



**QUIN-01-DM-036**



**QUIN-01-DM-037**



**QUIN-01-DM-038**



**QUIN-01-DM-039**



**QUIN-01-DM-040**

## **APPENDIX D**

### **Native American Coordination**

## Sacred Lands File & Native American Contacts List Request

### NATIVE AMERICAN HERITAGE COMMISSION

1550 Harbor Blvd., Suite 100  
West Sacramento, CA 95691-3830  
(916) 373-3710  
(916) 373-5471 – FAX  
nahc@nahc.ca.gov

*Information Below is Required for a Sacred Lands File Search*

Project: Alpine Meadows, Riverside

County: Riverside

USGS Quadrangle Name: Riverside East

Township: 3 South Range: 5 West Section(s): 13

Company/Firm/Agency: L&L Environmental, Inc.

Contact Person: Bill Gillean

Street Address: 700 East Redlands Blvd, Suite U, PMB 351

City: Redlands, CA Zip: 92373

Phone: 909-335-9897

Fax: 909-335-9893

Email: WGillean@LLEnviroinc.com

Project Description:

A parcel measuring approximately 5.74 acres will be developed into 3 single-family housing units.



STATE OF CALIFORNIA

Gavin Newsom, Governor

## NATIVE AMERICAN HERITAGE COMMISSION

September 20, 2021

Bill Gillean  
L&L Environmental, Inc.

Via Email to: [WGillean@LLeviroinc.com](mailto:WGillean@LLeviroinc.com)

CHAIRPERSON  
**Laura Miranda**  
Luiseño

VICE CHAIRPERSON  
**Reginald Pagaling**  
Chumash

SECRETARY  
**Merri Lopez-Keifer**  
Luiseño

PARLIAMENTARIAN  
**Russell Attebery**  
Karuk

COMMISSIONER  
**William Mungary**  
Paiute/White Mountain  
Apache

COMMISSIONER  
**Julie Tumamait-  
Stenslie**  
Chumash

COMMISSIONER  
[Vacant]

COMMISSIONER  
[Vacant]

COMMISSIONER  
[Vacant]

EXECUTIVE SECRETARY  
**Christina Snider**  
Pomo

**NAHC HEADQUARTERS**  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)  
[NAHC.ca.gov](http://NAHC.ca.gov)

**Re: Alpine Meadows, Riverside Project, Riverside County**

Dear Mr. Gillean:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: [Andrew.Green@nahc.ca.gov](mailto:Andrew.Green@nahc.ca.gov).

Sincerely,

Andrew Green  
Cultural Resources Analyst

Attachment

Native American Heritage Commission  
Native American Contact List  
Riverside County  
9/20/2021

**Agua Caliente Band of Cahuilla  
Indians**

Jeff Grubbe, Chairperson  
5401 Dinah Shore Drive Cahuilla  
Palm Springs, CA, 92264  
Phone: (760) 699 - 6800  
Fax: (760) 699-6919

**Los Coyotes Band of Cahuilla  
and Cupeño Indians**

Ray Chapparosa, Chairperson  
P.O. Box 189 Cahuilla  
Warner Springs, CA, 92086-0189  
Phone: (760) 782 - 0711  
Fax: (760) 782-0712

**Agua Caliente Band of Cahuilla  
Indians**

Patricia Garcia-Plotkin, Director  
5401 Dinah Shore Drive Cahuilla  
Palm Springs, CA, 92264  
Phone: (760) 699 - 6907  
Fax: (760) 699-6924  
ACBCI-THPO@aguacaliente.net

**Morongo Band of Mission  
Indians**

Ann Brierty, THPO  
12700 Pumarra Road Cahuilla  
Banning, CA, 92220 Serrano  
Phone: (951) 755 - 5259  
Fax: (951) 572-6004  
abrierty@morongo-nsn.gov

**Augustine Band of Cahuilla  
Mission Indians**

Amanda Vance, Chairperson  
P.O. Box 846 Cahuilla  
Coachella, CA, 92236  
Phone: (760) 398 - 4722  
Fax: (760) 369-7161  
hhaines@augustinetribes.com

**Morongo Band of Mission  
Indians**

Robert Martin, Chairperson  
12700 Pumarra Road Cahuilla  
Banning, CA, 92220 Serrano  
Phone: (951) 755 - 5110  
Fax: (951) 755-5177  
abrierty@morongo-nsn.gov

**Cabazon Band of Mission  
Indians**

Doug Welmas, Chairperson  
84-245 Indio Springs Parkway Cahuilla  
Indio, CA, 92203  
Phone: (760) 342 - 2593  
Fax: (760) 347-7880  
jstapp@cabazonindians-nsn.gov

**Pala Band of Mission Indians**

Shasta Gaughen, Tribal Historic  
Preservation Officer  
PMB 50, 35008 Pala Temecula Cahuilla  
Rd. Luiseno  
Pala, CA, 92059  
Phone: (760) 891 - 3515  
Fax: (760) 742-3189  
sgaughen@palatribe.com

**Cahuilla Band of Indians**

Daniel Salgado, Chairperson  
52701 U.S. Highway 371 Cahuilla  
Anza, CA, 92539  
Phone: (951) 763 - 5549  
Fax: (951) 763-2808  
Chairman@cahuilla.net

**Pechanga Band of Luiseno  
Indians**

Paul Macarro, Cultural Resources  
Coordinator  
P.O. Box 1477 Luiseno  
Temecula, CA, 92593  
Phone: (951) 770 - 6306  
Fax: (951) 506-9491  
pmacarro@pechanga-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Alpine Meadows, Riverside Project, Riverside County.

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Native American Heritage Commission  
Native American Contact List  
Riverside County  
9/20/2021

**Pechanga Band of Luiseno  
Indians**

Mark Macarro, Chairperson  
P.O. Box 1477 Luiseno  
Temecula, CA, 92593  
Phone: (951) 770 - 6000  
Fax: (951) 695-1778  
epreston@pechanga-nsn.gov

**Rincon Band of Luiseno Indians**

Cheryl Madrigal, Tribal Historic  
Preservation Officer  
One Government Center Lane Luiseno  
Valley Center, CA, 92082  
Phone: (760) 297 - 2635  
crd@rincon-nsn.gov

**Quechan Tribe of the Fort Yuma  
Reservation**

Jill McCormick, Historic  
Preservation Officer  
P.O. Box 1899 Quechan  
Yuma, AZ, 85366  
Phone: (760) 572 - 2423  
historicpreservation@quechantribe.com

**Rincon Band of Luiseno Indians**

Bo Mazzetti, Chairperson  
One Government Center Lane Luiseno  
Valley Center, CA, 92082  
Phone: (760) 749 - 1051  
Fax: (760) 749-5144  
bomazzetti@aol.com

**Quechan Tribe of the Fort Yuma  
Reservation**

Manfred Scott, Acting Chairman  
Kw'ts'an Cultural Committee  
P.O. Box 1899 Quechan  
Yuma, AZ, 85366  
Phone: (928) 750 - 2516  
scottmanfred@yahoo.com

**Santa Rosa Band of Cahuilla  
Indians**

Lovina Redner, Tribal Chair  
P.O. Box 391820 Cahuilla  
Anza, CA, 92539  
Phone: (951) 659 - 2700  
Fax: (951) 659-2228  
Isaul@santarosa-nsn.gov

**Ramona Band of Cahuilla**

John Gomez, Environmental  
Coordinator  
P. O. Box 391670 Cahuilla  
Anza, CA, 92539  
Phone: (951) 763 - 4105  
Fax: (951) 763-4325  
jgomez@ramona-nsn.gov

**Soboba Band of Luiseno  
Indians**

Joseph Ontiveros, Cultural  
Resource Department  
P.O. BOX 487 Cahuilla  
San Jacinto, CA, 92581  
Phone: (951) 663 - 5279  
Fax: (951) 654-4198  
jontiveros@soboba-nsn.gov

**Ramona Band of Cahuilla**

Joseph Hamilton, Chairperson  
P.O. Box 391670 Cahuilla  
Anza, CA, 92539  
Phone: (951) 763 - 4105  
Fax: (951) 763-4325  
admin@ramona-nsn.gov

**Soboba Band of Luiseno  
Indians**

Isaiah Vivanco, Chairperson  
P. O. Box 487 Cahuilla  
San Jacinto, CA, 92581  
Phone: (951) 654 - 5544  
Fax: (951) 654-4198  
ivivanco@soboba-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Alpine Meadows, Riverside Project, Riverside County.

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**Native American Heritage Commission  
Native American Contact List  
Riverside County  
9/20/2021**

**Torres-Martinez Desert Cahuilla  
Indians**

Michael Mirelez, Cultural  
Resource Coordinator  
P.O. Box 1160  
Thermal, CA, 92274  
Phone: (760) 399 - 0022  
Fax: (760) 397-8146  
mmirelez@tmdci.org

Cahuilla

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Alpine Meadows, Riverside Project, Riverside County.

PROJ-2021-  
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September 20, 2021

{Recipient Name} {E-mail Address}  
{Recipient Affiliation} {Telephone Number}  
{Address Line 1} {FAX Number}  
{Address Line 2}

**REGARDING: INFORMATION REQUEST LETTER ASSOCIATED WITH ONE CULTURAL RESOURCES ASSESSMENT PROJECT – APN 243-600-025 LOCATED ON ±5.74 ACRES AT 841 ALPINE MEADOWS LANE IN THE CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA (USGS RIVERSIDE EAST, CA 7.5-MINUTE TOPOGRAPHIC QUADRANGLE) (L&L PROJECT QUIN-05-752)**

{Recipient Name}:

L&L Environmental, Inc. (L&L) is in the process of completing a California Environmental Quality Act (CEQA) compliant cultural resources assessment for a project area totaling ±5.74 acres in the City of Riverside, Riverside County, California. The proposed project includes split of a parcel into approximately 1-acre parcels and construction of houses on each.

Environmental regulations, including CEQA, consider the impacts a project may have on cultural resources. To determine whether the proposed project may impact any cultural resources, L&L has conducted research on the project area, including the request of a Sacred Land Search (SLS) from the Native American Heritage Commission (NAHC). The NAHC indicates NAHC-recorded Native American cultural resources have not been located in the project area and has directed that inquiry for additional information be requested from the list of contacts provided. The NAHC has listed you as a contact and has indicated that you may have information about the potential for this project area to contain resources. This letter is not associated with a formal consultation process, but is an information request that will be included in our cultural resources assessment document.

We have enclosed maps showing the location of the project area. Generally, the parcel and offsite improvements located at 841 Alpine Meadows Lane in the City of Riverside in Riverside County, California (Figure 1). Specifically, the site is located just southwest of the intersection of Alpine Meadows Lane and Kingdom Drive. The site is located within Section 13 of Township 3 South, Range 5 West, as shown on a portion of the USGS Riverside East 7.5' topographic quadrangle (Figure 2). The site is generally bounded as follows: to the west by a residential

D: \Work Computer\L\_L Enviro\L&L Projects\QUINN-05-752 Alpine Meadows\Scoping Letters\Scoping Letter.docx

*Celebrating 20+ Years of Service to Southern CA and the Great Basin, WBE Certified (Caltrans, CPUC, WBENC)*

*Mailing Address: 700 East Redlands Blvd, Suite U, PMB#351, Redlands CA 92373*

*Delivery Address: 721 Nevada Street, Suite 307, Redlands, CA 92373*

*Webpage: llenviroinc.com | Phone: 909-335-9897 | FAX: 909-335-9893*

Information Scoping Letter  
APN 243-600-025, City of Riverside, Riverside County, California

September 2021

structure, with disturbed open space, Prenda Dam, and high-density tract home developments, and Washington Street beyond; to the east by Kingdom Drive, a mixture of relatively undisturbed and disturbed open space, high and low-density residential areas, with I-215 beyond; to the north by Alpine Meadows Lane, homes associated with Solitude Court, with a mixture of disturbed open space and relatively undisturbed lands and Muirfield Road beyond; and to the south by disturbed open space and a mapped blue-line stream, with residential areas (some still under construction) along Horizon View Drive and Kingdom Drive, with a mixture of disturbed open space and relatively undisturbed areas beyond (Figure 3).

We wish to ask if you have any information or concerns about this project area and/or if the proposed project may have an impact on cultural resources that are important to you. Please feel free to contact me at **909-335-9897** or **WGillean@lleviroinc.com** if you have any questions or information or you may address and mail a response to my attention at our office.

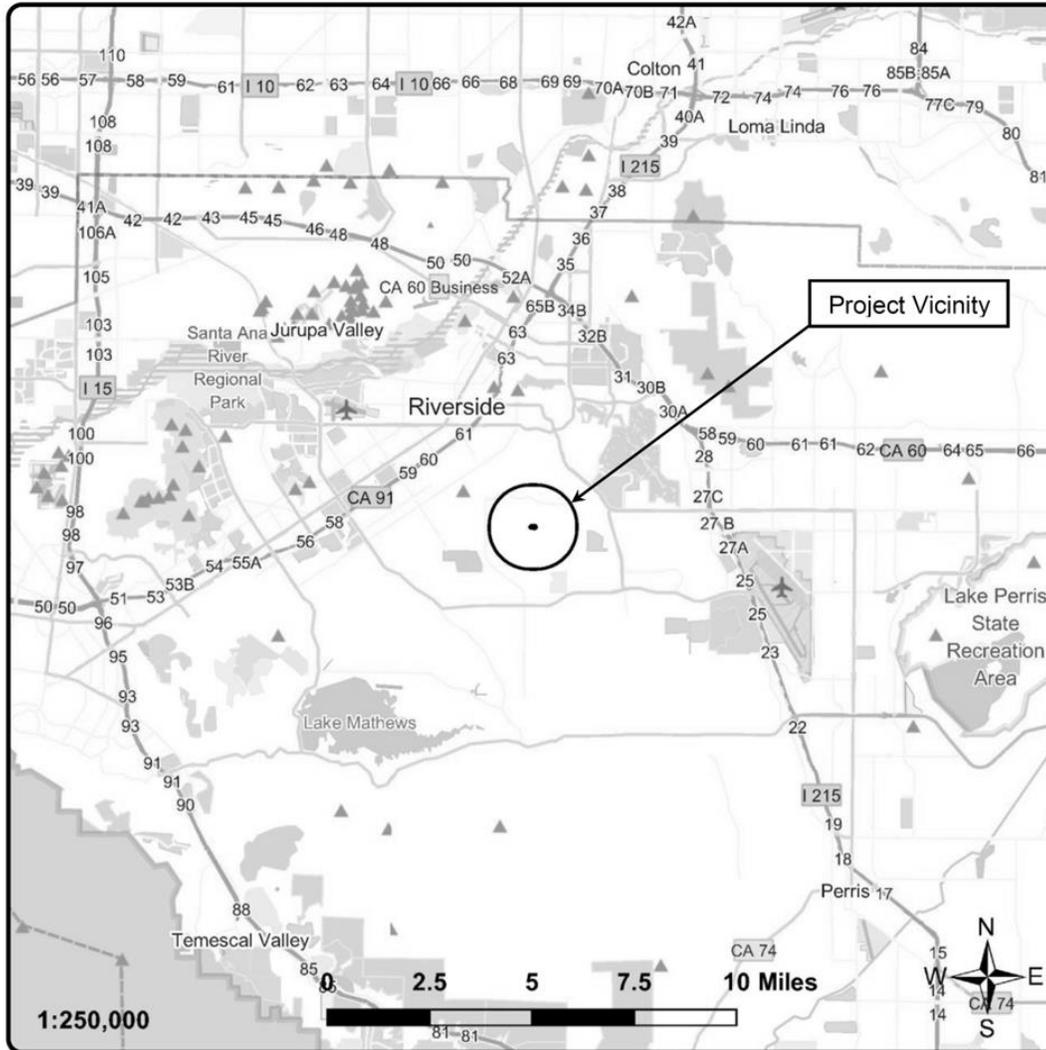
Sincerely,  
*L&L Environmental, Inc.*



William R. Gillean, B.S.  
Archaeologist

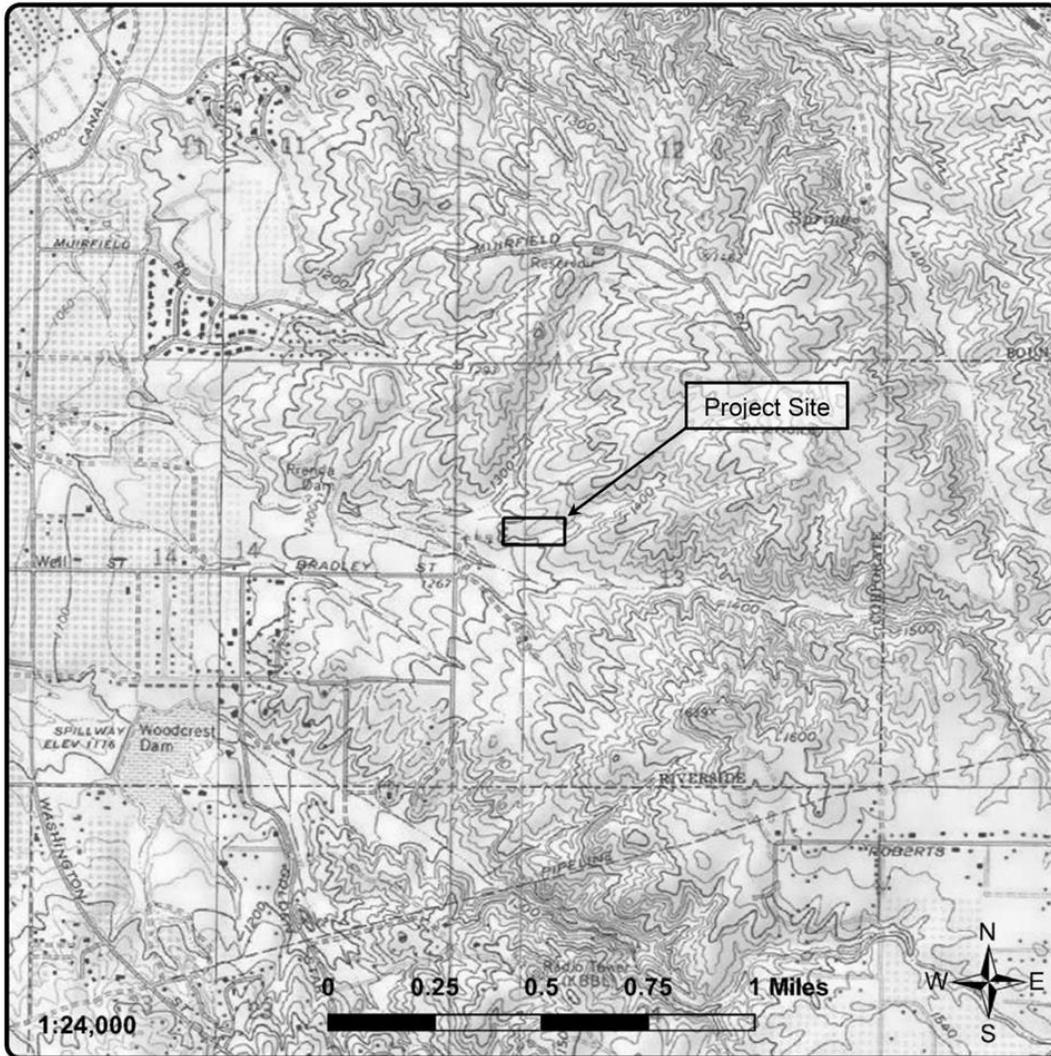
WRG/jje

Encl: Figure 1: Project Vicinity Map  
Figure 2: Project Location Map  
Figure 3: Aerial Photograph



**L&L Environmental, Inc.**  
  
BIOLOGICAL AND CULTURAL  
INVESTIGATIONS AND MONITORING  
  
QUIN-05-752  
September 2021

**Figure 1**  
**Project Vicinity Map**  
  
Alpine Meadows Lane, City of Riverside  
Riverside County, California



**L&L Environmental, Inc.**  
  
BIOLOGICAL AND CULTURAL  
INVESTIGATIONS AND MONITORING  
  
QUIN-05-752  
September 2021

**Figure 2**  
**Project Location Map**  
(USGS Riverside East [1980] quadrangle,  
Section 13, Township 3 South, Range 5 West)  
  
Alpine Meadows Lane, City of Riverside  
Riverside County, California



**L&L Environmental, Inc.**

BIOLOGICAL AND CULTURAL  
INVESTIGATIONS AND MONITORING

QUIN-05-752  
September 2021

**Figure 3**

**Aerial Photograph**

(Aerial obtained from Google Earth, August 2018)

Alpine Meadows Lane, City of Riverside  
Riverside County, California

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION



03-013-2021-007

October 29, 2021

[VIA EMAIL TO:wgillean@lleviroinc.com]  
L&L Environmental, Inc  
Mr. William Gillean  
721 Nevada Street, Suite 307  
Redlands, California 92373

**Re: APN 243-600-025/841 Alpine Meadows Lane**

Dear Mr. William Gillean,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the 841 Alpine Meadows Lane project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. For this reason, the ACBCI THPO requests the following:

\*Copies of any cultural resource documentation (report and site records) generated in connection with this project.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760)699-6956. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

Lacy Padilla  
Archaeologist  
Tribal Historic Preservation Office  
AGUA CALIENTE BAND  
OF CAHUILLA INDIANS

5401 DINAH SHORE DRIVE, PALM SPRINGS, CA 92264  
T 760/699/6800 F 760/699/6924 WWW.AGUACALIENTE-NSN.GOV



**AUGUSTINE BAND OF CAHUILLA INDIANS**  
**PO Box 846 84-481 Avenue 54 Coachella CA 92236**  
**Telephone: (760) 398-4722**  
**Fax (760) 369-7161**  
**Tribal Chairperson: Amanda Vance**  
**Tribal Vice-Chairperson: William Vance**  
**Tribal Secretary: Victoria Martin**

Date: September 22, 2021

**RE: INFORMATION REQUEST LETTER ASSOCIATED WITH ONE CULTURAL RESOURCES ASSESSMENT PROJECT – APN 243-600-025 LOCATED ON ±5.74 ACRES AT 841 ALPINE MEADOWS LANE IN THE CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA (USGS RIVERSIDE EAST, CA 7.5-MINUTE TOPOGRAPHIC QUADRANGLE) (L&L PROJECT QUIN-05-752)**

Dear: William R. Gillean  
Archaeologist

Thank you for the opportunity to offer input concerning the development of the above-identified project. We appreciate your sensitivity to the cultural resources that may be impacted by your project and the importance of these cultural resources to the Native American peoples that have occupied the land surrounding the area of your project for thousands of years. Unfortunately, increased development and lack of sensitivity to cultural resources have resulted in many significant cultural resources being destroyed or substantially altered and impacted. Your invitation to consult on this project is greatly appreciated.

At this time, we are unaware of specific cultural resources that may be affected by the proposed project, however, in the event, you should discover any cultural resources during the development of this project please contact our office immediately for further evaluation.

Very truly yours,

*Victoria Martin*

Victoria Martin, Tribal Secretary  
Augustine Band of Cahuilla Indians



**PECHANGA CULTURAL RESOURCES**  
*Temecula Band of Luiseño Mission Indians*

Post Office, Box 2183 • Temecula, CA 92593  
Telephone (951) 770-6300 • Fax (951) 506-9491

September 30, 2021

**VIA E-Mail and USPS**

William R. Gillean, B.S.  
Archaeologist  
L & L Environmental, Inc.  
700 East Redlands Blvd, Suite 300  
Redlands, CA 92373

**RE: Request for Information for the Alpine Meadows Lane Project, City of Riverside,  
Riverside County, California**

Dear Mr. Gillean,

The Pechanga Band of Luiseño Indians ("the Tribe") appreciates your request for information regarding the above referenced Project. After reviewing the provided maps and our internal documents, we have determined that the Project area is not within Reservation land's, although it is located in Our Ancestral Territory. At this time, we are interested in participating in this Project based upon our 'Ayélkwish/Traditional Knowledge of the area, its close proximity to two distinct and nearby Traditional Cultural Properties, and through extensive previously recorded site(s) within this Project's immediate vicinity. Therefore, we are interested in participating in this Project. The Tribe believes that the possibility of recovering subsurface resources during ground-disturbing activities for the Project is extremely high.

The Tribe is dedicated to providing comprehensive cultural information to you and your firm for inclusion in the archaeological study as well as to the Lead Agency for CEQA review. At this time, the Tribe requests the following so we may continue the consultation process and to provide adequate and appropriate recommendations for the Project:

- 1) Notification once the Project begins the entitlement process, if it has not already;
- 2) Copies of all applicable archaeological reports, site records, proposed grading plans and environmental documents (EA/IS/MND/EIR, etc);
- 3) Government-to-government consultation with the Lead Agency; and
- 4) The Tribe believes that monitoring by a Riverside County qualified archaeologist and a professional Pechanga Tribe monitor may be required during earthmoving activities. Therefore, the Tribe reserves its right to make additional comments and recommendations once the environmental documents have been received and fully reviewed. Further, in the event that subsurface cultural resources are identified, the

*Sacred Is The Duty Trusted Unto Our Care And With Honor We Rise To The Need*

Chairperson:  
Neal Ibanez

Vice Chairperson:  
Bridgett Barcello

Committee Members:  
Darlene Miranda  
Richard B. Searce, III  
Robert Villalobos  
Shevon Torres  
Juan Rodriguez

Director:  
Gary DuBois

Coordinator:  
Paul Macarro

Cultural Analyst:  
Tuba Ebru Ozdil

Planning Specialist:  
Molly Escobar

Tribe requests consultation with the Project proponent and Lead Agency regarding the treatment and disposition of all artifacts.

As a Sovereign governmental entity, the Tribe is entitled to appropriate and adequate government-to-government consultation regarding the proposed Project. We would like you and your client to know that the Tribe does not consider initial inquiry letters from project consultants to constitute appropriate government-to-government consultation, but rather tools to obtain further information about the Project area. Therefore, the Tribe reserves its rights to participate in the formal environmental review process, including government-to-government consultation with the Lead Agency, and requests to be included in all correspondence regarding this Project.

Please note that we are interested in participating in surveys within Luiseño Ancestral territory. Prior to conducting any surveys, please contact the Cultural Department to schedule specifics. If you have any additional questions or comments, please contact me at pmacarro@pechanga-nsn.gov or 951-770-6306.

Sincerely,



Paul E. Macarro  
Cultural Coordinator  
Pechanga Reservation

*Pechanga Cultural Resources • Temecula Band of Luiseño Mission Indians  
Post Office Box 2183 • Temecula, CA 92592*

*Sacred Is The Duty Trusted Unto Our Care And With Honor We Rise To The Need*

# Rincon Band of Luiseño Indians

## CULTURAL RESOURCES DEPARTMENT

One Government Center Lane | Valley Center | CA 92082  
(760) 749-1092 | Fax: (760) 749-8901 | rincon-nsn.gov



November 3, 2021

**Sent only via email to: [WGillean@llenviroinc.com](mailto:WGillean@llenviroinc.com)**

**Re: 841 Alpine Meadows Lane in the City of Riverside, Riverside County, California; L&L Project QUIN-05-752; APN 243-600-025**

Dear Mr. Gillean,

This letter is written on behalf of the Rincon Band of Luiseño Indians ("Rincon Band" or "Tribe"), a federally recognized Indian Tribe and sovereign government. We have received your notification regarding the above referenced project and we thank you for the opportunity to provide information pertaining to cultural resources. The identified location is within the Territory of the Luiseño people, and is also within the Tribe's specific area of Historic interest.

After review of the provided documents and our internal information, the Rincon Band has no knowledge of Tribal Cultural Resources (TCRs) or Traditional Cultural Properties (TCPs) that have been recorded within the project area. However, the Band believes that the area is culturally-sensitive and potential exists for cultural resources to be identified during further research and survey work. We recommend that an archaeological record search be conducted and ask that a copy of the results be provided to the Rincon Band. Additionally, we recommend working closely with Tribes located closer to the project site and may have pertinent information.

If you have additional questions or concerns, please do not hesitate to contact our office at your convenience at (760) 749 1092 ext. 323 or via electronic mail at [cmadrigal@rincon-nsn.gov](mailto:cmadrigal@rincon-nsn.gov). We look forward to working together to protect and preserve our cultural assets.

Sincerely,

A handwritten signature in black ink, appearing to read "Cheryl Madrigal".

Cheryl Madrigal  
Tribal Historic Preservation Officer  
Cultural Resources Manager

Bo Mazzetti  
Chairman

Tishmall Turner  
Vice Chair

Laurie E. Gonzalez  
Council Member

John Constantino  
Council Member

Joseph Linton  
Council Member

From: Quechan Historic Preservation Officer <historicpreservation@quechantribe.com>  
Sent: Tuesday, September 21, 2021 9:47 AM  
To: Jeff Sonnentag  
Subject: RE: H. Jill McCormick - Information Request Letter for L&L Project QUIN-05-752

This email is to inform you that we have no comments on this project. We defer to the more local Tribes and support their decisions on the projects.

**REDACTED CONFIDENTIAL APPENDIX E**

**DPR 523 Forms**

This section intentionally removed.

**Fire Protection Plan  
TTM 38174  
APN 243-600-25  
Riverside, California**



**24 February 2023**

**Prepared for:  
Ryan Williams  
1649 Harrison Lane  
Redlands, CA 92374**

Signed by Ryan Williams:

Certified by:

**Mel Johnson, Owner  
Certified CEQA Wildland Fire Consultant  
FIREWISE 2000 LLC  
P.O. BOX 339  
LOWER LAKE, CA  
INFO@FIREWISE2000.COM**

# TTM38174 Fire Protection Plan

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# Fire Protection Plan

## Alpine Meadows

### TTM38174

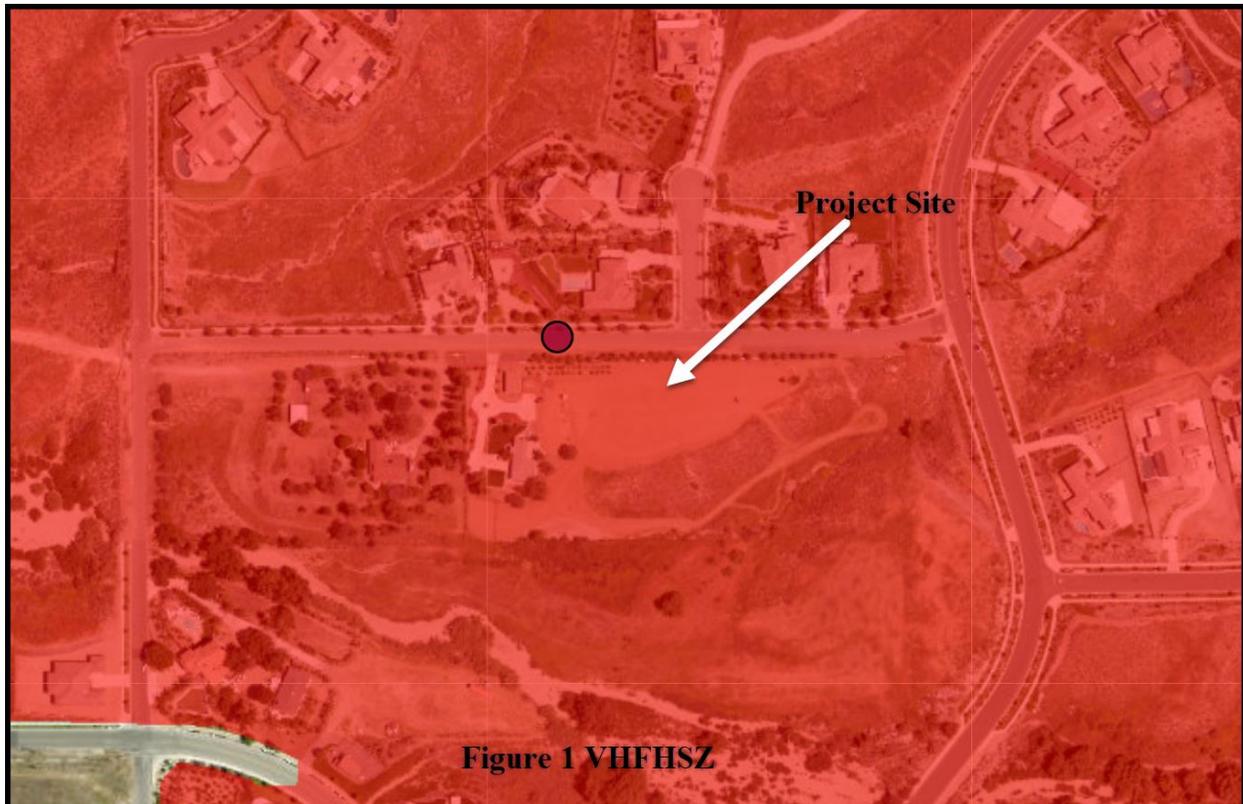
### Riverside, California

#### 1.0 GENERAL DESCRIPTION

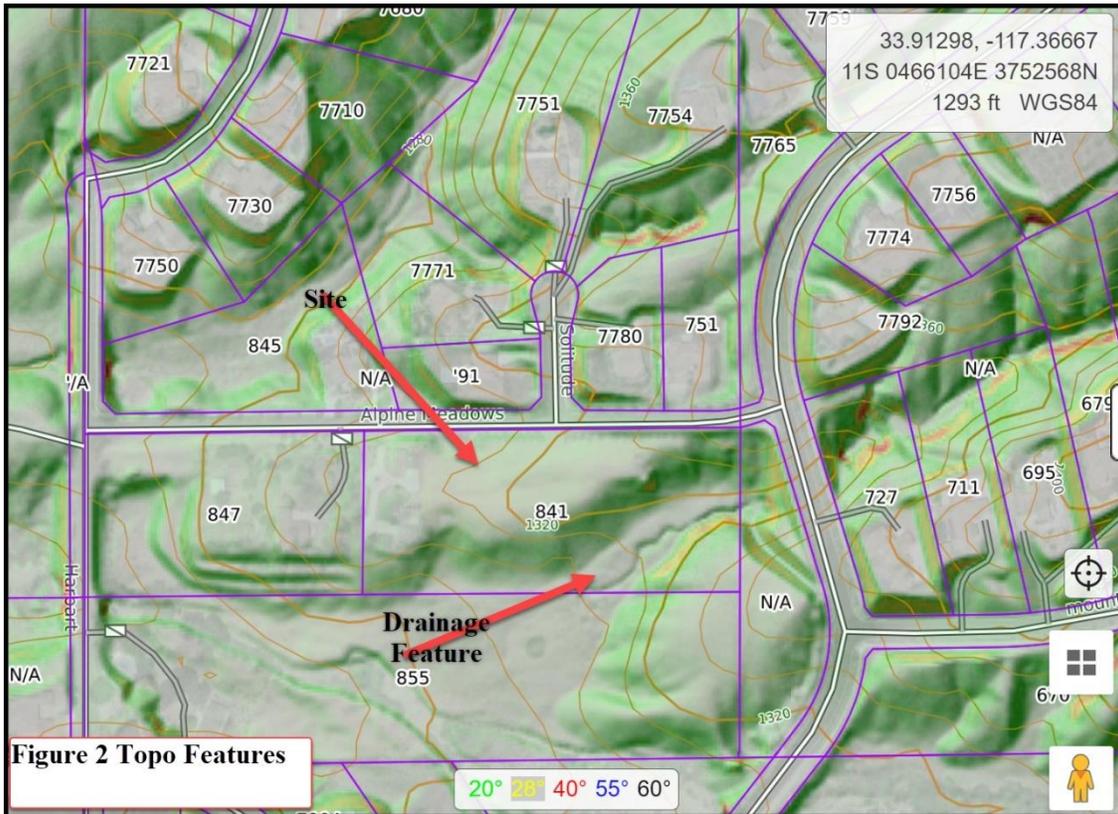
The proposed Project would split the 5.74-acre parcel APN 243-600-025, into four lots each of an approximate 46476 sf in size. Lot 1 is currently built under a prior permit. Lot 2, 3 and 4 would construct three (3) new single-family homes.

The subject property is currently vacant with no significant topographic features or vegetation and is characterized as undeveloped land.

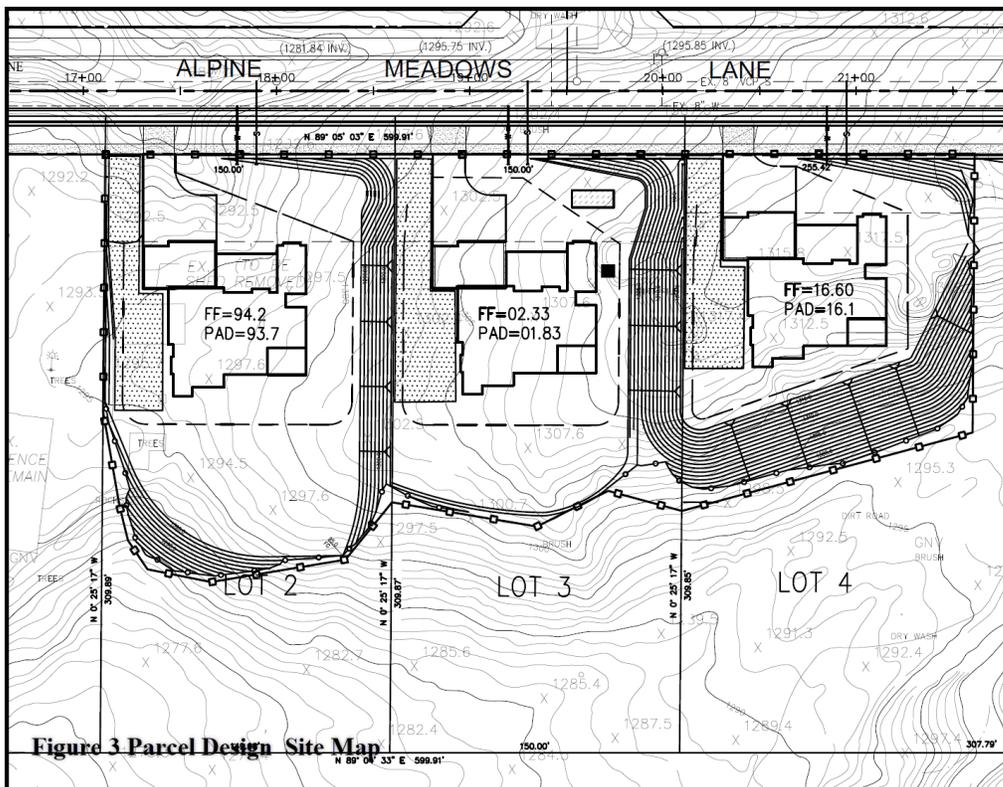
The proposed Project is located within a high fire hazard zone in the City of Riverside Figure 1 Very High Fire Hazard Severity Zone (VHFHSZ).



The project is bounded by developed properties to the north, east, and west. The area to the south is undeveloped and is believed to be a flood control drainage feature. Access into the drainage is off Kingdom Dr. (Figure 2). Figure 3 Design Site Map.



**Figure 2 Topo Features**



**Figure 3 Parcel Design Site Map**

Prior to any land development within this proposed project, a Fire Protection Plan (FPP) must be submitted to and approved by the City of Riverside Fire Department (RCFD). The FPP assesses the overall (on-site and off-site) wildland fire hazards and risks that may threaten life and property associated with the proposed residential development. In addition, this FPP establishes both short and long-term fuel modifications to minimize any projected fire hazard and risk and assigns annual maintenance responsibilities for each of the recommended fuel modification actions.

### **1.1 General Information**

**Developer/Applicant:** Ryan Williams  
1649 Harrison Lane  
Redlands, CA 92374

**Prepared By:** Monty Kalin  
Firewise2000, LLC  
Associate Planner

Approving Departments: City of Riverside Planning Department  
Fire Authority: City of Riverside Fire Department

The purpose of this FPP is to provide Vegetation Management Zone treatment and construction feature direction for developers, architects, builders, and the individual lot owner. The document will be used in making the structures in the proposed project safe from future wildfires.

Requirements of this FPP are based upon requirements listed in the 2022 California Fire Code, Chapter 49. Public Resources Code, Sections 4201 through 4204, and Government Code, Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires. Local Amendments as required; Chapter 7A-California Building Code; 2022 California Residential Code sections R337; National Fire Protection Association Standards (NFPA) 13-D, 2019 Edition. the City of Riverside Weed Abatement, Declaration of Nuisance 6.15.020, and supporting guidelines.

**Hazardous vegetation and fuels around all applicable buildings and structures shall be maintained by the following laws and/or regulations:**

Public Resources Code, Section 4291. California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299 (see guidance for implementation "General Guideline to Create Defensible Space"). California Government Code, Section 51182. California Code of Regulations, Title 19, Division 1, Chapter 7, Subchapter 1, Section 3.07. Riverside County Ordinances; 787.7 and 460.151.

### **2.0 WILDLAND FIRE HAZARD AND RISK ASSESSMENT**

The proposed site is located within an area classified by the RCFD as a Very High Fire Hazard Area. Wildland fire may impact the project as there are wildland fuels within 100 feet of the project on the south side. The greatest threat comes from the adjacent undeveloped property and drainage south of the proposed development. There is potential for wildfire to enter the project site from a windblown east and south fire event. All the structures within the site would be subject to embers showers.

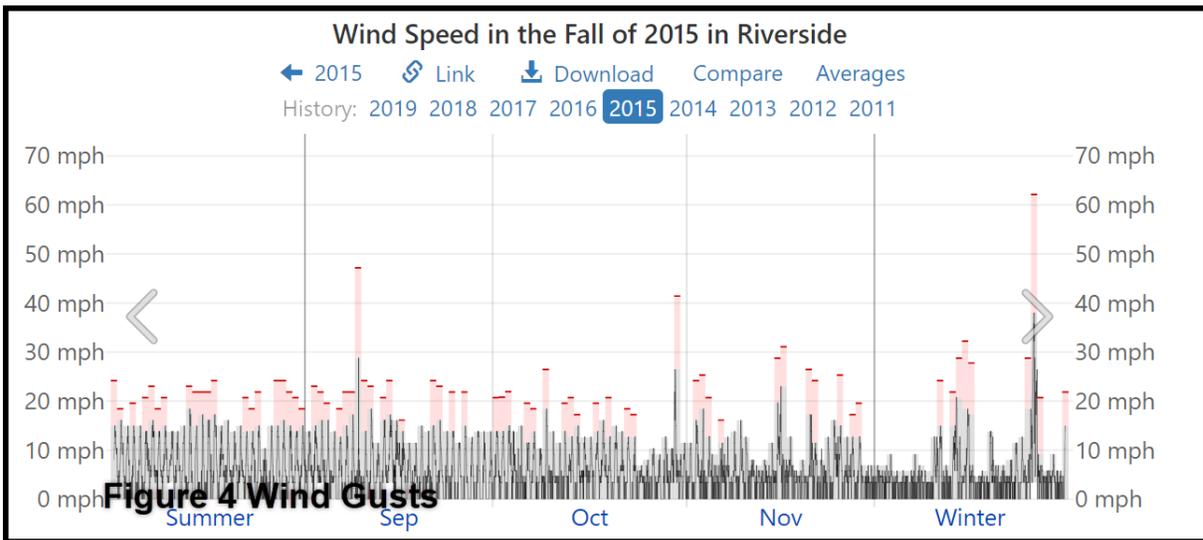
#### **2.1 Weather Review and Assessment**

The typical prevailing summer time wind pattern is out of the west/southwest and normally is of a much lower velocity (5-10 MPH with occasional gusts to 30 MPH) and is associated with relative humidity readings ranging between 20% and occasionally more than 70% due to the sites proximity to the ocean. All other (northwest, southeast and south) wind directions

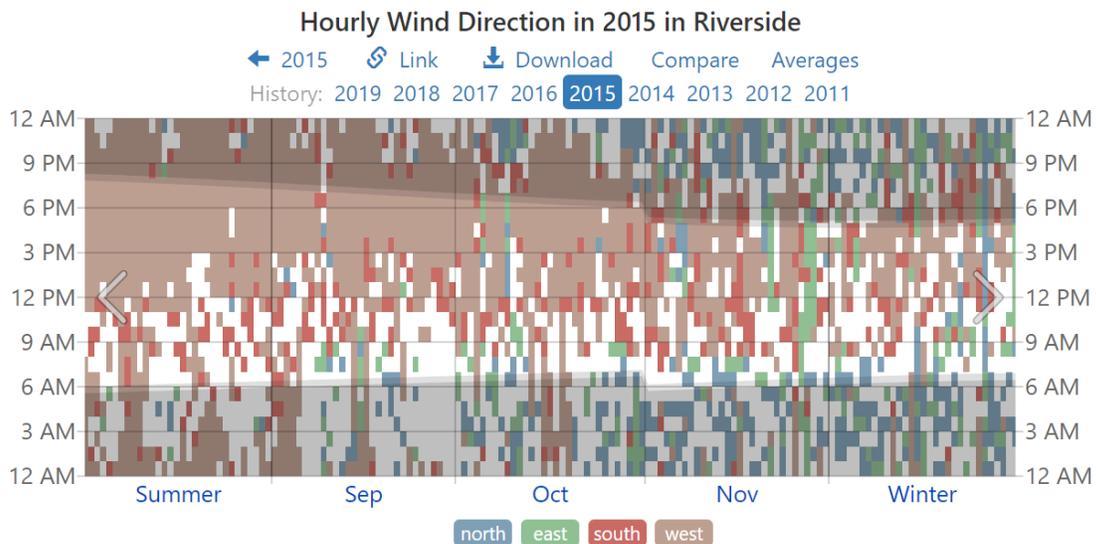
may be occasionally strong and gusty; however, they are generally associated with cooler moist air and have higher relative humidity (>40%). They are considered a serious wildland fire weather condition when wind speeds reach >20-MPH.

The most critical weather pattern to the project area is a hot, dry offshore wind, typically called a Santa Ana. Such wind conditions are usually associated with strong (>50 MPH), hot, dry winds with very low (<15%) relative humidity. Santa Ana winds originate over the dry desert land and can occur anytime of the year; however, they generally occur in the late fall (September through November). This is also when non-irrigated vegetation is at its lowest moisture content.

The following illustrations depict the the worst case weather that **FIREWISE 2000 LLC** could verify over the last 10 years. Note that when very low humidity occurs simultaneously with strong winds that fire behavior can be profoundly affected.



**Figure 4 Wind Gust highest found over the past several years. Recorded at 65 mph.**



**Figure 5 Wind Direction** color coded by compass point. The shaded overlays indicate night and civil twilight.

Figure 5 note predominate wind out of the west.

## 2.2 Off-Site Fire Hazard and Risk Assessment

Figure 6 shows areas that potentially put the structures at risk. There is considerable open space fuel to the south, and potentially along the east boundary in remaining open space. The Fire Behavior Analysis was performed to the south and east of the project site.

Historically, wildland fires have burned in the City of Riverside during moderate west to southwest winds. This moderately strong, dry wind condition that occurs during these fires usually develops in the late afternoon or early evening. These winds occur during the normal summer and early fall (June through October) months. These winds may blow from 20-30 MPH. The most significant wind pattern that will impact the project is a Santa Ana wind which typically occurs in September through November and in the range of 50-60 MPH within this portion of Riverside County.

**The current vegetative cover best resembles a SCAL 18 additionally portions were noted as more SH2 both BEHAVE Model are provided. Moderate Load, Dry Climate Shrub**

The required irrigated fire-resistant/draught tolerant landscape surrounding the structure combined with ignition resistant construction requirements, will be more than sufficient to mitigate any threats from wildfire and embers coming from the east.

The greatest threat will be embers from a wildfire occurring to the east in the undeveloped open space.

## 2.3 On-site Fire Hazard and Risk Assessment



All the interior fuels will be removed during grading; therefore, there are no wildland fire hazards anticipated within the development once all the fuel modifications are developed as described in Section 5.0 Fuel Modification Zone Descriptions & Required Treatments.

## SITE PHOTOS

	<p><b>1</b> View off Alpine Meadows Ln, note residential development on north side of road.</p>
	<p><b>2</b> View across site has been cleared of all vegetation.</p>
	<p><b>3</b> View inside fence looking west</p>



4

View east side of Kingdom Dr

These open space fuels would create a ember risk to the tract



5

View off corner of Alpine Meadows and Kingdom

Note partial top of slope landscaping prior to open space



6

View south of proposed development open space fuels risk to development

## 2.4 Fire History

Historical wildland fire activity was also considered in developing this FPP. CalFire and other sources were studied, no large fires have been on or near the site within the last 25 years. This does not include any fire less than 2.5 ac that may have been extinguished by Riverside City Fire. The viewed fuel is typical of the area, it is doubt fuel it will change much in future years.

## 2.5 Predicting Wildland Fire Behavior

The BEHAVE 5.0.5 Fire Behavior Prediction and Fuel Modeling System developed by USDA–Forest Service research scientists Patricia L. Andrews and Collin D. Bevins at the Intermountain Forest Fire Laboratory, Missoula, Montana, is one of the best systematic methods for predicting wildland fire behavior. The BEHAVE fire behavior computer modeling system is utilized by wildland fire experts and managers nationwide. The program projects the expected spotting distance, rate-of-spread and flame lengths with a reasonable degree of certainty for use in Fire Protection Planning purposes. **FIREWISE 2000, Inc.** used the BEHAVE 5.0.5 Fire Behavior Prediction Model to make the fire behavior assessments discussed below.

## 2.6 Wildland Fire Behavior Calculations for the Off-Site Hazardous Vegetative Fuels

Wildland fire behavior calculations have been projected for the hazardous vegetative fuels on the undeveloped areas in proximity to the proposed residences. These projections are based on scenarios that are ‘worst case’ Riverside County fire weather in the vicinity of the project area.

Tables 2.6.1 provides Behave Plus Inputs; fuel moisture values are at critical, and the fuel bed is unsheltered. **All scenario outputs provide the expected Flame Length (expressed in feet), Rate of Fire Spread (expressed in ft/min), and Fireline Intensity (as btu/ft/s), within the Behave run sheets as part of the Scenario**

Fuel Models were selected from project site observations of those areas within 200ft of proposed boundary, scenarios depict slope, aspect, and wind direction.

**The two models selected most closely represent the model location, available fuel to burn. Flame Lengths would vary depending on the area being burnt through.**

**Table 2.6.1  
Fire Behavior Modeling Inputs**

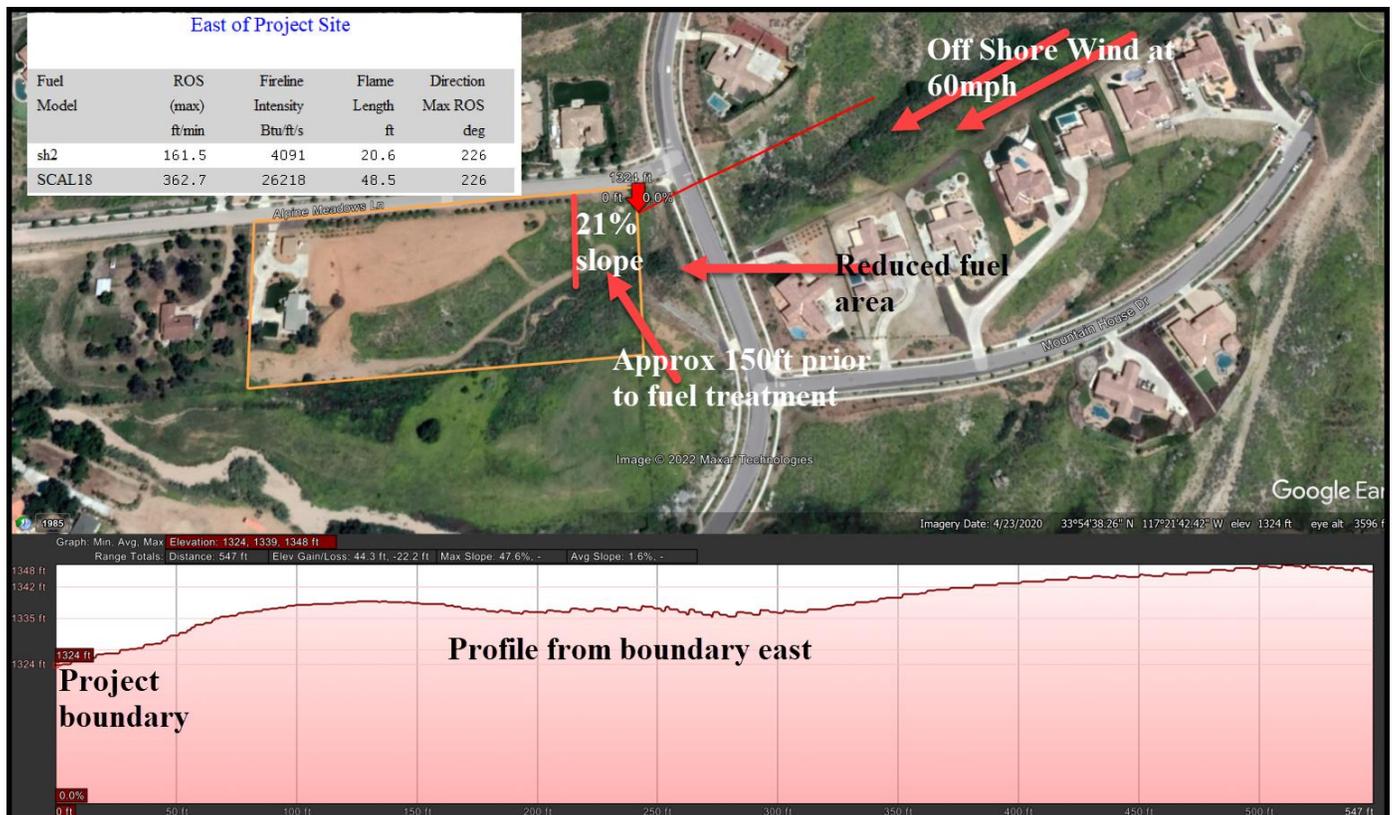
Variable	Summer Weather (Onshore Flow)	Peak Weather (offshore/Santa Ana Condition)
1h Moisture	3%	2%
10h Moisture	5%	3%
100h Moisture	7%	5%
Live Herbaceous Moisture	50%	30%
Live Woody Moisture	60%	60%
20-foot Wind Speed (upslope/downslope)	15, 30, mph	65mph gusts
Wind Adjustment Factor	0.5	0.5
Slope Steepness	varies	varies

The following table depicts a fire burning with no-wind up slope within in the surrounding topographic area. Base line results (NON-TREATED) east facing slopes near project boundary east and south side.

## East of Project Site No Wind

Fuel Model	ROS (max) ft/min	Fireline Intensity Btu/ft/s	Flame Length ft	Direction Max ROS deg
sh2	2.0	50	2.7	270
SCAL18	6.5	469	7.6	270

**Scenario 1 Typical off shore wind event modeled as Sh2 Moderate load, dry climate shrub and SCAL 18 Sage / Buckwheat. The fuel bed lacks continuity flame lengths are probably over predicted. The future view will most likely look the same unless environmental factors change.**



**Additional data rate of spread, and fireline intensity can be found in the behave run next page.**

## Behave Results

BehavePlus 5.0.5 (Build 307)

### East of Project Site

#### Input Worksheet

##### Inputs: SURFACE

Input Variables	Units	Input Value(s)
<b>Fuel/Vegetation, Surface/Understory</b>		
Fuel Model		sh2, SCAL18
<b>Fuel Moisture</b>		
1-h Moisture	%	2
10-h Moisture	%	3
100-h Moisture	%	5
Live Herbaceous Moisture	%	30
Live Woody Moisture	%	60
<b>Weather</b>		
20-ft Wind Speed	mi/h	65
Wind Adjustment Factor		.5
Wind Direction (from north)	deg	45
<b>Terrain</b>		
Slope Steepness	%	31
Aspect	deg	90

##### Notes

#### Run Option Notes

Maximum reliable effective wind speed limit IS imposed [SURFACE].

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

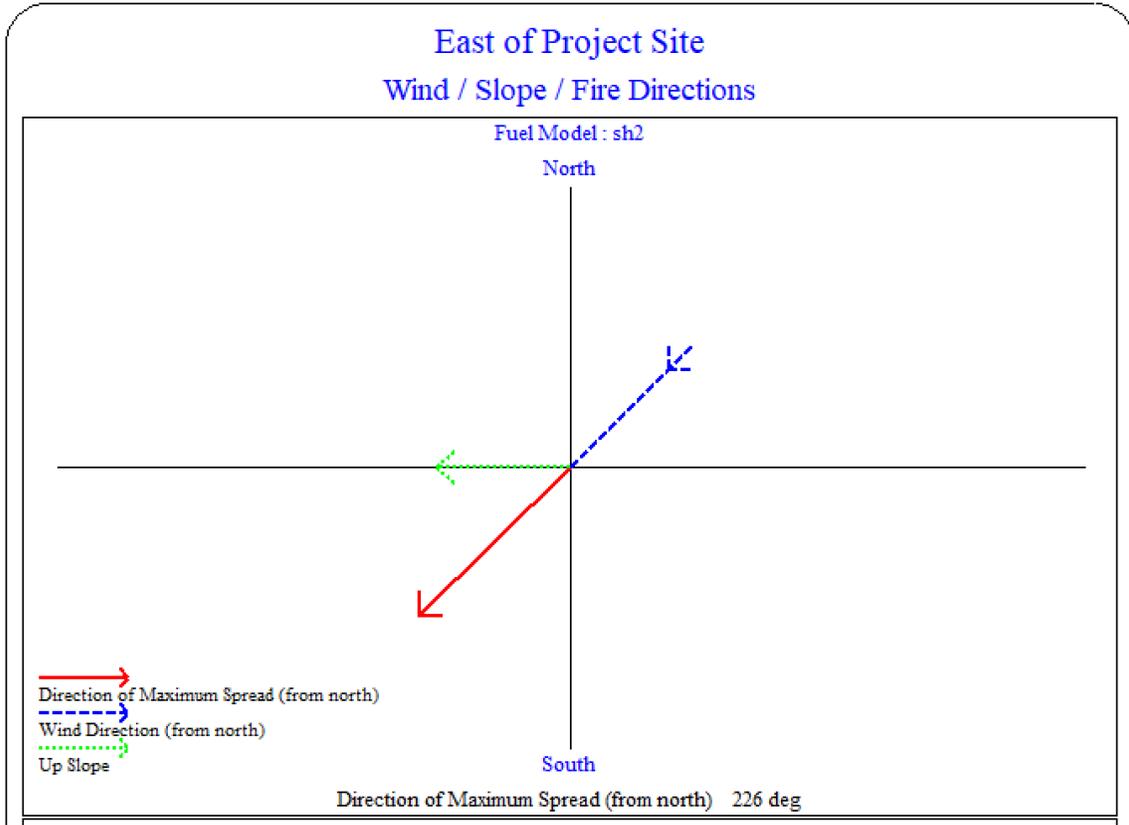
Wind direction is the direction from which the wind is blowing [SURFACE].

#### Results

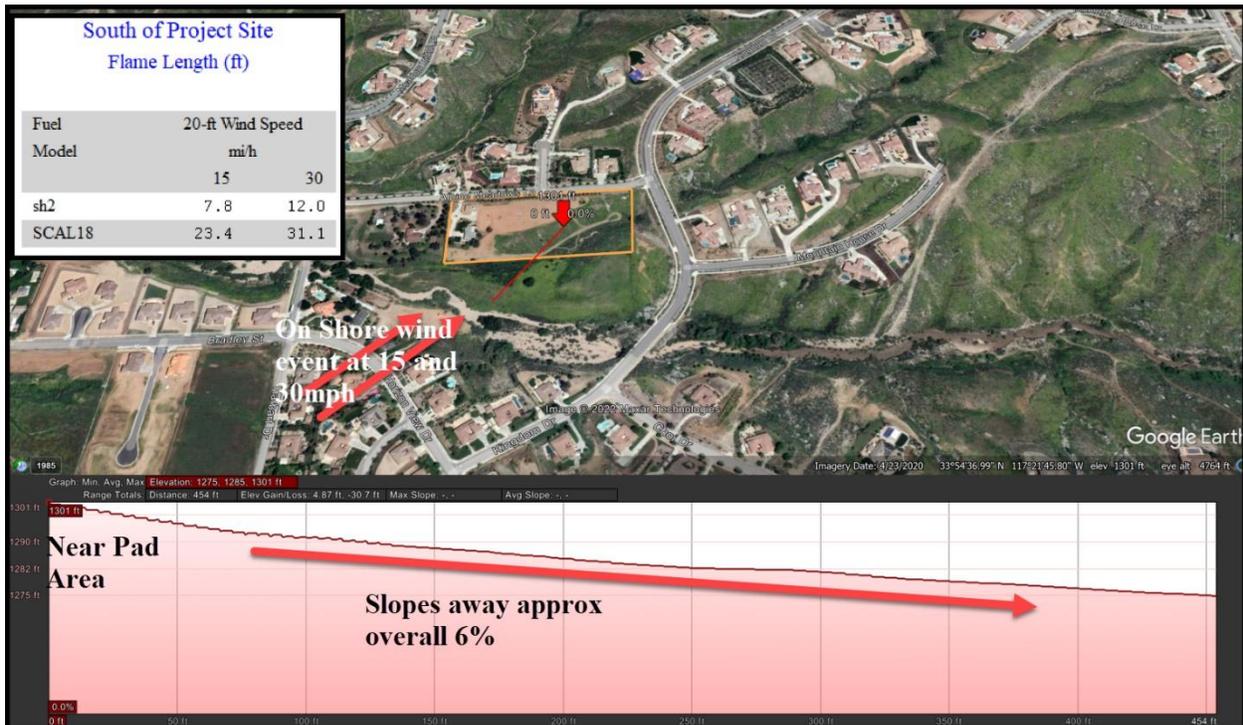
Fuel Model	ROS (max)	Fireline Intensity	Flame Length	Direction Max ROS
	ft/min	Btu/ft/s	ft	deg
sh2	161.5	4091	20.6	226
SCAL18	362.7	26218	48.5	226

**End**

**Spread Diagram follows.**



**Scenario 2 On shore wind event modeled as Sh2 Moderate load, dry climate shrub and SCAL 18 Sage / Buckwheat. The fuel bed lacks continuity flame lengths are probably over predicted. The future view will most likely look the same unless environmental factors**



change.

# Behave Results

BehavePlus 5.0.5 (Build 307)

## South of Project Site

### Input Worksheet

#### Inputs: SURFACE

Input Variables	Units	Input Value(s)
-----------------	-------	----------------

#### Fuel/Vegetation, Surface/Understory

Fuel Model		sh2, SCAL18
------------	--	-------------

#### Fuel Moisture

1-h Moisture	%	3
10-h Moisture	%	5
100-h Moisture	%	7
Live Herbaceous Moisture	%	50
Live Woody Moisture	%	60

#### Weather

20-ft Wind Speed	mi/h	15,30
Wind Adjustment Factor		0.5
Wind Direction (from north)	deg	225

#### Terrain

Slope Steepness	%	6
Aspect	deg	180

#### Notes

### Run Option Notes

Maximum reliable effective wind speed limit IS imposed [SURFACE].  
 Calculations are only for the direction of maximum spread [SURFACE].  
 Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].  
 Wind and spread directions are degrees clockwise from north [SURFACE].  
 Wind direction is the direction from which the wind is blowing [SURFACE].

### Results for: Surface Rate of Spread (maximum) (ft/min)

Fuel	20-ft Wind Speed	
Model	mi/h	
	15	30
sh2	20.7	52.6
SCAL18	79.8	149.0

### Results for: Fireline Intensity (Btu/ft/s)

Fuel	20-ft Wind Speed	
Model	mi/h	

	15	30
sh2	500	1269
SCAL18	5360	10008

**Results for: Flame Length (ft)**

Fuel	20-ft Wind Speed	
Model	mi/h	
	15	30
sh2	7.8	12.0
SCAL18	23.4	31.1

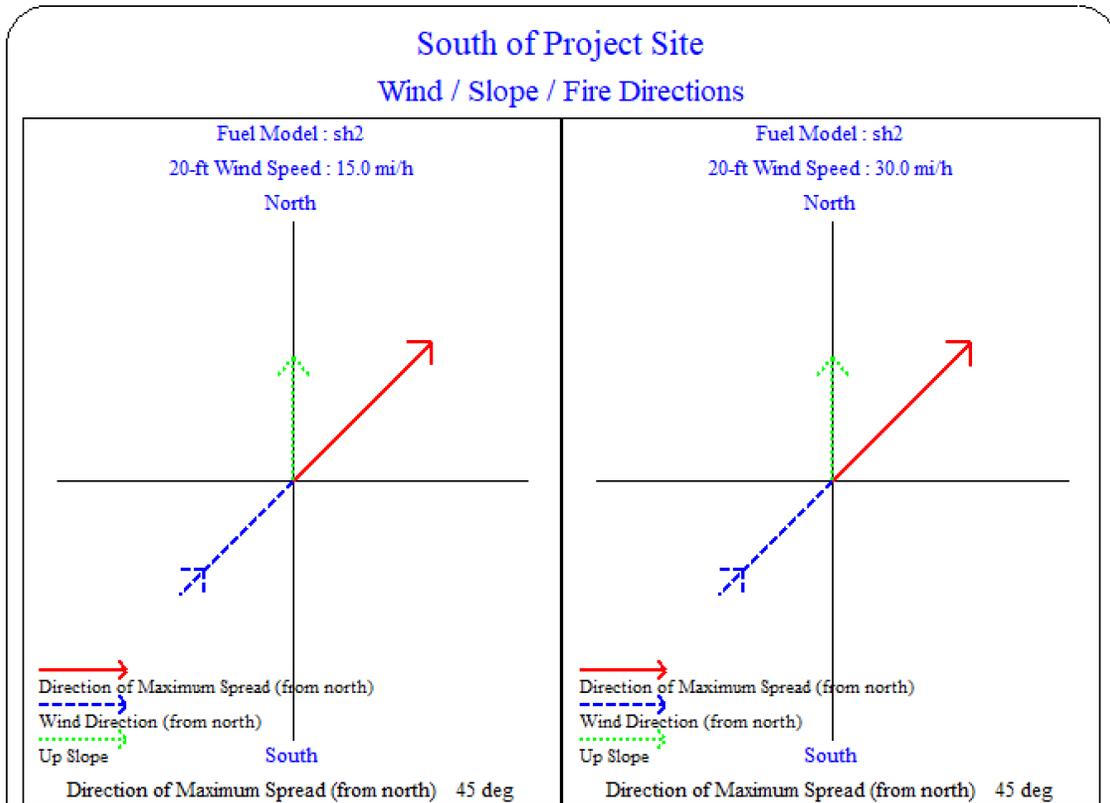
**Results for: Direction of Maximum Spread (from north) (deg)**

Fuel	20-ft Wind Speed	
Model	mi/h	
	15	30
sh2	45	45
SCAL18	45	45

**End**

**Spread Diagram**

**3.0 Assessing Structure Ignitions in the Wildland/Urban Interface**



Structure ignitions from wildland wildfires basically come from three sources of heat: convective firebrands (flying embers), direct flame impingement, and radiant heat. The Behave Plus Fire Behavior Modeling Program does not address wind blown embers or firebrands from a structure ignition perspective. However, even though ignition resistant exterior building materials will be required in the construction, they are not guaranteed to prevent ignition from wind driven embers, these issues are addressed in this FPP.

### **3.1 Firebrands**

Firebrands are pieces of burning materials that detach from a burning fuel due to the strong convection drafts in the flaming zone. Firebrands may also be referred to as embers. Firebrands can be carried a long distance (one mile or more) by fire drafts and strong winds. Severe wildland/urban interface fires can produce heavy showers of firebrands. The chance of these firebrands igniting a structure will depend on the number and size of the firebrands, how long they burn after contact and the type of building materials, building design, and construction features incorporated into the structure. Firebrands landing on combustible roofing and decks are common sources for structure ignition. They can also enter a structure through unscreened or poorly screened vents, chimneys, unprotected skylights, and windows.

Even with non-combustible roofing, firebrands landing on leaves, needles, and other combustibles located on a roof (due to a lack of maintenance) can cause structure ignition. Any open windows, doors, or other types of unscreened openings are sources for embers to enter a structure during a wildland fire. If these maintenance issues are addressed on a regular basis, firebrands should not be a concern.

### **3.2 Radiant Heat/Direct Flame Impingement**

Radiation and convection involve the transfer of heat directly from the flame to any exposed surface. Unlike radiation heat transfer, convection requires that the flames or heat column contact the structure. An ignition from radiation (given an exposed flammable surface) heat transfer depends on two aspects of the flame: 1) the radiant heat flux to a combustible surface and, 2) the duration (length of time) of the radiant flux. The radiant heat flux depends on the flame zone size, flame-structure distance, and how much the combustible material of the structure is exposed to the flame. While the flame from a wildfire may approach 1,800 degrees Fahrenheit, it is the duration of heat that is more critical. For example, a blow torch flame typically approaches 2,100 degrees Fahrenheit, yet a person can easily pass their hand through the flame. Heat duration only becomes critical to a home with a wood exterior surface if the heat is allowed to remain for 30-90 seconds.

Research scientist Jack Cohen of the United States Forest Service has found that a homes or structures characteristics (its exterior materials and design in relation to the immediate area around a home within 100 feet) principally determine the home's ignition potential. He calls the home and its immediate surroundings the 'home ignition zone'. In a study of ignition of wood wallboard, tests by a USDA Forest Service research team described in the Proceedings, 1st International Fire and Materials Conference showed that flame impingement for sufficient length of time (approximately 1 min.) ignites a typical hardboard siding material.

Fire agencies consider fuel treatment as a principal approach to wildland fire hazard reduction. Whenever the flame length is equal to or more than the separation of combustible vegetation from a combustible structure for 1-2 minutes in duration or more, there is a high probability of structure ignition. Contact with a fire's convection heat column also may cause ignition but the temperature of the column's gases is generally not hot enough or long enough in duration to sustain the ignition of the structure.

Comparing the expected wildland fire behavior projections for all boundary areas against the required fuel modification zones, and mitigation measures outlined in Section 6.0, demonstrates substantial reductions in the expected flame length in treated fuels. By requiring the structures exposed to the threat of wildfire to

incorporate the following guidelines, those structures will be provided with the most effective treatment for minimizing losses from flame impingement and associated radiant heat intensities.

- The structure is constructed of ignition resistant building materials and processes, see APPENDIX E.
- The area surrounding structure contains an Irrigated Zone (defensible space) and a Thinning Zone (low fuel volume buffer strip) between the Irrigated Zone and the untreated fuels.

The property owner shall be required (see Section 5.0) to maintain the properties to Zone 1 / Zone 2 Fuel Modification standards and shall keep the roof and any rain gutters free of leaves, needles and other combustible debris.

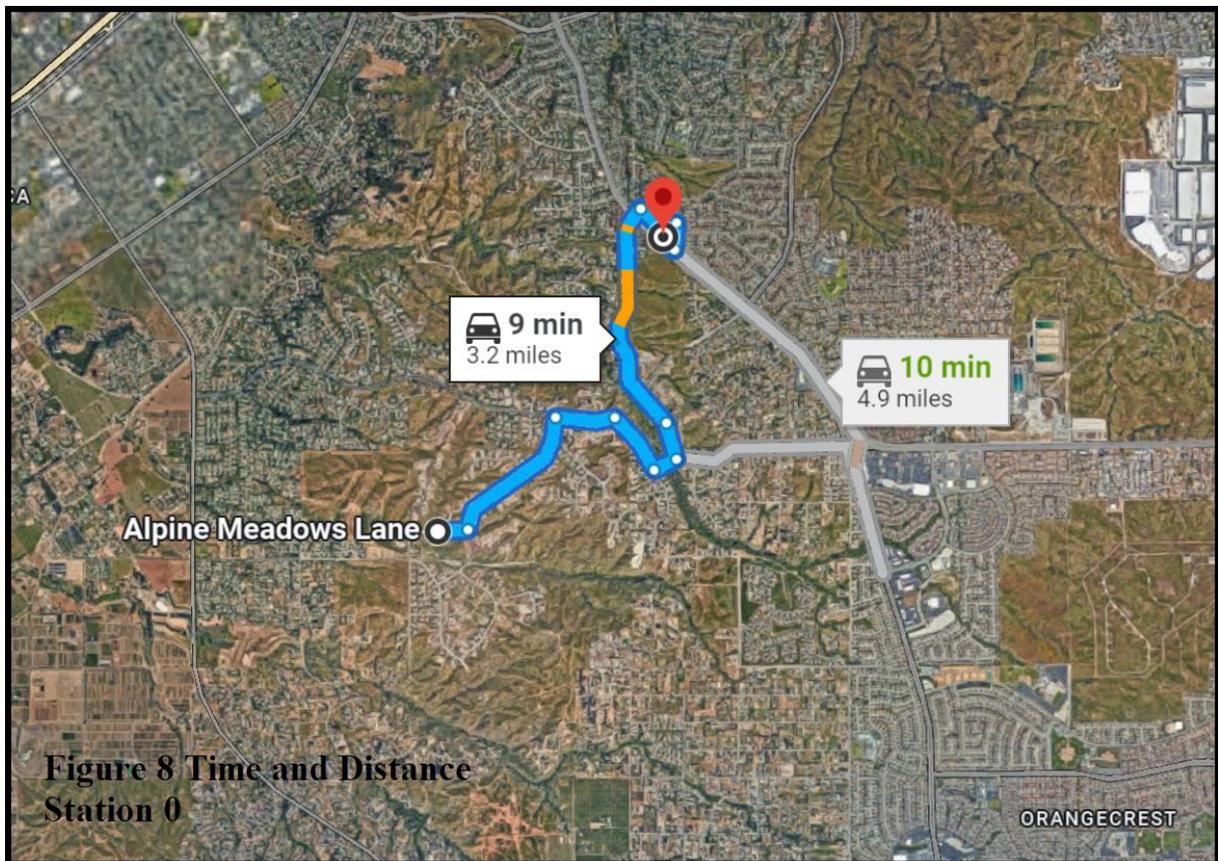
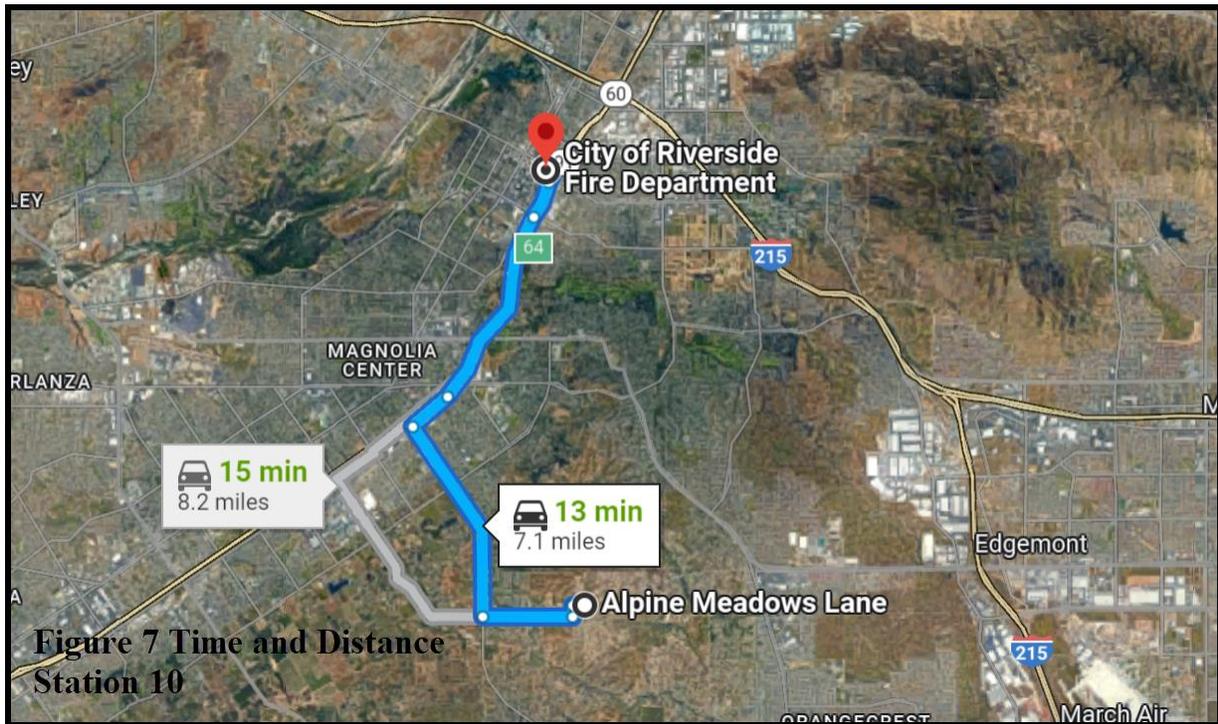
All combustible materials must be properly stored away from each structure so that burning embers falling on or near the structure have no suitable host. By requiring the structures to be constructed of non-combustible roofing, ignition resistant building materials, and the implementation of required fuel modification will be the most effective treatment for minimizing structure losses due to the projected flame lengths and associated radiant heat intensities.

### **3.3 Fire Resistant Plant Palette**

Wildland fire research has shown that some types of plants, including many natives, are more fire resistant than others. These low fuel volume, non-oily, non-resinous plants are commonly referred to as “fire resistant”. This term comes with the proviso that each year these plants are pruned, all dead wood is removed and all grasses or other plant material are removed from beneath the circumference of their canopies. Some native species are not considered “undesirable” from a wildfire risk management perspective provided they are properly maintained year round. Refer to APPENDIX ‘A’ for a list of prohibited plant species and APPENDIX ‘B’ for Defensible Space Landscaping.

## **4.0 Fire Department Response Times**

The project is within the Riverside City Fire Department’s (RCFD) response area. The closest Fire apparatus is RCFD Riverside City Fire Station 4, from 1496 W Linden St (2.8 miles away). Would likely be the first engine to arrive on scene at to the structure.



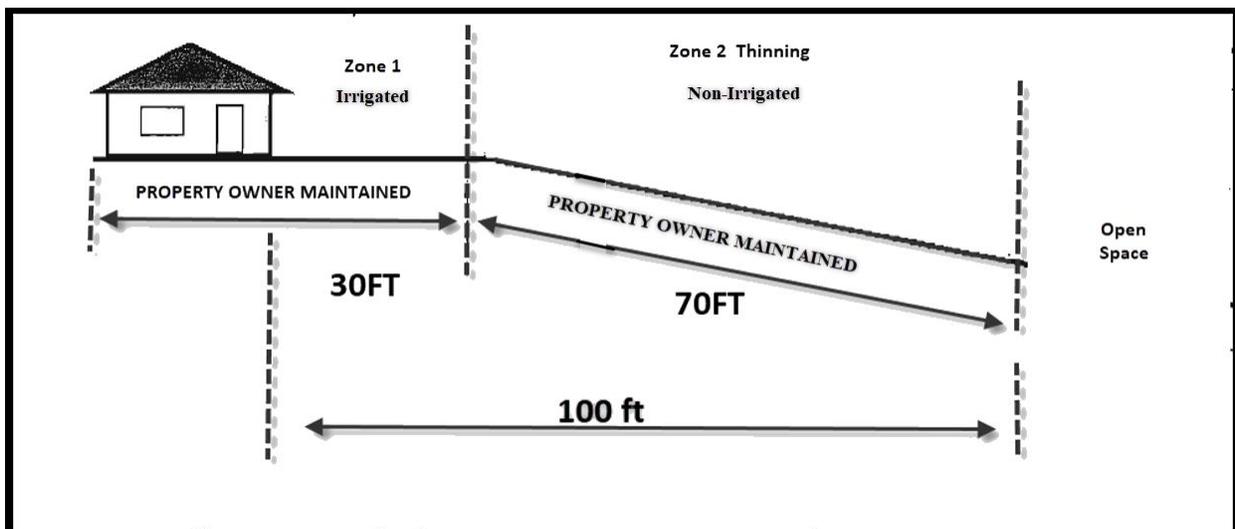
Additional agencies such as Riverside County and nearby cities would also likely respond with equipment should all of Riverside City Resources be unavailable.

Although the RCFD Fire Station 9 Engine may be generally 9 minutes away, there is no assurance that any of the engine companies will be in their stations when a wildfire threatens. Engines may respond from other stations located further away or from other incidents. On high/extreme fire danger days there often may be multiple fire starts and engine companies may be already deployed on other incidents.

- This is why planned projects use “*defensible space*”, ‘Ignition Resistant’ building features, and key fuel treatment strategies that enable residents to substantially increase their ability to survive a wildfire on their own and without the loss of any structure. The goal of this FPP, therefore, is to make the future residences and their owners as safe as possible and able to survive on their own until firefighting equipment arrives and/or the occupants can be safely evacuated.

## **5.0 VEGETATION MANAGEMENT ZONE DESCRIPTIONS & REQUIRED TREATMENTS**

- **Note: Landscaping elements will be coordinated with the Case Planner through “Landscape and Irrigation Design Review”.**



Zones 1 and 2 encompass 100 feet which will ensure no radiant heat will reach the structure. With the exception of Lot 4 where the distance is reduced to The property to the west’s required fuel treatment areas will tie into proposed Zones in that area. This will offer some buffer from on shore wind related fire events.

Below are the descriptions and required treatments for the Fuel Modification Zones. All distances in this report are measured horizontally from the exterior of each structure. These distances are depicted on the enclosed **Fire Protection Plan Map**. Fuel treatment areas are a mix of irrigate areas and dry thinning areas.

The owner(s) will be responsible for maintaining their respective properties Fuel Modification Zone. In the event of repossession, the person/unit/agency holding title to the project will be responsible for the maintenance.

**All highly flammable plant species identified in Appendix A shall be permanently removed from the Irrigated Zone 1 and Thinning Zone 2 due to their susceptibility to wildland fire.**

**5.1 Irrigated Zone 1 - Vegetation Management Zone 0/1 Irrigated - HOMEOWNER MAINTAINED TOTAL OF 30 feet.**

**Zone 0 Homeowner maintained Irrigated** - An area starting at the structure envelope extending 5 feet outward. This zone includes the area under and around all attached decks, and requires the most stringent wildfire fuel reduction. This area shall be kept clear of combustibles, landscaping mulch, and any large shrubs and trees. It may have limited plants that are low growing, nonwoody, properly watered and maintained. **Combustible fencing material shall not be attached to the structure to include vinyl products.**

**Defined**

**Irrigated Zone 1 starting at 5ft from structure and extending an additional 25feet** is commonly called the defensible space zone and shall be free of all combustible construction and materials. It includes the entire area around the structure (front, back and side) and that are located within the parcel. It is measured from the exterior wall of each structure or from the most distal point of a combustible projection, an attached accessory structure, or an accessory structure within 10 feet of a structure. It provides the best protection against the high radiant heat produced by wildfire. It also provides a generally open area in which fire suppression forces can operate during wildfire events. This zone includes a level or level-graded area around each structure, primarily used for parking.

**Required Landscaping**

- Plants in this zone shall be fire resistant and shall not include any pyrophytes that are high in oils and resins such as pines, eucalyptus, cedar, cypress or juniper species. Thick, succulent or leathery leaf species with high moisture content are the most 'fire resistant'. Refer to APPENDIX 'B' for an example of acceptable plants..
- Zone 1 shall be cleared of all fire prone and prohibited plant species (see APPENDIX 'A').
- Landscape designs using hardscape features such as driveways, swimming pools, concrete, rock, pavers, and similar non-combustible features to break up fuel continuity within Zone 1 are encouraged.
- **All Landscaping will be fire resistive. Landscaping elements will be coordinated with the Case Planner through Landscape and Irrigation Design Review.**

**Required Maintenance**

- Maintenance shall be year round by the owner as required by this FPP or the RCFD.
- Remove and replace any dead or dying plant material monthly.

- Native annual and perennial grasses will be allowed to grow and produce seed during the winter and spring. As grasses begin to cure (dry out), they shall be cut to four inches or less in height.
- Trees shall be maintained to a minimum of six feet of vertical separation from low growing, irrigated vegetation beneath the canopy of each tree.

All trees must be maintained to the current ANSI A300 standards [*Tree, Shrub, and Other Woody Plant Maintenance —Standard Best Practices ANSI A300 standards are the generally accepted industry standards for tree care practices. They are voluntary industry consensus standards developed by TCIA (Pruning)*]

## 5.2 Vegetation Management Non Irrigated – MAINTAINED by OWNER

### Defined

**THINNING ZONE** is an area of following Zone 1 and extends outward to 100 feet.

The area following Zone 1 may include single or small clusters of trimmed fire resistance native plants up to 36 inches in height where 50% of the vegetation is removed to create a mosaic. Selected native plant clusters must be separated by at least 1 1/2 times the mature height of the retained plants. The ground cover and grasses shall be weed whipped and maintained to 4" or less in stubble height.

**This should take full advantage of rock outcroppings and bare soil.**

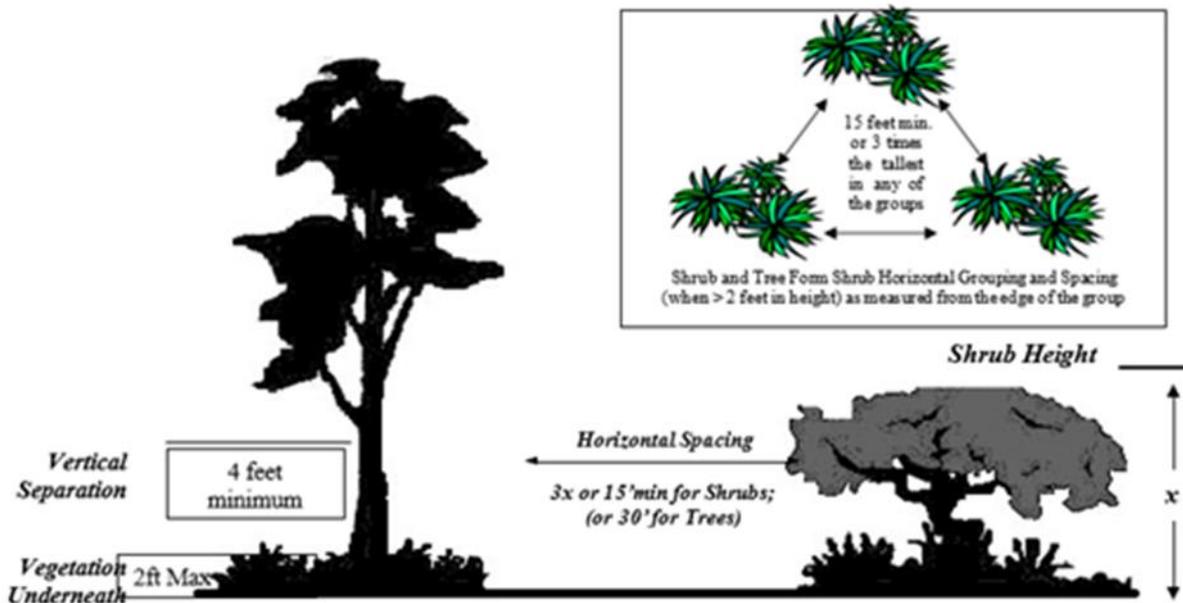
### Required Maintenance

- Fuel Modification area shall be maintained year, as required by this FPP. Inspections and compliance shall be by Riverside City.
- Shrubs shall be kept trimmed to ensure spacing is maintained.
- Grasses shall be maintained weed whipped to 4 inches.
- The area shall be maintained free of invasive plants and any volunteer native shrubs.
- **All plantings should be installed with at maturity growth in mind.**

**The image below provides a best practice spacing guide for construction and long-term maintenance.**

### Figure 9 Plant Spacing.

## Requirements for Planting Installation in Fuel Modification Zones Spacing and Separation



### Horizontal Spacing

#### Vegetation Less than 2 Feet in height:

- No horizontal spacing or vertical separation is required. Ground cover shall not exceed 2 feet in height. In Zone 1, ground cover may cover the entire ground between groups of shrubs, trees, or grasses and grasses are not considered ground cover. Grasses are acceptable within Zone 1 irrigated, all non-irrigated grasses will be maintained weed whipped or mowed to 4 in.

#### Shrubs and Trees 2 Feet in Height or Greater:

##### Shrub and Tree Group Size:

- All Shrubs and Trees can be in groups of 3 specimens or less. No horizontal spacing is required inside the group.

##### Shrub / Tree-form Shrub Group Spacing:

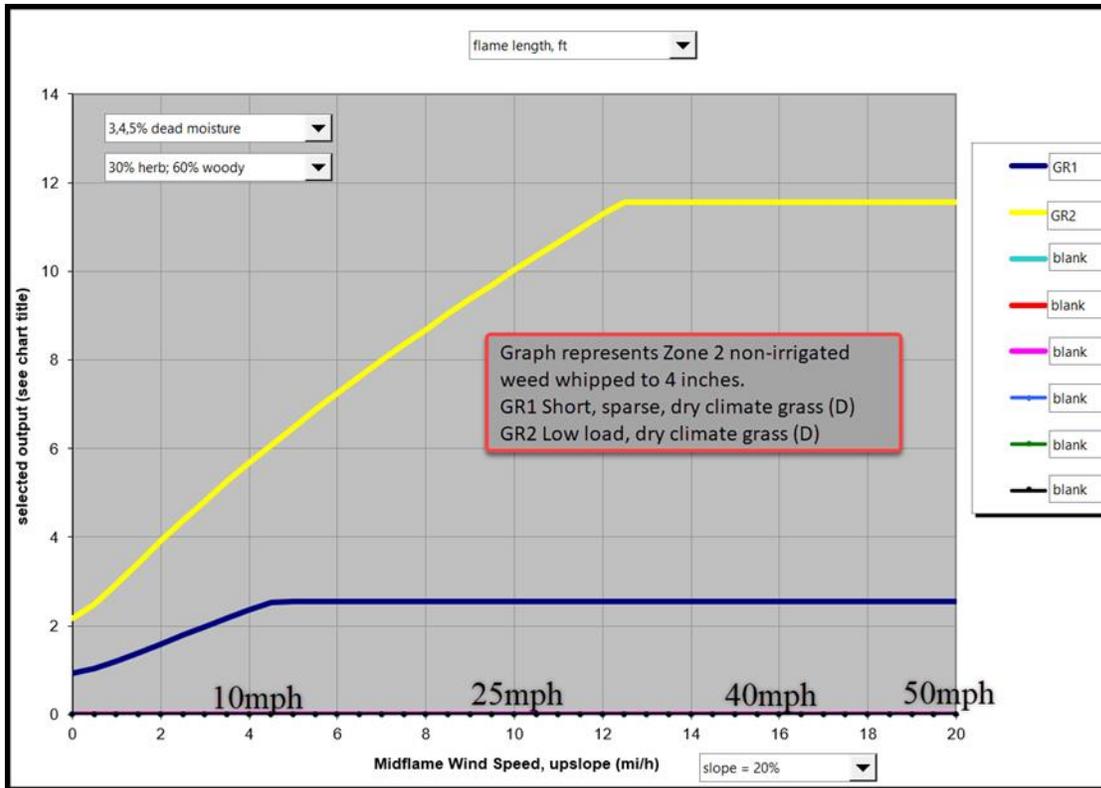
- Groups of shrubs shall be spaced by the greater of the following two measurements: A. distance of 15 feet minimum (or) 3 times the height of the tallest specimen in any of the groups.
- No vegetation over 2 feet in height is allowed within 15 feet from the edge of tree canopy(s).

##### Tree Group Spacing:

- Groups of Trees shall be spaced by a distance of 20 feet minimum regardless of height. In Zone 1, full growth tree branches are not allowed within 10 feet of enclosed combustible structures.

### Vertical Separation

- Shrubs and Trees Less than 10 Feet in Height:** When the fuel modification zone is within 30 feet of the structure, a vertical separation of 2ft is required from the vegetation below. (Not required if shrubs are further than 30 feet from structure).
- Shrubs and Trees 10 Feet in Height or Greater:**
  - A vertical separation of 4 feet minimum is required to be maintained from the vegetation below.
  - Trees only: All vegetation located underneath trees, shall be a maximum of 2 feet in height.



The following graph represents Zone 2 Non Irrigated Flame Lengths.

### 5.3 Construction Standards

All lots within the project shall be considered to be within a Very High Fire Hazard Severity Zone (VHFHSZ) and shall be designed and built-in accordance with Chapter 7A (Materials and Construction Methods for Exterior Wildfire Exposure) of the 2022 California Building Code. To include local code amendments. For a description of the current construction requirements as of the date of this report see APPENDIX 'D'.

- All construction and ignition resistant requirements shall meet the 2022 version of the California Fire Code, including amendments, and related Ordinances. The fire protection features described herein shall be maintained to their equivalent or greater ignition resistance in perpetuity.

Construction or building permits shall not be issued until the fire code official inspects and approves required fire apparatus access and water supply for the construction site.

#### 5.3.1 Conditions to Be Met

Prior to the delivery of combustible building construction materials to the project site the following conditions shall be completed to the satisfaction of the RCFD:

- Water and power utilities shall be installed and approved by the appropriate inspecting department or agency.



## 6.0 Infrastructure

Below is a review and discussion of water supply and access roads/driveways and gates that are to be utilized in the development.

### 6.1 Water Supply

The water supply will be provided by Riverside Public Utilities. An approved permanent water supply capable of supplying the required fire flow will be designed and installed prior to beginning construction.

Water supplies for fire protection and hydrants shall be in accordance with the 2022 California Fire Code as amended by the City of Riverside.

Hydrant installation shall conform to City of Riverside INFORMATION BULLETIN: D-19-005 and the 2019 NFPA 14, Fire hydrants shall be tested, accepted and placed in service prior to the delivery of any combustible materials to the project site.

### 6.2 Access Roads/Driveways and Gates

Driveways and access roads within the development shall be termed 'Fire Access Roads' within this document. All fire access roads shall meet the requirements of the Riverside City Fire Department, and shall be all weather surface capable of supporting loads of 80,000 lbs gross vehicle weight.

Access to all exterior portions of each structure must be within 150 feet of the available fire department access. The required turning radius of a fire apparatus access road shall be in accordance with Information Bulletin B-19-001, 28 feet inside radius and 48 feet outside radius. in accordance with Information Bulletin B-19-001 unless otherwise approved by the fire code official. Fire lanes shall be marked in accordance with the guidelines in Information Bulletin B-19-003.

Any gates to be installed shall meet RCFD Standards and shall be approved by the RCFD prior to fabrication and installation. A Knox override key switch or similar device must be installed outside the gate in an approved, readily visible, and unobstructed location at or near the gate to provide emergency access. Gates accessing major roadways shall also be equipped with approved emergency traffic control-activating strobe light sensor(s), or other devices approved by the Fire Chief, which will activate the gate on the approach of emergency apparatus with a battery back-up or manual mechanical disconnect in case of power failure. All gates shall always be equipped to allow for automatic egress.

## 7.0 Owner, Occupant Education

The owner should prepare, this link will provide usefule informaion to plan ahead for an emergency;

<https://riversideca.gov/readyriverside/sites/riversideca.gov.readyriverside/files/pdf/Disaster-Ready-Guide-Digital-SelfPrint-Eng.pdf>

In the event of a wildland fire, you should always relocate to a safe area well beyond the path of the threatening wildland fire. If relocation is not possible and egress is cut-off by the fire, they should seek shelter within thier structure until the wildland fire passes through their area. The ignition resistant buildings will have a 'defensible space' area around each structure for

firefighters to make their stand in the protection of each structure. In the event firefighting forces are not readily available, the defensible space will substantially increase the probability of ‘structure survivability’.

Should relocation be the the chosen option and time is available, they should ensure that all doors and windows are closed to prevent embers from entering their structure. Doors should be unlocked to allow emergency personnel unimpeded access. Both inside and outside lights should be placed on to allow emergency personnel to know that a structure is present when smoke or darkness may otherwise obscure visibility. In addition, combustible materials shall not be stored within 10 feet of any structure.

The owner shall be aware of the herein described fire protection measures by reviewing this FPP of the types of non-combustible construction and plant materials that are allowed within the the designated fuel treatment zones. A copy of this plan shall be provided to a future owner during escrow procedures. Of particular importance are APPENDICES ‘A’, ‘B’, ‘D’ anf ‘E’ of this plan which provide guidance in the types of plants that allowed to be established in landscaped areas and appropriate construction materials within fuel modification zones. Plant selection is critical as embers often travel over a mile during Santa Ana wind events.

Where this FPP requires specific construction features, these features shall not be changed without the approval of the RFD.

## **8.0 Fire Protection Plan Map**

Attached in a separate file is the Fire Protection Plan Map depicting the location of all proposed fuel treatment locations as well as fire access roads, and development boundaries.

### **APPENDICES**

**Undesirable Plant Species**

**Acceptable Plant List**

**Literature Referenced**

**Non-combustible & Fire-Resistant Building Materials**

**Ignition Resistant Construction Requirements**

**Fire Protection Plan Exhibit**

**Approved AM&M Request**

**APPENDIX ‘A’**

**APPENDIX ‘B’**

**APPENDIX ‘C’**

**APPENDIX ‘D’**

**APPENDIX ‘E’**

**APPENDIX ‘F’**

**APPENDIX ‘G’**

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# APPENDIX 'A'

## Prohibited Plant List

## APPENDIX 'A'

### Prohibited (& Fire Prone) Plant Species List For Fuel Modification Zones in High & Very High Hazard Areas

	Botanical Name	Common Name	Plant Form
1.	Acacia species •	Acacia	Shrub/Tree
2.	Adenostema fasciculatum	Chamise	Shrub
3.	Adenostema sparsifolium	Red Shank	Shrub/Tree
4.	Artemisia californica	California Sagebrush	Shrub
5.	Anthemis cotula	Mayweed	Weed
6.	Arundo donax	Giant reed	Grass/weed
7.	Brassica nigra	Black Mustard	Weed
8.	Brassica ropa	Yellow Mustard	Weed
9.	Cedrus species	Cedar	Tree
10.	Cirsim vulgare	Wild Artichoke	Weed
11.	Conyza canadensis	Horseweed	Weed
12.	Cortaderia seloana	Pampas Grass	Tall Grass
13.	Cupressus species	Cypress	Tree
14.	Eriogonum fasciculatum	Common Buckwheat	Shrub
15.	Eucalyptus species	Eucalyptus	Shrub/Tree
16.	Heterotheca grandiflora	Telegraph plant	Weed/shrub
17.	Juniperus species	Junipers	Succulent
18.	Lactuca serriola	Prickly lettuce	Weed
19.	Nicotiana bigelevelil	Indian tobacco	Shrub
20.	Nicotiana glauca	Tree tobacco	Shrub
21.	Pennisetum species	Fountain Grass	Ground cover
22.	Pinus species	Pines	Tree
23.	Rosmarinus species	Rosemary	Shrub
24.	Salvia species ••	Sage	Shrub
25.	Silybum marianum	Milk thistle	Weed
26.	Urtica urens	Burning nettle	Weed
<ul style="list-style-type: none"> <li>• Except: Acacia redolens desert carpet (Desert Carpet ground cover)</li> <li>•• Except: Salvia columbariae (chia) Salvia sonomensis (Creeping Sage)</li> </ul>			

**Additionally, all of the following plants shall be removed from fuel treatment zones in order to not only reduce fuel loading but also eliminate invasive plants that are identified in the Multiple Species Habitat Conservation Plan for Riverside County (MSHCP).**

**TABLE 6-2  
PLANTS THAT SHOULD BE AVOIDED  
ADJACENT TO THE MSHCP CONSERVATION AREA**

<b>BOTANICAL NAME</b>	<b>COMMON NAME</b>
<i>Acacia</i> spp. (all species)	acacia
<i>Achillea millefolium</i>	var. <i>millefolium</i> common yarrow
<i>Ailanthus altissima</i>	tree of heaven
<i>Aptenia cordifolia</i>	red apple
<i>Arctotheca calendula</i>	cape weed
<i>Arctotis</i> spp. (all species & hybrids)	African daisy
<i>Arundo donax</i>	giant reed or arundo grass
<i>Asphodelus fistulosus</i>	asphodel
<i>Atriplex glauca</i>	white saltbush
<i>Atriplex semibaccata</i>	Australian saltbush
<i>Carex</i> spp. (all species*)	sedge
<i>Carpobrotus chilensis</i>	ice plant
<i>Carpobrotus edulis</i>	sea fig
<i>Centranthus ruber</i>	red valerian
<i>Chrysanthemum coronarium</i>	annual chrysanthemum
<i>Cistus ladanifer</i>	(incl. hybrids/varieties) gum rockrose
<i>Cortaderia jubata</i> [syn. <i>C. Atacamensis</i> ]	jubata grass, pampas grass
<i>Cortaderia dioica</i> [syn. <i>C. sellowana</i> ]	pampas grass
<i>Cotoneaster</i> spp. (all species)	cotoneaster
<i>Cynodon dactylon</i>	(incl. hybrids varieties) Bermuda grass
<i>Cyperus</i> spp. (all species*)	nutsedge, umbrella plant
<i>Cytisus</i> spp. (all species)	broom

<i>Delosperma 'Alba'</i>	white trailing ice plant
<i>Dimorphotheca</i> spp. (all species)	African daisy, Cape marigold
<i>Drosanthemum floribundum</i>	rosea ice plant
<i>Drosanthemum hispidum</i>	purple ice plant
<i>Eichhornia crassipes</i>	water hyacinth
<i>Elaeagnus angustifolia</i>	Russian olive
<i>Eucalyptus</i> spp. (all species)	eucalyptus or gum tree
<i>Eupatorium coelestinum</i> [syn. <i>Ageratina</i> sp.]	mist flower
<i>Festuca arundinacea</i>	tall fescue
<i>Festuca rubra</i>	creeping red fescue
<i>Foeniculum vulgare</i>	sweet fennel
<i>Fraxinus uhdei</i>	(and cultivars) evergreen ash, shamel ash
<i>Gaura</i> (spp.) (all species)	gaura
<i>Gazania</i> spp. (all species & hybrids)	gazania
<i>Genista</i> spp. (all species)	broom
<i>Hedera canariensis</i>	Algerian ivy
<i>Hedera helix</i>	English ivy
<i>Hypericum</i> spp. (all species)	St. John's Wort
<i>Ipomoea acuminata</i>	Mexican morning glory
<i>Lampranthus spectabilis</i>	trailing ice plant
<i>Lantana camara</i>	common garden lantana
<i>Lantana montevidensis</i> [syn. <i>L. sellowiana</i> ]	lantana
<i>Limonium perezii</i>	sea lavender
<i>Linaria bipartita</i>	toadflax
<i>Lolium multiflorum</i>	Italian ryegrass
<i>Lolium perenne</i>	perennial ryegrass
<i>Lonicera japonica</i>	(incl. 'Halliana') Japanese honeysuckle
<i>Lotus corniculatus</i>	birdsfoot trefoil
<i>Lupinus arboreus</i>	yellow bush lupine
<i>Lupinus texanus</i>	Texas blue bonnets

<i>Malephora crocea</i>	ice plant
<i>Malephora luteola</i>	ice plant
<i>Mesembryanthemum nodiflorum</i>	little ice plant
<i>Myoporum laetum</i>	myoporum
<i>Myoporum pacificum</i>	shiny myoproum
<i>Myoporum parvifolium</i>	(incl. 'Prostratum') ground cover myoporum
<i>Oenothera berlandieri</i>	Mexican evening primrose
<i>Olea europea</i>	European olive tree
<i>Opuntia ficus-indica</i>	Indian fig
<i>Osteospermum spp. (all species)</i>	trailing African daisy, African daisy,
<i>Oxalis pes-caprae</i>	Bermuda buttercup
<i>Parkinsonia aculeata</i>	Mexican palo verde
<i>Pennisetum clandestinum</i>	Kikuyu grass
<i>Pennisetum setaceum</i>	fountain grass
<i>Phoenix canariensis</i>	Canary Island date palm
<i>Phoenix dactylifera</i>	date palm
<i>Plumbago auriculata</i>	cape plumbago
<i>Polygonum spp. (all species)</i>	knotweed
<i>Populus nigra 'italica</i>	' Lombardy poplar
<i>Prosopis spp. (all species*)</i>	mesquite
<i>Ricinus communis</i>	castorbean
<i>Robinia pseudoacacia</i>	black locust
<i>Rubus procerus</i>	Himalayan blackberry
<i>Sapium sebiferum</i>	Chinese tallow tree
<i>Saponaria officinalis</i>	bouncing bet, soapwart
<i>Schinus molle</i>	Peruvian pepper tree, California pepper
<i>Schinus terebinthifolius</i>	Brazilian pepper tree
<i>Spartium junceum</i>	Spanish broom
<i>Tamarix spp. (all species)</i>	tamarisk, salt cedar
<i>Trifolium tragiferum</i>	strawberry clover
<i>Tropaelolum majus</i>	garden nasturtium

<i>Ulex europaeus</i>	prickly broom
<i>Vinca major</i>	periwinkle
<i>Yucca gloriosa</i>	Spanish dagger
<p>An asterisk (*) indicates some native species of the genera exist that may be appropriate.</p> <p><b>Sources:</b> California Exotic Pest Plant Council, United States Department of Agriculture-Division of Plant Health and Pest Prevention Services, California Native Plant Society, Fremontia Vol. 26 No. 4, October 1998, The Jepson Manual; Higher Plants of California, and County of San Diego-Department of Agriculture.</p>	

# **APPENDIX 'B'**

## **Defensible Space Landscaping**

***Defensible Space Landscaping – Plant Pallet for Fuel Modification in Riverside,  
Orange and San Diego Counties***

	Code	Botanical Name	Common Name	Plant Form
1.	W	Abelia x grandiflora	Glossy Abelia	Shrub
2.		Acacia redolens desert carpet	Desert Carpet	Shrub
3.		Acer macrophyllum	Big Leaf Maple	Tree
4.	X	Achillea millefolium	Common Yarrow	Low shrub
5.	W	Achillea tomentosa	Wolly Yarrow	Low shrub
6.	X	Aeonium decorum	Aeonium	Ground cover
7.	X	Aeonium simsii	Aeonium	Ground cover
8.	W	Agaave attenuata	Century Plant	Succulent
9.	W	Agave shawii	Shaw's Century Plant	Succulent
10.	N	Agave victoriae-reginae	Agave	Ground cover
11.	X	Ajuga reptans	Carpet Bugle	Ground cover
12.	W	Alnus cordata	Italian Alder	Tree
13.		Alnus rhombifolia	White Alder	Tree
14.	N	Aloe aborescens	Torch Aloe	Shrub
15.	N	Aloe aristata	Dwarf Aloe	Ground cover
16.	N	Aloe brevifolia	Aloe	Ground cover
17.	W	Aloe Vera	Medicinal Aloe	Succulent
18.	W	Alyogyne huegelii	Blue Hibiscus	Shrub
19.		Ambrosia chamissonis	Beach Bur-Sage	Perennial
20.		Amoroha fruticosa	Western False Indigobush	Shrub
21.	W	Anigozanthus flavidus	Kangaroo Paw	Perennial Accent
22.		Antirrhinum nuttalianum ssp. Nuttalianum	Beard Tongue	Subshrub
23.	X	Aptenia cordifolia x 'Red Apple'	Red Apple Aptenia	Ground cover
24.	W	Arbutus unedo	Strawberry Tree	Tree
25.	W	Arctostaphylos 'Pacific Mist'	Pacific Mist Manzanita	Ground cover
26.	W	Arctostaphylos edmundsil	Little Sur Manzanita	Ground cover
27.		Arctostaphylos glandulosa	Eastwood Manzanita	Shrub
28.	W	Arctostaphylos hookeri 'Monterey Carpet'	Monterey Carpet Manzanita	Low shrub
29.	N	Arctostaphylos pungens	Heather	Shrub
30.	N	Arctostaphylos refugioensis	Refugio Manzanita	Shrub
31.	W	Arctostaphylos uva-ursi	Bearberry	Ground cover
32.	W	Arctostaphylos x 'Greensphere'	Greensphere Manzanita	Shrub
33.	N	Atemisia caucasia	Caucasian Artemisia	Ground cover
34.	N	Artemisia pycnocephala	Beach Sagewort	Perennial
35.	X	Atriplex canescens	Four-Wing Saltbush	Shrub
36.	X	Atriplex lentiformis ssp. Breweri	Brewer Saltbush	Shrub
37.		Baccharis emoryi	Emory Baccharis	Shrub
38.	W	Baccharis pilularis ssp. Consanguinea	Chaparral Bloom	Shrub

X = Plant Species prohibited in wet and dry fuel modification zones adjacent to native open space lands. Acceptable in all other fuel modification zones and locations.

W = Plant species appropriate for use in wet fuel modification zones adjacent to native open space lands.

– = Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification zones and locations.

= Plant species native to Riverside, Orange and San Diego Counties. Acceptable in all fuel modification (wet or dry zones) in all locations.

N = Plant species acceptable on a limited basis (maximum 30% of the area at time of planting) in wet fuel modification zones adjacent to native open space reserve lands. Acceptable in all other fuel modification zones and locations.

\* = If seed collected from local seed source.

\*\* = Not native plant species but can be used in all fuel modification zones.

**Defensible Space Landscaping – Plant Pallet for Fuel Modification in Riverside,  
Orange and San Diego Counties**

	Code	Botanical Name	Common Name	Plant Form
39.	X	Baccharis pilularis var. pilularis 'Twin Peaks #2'	Twin Peaks	Ground cover
40.		Baccharis salicifolia	Mulefat	Shrub
41.	N	Baileya Multiradiata	Desert Marigold	Ground cover
42.	W	Beaucarnea recurvata	Bottle Palm	Shrub/Small tree
43.	N	Bougainvillea spectabilis	Bougainvillea	Shrub
44.	N	Brahea armata	Mexican Blue Palm, Blue Hesper Palm	Palm
45.	N	Brahea brandegeei	San Jose Hesper Palm	Palm
46.	N	Brahea edulis	Guadalupe Palm	Palm
47.		Brickellia californica	Hoary Nettle	Subshrub
48.	W	Bromus carinatus	California Brome	Grass
49.		Camissonia cheiranthifolia	Beach Evening Primrose	Perennial subshrub
50.	N	Carissa macracarpa	Green Carpet Natal Plum	Ground cover/shrub
51.	X	Carpibrotus chilensis	Sea Fig Ice Plant	Ground cover
52.	W	Ceanothus gloriosus 'Point Reyes'	Point Reyes Ceanothus	Shrub
53.	W	Ceanothus griseus 'Louise Edmunds'	Louis Edmunds Ceanothus	Shrub
54.	W	Ceanothus griseus horizontalis	Yankee Point	Ground cover
55.	W	Ceanothus griseus var. horizontalis	Carmel Creeper Ceanothus	Shrub
56.		Ceanothus megacarpus	Big Pod Ceanothus	Shrub
57.	W	Ceanothus prostratus	Squaw Carpet Ceanothus	Shrub
58.		Ceanothus spinosus	Green Bark Ceanothus	Shrub
59.	W	Ceanothus verrucosus	Wart-Stem Ceanothus	Shrub
60.	W	Cerastium tomentosum	Snow-in-summer	Ground cover/shrub
61.	W	Ceratonia siliqua	Carob	Tree
62.	W	Cercis occidentalis	Western redbud	Tree/Shrub
63.	X	Chrysanthemum leucanthemum	Oxeye Daisy	Groundcover
64.	W	Cistus hybridus	White Rockrose	Shrub
65.	W	Cistus incanus	Mauve Rockrose	Shrub
66.	W	Cistus incanus salviafolius	Sageleaf Rockkrose	Shrub
67.	W	Cistus purpureus	Orchid Rockrose	Shrub
68.	W	Citrus species	Citrus	Tree
69.		Clarkia bottae	Showy Fairwell to Spring	Annual
70.		Cneoridium dumosum	Bushrue, Pt. Reyes Ceanothus	Shrub
71.		Collinsia heterophylla	Chinese Houses	Annual
72.	W	Comarostaphylis diversifolia	Summer Holly	Shrub
73.	N	Convolvulus cneorum	Bush Morning Glory	Shrub
74.	W	Coprosma kirkii	Creeping Coprosma	Ground cover/Shrub
75.	W	Coprosma pumila	Prostrate Coprosma	Low Shrub
76.		Coreopsis californica	California coreopsis	Annual
77.	W	Coreopsis lanceolata	Coreopsis	Ground cover

X = Plant Species prohibited in wet and dry fuel modification zones adjacent to native open space lands. Acceptable in all other fuel modification zones and locations.

W = Plant species appropriate for use in wet fuel modification zones adjacent to native open space lands. Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification zones and locations.

– = Plant species native to Riverside, Orange and San Diego Counties. Acceptable in all fuel modification (wet or dry zones) in all locations.

N = Plant species acceptable on a limited basis (maximum 30% of the area at time of planting) in wet fuel modification zones adjacent to native open space reserve lands. Acceptable in all other fuel modification zones and locations.

\* = If seed collected from local seed source.

\*\* = Not native plant species but can be used in all fuel modification zones.

**Defensible Space Landscaping – Plant Pallet for Fuel Modification in Riverside,  
Orange and San Diego Counties**

	Code	Botanical Name	Common Name	Plant Form
78.	N	<i>Correa pulchella</i>	Australian Fuchsia	Ground cover
79.	W	<i>Cotoneaster buxifolius</i>	Grayleaf Cotoneaster	Shrub
80.	W	<i>Cotoneaster congestus</i> Likiang	Likiang Cotoneaster	Ground cover/Vine
81.	X	<i>Crassula lactea</i>	Taylor's Parches	Ground cover
82.	X	<i>Crassula ovata</i>	Jade Tree	Shrub
83.	X	<i>Crassula tetragona</i>	Jade Plant	Shrub
84.	W	<i>Croton californicus</i>	California Croton	Ground cover
85.	X	<i>Delosperma 'alba'</i>	White Trailing Ice Plant	Ground cover
86.		<i>Dendromecon rigida</i>	Bush Poppy	Shrub
87.		<i>Dichelostemma capitatum</i>	Blue Dicks	Herb
88.	N	<i>Distictis buccinatoria</i>	Blood-Red Trumpet Vine	Vine/Climbing vine
89.	N	<i>Dodonaea viscosa</i>	Hopseed Bush	Shrub
90.	X	<i>Drosanthemum floribundum</i>	Rosea Ice Plant	Ground cover
91.	X	<i>Drosanthemum hispidum</i>	Ice Plant, Showy Dewflower	Ground cover
92.		<i>Dudleya lanceolata</i>	Lance Leaved Dudleya	Succulent
93.		<i>Dudleya pulverulenta</i>	Chalk Dudleya	Succulent
94.	W	<i>Elaeagnus pungens</i>	Silverberry	Shrub
95.		<i>Encelia californica</i>	California Encelia	Small shrub
96.	Λ	<i>Epilobium canum</i> ( <i>Zauschneria californica</i> )	Hoary California Fuchsia	Shrub
97.		<i>Eriastrum saphirinum</i>	Mojave Woolly Star	Annual
98.	N	<i>Eriobotrya japonica</i>	Loquat	Tree
99.		<i>Eriodictyon crassifolium</i>	Thick-Leaf Yerba Santa	Shrub
100.		<i>Eriodictyon trichocalyx</i>	Mojave Woolly Star	Annual
101.	W	<i>Eriophyllum confertiflorum</i>	Golden Yarrow	Shrub
102.	W	<i>Erythrina species</i>	Coral Tree	Tree
103.	W	<i>Eschscholzia californica</i>	California Poppy	Flower
104.	X	<i>Eschscholzia mexicana</i>	Mexican Poppy	Herb
105.	N	<i>Euonymus fortunei</i>	Winter Creeper Euonymus	Ground cover
106.	N	<i>Fiejoa sellowiana</i>	Pineapple Guava	Shrub/Tree
107.	N	<i>Fragaria chiloensis</i>	Wild Strawberry/ Sand Strawberry	Ground cover
108.		<i>Frankenia salina</i>	Alkali Heath	Ground cover
109.	W	<i>Fremontodendron californicum</i>	California Flannelbush	Shrub
110.	X	<i>Gaillardia x grandiflora</i>	Blanketflower	Ground cover
111.	W	<i>Galvezia speciosa</i>	Bush Snapdragon	Shrub
112.	W	<i>Garrya ellipta</i>	Silktassel	Shrub
113.	X	<i>Gazania hybrids</i>	South African Daisy	Ground cover
114.	X	<i>Gazania rigens leucolaena</i>	Trailing Gazania	Ground cover
115.		<i>Gilia capitata</i>	Globe Gilia	Perennial
116.	W	<i>Gilia leptantha</i>	Showy Gilia	Perennial

X = Plant Species prohibited in wet and dry fuel modification zones adjacent to native open space lands. Acceptable in all other fuel modification zones and locations.

W = Plant species appropriate for use in wet fuel modification zones adjacent to native open space lands. Acceptable in all other wet and irrigated dry (manufactured slopes) fuel modification zones and locations.

– = Plant species native to Riverside, Orange and San Diego Counties. Acceptable in all fuel modification (wet or dry zones) in all locations.

N = Plant species acceptable on a limited basis (maximum 30% of the area at time of planting) in wet fuel modification zones adjacent to native open space reserve lands. Acceptable in all other fuel modification zones and locations.

\* = If seed collected from local seed source.

\*\* = Not native plant species but can be used in all fuel modification zones.

**Defensible Space Landscaping – Plant Pallet for Fuel Modification in Riverside,  
Orange and San Diego Counties**

	Code	Botanical Name	Common Name	Plant Form
117.	W	<i>Gilia tricolor</i>	Bird's Eyes	Perennial
118.	W	<i>Ginko biloba</i>	Maidenhair Tree	Tree
119.		<i>Gnaphalium californicum</i>	California Everlasting	Annual
120.	W	<i>Grewia occidentalis</i>	Starflower	Shrub
121.		<i>Grindelia stricta</i>	Gum Plant	Ground cover
122.	N	<i>Hakea suaveolens</i>	Sweet Hakea	Shrub
123.	W	<i>Harde bergia comptoniana</i>	Lilac Vine	Shrub
124.	N	<i>Helianthemum mutabile</i>	Sunrose	Ground cover/Shrub
125.		<i>Helianthemum scoparium</i>	Rush Rose	Shrub
126.		<i>Heliotropium curassavicum</i>	Salt Heliotrope	Ground cover
127.	X	<i>Helix canariensis</i>	English Ivy	Ground cover
128.	W	<i>Hesperaloe parviflora</i>	Red Yucca	Perennial
129.		<i>Heteromeles arbutifolia</i>	Toyon	Shrub
130.	X	<i>Hypericum calycinum</i>	Aaron's Beard	Shrub
131.	N	<i>Iberis sempervirens</i>	Edging Candytuft	Ground cover
132.	N	<i>Iberis umbellatum</i>	Globe Candytuft	Ground cover
133.		<i>Isocoma menziesii</i>	Coastal Goldenbush	Small shrub
134.		<i>Isomeris arborea</i>	Bladderpod	Shrub
135.	W	<i>Iva hayesiana</i>	Poverty Weed	Ground cover
136.	N	<i>Jublans californica</i>	California Black Walnut	Tree
137.		<i>Juncus acutus</i>	Spiny Rush	Perennial
138.		<i>Keckiella antirrhinoides</i>	Yellow Bush Penstemon	Subshrub
139.		<i>Keckiella cordifolia</i>	Heart Leaved Penstemon	Subshrub
140.		<i>Keckiella ternata</i>	Blue Stemmed Bush Penstemon	Subshrub
141.	W	<i>Kniphofia uvaria</i>	Red Hot Poker	Perennial
142.	W	<i>Lagerstroemia patersonii</i>	Crape Myrtle	Tree
143.	X	<i>Lampranthus aurantiacus</i>	Bush Ice Plant	Ground cover
144.	X	<i>Lampranthus filicaulis</i>	Redondo Creeper	Ground cover
145.	X	<i>Lampranthus spectabilis</i>	Trailing Ice Plant	Ground cover
146.	W	<i>Lantana camara</i> cultivars	Yellow Sage	Shrub
147.	W	<i>Lantana montevidensis</i>	Trailing Lantana	Shrub
148.		<i>Lasthenia californica</i>	Dwark Goldfields	Annual
149.	W	<i>Lavandula dentata</i>	French Lavendar	Shrub
150.	W	<i>Leptospermum laevigatum</i>	Australian Tea Tree	Shrub
151.	W	<i>Leucophyllum frutescens</i>	Texas Ranger	Shrub
152.		<i>Leymus condensatus</i>	Giant Wild Rye	Large grass
153.	N	<i>Ligustrum japonicum</i>	Texas Privet	Shrub
154.	X	<i>Limonium perezii</i>	Sea Lavender	Shrub
155.	W	<i>Liquidambar styraciflua</i>	American Sweet Gum	Tree
156.	W	<i>Liriodendron tulipifera</i>	Tulip Tree	Tree

X = Plant Species prohibited in wet and dry fuel modification zones adjacent to native open space lands. Acceptable in all other fuel modification zones and locations.

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– = Plant species native to Riverside, Orange and San Diego Counties. Acceptable in all fuel modification (wet or dry zones) in all locations.

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***Defensible Space Landscaping – Plant Pallet for Fuel Modification in Riverside,  
Orange and San Diego Counties***

	Code	Botanical Name	Common Name	Plant Form
157.	X	Lonicera japonica 'Halliana'	Hall's Japanese Honeysuckle	Vining Shrub
158.		Lonicera subspicata	Wild Honeysuckle	Vining Shrub
159.	X	Lotus corniculatus	Bird's Foot Trefoil	Ground Cover
160.		Lotus Heermanii	Woolly Lotus	Perennial
161.		Lotus Scoparius	Deerweed	Shrub
162.	W	Lupinus arizonicus	Desert Lupine	Annual
163.	W	Lupinus benthamii	Spider Lupine	Annual
164.		Lupinus bicolor	Sky Lupine	Flowering annual
165.		Lupinus sparsiflorus	Coulter's Lupine	Annual
166.	W	Lyonothamnus floribundus ssp. Asplenifolius	Fernleaf Ironwood	Tree
167.	W	Macademia Integrifolia	Macadamia Nut	Tree
168.	W	Mahonia aquifolium 'Golden Abundance'	Golden Abundance, Oregon Grape	Shrub
169.	W	Mahonia nevinii	Nevin Mahonia	Shrub
170.		Malacothamnus fasciculatus	Chaparral Marrow	Shrub
171.	X	Makephora luteola	Trailing Ice Plant	Ground cover
172.	W	Maytenus boaria	Mayten Tree	Tree
173.	W	Melaleuca nesophila	Pink Melaleuca	Shrub
174.	N	Metrosideros excelsus	New Zealand Christmas Tree	Tree
175.	*	Mimulus species	Monkeyflower	Flower
176.		Mirabilis californica	Wishbone Bush	Perennial
177.	N	Myoporum debile	Trailing Myoporum	Shrub
178.	N	Myoporum insulare	Boobialla	Shrub
179.	W	Myoporum parvifolium	Creeping Boobialla	Ground cover
180.	W	Myoporum 'Pacificum'	Trailing Myoporum	Shrub
181.		Nassella [stipa] lepida	Foothill Needlegrass	Ground cover
182.		Nassella [stipa] pulchra	Purple Needlegrass	Ground cover
183.		Nemophila menziesii	Baby Blue Eyes	Annual
184.	X	Nerium oleander	Oleander	Shrub
185.		Oenothera hookeri	California Evening Primrose	Flower
186.	W	Oenothera speciosa	Showy Evening Primrose	Perennial
187.	X	Ophiopogon japonicus	Mondo Grass	Ground cover
188.	*	Opuntia littoralis	Prickly Pear	Cactus
189.	*	Opuntia oricola	Oracle Cactus	Cactus
190.	*	Opuntia prolifera	Coast Cholla	Cactus
191.	W	Osmanthus fragrans	Sweet Olive	Shrub
192.	X	Osteospermum fruticosum	Trailing African Daisy	Ground cover
193.	X	Parkinsonia aculeata	Mexican Palo Verde	Tree
194.	W	Pelargonium peltatum	Ivy Geranium	Ground cover
195.	X	Penstemon species	Beard Tongue	Shrub

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	Code	Botanical Name	Common Name	Plant Form
196.	W	Photinia Fraseri	Red Robin	Shrub
197.	W	Pistacia chinensis	Chinese pistache	Tree
198.	X	Pittosporum undulatum	Victorian Box	Tree
199.		Plantago erecta	California Plantain	Annual
200.	**	Plantago insularis	Woolly Plantain	Annual
201.	X	Plantago sempervirens	Evergreen Plantain	Ground cover
202.	W	Platanus racemosa	California Sycamore	Tree
203.	W	Plumbago auriculata	Plumbago Cape	Shrub
204.		Populus fremontii	Western Cottonwood	Tree
205.	X	Portulacaria afra	Elephant's Foot	Shrub
206.		Potentilla glandulosa	Sticky Cinquefoil	Subshrub
207.	X	Potentilla tabernaemontanii	Spring Cinquefoil	Ground cover
208.	X	Prunus caroliniana	Carolina Cherry Laurel	Shrub/Tree
209.		Prunus ilicifolia ssp. ilicifolia	Holly Leaved Cherry	Shrub
210.	X	Prunus lyonii	Catalina Cherry	Shrub/Tree
211.	N	Punica granatum	Pomegranate	Shrub/Tree
212.	W	Puya species	Puya	Succulent/shrub
213.	W	Pyracantha species	Firethorn	Shrub
214.		Quercus agrifolia	Coast Live Oak	Shrub
215.	*	Quercus berberidifolia	California Scrub Oak	Shrub
216.	*	Quercus dumosa	Coastal Scrub Oak	Shrub
217.	X	Quercus engelmannii	Engelmann Oak	Tree
218.	X	Quercus suber	Cork Oak	Tree
219.	X	Rhamnus alaternus	Italian Buckthorn	Shrub
220.		Rhamnus californica	California Coffee Berry	Shrub
221.		Rhamnus crocea	Redberry	Shrub
222.		Rhamnus crocea ssp. ilicifolia	Hollyleaf Redberry	Shrub
223.	N	Raphiolepis species	Indian Hawthorn	Shrub
224.		Rhus integrifolia	Lemonade Berry	Shrub
225.	N	Rhus lancea	African Sumac	Tree
226.		Rhus ovataa	Sugarbush	Shrub
227.		Ribes aureum	Golden Currant	Shrub
228.		Ribes indecorum	White Flowering Currant	Shrub
229.		Ribes speciosum	Fuschia Flowering Gooseberry	Shrub
230.	W	Ribes viburnifolium	Evergreen Currant	Shrub
231.	*	Romneya coulteri	Matilija Poppy	Shrub
232.	X	Romneya coulteri 'White Cloud'	White Cloud Matilija Poppy	Shrub
233.	W	Rosmarinus officinalis	Rosemary	Shrub
234.	W	Salvia greggii	Autumn Sage	Shrub

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	Code	Botanical Name	Common Name	Plant Form
235.	W	Salvia sonomensis	Creeping Sage	Ground cover
236.		Sambucus mexicana	Mexican Elderberry	Tree
237.	W	Santolina chamaecyparissis	Lavender Cotton	Ground cover
238.	W	Santolina virens	Green Lavender Cotton	Shrub
239.		Satureja chandleri	San Miguel Savory	Perennial
240.		Scirpus acutus	Hard-Stem Bulrush	Perennial
241.		Scirpus californicus	California Bulrush	Perennial
242.	X	Sedum acre	Goldmoss Sedum	Ground cover
243.	X	Sedum album	Green stonecrop	Ground cover
244.	X	Sedum confusum	Stonecrop	Ground cover
245.	X	Sedum x rubrotinctum	Pork & Beans	Ground cover
246.	X	Senecio serpens	Dusty Miller	Ground cover
247.		Sisyrinchium bellum	Blue-Eyed Grass	Ground cover
248.		Solanum douglasii	Douglas Nightshade	Shrub
249.		Solanum xanthii	Purple Nightshade	Perennial
250.	W	Stenocarpus sinuatus	Firewheel Tree	Tree
251.	W	Strelitzia nicolai	Giant Bird of Paradise	Perennial
252.	W	Strelitzia reginae	Bird of Paradise	Perennial
253.		Symphoricarpos mollis	Creeping Snowberry	Shrub
254.	W	Tecoma stans [stenolibium stans]	Yellow Bells	Shrub/small tree
255.	X	Tecomaria capensis	Cape Honeysuckle	Ground cover
256.	N	Teucrium chamaedrys	Germander	Ground cover
257.	N	Thymus serpyllum	Lemon Thyme	Ground cover
258.	N	Trachelospermum jasminoides	Star Jasmine	Shrub
259.		Trichostems lanatum	Wolly Blue-Curls	Shrub
260.	X	Trifolium hirtum ‘Hyron’	Hyron Rose Clover	Ground cover
261.	X	Trifolium fragiferum ‘O’Connor’s’	O’Connor’s Legume	Ground cover
262.		Umbellularia californica	California Laurel	Tree
263.		Verbena Lasiostachys	Western Vervain	Perennial
264.	N	Verbena peruviana	Peruvian Verbena	Ground cover
265.	X	Verbena species	Verbena	Ground cover
266.	X	Vinca minor	Dwarf Periwinkle	Ground cover
267.		Vitis Girdiana	Desert Wild Grape	Vine
268.	X	Vulpia myuros ‘Zorro’	Zorro Annual Fescue	Grass
269.	W	Westringia fruticosa	Coast Rosemary	Shrub
270.	W	Xanthorrhoea species	Grass Tree	Perennial / shrub
271.	W	Xylosma congestum	Shiny Xylosma	Shrub
272.	X	Yucca species	Yucca	Shrub
273.		Yucca whipplei	Yucca	Shrub

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# APPENDIX 'C'

## Literature References

### Literature References

1. *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*. General Technical Report RMRS-GTR-153. June 2005. Joe H. Scott, Robert E. Burgan, United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana.
2. *BEHAVEPlus: Fire Modeling System, version 5.0.5: Variables*. General Technical Report RMRS-GTR-213WWW Revised. September 2009. Patricia L. Andrews, United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana.
3. *BEHAVEPlus Fire Modeling System, Version 5.0.0* General Technical Report RMRS-GRT-106WWW Revised. June 2008. Patricia L. Andrews, Collin D. Bevins and Robert C. Seli. United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana.
4. *BEHAVEPlus Fire Modeling System, Version 5.0 User's Guide*. General Technical Report RMRS-GRT-106WWW Revised. July 2009. Patricia L. Andrews, Collin D. Bevins, Robert C. Seli. United States Department of Agriculture - Forest Service, Rocky Mountain Research Station, Missoula, Montana.
5. The 2022 California Fire Code Chapter 49
6. The 2022 California Fire Code with Local Amendments
7. The 2022 California Residential Code, Section R337.
8. Chapter 7A-California of the 2022 Building Code
9. National Fire Protection Association - NFPA 13 Standard for the Installation of Sprinkler Systems in One – and Two-Family Dwellings and Manufactured Homes, 13-R & 13-D, 2022 Editions
10. National Fire Protection Association - NFPA 1144 *Standard for Reducing Structure Ignition Hazards from Wildfire* (2018).
11. National Fire Protection Association - NFPA 1142, 2012 Edition. Table C.11 (b) Time-Distance Table Using an Average Speed of 35 mph
12. *The California State and Local Responsibility Area Fire Hazard Severity Zone Map – Fire and Resource Assessment Program of CAL FIRE*
15. Western Region Climate Center. *Historic Climate Data from Remote Automated Weather Stations*. RAWS USA Climate Archive. Reno, NV. Data for all Remote Automated Weather Stations is available at: <http://www.raws.dri.edu/index.html>

# APPENDIX 'D'

## Non-combustible & Ignition Resistant Building Materials

### Non-Combustible & Ignition Resistant Building Materials For Balconies, Carports, Decks, Patio Covers and Floors

Examples of non-combustible & fire-resistant building materials for balconies, carports decks, patio covers, and floors are as follow:

**I. NON-COMBUSTIBLE HEAVY GAGE ALUMINUM MATERIALS - Metals USA Building Products Group - Ultra-Lattice**



**Ultra-Lattice Stand Alone Patio Cover**



**Ultra-Lattice Attached Patio Cover**



**Ultra-Lattice Solid Patio Cover**



**Ultra-Lattice Vs. Wood**

## II. FRX Exterior Fire-Retardant Treated Wood

### Exterior Fire Retardant Treated (FRT) Wood

FRX® fire retardant treated wood may be used in exterior applications permitted by the codes where: public safety is critical, other materials would transfer heat or allow fires to spread, sprinkler systems cannot easily be installed, corrosive atmospheres necessitate excessive maintenance of other materials, or fire protection is inadequate or not readily available. The International Building, Residential and Urban-Wildland Interface Codes and regulations permit the use of fire-retardant treated wood in specific instances. See below for typical exterior uses and typical residential uses.

#### Typical Exterior Uses

- Balconies
- Decks



Homeowners and Residential Architects: See this [2-minute video](#) and the diagram below.

For information on fire retardant treated wood for exterior uses, visit [www.frxwood.com](http://www.frxwood.com).

- III. **TREX COMPANY, INC** –“Trex Accents®: Fire Defense™” wood and polyethylene composite deck board, nominal 5/4” thick x 5-1/2” width, nominal density of 0.036 lb./in.<sup>3</sup>.

## **Trex Accents®: Fire Defense™**

**The perfect blend of beauty and brawn.**

Trex's #1 selling platform, Trex Accents®, exceeds the strict fire regulations set by the State of California and San Diego County.



- Offers superior safety performance:
  - Exceeds ASTM E84 Class B Flame Spread.
  - Exceeds 12-7A-4 Part A (underflame) and Part B (Burning Brand).
- Self-extinguishing even under extreme fire exposure.

Approved for use by the California State Fire Marshal's Office and San Diego County. Read the California Department of Forestry and Fire Protection, Office of the State Fire Marshal [WILDLAND URBAN INTERFACE \(WUI\) PRODUCTS Report](#). (PDF)

#### IV. SOLID “WOOD” DECKING

Company Name: Various Manufacturers

**Product Description:** Solid “Wood” decking: “Redwood”, “Western Red Cedar”, “Incense Cedar”, “Port Orford Cedar”, and “Alaska Yellow Cedar”.

Sizes: Minimum nominal 2” thickness (American Softwood Lumber Standard PS 20).

Lumber grades: Construction Common and better grades for Redwood, 3 Common and better grades for Cedars, and commercial decking or better grades for both Redwood and Cedars.

**Special Instructions:** Solid wood decking shall be installed over solid wood joists spacing 24” or less on center.

**Decking (SFM Standard 12-7A-4)**

#### V. Vents

Examples of Approved Vents

**Brandguard**



**O’Hagin Fire & Ice® Line – Flame and Ember Resistant**

An available option for all O’Hagin attic ventilation products, this attic vent not only features all the same design, construction elements and color choices as the O’Hagin Standard Line, but also features an interior stainless-steel matrix that resists the intrusion

of flames and embers. This patent-pending attic vent is accepted for use by many local fire officials for installation in Wildland Urban Interface (WUI) zones.



## **Vulcan Vents**

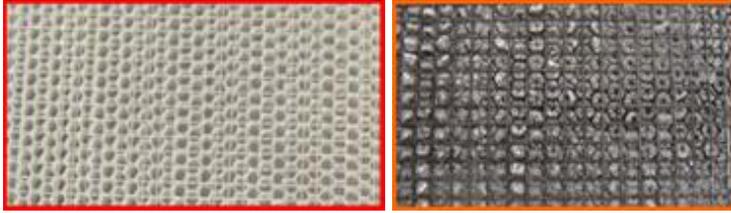
The founders of Gunter Manufacturing have been working closely over the last two years, with the scientists and inventors of Vulcan Technologies to bring to market this incredible product.

Combining our quality vent products with the fire-stopping honeycomb matrix core designed by Vulcan has produced unique and remarkable results.

Gunter manufacturing has over 50 years of combined sheet metal manufacturing experience. Special orders are not a problem. Their vent frames are industry standard frames so there is little or no learning curve for installers and contractors. Their stated goal is to provide people with the vents they need to secure their homes with additional safety against wildfires and give them piece of mind from knowing that their home or structure is protected by a product that works!

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The core of their fire and ember safe vents are manufactured out of hi-grade aluminum honeycomb and coated with an intumescent coating made by [FireFree Coatings](#). The intumescent coating is designed to quickly swell up and close off when exposed to high heat. The expanded material acts as an insulator to heat, fire, and embers

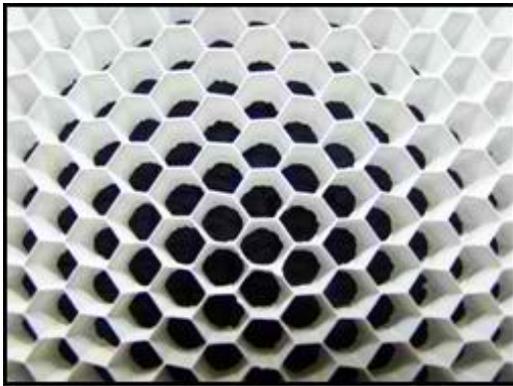


**Before**

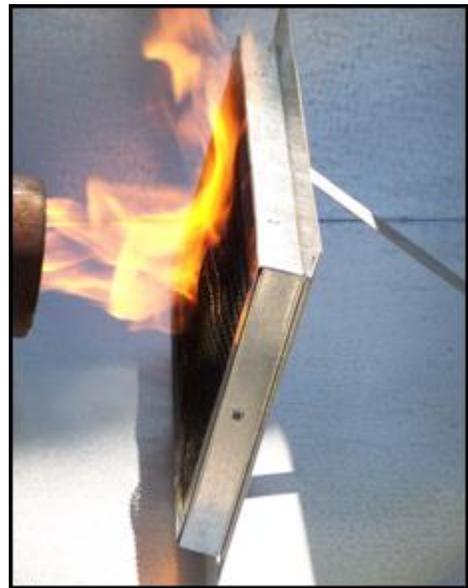
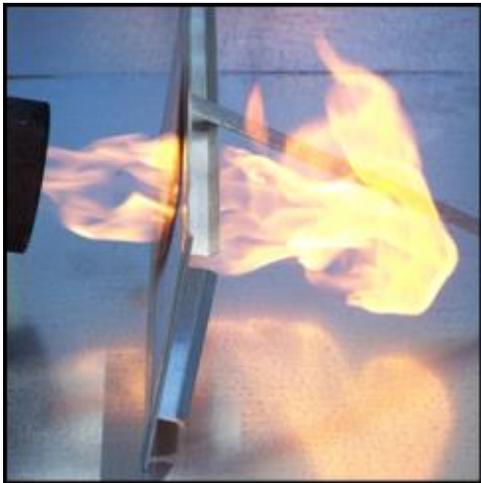
**After**

After the cells close off, they are extremely well insulated, and fire or embers cannot penetrate.

Even before the cells close off, the vent is designed to protect against flying embers. In many cases embers will attack a structure before fire ever comes near, so this feature is especially important.



**Close-up of the coated honeycomb matrix.**



**Fire easily passes through a standard vent, on the left, but stops cold when it comes up against a Vulcan Vent shown on right.**

# APPENDIX 'E'

## Ignition Resistant Construction Requirements

The following is a summary of the current requirements for ignition resistant construction for high fire hazard areas under Chapter 7A of the California Building Code (CBC) 2022 edition. However the requirements listed below are not all inclusive and all exterior building construction including roofs, eaves, exterior walls, doors, windows, decks, and other attachments must meet the current CBC Chapter 7A ignition resistance requirements, the California Fire Code, and any additional County and/or City codes in effect at the time of building permit application. See the current applicable codes for a detailed description of these requirements and any exceptions.

1. All structures will be built with a Class A Roof Assembly and shall comply with the requirements of Chapter 7A and Chapter 15 of the California Fire Code. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions.
2. Roof valley flashings shall be not less than 0.019-inch (0.48 mm) No. 26 gage galvanized sheet corrosion-resistant metal installed over not less than one layer of minimum 72-pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909, at least 36-inch-wide (914 mm) running the full length of the valley.
3. Attic or foundation ventilation louvers or ventilation openings in vertical walls shall be covered with a minimum of 1/16-inch and shall not exceed 1/8-inch mesh corrosion-resistant metal screening or other approved material that offers equivalent protection.
4. Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to resist the intrusion of flames and embers, be fire stopped with approved materials or have one layer of a minimum 72 pound (32.4 kg) mineral-surfaced nonperforated cap sheet complying with ASTM D3909 installed over the combustible decking.
5. Enclosed roof eaves and roof eave soffits with a horizontal underside, sloping rafter tails with an exterior covering applied to the under-side of the rafter tails, shall be protected by one of the following:
  - noncombustible material
  - Ignition-resistant material
  - One layer of <sup>5</sup>/<sub>8</sub>-inch Type X gypsum sheathing applied behind an exterior covering on the underside of the rafter tails or soffit
  - The exterior portion of a 1-hour fire resistive exterior wall assembly applied to the underside of the rafter tails or soffit including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual

- Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in Section 707A.10 when tested in accordance with the test procedures set forth in ASTM E2957.
- Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.

**Exceptions:** The following materials do not require protection:

1. Gable end overhangs and roof assembly projections beyond an exterior wall other than at the lower end of the rafter tails.
2. Fascia and other architectural trim boards.

6. The exposed roof deck on the underside of unenclosed roof eaves shall consist of one of the following:

- Noncombustible material, or
- Ignition-resistant material, or
- One layer of 5/8-inch Type X gypsum sheathing applied behind an exterior covering on the underside exterior of the roof deck, or
- The exterior portion of a 1-hour fire resistive exterior wall assembly applied to the underside of the roof deck designed for exterior fire exposure including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association fire Resistance Design Manual.

**Exceptions:** The following materials do not require protection:

1. Solid wood rafter tails on the exposed underside of open roof eaves having a minimum nominal dimension of 2 inch (50.8 mm).
2. Solid wood blocking installed between rafter tails on the exposed underside of open roof eaves having a minimum nominal dimension of 2 inch (50.8 mm).
3. Gable end overhangs and roof assembly projections beyond an exterior wall other than at the lower end of the rafter tails.
4. Fascia and other architectural trim boards.

7. Vents - ventilation openings for enclosed attics, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, and underfloor ventilation openings shall be fully covered with metal wire mesh, vents, other materials or other devices that meet one of the following requirements:

A. Vents listed to ASTM E2886 and complying with all the following:

- i. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
- ii. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
- iii. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).

B. Vents shall comply with all the following:

- i. The dimensions of the openings therein shall be a minimum of 1/16-inch (1.6 mm) and shall not exceed 1/8-inch (3.2 mm).
- ii. The materials used shall be noncombustible.

**Exception:** Vents located under the roof covering, along the ridge of roofs, with the exposed surface of the vent covered by noncombustible wire mesh, may be of combustible materials.

iii. The materials used shall be corrosion resistant.

8. Vents shall not be installed on the underside of eaves and cornices.

**Exceptions:**

1. Vents listed to ASTM E2886 and complying with all the following:
  - There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
  - There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
  - The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).
2. The enforcing agency shall be permitted to accept or approve special eave and cornice vents that resist the intrusion of flame and burning embers.
3. Vents complying with the requirements of Section 706A.2 shall be permitted to be installed on the underside of eaves and cornices in accordance with either one of the following conditions:
  - 3.1. The attic space being ventilated is fully protected by an automatic sprinkler system installed in accordance with Section 903.3.1.1 or,
  - 3.2. The exterior wall covering, and exposed underside of the eave are of noncombustible materials, or ignition-resistant materials, as determined in accordance with SFM Standard 12-7A-5 Ignition-Resistant Material and the requirements
9. All chimney, flue or stovepipe openings that will burn solid wood will have an approved spark arrester. An approved spark arrester is defined as a device constructed of nonflammable materials, having a heat and corrosion resistance equivalent to 12-gauge wire, 19-gauge galvanized steel or 24-gauge stainless steel. or other material found satisfactory by the Fire Protection District, having 1/2-inch perforations for arresting burning carbon or sparks nor block spheres having a diameter less than 3/8 inch (9.55 mm). It shall be installed to be visible for the purposes of inspection and maintenance and removeable to allow for cleaning of the chimney flue.
10. All residential structures will have automatic interior fire sprinklers installed according to the National Fire Protection Association (NFPA) 13R 2019 edition - Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies.
11. The exterior wall covering, or wall assembly shall comply with one of the following requirements:
  - Noncombustible material, or
  - Ignition resistant material, or
  - Heavy timber exterior wall assembly, or
  - Log wall construction assembly, or
  - Wall assemblies that have been tested in accordance with the test procedures for a 10-minute direct flame contact expose test set forth in ASTM E2707 with the conditions of acceptance shown in Section 707A.3.1 of the California Building Code, or

- Wall assemblies that meet the performance criteria in accordance with the test procedures for a 10-minute direct flame contact exposure test set forth in SFM Standard 12-7A-1.

**Exception:** Any of the following shall be deemed to meet the assembly performance criteria and intent of this section including;

- One layer of 5/8-inch Type X gypsum sheathing applied behind the exterior covering or cladding on the exterior side of the framing, or
  - The exterior portion of a 1-hour fire resistive exterior wall assembly designed for exterior fire exposure includes assemblies using the gypsum panel and sheathing products listed in the Gypsum Associate Fire Resistance Design Manual.
12. Exterior walls shall extend from the top of the foundation to the roof and terminate at 2-inch nominal solid blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure.
  13. Gutters shall be provided with the means to prevent the accumulation of leaf litter and debris within the gutter that contribute to roof edge ignition.
  14. No attic ventilation openings or ventilation louvers shall be permitted in soffits, in eave overhangs, between rafters at eaves, or in other overhanging areas.
  15. All projections (exterior balconies, decks, patio covers, unenclosed roofs and floors, and similar architectural appendages and projections) or structures less than five feet from a building shall be of non-combustible material, one-hour fire resistive construction on the underside, heavy timber construction or pressure-treated exterior fire-retardant wood. When such appendages and projections are attached to exterior fire-resistive walls, they shall be constructed to maintain the same fire-resistant standards as the exterior walls of the structure.
  16. Deck Surfaces shall be constructed with one of the following materials:
    - Material that complies with the performance requirements of Section 709A.4 when tested in accordance with both ASTM E2632 and ASTM E2726, or
    - Ignition-resistant material that complies with the performance requirements of 704A.3 when tested in accordance with ASTM E84 or UL 723, or
    - Material that complies with the performance requirements of both SFM Standard 12-7A-4 and SFM Standard 12-7A-5, or
    - Exterior fire retardant treated wood, or
    - Noncombustible material, or
    - Any material that complies with the performance requirements of SFM Standard 12-7A-4A when the attached exterior wall covering is also composed of noncombustible or ignition-resistant material.
  17. Accessory structures attached to buildings with habitable spaces and projections shall be in accordance with the Building Code. When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface greater than 10 percent, the area below the structure shall have all underfloor areas and exterior wall construction in accordance with Chapter 7A of the Building Code.

18. Exterior windows, skylights and exterior glazed door assemblies shall comply with one of the following requirements:
  - Be constructed of multiplane glazing with a minimum of one tempered pane meeting the requirements of Section 2406 Safety Glazing, or
  - Be constructed of glass block units, or
  - Have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 257, or
  - Be tested to meet the performance requirements of SFM Standard 12-7A-2.
  
19. All eaves, fascia and soffits will be enclosed (boxed) with non-combustible materials. This shall apply to the entire perimeter of each structure. Eaves of heavy timber construction are not required to be enclosed as long as attic venting is not installed in the eaves. For the purposes of this section, heavy timber construction shall consist of a minimum of 4x6 rafter ties and 2x decking.
  
20. Detached accessory buildings that are less than 120 square feet in floor area and are located more than 30 feet but less than 50 feet from an applicable building shall be constructed of noncombustible materials or of ignition-resistant materials as described in Section 704A.2 of the California Building Code.  
**Exception:** Accessory structures less than 120 square feet in floor area located at least 30 feet from a building containing a habitable space.
  
21. All rain gutters, down spouts and gutter hardware shall be constructed from metal or other noncombustible material to prevent wildfire ignition along eave assemblies.
  
22. All side yard fence and gate assemblies (fences, gate and gate posts) when attached to the home shall be of non-combustible material. The first five feet of fences and other items attached to a structure shall be of non-combustible material.
  
23. Exterior garage doors shall resist the intrusion of embers from entering by preventing gaps between doors and door openings, at the bottom, sides and tops of doors, from exceeding 1/8 inch. Gaps between doors and door openings shall be controlled by one of the methods listed in this section.
  - Weather-stripping products made of materials that:
    - (a) have been tested for tensile strength in accordance with ASTM D638 (Standard Test Method for Tensile Properties of Plastics) after exposure to ASTM G155 (Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials) for a period of 2,000 hours, where the maximum allowable difference in tensile strength values between exposed and non-exposed samples does not exceed 10%; and (b) exhibit a V-2 or better flammability rating when tested to UL 94, Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.
  - Door overlaps onto jambs and headers.
  - Garage door jambs and headers covered with metal flashing.
  
24. Exterior doors shall comply with one of the following:
  1. The exterior surface or cladding shall be of noncombustible material or,

2. The exterior surface or cladding shall be of ignition-resistant material or,
  3. The exterior door shall be constructed of solid core wood that complies with the following requirements:
    - 3.1. Stiles and rails shall not be less than 1-3/8 inches thick.
    - 3.2. Panels shall not be less than 1-1/4 inches thick, except for the exterior perimeter of the panel that shall be permitted to taper to a tongue not less than 3/8 inch thick.
  4. The exterior door assembly shall have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 252 or,
  5. The exterior surface or cladding shall be tested to meet the performance requirements of Section 707A.3.1 when tested in accordance with ASTM E2707 or,
  6. The exterior surface or cladding shall be tested to meet the performance requirements of SFM Standard 12-7A-1.
25. Fire access tunnels shall have two hour rated walls consisting of two layers of 5/8” Type ‘X’ gypsum wallboard panels on each side of the studs. The EZ Taping Systems “Fire Tape” product or equivalent should be used as an alternative to convention joint tape when:
1. Two or more layers of listed Type ‘X’ gypsum wallboard are applied vertically with joints staggered and joints of the face board are:
    - a. Tightly butted and taped with EZ Taping Systems ”Fire Tape” or equivalent product or
    - b. Finished with joint compound of EZ Taping Systems “Fire Tape” or equivalent product if the gap between gypsum wallboard panels is visible at the joint.
  2. Two or more layers of USG “Sheetrock” Fire code C gypsum wallboard are applied (horizontally or vertically).
  3. Gypsum panels shall be attached with Type S drywall screws, placed 8” oc to vertical edges and 12” oc to top and bottom runners and intermediate studs.
  4. Fire Tape shall be nominal 2” wide and applied on the vertical joints at studs.

\*\* FAHJ – Fire Authority Having Jurisdiction  
SFM – State Fire Marshal  
NFPA – National Fire Protection Association

**APPENDIX 'F'**  
**Site Plan and Fuel Treatment Exhibit**

**These Documents must be included at time of submittal**

# APPENDIX 'G'

Approved AM&M Request

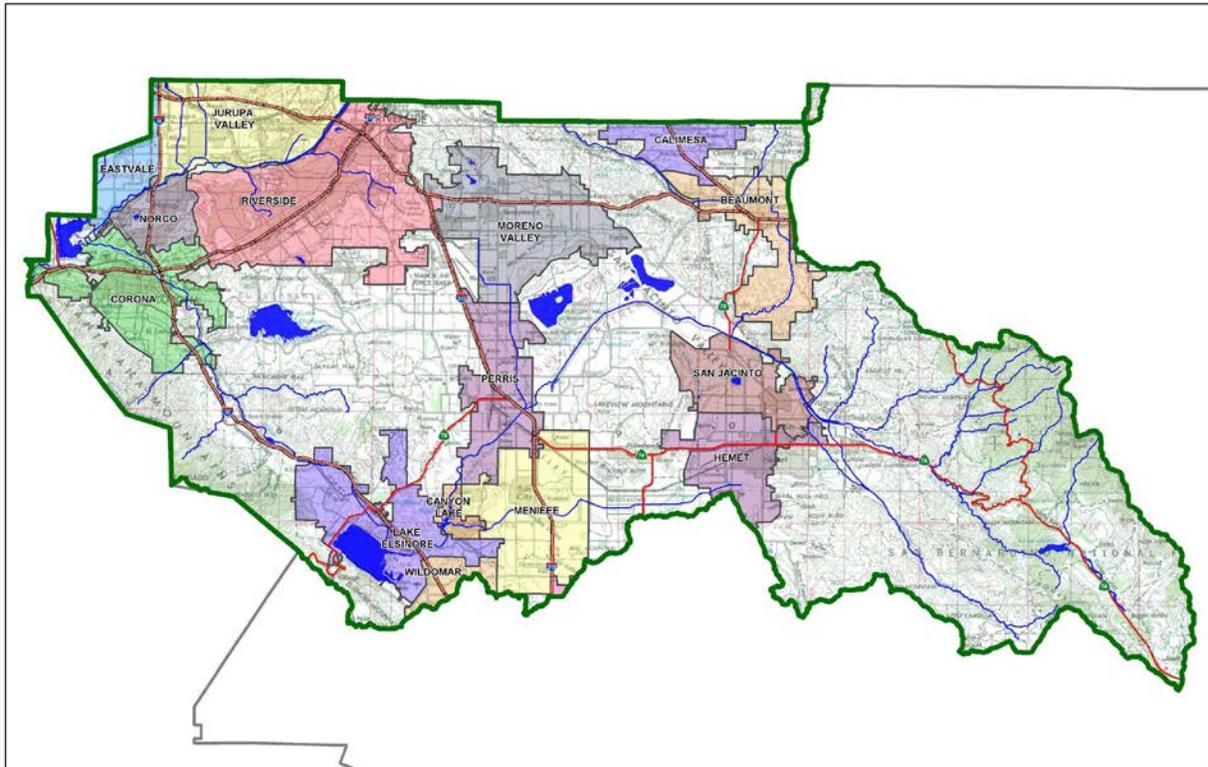
# Preliminary Project Specific Water Quality Management Plan

For Alpine Project PM 38174 located within the **Santa Ana Watershed** Region of Riverside County

**Project Title: FOUR LOT SUBDIVISION – 841 ALPINE MEADOWS LANE**

**Development No: GP-2022-04952**

**Design Review/Case No: PLANNING CASE PR-2021-001078**



- Preliminary
- Final

**Original Date Prepared:** 03-01-2022

**Revision Date(s):** 2/19/23

*Prepared for Compliance with*

*Regional Board Order No. **R8-2010-0033***

## **Contact Information:**

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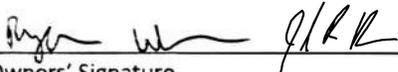
## OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Ryan Williams and Jerardo R Reyes by Ackerman Associates 2000, Inc. for the PM 38174 4-unit subdivision project.

This WQMP is intended to comply with the requirements of the City of Riverside for Design Review and Certificate of Appropriateness, Planning Case No. PR-2021-001078 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."

  
\_\_\_\_\_  
Owners' Signature

Ryan Williams and Jerardo R Reyes  
\_\_\_\_\_  
Owners' Printed Name

03-01-2023  
\_\_\_\_\_  
Date

Owner  
\_\_\_\_\_  
Owners' Title/Position

## PREPARER'S CERTIFICATION

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

  
\_\_\_\_\_  
Preparer's Signature

Michael Ackerman  
\_\_\_\_\_  
Preparer's Printed Name

03-01-2023  
\_\_\_\_\_  
Date

Engineer  
\_\_\_\_\_  
Preparer's Title/Position

Preparer's Licensure: C64663 Exp. 6-30-2023



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## Section A: Project and Site Information

The existing single family residential site will be subdivided into 4 lots. Stormwater will drain to landscaped self retaining areas.

PROJECT INFORMATION	
Type of Project:	Residential
Ward Area:	Ward 4
Community Name:	Alpine
Development Name:	Alpine PM 38174
PROJECT LOCATION	
<b>Latitude &amp; Longitude (DMS):</b> 33°54'37.5"N 117°21'48.1"W	
Project Watershed and Sub-Watershed: Santa Ana River, Reach 3	
APN(s): 243-600-025	
Map Book and Page No.: 57/31	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Residential
Proposed or Potential SIC Code(s)	1522
Area of Impervious Project Footprint (SF)	12,200
Total Area of <u>proposed</u> Impervious Surfaces within the Project Footprint (SF)/or Replacement	30,500
Does the project consist of offsite road improvements?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Does the project propose to construct unpaved roads?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
Is the project part of a larger common plan of development (phased project)?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
EXISTING SITE CHARACTERISTICS	
Total area of <u>existing</u> Impervious Surfaces within the Project limits Footprint (SF)	0
Is the project located within any MSHCP Criteria Cell?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
If so, identify the Cell number:	
Are there any natural hydrologic features on the project site?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Is a Geotechnical Report attached?	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	C
What is the Water Quality Design Storm Depth for the project?	0.6 in

### 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.

Receiving Waters	Hydrologic Unit	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Santa Ana River, Reach 3	801.21	Pathogens	AGR, GWR, REC1, REC2, WARM, WILD, RARE, SPWN	20 miles

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

Table A.1 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Army Corps of Engineers, CWA Section 404 Permit	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Statewide Construction General Permit Coverage	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
Statewide Industrial General Permit Coverage	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
<i>Other (please list in the space below as required)</i>		
City of Riverside Conditional Use Permit	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
City of Riverside Design Review	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
City of Riverside Building Permit	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
City of Riverside Grading Permit	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> N
City of Riverside Construction Permit	<input checked="" type="checkbox"/> Y	<input type="checkbox"/> 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. Integrating existing drainage patterns into the site plan helped maintain the site's predevelopment hydrologic function. Drainage patterns were inferred from topographic data. Analysis of the existing site drainage patterns during the site assessment phase of the project helped to identify the best locations for stormwater BMPs. Mild gradients are utilized to extend the time of concentration which reduces peak flows and increases the potential for additional infiltration.

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

Yes. Project protected existing vegetation where practicable and avoidance of disturbance to these areas was incorporated into design. Natural vegetation was preserved where practicable.

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

Yes. A key component of LID is taking advantage of a site's natural infiltration and storage capacity. Planting areas and surface infiltration were added to the project.

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

Yes. Minimization of impervious cover was considered during design. The overall coverage of paving was limited. Site layout and circulation patterns where landscaping could be adjacent to impervious pavement were identified.

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

Yes. Runoff is directed from impervious areas to adjacent landscaping minimizing directly connecting impervious areas. Runoff is detained and retained throughout the site where practicable.

# Section C: Delineate Drainage Management Areas (DMAs)

**Table C.1 DMA Classifications**

DMA Name or ID	Surface Type(s) <sup>12</sup>	Area (Sq. Ft.)	DMA Type
DMA 1	LANDSCAPE	79,984	SELF TREATING
DMA 5, 8	LANDSCAPE	25,300; 26,600	SELF TREATING
DMA 3, 6, 9	RESIDENTIAL	13,900; 19,250; 18,000	DRAINS TO SELF RETAINING
DMA 4, 7, 10	LANDSCAPE	3200; 3200; 3200	SELF RETAINING

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

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA 1	49,000	LANDSCAPE	DRIP/NONE
DMA 5	25,300	LANDSCAPE	DRIP/NONE
DMA 8	26,600	LANDSCAPE	DRIP/NONE

**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]
DMA 4	LANDSCAPED	3200	0.6	DMA 3	6100	1.74
DMA 7	LANDSCAPED	3200	0.6	DMA 6	6100	1.74
DMA 10	LANDSCAPED	3200	0.6	DMA 9	6100	1.74

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

**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]
DMA 3	13,900	RESIDENTIAL	0.44	6100	DMA 4	3200	1.9
DMA 6	19,250	RESIDENTIAL	0.31	6100	DMA 7	3200	1.9
DMA 9	18,000	RESIDENTIAL	0.33	6100	DMA 10	3200	1.9

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

DMA Name or ID	BMP Name or ID
NA	NA

## 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 or Phase I Environmental Site Assessment may be required by the Copermitttee to confirm present and past site characteristics that may affect the use of Infiltration BMPs.

Is this project classified as a small project?  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? If Yes, list affected DMAs:		X
...have any DMAs located within 100 feet of a water supply well? If Yes, list affected DMAs:		X
...have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact? If Yes, list affected DMAs:		X
...have measured average in-situ infiltration rates of less than 1.6 inches / hour? If Yes, list affected DMAs:		X
...have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface? If Yes, list affected DMAs:		X
...geotechnical report identify other site-specific factors that would preclude effective and safe infiltration? Describe here:		X

## 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.
- None of the above.

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

### **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. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.
- None of the above.

## 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	
NA	<input type="checkbox"/>				
	<input type="checkbox"/>				
	<input type="checkbox"/>				
	<input type="checkbox"/>				
	<input type="checkbox"/>				
	<input type="checkbox"/>				

## D.5 LID BMP Sizing

Table D.3 DCV Calculations for LID BMPs

DMA Type/I D	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I <sub>f</sub>	DMA Runoff Factor	DMA Areas x Runoff Factor	BMP 1		
	[A]		[B]	[C]	$\frac{[A]}{[C]} \times$			
<b>NA</b>						<i>Design Storm Depth (in)</i>	<i>Design Capture Volume, V<sub>BMP</sub> (cubic feet)</i>	<i>Proposed Volume on Plans (cubic feet)</i>
	A <sub>T</sub> =			$\Sigma = [D]$ =	[E]=	$[F] = \frac{[D] \times [E]}{12}$ =	[G] =	

[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.

# 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 City of Riverside 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<sup>1</sup> 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

Results included in Table F.1 below and hydrologic analysis included in Appendix 7.

**Table F.1** Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	Post-condition	% Difference
<b>Time of Concentration</b>	INSERT VALUE	INSERT VALUE	INSERT VALUE
<b>Flow (CFS)</b>	INSERT VALUE	INSERT VALUE	INSERT VALUE
<b>Volume (Cubic Feet)</b>	INSERT VALUE	INSERT VALUE	INSERT VALUE

<sup>1</sup> 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 (Prado Dam, Santa Ana River) 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 Sensitivity Maps.

Does the project qualify for this HCOC Exemption?       Y     N

## 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

The following table identifies the potential sources of runoff pollutants for this project and specifies how they are addressed through permanent controls and operational BMPs:

**Table G.1** Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Driveways and sidewalks		Sweep driveways and sidewalks regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.
Landscape, Irrigation and Outdoor Pesticide Use		Maintain landscaping using minimal or no pesticides.
Refuse Area		Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Inspect and pick up litter daily and clean up spills immediately.

## 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 4	SELF RETAINING AREA	2	33.910594, 117.363849
DMA 7	SELF RETAINING AREA	2	33.910629, 117.363444
DMA 10	SELF RETAINING AREA	2	33.910620, 117.362941

## Section I: Operation, Maintenance and Funding

As required by the City of Riverside, the following Operation, Maintenance and Funding details are provided as summarized:

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.
3. An outline of general maintenance requirements for the Stormwater BMPs 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.
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.

See Appendix 9 for a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on site, and an agreement assigning responsibility for maintenance and providing for inspections and certification.

**Maintenance Mechanism:** Owner maintained. Covenant & Agreement

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

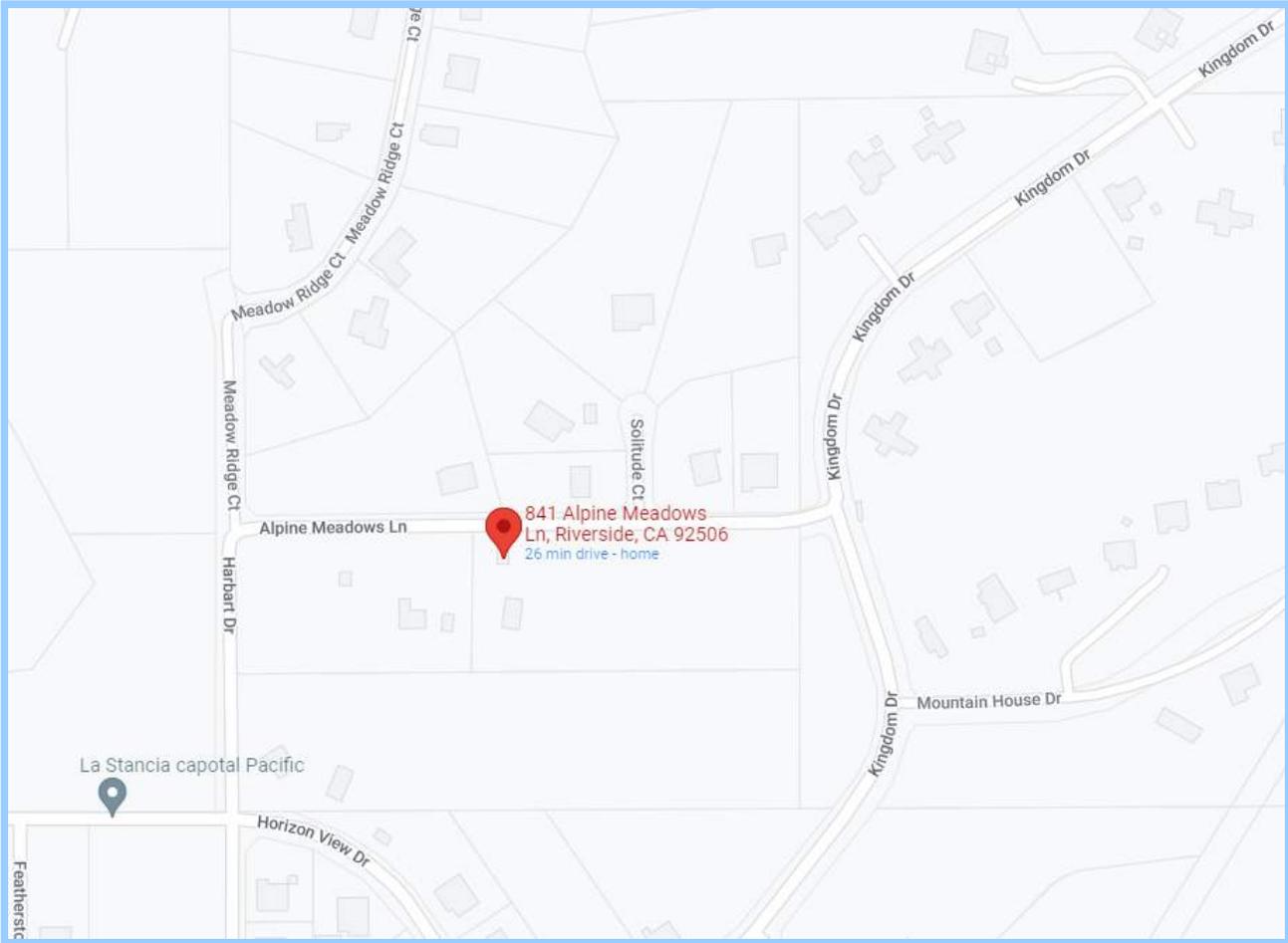
Y       N

Operation and Maintenance Plan and Maintenance Mechanism is included in Appendix 9. Educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP are included in Appendix 10.

# Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

## LOCATION MAP



***WQMP SITE PLAN WITH DRAINAGE MANAGEMENT AREAS***