less than 0.75%) upon the addition of water at a load of 3.2 tsf.

Shear Strength: Direst shear testing was performed on one relatively undisturbed ring sample collected at a depth of 5 feet, representative of the native older alluvium. One remolded direct shear (remolded to 90% relative compaction of the maximum density) was also performed, representative of future compacted fill material. The test results for the in-situ sample indicate an ultimate internal friction angle of 32 degrees at zero cohesion with peak internal friction angle of 39 degrees and a cohesion of 100 pounds per square foot (psf). The remolded sample had an ultimate internal friction angle of 27 degrees and a cohesion of 150 psf. The peak values for the internal friction angles and the cohesion of the remolded sample were 28 degrees and 350 psf, respectively.

R-value: One sample collected from the uppermost 5 feet in Boring H-4 had an R-value of 18.

Expansion Potential: Two near-surface samples collected from the upper five feet were tested to evaluate the expansion potential of onsite alluvial soils. The testing shows that the silty sand and sandy clays have expansion indices of 0 to 59, respectively, indicating "Very Low" to "Medium" expansion potential.

Chemical Properties: Soluble sulfate content of the soil was measured in two samples representative of the near surface soils. Soluble sulfate content testing indicates the soil may be classified as "S0" per Table 19.3.1.1 of ACI-318-14. We anticipate that the onsite soils are corrosive to metals.

2.3 Groundwater

Groundwater was encountered in one boring, H-5, at a depth of 26.5 feet bgs. Based on the recorded groundwater depth and our understanding of the site geology, perched groundwater can occur within highly weathered portions of granitic bedrock and/or at the bedrock/alluvium/fill contact. Historic high groundwater mapping by the State has not been performed for the region.

Groundwater levels may fluctuate on an annual and seasonal basis, based on variations in future residential irrigation and rainfall amounts. The presence of locally saturated soils and/or perched water cannot be ruled out and may be encountered during grading, construction of utility infrastructure and future homeowner improvements.

2.4 Regional Faulting and Seismicity

Regional Faults: The site is not located within a fault-rupture hazard zone as defined by the Alquist-Priolo Special Studies Zones Act (CGS, 2018). Also, based on mapping by the State (Jennings and Bryant, 2010) and Riverside County (2023), there are no active faults mapped at the site.

Seismicity: Properties in southern California are subject to seismic hazards of varying degrees depending upon the proximity, degree of activity, and capability of nearby faults. These hazards can be primary (i.e., directly related to the energy release of an earthquake) or secondary (i.e., related to the effect of earthquake energy on the physical world). Since there are no active faults at the site, the potential for primary ground rupture is considered very low. The primary seismic hazard for this site is ground shaking during a future earthquake. The maximum moment magnitude for the controlling fault is 8.1 M_W, which would be generated from the San Jacinto Fault.

The site is located within an area of "high" liquefaction susceptibility per the County of Riverside (2023). However, based on the shallow bedrock condition and absence of groundwater within potentially liquefiable soils (older alluvium), the liquefaction potential is considered very low. Please also note that the alluvium in Boring H-6, which was encountered to a depth of 21.5 feet, generally consisted of fine-grained clayey soils that are typically not considered prone to liquefaction. Other secondary seismic hazards, such as tsunami and seiche are considered nil due to site elevation and distance from the ocean or other confined bodies of water.

2.5 Settlement

In general, the anticipated settlements depend upon the building loads, type of foundations, and the geotechnical properties of the supporting subgrade. Shallow bedrock is generally present throughout the site. Considering the subsurface soil conditions, laboratory test data, and lightly loaded residential structures, we estimate total settlement (combined static and seismic) to be on the order of 1 inch with differential settlement of ½-inch over a 40-foot span. This assumes remedial grading measures recommended in Section 3.2 of this report are implemented during grading.

2.6 Shrinkage and Bulking

The shrinkage and bulking (reduction or increase in volume of excavated materials upon recompaction and replacement as fill) varies by soil type, earth unit, and location. The volume changes depend primarily on in-situ density and the maximum dry density of the soil type. We anticipate that the near surface alluvial materials will have 0 to 5 percent shrinkage. The weathered bedrock is anticipated to bulk less than 5 percent. Ground subsidence is estimated to be on the order of 0.1 foot. These values exclude losses due to removal of vegetation and debris and is dependent on the accuracy of the site topographic survey and type of equipment and compaction method used by the contractor.

2.7 Rippability and Generation of Oversize Material

The rippability characteristics of bedrock depend upon the rock type, hardness, the depth and degree of weathering and fracturing, rock structure, equipment size/type used for excavation, and operator experience and skill level. Based on our subsurface exploration, the underlying granitic bedrock is weathered/decomposed to variable depths.

A geophysical refraction survey was performed as part of our study and included two survey lines (SL-1 and SL-2) within the western portion of the site, where grading cuts are anticipated, and the shallowest hard rock was encountered during drilling (see Plate 1). The refraction survey was used to measure compressional (P) wave velocities of the granitic bedrock to assist in rippability assessment. The survey lines were approximately 205 (SL-1) and 235 (SL-2) feet in length to provide a minimum investigation depth of approximately 40 feet bgs. The published Caterpillar Tractor Company bulldozer ripper performance charts, our experience, and the experience of the geophysics subcontractor indicate that granitic rocks with velocities below approximately 5,800 feet/second are "rippable" with some difficulty using a D9R (single shank) bulldozer.

SL-1 and SL-2 encountered weathered rock (p-wave velocity less than 5,800 feet/second) to depths generally ranging from 18 to 35 feet, below which mildly weathered to unweathered rock was encountered. Localized "plateaus" of hard rock were encountered in SL-2, within the vicinity of the existing home and where granitic outcrops were observed in the field. The seismic line velocity profile and accompanying geophysical report are included in Appendix D. Oversize rocks (defined as rock exceeding 12 inches in the maximum diameter) are anticipated to be generated during grading, especially in deeper excavations.

2.8 Percolation Testing

Percolation testing was performed on December 12, 2023, in general accordance with the Riverside County Design Handbook for Low Impact Development Best Management Practices (2011). The Percolation Test method was generally performed as described in the handbook. In order to prevent caving during testing, a 3-inch-diameter perforated pipe was installed in the boring and the annular space was backfilled with 3/4-inch gravel. The borings were presoaked and tested to determine if onsite soils fell under the "Sandy Soil" criteria as defined in the handbook. All percolation borings were considered "Sandy". Test results were tabulated, and final measurements were used to calculate the infiltration rate. The percolation data sheets are provided in Appendix E.

The County Handbook does not include calculation adjustments to account for the presence of the annular backfill material described above which can result in overestimation of infiltration rates. We have used a correction factor to account for the volume loss due to the annular material, based on the porosity, pipe size used, and the boring diameter. The correction factor is noted on the percolation test data sheets.

The calculated infiltration rates are provided below, which include the correction factor discussed above; however, the rates do not include a factor of safety reduction. A discussion of the overall feasibility of stormwater infiltration is provided in Section 3.15. The infiltration test results are representative of the location and depths the tests were performed.

TABLE 1 – PERCOLATION TEST RESULTS

Boring No.	Tested Depth (Below Ground Surface)	Calculated Infiltration Rate (in./hr.)
P-1	3 to 5	1.5
P-2	2.5 to 5	2.6
P-3	7 to 10	0.3
P-4	4 to 7.25	1.0

2.3 Existing Utilities

No onsite utilities were marked during the DigAlert utility clearance process. We understand that active domestic water and numerous irrigation pipelines service the homes and equestrian areas. Overhead electrical lines are present along Alhambra Avenue, adjacent to the site. Also, based on verbal communication with the current property owner, the existing onsite residences rely on septic systems and leach fields for sewage management. Septic systems and related appurtenances should be anticipated during demolition and grading.

3.0 CONCLUSION AND PRELIMINARY RECOMMENDATIONS

3.1 General Conclusion and Recommendation

Based on our subsurface exploration and evaluation, construction of the proposed residential development, as described herein, is considered geotechnically feasible provided the preliminary recommendations in this report are implemented during design, grading, and construction. The geotechnical consultant should review the WQMP once available. Additional geotechnical exploration and percolation testing may need to be performed during the design phase, depending upon the location/depth of the infiltration device. Also, grading, foundation, utility, structural and wall plans for the project should be reviewed by the geotechnical consultant during the design phase. Updated recommendations should be provided once the project plans are finalized and reviewed by SA GEO and as needed.

The recommendations in this report should be considered minimum and may be superseded by more restrictive requirements of others. In addition to the following recommendations, General Earthwork and Grading Specifications are provided in Appendix G.

3.2 Site Preparation and Earthwork

Site preparation and grading should be performed in accordance with the recommendations included herein and the requirements of the City of Riverside.

3.2.1 Site Demolition and Clearing

Prior to remedial grading, the existing structures/foundations, landscape, and utilities to be abandoned should be demolished. Deleterious materials and debris should be cleared and disposed of offsite. Concrete material may be mixed with onsite soils and placed as compacted fill provided that it is broken into pieces that are smaller than 6 inches in the largest diameter and placed in accordance with Section 3.2.5. Excavations for the removal of existing foundations, utilities and vegetation, including onsite trees, should be observed by the geotechnical consultant. Large roots, highly organic soils, and utility/pipeline debris should be removed and not incorporated into new fills.

Soil that is disturbed as part of excavations or during removal of trees or underground utilities should be evaluated by the geotechnical consultant. Excavations that require backfill should be properly documented and compacted under the observation and testing of the geotechnical consultant in accordance with the recommendations provided in Section 3.2.6.

Based on verbal communication with the current landowner, the existing onsite residences rely on septic tanks and leach fields for sewage management. These features should be anticipated during demolition and grading. Wells (if any), septic tanks, seepage pits, and related appurtenances will need to be properly removed and/or abandoned in accordance with County of Riverside Department of Environmental Health requirements (or other governing agency) and the project environmental consultant's recommendations. Any voids created during demolition and removal should be backfilled with suitable onsite or import materials and compacted in accordance with the recommendations provided in Section 3.2.6.

3.2.2 Protection of Existing Improvements and Utilities

Existing buildings, improvements and utilities adjacent to the site that are to be protected in place should be located and visually marked prior to grading operations. Excavations adjacent to improvements to be protected in-place or any utility easement should be performed with care, so as not to undermine existing foundations or destabilize the adjacent ground.

Stockpiling of soils more than 5 feet in height at or near existing structures and over utility lines should not be allowed. If deep excavations are required, shoring or other special measures (i.e., setback or laybacks) to provide safety and mitigate the potential for lateral/vertical movements may be required.

3.2.3 Remedial Grading Measures

Remedial grading at the site should consist of removal of all undocumented fill materials, unsuitable alluvium, and highly weathered/disturbed bedrock. In general, we recommend that remedial removals (within design fill areas) consist of removal and recompaction of soils in the upper 2.5 to 6 feet. Where deeper unsuitable material is encountered, the removals should be extended to competent alluvium or bedrock. Bedrock is anticipated to be shallow throughout the site; thus, we recommend that removals within the proposed streets and at utility connections be deepened to approximately 1 foot below the lowest pipeline to facilitate utility construction and limit excavation difficulty. The geotechnical consultant should review and approve the removal bottoms prior to fill placement and should provide specific recommendations based on actual conditions, if necessary.

Excavations deeper than 4 feet will need to be laid back a minimum inclination of 1H:1V (horizontal to vertical) or provided with shoring. Shallow, unconfined excavations (4 feet or less) may consist of near-vertical excavation, pending field review of the exposed materials. Excavations should be performed in accordance with Cal/OSHA requirements for Soil Type "B". Locally, Soil Type "C" may be encountered (loose, friable sand) and should be laid back a minimum inclination of 1.5H:1V. The contractor's qualified person should verify compliance with Cal/OSHA requirements. Excavations near existing structures (within a 1H:1V projection) should be provided with shoring that is designed to support the surcharge load of the existing structure. Otherwise, excavations may be performed in sections that are 20 feet long or less. The conditions should be reviewed in the field by the project geotechnical consultant. Additional recommendations will be provided based on the actual conditions encountered during excavation and grading, as needed.

3.2.4 Lot Capping/Overexcavation

The proposed grading is anticipated to expose cut and fill transitions at finish grade within some lots. Lots with design cuts are also anticipated throughout the site but mostly within the western portion of the site. At minimum, we recommend overexcavation of the cut lots in the upper 4 feet and replacement with compacted fill to provide a uniform fill blanket over each lot. Lots with design cuts into bedrock should be overexcavated to depths of 3 to 4 feet. We recommend shallower overexcavation (3 feet) within the back of the lot and deeper overexcavation (4 feet) within the front of the lots. For lots underlain by bedrock it is recommended that the overexcavation bottoms slope a minimum of 1 percent toward deeper

fill areas or the adjacent street to limit ponding of nuisance water along the fill/bedrock contact.

In areas where granitic rock is expected within streets or utility trenches/connections, overexcavation is recommended to 1 foot below the deepest utility, to facilitate utility construction and limit excavation difficulty.

Additional lot overexcavation may be recommended during grading in areas where earth materials are highly variable within an individual lot. The conditions should be evaluated by the geotechnical consultant in the field during grading. The overexcavation bottoms should be mapped and approved by the geotechnical consultant.

A disclosure should be provided to homeowners that hard rock may be encountered below compacted fill. A table including a summary of fill thicknesses for each lot may be provided at the completion of grading in order to inform the homeowners of the subsurface soil conditions.

3.2.5 Rippability and Placement of Oversize Material

Granitic bedrock with p-wave velocities greater than 5,800 feet/second are generally regarded as very difficult to rip, marginally rippable, and/or non-rippable (greater than 7,000 to 8,000 feet/second). Velocities below 5,800 feet/second are anticipated to be rippable with some difficulty; however, it should be noted that rock characteristics, fracture spacing and orientation, and skill and experience level of operators play a significant role in determining rippability. These velocity thresholds for rippability should be scaled downward for trenching operations.

Seismic Lines 1 and 2 (SL-1 and SL-2) encountered weathered rock (p-wave velocity less than 5,800 feet/second) to depths ranging from 18 to 35 feet, below which mildly weathered to unweathered rock was encountered. Localized "plateaus" of weathered to mildly weathered rock (velocity of 5,000 to 5,800 feet/second) were encountered in SL-2, within 10 feet of existing grade. Localized hard zones and/or contact irregularities within the weathered rock zone, if encountered, will require additional excavation and processing effort. We anticipate bedrock to generally be rippable to the anticipated design/remedial grading and deepest utility lines with heavy duty earthmoving equipment (i.e., Caterpillar D-9 bulldozer, Caterpillar 330 excavator); however, this will need to be reviewed by the geotechnical consultant once grading and utility plans are available. Blasting is not anticipated to be required.

Grading cuts within bedrock are anticipated to produce some oversize rock (greater than 12 inches in size). If grading equipment cannot break down the material into smaller pieces, oversize rock will need to be disposed of in deeper fill areas. Oversize rocks may be placed in fills deeper than 10 feet below design grades. The grading contractor should consider performing the remedial grading within design fill areas to facilitate placement of oversize rocks. Rocks smaller than 6 inches may be placed in the upper 4 feet of each lot. Rocks larger than 6 inches and smaller than 12 inches in the largest dimension may be placed at depth between 4 and 10 feet below design finish grades or 1 foot below the deepest utility line, whichever is deeper. Rocks greater than 3 inches in dimension are typically not suitable for

backfill of utility trench excavations (unless accepted by the agency/utility owner). Thus, we recommend that the grading contractor consider placement of rocks larger than 3 inches in dimension outside of proposed utility alignments.

The Grading and Earthwork Specifications in Appendix G include details for placement of oversize rock.

3.2.6 Fill Placement

Upon the completion of remedial grading measures, the approved removal bottoms should be scarified a minimum of 6 inches. The removal bottoms and fill materials should be compacted to at least 90 percent of maximum dry density, as determined by ASTM Test Method D1557. Fill materials should be placed in loose lifts no thicker than 8 inches.

Fill materials should be relatively free of deleterious material. The existing undocumented fill material, native alluvial soils, and bedrock are considered suitable for re-use as compacted fill provided any deleterious material is removed and the recommendations provided in the prior sections are followed. Concrete material may be mixed with onsite soils and placed as compacted fill provided it is broken into pieces that are smaller than 6 inches in the largest diameter and placed in accordance with Section 3.2.5. Placement of concrete as compacted fill should be approved by the project environmental consultant.

We recommend that the moisture content of new compacted fill soils be above the optimum moisture content but should be within the compactable moisture range. Appropriate equipment should be used and other measures (e.g., mixing, stockpiling, drying) may be needed to achieve the uniform and correct moisture content for placement of the fill. If the soils become extremely wet, special measures for mixing and drying may be required that will need to be determined based on the actual field conditions.

3.2.7 Import

The geotechnical consultant should evaluate and accept any import soils prior to transportation to the subject site. We recommend that import soils have similar engineering properties as onsite soils. At minimum, the import materials should have Expansion Index of less than 50, Plasticity Index of less than 15, fines content (passing Sieve 200) of less than 50 percent, and negligible soluble sulfate content.

3.3 Settlement Potential

The amount of settlement will depend upon the type of foundation(s) selected and future loading by additional fill and structures. Based on our subsurface exploration and analysis, considering the remedial grading recommendations provided in this report are implemented during grading, and the anticipated structural loads typically associated with the proposed residential units, we estimate a total settlement of 1 inch and a differential settlement of ½-inch over a span of 40-foot.

SA GEO should be provided with the foundation plans and structural loads, once available, to further evaluate the potential for post-construction settlement of the proposed buildings and associated improvements. Additional laboratory testing will also be performed at the completion

of grading. The parameters provided herein will then be confirmed/updated based on the planned foundation layout and loads, and additional testing/analysis.

3.4 Foundation Design

The slab and foundations should be designed by the project structural engineer based on the proposed structure type and the anticipated loading conditions. Onsite soils are anticipated to have "Very Low" to "Low" expansion potential (EI>20) at the completion of grading. Thus, they are subject to climatic and landscape moisture fluctuations and should be designed in accordance with the requirements of the 2022 California Building Code. The following foundation recommendations are provided with the assumption that the recommendations included in Section 3.2 of this report are implemented during grading of the site.

The recommended net allowable bearing capacity for continuous and isolated footings may be calculated based on the following equation:

$q_{all} = 600\ D + 200\ B + 1{,}000$ (but not to exceed 4,000 psf)

where:
D = embedment depth of footing, in feet
B = width of footing, in feet

Also, the following parameters may be used for design of foundation and slabs:

- Soil unit weight = 120 pcf
- Soil internal friction angle = 28 degrees
- Coefficient of Friction = 0.35
- Subgrade modulus (k) of 100 pci (corrected for large slabs)
- Soil elastic modulus (Es) of 2,000 psi

The dead load of concrete below adjacent grades (buried concrete foundations) may be neglected. The allowable bearing pressure and friction coefficient may be increased by one-third for wind and seismic loading.

We recommend that strip and isolated footings for the buildings have a minimum embedment depth of 12 inches below the lowest adjacent grade. Continuous footings should be at least 12 inches wide and isolated column footings should be at least 24 inches wide. The footings of freestanding and isolated structures, such as walls and pilasters, should have a minimum embedment depth of 18 inches into approved soils.

The following table provides our general guidelines and preliminary recommendations for design of post-tensioned foundations and slabs on expansive soil in accordance with the 2022 California Building Code (CBC) and Post-Tension Institute (PTI) DC 10.5 Edition provisions.

GEOTECHNICAL GUIDELINES
FOR DESIGN OF POST-TENSIONED SLABS*

Parameter	Recommendation
Center Lift	
* Edge Moisture Variation Distance, e_m	9.00 feet
* Center Lift, y_m	0.35 inches
Edge Lift	
* Edge Moisture Variation Distance, e_m	5.0 feet
* Edge Lift, y_m	0.50 inch
Presaturation, as needed, to obtain the minimum moisture down to the minimum depth	1.1 x optimum down to 6 inches
*Based on method in CBC 2022	

For post-tensioned slabs, we recommend that the slabs have a thickened edge such that the slab is embedded a minimum of 12 inches below the lowest adjacent grade. The thickened edge should be tapered and have a minimum width of 12 inches.

In addition, as indicated in the DC 10.5 Edition of PTI, shape factor calculations should be performed by the project structural engineer in order to determine if strengthening/modification of foundations are necessary. Per PTI guidelines, the modifications to the foundations design should be considered if the shape factor (ratio of square of foundation perimeter over foundation area) exceeds 24.

If non-post-tensioned slabs-on-grade and foundations are considered at the site in accordance with Wire Reinforcement Institute (WRI) method (per the 2022 CBC), an effective Plasticity Index of 15 or less is considered appropriate for the upper 15 feet of soil materials. For non-post-tensioned slabs, we recommend a minimum embedment of 12 inches below the lowest adjacent grade for the perimeter footings. Also, the upper 6 inches of subgrade soil should be pre-saturated to 110 percent of optimum moisture content prior to placement of moisture barrier and concrete.

The foundations and slabs should be designed to tolerate the total and differential settlements discussed in Section 3.3 of these recommendations.

For the design of pole-type foundations (i.e., light poles, shade structures, etc.), an allowable soil-bearing pressure ($_{S1}$) of 340 psf/ft may be used for Equation 18-1 (the "pole" equation) of the 2022 CBC, Section 1807.3.2.1, to determine the depth of embedment for the footings, considering level ground conditions. The equation is applicable for designed embedment depths of less than 12 feet for the purpose of computing lateral pressure. Also, for vertical loads on pole-type foundations, an allowable skin friction of 250 pounds per square foot may be used. For cast-in-place pole-type foundations, the vertical end bearing pressure should be neglected.

3.5 Retaining Wall Design and Lateral Earth Pressures

Recommendations for lateral earth pressures for permanent retaining walls and structures with approved onsite drained soils and above groundwater table are as follows:

Conditions	Level (pcf)	2:1 Sloping
Active	43	68
At-Rest	63	90
Passive	340	160 (sloping down)

The parameters provided above are based on a soil internal friction angle of 28 degrees and soil unit weight of 120 pcf.

To design an unrestrained retaining wall, such as a cantilever wall, the active earth pressure may be used. For a restrained retaining wall, the at-rest pressure should be used. Passive pressure is used to compute lateral soils resistance developed against lateral structural movement. The passive pressures provided above may be increased by one-third for wind and seismic loads. Passive resistance is taken into account only if it is ensured that the soil against embedded structure will remain intact with time. Future landscaping/planting and improvements adjacent to the retaining walls should also be taken into account in the design of the retaining walls. Excessive soil disturbance, trenches (excavation and backfill), future landscaping adjacent to footings and over-saturation can adversely impact retaining structures and result in reduced lateral resistance.

For sliding resistance, a friction coefficient of 0.35 may be used at the concrete and soil interface. The coefficient of friction may be increased by one-third for wind and seismic loading. The retaining walls may also need to be designed for additional lateral loads if other structures or walls are planned within a 1H:1V projection.

The seismic lateral earth pressure for walls retaining more than 6 feet of soil may be estimated to be an additional 18 pcf for active and at-rest conditions. The earthquake soil pressure has a triangular distribution and is added to the static pressures. For the active and at-rest conditions, the additional earthquake loading is zero at the top and maximum at the base. The seismic lateral earth pressure does not apply to walls retaining less than, or equal to, 6 feet of soil (2022 CBC Section 1803.5.12).

Drainage behind walls retaining more than 30 inches of soil should also be provided in accordance with the attached Figure 4. Specific drainage connections, outlets and avoiding open joints should be considered for the retaining wall design.

3.6 Seismic Design Parameters

The following table summarizes the seismic design criteria for the subject site. The seismic design parameters are developed in accordance with ASCE 7-16 and 2022 CBC. Please note that, considering the proposed structures and anticipated structural periods, site-specific ground-motion hazard analysis was not performed for the site. The seismic response coefficient, Cs, should be determined per the parameters provided below and using equation 12.8-2 of ASCE 7-16.

Selected Seismic Design Parameters from 2022 CBC/ASCE 7-16	Seismic Design Values	Reference
Latitude	33.6570 North	
Longitude	-117.1996 West	
Controlling Seismic Source	San Jacinto	USGS, 2023
Site Class per Table 20.3-1 of ASCE 7-16	C	
Spectral Acceleration for Short Periods (Ss)	1.5 g	SEA/OSHPD, 2023
Spectral Accelerations for 1-Second Periods (S_1)	0.57 g	SEA/OSHPD, 2023
Site Coefficient F_a, Table 11.4-1 of ASCE 7-16	1.2	SEA/OSHPD, 2023
Site Coefficient F_v, Table 11.4-2 of ASCE 7-16	1.43	SEA/OSHPD, 2023
Design Spectral Response Acceleration at Short Periods (S_{DS}) from Equation 11.4-4 of ASCE 7-16	1.2 g	SEA/OSHPD, 2023
Design Spectral Response Acceleration at 1-Second Period (S_{D1}) from Equation 11.4-4 of ASCE 7-16	0.543 g	SEA/OSHPD, 2023
T_S, S_{D1} /S_{DS} 11.4.6 of ASCE 7-16	0.45 sec	
T_L, Long-Period Transition Period	8 sec	SEA/OSHPD, 2023
Peak Ground Acceleration Corrected for Site Class Effects (PGA_M) from Equation 11.8-1 of ASCE 7-16	0.618 g	SEA/OSHPD, 2023
Seismic Design Category, Section 11.6 of ASCE 7-16	D	SEA/OSHPD, 2023

3.7 Slope Setback

Footings for structures located above descending slopes should be set back from the slope face in accordance with the minimum requirements of the City of Riverside and section 1808.7.1 of the 2022 California Building Code, whichever is greater. The setback distance is measured from the outside edge of the footing bottom along a horizontal line to the face of the slope. The tables below summarize the minimum setback criteria for structures above descending slopes:

Structural Setback Requirements

Case A – Building and Retaining Wall Footings Above Descending Slopes	
Slope Height [H] (feet)	Minimum Setback from Slope face (feet)
Less than 10	5
10 to 20	½ * H
20 to 30	10
Greater than 30	⅓ * H (maximum of 40')

Case B – Freestanding Wall Footings Above Descending Slopes	
Slope Height [H] (feet)	Minimum Setback from Slope face (feet)
Less than 10	5
10 to 20	½ * H
Greater than 20	Maximum of 10

For freestanding walls and other structures that are sensitive to lateral movement (e.g., smooth stucco finish, glass screens, etc.), SA GEO recommends that the structural setback requirements in accordance with Case A above be followed or that additional design measures be used to help control the potential for cracking and displacements. Otherwise, typical freestanding walls may have a setback in accordance with Case B.

3.8 Corrosivity

Based on prior laboratory testing, soluble sulfate exposure in the onsite soils may be classified as "S0" per Table 19.3.1.1 of ACI-318-14. Structural concrete elements in contact with soil include footings and building slabs-on-grade. The flatwork and sidewalk concrete are typically not considered structural elements. Concrete mix for structural elements should be based on the "S0" soluble sulfate exposure class of Table 19.3.2.1 in ACI-318-14. Other American Concrete Institute (ACI) guidelines for structural concrete are recommended. Also, onsite soils are anticipated to be moderately corrosive to metals.

3.9 Expansion Potential

At the completion of grading, we anticipate that onsite soils will have "Very Low" to "Low" expansion potential. The geotechnical recommendations provided in this report including the design parameters for foundations, slab-on-grade and flatwork improvement should be implemented during design and construction.

Homeowners and their design/construction team should be familiar with the recommendations in this report as well as principles described in a useful reference published by the California Geotechnical Engineers Association (CalGeo), titled, "Coexisting with Expansive Soil: An Informational Guide for Homeowners." This free booklet can be downloaded at www.calgeo.org.

3.10 Interior Slab Moisture Mitigation

In addition to geotechnical and structural considerations, the project owner should also consider interior moisture mitigation when designing and constructing slabs-on-grade.

The intended use of the interior space, type of flooring, and type of goods in contact with the floor may dictate the need for, and design of, measures to mitigate potential effects of moisture emission from and/or moisture vapor transmission through the slab. Typically, for human occupied structures, a vapor retarder or barrier is recommended under the slab to help mitigate moisture transmission through slabs. The most recent guidelines by the American Concrete Institute (ACI 302.1R-04) suggest that the vapor retarder be placed directly under the slab (no sand layer). However, the location of the vapor retarder may also be subject to the builder's past successful practice. Placement of 1 or 2 inches of sand over the moisture retardant has been common practice by builders in southern California. Specifying the strength of the retarder to resist puncture and its permeance rating is important. These qualities are not necessarily a function of the retarder thickness. A minimum of 10-mil is typical but some materials, such as 10-mil polyethylene ("Visqueen"), may not meet the desired standards for toughness and permeance.

Vapor retarders, when used, should be installed in accordance with standards such as ASTM E 1643 and/or those specified by the manufacturer.

Concrete mix design and curing are also significant factors in mitigating slab moisture problems. Concrete with lower water/cement ratios results in denser, less permeable slabs that also "dry" faster with regard to when flooring can be installed (reduced moisture emission quantities and rates). Rewetting of the slab following curing should be avoided since it can result in additional drying time prior to flooring installation. Proper concrete slab testing prior to flooring installation is also important.

Concrete mix design, the type and location of the vapor retarder should be determined in coordination with all parties involved in the finished product, including the project owner, architect, structural engineer, geotechnical consultant, concrete subcontractors, and flooring subcontractors.

3.11 Exterior Concrete

The driveway, patio slabs and other flatwork elements should be at least 4 inches thick. Considering that the onsite soils are anticipated to have "Very Low" to "Low" expansion potential at the completion of grading, reinforcement of concrete is not necessary from a geotechnical standpoint; however, reinforcement will reduce the potential for concrete cracking as a result of shrinkage. If reinforcement is used, we recommend that No. 3 bars be placed at 24 inches on center both ways. Equivalent wire mesh reinforcement may also be used. Concrete slabs should be provided with construction or weakened plane control joints at a maximum spacing of 10 feet. The control joints should have a thickness that is ¼ of the total concrete thickness. The subgrade soils in the upper 6 inches should be presaturated to 110 percent of optimum moisture content.

For exterior slabs, the use of a granular sublayer is primarily intended to facilitate presaturation and subsequent construction by providing a better working surface over the saturated soil. It also helps retain the added moisture in the native soil in the event that the slab is not placed immediately. Where these factors are not significant, the layer may be omitted. If used, we recommend placement of 2 to 4 inches of granular material over subgrade soils.

Exterior concrete elements such as curb and gutter, driveways, sidewalks and patios are susceptible to lifting and cracking when constructed over expansive soils. With expansive soils, the impacts to flatwork/hardscape can be significant, generally requiring removal and replacement of the affected improvements. Please also note that reducing concrete problems is often a function of proper slab design, concrete mix design, placement, and curing/finishing practices. Adherence to guidelines of the American Concrete Institute (ACI) is recommended. Also, the amount of post-construction watering, or lack thereof, can have a very significant impact on the adjacent concrete flatwork.

On projects with expansive soils, additional measures such as thickened concrete edges/footings, subdrains and/or moisture barriers should be considered where planter or natural areas with irrigation are located adjacent to the concrete improvements. Design and maintenance of proper surface drainage is also very important.

For **vehicular** traffic, at minimum, a pavement section consisting of 6 inches of PCC over subgrade compacted to 95 percent relative compaction should be used. However, the recommended section should be evaluated during the design and grading phase based on the anticipated traffic loads/frequency of use and additional R-value testing.

The above recommendations typically are not applied to curb and gutter but should be considered in areas with highly expansive soils.

3.12 Preliminary Asphalt Concrete Pavement Design

Final structural pavement sections should be based on R-value testing after the completion of grading and in accordance with City of Riverside requirements. The laboratory test results on a sample collected in the upper 5 feet shows an R-value of 18. Using a design R-value of 15 and estimated traffic indices (TIs), we recommend the following preliminary pavement sections:

Street Location	Estimated TIs	Pavement Section
Parking Stalls	TI – 4.0	0.25' AC / 0.35' AB
General Drives	TI – 5.5	0.35' AC / 0.65' AB
Driveways with Heavy Truck Traffic	TI – 7.0	0.35' AC / 1.10' AB or 0.45' AC / 0.85'
AC = Asphalt Concrete, AB = Aggregate Base		

Please note that for two-stage paving operations, we recommend that the final AC cap be a minimum of 0.10 foot thick and the base AC course have a minimum thickness of 0.25 foot.

Asphalt concrete pavement should be placed in accordance with the requirements of Sections 301 and 302 of the Standard Specifications of Public Works Construction (the Greenbook). Prior to construction of pavement sections, the subgrade soils should be scarified to a minimum depth of 6 inches, moisture-conditioned as needed, and recompacted in-place to a minimum of 90 percent relative compaction (per ASTM D1557). Subgrade should be firm prior to AB placement.

AB materials can be crushed aggregate base or crushed miscellaneous base in accordance with the Greenbook (Section 200-2). The materials should be free of any deleterious materials. Aggregate base materials should be placed in 6- to 8-inch-thick loose lifts, moisture-conditioned as necessary, and compacted to a minimum of 95 percent relative compaction (per ASTM D1557). Asphalt concrete should also be compacted to a minimum relative compaction of 95 percent.

Unpaved median and parkway areas should also be provided with vertical moisture barriers.

3.13 Trench Excavation and Backfill

Excavations should be performed in accordance with the requirements set forth by Cal/OSHA Excavation Safety Regulations (Construction Safety Orders, Section 1504, 1539 through 1547, Title 8, California Code of Regulations). In general, onsite soils may be classified as Type "B" soils for excavations into compacted fill, older alluvium, or bedrock. Locally, Type "C" soils

(loose, friable sand, bedrock fractures) may also be encountered. Cal/OSHA regulations indicate that, for workmen in confined conditions, the steepest allowable slopes in Type "B" and "C" soils are 1H:1V and 1.5H:1V, respectively, for excavations less than 20 feet deep. Where there is no room for these layback slopes, we anticipate that shoring will be necessary. Adequate shoring/shields should be provided, as deemed necessary. Excavations should be reviewed periodically by the contractor's qualified person to confirm compliance with Cal/OSHA requirements.

Utility trench backfill should be in accordance with City of Riverside and/or the governing jurisdiction's specifications. Please note that some agencies require select material for backfilling of trenches and therefore import soils may be required. Native onsite soils are generally considered suitable for use as trench backfill from a geotechnical viewpoint provided that they are approved by the governing agency. Native backfill materials should be compacted to a minimum of 90 percent relative compaction (per ASTM D1557). Rocks greater than 3 inches in largest diameter should generally not be used as trench backfill unless approved by the agency and geotechnical consultant of record. Excavation and backfilling of HDPE pipes (if any) should be in accordance with the manufacturer's requirement and the Greenbook. Select granular backfill (i.e., clean sand with SE 30 or better) may be used in lieu of native soils but should also be compacted or densified with water jetting and flooding.

Trenches excavated next to structures and foundations should also be properly backfilled and compacted to provide full lateral support and reduce settlement potential.

3.14 Groundwater

Groundwater was encountered in one boring (H-5) at a depth of 26.5 feet below ground surface. Groundwater levels may fluctuate on an annual and seasonal basis, based on variations in future residential irrigation and rainfall amounts. Locally saturated soils and/or perched water may be encountered during grading and construction of utility lines and during excavations by future homeowners. In general, groundwater is anticipated to remain more than 10 feet below design grades upon the completion of grading; however, perched water should be anticipated within weathered bedrock and/or at the bedrock/alluvium/fill contact.

3.15 Stormwater Infiltration

Based on our onsite percolation testing, storm water infiltration is considered locally feasible at the tested locations, between 3 and 7 feet bgs. Additional infiltration testing may need to be conducted onsite once a water quality management plan has been prepared in order to evaluate the infiltration rates at the actual location and depth of the proposed device(s). For preliminary design purposes, a design infiltration rate of 0.4 inches per hour may be used for devices that are 3 to 7 feet deep in the vicinity of percolation test borings (P-1 through P-4). For depths between 7 and 10 feet a rate of 0.1 inches per hour may be used. These rates include a minimum factor-of-safety of 3, in accordance with the 2011 Riverside County Design Handbook for Low Impact Development Best Management Practices.

Infiltration systems should maintain a minimum 5-foot vertical separation from bedrock/confining layers. The depth to granitic bedrock (Kgr) is noted on Plate 1 (Geotechnical Map). Infiltration

systems should also maintain a minimum 10-foot vertical separation from groundwater. Considering these constraints and the fine-grained nature of the soils at depths below 10 feet, the systems should not be deeper than 10 feet below existing grades.

Infiltration systems should be designed and constructed in accordance with County/City of Riverside guidelines. Infiltration systems should have a minimum setback of 15 feet from proposed residential structures. The subgrade soil utilized as the infiltration surface should be reviewed and approved by the geotechnical consultant prior to installation of any infiltration devices. Special care should be taken to limit disturbance to native soils used as the infiltration surface. Proper maintenance will also be required to extend the operational life and reduce siltation or reduction in infiltration performance. All infiltration devices should be provided with an overflow system.

3.16 Surface Drainage and Irrigation

Maintaining adequate surface drainage, proper disposal of run-off water, and control of irrigation will help reduce the potential for future moisture-related problems and differential movements from soil heave/settlement.

Surface drainage should be carefully taken into consideration during grading, landscaping, and building construction. Positive surface drainage should be provided to direct surface water away from structures and slopes and toward the street or suitable drainage devices. Ponding of water adjacent to the structures should not be allowed. Buildings should have roof gutter systems and the run-off should be directed to parking lot/street gutters by area drainpipes or by sheet flow over paved areas. Paved areas should be provided with adequate drainage devices, gradients, and curbing to prevent run-off flowing from paved areas onto adjacent unpaved areas.

Considering the climatic conditions in southern California and the relatively low expansion potential of onsite soils, a two-percent slope away from structures should be provided and is in substantial compliance with the 2022 CBC. Also, swales with one-percent slopes are acceptable from a geotechnical standpoint and are common practice in this locale.

Construction of planter areas immediately adjacent to structures should be avoided if possible. If planter boxes are constructed adjacent to or near buildings, the planters should be provided with controls to prevent excessive penetration of the irrigation water into the foundation and flatwork subgrades. Provisions should be made to drain excess irrigation water from the planters without saturating the subgrade below or adjacent to the planters. Raised planter boxes may be drained with weepholes. Deep planters (such as palm tree planters) should be drained with below-ground, water-tight drainage lines connected to a suitable outlet. Moisture barriers should also be considered.

It is also important to maintain a consistent level of soil moisture, not allowing the subgrade soils to become overly dry or overly wet. Properly designed landscaping and irrigation systems can help in that regard.

3.17 Maintenance of Graded Slopes

To reduce the erosion and slumping potential of graded slopes, all permanent manufactured slopes should be protected from erosion by planting with appropriate vegetation, or suitable erosion protection should be applied as soon as is practical. Proper drainage should be designed and maintained to collect surface waters and direct them away from slopes. A rodent-control program should also be established and maintained to reduce the potential for damage related to burrowing. In addition, the design and construction of improvements and landscaping should also provide appropriate drainage measures.

3.18 Additional Subsurface Exploration and Laboratory Testing

Additional subsurface exploration and laboratory testing may be necessary during the design phase of the project for determination/confirmation of the percolation rates, depending on the location and depth of the proposed system(s). Also, additional laboratory testing should be performed during and upon the completion of grading to confirm/update the design parameters provided herein.

3.19 Review of Future Plans

The project grading, foundation, street improvement, wall, water quality management, and landscape plans should be reviewed and accepted by the geotechnical consultant prior to grading and construction. Additional recommendations should be provided upon the review of the project plans and as needed.

3.20 Observation and Testing during Grading and Construction

Geotechnical observation and testing should be performed by SA GEO during the following phases of grading and construction:

- During site demolition, preparation and clearing;
- During excavations performed for remedial grading and to relocate or remove existing underground improvements;
- During removal/abandonment of cesspits, septic tanks, wells, etc.;
- During earthwork, including observation and acceptance of remedial removal and overexcavation bottoms and fill placement, including import material (if any);
- Following the completion of grading, in order to verify soil properties for foundations, slab-on-grade and pavement areas;
- Upon completion of any foundation or structural excavation, prior to pouring concrete;
- During slab and flatwork subgrade preparation including pre-saturation, prior to pouring of concrete;
- During placement of backfill for utility trenches;
- During construction of infiltration/stormwater filtration systems;
- During placement of backfill for retaining structures;
- During installation and backfill of subdrainage systems; and
- When any unusual soil conditions are encountered.

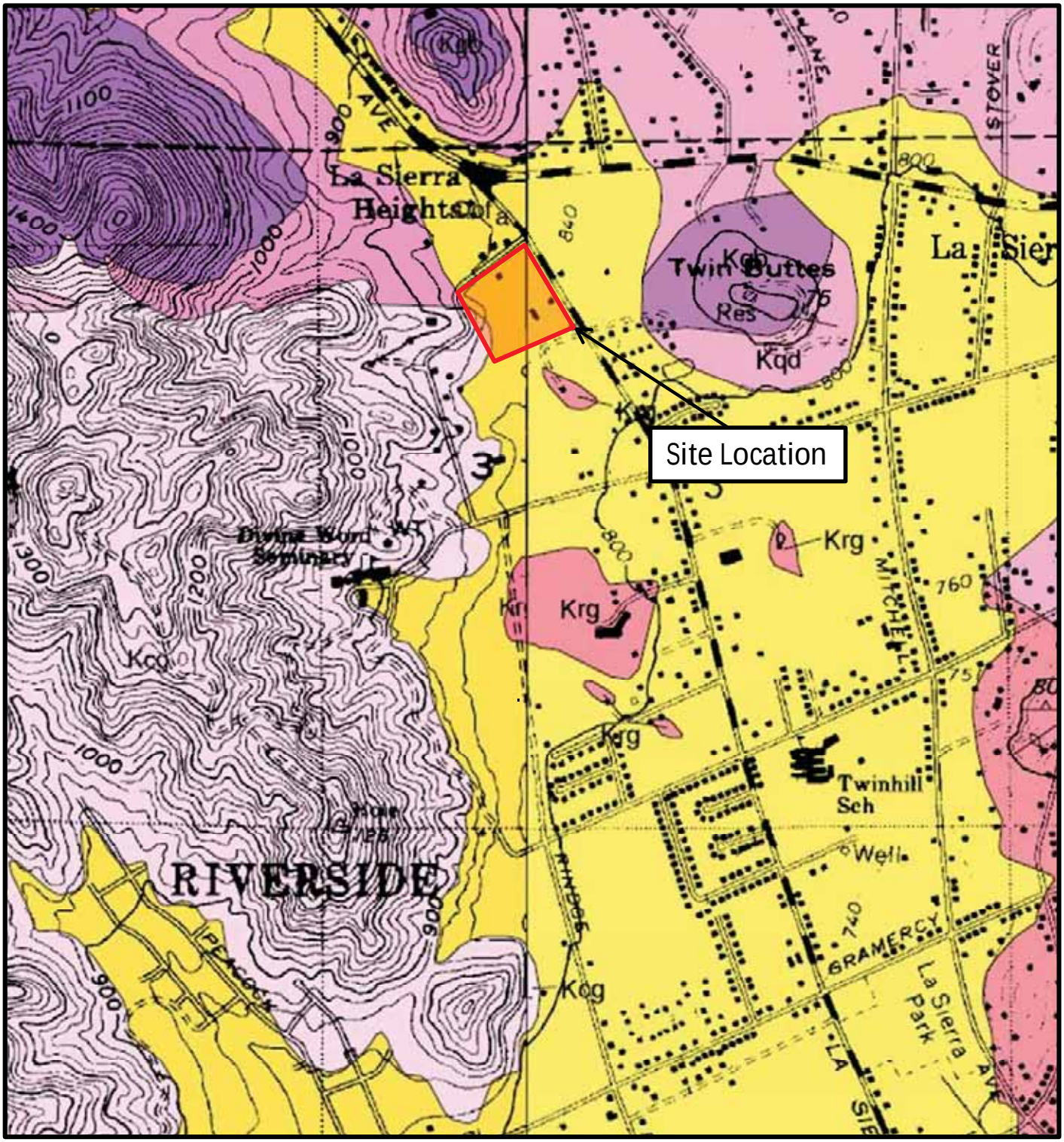
4.0 LIMITATIONS

This report has been prepared for the exclusive use of our client, Meritage Homes, within the scope of services requested for the subject property described herein. This report or its contents should not be used or relied upon for other projects or purposes, or by other parties without the acknowledgement of SA GEO and the consultation of a geotechnical professional. The means and methods used by SA GEO for this study are based on local geotechnical standards of practice, care, and requirements of governing agencies. No warranty or guarantee, expressed or implied, is given.

Our findings, conclusions, and recommendations are professional opinions based on interpretations and inferences made from geologic and engineering data from specific locations and depths, observed or collected at a given time. By nature, geologic conditions can vary from point to point, can be very different in-between exploration points, and can also change over time. Our conclusions and recommendations are, by nature, preliminary and subject to verification and/or modification during grading and construction when more subsurface data is exposed.

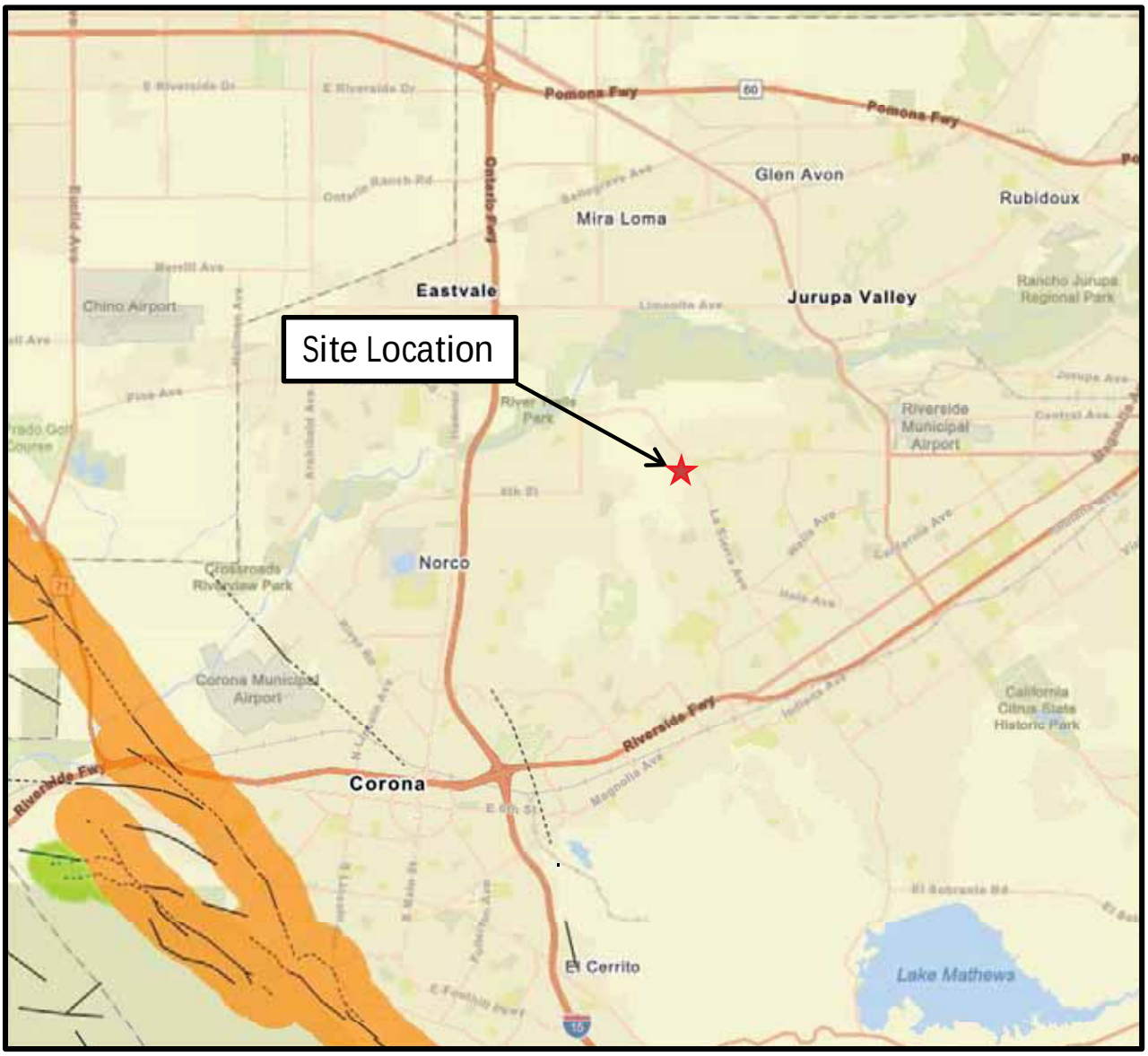
Source: Google Earth

Site Location Map	
Meritage Homes Proposed Residential Development La Sierra Avenue/Alhambra Avenue Riverside, California	Project Number: 23145-01 Date: December 22, 2023 Figure 1



Source: Geologic Map of the Corona North and Riverside West 7.5' Quadrangles, (USGS, 2001 & 2002)

Regional Geologic Map		
Meritage Homes Proposed Residential Development La Sierra Avenue/Alhambra Avenue Riverside, California	Project Number: 23145-01 Date: December 22, 2023 Figure 2	S/A



Source: Fault Activity Map of California (Jennings and Bryant, 2010)

Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.

Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.

Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.

Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

Regional Fault Map

Meritage Homes
Proposed Residential Development
La Sierra Avenue/Alhambra Avenue
Riverside, California

Project Number: 23145-01
Date: December 22, 2023
Figure 3