INTENTIONALLY LEFT BLANK

6.1 Heat Deflecting Walls

The project's slopes in the areas of concern along with the elevated lots/pads adjacent, provide an opportunity to place a non-combustible, six foot tall, heat-deflecting wall (lower 1 to 2 feet block wall and upper 4 to 5 feet dual pane, one pane tempered glazing) to provide additional deflection for these lots to compensate for the reduced fuel modification zones and top of slope setbacks.

When buildings are set back from slopes, and a wall is placed at the top of slope, flames spreading up those slopes are deflected vertically and over the structure where cooling occurs, reducing the effects of convective heat on the structure. If a structure cannot be setback adequately, or where the slope is less than 30%, a noncombustible wall can help deflect the flames from the structure (NFPA 2005). The duration of radiant heat impact on the downhill facing side of the house is also reduced. An imaginary line extended along the slope depicts the path of the heat (hot air rises) and flame. The structure setback is important to avoid heat and/or flame intersection with the structure.

Heat-deflecting landscape view walls of masonry construction with fire-rated glazing that are six feet in height (roughly lower two feet masonry construction and upper three feet dual pane, one pane tempered glazing or equivalent and meeting Chapter 7A and/or DSFPD approval) will be incorporated at top of slope/edge of lot for lots where FMZs are the most constrained and where a full 30 feet of structure setback for the second story is not possible (graphically depicted in Figure 8). The landscape walls provide a vertical, non-combustible surface in the line of heat, fumes, and flame travel up the slope. Once these fire byproducts intersect the wall, they are deflected upward or, in the case where lighter fuels are encountered, they are quickly consumed, heat and flame are absorbed or deflected by the wall, and the fuels burn peaks out within a short (30 second–2 minute) time frame (Quarles and Beall 2002). Walls like these have been observed to deflect heat and airborne embers on numerous wildfires in San Diego, Orange, Los Angeles, Ventura, and Santa Barbara County. Rancho Santa Fe Fire Protection District, Laguna Beach Fire Protection District, Orange County Fire Authority, and others utilize these walls as Alternative methods based on observed performance during wildfires. This has lead to these agencies approving use of non-combustible landscape walls as mitigations for reduced fuel modification zones and reduced setbacks at top of slope. These walls are consistent with NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire – 2008 Edition, Section 5.1.3.3 and A.5.1.3.3 and International Urban Wildland Interface Code (ICC 2012). NFPA 1144, A.5.1.3.3 states: "Noncombustible walls and barriers are effective for deflecting radiant heat and windblown embers from structures." These walls and barriers are usually constructed of noncombustible materials (concrete block, bricks, stone, stucco) or earth with emergency access openings built around a development where 30 feet (9 meters) of defensible space is not available.

6.2 Evacuation Plan

An evacuation plan has been prepared for the project that indicates how the project will evacuate during a wildfire emergency. The evacuation plan has been prepared in coordination with DSFPD and San Diego County Fire Authority (SDCFA) such that it does not conflict with existing evacuation and operational pre-plans.

DUDEK

FIGURE 8
Example Heat Deflecting Wall

INTENTIONALLY LEFT BLANK

7 HOMEOWNER'S ASSOCIATION WILDFIRE EDUCATION PROGRAM

The Newland Sierra HOA will provide on-going resident education outreach regarding wildfire safety, the "Ready, Set, Go!" pre-planning model, and this FPP's requirements. Informational handouts, facility Web-site page, mailers, fire safe council participation, inspections, and seasonal reminders are some methods that will be used to disseminate wildfire and relocation awareness information. The HOA will coordinate with DSFPD regarding wildfire educational material/programs before printing and distribution.

INTENTIONALLY LEFT BLANK

8 CONCLUSION

This FPP has been prepared for the Newland Sierra Planned Community. It is submitted in compliance with DSFPD and San Diego County Fire Authority requirements. The recommendations in this document meet fire safety, building design elements, infrastructure, fuel management/modification, and landscaping recommendations of the applicable codes. The recommendations provided in this FPP have been designed specifically for the proposed construction of structures within a Wildland Urban Interface on the Newland Sierra project site. The project site's fire protection system includes a redundant layering of protection materials, measures, and methods that have been shown through post-fire damage assessments to reduce risk.

Fuel modification would occur throughout the site and includes 250 foot wide zones for most project-perimeter areas which set back the structures from the wildland fuels. The fuel modification zones will be maintained and inspected twice each year; removing all dead and dying materials and maintaining appropriate horizontal and vertical spacing. In addition, plants that establish or are introduced to the fuel modification zone that are not on the approved plant list will be removed so that the fuel modification zones function as intended by reducing fire spread rates and intensity. Landscaping within the project's neighborhoods will conform to fire safe plant palettes, planting densities and spacing.

The site improvements are designed to facilitate emergency apparatus and personnel access to all portions of the site. Roads and driveways meeting the code width standards and including fire engine turnouts and turnarounds provide access to within 150 feet of all sides of every building. Water availability and flow via the Vallecitos Municipal Water District will be consistent with DSFPD requirements including fire flow and hydrant distribution. These features along with the ignition resistance of all buildings, the interior sprinklers, and the pre-planning, training and awareness will assist responding firefighters through prevention, protection and suppression capabilities.

Ultimately, it is the intent of this FPP to recommend the construction of structures that are defensible from wildfire and, in turn, do not represent significant threat of ignition source for the adjacent native habitat. During extreme fire conditions, there are no guarantees that a given structure will not burn. Fire safety measures identified in this report are designed to reduce the likelihood that fire would impinge upon the proposed structures. Wildfires may occur in the area that could damage property or harm persons. However, implementation of the recommendations in this FPP will substantially reduce the risk associated with this project's high wildfire hazard location.

This FPP does not provide a guarantee that all residents and visitors will be safe at all times because of the advance fire protection features it requires. There are many variables that may influence overall safety. This FPP provides requirements and recommendations for implementation of the latest fire protection features that have proven to result in reduced wildfire related risk and hazard. Even then, fire can compromise the fire protection features through various, unpredictable ways. The goal is to reduce the likelihood that the system is compromised through implementation of the elements of this FPP and a regular occurring maintenance program.

It is recommended that the Newland Sierra community maintains a conservative approach to fire safety. This approach must include maintaining the landscape and structural components according to the appropriate standards and embracing a **"Ready, Set, Go!"** stance on evacuation. This project is not to be considered a shelter in place community. However, the fire agencies and/or law enforcement officials may, during an emergency, as they would for any new community provided the layers of fire protection as Newland Sierra, determine that it is safer to temporarily refuge residents on the site. When an evacuation is ordered, it will occur according to pre-established evacuation decision points (as detailed in the Newland Sierra Evacuation Plan), or as soon as notice to evacuate is received, which may vary depending on many environmental and other factors. Fire is a dynamic and somewhat unpredictable occurrence and it is important for anyone living at the WUI to educate themselves on practices that will improve safety.

9 REFERENCES

Alexander, M.E. 1998. Crown fire thresholds in exotic pine plantations of Australasia. Australian National University, Canberra, Australian Capital Territory. Ph.D. Thesis. 228p.

Anderson, Hal E. 1982. *Aids to Determining Fuel Models for Estimating Fire Behavior*. USDA Forest Service Gen. Tech. Report INT-122. Intermountain Forest and Range Experiment Station, Ogden, UT. http://www.fs.fed.us/rm/pubs_int/int_gtr122.pdf

Andrews, P.L. 1980. Testing the fire behavior model. In Proceedings 6th conference on fire and forest meteorology. April 22–24, 1980. Seattle, WA: Society of American Foresters. Pp. 70–77.

Andrews, Patricia L., Collin D. Bevins, and Robert C. Seli. 2008. BehavePlus fire modeling system, version 4.0: User's Guide. Gen. Tech. Rep. RMRS-GTR-106WWW Revised. Ogden, UT: Department of Agriculture, Forest Service, Rocky Mountain Research Station. 132p.

Arca, Bachisio (a), M. Laconi (b), A. Maccioni (b), G. Pellizzaro (a), and M. Salis (b). 2005. Validation of Farsite Model in Mediterranean Area. (a) CNR – IBIMET, Institute of Biometeorology, Sassari, Italy; (b) DESA, Università di Sassari, Sassari, Italy.

Blanda, M. 2005. Geriatric Trauma: Current Problems, Future Directions. www.saem.org /download/02blanda.pdf.

Brown, J.K. 1972. Field test of a rate-of-fire-spread model in slash fuels. USDA Forest Service Res. Pap. Int-116. 24 p.

Brown, J.K. 1982. Fuel and fire behavior prediction in big sagebrush. USDA Forest Service Res. Pap. INT-290. 10p.

Bushey, C.L. 1985. Comparison of observed and predicted fire behavior in the sagebrush/ bunchgrass vegetation-type. In J.N. Long (ed.), Fire management: The challenge of protection and use: Proceedings of a symposium. Society of American Foresters. Logan, UT. April 17–19, 1985. Pp. 187–201.

Cohen, J.D. 1995. Structure ignition assessment model (SIAM). In: Weise, D.R.; Martin, R.E., technical coordinators. Proceedings of the Biswell symposium: fire issues and solutions in urban interface and wildland ecosystems. 1994 February 15–17; Walnut Creek, California. Gen. Tech. Rep. PSW-GTR-158. Albany, California: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 85–92.

Cohen, J.D. 2000. Preventing disaster: home ignitability in the wildland-urban interface. Journal of Forestry 98(3): 15-21.

Cohen, J.D. and Butler, B.W. [In press]. 1996. Modeling potential ignitions from flame radiation exposure with implications for wildland/urban interface fire management. In: Proceedings of the 13th conference on fire and forest meteorology. October 27-31; Lorne, Victoria, Australia. Fairfield, Washington: International Association of Wildland Fire.

Cohen, J.D. and Saveland, J. 1997. Structure Ignition Assessment Can Help Reduce Fire Damages in the W-UI. Fire Management Notes 57(4): 19-23.

County of San Diego 2010. County of San Diego Report Format and Content Requirements – Wildland Fire and Fire Protection (August 31, 2010). On-line at http://www.sdcounty.ca.gov/dplu/docs/Fire-Report-Format.pdf

DSFPD. 2015. Deer Springs Fire Protection District Call Volume Data for years 2012 through 2014, provided by Chief Chris Amestoy to Dudek, May 15, 2015.

Dudek. 2014. *Draft Biological Resources Report for the Sierra Newland Project*. Prepared for Newland Sierra LLC. March 2014.

Finney, M.A. 2006. An overview of FlamMap modeling capabilities. In: Andrews, Patricia L.; Butler, Bret W., comps. 2006. Fuels Management—How to Measure Success: Conference Proceedings. 28-30 March 2006; Portland, OR. Proceedings RMRS-P-41. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Foote, Ethan I.D.; Gilless, J. Keith. 1996. Structural survival. In: Slaughter, Rodney, ed. California's I-zone. Sacramento, California: CFESTES; 112-121.

FRAP (Fire and Resource Assessment Program). 2014. CAL FIRE Fire Resource and Assessment Program. California Department of Forestry and Fire Protection. Accessed April 28, 2014. http://frap.cdf.ca.gov/.

Grabner, K., J. Dwyer, and B. Cutter. 1994. “Validation of Behave Fire Behavior Predictions in Oak Savannas Using Five Fuel Models.” Proceedings from 11th Central Hardwood Forest Conference. 14 p.

Grabner, K.W. 1996. “Validation of BEHAVE fire behavior predictions in established oak savannas.” M.S. thesis. University of Missouri, Columbia.

Grabner, K.W., J.P. Dwyer, and B.E. Cutter. 2001. "Fuel model selection for BEHAVE in midwestern oak savannas." *Northern Journal of Applied Forestry*. 18: 74–80.

Howard, Ronald A.; North, D. Warner; Offensend, Fred L.; Smart, Charles N. 1973. Decision analysis of fire protection strategy for the Santa Monica mountains: an initial assessment. Menlo Park, California: Stanford Research Institute. 159 p.

Hunt, J. 2013. Personal communication with M. Huff. Retired fire Battalion Chief and fire active protection planning consultant.

Hunter, Cliff. 2008. Personal communication with Rancho Santa Fe Fire Protection District Fire Marshal following after-fire loss assessments.

Institute for Business and Home Safety (IBHS). 2008. Megafires: The Case for Mitigation. 48 pp.

International Fire Chiefs Association. 2013. "Ready, Set, Go" website link: http://wildlandfirersg.org/

Keeley, J.E. and S.C. Keeley. 1984. Postfire recovery of California coastal sage scrub. The American Midland Naturalist 111:105-117.

Keeley, J.E. and C.J. Fotheringham. 2003. "Impact of Past, Present, and Future Fire Regimes on North American Mediterranean Shrublands." In *Fire and Climatic Change in Temperate Ecosystems of the Western Americas,* edited by T.T. Veblem, W.L. Baker, G. Montenegro, and T.W. Swetnam, 218–262. New York, New York: Springer-Verlag.

Keeley, J.E. 2004. "Invasive Plants and Fire Management in California Mediterranean-Climate Ecosystems." Edited by M. Arianoutsou. *In 10th MEDECOS-International Conference on Ecology, Conservation Management*. Rhodes, Greece.

Lawson, B.D. 1972. Fire spread in lodgepole pine stands. Missoula, MT: University of Montana. 110 p. thesis.

Linn, R. 2003. "Using Computer Simulations to Study Complex Fire Behavior." Los Alamos National Laboratory, MS D401. Los Alamos, NM.

Marsden-Smedley, J.B. and W.R. Catchpole. 1995. Fire behaviour modelling in Tasmanian buttongrass moorlands. II. Fire behaviour. *International Journal of Wildland Fire*. Volume 5(4), pp. 215–228.

McAlpine, R.S. and G. Xanthopoulos. 1989. Predicted vs. observed fire spread rates in Ponderosa pine fuel beds: a test of American and Canadian systems. In Proceedings 10th conference on fire and forest meteorology, April 17–21, 1989. Ottawa, Ontario. pp. 287–294.

National Fire Protection Association (NFPA) 2005: Protecting Life and Property from Wildfire. James C. Smalley, Editor.

NFPA 1144. 2008. Standard for Reducing Structure Ignition Hazards from Wildland Fire. Technical Committee on Forest and Rural Fire Protection. Issued by the Standards Council on June 4, 2007, with an effective date of June 24, 2007. Approved as an American National Standard on June 24, 2007.

Orange County Fire Authority. 2008. After Action Report – Freeway Complex Fire. 125 pp.

Orange County Transportation Corridor Authority/Orange County Parks. 2013. Comment during stakeholder meeting for preparation of the Nature Reserve of Orange County Wildland Fire Management Plan. Dudek.

Quarles, S.L. and F.C. Beall. 2002. Testing protocols and fire tests in support of the performance-based codes. In 'Proceedings of the California 2001Wildfire Conference: 10Years after the 1991 East Bay Hills Fire,' 10–12 October 2001, Oakland, California. University of California, Forest Products Laboratory, Technical Report 35.01.462, pp. 64–73. (Richmond, California).

Rothermel, R.C., and G.C. Rinehart. 1983. "Field procedures for verification and adjustment of fire behavior predictions." Res. Pap. INT-142. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 25 p.

Rothermel, R.C. 1991. *Predicting Behavior and Size of Crown Fires in the Northern Rocky Mountains.* Research Paper INT-438. Ogden, Utah: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment.

San Diego Geographic Information Source (SANGIS) 2014. SANGIS Database, 2014. Online URL: www.sangis.org/

Scott, Joe H. and Robert E. Burgan. 2005. *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 72 p.

Sneeuwjagt, R.J., and W.H. Frandsen. 1977. "Behavior of experimental grass fires vs. predictions based on Rothermel's fire model." *Canadian Journal of Forest Resources*. 7:357–367.

Tran, H.C.; Cohen, J.D; Chase, R.A. 1992. Modeling ignition of structures in wildland/urban interface fires. In: Proceedings of the 1st international fire and materials conference; 1992 September 24-25; Arlington, Virginia. London, United Kingdom: Inter Science Communications Limited; 253-262.

Weise, D.R. and J. Regelbrugge. 1997. Recent chaparral fuel modeling efforts. Prescribed Fire and Effects Research Unit, Riverside Fire Laboratory, Pacific Southwest Research Station. 5p.

Ventura County Fire Protection District. 2011. Ventura Unit Strategic Fire Plan.

WRCC (Western Regional Climate Center). 2014a. "Climate of California." Western Regional Climate Center. Accessed April 2014. http://www.wrcc.dri.edu/narratives/california/.

WRCC. 2014b. "Period of Record General Climate Summary, Escondido." Accessed April 2014. http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2862

INTENTIONALLY LEFT BLANK

APPENDIX A

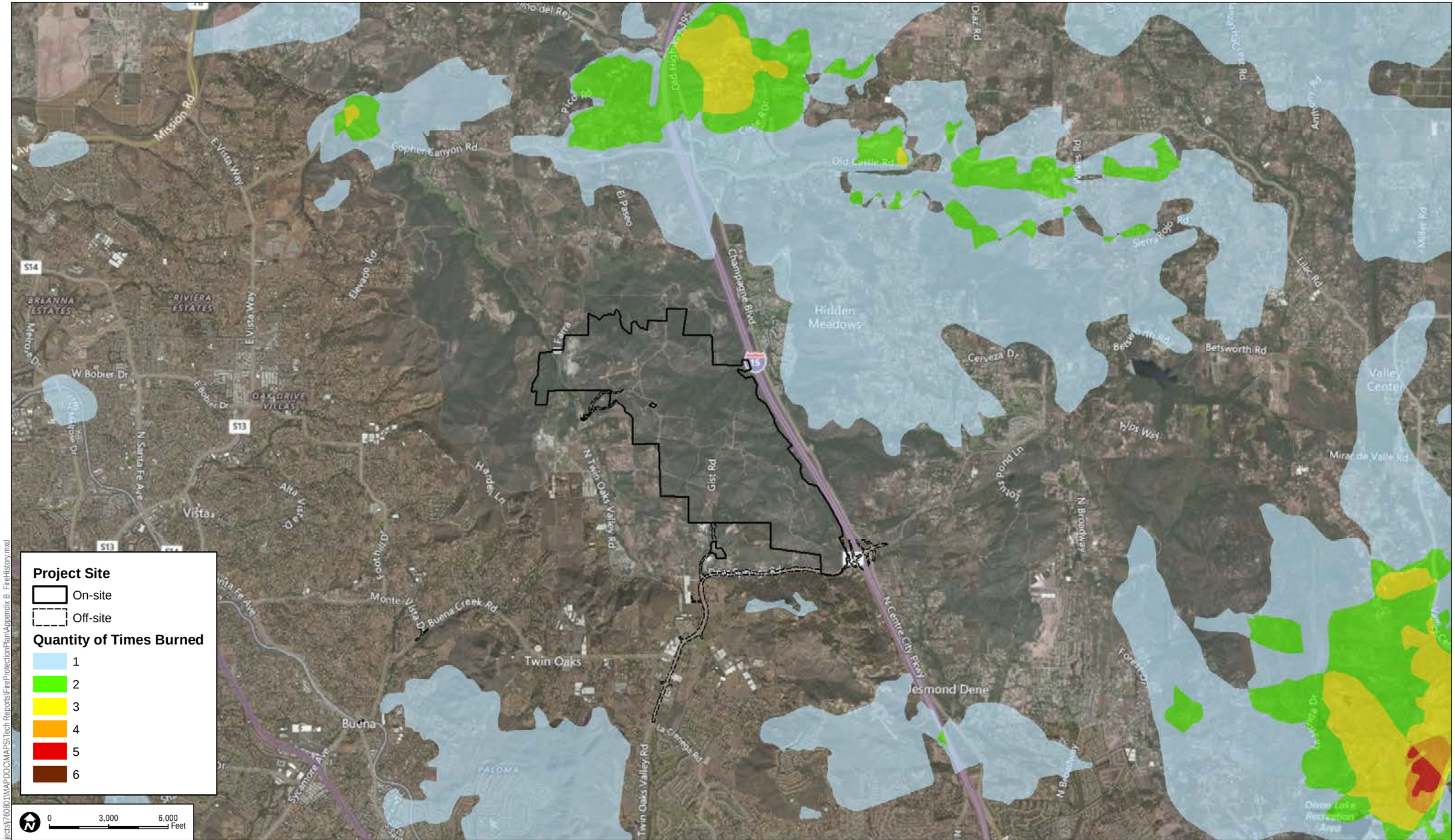
Site Photos

Site Photos

Newland Sierra

APPENDIX B

Fire History Exhibit



SOURCE: FRAP 2014; BING 2014

DUDEK

APPENDIX B

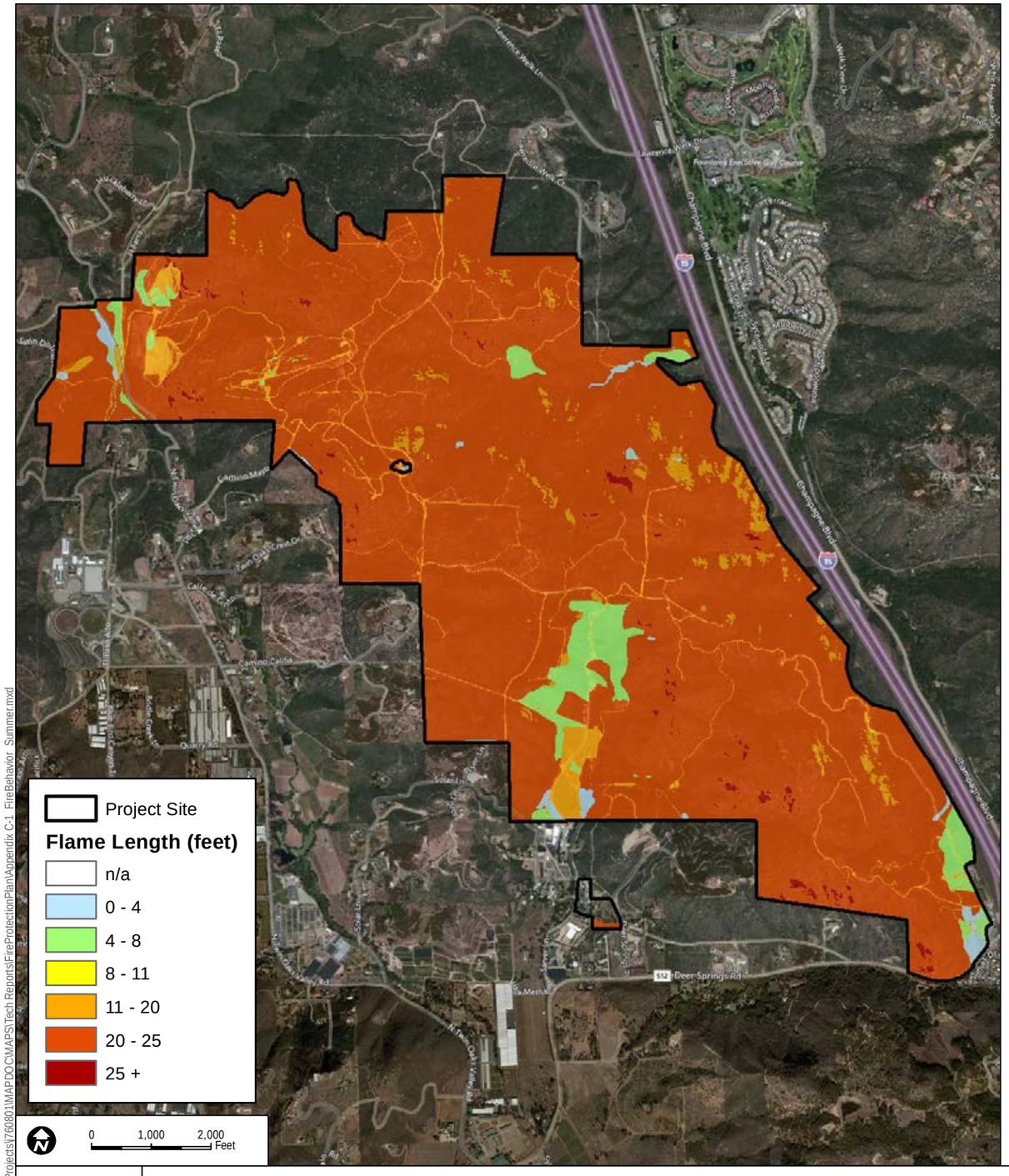
Fire History Map

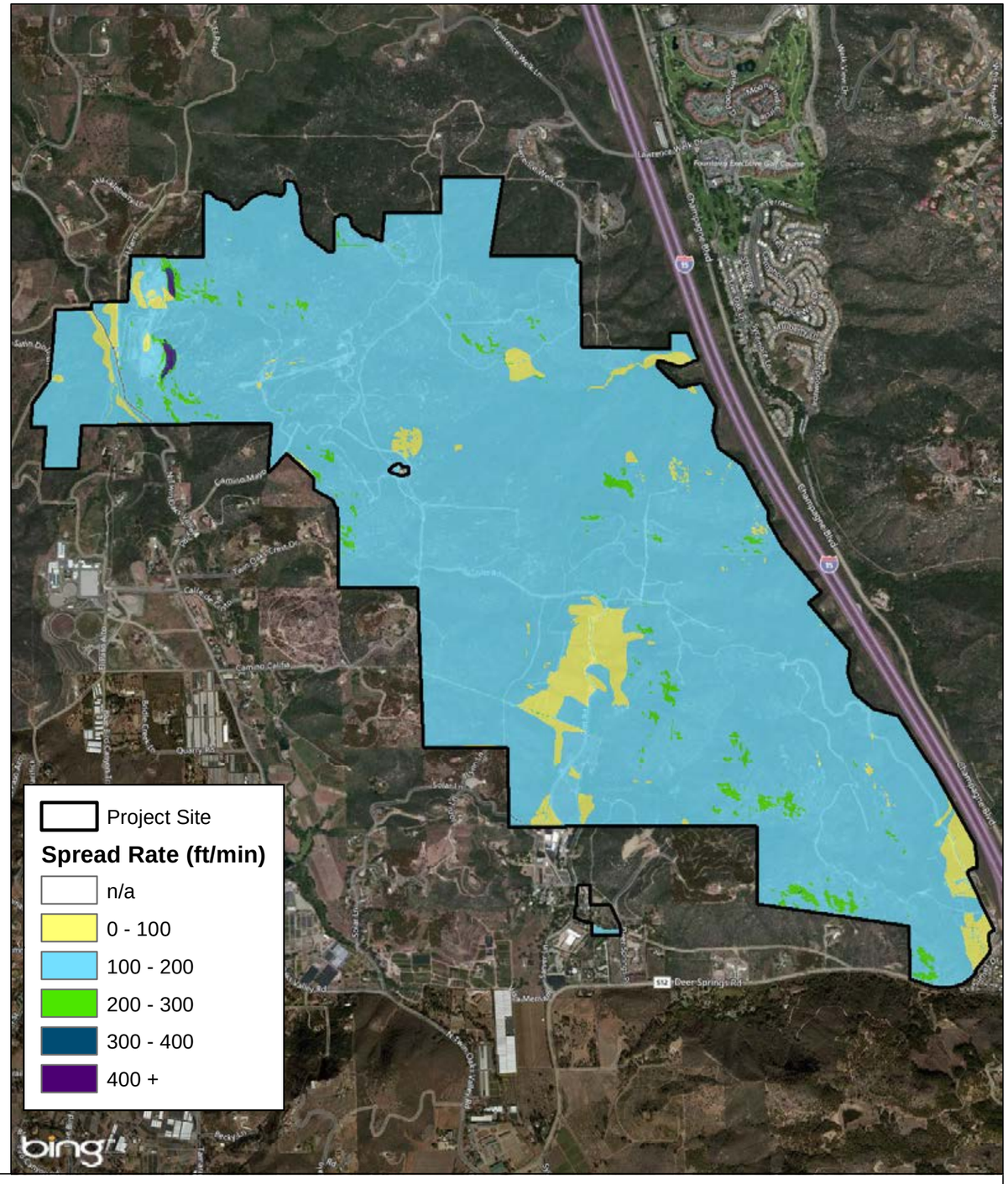
Newland Sierra Fire Protection Plan

Document Path: Z:\Projects\17600301\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\Appendix B_FireHistory.mxd

APPENDIX C-1

FlamMap Fire Behavior Modeling – Summer Fire





SOURCE: BING 2014

APPENDIX C-1

FlamMap Fire Behavior Modeling - Summer Fire

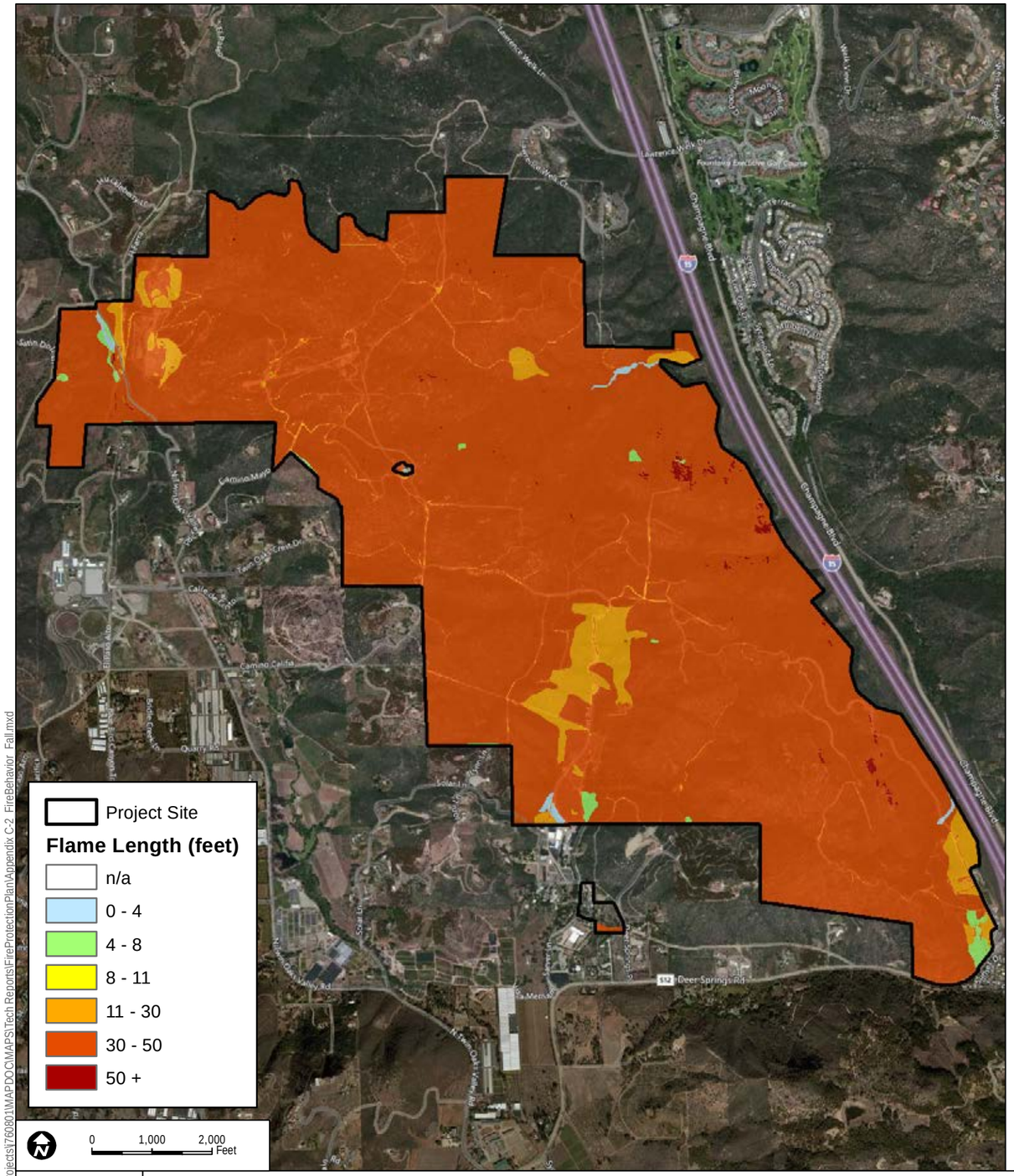
DUDEK

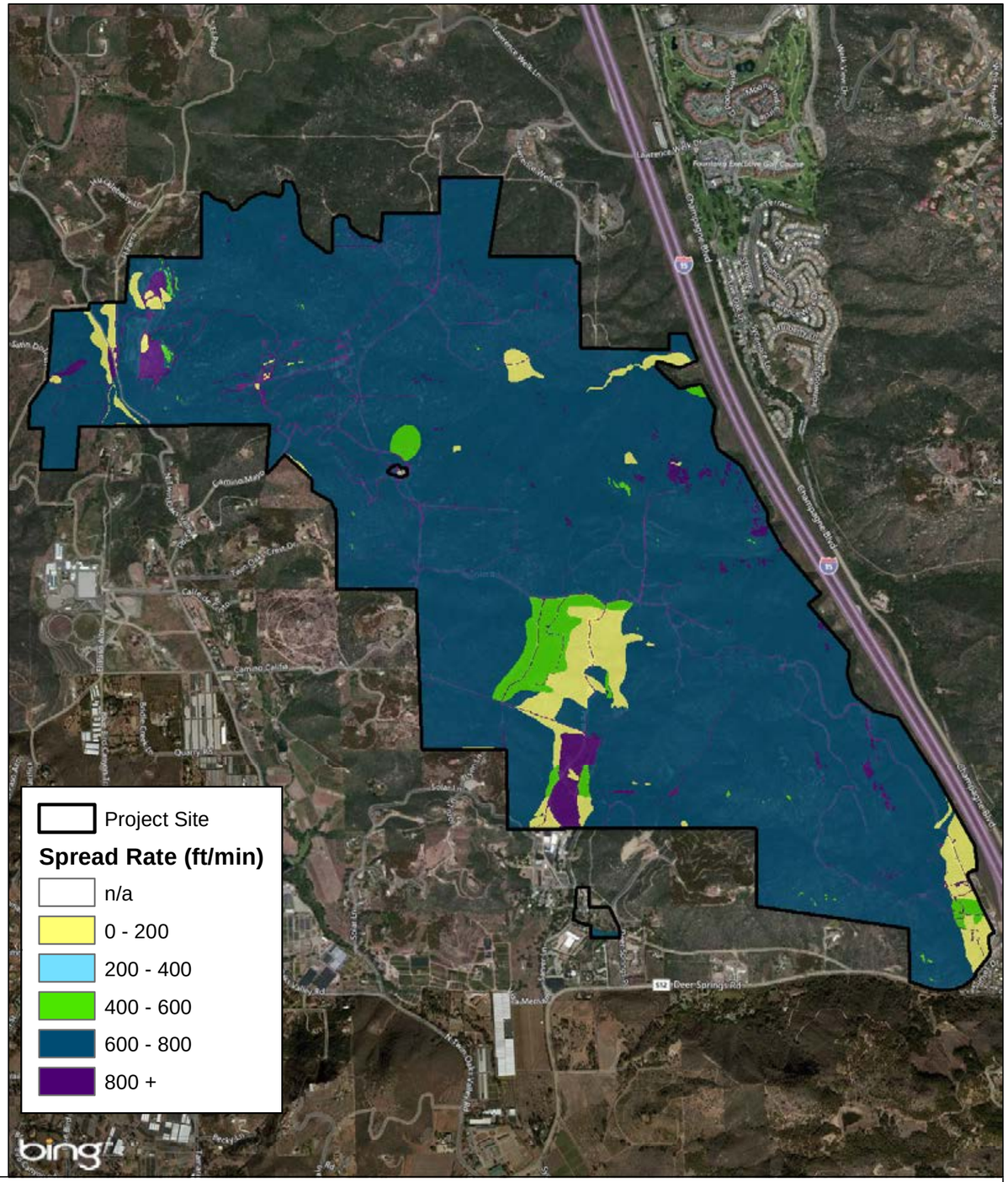
Newland Sierra Fire Protection Plan

Document Path: Z:\Projects\j760801\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\Appendix C-1 FireBehavior Summer.mxd

APPENDIX C-2

FlamMap Fire Behavior Modeling– Fall Fire





Document Path: Z:\Projects\17608011\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\Appendix C-2 FireBehavior Fall.mxd

DUDEK

SOURCE: BING 2014

APPENDIX C-2

FlamMap Fire Behavior Modeling - Fall Fire

Newland Sierra Fire Protection Plan

APPENDIX D

FlamMap Behavior Modeling –
Current and Post Project – Fall Fire

Project Site

Project Site

Flame Length (feet)

- n/a
- 0 - 4
- 4 - 8
- 8 - 11
- 11 - 30
- 30 - 50
- 50 +

0 1,000 2,000 Feet

SOURCE: BING 2014

DUDEK

APPENDIX D

FlamMap Fire Behavior Modeling - Current and Post Project - Fall Fire

Newland Sierra Fire Protection Plan

Document Path: Z:\Projects\17600801\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\Appendix D_FireBehavior_PREandPOST_Fall.mxd

APPENDIX E

Fire Service Availability Form

County of San Diego, Planning & Development Services
PROJECT FACILITY AVAILABILITY - FIRE
ZONING DIVISION

Please type or use pen

Newland Sierra, LLC (858) 875-8219
Owner's Name Phone

9820 Towne Centre Drive, Suite 100
Owner's Mailing Address Street

San Diego CA 92121
City State Zip

ORG_____ **F**
ACCT_____
ACT_____
TASK_____
DATE_____ AMT $_____
DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. ☒ Major Subdivision (TM) ☒ Specific Plan or Specific Plan Amendment
☐ Minor Subdivision (TPM) ☐ Certificate of Compliance:_____
☐ Boundary Adjustment
☒ Rezone (Reclassification) from Attached to Attached zone.
☐ Major Use Permit (MUP), purpose:_____
☐ Time Extension...Case No._____
☐ Expired Map...Case No._____
☐ Other_____

B. ☒ Residential ..... Total number of dwelling units 2,135
☒ Commercial ..... Gross floor area 81,000 s.f.
☐ Industrial ..... Gross floor area_____
☒ Other ..... Gross floor area 33,000 s.f. [school]

C. Total Project acreage 1,989 Total lots 1,202 Smallest proposed lot 3,000

Assessor's Parcel Number(s)
(Add extra if necessary)

See attached	

Thomas Guide. Page 1089 Grid B6
Mesa Rock Road @ Deer Springs Road
Project address Street
North County Metro Subregion 92069
Community Planning Area/Subregion Zip

OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: Kita Brandin Date: 11/3/14
Address: 9820 Towne Centre Drive, Suite 100 Phone: (858) 875-8219
(On completion of above, present to the district that provides fire protection to complete Section 2 and 3 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District Name: Deer Springs Fire Protection District

Indicate the location and distance of the primary fire station that will serve the proposed project:
Deer Springs Sta. #2 1521 Deer Springs Rd. San Marcos CA less than 1mi.

A. ☒ Project is in the District and eligible for service.
☐ Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.
☐ Project is not in the District and not within its Sphere of Influence boundary.
☐ Project is not located entirely within the District and a potential boundary issue exists with the _____ District.

B. ☒ Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is 5 minutes.
☐ Fire protection facilities are not expected to be adequate to serve the proposed development within the next five years.

C. ☐ District conditions are attached. Number of sheets attached:_____
☒ District will submit conditions at a later date.

SECTION 3. FUELBREAK REQUIREMENTS

Note: The fuelbreak requirements prescribed by the fire district for the proposed project do not authorize any clearing prior to project approval by Planning & Development Services.

☒ Within the proposed project 100 feet of clearing will be required around all structures.
☒ The proposed project is located in a hazardous wildland fire area, and additional fuelbreak requirements may apply. Environmental mitigation requirements should be coordinated with the fire district to ensure that these requirements will not pose fire hazards.

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Authorized Signature — Chris Amestoy, Fire Chief — 760-749-8001 — 11/4/14
Print Name and Title — Phone — Date

On completion of Section 2 and 3 by the District, applicant is to submit this form with application to:
Planning & Development Services – Zoning Counter, 5510 Overland Ave, Suite 110, San Diego, CA 92123

PDS-399F (Rev. 09/21/2012)

APPENDIX F

Newland Sierra Water Service Availability Form

County of San Diego, Planning & Development Services
PROJECT FACILITY AVAILABILITY - SEWER
ZONING DIVISION

Please type or use pen

Newland Sierra, LLC (858) 875-8219
Owner's Name Phone

9820 Towne Centre Drive, Suite 100
Owner's Mailing Address Street

San Diego CA 92121
City State Zip

ORG_____
ACCT_____
ACT_____
TASK_____
DATE_____ AMT $_____

S

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. ☒ Major Subdivision (TM) ☐ Certificate of Compliance:_____
☐ Minor Subdivision (TPM) ☐ Boundary Adjustment
☒ Specific Plan or Specific Plan Amendment
☒ Rezone (Reclassification) from Attached to Attached zone
☐ Major Use Permit (MUP), purpose:_____
☐ Time Extension...Case No._____
☐ Expired Map...Case No._____
☐ Other_____

B. ☒ Residential . . . . . Total number of dwelling units 2,136
☒ Commercial. . . . . Gross floor area 81,000 s.f.
☐ Industrial . . . . . Gross floor area_____
☒ Other . . . . . Gross floor area 33,000 s.f. [school]

C. Total Project acreage 1989 Total lots 1202 Smallest proposed lot 3000

D. Is the project proposing its own wastewater treatment plant? Yes ☐ No ☒
Is the project proposing the use of reclaimed water? Yes ☐ No ☒

Assessor's Parcel Number(s)
(Add extra if necessary)

See attached	

Thomas Guide Page 1089 Grid B6

Mesa Rock Road @ Deer Springs Road
Project address Street

North County Metro Subregion 92069
Community Planning Area/Subregion Zip

Owner/Applicant agrees to pay all necessary construction costs and dedicate all district required easements to extend service to the project.
OWNER/APPLICANT MUST COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: Etta Bandlin Date: 5/29/14

Address: 9820 Towne Centre Drive, Suite 100, San Diego, CA 92121 Phone: (858) 875-8219

(On completion of above, present to the district that provides sewer protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District name Vallecitos Water District Service area Sewer

A. ☒ Project is in the District. (partial)
☒ Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation. (partial)
☐ Project is not in the District and is **not** within its Sphere of Influence boundary.
☐ Project is not located entirely within the District and a potential boundary issue exists with the _____ District.

B. ☒ Facilities to serve the project ☐ ARE ☒ ARE NOT reasonably expected to be available within the next 5 years based on the capital facility plans of the district. Explain in space below or on attached. Number of sheets attached:_____

☐ Project will not be served for the following reason(s): _____

C. ☐ **District conditions are attached. Number of sheets attached:**_____
☐ **District has specific water reclamation conditions which are attached. Number of sheets attached:**_____
☒ **District will submit conditions at a later date.** see attached

D. ☒ **How far will the pipeline(s) have to be extended to serve the project?** to be determined

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Eileen Koonce | Eileen Koonce, Engineering Tech III | 760-744-0460 | 6/5/14

Authorized Signature | *Print Name and Title* | *Phone* | *Date*

THIS DOCUMENT IS NOT A COMMITMENT OF FACILITIES OR SERVICE BY THE DISTRICT *On completion of Section 2 by the district, applicant is to submit this form with application to: Planning & Development Services, Zoning Counter, 5510 Overland Ave. Suite 110 San Diego, CA 92123*

Newland Sierra APNs

172-091-07
172-220-14, 16, and 18
174-190-12, 13, 20, 41, 43, and 44
174-210-01, 05, 07, 08, 11 12, 17 and 18
174-211-04, 05, 06, and 07
174-280-11 and 14
174-290-02
178-100-05 and 26
178-101-01, 16, 17, 25 through 28
178-221-09
180-020-29
182-040-36 and 69
186-250-13
186-611-01, 07 through 9, 11, 14 through 17, and 23
187-540-49 through 51

Rezone (Reclassification) from C36, C30, RR, A70, S92 and S82 to C34, RU, A70 and OP zone.

County of San Diego, Planning & Development Services
PROJECT FACILITY AVAILABILITY - WATER
ZONING DIVISION

Please type or use pen

Newland Sierra, LLC (858) 875-8219
Owner's Name Phone

9820 Towne Centre Drive, Suite 100
Owner's Mailing Address Street

San Diego CA 92121
City State Zip

ORG_____
ACCT_____
ACT_____
TASK_____
DATE_____
AMT $_____

W

DISTRICT CASHIER'S USE ONLY

SECTION 1. PROJECT DESCRIPTION — TO BE COMPLETED BY APPLICANT

A. ☒ Major Subdivision (TM) ☒ Specific Plan or Specific Plan Amendment
☐ Minor Subdivision (TPM) ☐ Certificate of Compliance:_____
☐ Boundary Adjustment
☒ Rezone (Reclassification) from Attached to Attached zone.
☐ Major Use Permit (MUP), purpose:_____
☐ Time Extension...Case No._____
☐ Expired Map...Case No._____
☐ Other_____

B. ☒ Residential . . . . . Total number of dwelling units 2,136
☒ Commercial. . . . . Gross floor area 81,000 s.f.
☐ Industrial . . . . . Gross floor area_____
☒ Other . . . . . Gross floor area 33,000 s.f. [school]

C. ☐ Total Project acreage 1,989 Total number of lots 3,000

D. Is the project proposing the use of groundwater? ☐ Yes ☒ No
Is the project proposing the use of reclaimed water? ☐ Yes ☒ No

Assessor's Parcel Number(s)
(Add extra if necessary)

See attached	

Thomas Guide Page 1089 Grid B6

Mesa Rock Road @ Deer Springs Road
Project address Street

North County Metro Subregion 92069
Community Planning Area/Subregion Zip

Owner/Applicant agrees to pay all necessary construction costs, dedicate all district required easements to extend service to the project and COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: Rita Brandin Date: 5/28/14

Address: 9820 Towne Centre Drive, Suite 100, San Diego, CA 92121 Phone: (858) 875-8219

(On completion of above, present to the district that provides water protection to complete Section 2 below.)

SECTION 2: FACILITY AVAILABILITY — TO BE COMPLETED BY DISTRICT

District Name: Vallecitos Water District Service area Water

A. ☒ Project is in the district.
☐ Project is not in the district but is within its Sphere of Influence boundary, owner must apply for annexation.
☐ Project is not in the district and is not within its Sphere of Influence boundary.
☐ The project is not located entirely within the district and a potential boundary issue exists with the _____ District.

B. ☒ Facilities to serve the project ☐ ARE ☒ ARE NOT reasonably expected to be available within the next 5 years based on the capital facility plans of the district. Explain in space below or on attached_____. (Number of sheets)
☐ Project will not be served for the following reason(s):_____

C. ☐ **District conditions are attached. Number of sheets attached:**_____
☐ **District has specific water reclamation conditions which are attached. Number of sheets attached:**_____
☒ **District will submit conditions at a later date.** See attached

D. ☒ **How far will the pipeline(s) have to be extended to serve the project?** to be determined

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted.

Authorized Signature: Eileen Koonce Print Name Eileen Koonce

Print Title Engineering Tech II Phone 760-744-0460 Date 6/5/14

NOTE: THIS DOCUMENT IS NOT A COMMITMENT OF SERVICE OR FACILITIES BY THE DISTRICT
On completion of Section 2 and 3 by the District, applicant is to submit this form with application to:
Planning & Development Services – Zoning Counter, 5510 Overland Ave, Suite 110, San Diego, CA 92123

Newland Sierra APNs

172-091-07
172-220-14, 16, and 18
174-190-12, 13, 20, 41, 43, and 44
174-210-01, 05, 07, 08, 11 12, 17 and 18
174-211-04, 05, 06, and 07
174-280-11 and 14
174-290-02
178-100-05 and 26
178-101-01, 16, 17, 25 through 28
178-221-09
180-020-29
182-040-36 and 69
186-250-13
186-611-01, 07 through 9, 11, 14 through 17, and 23
187-540-49 through 51

Rezone (Reclassification) from C36, C30, RR, A70, S92 and S82 to C34, RU, A70 and OP zone.

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

201 Vallecitos de Oro • San Marcos, California • 92069-1453 Telephone (760) 744-0460

June 5, 2014

County of San Diego
Planning & Development Services
Zoning Division
5510 Overland Avenue, Suite 110
San Diego, CA 92123

RE: NEWLAND SIERRA DEVELOPMENT
APN 172-091-07, 172-220-14, 16 and 18, 174-190-12, 13, 20, 41, 43 and 44, 174-210-01, 05, 07, 08, 11, 12, 17 and 18, 174-211-04, 05, 06 and 07, 174-280-11 and 14, 174-290-02, 178-100-05 and 26, 178-101-01, 16, 17, 25 through 28, 178-221-09, 180-020-29, 182-040-36 and 69, 186-250-13, 186-611-01, 07 through 9, 11, 14 through 17 and 23, 187-540-49 and 51
Newland Sierra, LLC (Developer)

General

The above referenced project is within the water service boundary of the Vallecitos Water District (VWD or District) and is eligible for service. While portions of the project are within VWD's sewer service boundary, the majority of the project property is outside of the sewer service boundary and would require annexation prior to being eligible for sewer service. Service will be provided under the rules and regulations of the District, under normal operating conditions after all required fees have been paid and all conditions of the District have been satisfied.

At this time, the developer has not submitted a site plan or project description. When the project is submitted, VWD will require the completion of a water and sewer study that will evaluate the development's proposed land use against the County-approved land use that is utilized in the District's current Master Plan. The water and sewer study will assess the impacts of any increased density and provide mitigation measures which will be required prior to District approval of the project. The 2008 VWD Master Plan land use for the project property is a mix of Hillside Residential (0.5 – 0.25 du/ac), Intensive Agriculture (0.125 - 0.5 du/ac) and Ag Preserve (0.125 du/ac).

Any existing District pipelines located within the boundaries of the project that are in conflict with the proposed development will require relocation within the public right-of-way or District easements. District policy requires that all newly created parcels have frontage on

the District main and extensions of facilities to serve each newly created parcel will be required. The exact location of the main line extensions and relocation will be determined during the design phase of the project.

Water or Sewer facilities not within the public right-of-way will require a minimum 20-foot easement granted to the District. The District may require additional easements through the project or private properties for future extensions. The owner of the project is responsible for obtaining any easements including expenses incurred. Joint use of these easements is not allowed by the District and easements for storm drain and other facilities should be analyzed early so that adequate sizing of easements for all facilities and various agencies is provided.

No structures will be allowed over District facilities. This includes but is not limited to, walls, entrance medians, landscaping, gates, guard house structures, curbs and gutters, or driveways that will be constructed over District facilities.

Water Service

The property is located within two pressure zones (source of water for fire protection and domestic use). One zone maintains a hydraulic gradeline (HGL) of 1228, one maintains an HGL of 1330 and the other maintains an HGL of 1608 feet above sea level (msl). The District requires minimum static water pressure of 40 psi at the water meter. For protection of District facilities, any areas with water pressures near or higher than 150 psi will require water pressure regulators before the meter.

There are existing water facilities located throughout the project. Any water lines in conflict with the development will require relocation into public right-of-ways and may require District easements across a portion of the lots. Drivable access to, and along, the facilities must be maintained at all times.

A Water Supply Assessment (WSA) will be required for this project. The Assessment will identify long term water supplies from both the San Diego County Water Authority and the Metropolitan District of Southern California and determine if sufficient water supplies are expected to be available over the next 20 years to serve the development.

Although the WSA will identify long term water supplies, it does not identify the project's impact on the District's existing infrastructure and storage facilities. Because of the project's potential increased densities, a water study for both onsite facilities and offsite facilities is required for the entire project to determine both on-site and offsite infrastructure, including storage, necessary to serve the development. The water study will also identify any regional components necessary to serve the project.

Fire Flow Requirements

The Fire Department should be contacted to verify fire flow requirements and location of fire flow facilities required for the proposed project. A hydraulic analysis prepared by the District will be required to determine the available fire flow for the project. The owner/developer is responsible for all costs incurred in obtaining the hydraulic analysis. Looping or upgrades to the existing facilities both onsite and offsite may be required based on results of the required Water and Sewer Study or Fire Flow Analysis. It is recommended that the hydraulic analysis be completed early in the process so not to cause any delay in the design and plan check process.

Sewer Service

The property is partially within the boundaries of the Vallecitos Water District for sewer service. The portion of the property not within VWD's sewer service boundary will require annexation prior to being eligible for sewer service. Sewer service will only be provided under the rules and regulations of the District, under normal operating conditions and after all required fees have been paid and all conditions of the District have been satisfied.

There are existing sewer facilities located in Deer Springs Road at the very southern portion of the project. Any sewer facilities in conflict with the development will require relocation into public right-of-ways and may require easements across a portion of the lots. Access to, and along, the facilities must be maintained at all times.

A sewer analysis is also required to determine if the existing facilities both onsite and offsite are adequately sized to provide service to the proposed project. Because of the potential increased density, the proposed development's wastewater flows may have an impact on the District's downstream sewer collection and conveyance system, as well as treatment facilities. Upgrades to existing collection and conveyance facilities, existing Land Outfall, and the Encina Wastewater Authority may be required, and may include the purchase or construction of additional treatment and disposal capacity. Actual facility sizing and requirements will be determined upon completion of the sewer analysis by the District or the District's Consultant.

Conclusion

At this time, the developer/owner is required to complete a water and sewer study and a Water Supply Assessment for the project. Until these are completed, the District cannot determine the impacts the project will have on existing facilities. The project specific impacts will be analyzed in conjunction with the District's current Master Plan.

Costs associated with the District review as well as costs associated with the review of the project's impact on the District's Master Plan facilities shall be the responsibility of the

developer/owner. To avoid any delays in processing the project, it is recommended that the study be requested early to allow ample time for the District to complete. *As mentioned above, the potential increased density of the project may have a significant impact on offsite facilities both for this project and cumulatively with other projects currently being proposed. These projects may significantly impact District facilities including local water and sewer mains, water storage, the sewer interceptor, pump stations, outfall and treatment.*

The District adopted Ordinance No. 162 on May 6, 2009, which identifies various water conservation measures as they relate to current and future drought conditions including the curtailment of availability letters and limiting new service connections at Drought Level 3.

This letter is issued for planning purposes only, and is not a representation, expressed or implied that the District will provide service at a future date. The Vallecitos Water District relies one hundred percent on imported water supplies. Water may not be available at the time the project is built. Commitments to provide service are made by the District Board of Directors and are subject to compliance with District fees, charges, rules and regulations.

Sincerely,

VALLECITOS WATER DISTRICT

Eileen Koonce
Engineering Technician III

cc: Ken Gerdes, Director of Engineering and Operations
James Gumpel, District Engineer
Rob Scholl, Development Services Senior Engineer

APPENDIX G

Proposed Fire Hydrant Exhibit

Camino Mayor

Twin Oaks Valley Road

Interstate 15

Sarver Lane

Deer Springs Road

Mesa Rock Rd

Fire Hydrant Location

Project Site

0 600 1,200 Feet

SOURCE: Fuscoe 2016

DUDEK

APPENDIX G

Proposed Fire Hydrant Locations

Newland Sierra Fire Protection Plan

Document Path: Z:\Projects\17608011\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\Appendix G_FireHydrantLocations.mxd

APPENDIX H-1

Newland Sierra Fuel Modification Zone Exhibit

Camino Mayor

Twin Oaks Valley Road

Interstate 15

Sarver Lane

Deer Springs Road

Mesa Rock Rd

Potential Vineyard Locations

Project Site

Fuel Modification Zone

Zone 1

Zone 2

Special

0 600 1,200 Feet

SOURCE: Fuscoe 2016

DUDEK

APPENDIX H-1

Fuel Modification Zone Exhibit

Newland Sierra Fire Protection Plan

Document Path: Z:\Projects\T\60801\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\Appendix H-1 FuelModZones.mxd

SOURCE: Fuscoe 2016

DUDEK

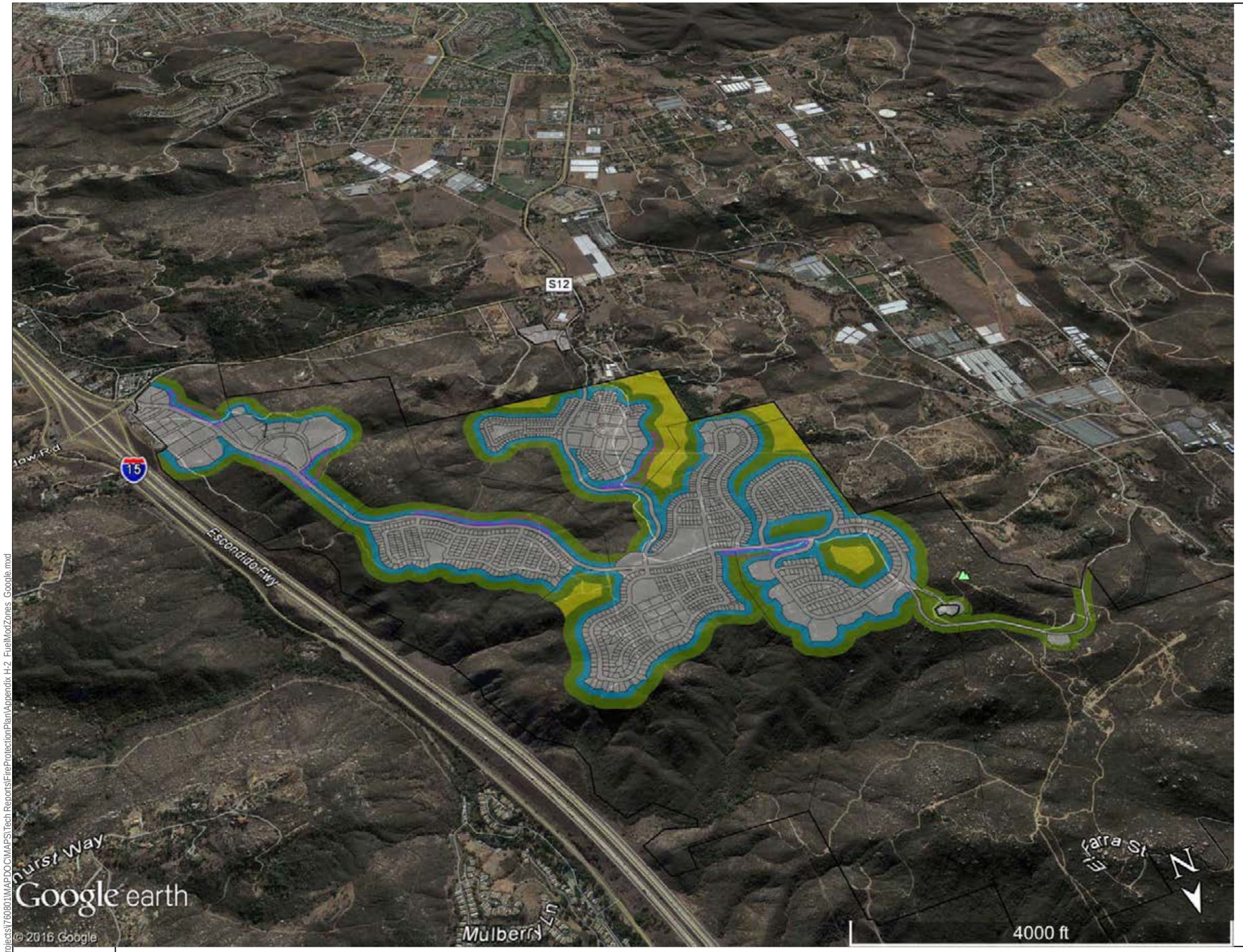
APPENDIX H-1

Fuel Modification Zone Exhibit

Newland Sierra Fire Protection Plan

APPENDIX H-2

3D Newland Sierra Fuel Modification Zone Exhibit



SOURCE: Fuscoe 2016; GoogleEarth 2016

DUDEK

APPENDIX H-2

Fuel Modification Zone Exhibit (GoogleEarth Overlay)

Newland Sierra Fire Protection Plan

Document Path: Z:\Projects\Y760801\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\Appendix H-2_FuelModZones_Google.mxd

APPENDIX I

Prohibited Plant List

Appendix I
Examples of Prohibited Plants

Botanical Name	Common Name	Comment*
Trees		
Abies species	Fir	F
Acacia species (numerous)	Acacia	F, I
Agonis juniperina	Juniper Myrtle	F
Araucaria species (A. heterophylla, A. araucana, A. bidwillii)	Araucaria (Norfolk Island Pine, Monkey Puzzle Tree, Bunya Bunya)	F
Callistemon species (C. citrinus, C. rosea, C. viminalis)	Bottlebrush (Lemon, Rose, Weeping)	F
Calocedrus decurrens	Incense Cedar	F
Casuarina cunninghamiana	River She-Oak	F
Cedrus species (C. atlantica, C. deodara)	Cedar (Atlas, Deodar)	F
Chamaecyparis species (numerous)	False Cypress	F
Cinnamomum camphora	Camphor	F
Cryptomeria japonica	Japanese Cryptomeria	F
Cupressocyparis leylandii	Leyland Cypress	F
Cupressus species (C. fobesii, C. glabra, C. sempervirens,)	Cypress (Tecate, Arizona, Italian, others)	F
Eucalyptus species (numerous)	Eucalyptus	F, I
Juniperus species (numerous)	Juniper	F
Larix species (L. decidua, L. occidentalis, L. kaempferi)	Larch (European, Japanese, Western)	F
Leptospermum species (L. laevigatum, L. petersonii)	Tea Tree (Australian, Tea)	F
Lithocarpus densiflorus	Tan Oak	F
Melaleuca species (M. linariifolia, M. nesophila, M. quinquenervia)	Melaleuca (Flaxleaf, Pink, Cajeput Tree)	F, I
Olea europea	Olive	I
Picea (numerous)	Spruce	F
Palm species (numerous)	Palm	F, I
Pinus species (P. brutia, P. canariensis, P. b. eldarica, P.	Pine (Calabrian, Canary Island, Mondell, Aleppo, Italian Stone,	F

Appendix I
Examples of Prohibited Plants

Botanical Name	Common Name	Comment*
halepensis, P. pinea, P. radiata, numerous others)	Monterey)	
Platycladus orientalis	Oriental arborvitae	F
Podocarpus species (P. gracilior, P. macrophyllus, P. latifolius)	Fern Pine (Fern, Yew, Podocarpus)	F
Pseudotsuga menziesii	Douglas Fir	F
Schinus species (S. molle, S. terebenthifolius)	Pepper (California and Brazilian)	F, I
Tamarix species (T. africana, T. aphylla, T. chinensis, T. parviflora)	Tamarix (Tamarisk, Athel Tree, Salt Cedar, Tamarisk)	F, I
Taxodium species (T. ascendens, T. distichum, T. mucronatum)	Cypress (Pond, Bald, Monarch, Montezuma)	F
Taxus species (T. baccata, T. brevifolia, T. cuspidata)	Yew (English, Western, Japanese)	F
Thuja species (T. occidentalis, T. plicata)	Arborvitae/Red Cedar	F
Tsuga species (T. heterophylla, T. mertensiana)	Hemlock (Western, Mountain)	F
Groundcovers, Shrubs & Vines		
Acacia species	Acacia	F, I
Adenostoma fasciculatum	Chamise	F
Adenostoma sparsifolium	Red Shanks	F
Agropyron repens	Quackgrass	F, I
Anthemis cotula	Mayweed	F, I
Arbutus menziesii	Madrone	F
Arctostaphylos species	Manzanita	F
Arundo donax	Giant Reed	F, I
Artemisia species (A. abrotanium, A. absinthium, A. californica, A. caucasica, A. dracunculus, A. tridentata, A. pynocephala)	Sagebrush (Southernwood, Wormwood, California, Silver, True tarragon, Big, Sandhill)	F
Atriplex species (numerous)	Saltbush	F, I
Avena fatua	Wild Oat	F
Baccharis pilularis	Coyote Bush	F
Bambusa species	Bamboo	F, I
Bougainvillea species	Bougainvillea	F, I

Appendix I
Examples of Prohibited Plants

Botanical Name	Common Name	Comment*
Brassica species (B. campestris, B. nigra, B. rapa)	Mustard (Field, Black, Yellow)	F, I
Bromus rubens	Foxtail, Red brome	F, I
Castanopsis chrysophylla	Giant Chinquapin	F
Cardaria draba	Hoary Cress	I
Carpobrotus species	Ice Plant, Hottentot Fig	I
Cirsium vulgare	Wild Artichoke	F,I
Conyza bonariensis	Horseweed	F
Coprosma pumila	Prostrate Coprosma	F
Cortaderia selloana	Pampas Grass	F, I
Cytisus scoparius	Scotch Broom	F, I
Dodonaea viscosa	Hopseed Bush	F
Eriodictyon californicum	Yerba Santa	F
Eriogonum species (E. fasciculatum)	Buckwheat (California)	F
Fremontodendron species	Flannel Bush	F
Hedera species (H. canariensis, H. helix)	Ivy (Algerian, English)	I
Heterotheca grandiflora	Telegraph Plant	F
Hordeum leporinum	Wild barley	F, I
Juniperus species	Juniper	F
Lactuca serriola	Prickly Lettuce	I
Larix species (numerous)	Larch	F
Larrea tridentata	Creosote bush	F
Lolium multiflorum	Ryegrass	F, I
Lonicera japonica	Japanese Honeysuckle	F
Mahonia species	Mahonia	F
Mimulus aurantiacus	Sticky Monkeyflower	F
Miscanthus species	Eulalie Grass	F
Muhlenbergia species	Deer Grass	F
Nicotiana species (N. bigelovii, N. glauca)	Tobacco (Indian, Tree)	F, I
Pennisetum setaceum	Fountain Grass	F, I
Perovskia atroplicifolia	Russian Sage	F
Phoradendron species	Mistletoe	F
Pickeringia montana	Chaparral Pea	F
Rhus (R. diversiloba, R.	Sumac (Poison oak, Laurel, Pink	F

Appendix I
Examples of Prohibited Plants

Botanical Name	Common Name	Comment*
laurina, R. lentii)	Flowering)	
Ricinus communis	Castor Bean	F, I
Rhus Lentii	Pink Flowering Sumac	F
Rosmarinus species	Rosemary	F
Salvia species (numerous)	Sage	F, I
Salsola australis	Russian Thistle	F, I
Solanum Xantii	Purple Nightshade (toxic)	I
Silybum marianum	Milk Thistle	F, I
Thuja species	Arborvitae	F
Urtica urens	Burning Nettle	F
Vinca major	Periwnkle	I

*F = flammable, I = Invasive

NOTES:

1. Plants on this list that are considered invasive are a partial list of commonly found plants. There are many other plants considered invasive that should not be planted in a fuel modification zone and they can be found on The California Invasive Plant Council's Website www.cal-ipc.org/ip/inventory/index.php. Other plants not considered invasive at this time may be determined to be invasive after further study.
2. For the purpose of using this list as a guide in selecting plant material, it is stipulated that all plant material will burn under various conditions.
3. The absence of a particular plant, shrub, groundcover, or tree, from this list does not necessarily mean it is fire resistive.
4. All vegetation used in Vegetation Management Zones and elsewhere in this development shall be subject to approval of the Fire Marshal.
5. Landscape architects may submit proposals for use of certain vegetation on a project specific basis. They shall also submit justifications as to the fire resistivity of the proposed vegetation.

APPENDIX J

Desirable Plan List for Fuel Modification Zones

GUIDELINES FOR PLANTING IN FUEL MODIFICATION ZONES

Planting in fuel modification areas on private property shall be in accordance with the following guidelines:

1. Limit planting in large unbroken masses especially trees and large shrubs, while at the same time trying to achieve the desired screening required by the jurisdictional planning/building department. Groups should be two (2) or three (3) maximum, with mature foliage of any group separated horizontally by at least twenty (20) feet.*

2. Avoid massing of shrubs at bases of trees or larger shrubs.

3. Avoid massing of vegetation adjacent to structures especially under eaves, overhangs, decks, etc.

4. Limit the use of plants which have the following characteristics:

    a. Are known to be especially combustible. (eg.: conifers, eucalyptus, acacias)

    b. Have dry or deciduous foliage during part of the year.

    c. Develop deciduous or shaggy bark.

    d. Develop dry or dead undergrowth.

5. Conduct periodic maintenance to reduce fuel volumes, eliminate weeds, remove dead vegetation, etc.

6. Provide reliable automatic irrigation systems to maintain vegetation in a healthy, turgid state.

7. Avoid topping trees as this causes excessive branching, which can increase fire danger.

8. Adhere to the plant spacing guidelines on page 10 of these guidelines.

9. Avoid planting of trees within 10 feet of the roadway. Care should be given to the type of tree selected that will not encroach into the roadway, nor produce a canopy effect.

10. Avoid species that are known to be especially flammable such as conifers and eucalyptus

Planting vegetation adjacent to structures and within the Fuel Modification Zone when the zone is located on adjacent property is considered complementary to the fuel modification program and may be subject to periodic inspections by the enforcing agency.

*Agricultural crops, groves and orchards may be exempted from this requirement.

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
1	W	Abelia x grandiflora	Glossy Abelia	Shrub
2	■	Acacia redolens	Desert Carpet	Shrub
3	□	Acer macrophyllum	Big Leaf Maple	Tree
4	X	Achillea millefolium	Common Yarrow	Low shrub
5	W	Achillea Tomentosa	Woolly Yarrow	Low shrub
6	X	Aeonium decorum	Aeonium	Ground cover
7	X	Aeonium simsii	ncn	Ground cover
8	W	Agave attenuata	Century Plant	Succulent
9	□	Agave shawii	Shaw's Century Plant	Succulent
10	N	Agave victoriae-reginae	ncn	Ground cover
11	X	Ajuga reptans	Carpet Bugle	Ground cover
12	W	Alnus cordata	Italian Alder	Tree
13	□	Alnus rhombifolla	White Alder	Tree
14	N	Aleo arborescens	Tree Aloe	Shrub
15	N	Aloe aristata	ncn	Ground cover
16	N	Aloe brevifolia	ncn	Ground cover
17	W	Aloe vera	Medicinal Aloe	Succulent
18	W	Alyogyne huegelii	Blue Hibiscus	Shrub
19	□	Ambrosia chamissonis	Beach Bur-Sage	Perennial
20	□	Amorpha fruticosa	Western False Indigobush	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
21	W	Anigozanthus flavidus	Kangaroo Paw	Perennial accent
22	☐	Antirrhinum nuttalianum ssp. nuttalianum	ncn	Subshrub
23	X	Aptenia cordifolla 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 edmundsii	Little Sur Manzanita	Ground cover
27	☐	Arctostaphylos glandulosa ssp.	Eastwood Manzanita	Shrub
28	W	Arctostaphylos hookeri 'Monterey Carpet'	Monterey carpet Manzanita	Low Shrub
29	N ☐	Arctostaphylos pungens		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	Artemisia caucasica	Caucasian Artemisia	Ground cover
34	X	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
39	X	Baccharis pilularis var. pilularis 'Twin Peaks#2'	Twin Peaks	Ground cover
40	☐	Baccharis salicifolia	Mulefat	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
41	N	Baileya pauciradiata	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 californía		Subshrub
48	w □	Bromus carinatus	California Brome	Grass
49	□	Camissonia cheiranthifolia	Beach Evening Primrose	Perennial subshrub
50	N	Carissa macrocarpa	Green Carpet Natal Plum	Ground cover/Shrub
51	X	Carpobrotus chilensis	Sea Fig Ice Plant	Ground cover
52	W	Ceanothus gloriosus 'Point Reyes'	Point Reyes Ceanothus	Shrub
53	W	Ceanothus griseus 'Louis Edmunds'	Louis Edmunds Ceanothus	Shrub
54	W	Ceeanothus griseus horizontalis	Yankee Point	Ground Cover
55	W	Ceanothus griseus var. horizontalis	Carmel Creeper Ceanothus	Shrub
56	W	Ceanothus griseus var. Horizontalis 'Yankee Point'	Yankee Point Ceanothus	Shrub
57	□	Ceanothus megacarpus	Big Pod Ceanothus	Shrub
58	W	Ceanothus prostratus	Squaw Carpet Ceanothus	Shrub
59	□	Ceanothus spinosus	Green Bark Ceanothus	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Comman Name	Plant Form
60	N□	Ceanothus verruscosus	Wart-Stem Ceanothus	Shrub
61	W	Cerastium tomentosum	Snow-in-Summer	Ground cover/Shrub
62	W	Ceratonia siliqua	Carob	Tree
63	W □	Cercis occidentalis	Western Redbud	Shrub/Tree
64	X	Chrysanthemum leucanthemum	Oxeye Daisy	Ground cover
65	W	Cistus crispus	ncn	Ground cover
66	W	Cistus hybridus	White Rockrose	Shrub
67	W	Cistus incanus	ncn	Shrub
68	W	Cistus incanus ssp. corsicus	ncn	Shrub
69	W	Cistus salviifolius	Sageleaf Rockrose	Shrub
70	W	Cistus x purpureus	Orchid Rockrose	Shrub
71	W	Citrus species	Citrus	Tree
72	□	Clarkia purpurea or unguiculata	Showy Fairwell to spring	Annual
73	□	Cneoridium dumosum	Bushrue	Shrub
74	□	Collinsia heterophylla	Chinese Houses	Annual
75	w□	Comarostaphylis diversifolia	Summer Holly	Shrub
76	N	Convolvulus cneorum	Bush Morning Glory	Shrub
77	W	Coprosma kirkii	Creeping Coprosma	Ground cover/Shrub
78	W	Coprosma pumila	Prostrate Coprosma	Low Shrub
79	□	Coreopsis californica	California Coreopsis	Annual
80	W	Coreopsis Lanceolata	Coreopsis	Ground Cover

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
81	N	Correa pulchella	Australian Fushsia	Ground cover
82	W	Cotoneaster buxifolius	ncn	Shrub
83	W	Cotoneaster congestus 'Likiang'	Likiang Cotoneaster	Ground cover/Vine
84	W	Cotoneaster Parneyi	ncn	Shrub
85	X	Crassula Lactea	ncn	Ground cover
86	X	Crassula multicava	ncn	Ground cover
87	X	Crassula ovata	Jade Tree	Shrub
88	X	Crassula tetragona	ncn	Ground cover
89	w□	Croton californicus	California Croton	Ground cover
90	X	Delosperma 'alba'	White Trailing Ice Plant	Ground cover
91	□	Dendromecon rigida	Bush Poppy	Shrub
92	□	Dichelostemma Capitatum	Blue Dicks	Herb
93	N	Distictis buccinatoria	Blood-Red Trumpet Vine	Vine/Climbing vine
94	N	Dodonaea viscosa	Hopseed Bush	Shrub
95	X	Drosanthemum floribundum	Rosea Ice Plant	Ground cover
96	X	Drosanthemum hispidum	ncn	Ground cover
97	X	Drosanthemum speciosum	Dewflower	Ground cover
98	□	Dudleya lanceolata	Lance-leaved Dudleya	Succulent
99	□	Dudleya pulverulenta	Chalk Dudleya	Succulent
100	W	Elaeagnus pungens	Silverberry	Shrub
101	□	Encelia californica	California Encelia	Small Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
102	□	Epiloblum canum (Zauschneria californica)	Hoary California Fushsia	Shrub
103	□	Eriastrum sapphirinum	Majave Voooly Star	Anuual
104	N	Eriobotrya japonica	Loquat	Tree
105	□	Eriodictycon crassifolium	Thick-Leaf Yerba Santa	Shrub
106	□	Eriodictycon trichocalyx	Yerba Santa	Shrub
107	w□	Eriophyllum confertiflorum	ncn	Shrub
108	W	Erythrina species	Coral Tree	Tree
109	N	Escallonia species	several varieties	Shrub
110	w□	Eschscholzia californica	California Poppy	Flower
111	X	Eschscholzia mexicana	Mexican Poppy	Herb
112	N	Euonymus fortunei	Winter Creeper Euonymus	Ground cover
113	N	Feijoa sellowiana	Pineapple Guava	Shrub/Tree
114	N	Fragaria chiloensis	Wild Strawberry /Sand Strawberry	Ground cover
115	□	Frankenia salina	Alkali Heath	Ground cover
116	W □	Fremontodendron californicum	California Flannelbush	Shrub
117	X	Gaillardia x grandiflora	Blanketflower	Ground cover
118	W	Galvezia speciosa	Bush Snapdragon	Shrub
119	W	Garrya veatchii	Silktassel	Shrub
120	X	Gazania hybrids	South African Daisy	Ground cover
121	X	Gaxania rigens leucolaena	Trailing Gazania	Ground cover

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
122	□	Gilia capitata	Globe Gilia	Perennial
123	W	Gilia leptantha	Showy Gilia	Perennial
124	W	Gilia tricolor	Bird's Eyes	Perennial
125	W	Ginkgo biloba	Maidenhair Tree	Tree
126	□	Gnaphalium californicum	California Everlasting	Annual
127	W	Grewia occidentalls	Starflower	Shrub
128	□	Grindelia camporum bracteosum	Gum Plant	Ground cover
129	N■	Hakea suaveolens	Sweet Hakea	Shrub
130	W	Hardenbergia comptoniana	Lilac Vine	Shrub
131	N	Helianthemum mutabile	Sunrose	Ground cover /Shrub
132	□	Helianthemum scoparium	Rush Rose	Shrub
133	□	Heliotropium curassavicum	Salt Heliotrope	Ground cover
134	X	Helix canariensis	English Ivy	Ground cover
135	W	Hesperaleo parviflora	Red Yucca	Perennial
136	□■	Heteromeles arbutifolia	Toyon	Shrub
137	X	Hypericum calycinum	Aaron's Beard	Shrub
138	N	Iberis Sempervirens	Edging Candytuft	Ground cover
139	N	Iberis Umbellatum	Globe Candytuft	Ground cover
140	□	Isocoma menziesii	Coastal Goldenbush	Small shrub
141	□	Isomeris arborea	Bladderpod	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
142	W ☐	Iva hayesiana	Poverty Weed	Ground cover
143	N ☐	Juglans californica	California Black Walnut	Tree
144	☐	Juncus acutus	Yellow Bush Penstemon	Subshrub
145	☐	Keckiella antirrhinoides	Yellow Bush Penstemon	Subshrub
146	☐	Keckiella cordifoila	Heart Leaved Penstemon	Subshrub
147	☐	Keckiella ternata	Blue Stemmed Bush Penstemon	Subshrub
148	W	Kniphofia uvaria	Red Hot Poker	Perennial
149	W	Lagerstroemia indica	Crape Myrtle	Tree
150	W	Lagunaria patersonii	Primrose Tree	Tree
151	X	Lampranthus aurantiacus	Bush Ice Plant	Ground cover
152	X	Lampranthus filicaulis	Redondo Creeper	Ground cover
153	X	Lampranthus spectabilis	Trailing Ice Plant	Ground cover
154	W	Lantana camara cultivars	Yellow Sage	Shrub
155	W	Lantana montevidensis	Trailing Lantana	Shrub
156	☐	Lasthenia californica	Dwarf Goldfields	Annual
157	W	Lavandula dentata	French Lavendar	Shrub
158	W	Leptospermum laevigatum	Australian Tea Tree	Shrub
159	W	Leucophyllum frutescens	Texas Ranger	Shrub
160	☐	Leymus condensatus	Giant Wild Rye	Large grass
161	N	Ligustrum japonicum	Texas Privet	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
162	X	Limonium pectinatum	ncn	Ground cover
163	X	Limonium perezii	Sea Lavender	Shrub
164	w	Liquidambar styraciflua	American Sweet Gum	Tree
165	W	Liriodendron tulipifera	Tulip Tree	Tree
166	X	Lonicera japonica 'Halliana'	Hall's Japanese Honeysuckle	Vining shrub
167	☐	Lonicera subspicata	Wild Honeysuckle	Vining shrub
168	X	Lotus corniculatus	Bird's Foot Trefoil	Ground cover
169	☐	Lotus heermannii	Northern Woolly Lotus	Perennial
170	☐	Lotus scoparius	Deerweed	Shrub
171	W ☐	Lupinus arizonicus	Desert Lupine	Annual
172	W	Lupinus benthamii	Spider Lupine	Annual
173	☐	Lupinus bicolor	Sku Lupine	Flowering annual
174	☐	Lupinus sparsiflorus	Lupini/Coulter's Lupine	Annual
175	W	Lyonothammus florbundus ssp. asplenifollus	Fernleaf Ironwood	Tree
176	W	Macadamia integrifolia	Golden Abundance Oregon	Shrub
177	W	Mahonia aquifolium 'Golden Abundance'	Golden Abundance Oregon Grape	Shrub
178	W	Mahonia nevinii	Nevin Mahonia	Shrub
179	☐	Malacothamnus fasciculatus	Chaparral Mallow	Shrub
180	X	Malephora luteola	Trailing Ice Plant	Ground cover
181	W	Maytenus boaria	Mayten Tree	Tree

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
182	W	Melaleuca nesophila	Pink Melaleuca	Shrub
183	N	Metrosideros excelsus	New Zealand Christmas Tree	Tree
184	□*	Mimulus aurantiacus	Monkeyflower	Flower
185	□	Mirabilis californica	Wishbone Bush	Perennial
186	N	Myoporum debile	ncn	Shrub
187	N	Myoporum insulare	Boobyalla	Shrub
188	W	Myoporum parvifolium	ncn	Ground cover
189	W	Myoporum 'Pacificum'	ncn	Shrub
190	□	Nassella (=Stipa) lepida	Foothill Needlegrass	Ground cover
191	□	Nassella (=Stipa) pulchra	Purple Needlegrass	Ground cover
192	□	Nemophila menziesli	Baby Blue Eyes	Annual
193	X	Nerium oleander	Oleander	Shrub
194	□	Nolina cismontana	Chaparral Nolina	Shrub
195	N	Nolina bigelovii, or N. interrata	Mexican Grasstree	Shrub
196	W	Oenothera berlandieri	Mexican Evening Primrose	Ground cover
197	N	Oenothera hookeri	California Evening Primrose	Flower
198	W	Oenothera speciosa	Showy Evening Primrose	Perennial
199	X	Ophiopogon japonicus	Mondo Grass	Ground cover
200	□*	Opuntia littoralis	Prickly Pear	Cactus
201	□*	Opuntia oricola	Oracle Cactus	Cactus

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
202	□*	Opuntia polifera	Coast Cholla	Cactus
203	W	Osmanthus fragrans	Sweet Olive	Shrub
204	X	Osteospermum fruticosum	Trailing African Daisy	Ground cover
205	X	Parkinsonia aculeata	Mexican Palo Verde	Tree
206	W	Pelargonium peltatum	Ivy Geranium	Ground cover
207	X	Penstemon spectabilis	Beard Tongue	Shrub
208	W	Photinia fraseri	ncn	Shrub
209	W	Pistacla chinensis	Chinese Pistache	Tree
210	X	Pittosporum undulatum	Victorian Box	Tree
211	□	Plantago erecta	California Plantain	Annual
212	**	Plantago insularis	Woolly Plantain	Annual
213	X	Plantago sempervirens	Evergreen Plantain	Ground cover
214	W □	Platanus racemosa	California Syoamore	Tree
215	W	Plumbago auriculata	Plumbago Cape	Shrub
216	□	Populus fremontii	Western Cottonwood	Tree
217	X	Portulacaria afra	Elephant's Food	Shrub
218	□	Potentilla glandulosa	Sticky Cinquefoil	Subshrub
219	X	Potentilla tabernaemontanii	Spring Cinquefoil	Ground cover
220	X	Prunus caroliniana	Carolina Cherry Laurel	Shrub/Tree
221	□	Prunus ilicifolia ssp. ilicifolia	Holly Leaved Cherry	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
222	X	Prunus lyonil	Catalina Cherry	Shrub/Tree
223	N	Punica granatum	Pomegranate	Shrub/Tree
224	W	Puya species	Puya	Succulent/Shrub
225	W	Pyracantha species	Firethorn	Shrub
226	□	Quercus agrifolia	Coast Live Oak	Tree
227	□◙*	Quercus berberdifolia	California Scrub Oak	Shrub
228	□◙*	Quercus dumosa	Coastal Scrub Oak	Shrub
229	X □	Quercus engelmannii	Engelmann Oak	Tree
230	X	Quercus suber	Cork Oak	Tree
231	X	Rhamnus alaternus	Italian Buckthorn	Shrub
232	□	Rhamnus californica	California Coffee Berry	Shrub
233	□	Rhamnus crocea	Redberry	Shrub
234	□	Rhamnus crocea sp. ilicifolia	Hollyleaf Redberry	Shrub
235	N	Rhaphiolepis species	Indian Hawthorn	Shrub
236	□	Rhus integrifolia	Lemonade Berry	Shrub
237	N	Rhus lancea	African Sumac	Tree
238	□◙	Rhus ovata	Sugarbush	Shrub
239	□	Ribes aureum	Golden Currant	Shrub
240	□	Ribes indecorum	White Flowering Currant	Shrub
241	□	Ribes speciosum	Fuchsia Flowering Gooseberry	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
242	W	Ribes viburnifolium	Evergreen Currant	Shrub
243	□*	Romneya coulteri	Matilija Poppy	Shrub
244	X	Romneya coulteri 'white cloud'	White Cloud Matilija Poppy	Shrub
245	w■	Rosmarinus officinalis	Rosemary	Shrub
246	w■	Salvia greggii	Autumn Sage	Shrub
247	w■	Salvia sonomensis	Creeping Sage	Ground cover
248	□	Sambucus mexicana	Mexican Elderberry	Tree
249	W	Santolina chamaecyparissus	Lavender Cotton	Ground cover
250	W	Santolina virens	Green Lavender Cotton	Shrub
251	□	Satureja chandleri	San Miquel Savory	Perennial
252	□	Scirpus acutus	Hard-Stem Bulrush	Perennial
253	□	Scipus californicus	California Bulrush	Perennial
254	X	Sedum acre	Goldmoss Sedum	Ground cover
255	X	Sedum album	Green Stonecrop	Ground cover
256	X	Sedum confusum	ncn	Gorund cover
257	X	Sedum ilineare	ncn	Ground cover
258	X	Sedum x rubrotinctum	Pork and Beans	Ground cover
259	X	Senecio serpens	ncn	Ground cover
260	□	Sisyrinchium bellum	Blue-Eyed Grass	Ground cover
261	□	Solanum douglasii	Douglas Nightshade	Shrub

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
262	□	Solanum xantii	Purple Nightshade	Perennial
263	W	Stenocarpus sinuatus	Firewheel Tree	Tree
264	W	Strelitzia nicolai	Giant Bird of Paradise	Perennial
265	W	Strelitzia reginae	Bird of Paradise	Perennial
266	□	Symphoricarpos mollis	Creeping Snowberry	Shrub
267	W	Tecoma stans (Stenolobium stans)	Yellow Bells	Shrub/Small tree
268	X	Tecomaria capensis	Cape Honeysuckle	Ground cover
269	N	Teucrium chamaedrys	Germander	Ground cover
270	N	Thymus serpyllum	Lemon Thyme	Ground cover
271	N	Trachelospermum jasminoides	Star Jasmine	Shrub
272	□	Trichostema lanatum	Woolly Blue-Curis	Shrub
273	X	Trifolium hirtum 'Hyron'	Hyron Rose Clover	Ground cover
274	X	Trifolium fragiferum 'O'Connor's'	O'Connor's Legume	Ground cover
275	□	Umbellularia californica	California Laurel	Tree
276	□	Verbena lasiostachys	Western Vervain	Perennial
277	N	Verbena peruviana	ncn	Ground cover
278	X	Verbena species	Verbena	Ground cover
279	X	Vinca minor	Dwarf Periwinkle	Ground cover
280	□	Vitis girdiana	Desert Wild Grape	Vine
281	X	Vulpia myuros 'Zorro'	Zorro Annual Fescue	Grass

SAN DIEGO COUNTY FIRE CHIEF'S ASSOCIATION
FUEL MODIFICATION ZONE PLANT LIST
July 15, 1997

	Code	Botanical Name	Common Name	Plant Form
282	W	Westringia fruticosa		Shrub
283	W	Xanthorrhoea species	Grass Tree	Perennial accent /Shrub
284	W	Xylosma congestum	Shiny Xylosma	Shrub
285	X	Yucca species	Yucca	Shrub
286	□	Yucca whipplei	Yucca	Shrub

*****Plants listed in gray boxes may not be appropriate for use in certain locations based on invasiveness and ability to hybridize and will be reviewed on a case by case bases by the appropriate jurisdiction.*

X = Plant species prohibited in fuel modification zones adjacent to reserve lands. Acceptable on all other fuel modification locations and zones.

W = Plant species appropriate for use in irrigated portions of fuel modification zones adjacent to reserve lands. Acceptable in all other fuel modification locations and zones.

□ = Plant species native to San Diego County. Acceptable in all fuel modification zones in all locations.

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

* = If locally collected.

** = Not native but can be used in all zones.

◙ = Plant species acceptable on a limited use basis. Refer to qualification requirements following plant palette.

APPENDIX K

Caltrans Roadside
Vegetation Management Toolbox

Roadside Management Toolbox



INTRODUCTION

Welcome to the **Caltrans Roadside Management Toolbox**, a web based decision making tool provided to improve the safety and maintainability of transportation projects. This toolbox provides design techniques and treatments that improve traveler and worker safety, protect the highway infrastructure and improve transportation system reliability by reducing the need for recurrent maintenance activities.

The California Department of Transportation manages approximately 15,000 miles of highway and 230,000 acres of right-of-way throughout California. The management, maintenance and control of vegetation on the roadsides has become increasingly difficult as the miles of roadway and acres of roadside have increased while maintenance resources have been reduced. Historic methods of vegetation control (manual, mechanical and chemical) have been sharply curtailed due to local development, increased traffic volumes, public concerns and other economic and environmental issues.

Following a 1992 Environmental Impact Report on Caltrans vegetation control practices, the Department adopted a formal Integrated Vegetation Management (IVM) program for its roadsides. A major component of this program are permanent vegetation control techniques that reduce the need for ongoing vegetation management. Since the adoption of IVM, District and Headquarters functional areas have completed research and field trials of a wide variety of permanent vegetation control approaches. The toolbox includes treatments composed of both materials familiar to traditional highway construction contractors (such as asphalt concrete, portland cement concrete and road base) as well as less conventional materials or products (such as polyurea coatings, rubber mats, and fiber weed control mats).

The toolbox is a living document, open to improvement and refinement as new treatments are identified and existing methods improved. Your feedback and input are vital to the continuous improvement of this guidance. Comments may be directed to Jack_Broadbent@dot.ca.gov

For more detailed information on how to use this toolbox, please visit our Toolbox User Instruction page.

Treatment Categories	Treatment Details
Areas Beyond the Gore	Minor Concrete Vegetation Control
Guard Rail Posts and Sign Posts	Asphalt Composite Vegetation Control
Medians	Weed Control Mat (Fiber)
Road Edge	Weed Control Mat (Rubber)
Side Slopes	Asphalt Concrete
	Stamped Asphalt
	Patterned Concrete

Irrigated Vegetation

Minor Concrete Paving

Native Vegetation

Mulch

Gravel Mulch

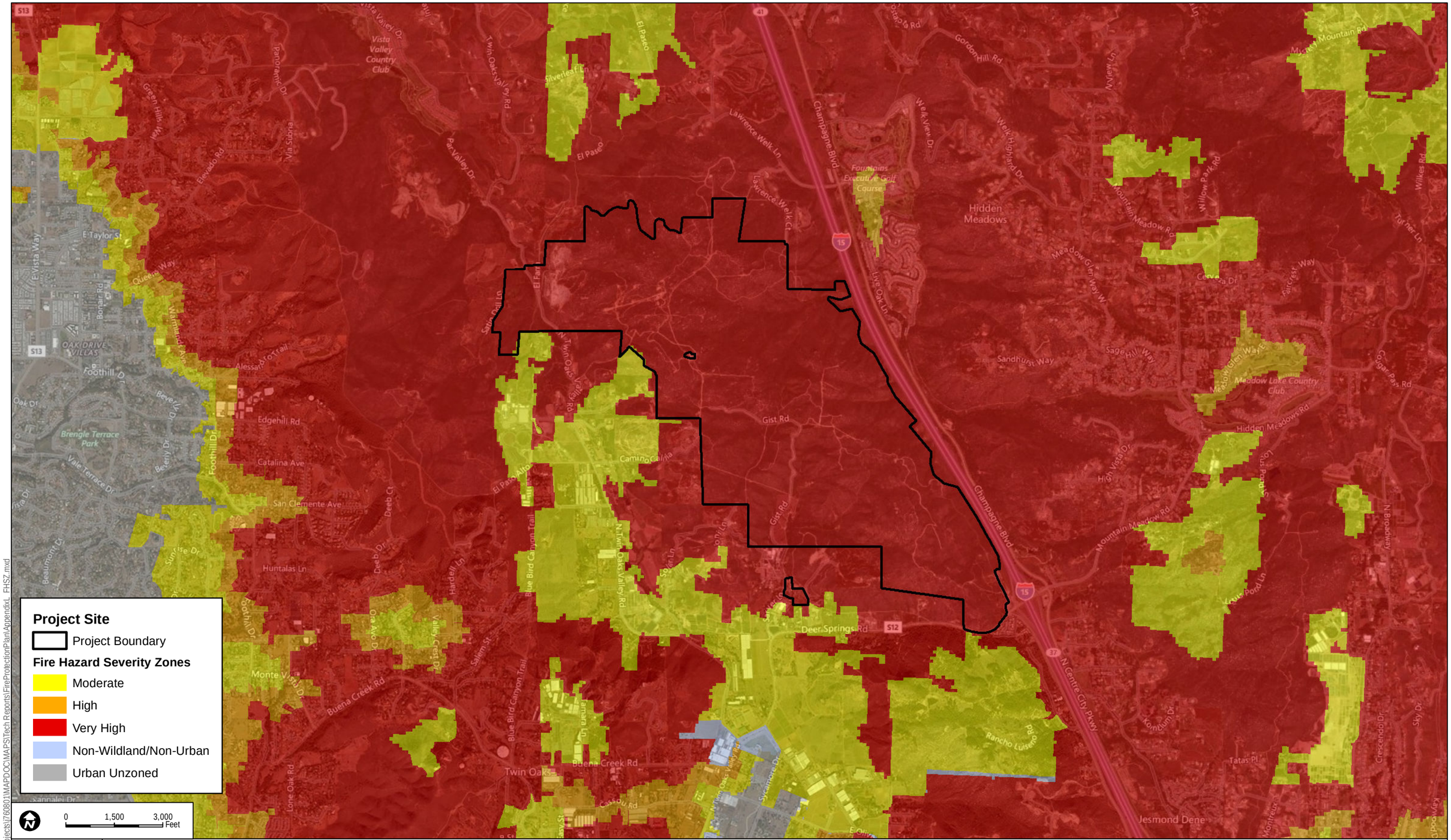
Rock Blanket

Rock Slope Protection

Updated: February 2014

APPENDIX L

CAL FIRE Hazard Severity Zone Map



SOURCE: FRAP 2014; BING 2014

DUDEK

APPENDIX L

CAL FIRE Fire Hazard Sevrrity Zone Map

Newland Sierra Fire Protection Plan

Document Path: Z:\Projects\l760801\MAPDOC\MAPS\Tech Reports\FireProtectionPlan\AppendixL_FHSZ.mxd