NORTH EAST GEYSERVILLE
Community Wildfire Protection Plan

July 31, 2022

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Appendices:

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Executive Summary

This document shall be known as the North East Geyserville Community Wildfire Protection Plan (CWPP) and has been developed by the Northern Sonoma County Fire Protection District (District) and the North East Geyserville Citizens Organized to Prepare for Emergencies (COPE). The purpose of this plan is to save lives, protect property and safeguard the environment in North East Geyserville utilizing the goals of the National Cohesive Wildland Fire Management Strategy. Through the process of collaboration between fire agencies, governmental agencies, residents, and other stakeholders, the community produced a list of prioritized projects intended to reduce the potential loss of human life, property, and natural resources due to wildfire.

Community Profile

North East Geyserville is a 10,128-acre portion of the Geyserville community located east of the Russian River and accessed from River Road and Moody Lane. The community contains approximately 175 homes.

Land and Parcels

North East Geyserville is privately owned with 217 parcels except for the New Technology High School and Geyserville Middle School, located in one building complex on Moody Lane.

Fire Services

North East Geyserville is in the Northern Sonoma County Fire Protection District. CAL FIRE has jurisdiction for all wildfires within North East Geyserville that is classified as State Responsibility Area (SRA). SRA is, in general, the mountainous area surrounding Alexander Valley.

Homes

Most homes were built before WUI building codes and standards took effect in 2007 with the publication of the Updated California Building Code (Chapter 7A of the California Building Code). Most homes have vulnerable elements that increase the potential for ignition, such as attic or foundation vents that allow for ember intrusion, wooden decks and attachments, and wooden siding.

Residents

The North East Geyserville area has an estimated 135 full time residents and 149 part-time residents with approximately 284 property owners. The combined student enrollment for the New Technology High School and Geyserville Middle School is approximately 120 students.

Wildland Fuels

The predominant vegetation is native forest (55%), herbaceous (26%), and shrub (7.5%) typical of a Mediterranean climate. Almost 9% of the Area is developed as vineyards with most vineyard located in the Alexander Valley adjacent to the Russian River.

Weather

The climate patterns are characteristically Mediterranean. Summers are warm and dry, while winters are wet and cool. Strong northeasterly winds are common in the late summer and fall months.

Fire History

North East Geyserville experiences more frequent wildfires than all other portions of Sonoma County. Approximately 75% of the area has been burned in the 2017 Pocket Fire and 2019 Kincade Fire.

Fire Hazard Severity Zone (FHSZ)

A majority (76%) of North East Geyserville is classified as Very High Fire Hazard Severity Zone.

Access/Egress

Two primary roads, River Road and Moody Lane, provide access to North East Geyserville. Both roads dead end. Secondary roads also dead end or dead end at located gates.

Emergency Notifications and Communications

The Sonoma County Department of Emergency Management (DEM) maintains an alerting and warning program for unincorporated Sonoma County. There is no one single alert and/or warning system capable of alerting the total affected population at any given time. The North East Geyserville COPE has established a notification service to supplement DEM's program. The "last resort" is door-to-door alerting/notification by either public safety agencies or neighbors.

Assets at Risk

The lives and safety of residents and visitors are the priority, followed by the estimated 487 structures of which approximately 175 are houses, followed by the natural environment which includes the Russian River, several lakes, and undeveloped wildland areas.

Risk Reduction Priorities

A Wildfire Risk Assessment was completed and can be found in Appendix A. The proposed projects to mitigate the identified wildfire risks can be broadly categorized as addressing:

- Resilient Landscapes
    - Vegetation management (fuels) reduction
- Fire Adapted Communities
    - Building construction
    - Wildfire ignition reduction
- Safe and Effective Wildfire Response
    - Access and evacuation
    - Addressing and signage
    - Maps
    - Water sources

Conclusion

The intensity and devastation of recent wildfires that have ravaged Northern Sonoma County over the last 3 years have brought to light the importance of residents coming together with public safety agencies to focus on wildfire prevention and preparedness. Prevention and preparedness will create wildfire resilient landscapes, containing fire adapted communities, with a safe and effective wildfire response when a fire occurs. This CWPP sets forth the foundation for actionable projects to protect life, property, and to ensure the preservation of the land's natural resources and extraordinary beauty.

CWPP Planning Group Members

The contributions of the North East Geyserville COPE and organizational work done prior to the development of this CWPP formed the foundation for a comprehensive and collaborative development process. The following individuals were core committee collaborators on the CWPP:

- Jan Connors
- Bob Dilworth
- Larry Heiges
- Adriane Garayalde
- Teri Mendelson
- Sharon Olson

The following fire agency personnel have been integral to the CWPP:

- Northern Sonoma County Fire Protection District Fire Chief Marshall Turbeville
- CAL FIRE Battalion Chief Paul Fleckenstein

Many community members participating in the various meetings as well as representatives from the following community organizations:

- North East Geyserville COPE
- Gill Creek Mutual Water Company
- Vineyard Valley View Property Owners Association
- The Vineyard Club

Mutual Agreement Page

North East Geyserville Community Wildfire Protection Plan

The North East Geyserville Community Wildfire Protection Plan was developed in accordance with the guidelines set forth by the Healthy Forests Restoration Act.

This Community Wildfire Protection Plan:

1. Was collaboratively developed. Interested parties in the region of this CWPP have been consulted.
2. Identifies and prioritizes areas for hazardous fuels reduction treatments and recommends the types and methods of treatment to reduce the wildfire threat to values at risk in the area.
3. Recommends measures to reduce the ignitability of structures throughout the area addressed by the plan.

The following representatives of the entities required for CWPP approval mutually agree with and approve the contents of this Community Wildfire Protection Plan:

09/30/2022

James Gore
Supervisor, Sonoma County District 4

Date

09/29/2022

Mike Marcucci
Unit Chief, CAL FIRE Sonoma-Lake-Napa Unit

Date

Marshall Turbeville

30/09/2022

Marshall Turbeville
Fire Chief, Northern Sonoma County FPD

Date

ROBERTA MACINTYRE

03/10/2022

Roberta MacIntyre
President, FireSafe Sonoma

Date

North East Geyserville Community Wildfire Protection Plan

Location and Community Boundaries

The North East Geyserville community is located in northern Sonoma County approximately 80 miles north of San Francisco and one mile east of Geyserville and Highway 101 (Figure 1). The CWPP area covers 10,128 acres and matches the North East Geyserville COPE Community boundary, generally described as those parcels which are:

- East of the Russian River
- North of Highway 128
- East of Pocket and Geysers Peaks
- South of Highland Ranch Road

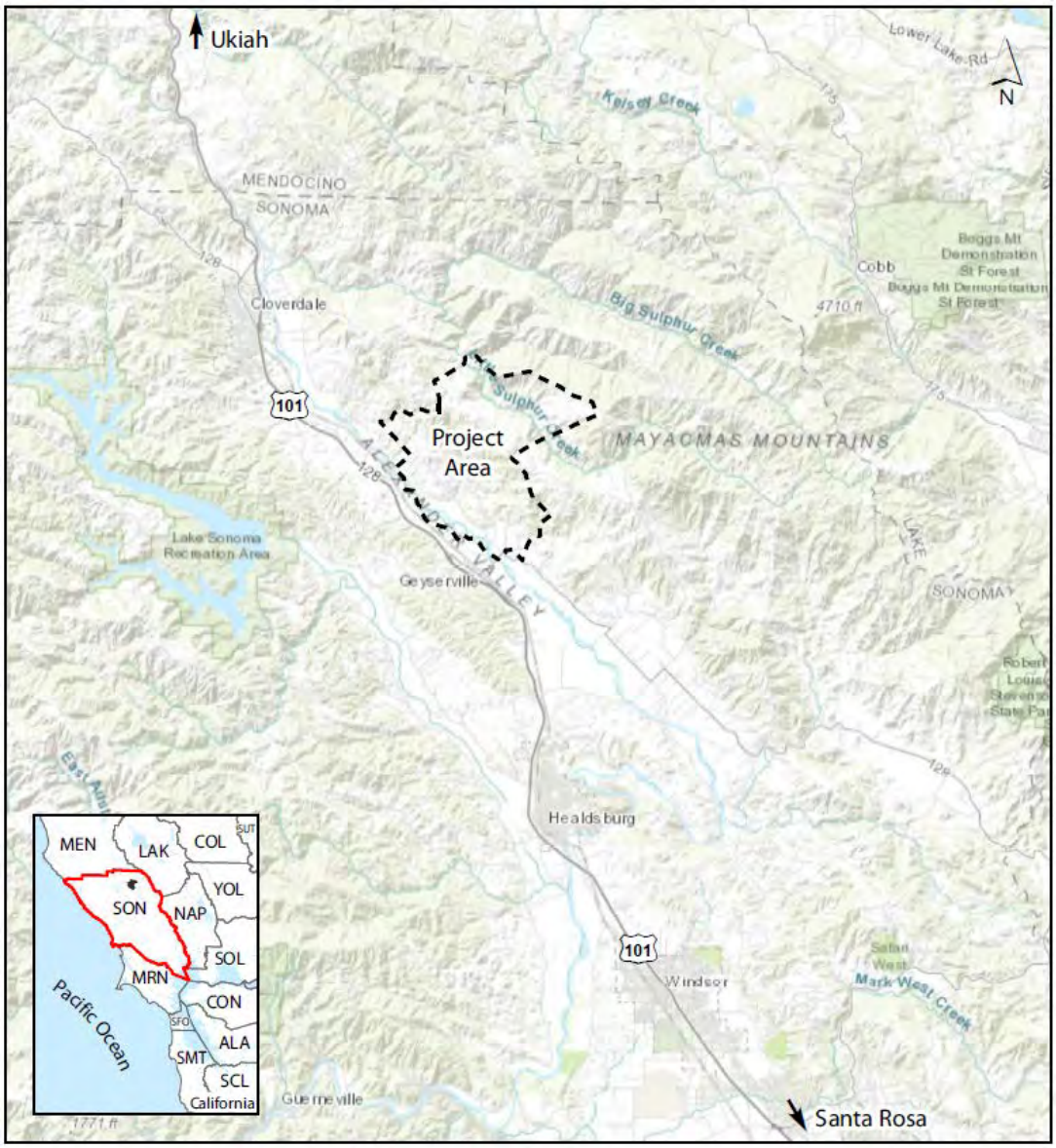

Figure 1. Vicinity Map. (Dotted line marks the North East Geyserville CWPP Boundary)

Fire Department Service Areas

North East Geyserville is in the Northern Sonoma County Fire Protection District. Surrounding fire agencies including the Dry Creek Rancheria Fire Department, Cloverdale Fire Protection District, and the Healdsburg Fire Department, also respond depending upon the nature and complexity of the emergency. These fire agencies have combined paid and volunteer staffing.

CAL FIRE has jurisdiction for all wildfires within North East Geyserville that is classified as State Responsibility Area (SRA). CAL FIRE also responds to other emergencies as part of an existing mutual aid agreement.

Parcel Data

North East Geyserville consists of 217 parcels. According to Sonoma County maintained geospatial data, there are a total of 487 structures inside the area. These structures vary from residences to storage sheds, and also contain agricultural buildings and accessory dwellings. Refer to Table 1 for additional parcel information.

CWPP PARCEL DATA*	
TOTAL ACRES:	10,128
TOTAL NUMBER of PARCELS	217
Parcels with structures ("Improved")	
Total number improved	154
Average size of improved parcels	40 acres
Number of improved parcels more than 30 acres	34
Average size of improved parcels more than 30 acres	163 acres
Average size improved parcels less than 30 acres	5 acres
Number of structures	487
Vacant parcels (without structures, "Unimproved")	
Total number	63
Average size of vacant parcels	63 acres
Approximate Population**	284
Full time residents	135
**Based on Sonoma County Assessor's data*	
*** Based on COPE Master List*	

Table 1. North East Geyserville Parcel Information

Land Ownership

All of North East Geyserville is privately owned except the Geyserville New Technology Academy and Geyserville Middle School which is on 2 parcels totaling 31 acres. The Geyserville Oriental Community Hall is located at the intersection of Highway 128 and Moody Lane. A

majority of the area is not developed including the 1,857-acre Vanoni Ranch which is used for cattle grazing.

Demographics

- Number of Homes: 175
- Approximate number of residents: 284
- 67% of the full time residents are over 60 years old
- Less than 10 children (full time)
- Full Time/Part Time Residents: 135 full time residents and 149 part-time
- Approximate annual visitors to the area: 1,800 – 2,000

Community Organizations

- Vineyard Club
- Vineyard Valley View Property Owners Association
- North East Geyserville COPE
- Geyserville Oriental Hall

Wildland Urban Intermix (WUI) Condition

All of the North East Geyserville Area is considered a Wildland-Urban Interface (WUI). The "WUI" term may have different definitions and subcategories based upon its application to building codes, CWPPs, insurance rates, etc. North East Geyserville is a WUI Intermix Community according to FireSafe Sonoma WUI categories, which are from the Federal Register[2] and are defined as follows:

- The **Interface Community** exists where structures directly abut wildland fuels. There is a clear line of demarcation between residential, business, and public structures and wildland fuels. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually three or more structures per acre, with shared municipal services. Fire protection is generally provided by a local government fire department with the responsibility to protect the structure from both an interior fire and an advancing wildland fire. An alternative definition of the interface community emphasizes a population density of 250 or more people per square mile.
- The **Intermix Community** exists where structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous, outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres. Fire protection districts funded by various taxing authorities normally provide life and property fire protection and may also have wildland fire protection responsibilities. An alternative definition of intermix community emphasizes a population density of between 28-250 people per square mile.
- The **Occluded Community** generally exists in a situation, often within a city, where structures abut an island of wildland fuels (e.g., park or open space). There is a clear line of demarcation between structures and wildland fuels. The development density for an occluded community is usually similar to those found in the interface community, but the occluded area is usually less than 1,000 acres in size. Fire protection is normally provided by local government fire departments.

Climate

North East Geyserville has a Mediterranean climate, with a rainy, cool season typically lasting from November through April and dry, warm conditions the rest of the year. The area has a coastal influence, which can lead to large temperature changes from day to night, influenced by cooling fog. Refer to Table 2 for average monthly air temperature and precipitation information.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Average High (ºF)	58	62	67	71	78	85	90	89	86	78	66	58
Average Low (ºF)	37	38	40	44	47	52	52	51	49	46	41	36
Average Precipitation (inches)	8.75	8.24	6.90	2.68	1.40	0.23	0.01	0.10	0.37	2.05	5.29	10.09

Table 2. Average Monthly Air Temperature and Precipitation Information

Strong northeasterly wind can occur in the later summer, fall, and during the winter and are referred to as "North Winds." These winds, when combined with warm dry air and cured vegetation, result in Red Flag Warning conditions under which large and damaging fires, including the 1965 Pocket Ranch, 2017 Pocket, and 2019 Kincade have occurred.

While historical average rainfall is between 25-30 inches per year, climate conditions are changing. Based on USGS data, between 1911 and 2000, average maximum temperatures in the North Bay Region (Sonoma, Marin and Napa Counties) had already increased approximately 1.0° F, while average minimum temperatures have increased approximately 1.7° F (NBCAI 2013 http://northbayclimate.org). Regional climate predictions differ in terms of trends in overall precipitation. However, all models predict that weather will be more variable in the future, with extreme events like drought and floods becoming more common and more intense. Also, due to rising temperatures (anticipate 6 to 8° by the end of the century) and the greater concentration of precipitation into short, extreme events, drought stress on soils and plants is expected to increase even if precipitation increased in the North Bay. Whether Sonoma County experiences more or less rainfall, the land will likely be drier, because warmer temperatures increase evapotranspiration (the loss of water from plants and soil into the air). Even with wetter winters, measures of drought stress on soils in late summer are projected to increase approximately 10% (NBCAI 2016 A Roadmap for Climate Resilience in Sonoma County).

These changes in climate pose a serious challenge to natural systems and human uses of the resources in North East Geyserville. Flooding and fire may become more common in the future, based on climate predictions.

The Built Environment

Structures, including residences, should be thought of as one of the most critical fuel components. Although we naturally worry about the dense vegetation that surrounds us, houses and outbuildings are themselves fuel, and are highly susceptible to ignition from embers, direct flame contact from nearby fuels, or radiant heat from burning vegetation or nearby structures. Most homes in North East Geyserville were built before WUI building codes and standards associated with the construction of buildings took effect in 2007 with the publication of the Updated California Building Code (Chapter 7A of the California Building Code). Most homes have vulnerable elements that increase the potential for ignition, such as

attic or foundation vents that allow for ember intrusion, wooden decks and attachments, and wooden siding.

Sufficient space exists to create the required 100 feet of defensible space, given the large average size of parcels. Moreover, large parcels reduce the likelihood of house-to-house ignitions, a characteristic of many recent wildfires.

Refer to Appendix D, C*reating Wildfire Adapted Homes and Landscapes,* for specific guidelines about home hardening and defensible space.

Homeowners Insurance

North East Geyserville has experienced homeowner insurance cancellations and rate increases since the fall of 2017 and a recent increase following the 2019 Kincade Fire. Rate increases have been as much as five times the premium from previous years. Many of these residents had longstanding relationships with their insurance companies that spanned decades. These trends reflect patterns reported in local, regional and national media through the county and state.

Access / Egress and Evacuation

Road Infrastructure: North East Geyserville is only accessed from Highway 128 one mile east of Geyserville, via River Road and Moody Lane which are the two primary roads, paved, and maintained by Sonoma County. Both roads dead end. Fire or privately maintained roads provide the only contingency or emergency access/egress travel routes. Fire agencies do not recommend the use of the fire or private roads as access/egress and evacuation routes.

River Road is an approximate 2.5 mile north-south orientated road, parallel to the Russian River. A portion of River Road is in jeopardy of being eroded by the Russian River. River Road becomes Vineyard Road, which has steep, narrow, and windy portions that provide access to the most developed portion of the community, the Vineyard subdivision. Fox Ridge Road and Ridge Oaks Road are secondary roads connecting to River Road. Fox Ridge Road provides a route between River Road and Ridge Oaks Road but is steep and narrow. Ridge Oaks Road and all roads, Pocket Ranch Road and Coyote Ridge Road, that connect to Ridge Oaks Road are not paved, narrow, have few turnouts, and are privately maintained. Ridge Oaks Road provides access to the largely undeveloped eastern portion of the community and eventually becomes Monkey Rock Road which is also not paved and dead ends.

Moody Lane is approximately a mile-long road and has one secondary road, Nutter Road. Moody Lane and Nutter Road provide access to 15 of the residences.

The intersection of Highway 128 and River Road could become congested by a simultaneous evacuation of the community and/or adjacent areas.

Bridges: River Road has the only Sonoma County maintained bridge across Gill Creek. Ridge Oaks Road and Pocket Ranch Road have privately maintained bridges that cross Gill Creek. There is also a bridge on a driveway to the most eastern property on Pocket Ranch Road. All

bridges can support fire apparatus but may present width concerns for large fire apparatus used during larger wildfire such as bulldozer transport units.

Roadside Vegetation: Vegetation is adjacent to the roads with canopy over the roads for a majority of the primary and secondary roads, as well as driveways.

Signage: Street signs and addresses markings are primarily wood and non-reflective, non-confirming to Sonoma County standards.

Gates: Most gates are equipped with a fire agency override switch or lock (Knox). Interruption of electrical power may affect the normal operation of many of the gates.

Emergency Notification and Alerts

Landline telephone service by AT&T provides the most reliable form of voice communication in North East Geyserville. Cellular phone communications are unreliable due to the lack of a nearby cellular tower and topography.

The Sonoma County Department of Emergency Management (DEM) maintains an alerting and warning program for unincorporated Sonoma County. There is no one single alert and/or warning system capable of alerting the total affected population at any given time. All systems are limited by a combination of factors including topography, technology, and infrastructure. Each system, by itself, is only expected to reach a fraction of the affected population.

Therefore, DEM sends alerts and warnings using redundant and overlapping systems to ensure the greatest amount of the affected population is contacted. The "last resort" is door-to-door alerting/notification. The DEM alerting and warning program includes the following systems:

- **SoCo Alert.** SoCo Alert is a system that allows officials to alert specific or defined areas. Messages are sent primarily by landline phone, unless a person registers their cellular telephone (with text and/or voice options) and email at www.socoalert.com. SoCo Alert is only used for emergencies.
- **Wireless Emergency Alert (WEA).** The WEA system is operated by the Federal Government. The WEA is part of IPAWS (Integrated Public Alert and Warning System) and alerts are only sent through cellular telephone. Cellular coverage is needed. Registration is not required, and a cellular telephone will receive a warning tone if they are in the area designated to receive an alert. The warning tone will be accompanied by a text message. The WEA system has a limited text capacity, and alerts are short and may not give detailed information.
- **Emergency Alert System (EAS).** EAS is part of the IPAWS system. An EAS message is sent using radio and television systems.
- **NOAA Weather Radio (NWR).** DEM has partnered with the National Weather Service to send alerts through the NWR. More information can be found at https://www.weather.gov/nwr. The messages associated with the NWR alert are limited.
- **Nixle**. Nixle sends cellular telephone texts (without an alarm) and emails. Nixle is provided at no cost to consumers but requires registration. DEM does not have a Nixle

account. The Sonoma County Sheriff (https://local.nixle.com/sonoma-county-sheriffs-office/) uses Nixle. Nixle is used during emergencies to support other alerting and warning systems, and is also used by the Sonoma County Sheriff for non- emergency public information.

- **Hi-Lo Sirens.** Sonoma County Sheriff vehicles and various other public safety agency vehicles are outfitted with a special "Hi-Lo" siren, similar to the sound used by emergency vehicles in Europe. These sirens are used when driving through evacuating neighborhoods to help provide alerts to those who may not have received the alert through the above systems.

One Call Now: North East Geyserville COPE has a subscription to a notification system, One Call Now, in addition to the DEM alert and warning program. One Call Now has the same limits with the one advantage that community members can send messages. One Call Now is an automated notification system that can be used to provide emergency information through routine phone, text or email simultaneously to registered users. A recorded message can be customized, based on available information about the emergency and the potential need to prepare for evacuation or the shelter in place. The organizational structure consists of 2 Key Communicators (COPE Community Leaders) who can activate One Call Now. COPE strives to be proactive, notifying residents by email during Red Flag Warnings, if there is a nearby fire, with the goal to increase the amount of time residents have for evacuations. The DEM alert and warning program remains the official notification.

Fire Environment

Fire intensity, size, rate of spread, and loss of structures and life have increased dramatically in California in recent years. "Fire season" is considered to be year-round meaning that wildfires can occur any day of the year. However, the largest and most devasting wildfire usually occur during the summer, fall, and early winter months. The lack of fall and winter rains have led to the 2017 Pocket and 2019 Kincade which occurred during the month of October.

Each wildfire has a unique "behavior" which includes flame lengths, rate of spread, intensity, and ember production based on three primary environmental factors: topography, weather, and fuel. The three elements are called the "Fire Behavior Triangle." Ultimately, fire behavior is directly related to the severity of conditions of each of these three factors. A worst-case scenario is when all three elements of the Fire Behavior Triangle are heightened.
If a fire starts on a day with low fuel moisture, high winds, low relative humidity, and high temperatures, fire behavior will be much more intense with much higher potential for significant loss of lives, structures, and natural resources. While low-intensity fires are a necessity to maintain healthy ecosystems, a large uncontrolled wildfire can have significant negative environmental consequences to natural vegetation and wildlife.

North East Geyserville exhibits all three of these elements with wind being the most dominant driver of extreme fire behavior. These conditions are observed by reviewing fire history, FHSZ, and CPUC Fire Threat indices.

Fire History

Documented wildfire fire history exists for approximately the past 100 years and does not represent many of the fires historically ignited by lightning and Native Americans. Both these sources of ignitions likely produced wildfires that were not suppressed and occurred more frequently than today. The documented fire history for North East Geyserville includes significant fires in 1949, 1965, 1988, 2004, 2017, and 2019.

CAL FIRE's Fire Resource Assessment Program (FRAP) has classified all State Responsibility Area (SRA) into three categories of FHSZ: Moderate, High, and Very High. The last modeling and classification of this area was completed in 2008. FHSZs are utilized primarily for WUI building code requirements, with the modeling and classification based upon a wildfire's potential to ignite a structure. Inputs into the FHSZ classification include several variables including vegetation, fire history, and housing density. Refer to Appendix C for the FHSZ map. 90% of the North East Geyserville Area is SRA, with the remaining 10% being local responsibility area.

FHSZ	Acreage	% of Total Area
Very High	7,656	76
High	0	0
Moderate	1,431	14

FRAP also maintains a "Fire Threat" map for the California Public Utilities Commission (CPUC) for primarily SRA using three categories: Tier 1 (non-classified), Tier 2, and Tier 3. Refer to Appendix C for the Fire Threat map. North East Geyserville has the following Fire Threat classifications.

Fire Threat	Acreage	% of Total Area
Tier 3	7,152	71
Tier 2	1,826	18
Tier 1 (Non classified)	1,561	11

Vegetation

North East Geyserville spans from the riparian vegetation along the Russian River in the Alexander Valley to oak woodland, grass/herbaceous, chaparral, and forested area. The alluvial valleys and much of the Alexander Valley floor are planted with vineyards. Orchards, vegetable crops and livestock grazing also occur within the Area. Refer to Appendix C for a Vegetation Map.

Tree Mortality

In general, there is no significant tree mortality. Isolated pockets of sudden oak death syndrome exist but are not a major concern for tree mortality. Monterey pine trees are observed to be nearing the end of their life cycle and dying.

Wildland Fuels

Decades of fire suppression, in combination with conversion of managed forest and grazing lands to residential use and fueled by climate change, have had dramatic effects on virtually all of Sonoma County's ecosystems, leaving a legacy of dense vegetation with a high proportion of dead materials and brushy fuels that will increase fire behavior and fire spread. Projects that will help increase forest health and habitat while reducing available fuel are critically important. Wildland fuels need to be thinned and maintained to create healthier forests and landscapes that are better adapted to our fire prone environment.

While projects that increase forest health on a landscape scale are important, highest priority fuels treatments should be those which will help save lives and property. Reducing flammable vegetation within 100 feet of homes and on roadsides is critically important. It is also essential to educate residents about how to create "wildfire adapted" homes and defensible space and provide assistance that will help them reduce risks of economic and life loss.

Vegetation Treatment Options

Vegetation treatment options should prioritize keeping a wildfire burning on the surface of earth rather than spreading from treetop to treetop. This is done by reducing and disrupting the horizonal continuity of surface vegetation and removing ladder fuels. Treating surface vegetation such as grass and brush underneath and/or adjacent to trees, reduces a wildfire's intensity and potential to spread to trees. Treating ladder fuels such as a tree's lower limbs, shorter trees, and brush growing underneath trees, reduces the possibility the wildfire will spread to a treetops. Treatment options have additional benefits such as increasing carbon storage and fire resilience and may also serve to improve or maintain the quality of in-stream aquatic habitat.

Vegetation treatment options include:

- Mechanical (using large machines such as masticators)
- Manual Labor
- Grazing of domestic livestock
- Pile Burning
- Broadcast Burn/Prescribed Fire

These options can be used as a single treatment, or in a sequence for initial treatment and maintenance.

Mechanical: Employing large machines like masticators, grinders, and chippers to chip vegetation. Chips can be disposed of by broadcasting, or removed off-site for disposal or reuse (firewood, chips for cogeneration, finished wood products, etc.). Mechanical treatments are most feasible where roads allow access to the treatment area. Costs for mechanical means of treatment per acre vary considerably, and the cost of treatment will increase along with fuel loading, steepness, and difficulty of access to terrain.

Manual Labor: Chainsaws and other tools are used to cut vegetation, either lopping and scattering, chipping, or burning in piles. Per-acre cost for hand work varies considerably, and

the cost of treatment will increase along with fuel density, difficulty of access, and steepness of terrain.

Grazing: Properly managed, grazing of domestic livestock such as sheep, goats, and cattle can be an efficient and cost-effective means to control grasses and brush, and can greatly benefit soil health and the ecosystem. Grazing animals can browse noxious plants such as poison oak that are difficult to manage and are not restricted by slope as other treatment options.

Pile Burning: Pile burning is a method of eliminating vegetative material by incineration. Material is cut down and piled in relatively open areas. The piles are fully or partially covered with waterproof material to cure, typically for at least 3 months, until they are dry. The piles are burned on cool moist days, and typically on days where rain is expected.

Broadcast Burn/Prescribed Fire: Prescribed fire is one of the best and most cost-efficient means of fuel reduction for larger areas. Prescribed fire is the intentional use of fire to help control and reduce vegetation by removing small trees and brush. Broadcast burning is conducted during times of the year when environmental conditions meet management objectives such as vegetation consumption and intensity, and most importantly for the broadcast burning to be done safely with reducing the probability of the fire escaping control.

Water Supply

The Gill Creek Mutual Water Company provides domestic water to most of the Vineyard subdivision including twenty standpipes for firefighting. The system includes two wells near the Russian River with water being pump to three tanks, two steel and one concrete, which store a total of 110,000 gallons. Gravity is then used to supply residences and the standpipes with pressure varying from 20-150 pounds per square inch.

The remainder of the developed parcels in North East Geyserville are served by a well with some wells shared amongst adjacent parcels. Newer residences have been required to have a water supply accessible at the house. Firefighters are able to access private water sources including standpipes and water tanks, as well as accessing water from the rivers, streams, ponds, pools, etc. Water sources may be affected by droughts, electrical power supply, long summers, lack of maintenance, and fittings not compatible with fire apparatus.

The New Technology High School and Geyserville Middle School and Zialena Winery have a water supply with hydrants for fire suppression.

Several ponds are located in the community including a lake in the Vineyard Club, and several stock ponds on the Vanoni Ranch. These ponds have been previously used by firefighting helicopters. Water may also be obtained from the Russian River and Gill Creek.

Overall, there is inadequate water storage for sustained firefighting operations occurring simultaneously throughout North East Geyserville. Firefighters will rely upon water being shuttled from other areas.

Watersheds and Hydrology

North East Geyserville is located in the Gill Creek, Lower Little Sulfur Creek, and Miller Creek watersheds which all feed into the Russian River.

Assets at Risk

There is considerable risk of loss of life, property, and environmental values in North East Geyserville. A summary description of the assets at risk has been broken into the following categories: demographics, residences and structures, businesses, utility infrastructure, and ecological values.

Demographics: The demographic information was estimated from data obtained for the North East Geyserville COPE, which contains 150 residences houses and using Sonoma County's average size household factor of 2.57. Multiplying these numbers provides a population estimate of approximately 386 people. However, approximately 25% of the residences are utilized as "second homes" and/or short-term vacation rentals. This reduces the population estimate to approximately 290. The limited evacuation routes, as well as the potential for insufficient time to reliably alert and warn area residents, places them at a significant disadvantage during the early stages of a rapidly evolving wildfire that starts in or near the Area

Residences and Structures: Sonoma County maintained geospatial data contains 487 structures inside the Area. These structures vary from residences to storage sheds and also contain agricultural buildings and accessory dwellings. Please refer to Table 1 for additional parcel information.

Other structures with historical and/or value to the community include:

- New Technology High School
- Geyserville Middle School
- Geyserville Oriental Community Hall
- Vineyard subdivision Clubhouse
- Vanoni Ranch historical buildings

Businesses:

- 1 winery
- Wine grape vineyards
- Several historic and active agricultural farms and orchards
- Cattle ranch
- An unknown number of small businesses that function in residences. Many local residents have home-based businesses: carpenters, woodworkers and other trades, insurance, high tech, "telecommuters," artists, etc.

Utility Infrastructure:

- Pacific Gas and Electric has a transmission line, along with primary and secondary lines providing the only electrical service to the community.

- Pacific Gas and Electric supplies natural gas to the New Technology High School and Geyserville Middle School
- Gill Creek Water Company supplies water to the Vineyard subdivision
- AT&T has above ground telephone lines which provide the only telephone service to the Area.
- Cell tower located at the end of Nutter Road.

Ecological Values:
Ecological values include the water, minerals, vegetation, animals, soils, and air quality which create various ecosystems to support a diverse population of vegetation and animals. The key values to humans are water and air. Portions of North East Geyserville have not been developed and ecosystems are close to their natural state as any other portion of Sonoma County.

Existing Plans

North East Geyserville COPE Community: Following the 2017 Pocket Fire, 127 residents organized themselves using the Citizens Organized for Potential Emergencies model. The COPE model is "grass roots" and based upon neighbor helping neighbor. The residents divided into 6 "Neighborhoods" of 10-15 residences. Two Neighborhood Leaders coordinate their neighborhood and coordinate between neighbors. COPE has completed the following task:

- Developed a confidential COPE Master Spreadsheet with residents' vital information for emergencies
- Established communication systems via One Call Now and GroupMe texting applications
- Created fuels management assistance via private road clearing. During the 2019 Kincade fire, 6 homes were saved on Coyote Ridge Road due to the 70-foot road clearance and a fire break that was created to stop the fire. This road became the containment line for the fire.
- Increased defensible space and roadside clearance
- Collaborated with the Northern Sonoma County Fire Protection District over the past 2 years to prepare property owners for future wildfire event(s). Organized community education opportunities; first aid workshops, two Community educational meetings per year, developing CERT for Neighborhood Leaders (4 to date)

2021 Sonoma-Lake-Napa Fire Plan: This CWPP supports the following goals and objectives of the 2021 Sonoma-Lake-Napa Unit Fire Plan as mentioned in the Executive Summary and Pre-Fire Management Priorities and Tactics:

Executive Summary

- Identify and improve areas of Wildland Urban Interface (WUI)

Pre-Fire Management Priorities and Tactics

- Public arterial and collector road fuel reduction projects
- Supporting defensible space and home hardening effort
- WUI community fuel breaks
- Landscape level fuel reduction
- Emergency responder incident response planning and ingress progress
- Tactical ridgetop fuel breaks

2018 California Strategic Fire Plan: This CWPP supports the following goals and objectives of the 2018 California Strategic Fire Plan's:

- Support and participate in the collaborative development and implementation of local, county, and regional plans that address fire protection and landowner objectives
- Increase fire prevention awareness, knowledge and actions implemented by individuals and communities to reduce human loss, property damage, and impacts to natural resources from wildland fires
- Integrate fire and fuels management practices with landowner/land manager priorities across all ownerships and jurisdictions

2016 Sonoma County Community Wildfire Protection Plan: This CWPP supports the following goals and objectives of the 2016 Sonoma County Community Wildfire Protection Plan:

- Creating fuel breaks along roads to reduce the wildfire risk to residents and communities
- Creating fuel breaks

Appendix A:
COMMUNITY WILDFIRE RISK AND HAZARD ASSESSMENT

This Form Prepared for: North East Geyserville

How to Use This Community Wildfire Risk and Hazard Assessment Tool

These questions are designed to help you understand and assign risk ratings in your community. The ratings sum up the many factors that affect how a hazardous fire might behave in your local Wildland-Urban Interface (WUI).

Your working group will assess a variety of risk factors, including:

- Road infrastructure and access—Can residents and firefighters get in and out during an emergency?
- Construction materials—Are buildings designed or modified to resist ember ignition?
- Defensible space—Do buildings have a100 foot defensible space radius?
- How available are local fire suppression resources, and what are their capabilities?
- How will local land conditions such as fuel types, fuel loading, and slope impact potential wildfire behavior and severity?

This interactive template will help you examine and rate the risks of each of these factors. After all the questions are answered, results will be automatically tabulated and your calculated hazard ratings will appear on the last page.

In Appendix B, you will identify more specifically where and to what extent risks exist, and present maps that show them. After that, your community, in collaboration with local fire agencies and other stakeholders, can come up with the strategies and projects that can help you to become better adapted to wildfire.

It may seem difficult to know which option to choose. For example, your community may have a wide variety of roads. To use this assessment tool effectively, you should provide a very basic answer to each question. For instance, ask yourself: "Do any of our secondary roads present risks to people trying to evacuate during a wildfire? Yes or No." For this reason, we suggest that where there are a variety of conditions, use the worst case for the risk assessment.

The procedure for this Community Wildfire Risk/Hazard Assessments was originally developed by the "Living with Fire" program, University of Nevada Cooperative Extension, in conjunction with agency and community stakeholders. It was modified by permission for use in California by Fire Safe Sonoma, in conjunction with California stakeholders. Content for Appendix A was extracted or adapted from the *Nevada Community Wildfire Risk/Hazard Assessment: Washoe County* (Resource Concepts, Inc. 2005).

1. Access

Design aspects of roadways influence the hazard rating assigned to a neighborhood. Roads that are steep or less than twenty feet in width often impede two-way movement of vehicles for resident evacuation and access for fire suppression equipment. Hairpin turns and cul-de-sacs with radii of less than 45 feet can cause problems for equipment mobility. Visible, fire resistant, street and address identification and adequate driveway widths also reduce the overall neighborhood hazard rating.

Primary roads are those that most people use to access secondary roads and/or homes. A primary road is typically paved and maintained by the County or the State.

Primary Roads:

- ○ Two or more primary roads.....1
- ○ One road or loop road (exit possible in two directions).....3
- ◉ One road in, one way out (one road, dead end) 5

At the narrowest point, primary roads are

- ○ More than 24 feet 1
- ◉ More than 20 feet and less than 24 feet 3
- ○ Less than 20 feet..... 5

Slope:

- ○ Road grades of 5% or less..... 1
- ◉ Road grades more than 5% 3

Secondary Roads are smaller roads that are used to access homes or neighborhoods. They may or may not be paved or maintained by the County or the State.

At the narrowest point, secondary roads are

- ○ More than 24 feet 1
- ○ More than 20 feet and less than 24 feet 3
- ◉ Less than 20 feet..... 5

Secondary road terminus:

- ○ Loop roads or cul-de-sac with outside radius of 45' or greater 1
- ○ Dead-end roads 200' or less in length 3
- ◉ Dead-end roads greater than 200'..... 5

Slope:

- ○ Road grades of 5% or less..... 1
- ◉ Road grades more than 5% 3

Secondary roads in our area are:

- ○ Mostly paved (more than 80%-100%) 1
- ◉ Some are paved (50%-79%) 3
- ○ Few are paved (less than 50%) 5

Accessibility: Fire trucks are very large, and can be difficult to maneuver. Can a large two-wheel drive truck drive up the road? Can two trucks pass each other side by side? Are there sufficient turnout spots where trucks can turn around? Hint: Think of UPS trucks.

- ○ Two-wheel drive trucks can easily handle road surface and slope and can pass each other side-by-side without pulling over 1
- ○ Narrow road surface and/or roadside vegetation make it difficult for vehicles to pass side by side, but vehicles don't have to back up for more than twenty five feet for turnaround 3
- ◉ Narrow road surface and/or roadside vegetation with limited turn arounds (vehicles have to back up more than 150') 5

Bridges & Gates:

Some fire departments will not drive over a bridge that has not been rated for weight.

- ○ No bridges 0
- ○ All bridges in the area are rated for heavy vehicles 1
- ◉ There are a few unrated bridges 3
- ○ Most bridges are unrated 5

Wood bridges can burn in wildland fires, rendering them impassible.

- ○ No wood bridges 0
- ○ All bridges have non-combustible surface and structure 1
- ◉ Some secondary road bridges have wooden surfaces or structure 3
- ○ Some primary roads have wooden surfaces 5

Gates:

- ○ No gates 0
- ○ Gates are equipped with fire dept access systems or no gates 1
- ◉ Most gates are equipped with fire department access systems 3
- ○ Locked gates will impede emergency access 5

Roadside Vegetation 10 feef from usable road edge :

- ○ Grasses are mown to less than 4 inches, trees and brush are trimmed to provide 10' of horizontal clearance, and 15' of vertical clearance 1
- ◉ Roadside vegetation is mostly well maintained, but some areas need improvement 3
- ○ Tall grass, brush and trees border and overhang the roadway 5

Signage

Street and home address signs should be metal with reflective numbers on non-combustible posts. Signs need to be visible from any point of entry and not obscured by vegetation. Signs made from combustible materials won't survive the wildfire!

Street signs

- ○ Present 90-100% 1
- ○ Present 75-89% 3
- ◉ Present less than 75% 5

Address signs (house numbers)

- ○ Present 90-100% 1
- ○ Present 75-89% 3
- ◉ Present less than 75% 5

2. Built Environment

When paired with good defensible space, appropriate home construction and maintenance can help homes survive wildfire ignition. Vulnerable points on homes include roofs, gutters and eaves, venting, attachments such as decks and fences, windows, and siding. Chapter 7A of the California Building Code applies to new construction in designated wildfire-prone (WUI) areas. In addition to noncombustible and ignition-resistant materials, Chapter 7A uses State Fire Marshal–approved standard test methods that provide a way to evaluate and compare the performance of exterior-use construction materials. Homes built after 2007, when California adopted the WUI Building Code, will have many important features to help prevent home ignition. You can learn more about home hardening at on the Insurance Institute for Business and Home Safety website.

Percentage of buildings in your area constructed or modified after 2007:

- ○ 90-100% 1
- ○ 75-89% 3
- ◉ Less than 75% 5

Roofing materials

- ○ Non-combustible covering 90-100% 1
- ○ Non-combustible covering 80-90% 5
- ○ Non-combustible covering 70-80% 8
- ◉ Non-combustible less than 70% 10

Siding materials

- ○ Non-combustible siding more than 75% 1
- ◉ Non-combustible siding less than 75% 5

Unenclosed features (decks, wooden attachments such as fences, etc.)

- ○ Less than 25% 1
- ○ 25-50% 3
- ◉ More than 50% 5

3. Utilities

Overhead power lines can be a potential ignition source for wildfires. PG&E should regularly maintain vegetation near poles, and beneath power lines and transformers, as fires have been known to start from arcing power lines during windy conditions. If you are concerned about vegetation that may pose a risk to electrical lines, call PG&E at 1-800-PGE-5000.

Utility ignition risk

- ○ All utility lines are underground..... 0
- ◉ Utility lines all above ground..... 3

4. Defensible Space

Fuels are simply anything that can burn. All plants, from grasses to redwood trees, are fuels. It is also important to remember that the human-built environment of homes are part of the fuels component in your area. The type, density, and condition of vegetation, the homes themselves, the presence of other combustible materials (for example wood piles, wooden fencing) together influence the ease of ignition, intensity, and duration of the fire. Defensible space is one of the factors that homeowners can modify in order to improve the chances that a home or other property avoids damage from a wildfire.

Average lot size

- ◉ 10 acres or larger 1
- ○ 1 to 10 acres 3
- ○ Less than 1 acre 5

Defensible space

- ○ 70% or more adequate 1
- ◉ 30-70% adequate 3
- ○ Less than 30% adequate 5

5. Fire Protection

Knowledge of the capabilities or limitations of the fire suppression resources in a neighborhood can help municipality officials and residents take action to maximize the resources available. Factors considered in the assessment include:

A. Availability, Number, and Training Level of Firefighting Personnel. When a fire begins in or near a neighborhood, having the appropriate firefighting personnel available to respond quickly is critical to saving structures and lives. Whether there is a local paid fire department, volunteer department, or no local fire department affects how long it takes for firefighters to respond to a reported wildland fire or to a threatened neighborhood.

B. The Quantity and Type of Fire Suppression Equipment has an important role in minimizing the effect of a wildfire on a neighborhood. Wildland firefighting requires specialized equipment.

C. Availability of Water Resources is critical to fighting a wildland fire. Whether there is a community water system with adequate fire flow capabilities, or whether firefighters must rely on local ponds or other drafting sites, affects how difficult it will be for firefighters to protect the neighborhood.

Water source --Ask your local fire or water agency for information

- ○ 500 gpm hydrants within 500' of structures 1
- ○ 500 gpm hydrants or draft source within 1000' of structures 2
- ○ Water source 20 minutes away roundtrip 5
- ◉ Water source 45 minutes away roundtrip 10

Fire department/protection district within 15 minutes

- ○ Career Department 1
- ◉ Combination Career/Volunteer 3
- ○ Volunteer with Seasonal Staffing 5
- ○ All Volunteer Department 7
- ○ No Organized Department or extended response times 10

6. Fire Behavior

Physical conditions include slope, aspect, topography, typical local weather patterns, wind patterns, fuel type, and fuels density. With the exception of changes to the fuel composition, the physical conditions in and around a neighborhood cannot be altered to make the neighborhood more fire safe. Therefore, an understanding of how these physical conditions influence fire behavior is essential to planning effective preparedness activities such as fuel reduction treatments. Physical conditions considered in the assessment include:

A. Slope, Aspect, and Topography. In addition to local weather conditions, slope, aspect, and topographic features are also used to predict fire behavior. Steep slopes greatly influence fire behavior. Fire usually burns upslope with greater speed and longer flame lengths than on flat areas. Fire will burn downslope; however, it usually burns downhill at a slower rate and with shorter flame lengths than in upslope burns. East aspect slopes may experience afternoon downslope winds that may rapidly increase downhill burn rates. West and south facing aspects are subject to more intense solar exposure, which preheats vegetation and lowers the moisture content of fuels. Canyons, ravines, and saddles are topographic features that are prone to higher wind speeds than adjacent areas. Fires pushed by winds grow at an accelerated rate compared to fires burning in nonwindy conditions. Homes built midslope, at the crest of slopes, or in saddles are most at risk due to wind-prone topography in the event of a wildfire.

B. Fuel Type and Density. Vegetation type, fuel moisture values, and fuel density around a neighborhood affect the potential fire behavior. Areas with thick, continuous, vegetative fuels carry a higher hazard rating than communities situated in areas of irrigated, sparse, or non-continuous fuels. Dry weather conditions, particularly successive years of drought, in combination with steep slopes or high winds can create situations in which the worst-case fire severity scenario can occur.

CAL FIRE Fire and Resource Assessment Program (FRAP) Maps: California Department of Forestry and Fire Protection (CDF) has mapped areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. All of the State Responsibility Areas in California have been mapped as moderate, high or very high Fire Hazard Severity Zones. You can view maps for your area on the FRAP website at frap.fire.ca.gov/.

FRAP Fire Hazard Severity Zone: Please download the FRAP maps from frap.fire.ca.gov or ask CAL FIRE personnel for a copy. If you have GIS mapping capability, determine the percentage of each FHSZ that you have in the project area. If you can't do it by GIS, an approximation is fine.

Enter the percentages of the FHSZs below, then use those values to choose a value.:

Very High FHSZ	76	%
High FHSZ	0	%
Moderate	14	%

Predominant FSHZ

- ○ Moderate FHSZ 3
- ○ High FHSZ 5
- ◉ Very High FHSZ 7

Slope

- ○ 8% or less 1
- ○ 8% - 20% 4
- ○ 20% - 30% 7
- ◉ More than 30% 10

Predominant aspect

- ○ North 1
- ○ East 3
- ○ West 7
- ◉ South 10

Fuels

- ○ Light density 1
- ○ Medium density 3
- ◉ High density 5

Fire behavior situations

- ○ Situation #1 - Fine and/or sparse fuels surround structures; infrequent wind exposure; flat terrain with little slope and/or north aspect. No large wildland fire history and/or moderate fire occurrence. 3
- ○ Situation #2 - Moderate slopes; broken moderate fuels; some ladder fuels; composition of fuels is conducive to torching and spotting; conditions may lead to moderate suppression success; some fire history and/or moderate fire occurrence. 7
- ◉ Situation #3 - Continuous fuels in close proximity to structures; composition of fuels is conducive to crown fires or high intensity surface fires; steep slopes; predominately south aspects; dense fuels; heavy duff; prevailing wind exposure and/or ladder fuels that may reduce suppression effectiveness; history of some large fires and/or moderate fire occurrence. 10

7. Contributing Risk Factors

Please select the contributing risk factors on the table on Page 8.

8. Risk and Hazard Assessment Summary

Based on the inputs entered into Sections 1 through 7, the community's risks and hazards are summarized in the "Ignition Risk and Hazard Assessment Overview."

IGNITION RISK AND HAZARD ASSESSMENT OVERVIEW FOR

FACTORS	RATING
IGNITION RISK ASSESSMENT	
CONTRIBUTING RISK FACTORS	
History of Lightning	Low
Camping Activities	Low
High Level of visitors/activities	Moderat
Understory receptive to ignition	High
Thick brush and trees	High
Unmaintained Powerline Corridors	Moderat
High fuel loads	High
High Winds	High
History of fire ignitions	Moderat
Add other risk factor	Choose
Add other risk factor	Choose
Add other risk factor	Choose
Add other risk factor	Choose

Final Scores

Summary Rating[1]

Summary Rating / Score 94

Hazard Category	Score
Low Hazard	< 41
Moderate Hazard	41-60
High Hazard	61-75
Very High Hazard	76+

[1] Summary rating for Ignition Risk Assessment is a judgment call determined by planning committee.

FACTORS	RATING	
HAZARD ASSESSMENT		
ACCESS		
Ingress/Egress	Inadequate	
Width of Primary Road	Inadequate	
Passibility	Inadequate	
Secondary Road Terminus	Inadequate	
Primary Slope		
Street Signs	Inadequate	
Address Signage	Inadequate	
Roadside Vegetation	High	
Narrow Secondary	Inadequate	
Secondary Paved		
Secondary Road Slope	Inadequate	
Unrated Bridges		
Wooden Bridges	Inadequate	
Gates	Moderate	
BUILT ENVIRONMENT		
2007 Standards	Low	
Roofing Materials	Low	
Siding Materials	Low	
Unenclosed Features	Inadequate	
UTILITIES		
Utility Ignition Risk	High	
Lot Size	Moderate	
Defensible Space	Moderate	
FIRE PROTECTION		
Water Source	Inadequate	
Fire Protection	Moderate	
FIRE BEHAVIOR		
Fire Hazard Safety Zone	High	
Slope	High	
Aspect	High	
Fuels	Inadequate	
Fire Behavior	Low	

Clear Form

Use this chart to consider which projects might be tackled, and how. Some Green colored risks could potentially be tackled by neighborhood groups for little or no cost. The risks in the yellow category may need considerable planning and perhaps funding, but are modifiable. The Orange risks are physical features or infrastructure that are not easily modified. Risks in this area will be better modified by education and planning.

Risks that can probably be modified	**Mitigation Strategies Include:**	
Access		
Gates	Evacuation Planning, install "Knox Keys"	Moderate
Roadside vegetation	Fuels Management, education, funding	High
Signage		
Street	Education, outreach, funding	Inadequate
House	Education, outreach, funding	Inadequate
Home Hardening/Construction		
Roofing	Education, outreach, retrofit, funding	Low
Siding	Education, outreach, retrofit, funding	Low
Unenclosed Features	Education, outreach, retrofit, funding	Inadequate
Defensible Space		
Defensible Space	Education, outreach, funding, inspections	Moderate
Risks that possibly can be modified	**Mitigation Strategies Include:**	
Access: Bridges		
Unrated Bridges	Evacuation Planning, modification	
Wood Bridges	Evacuation Planning, modification	Inadequate
Water and Fuels		
Water Sources	Develop further sources.	Inadequate
Fire Behavior (stragegic fuel breaks)	Planning, funding, education, outreach	Inadequate
Fuels Density (fuels modification)	Planning, funding, education, outreach	Low
Risks that cannot likely be modified	**Mitigation Strategies Include:**	
ACCESS		
Primary Roads out	Evacuation Planning	Inadequate
Primary Road width	Evacuation Planning	Inadequate
Primary Road Slope	Evacuation Planning	
Secondary width	Evacuation Planning	Inadequate
Secondary Terminus	Evacuation Planning	Inadequate
Secondary Slope	Evacuation Planning	Inadequate
Secondary Surface	Evacuation Planning	
Utilities		
Underground	Education, outreach, report issues	High
Fire Behavior		
Fire Hazard Severity Zones	Education, outreach, planning	High
Slope	Education, outreach, planning	High
Predominant Aspect	Education, outreach, planning	High

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
1	FIRST YEAR (21-22)	**Vegetation Management Modeling**	All	3		X	X		X	2021-2022		X	X	X
		Goal	To identify and locate hazardous trees and woodlands for formation of an attack map for vegetation management projects.											
		Actions	●Complete drone photography of area and meet with consultants.											
		Participants	NSCFPD, CAL FIRE, Cary Gloeckner (contractor)											

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
2	FIRST YEAR (21-22)	**Vegetation Management Along Primary and Secondary Roads**	Roads	3	X	X				2021-2022	X	X		
		Goal	Reduce hazards along primary and secondary roads for ingress and egress of First Responders, Emergency Vehicles and Evacuees.											
		Actions	●River Road, Mooday Lane, and parts of Vineyard Road are county maintained roads with River Road being the only primary road serving 90% of the CWPP Plan area. The secondary roads are all private and privately maintained. ●Identify critical areas and prioritize trimming of canopies over the road, removing dead or precarious trees in danger of falling and blocking the only road in or out (access and evacuation), trim or remove trees or branches that pose a risk of falling on power lines (ignition), cutting back and eliminating ladder fuels under trees (ignition) and cut back or thin out ground vegetation to slow the speed and intensity of fire. ●Identify funding and potential resources to implement work ●Include execution plan and align with available chipper programs or seasonal burn piles ●County of Sonoma Transportation and Public Wokrs (TPW) has responsibility to keep the roadway clear of vegetation within their right of way. This distance is usually 5-10 feet from the edge of the road which is not always easily accessible. Beyond the county right of way, the responsibility becomes the individual property owner.											
		Participants	Licensed contractors, NSCFPD, PGE, NE Geyserville COPE, TPW and property owners.											

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
3	FIRST YEAR (21-22)	**Vegetation Management on Undeveloped Land**	Vacant Parcels	1		X					2021-2022	X	X		
		Goal	Reduce fuels in strategic locations aimed at creating “calming zones” and fire breaks to stop/slow the spread of wildfire.												
		Actions	●Determine location and feasibility of prescribed burns, grazing and other fuels reduction techniques. Explore funding possibilities for the various fuels reduction techniques ●Explore the possibility of acquiring area wide burn permits so that property owners don’t have to pursue individual permits every year												
		Participants	Licensed contractors, NSCFPD, NE Geyserville COPE, TPW and property owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
4	SECOND YEAR (22-23)	**Vegetation Management on Undeveloped Land**	Vacant Parcels	1		X					2022-2023	X	X		
		Goal	Reduce fuels in strategic locations aimed at creating “calming zones” and fire breaks to stop/slow the spread of wildfire.												
		Actions	●Determine the cost and location of strategic wildfire calming zones and implement ●Remove invasive vegetation ●Explore the possibility of acquiring area wide burn permits so that property owners don’t have to pursue individual permits every year												
		Participants	Licensed contractors, NSCFPD, NE Geyserville COPE, TPW and property owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
5	THIRD YEAR (23-24)	**Vegetation Management on Undeveloped Land**	Vacant Parcels	1		X					2023-2024	X	X		
		Goal	Reduce fuels in strategic locations aimed at creating “calming zones” and fire breaks to stop/slow the spread of wildfire.												
		Actions	●Explore the feasibility of water retention systems (zones) using plants, springs and other natural resources ●Remove invasive vegetation (Continue from second year, may be ongoing into future years)												
		Participants	Licensed contractors, NSCFPD, NE Geyserville COPE, TPW and property owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
6	SECOND YEAR (22-23)	**High Flammability/Explosive Vegetation Plan**	All	2		X	X			2022-2023	X	X		X
		Goal	Develop a plan to reduce the number of highly flammable plants and trees.											
		Actions	●Inventory dead or dying trees ● Determine which tree species are most flammable or explosive (certain conifers, eucalyptus, live oak, pepperwood) and develop a plan to isolate or eliminate them systematically. Analyze cost associated with removal of various species/sizes ●Complete a feasibility study on the various methods of fuel reduction for each plant species (thinning out, limbing up, eradication and removal. ●Determine the importance of eradicating certain flammable vegetation within the defensible space zones and proximity to "calming zones" and fire breaks.											
		Participants	Licensed contractors, NSCFPD, NE Geyserville COPE, and property owners.											

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
7	SECOND YEAR (22-23)	**Establish Safe Refuges**	Residents and Prop Owners	2	X					2022-2023	X	X		
		Goal	Identify and ready areas for sheltering in place											
		Actions	●Determine the best places to shelter in place for all residents of the affected area and determine what actions need to be taken to develop those areas into safe refuges for multiple people ●Prepare The Vineyard clubhouse and beach area for receiving evacuees in a shelter-in-place scenario. Increase defensible space, complete structure hardening and establish an area or storage location to stock medical supplies and other supplies for the safety and comfort of the residents. ●Complete an assessment of the Vineyard and other possible refuge sites (New Tech Academy, Vanoni Ranch) as to access, defensible space & structure hardening.											
		Participants	Licensed contractors, NSCFPD, CAL FIRE, and property owners.											

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
8	FIRST YEAR (21-22)	**Defensible Space Abatement**	All	2		X	X			2021-2022	X		X	X
		Goal	Minimize structural ignition and damage from wildfire (from radiant heat, embers, and direct flame impingement) by insuring property owners adhere to defensible space laws and recommendations.											
		Actions	●Coordinate with County of Sonoma for enforcement and abatement following fire district inspections ●Determine avenues of enforcement and abatement for defensible space and fuels reduction on private property ●Develop plan for periodic inspections											
		Participants	County of Sonoma, Licensed contractors, NSCFPD, CAL FIRE, and property owners.											

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
9	FIRST YEAR (21-22)	**Home/Structure Hardening**	Homes and Structures	3		X	X		X		2021-2022	X			
	Goal	Minimize structural ignition and damage from wildfire (from radiant heat, embers, and direct flame impingement) by retrofitting existing structures.													
	Actions	●County of Sonoma performing defensible space and building construction assessments in 2021 ●Conduct an education/awareness campaign via community presentations, site visits, and inspections/assessments ●Explore funding possibilities and feasibility of incentives for structure hardening (Possible FEMA funding via County of Sonoma)													
	Participants	Licensed contractors, property owners, The Vineyard Club.													

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
10	SECOND YEAR (22-23)	**Home/Structure Hardening**	Homes and Structures	2		X	X		X		2022-2023	X			
	Goal	Minimize structural ignition and damage from wildfire (from radiant heat, embers, and direct flame impingement) by retrofitting existing structures.													
	Actions	●Conduct an education/awareness campaign via community presentations, site visits, and inspections/assessments ●Seek funding for contractors to aid property owners who may need financial assistance. Establish criteria for providing funding. ●Harden Vineyard Club clubhouse and surrounds to fire safe standards													
	Participants	Licensed contractors, property owners, The Vineyard Club.													

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
11	FIRST YEAR (21-22)	**Outreach and Education**	Residents and Prop Owners	3		X	X		X		2021-2022				X
	Goal	Work with NE Geyserville COPE, Firesafe Sonoma, and other organziations to conduct workshops in areas that will keep the community safe from wildfire.													
	Actions	●Educate community on new guidelines for home hardening ●Increase awareness regarding large area vegetation management such as grazing, precribed burning, mechanical treatment, etc. ●Educate property owners, renters, employees or frequent visitors to the area of emergency notification and evacuation procedures													
	Participants	COPE, NSCFPD, and other organizations offering classes in defensible space and home hardening													

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
12	FIRST YEAR (21-22)	**Address Signs**	All Roads and Homes	2	X						2021-2022	X			X
		Goal	Ensure first responders can locate emergencies and structures to defend from a wildfire, by having address signs meeting Sonoma County ordinance requirements.												
		Actions	●Install address signs to meet County Ordinance ●Order and fund payment of address signs ●Consider organizing a volunteer day for address sign installation												
		Participants	NSCFPD, NE Geyserville COPE, and property owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
13	SECOND YEAR (22-23)	**Road Signage**	All Roads and Homes	0	X						2022-2023	X			X
		Goal	Ensure first responders can locate emergencies, and structures to defend from a wildfire, by having street signs meeting Sonoma County ordinance requirements.												
		Actions	●Replace existing and missing street signs including street names, informational signs and warnings with non-burnable, reflective alternatives ●Determine cost and contractor to install new street signs ●Install road signage to meet County Ordinance ●Consider organizing a volunteer day for street sign installation												
		Participants	NSCFPD, NE Geyserville COPE, TPW and property owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
14	FIRST YEAR (21-22)	**Early Warning Communication Protocols**	All Residents and Prop	3	X			X			2021-2022		X		X
		Goal	Ensure earliest possible alerting and warning during emergencies .												
		Actions	●Develop and communicate community and neighborhood wide notification procedures and plans during emergencies ●Implement digital messaging service, OneCallNow, for emergency communications and prepare scripted messages for use in different scenarios. ●Investigate backup methods including radios and sirens. ●Develop protocols for GroupMe communications.												
		Participants	NSCFPD, NE COPE Leadership, Sonoma County Department of Emergency Management, and Sheriff.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
15	FIRST YEAR (21-22)	**Community and Area Wide Response Maps**	All	4	X		X		X		Updated Annually by June 1		X		X
		Goal	Create various detailed maps of the area for corresponding projects and education.												
		Actions	●Assume the majority of first responders will not be familiar with the NE Geyserville area ●Complete and update Pre-Attack and Neighborhood Information Maps, designed for the initial phases of a rapidly developing, dynamic wildfire situation ●Explore expanding property maps to include better detail on location of water tanks, pools, standpipes etc.												
		Participants	NSCFPD, NE Geyserville COPE, residents, and property owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
16	SECOND YEAR (22-23)	**Identify and Develop Viable Water Sources**	All	5	X	X	X		X		2022-2023	X	X	X	X
		Goal	Identify local water sources and increase storage capacity to aid firefighters and reduce water supply turn around time.												
		Actions	●Add or increase capabilities of water hydrant system in The Vineyard neighborhood ●Determine alternate means of collecting water and implement, inlcuding portable pump at Vineyard Club lake ●Explore/determine sources of funding of developing additional water sources												
		Participants	Gill Creek Mutual Water Company, Property owners, NSCFPD, CAL FIRE, and regulatory agencies associated with watercourses.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
17	THIRD YEAR (23-24)	**Identify and Develop Viable Water Sources**	All	0	X	X	X		X	2023-2024	X	X	X	X
	Goal	Identify local water sources and increase storage capacity to aid firefighters and reduce water supply turn around time.												
	Actions	●Consider adding public water tank storage ●Evaluate private water tanks not currently in use ●Install portable pump at Vineyard Club lake ●Secure backup power sources for water distribution systems ●Assist in advising/funding of developing additional water sources												
	Participants	Gill Creek Mutual Water Company, Property owners, NSCFPD, CAL FIRE, and regulatory agencies associated with watercourses.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
18	THIRD YEAR (23-24)	**Generator/s**	Homes	4		X	X	X	X	2023-2024	X	X		X
	Goal	Purchase generator(s) to aid firefighters in accessing water sources and providing basic needs for residents sheltering-in-place												
	Actions	●Determine the location and needs of electricity during a power shut down due to wildfire ●Research type and cost of appropriate generator(s) to fill the needs of the community and the firefighters ●Secure funding, purchase and install generator(s)												
	Participants	NSCFPD, NE Geyserville COPE, Gill Creek Mutual Water Company, Vineyard Valley View Property Owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type					Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency		Prop Owner	Grant	State	SOCO/District
19	THIRD YEAR (23-24)	**Helicopter Pads**	Remote Areas and Dead-Ends	2	X					2023-2024	X	X		
	Goal	Increase number of helicopter landing sites for evacuating stranded residents due to wildfire.												
	Actions	●Identify locations that can be developed as helipads ●Determine the type of work needed to develop the sites and implement												
	Participants	NSCFPD, CAL FIRE, and Vineyard Valley View Property Owners.												

Project	Yr	Project Title	Location/Area	Priority Rating	Hazard Type						Schedule	Funding			
				Hazard Score (# Xs)	Access & Evacuation	Fuels Reduction	Ignitions Reduction	Emerg Notific. & Comm.	Resiliency			Prop Owner	Grant	State	SOCO/District
20	FIRST YEAR (21-22)	**Evacuation Route**	All	2	X						2021-2022	X	X		X
		Goal	Identify alternative egress routes												
		Actions	●Explore options for alternatives to River Road for egress ●Seek property owner permission or explore imminent domain laws for developing an exit route through private property												
		Participants	NSCFPD, CAL FIRE, and property owners.												

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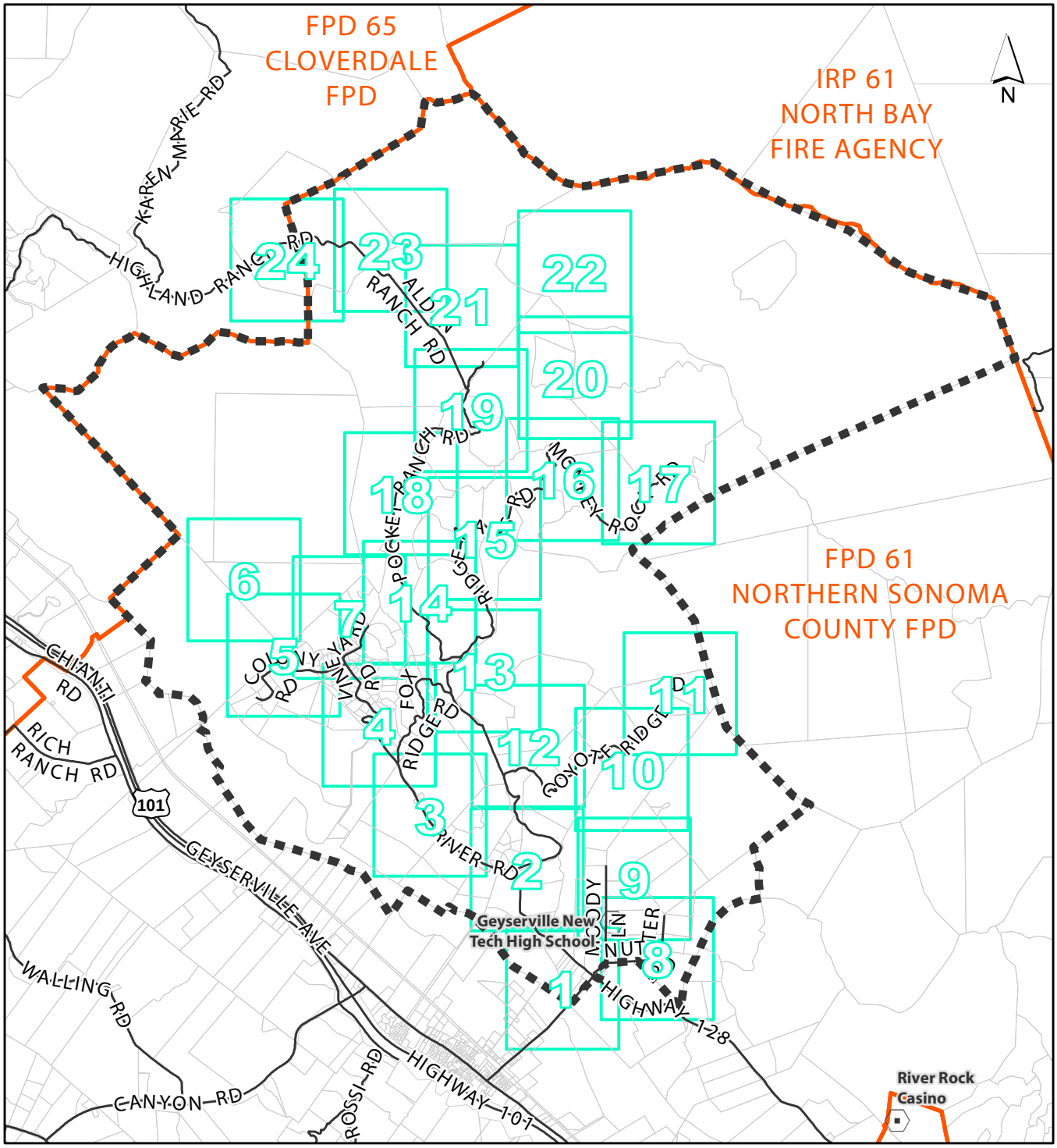

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CWPP boundary, landmarks, addresses, and roads provided by Marshall Turbeville (2020). Parcel and fire district data from Sonoma County online GIS database. Map created by digitalmappingsolutions.com on 3/16/2020.

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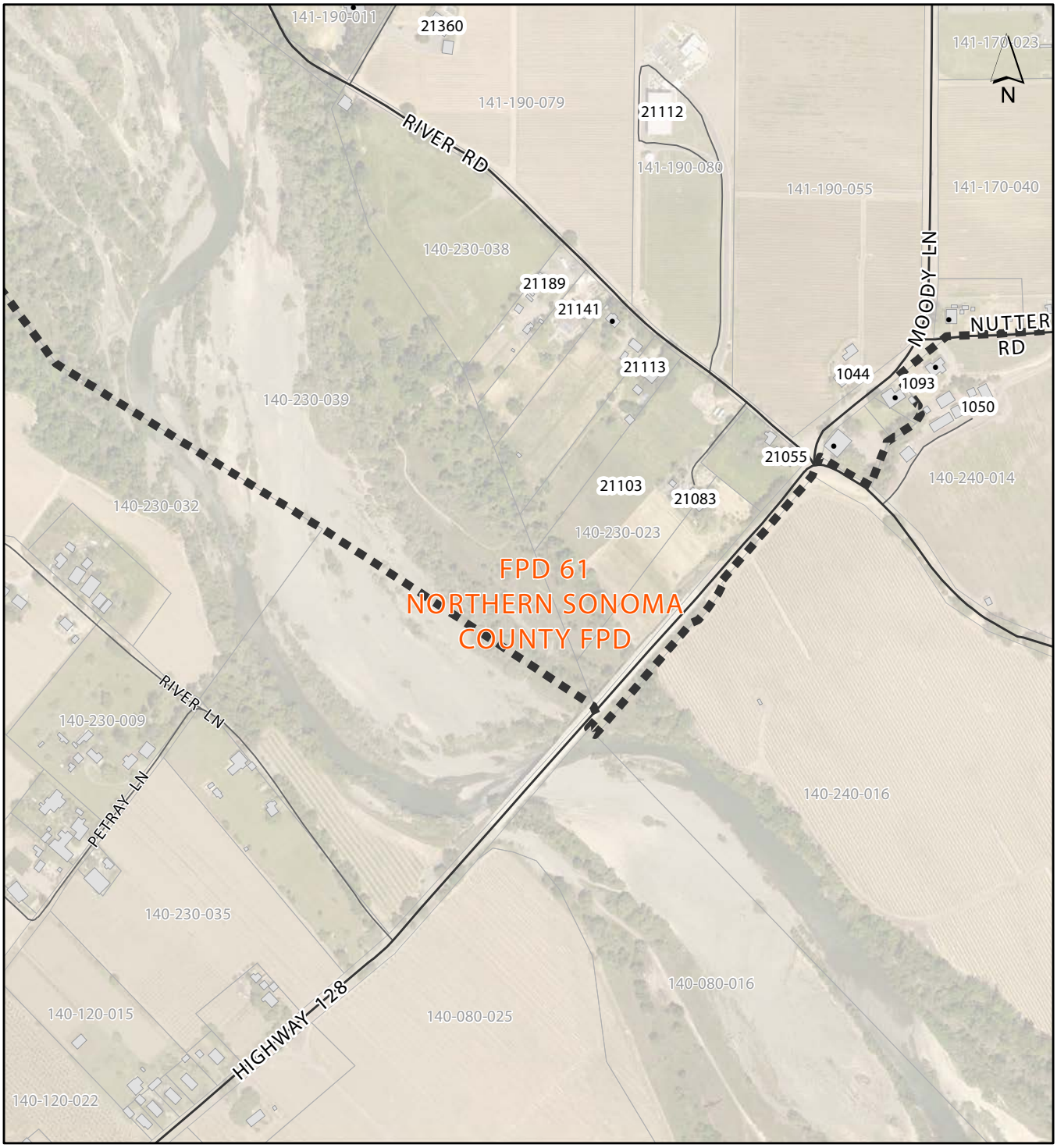

Legend

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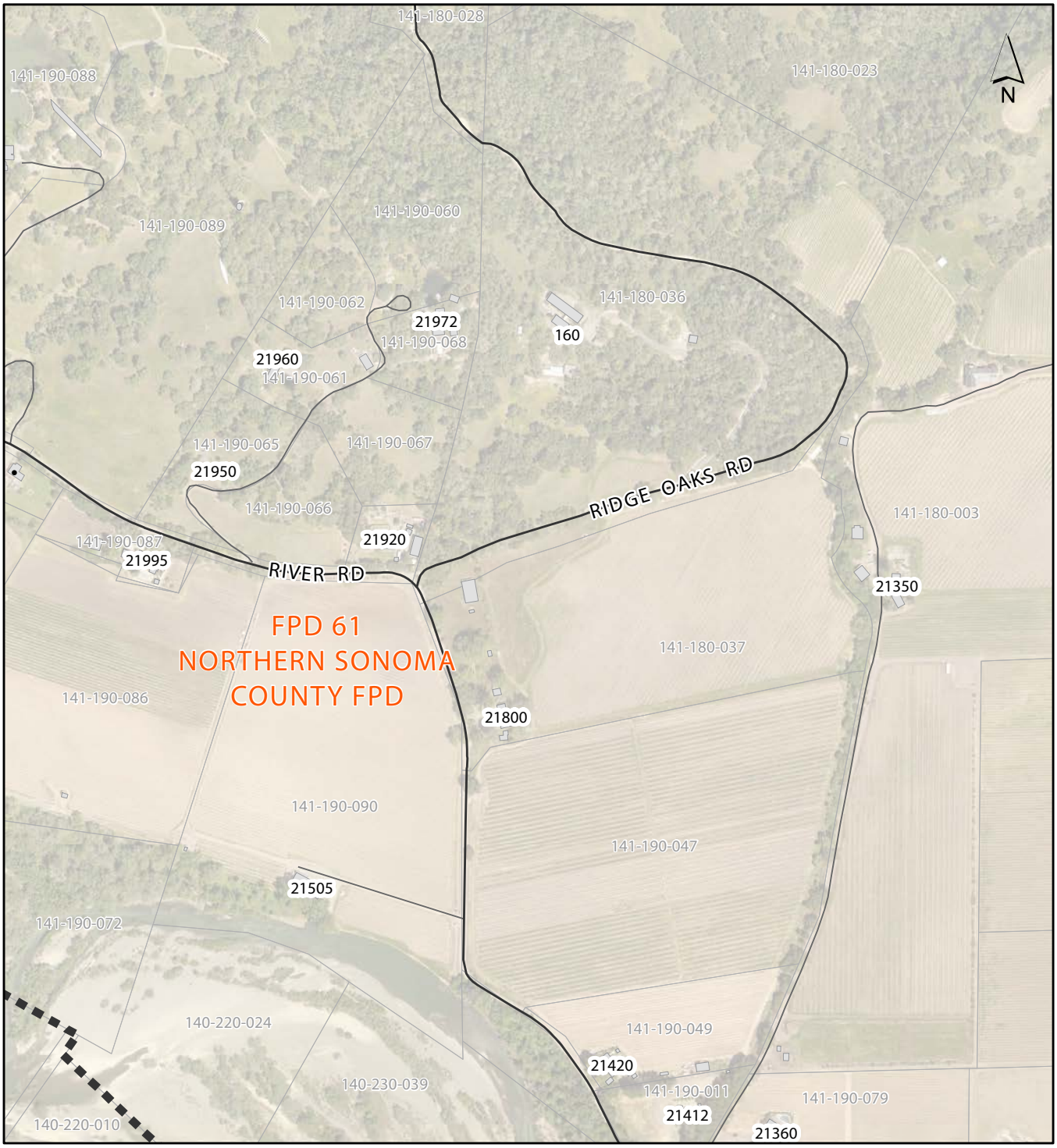

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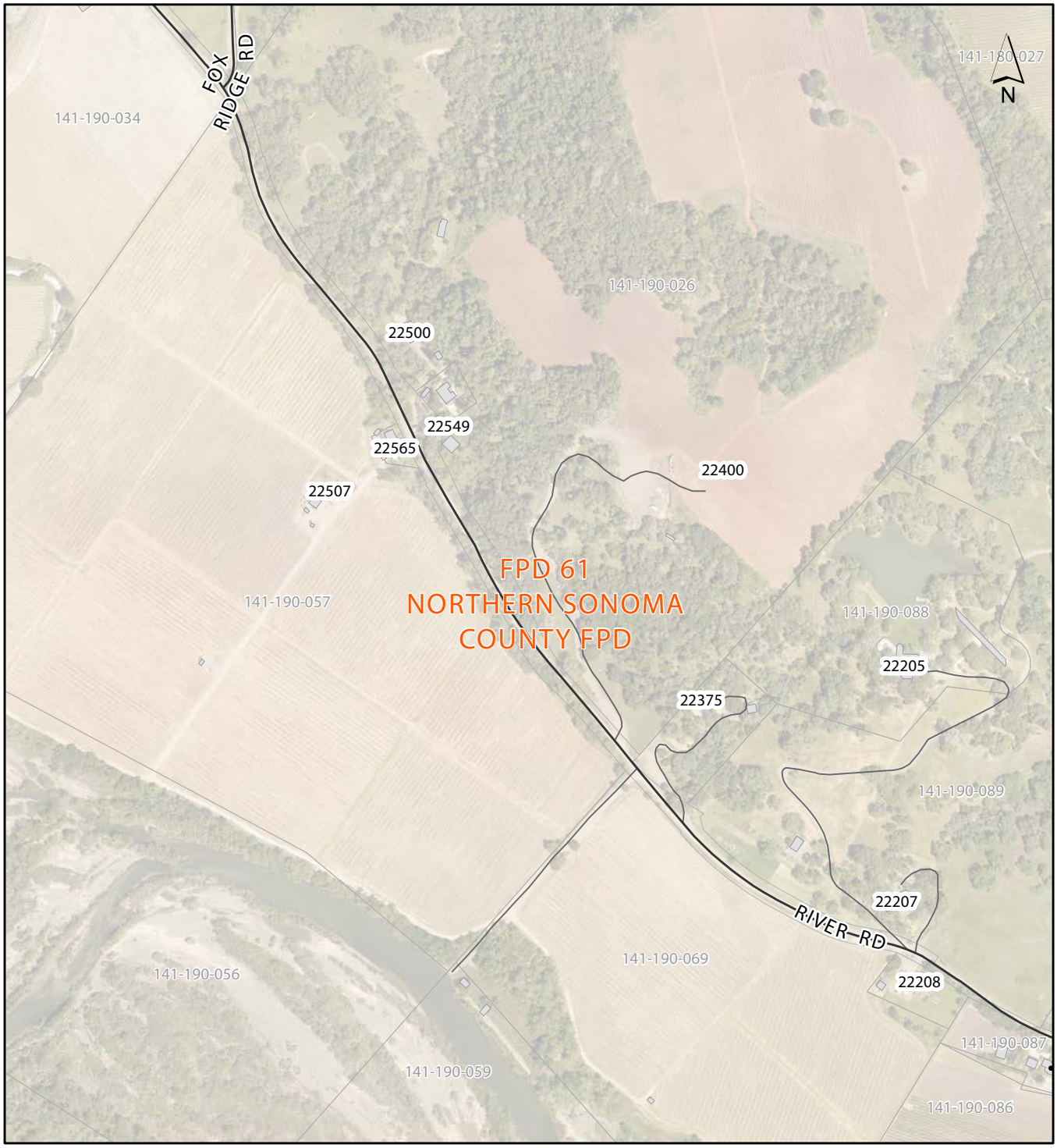

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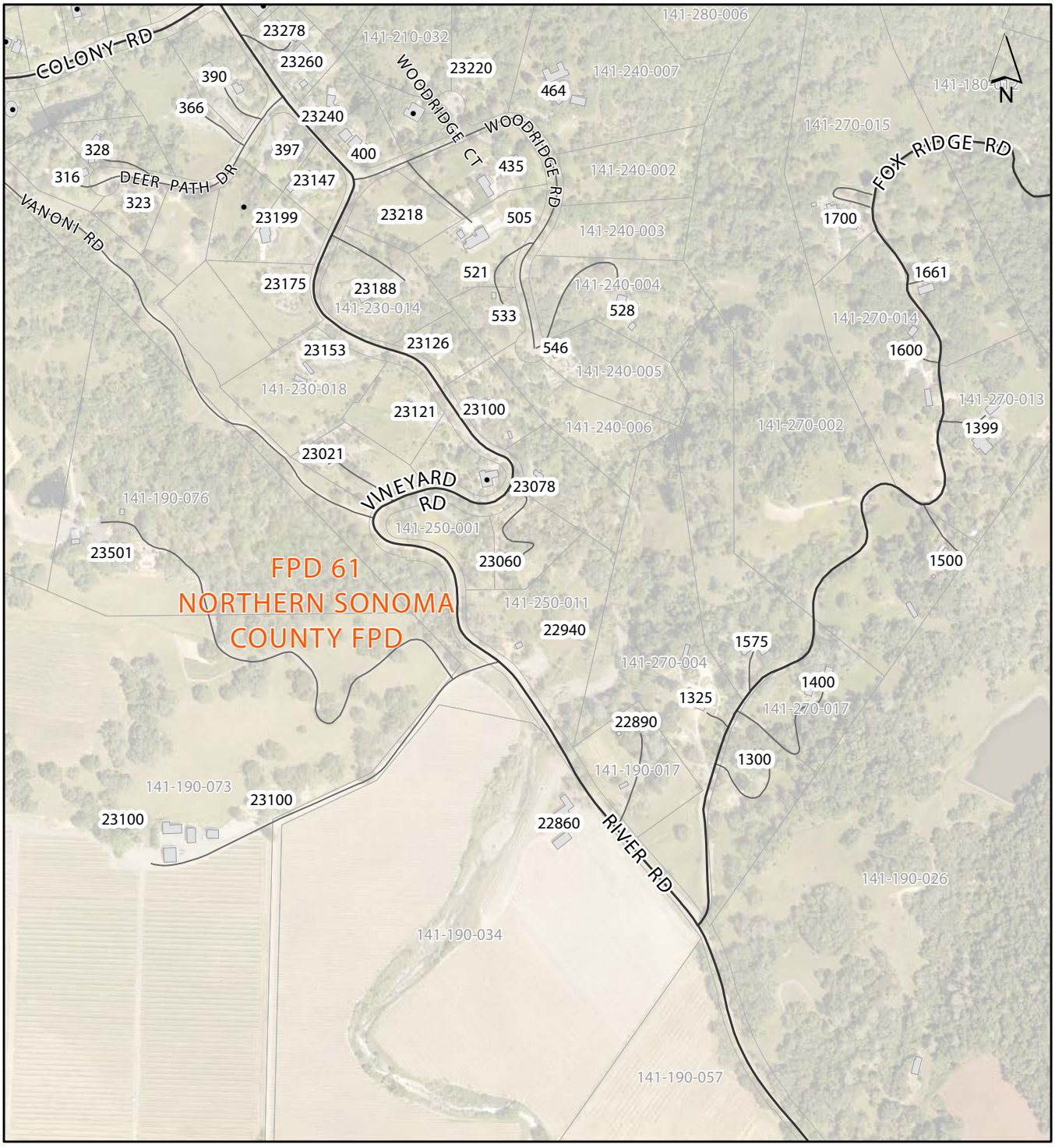

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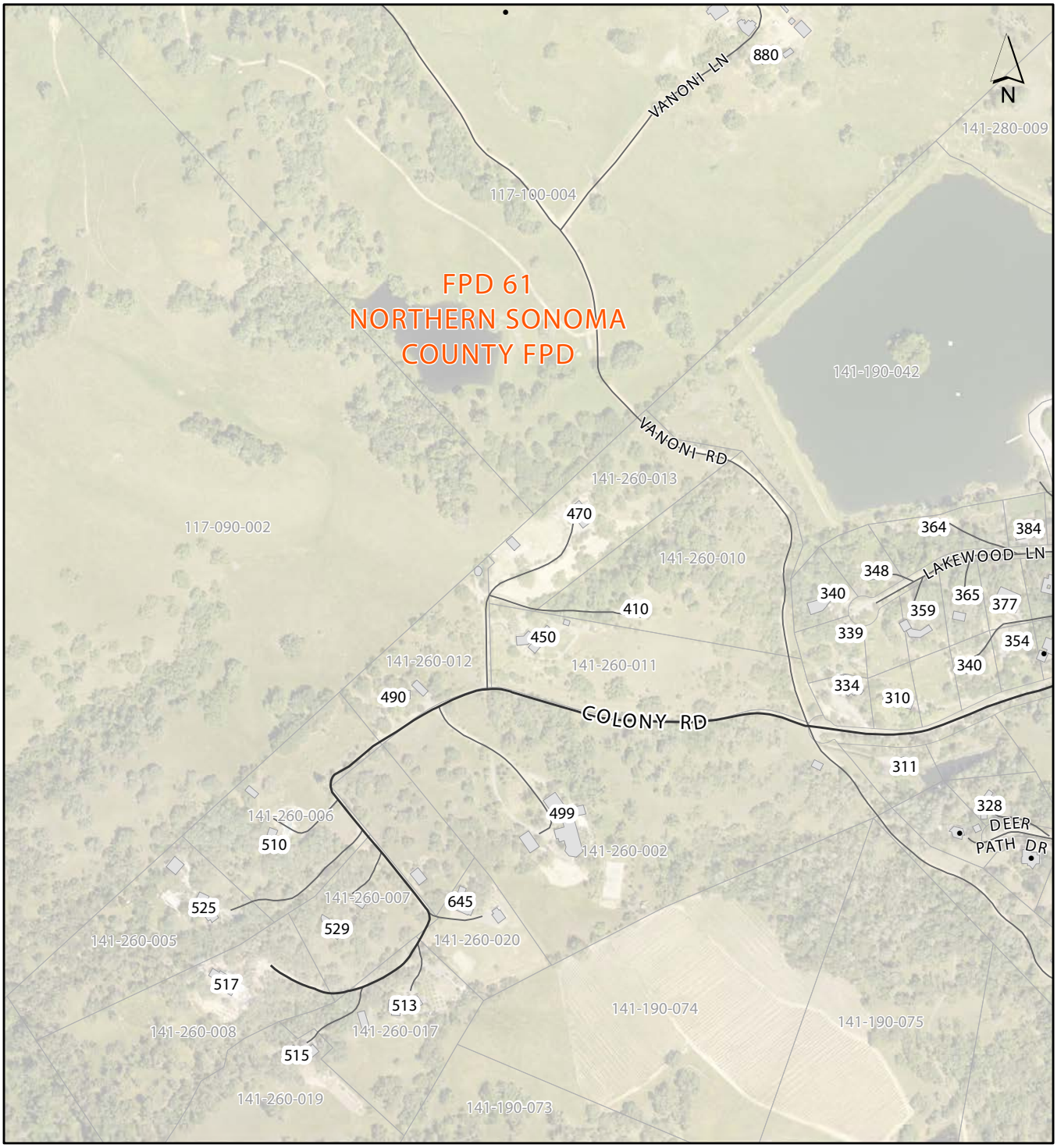

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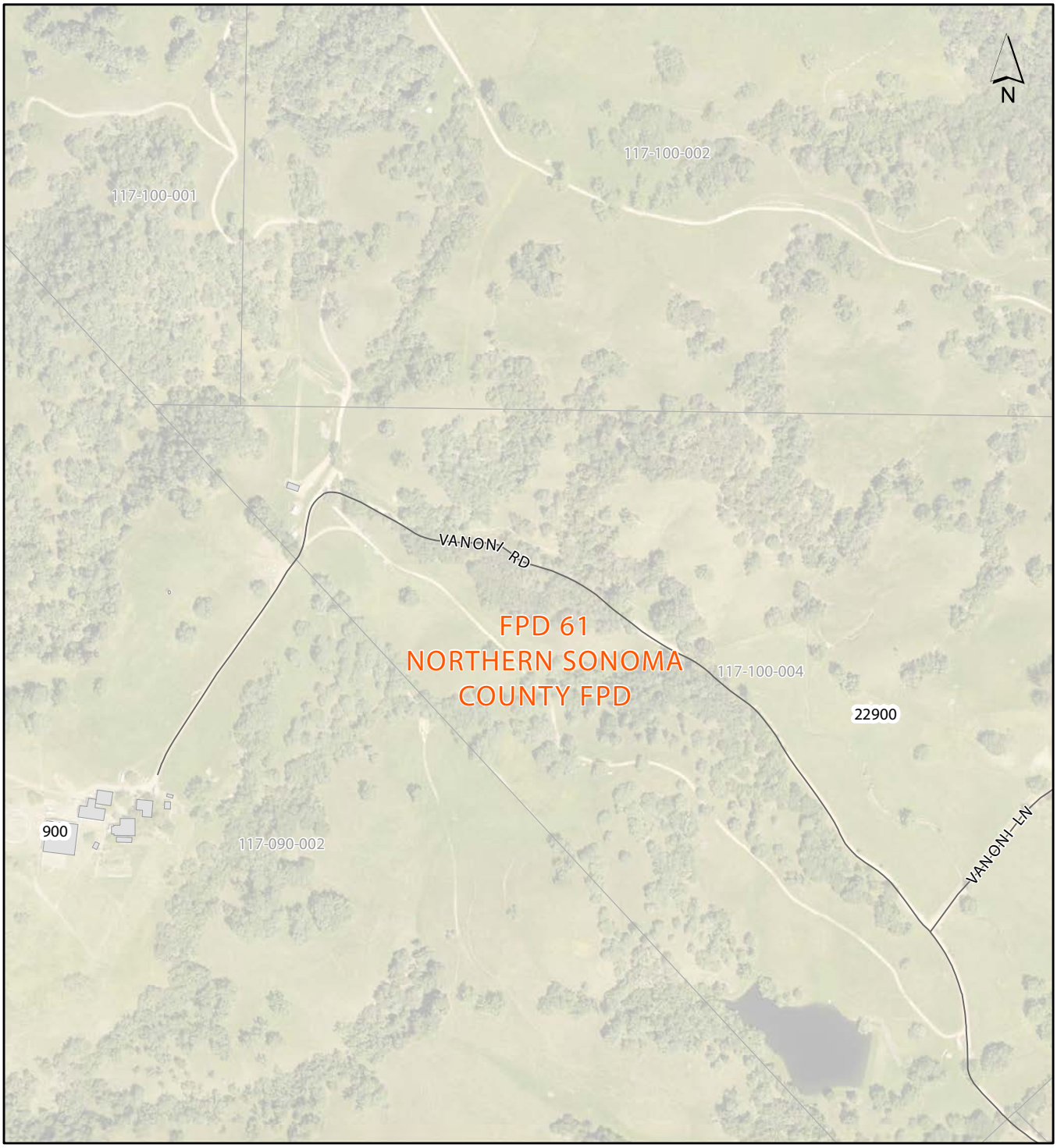

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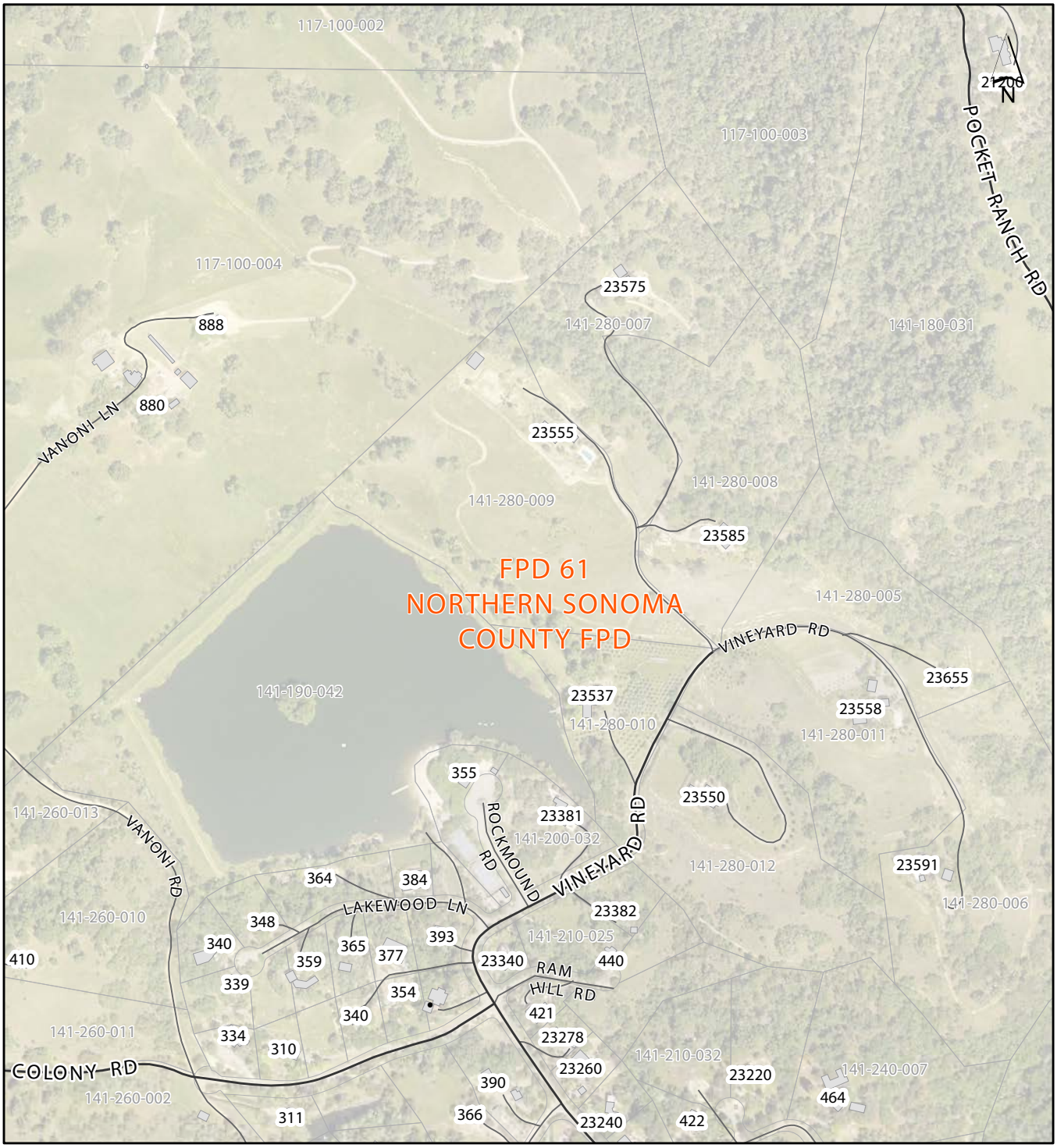

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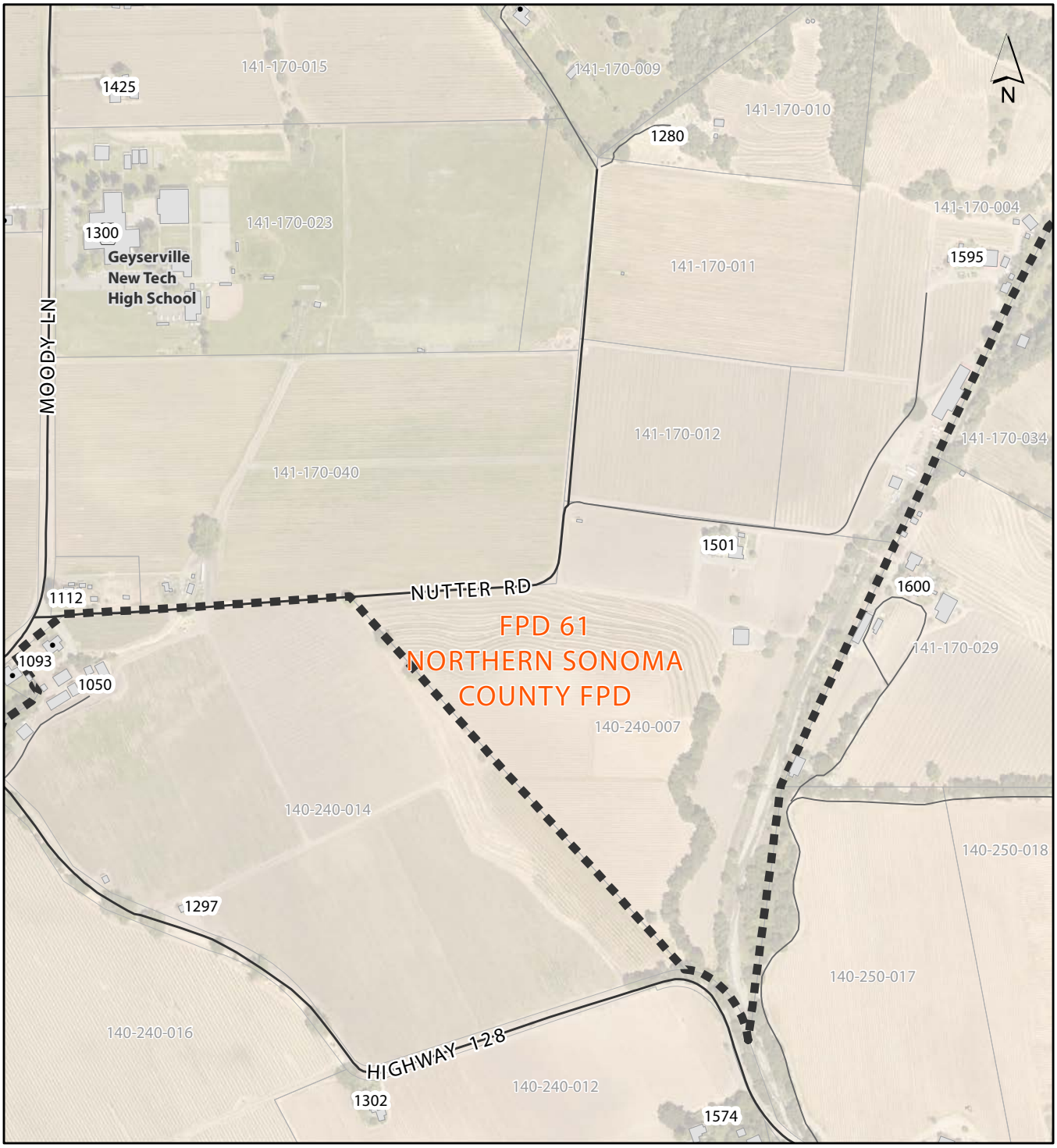

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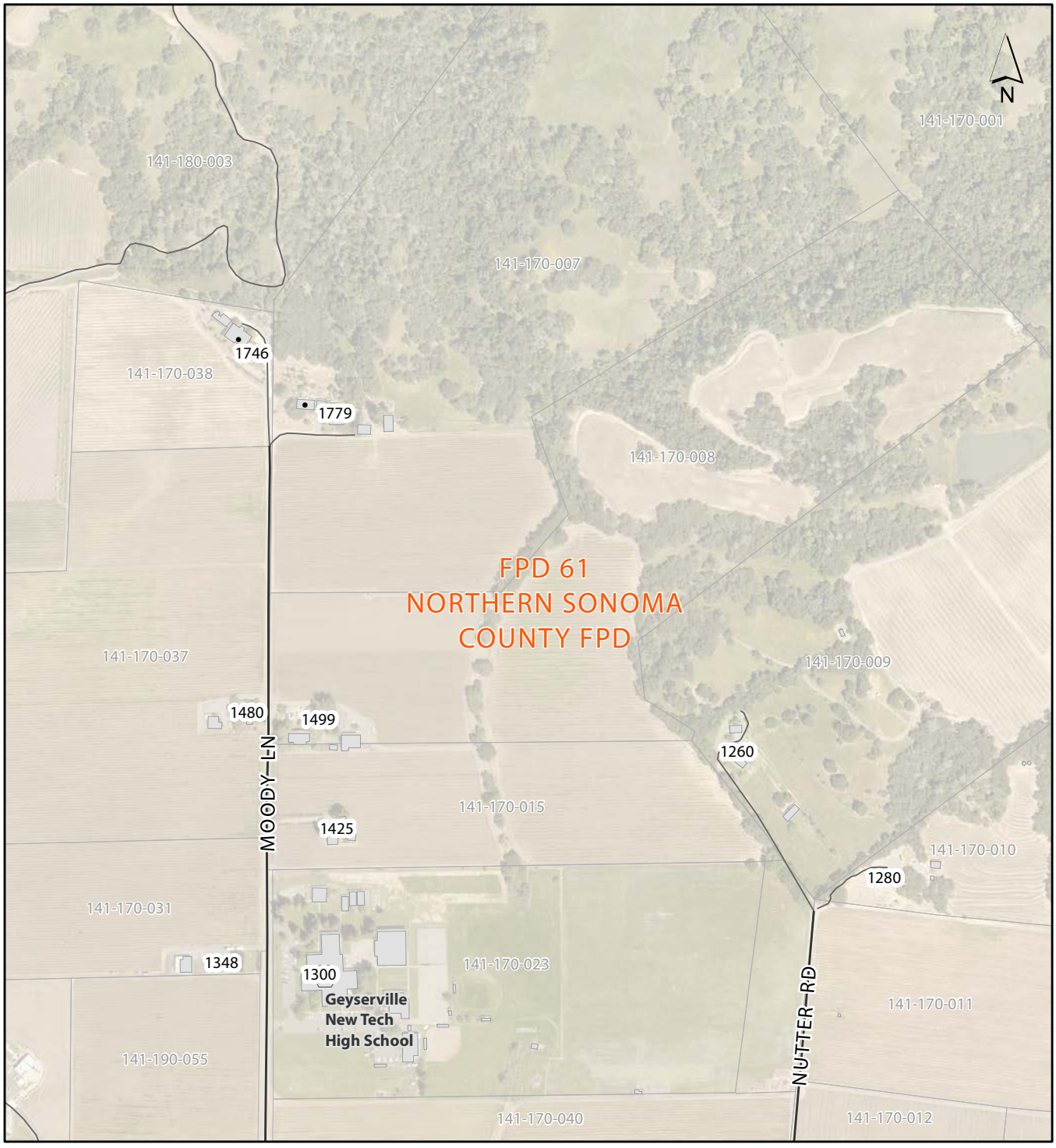

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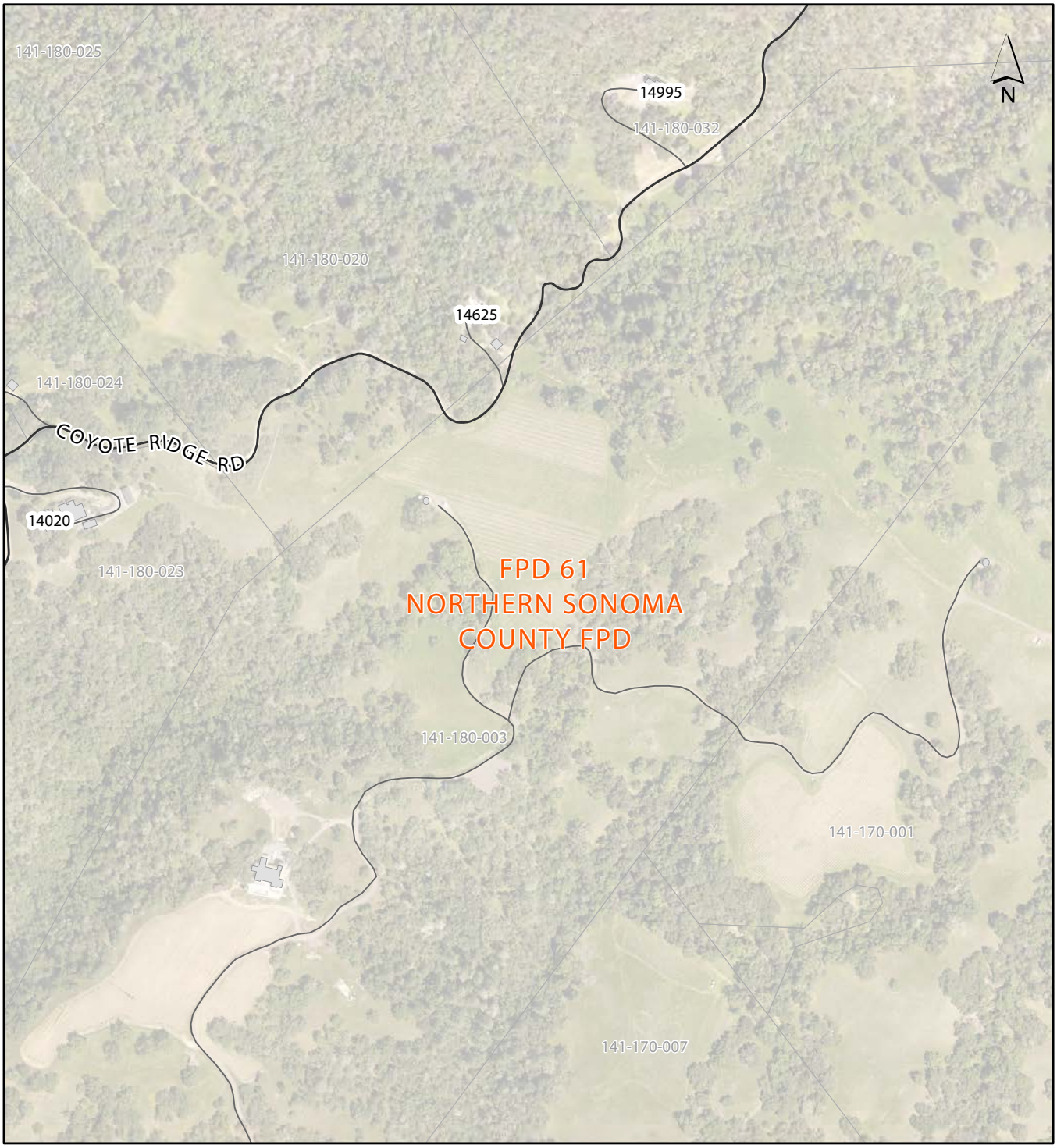

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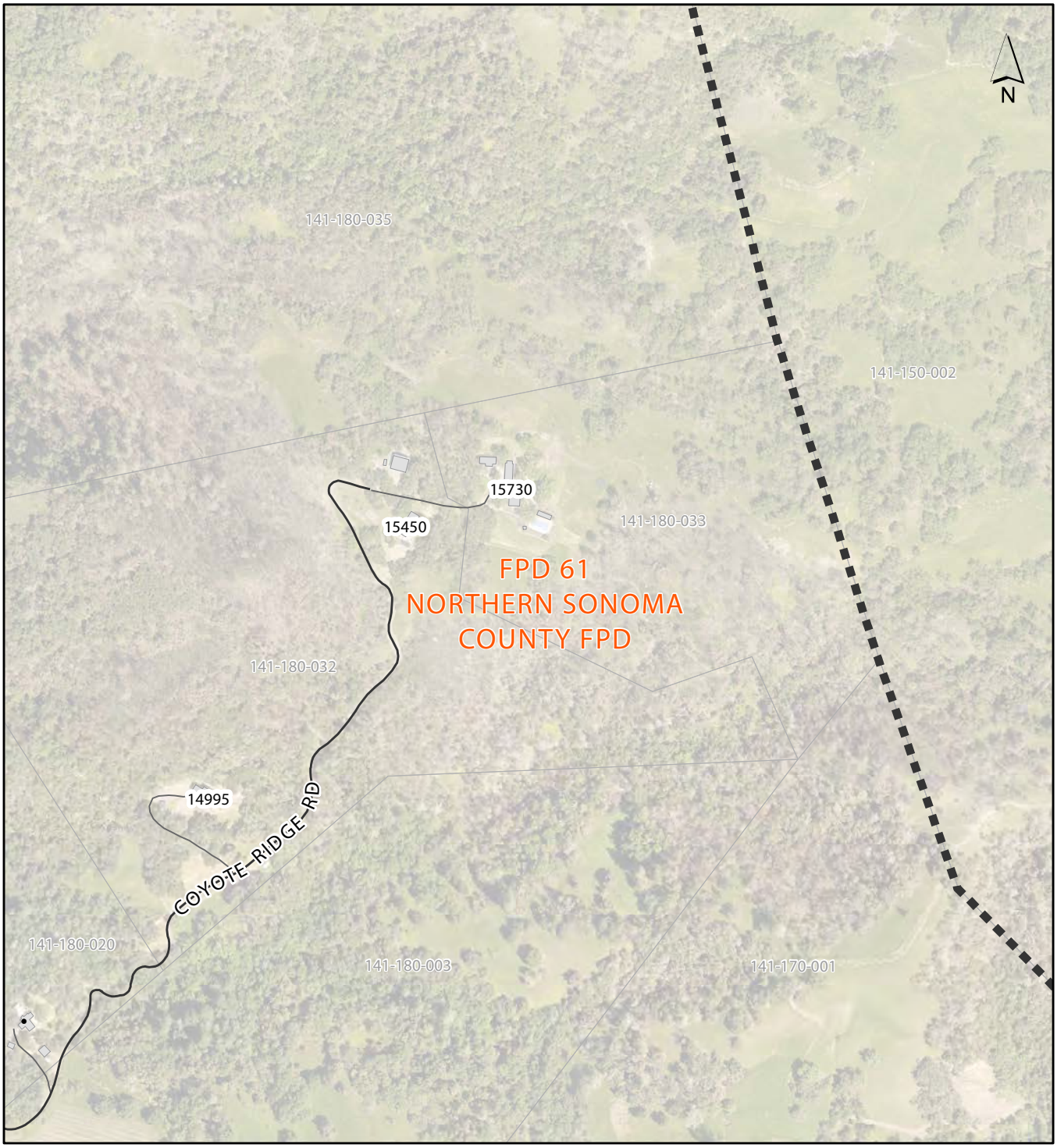

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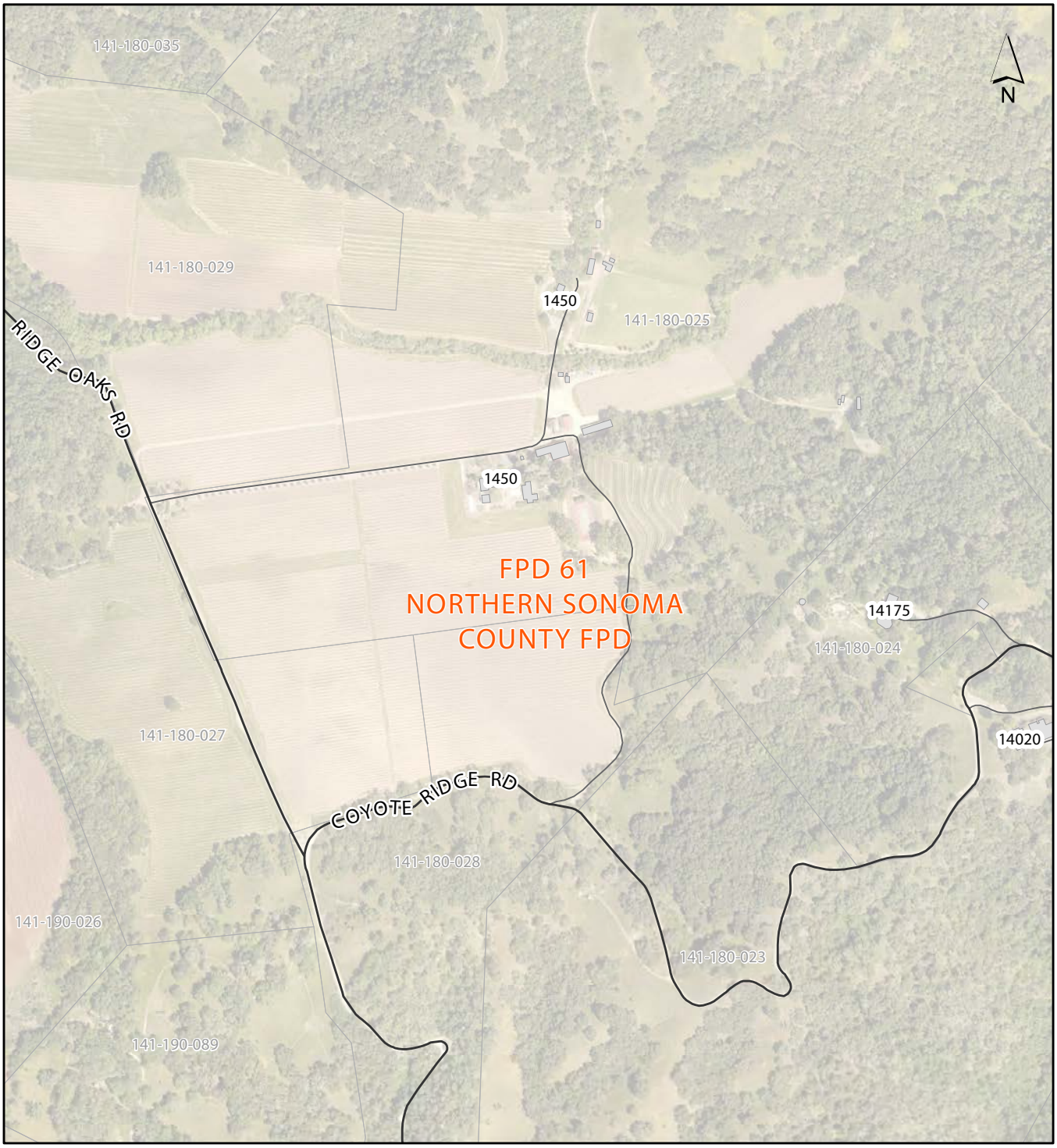

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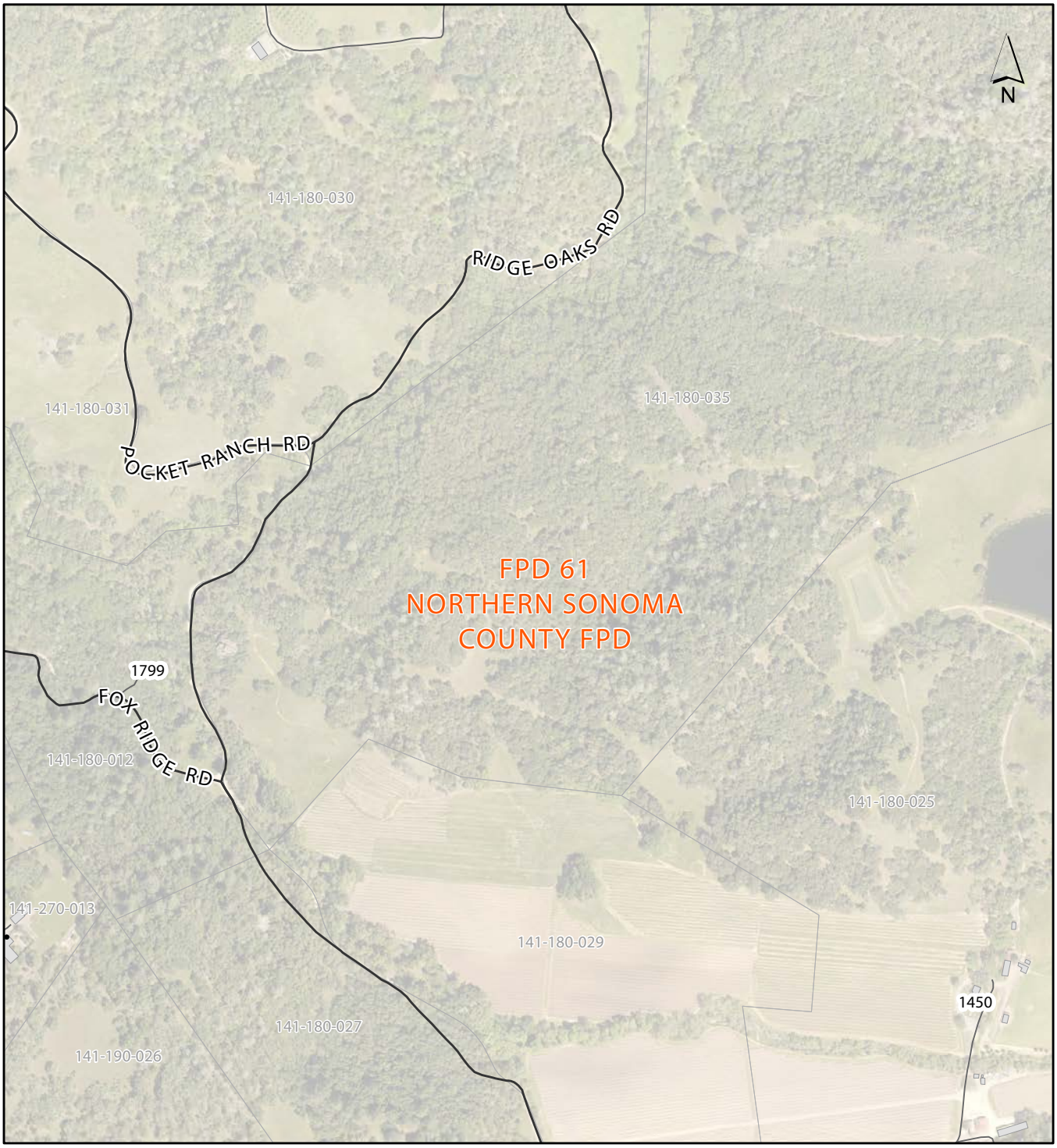

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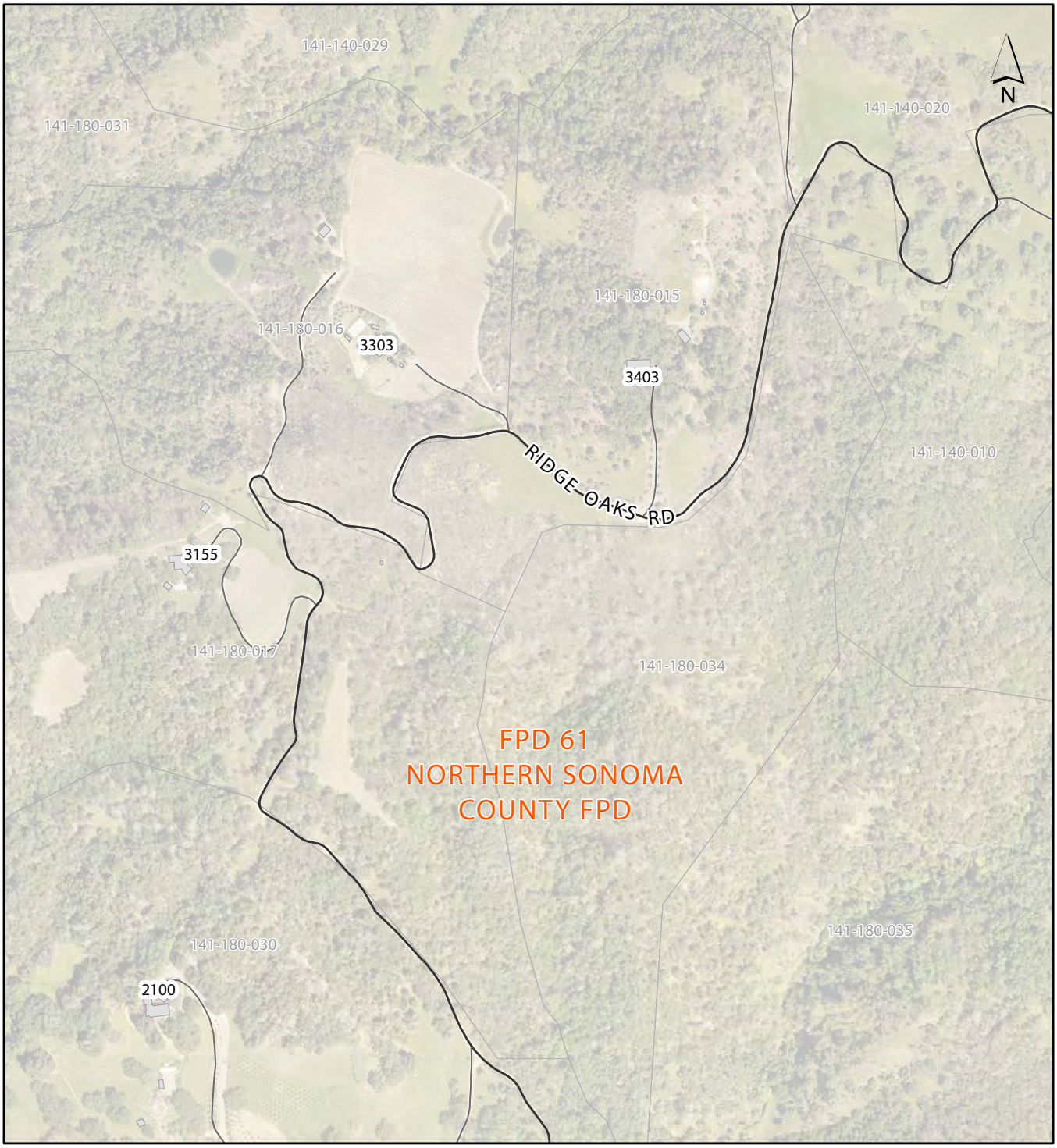

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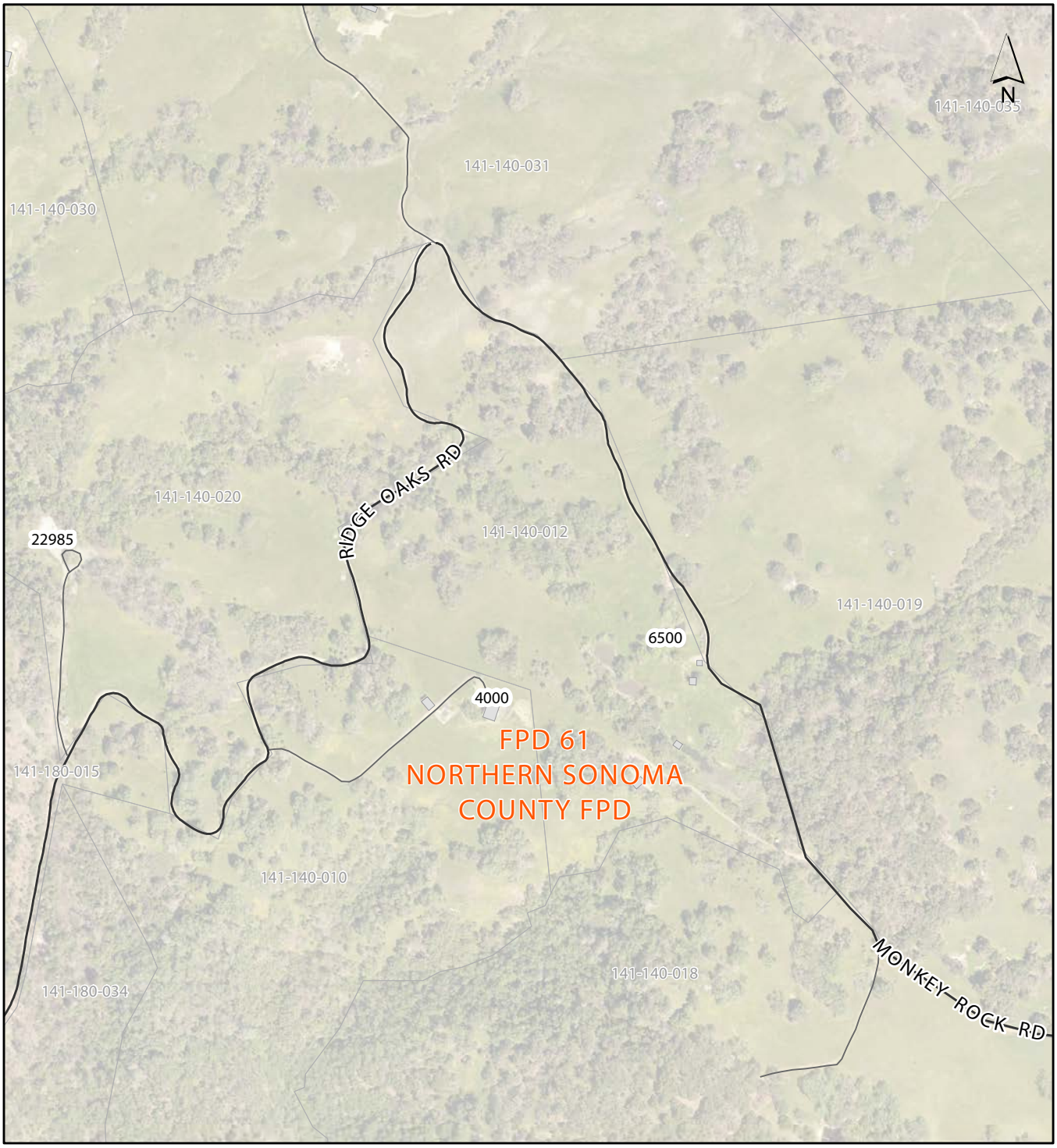

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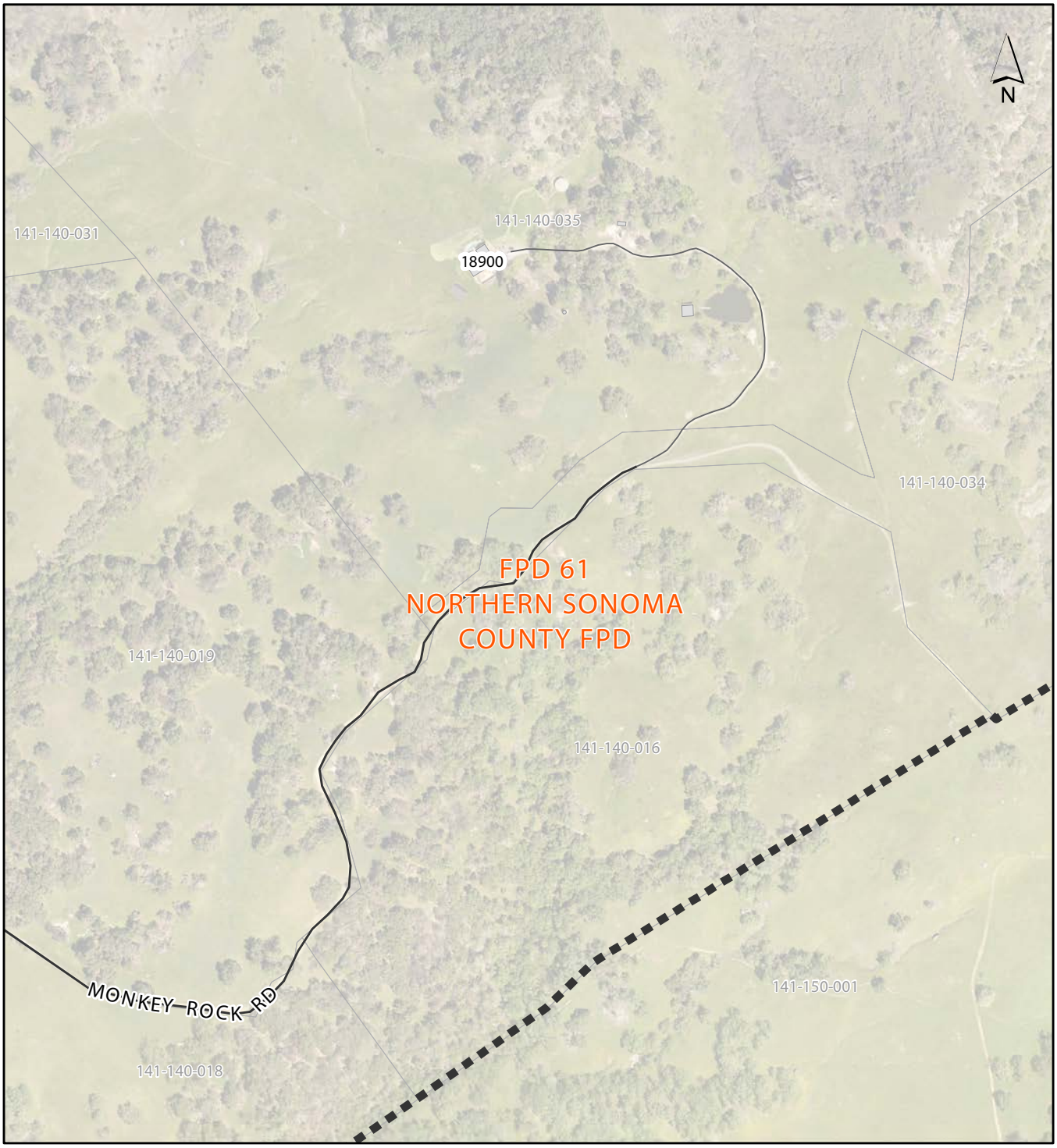

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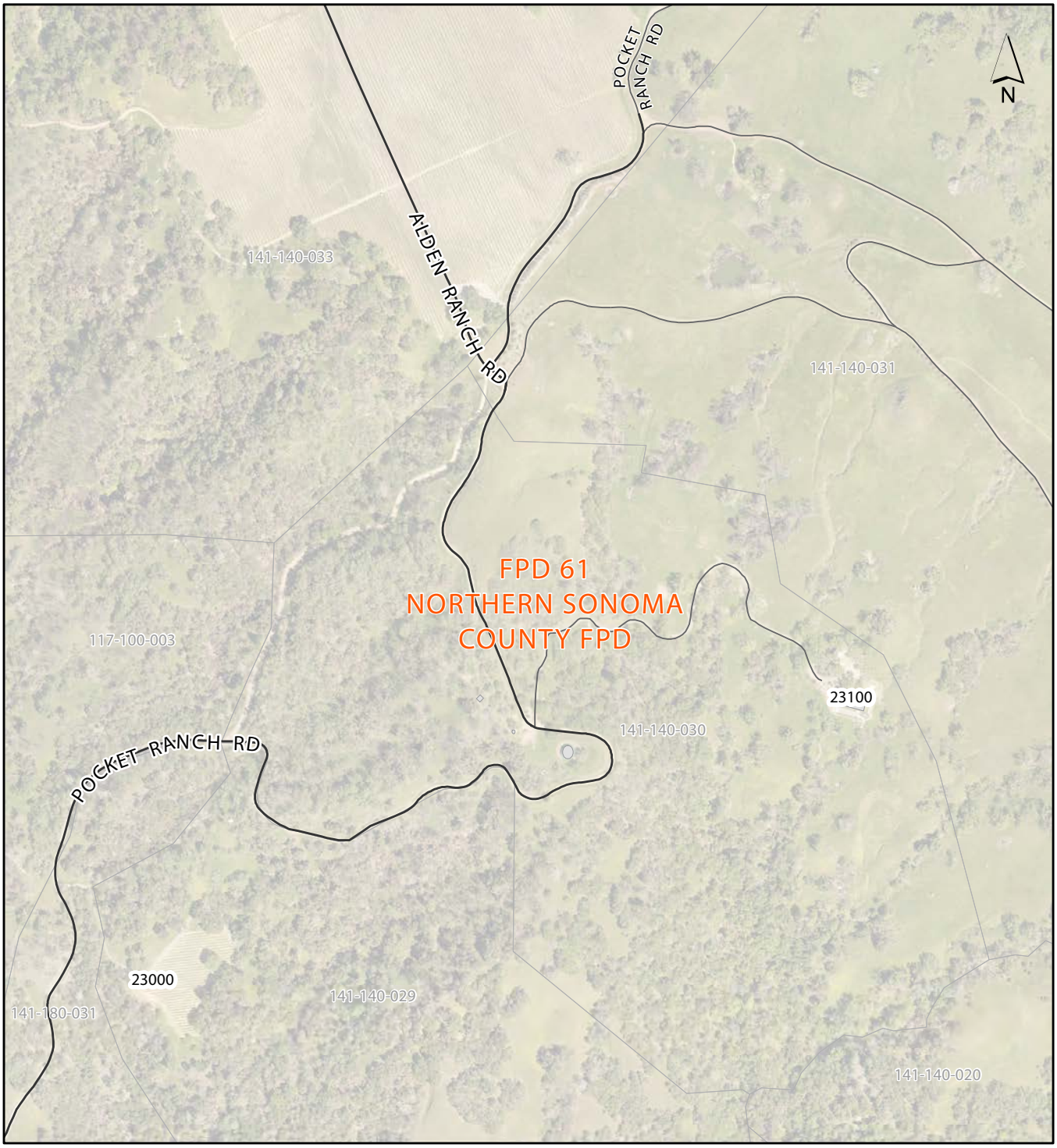
Aerial image basemap from Pictometry International and County of Sonoma CA 2018 Accuplus Project. CWPP boundary addresses, and roads provided by Marshall Turbeville (2020). Parcel and fire district data from Sonoma County online GIS database. Map created by digitalmappingsolutions.com on 3/16/2020.

North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Road Map Book Page 19 of 24



Legend

- Addresses (labeled)
- Major Roads
- Minor Roads & Driveways
- NE Geyserville CWPP Boundary (10,303 acres)
- Building Footprints
- Fire District Boundary
- Parcels

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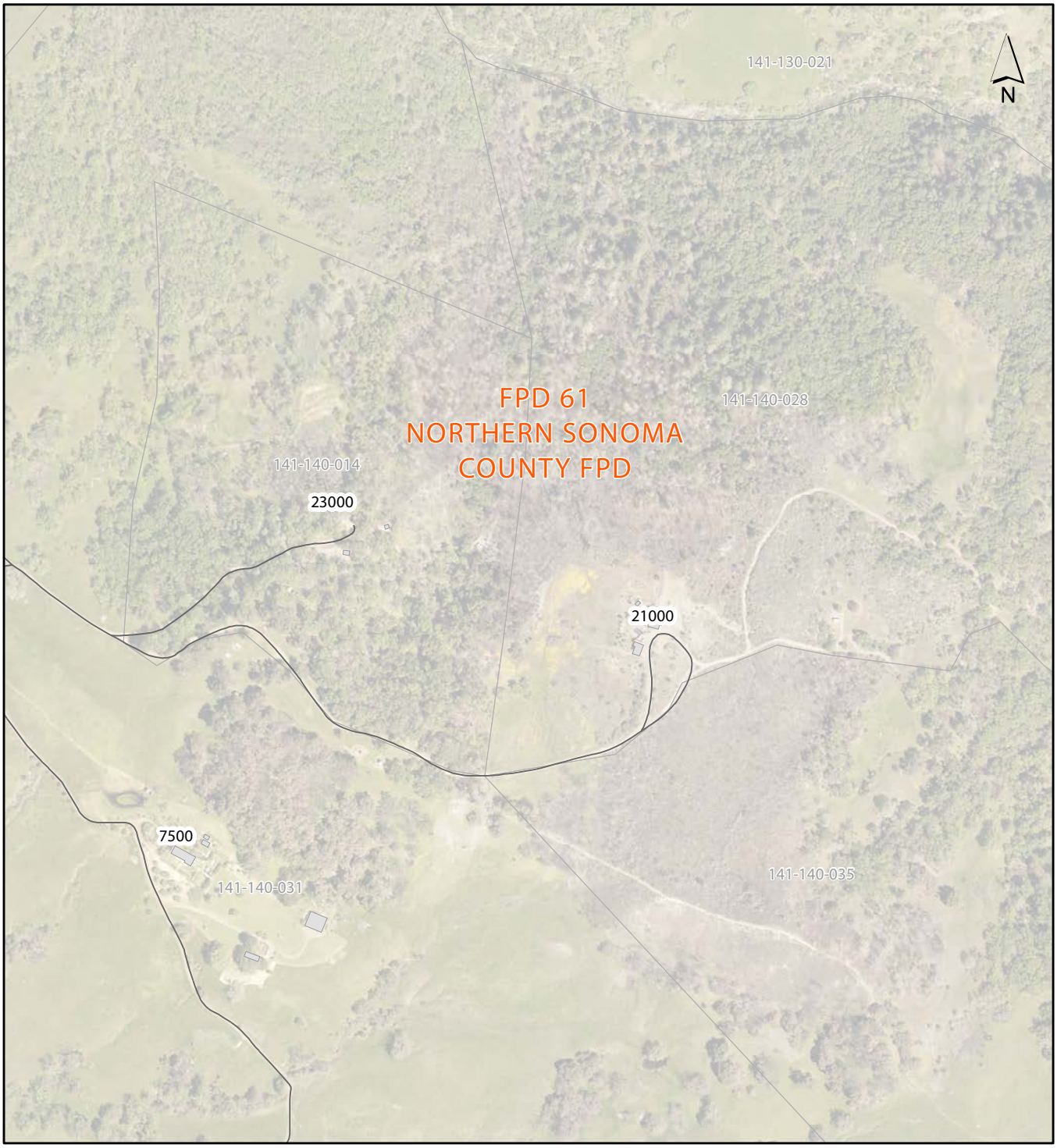
Feet

Aerial image basemap from Pictometry International and County of Sonoma CA 2018 Accuplus Project. CWPP boundary addresses, and roads provided by Marshall Turbeville (2020). Parcel and fire district data from Sonoma County online GIS database. Map created by digitalmappingsolutions.com on 3/16/2020.

North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Road Map Book Page 20 of 24



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North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

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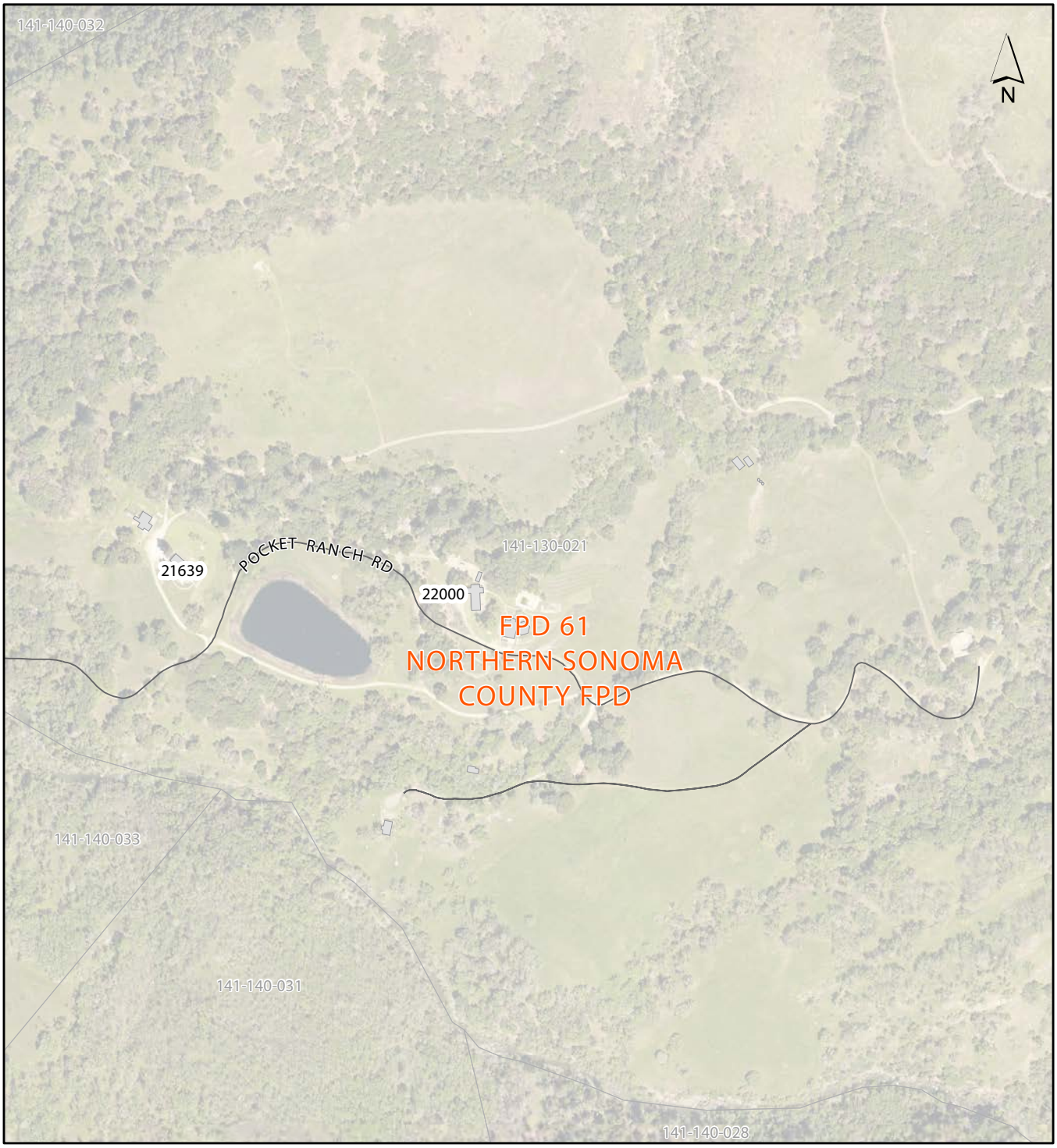
North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Road Map Book Page 22 of 24



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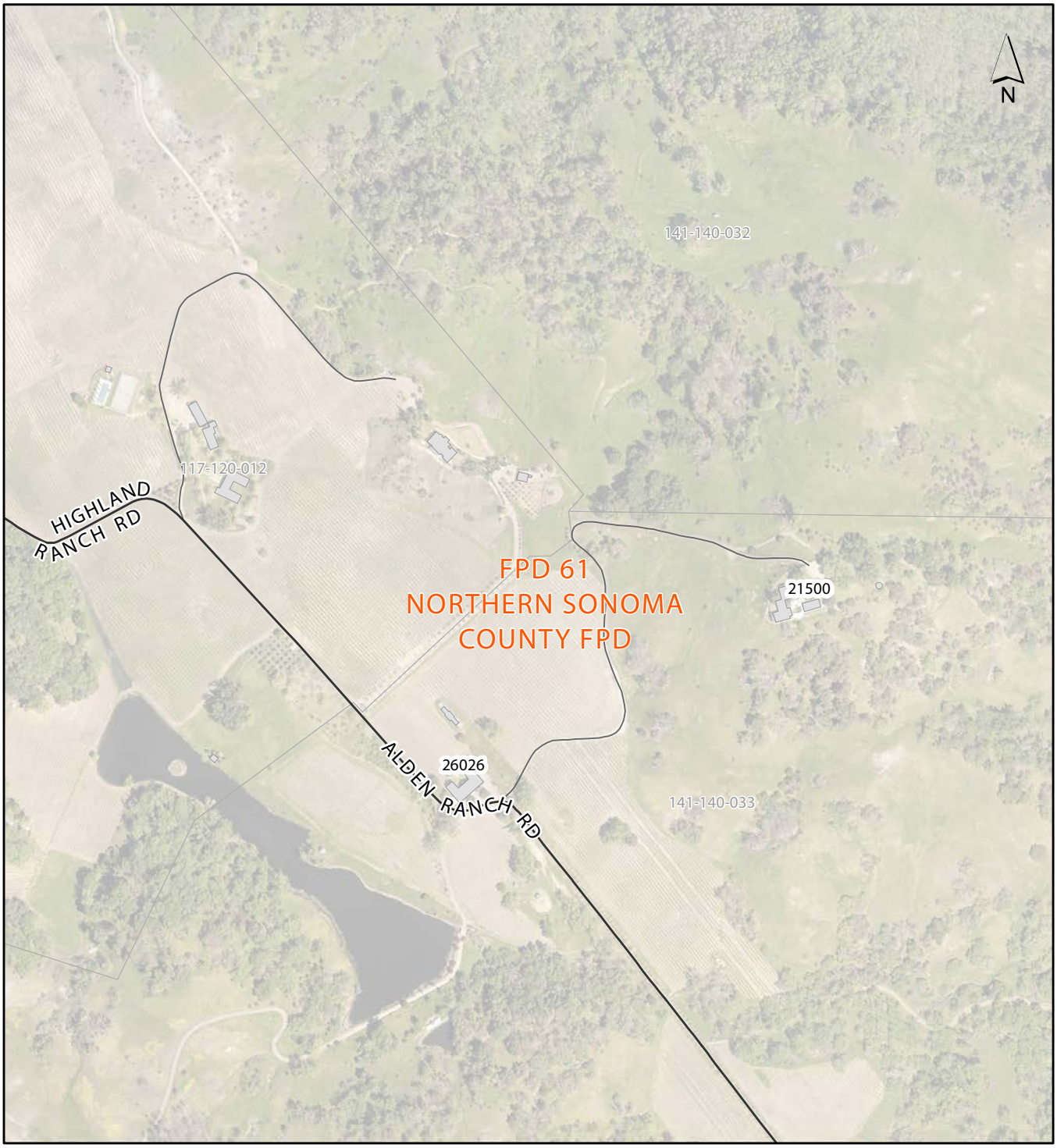
North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Road Map Book Page 23 of 24



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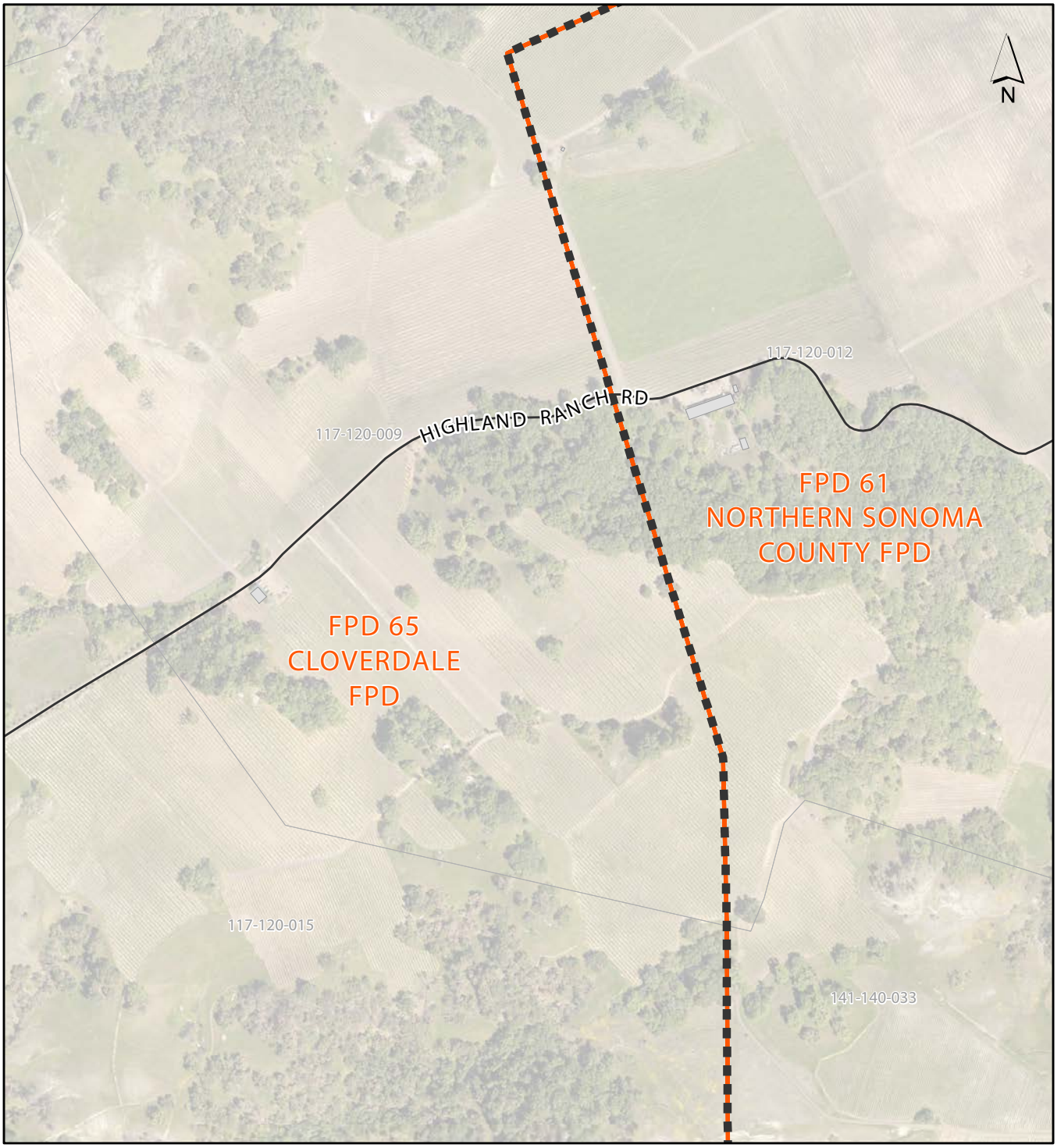
North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Road Map Book Page 24 of 24



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North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

USGS Topographic Map

Legend

- Landmark
- NE Geyserville CWPP Boundary (10,128 acres)

1:56,000

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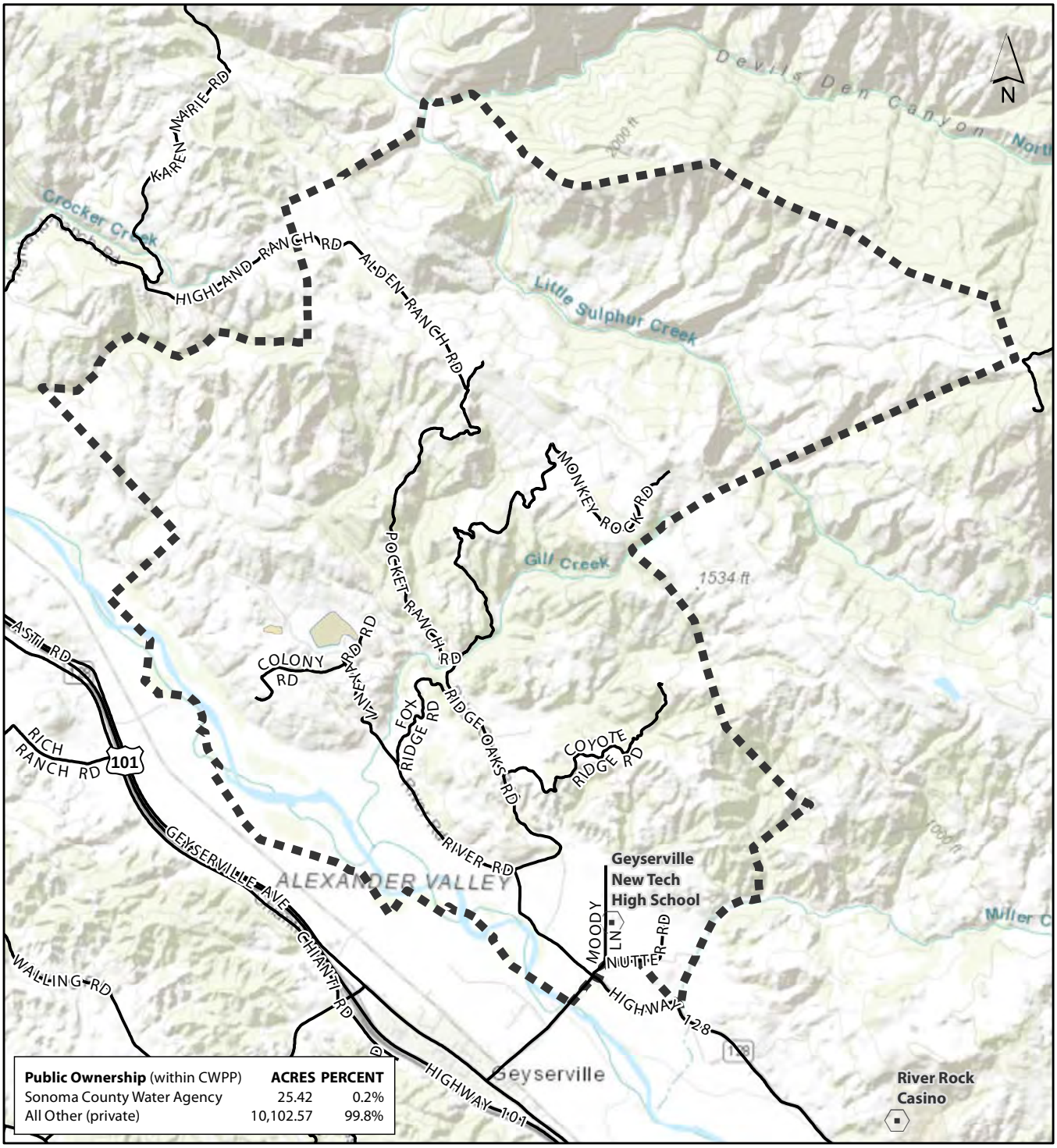
Miles

Topographic basemap from ESRI data service. CWPP boundary and landmarks provided by Marshall Turbeville (2020). Map created by digitalmappingsolutions.com on 3/16/2020.

North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Public Ownership Map



Public Ownership (within CWPP)	ACRES	PERCENT
Sonoma County Water Agency	25.42	0.2%
All Other (private)	10,102.57	99.8%

Legend

- Landmark
- Major Roads
- NE Geyserville CWPP Boundary (10,128 acres)

Public Ownership

- Sonoma County Water Agency (25.4 acres)

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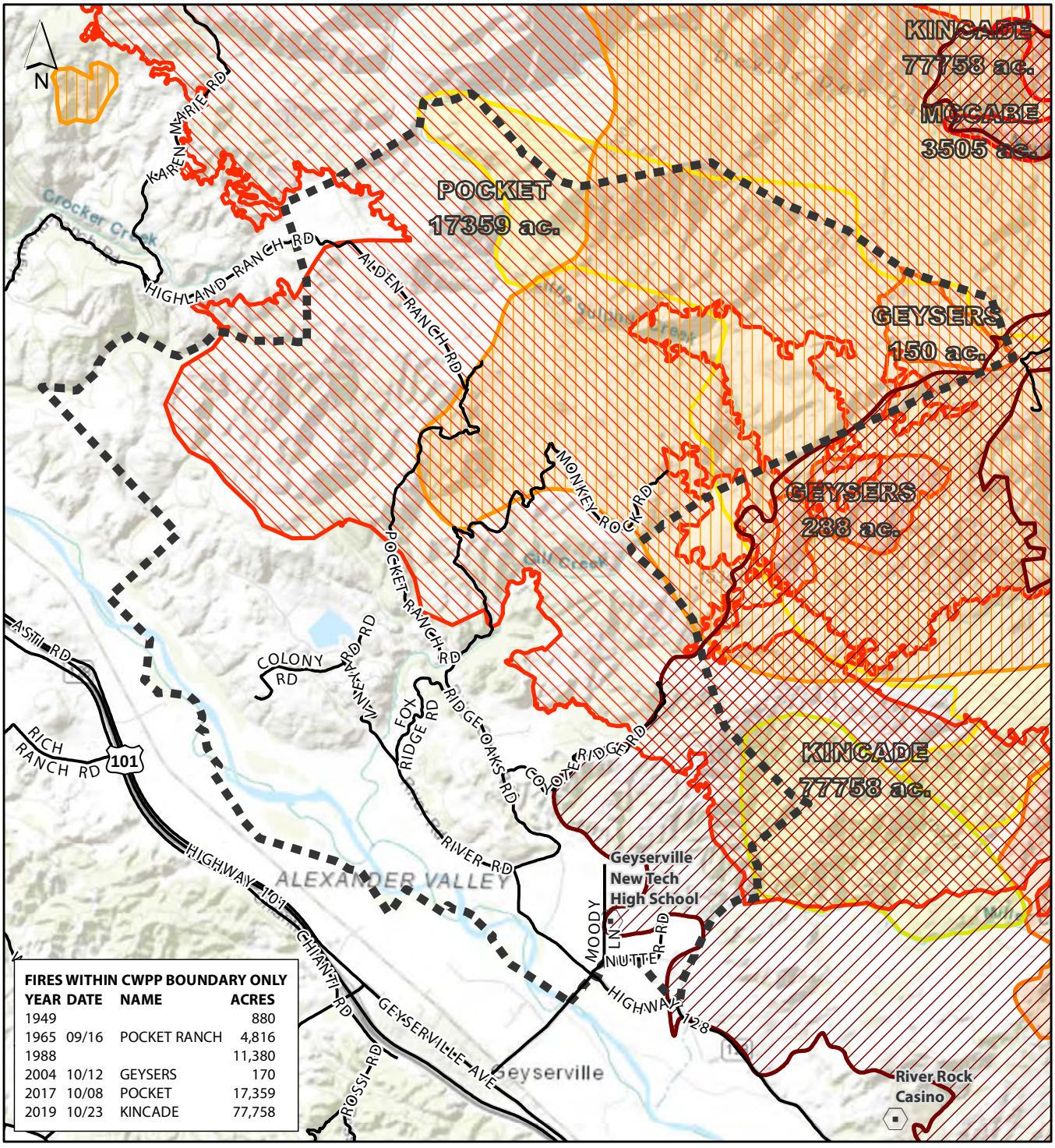
Miles

Topographic basemap from ESRI data service. CWPP boundary provided by Marshall Turbeville (2020). Fire District boundaries from Sonoma County GIS. Public ownership data from FRAP (2018). Map created by digitalmappingsolutions.com on 3/16/2020.

North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Fire History Map



FIRES WITHIN CWPP BOUNDARY ONLY

YEAR	DATE	NAME	ACRES
1949			880
1965	09/16	POCKET RANCH	4,816
1988			11,380
2004	10/12	GEYSERS	170
2017	10/08	POCKET	17,359
2019	10/23	KINCADE	77,758

Legend

NE Geyserville CWPP Boundary (10,128 acres)

Regional Fire History

1949 1965 1988 1999 2004 2008 2013 2017 2019

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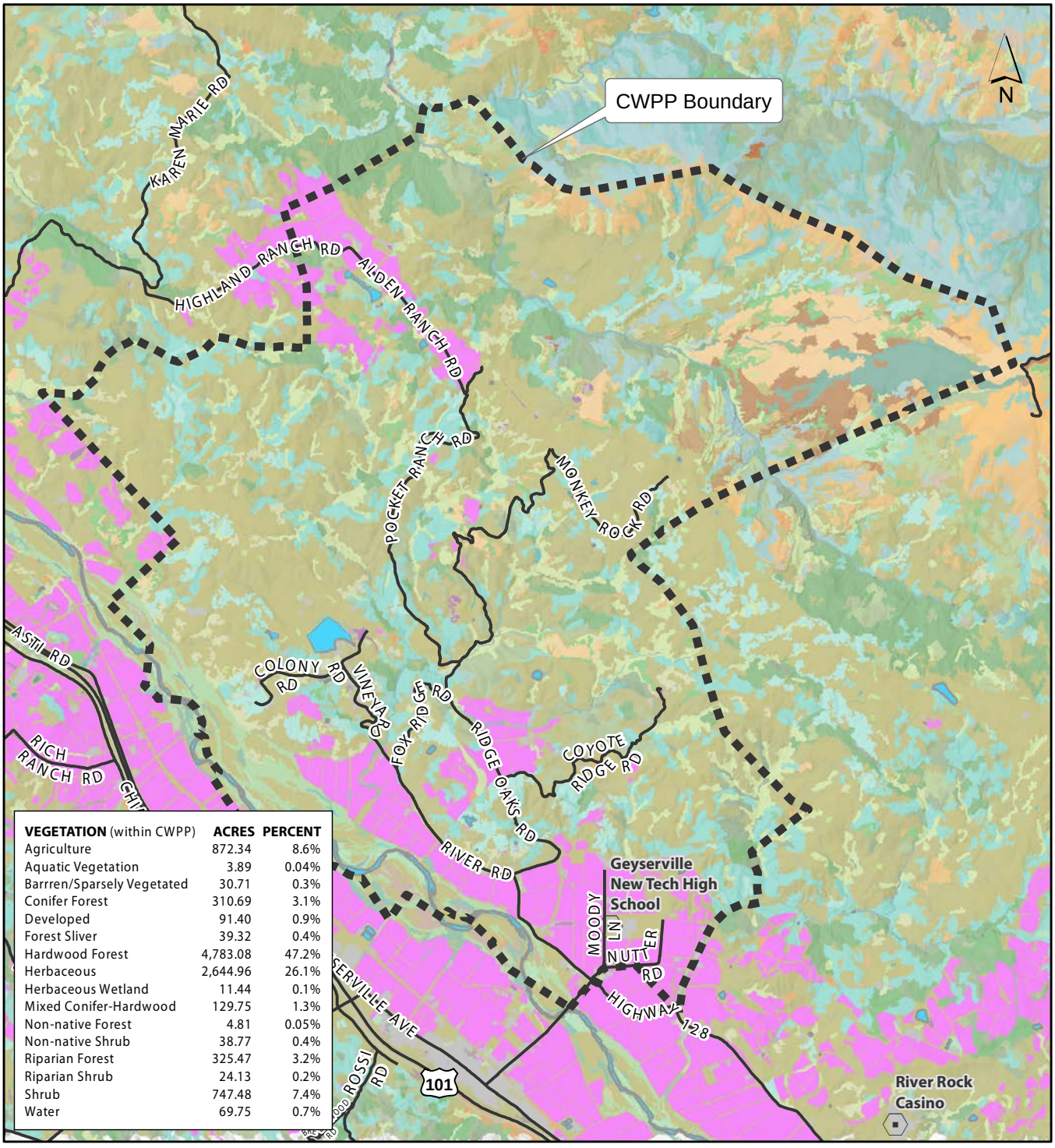
Miles

Topographic basemap from ESRI data service. CWPP boundary provided by Marshall Turbeville (2020). Fire history data from CAL FIRE FRAP fire perimeter layer (18.1) with the Kincade Fire of 2019 added. Map created by digitalmappingsolutions.com on 3/16/2020.

North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Vegetation Map



VEGETATION (within CWPP)	ACRES	PERCENT
Agriculture	872.34	8.6%
Aquatic Vegetation	3.89	0.04%
Barrren/Sparsely Vegetated	30.71	0.3%
Conifer Forest	310.69	3.1%
Developed	91.40	0.9%
Forest Sliver	39.32	0.4%
Hardwood Forest	4,783.08	47.2%
Herbaceous	2,644.96	26.1%
Herbaceous Wetland	11.44	0.1%
Mixed Conifer-Hardwood	129.75	1.3%
Non-native Forest	4.81	0.05%
Non-native Shrub	38.77	0.4%
Riparian Forest	325.47	3.2%
Riparian Shrub	24.13	0.2%
Shrub	747.48	7.4%
Water	69.75	0.7%

Legend

- Landmark
- NE Geyserville CWPP Boundary (10,128 acres)

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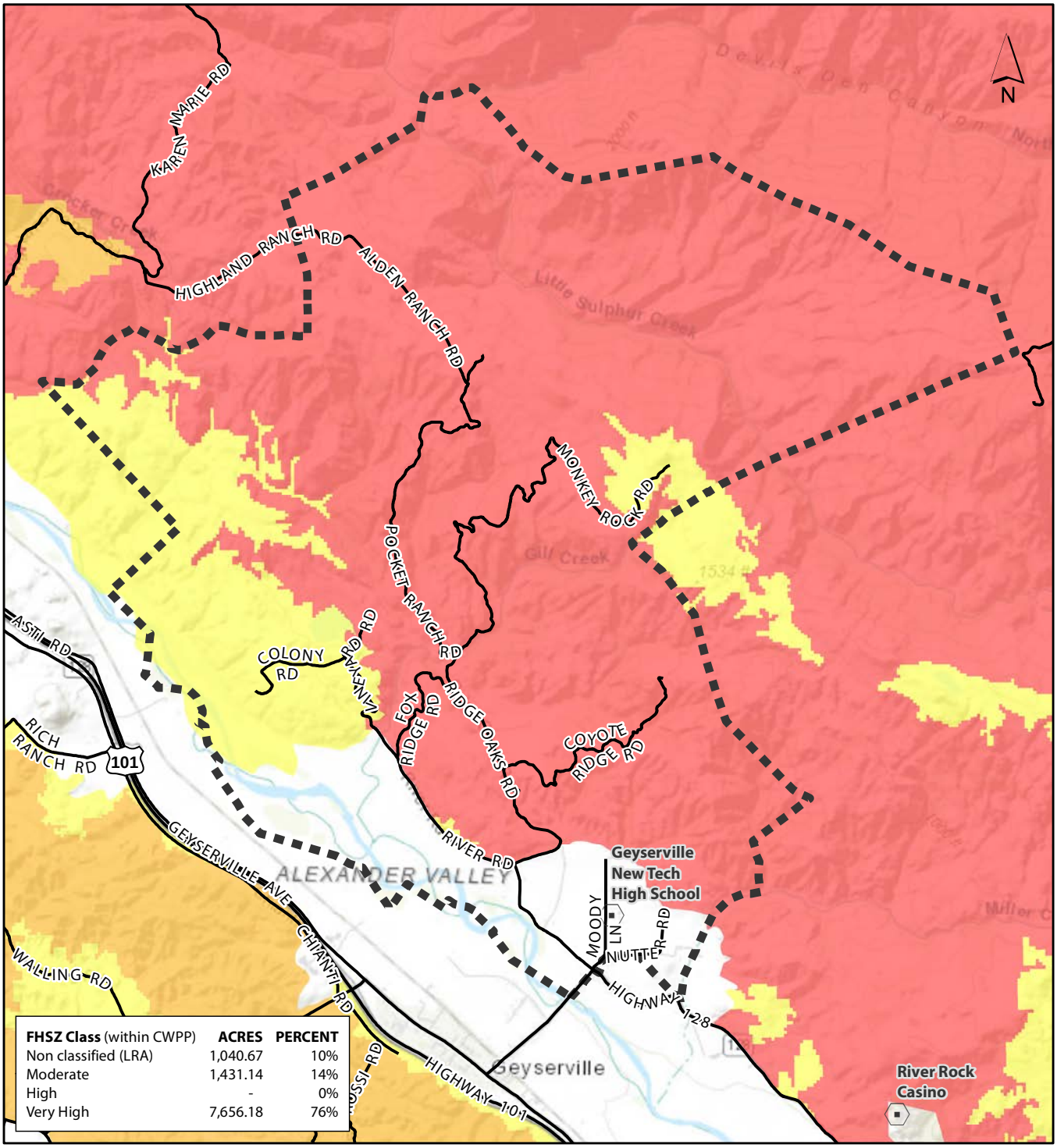
Miles

Vegetation data downloaded from Sonoma Veg Map website (funded by Sonoma County Argiculture and Open Space District), 2015 (version 5.1). CWPP boundary, landmarks and major roads provided by Marshall Turbeville (2020). Map created by digitalmappingsolutions.com on 3/16/2020.

North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

Fire Hazard Severity Zones Map



FHSZ Class (within CWPP)	ACRES	PERCENT
Non classified (LRA)	1,040.67	10%
Moderate	1,431.14	14%
High	-	0%
Very High	7,656.18	76%

Legend

- Landmark
- Major Roads
- NE Geyserville CWPP Boundary (10,128 acres)

FIRE HAZARD SEVERITY ZONES in SRA

- Moderate
- High
- Very High

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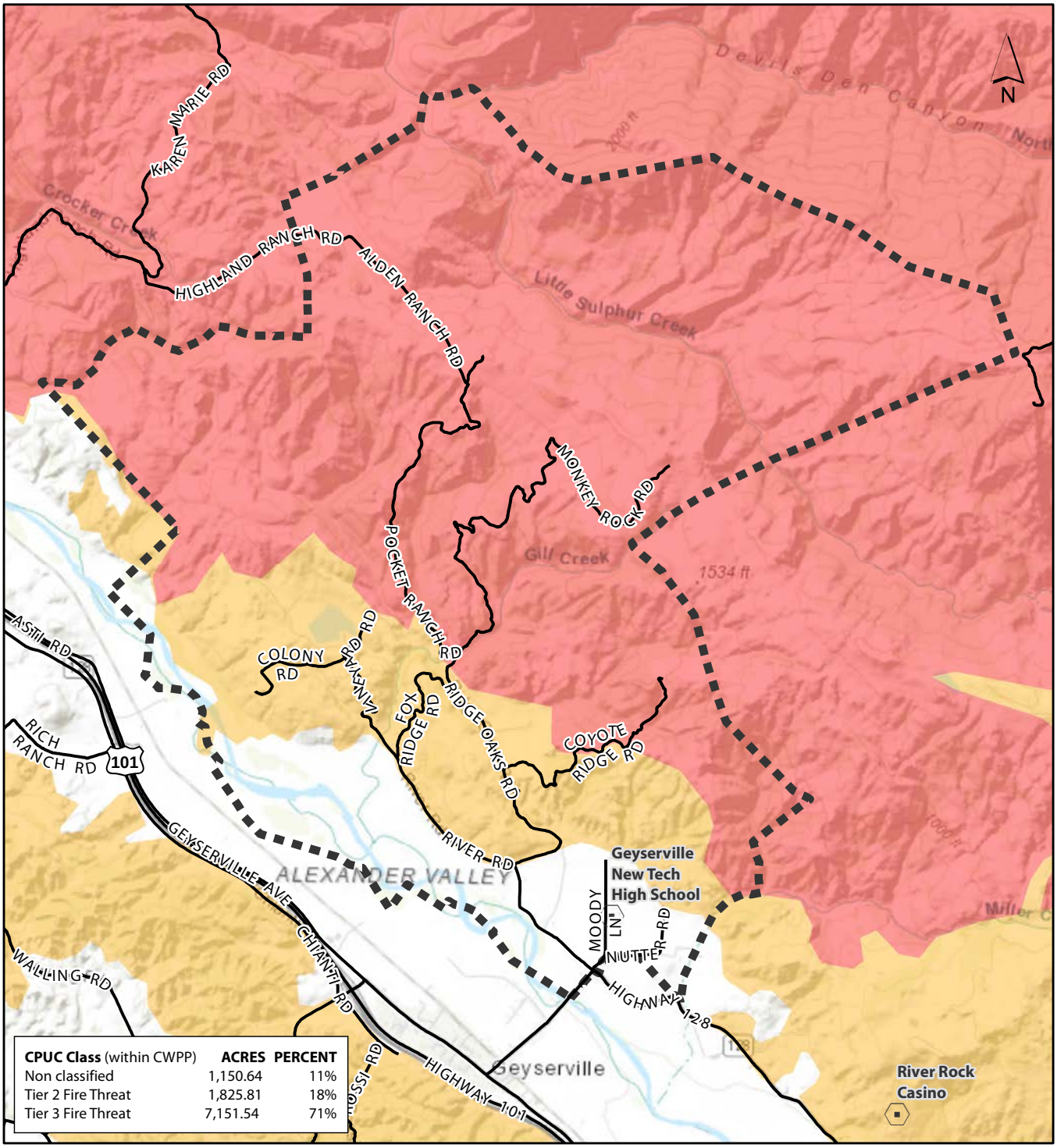
Miles

Topographic basemap from ESRI data service. CWPP boundary provided by Marshall Turbeville (2020). Fire Hazard Severity Zones from CAL FIRE FRAP database, 2007. Map created by digitalmappingsolutions.com on

North East Geyserville Community Wildfire Protection Plan

Northern Sonoma County Fire Protection District

CPUC Fire Threat Map



CPUC Class (within CWPP)	ACRES	PERCENT
Non classified	1,150.64	11%
Tier 2 Fire Threat	1,825.81	18%
Tier 3 Fire Threat	7,151.54	71%

Legend

- Landmark
- Major Roads
- NE Geyserville CWPP Boundary (10,128 acres)
- CPUC Fire Threat Tier 2 (elevated)
- CPUC Fire Threat Tier 3 (extreme)

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Miles

Topographic basemap from ESRI data service. CWPP boundary provided by Marshall Turbeville (2020). CPUC Fire Threat data from CPUC Fire Map online database accessed on 01/27/2020. Map created by digitalmappingsolutions.com on 3/16/2020.

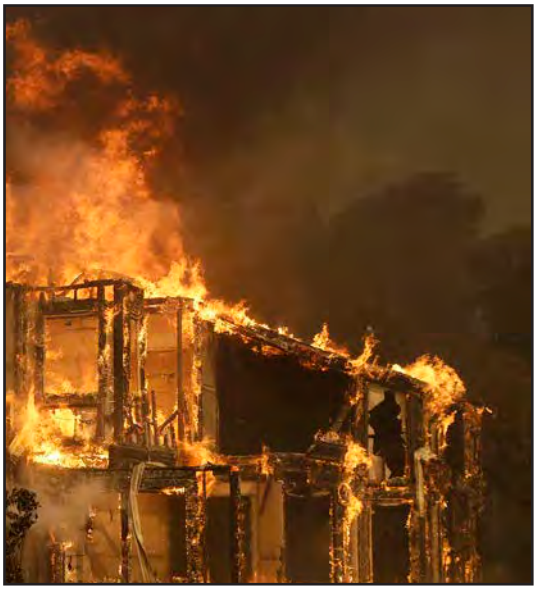
Creating Wildfire Adapted Homes and Landscapes

FireSAFE SONOMA

Creating Wildfire Adapted Homes and Landscapes

What Can Be Done to Reduce Structure Loss from Wildfire?

Since the 1960s, researchers and firefighters have analyzed the causes of home loss in wildland fires. Their work clearly has indicated that to effectively reduce home loss, **we must treat BOTH the VEGETATION** surrounding the buildings **and the BUILDINGS themselves**.



Embers and firebrands are a significant cause of home ignition.

Treating the Vegetation: Defensible Space

Defensible space is crucial for three reasons: to save lives of residents and firefighters, to keep fires that start in structures from escaping into the wildland, and to prevent home loss in a wildfire. Reducing vegetation helps protect structures by ensuring that intense radiant heat is far enough away from the sides of the building that the heat doesn't ignite the structure. Defensible space also ensures that flammable brush does not act as kindling allowing direct transmission of flames to the structure. ***"Defensible space" does not mean "moonscape."*** A good defensible space is likely to have trees, but low branches and brush has been modified to remove the "ladder fuels" that increase fire behavior. Your defensible space landscape should be even more beautiful and wildlife friendly than before treatment. But there is much more to the picture than vegetation.

Treating the Structure: Protecting Homes through Better Design and Materials

Additionally, we must construct buildings that can withstand the multiple threats of wildfire without igniting. Reducing the question of structural ignition to its simplest possible terms, we can say that a house won't burn in a wildfire if it doesn't ignite in the first place. The major ignition threat is firebrands—burning embers that can be carried for miles on the wind to fall on or near the house. This threat is addressed by treating the house so that even if firebrands fall on it, it is much less likely to ignite. Homes can be constructed or modified to greatly increase their chances of surviving a wildfire with minimal damage.

Please use this document as a starting place to learn how to make your home and surroundings more wildfire compatible. There's a lot you can do to protect both your home and surrounding wildlands!

Protecting Your Home from Wildfire: Two Crucial Elements

Modifying **both** surrounding **vegetation** and **buildings and outbuildings** will tremendously improve the odds that your home can survive a wildfire, as well as provide an additional margin of safety for you, your family, and any firefighters who may actively defend your property.

Though firefighters will do all they can to defend homes, all residents in California's Wildland-Urban Interface (WUI) areas should be aware that, in the event of a large catastrophic fire, there simply are not enough fire engines and crews to protect all threatened homes. This observation is not meant to dishearten WUI residents or to imply that California firefighting agencies are not capable of carrying out their crucial role. However, clearly it is...

BAD ODDS: To assume that the firefighters will be on scene to defend your property.

GOOD ODDS: To take actions far in advance of a wildfire that will prepare you and your property to safely survive a wildfire event, even if firefighters can't make it to your home.

What actions can you take to better your chances to WIN in a wildfire?

Modify **Structures** so that burning embers and blowing around during wildland fires cannot easily cause ignition.

AND

Modify **Vegetation** within 100 feet of buildings and outbuildings so that there is less fuel available to transmit heat and flames and cause ignition.

We realize that for some Sonoma County homes, nearby fuels conditions are such that improving your odds may seem impossible. We often encounter those who think: "This home is a goner anyway, why should I do anything?" Here are just a few of the reasons that every resident of wildland areas should do everything they can to prepare for wildfire:

- Even small modifications to home can make a big difference in home survival.
- In the event that you are trapped by a wildland fire and cannot safely evacuate, a well-prepared home could save your life.
- A minimum 100' of defensible space is required by law.
- During a wildland fire, firefighters perform "triage" to determine which homes can be effectively and safely defended. Homes with surrounding vegetation that presents a danger to firefighters will likely be passed up in favor of homes that have been improved. Support your firefighters by providing a safe and defensible space.
- A well-treated wildland is a healthy wildland. Fuels treatment projects should improve overall health of surrounding vegetation, provide better habitat for wildland creatures, and be even more beautiful.

First we'll address structure improvements. Then we'll look at vegetation and defensible space.

Protecting Your Home from Wildfire: Buildings

Ongoing research on home loss in wildland fires shows that two out of three houses destroyed were ignited by wind-dispersed embers and not the actual flames of the wildfire.[1] As you look at the structures on your property, keep a vision in your mind of a blizzard, but rather than snow, burning bits of debris are flying around. Some embers are the size of a grain of sand, some the size of a dinner plate or larger. Ask yourself, "If a burning hunk of charcoal landed here, would it ignite? Can embers blow into that vent? Would this hole in the siding allow embers to accumulate or blow into the house walls? "

Luckily, there are many actions you can take to protect your home from embers and wildfire. While it is effectively impossible to make a structure "fire proof," there is a lot you can do to make it much more wildfire safe. This section provides merely a brief introduction. Use it to launch your own investigations.

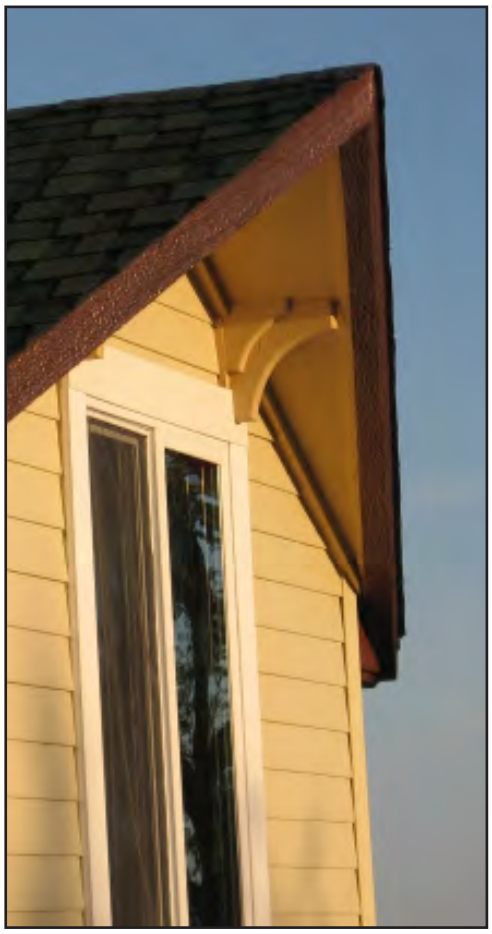
This section has been adapted from the work of fire researcher Dr. Steve Quarles. We sincerely thank him for his support. His research has been pivotal in increasing understanding of wildland structure ignition and how homeowners might prevent it.

Ember blizzard.

Six Priorities to Protect Homes

Quarles has identified six priority areas for making changes to existing homes in fire hazard zones. The priorities correlate to where and how your house is most vulnerable. As you go through the list, we suggest you prioritize it yourself by what you can do most immediately. For instance, if you need to replace your roof (Priority One), but just can't take on that project right now, take on something else on the list that you can do as soon as possible. Some of the items listed in Priorities Two and Three, for example, can be done easily at little or no cost, and are also very important. However, if you have an untreated wood shake roof and don't replace it, almost anything else you do will be for for not.

1 Quarles, Steve, et.al. "Home Survival in Wildfire-Prone Areas: Building Materials and Design Considerations." UC ANR Publication 8393, May 2010. http://ucanr.org/freepubs/docs/8393.pdf, p.1.



Existing homes can and should be made fire resistant too.

Approved building products for the WUI are listed by the Office of the State Fire Marshal on their web site at *http://osfm.fire.ca.gov/licensing-listings/licenselisting_bml_search-cotest.php*

In 2008, California Building Codes were revised to require that new construction in Wildland Urban Interface (WUI) areas have increased wildfire safety measures.

The WUI code addresses the elements of construction most vulnerable to wildland fire and ensures that homes constructed in California after 2008 will have safety features built in. However, the new WUI building code doesn't address homes constructed before 2008. Unless you are undertaking a large remodeling project, there is no legal requirement to upgrade to the new building code's provisions. Voluntary upgrading to meet some of the requirements, however, will increase the likelihood that your home can survive.

While some structural improvements might be rather expensive, there is a lot that homeowners can do for minimal expense. Creating and maintaining a "Non-Combustible" zone five feet from house walls is critical. Making covers for eave, gable or foundation vents is cheap and may be more beneficial than much more expensive projects. Taking a close look at your home and making a prioritized list of the projects that you can realistically take on could reduce the vulnerability of your home and property.

Dr. Steve Quarles of the **Insurance Institute for Business and Home Safety (IBHS)**, is the leading expert in wildland home ignition. The publications on the IBHS webiste are an excellent resource. A wide variety of important publications including a Homeowners Checklist, can be found at *www.disastersafety.org/wildfire*

PRIORITY ONE: Roofs

The roof of your home is exposed to sun, rain, wind, and potentially wildfire-generated embers. If your roof in poor shape or is untreated wood shingle, it will increase risk of home loss more than any other single component, and would be your highest priority.

Performance of a roof in a wildfire will depend on a number of factors, including:

- **Material classification:** A Class A fire rating simply means that the material will withstand exposure to burning materials for one hour without burning through. There are two ways to think about the Class A fire rating:

  Covering alone ("stand alone Class A"): For example, Asphalt Comp ("three-tab" shingles) have a "stand alone" Class A rating: it doesn't matter what kind of materials (sheathing and underlayment) are used under the roofing material.

  By covering and underlying materials ("assembly rated Class A"). For example, aluminum roofing materials must have a specific underlayment to achieve the Class A rating.

It can be difficult to tell if you have a Class A roof. If you are not sure, schedule an inspection with a professional roofer to find out. When you replace, replace with Class A fire rated materials.

Though it may have originally had a Class A rating, this old, weathered asphalt composition shingle roof would no longer provide adequate protection against embers and heat.

Condition (age): A Class A roof is only Class A for the time specified for that particular roofing material. Age and UV exposure degenerate some materials, reducing resistance to fire. Maintenance is crucial throughout the life of your roof: make sure you repair any wind damage, and replace the roof before it reaches the end of its service life.

Roof Shape: Home designs that have roof-to-vertical-wall intersections (e.g., at a dormer or chimney chase) can allow debris and embers to accumulate where they have the potential to ignite vulnerable vertical walls, bypassing the the protection provided by a fire-rated roof. If your house has a complex roof, be vigilant about keeping it clean, and consider replacing combustible siding located on vertial roof to roof-to-wall locations.

Keeping the roof clear of debris is crucial during fire season. Don't let needles and leaves pile

up on the roof or in gutters. Even if your roof has a Class A fire rating to withstand burning materials without penetration into the building, flaming debris exploits any vulnerabilities on the roof and exposed exterior walls, and can roll off the roof to ignite materials on the ground.

Roof Edge:

In open eave construction, the edge of the roof, and the places where the roof meets other materials such as dormers, are the most vulnerable. There are two primary ways that the edge of the roof is exposed:

1. While the top of the roof is covered with (hopefully) fire-rated roof covering, the very outer edge and underside of the roof decking is often uncovered, with the plywood underlayment exposed. This edge is vulnerable to flaming debris in the gutter. Angle flashing should be used to cover the outer edge of the plywood decking.

If you have open rafter/eave construction, inspect the blocking. Caulk around the joints and seal any gaps. In future years inspect the blocking caulk at the beginning of every fire season and replace as needed.

Debris buildup in gutters can allow flames to enter the structure between the wall and the roof, and expose the roof edge. Always keep the gutters and the roof clear of debris during fire season! Investigate products that can keep gutters from filling up with leaves.

Debris on the outside can lead to flames on the inside!

2. Large openings at the roof edge, such as those formed by barrel tile roofing, provide spaces where combustibles can accumulate. For example, these openings make the perfect place for birds to build nests. Needless to say, dry bird's nests are extremely combustible. Easily ignited by embers from a nearby wildfire, they can expose the roofing felt and sheathing beneath the roofing material to sufficient heat and flames to burn through and penetrate into the home's attic space. Tile roofs with "bird stops" at the edge should be inspected annually to make sure the stops are still in place.

Upgrading to a Class A roof should be the first priority for anyone with a wood shake or old, deteriorated roof covering. However, because the roof and siding are dominant features on houses, many homeowners get a false sense of security when they install Class A roofs and siding. Each year, many of the homes are lost in wildfires that had Class A roofing and non-combustible siding. This clearly illustrates that some less obvious fire-protection elements are also quite important.

Foundation vent

Through-roof vent

Gable end vent

PRIORITY TWO: Vents

This vent uses fine screen and intumescent paint to prevent both ember and flame intrusion. See the State Fire Marshal Buildings Materials Listings for information about WUI building products (web link p.16).

The second item on Quarles' priority list is vents. Unless a code-approved non-vented crawl space or attic design is used, vents for crawl spaces under homes or for attics are required by building codes to control moisture, which can lead to mold growth and decay in building materials. Yet vents that allow for sufficient air circulation also provide an easy entry point for burning embers and flames. During a wildland fire, embers, which can be smaller than a grain of rice, can blow in through vents and accumulate to ignite debris or stored items, and subsequently the house itself, setting the home ablaze from within.

What kind of venting do you have, and does it expose your home to ember ignition?

California building code generally requires that vents be covered with 1/8-inch mesh, which should be sufficient to allow air movement that will prevent moisture problems. Unfortunately, there is some evidence that even 1/8-inch mesh is wide enough to allow for intrusion of embers (See Quarles, *Home Survival in Wildfire Prone Areas*). The importance of vents in wildfire resistance has led to the development of vents designed to limit ember intrusion while still allowing sufficient air flow for ventilation. Some have been accepted for use by the Office of the State Fire Marshal for use in wildfire prone areas. See *http://osfm.fire.ca.gov/licensinglistings/licenselisting_bml_searchcotest*, select 8165--"Vents for WUI" and search to see approved products.

Vents: What you should do:

- Replace with WUI approved vents if possible.
- Check existing vents frequently to make sure screens are intact and clear from debris buildup.
- It is possible to make vent covers out of a non-combustible solid material such as fiber cement, or plywood and a thin metal plate. The covers can be quickly installed over vents if a wildfire threatens. Assemble all you'll attach the vent cover, and have everything you need ready and in one place. Number vent covers and vents so you can very quickly get the right cover on the right vent. You could even use duct or metal tape as a last-minute effort.

PRIORITY THREE: The critical five-foot noncombustible zone and Defensible Space

Though it charred the siding, luckily, the broom didn't fully ignite this building.

Defensible space is the area between an oncoming wildland fire and a building where the vegetation has been modified to reduce the intensity of an oncoming wildfire. Defensible Space is usually thought of in zones radiating from the house walls. Zone 1 goes from the house walls out to 30 feet. Zone 2 goes from 30 to 100 feet or the property line. Creating and maintaining defensible space in both Zone 1 and Zone 2 should be considered as very high priority projects for home survival. **You can read more about defensible space Zones 1 and 2 later in the document.**

Research about home loss from wildland fires increasingly shows that having a noncombustible zone from the exterior house walls out to 5 feet is extremely important to reduce home ignitions. Though not currently a "Defensible Space" requirement in California, the 0 to 5 foot noncombustible zone is recommended by several of the most influential outreach and education groups, including the IBHS, Nevada's Living with Fire Program, and NFPA's Firewise Program. The closer combustible items and vegetation are to buildings, the more likely they are to contribute to home ignition.

As you create your defensible space, it is very highly recommended to start at the house and work outwards to 100 feet. First, work on creating your noncombustible zone 0–5 feet from house walls. Then tackle vegetation in the 30 foot "Lean Clean and Green" zone. Then work on to fuels reduction in Zone 2, from 30–100 feet or the property line.

Throughout fire season, identify and re-move any items near structures that may catch fire from embers, radiant heat, or direct flame contact.Surprisingly often, it's the little things around the house that ignite to spread flames to the building. Most of us have lots of the "Stuff of Daily Life" around our homes, which we don't think of as wild-fire risks.

It is not unusual for firefighters to successfully defend a home during the initial impact of a wildfire, only to return hours or even days later to find that the house has burned down. This is usually because small fires started after the worst part of the fire front had passed, and slowly grew to sufficient size to ignite the buildings. Recoginzing and eleminating the "little things" that cause these fires to ignite are critical for your overall wildfire prevention plan.

Create non-combustible space between the wood fence and the house walls with metal gates, and similar material. This fence would have burned to the house walls had firefighters not arrived to extinguish the fire.

The 0--5 foot noncombustible zone

Wood trellis

The objective of this zone is to reduce the chance that an ignition will occur neaer the home, and result in flames directly contacting the building. The noncombustible zone includes everything from building walls out five feet, including the areas under decks or other building attachments (such as stairs).

First, do a slow walk around your structures to look critically for anything that might ignite and spread flames to the structure. Look critically at both vegetation and stuff. Think of things like wood piles, wooden planter boxes, combustible decorative items, natural-fiber door mats, brooms, etc.

If you can reasonably move it away from where it will expose the house to direct flame contact, or replace it with a noncombustible alternative, do so. Ask yourself: Would this ignite if a burning chunk of charcoal dropped on it? If so, replace it with a non-combustible material or move it far enough away so that if it ignites, it won't spread fire to your structures. There may be risky items that have to stay near structures because that is where we use them, such as patio furniture. If that is the case, make a list of things that you will relocate to inside a building or away from the structure if a wildfire threatens to come near or during red-flag warning weather conditions. Making a list helps you think clearly and move fast when you must.

In the 0--5 foot noncombustible zone

- **Install hard surfaces** such as concrete walkways, or use non-combustible mulch products, such as rock. Bare mineral soil is an option if erosion is not an issue. Do not use wood or combustible mulches in this area.
- **Vegetation:** Use only highly fire resistant plants in this area, such as irrigated lawn or low-growing non-woody plants. Shrubs and trees, particurarly conifers, are not recommended. Maintain all plants free of dead and dying material throughout the fire season. Plants adjacent to combustible siding and foundation vents, under or next to windows, or under soffit vents or inside corners, present the greatest risks.
- **Firewood and wood piles:** One cord of wood will produce 20-million BTUs, the equivalent of 160 gallons of gas. Move firewood piles 30' away from buildings during fire season.
- **Wood fences** can act like a wick to bring the wildfire straight up to your home. Ideally, wooden fences should be located no closer than 10' from structures. If you have a wood fence that attaches to the house, break the continuity with a noncombustible element next to the house.
- **Needle litter, leaf debris and mulch:** Make sure that combustible materials don't pile up in the 5 foot non combustible zone or on the building--roofs, decks, stairs, etc.
- **Wood trellises** are commonly installed beneath decks to hide all of the stuff that accumulates underneath (a major no-no), or to support potentially combustible vegetation against house walls. Consider a trellis made of a noncombustible material. If the trellis is primarily used as under-deck screening, make sure to remove any combustible items under the deck! The trellis will not prevent embers from blowing onto flammable items. If the trellis is used to support a plant, make sure that the plant is a low combustible species, well main-tained and irrigated, and, or better yet, remove it.

Other Important considerations near the home:

- **Garages:** Older garage doors typically have large gaps along the perimeter that embers can blow through. Typically, combustibles are stored in the garage, so it is important to make sure that gap is well sealed. **Safety note:** If you have an electric garage door, make sure you know how to open it if the power goes out. Practice opening it with your car parked in the garage as it normally would be. Consider purchasing a garage door opener with a battery back up. Not being able to open the garage door during a fire is a serious life safety concern.
- **Windows and Screens:** Look around your home to find any place that embers may enter. If you leave the house with the windows open in the summer time, make sure your screens have no gaps. According to an Australian study, bronze screening is best at stopping embers. However, screening will not stop penetration of flames or radiant heat if windows are open, exposing vulnerable interior items such as curtains.
- **Pet doors** can blow open to let embers in. If you have to evacuate, make sure to block them closed before you leave.

PRIORITY FOUR: Windows

The next priority should be windows. Glass can break when exposed to radiant heat or flames; a broken window provides an entry point for flames and embers. Consequently, having windows that can withstand the brief but intense blast of heat from a wildfire is very important. In dual pane windows, the outer pane protects the inner pane; the inner pane heats up more slowly and uniformly, and therefore may not break even though the outer pane does. Tempered glass is much stronger than annealed glass and fails at a higher temperature, so it provides more protection. The 2008 revision of the California Building Code for new construction in the WUI requires dual pane windows with at least one tempered glass pane.

Reseach has shown that by far the most important factor in determining the vulnerability of windows in a wildfire is the glass, not the frame. Since the type of frame doesn't make much difference in a fire, it can be selected based on cost, aesthetics, energy efficiency, and other factors.

As with vents, homeowners can fabricate window covers out of a noncombustible material or even plywood. Cut to size, have everything ready to attach them to the house and mark them clearly so they can be installed quickly over windows in the event of an approaching wildfire. Manufactured shutters might also be considered.

A structure fire at the arrow burned into nearby trees. Radiant heat cracked the window shown in the red circles.

PRIORITY FIVE: Decks

Post-wildfire research has shown that the initial ignition point for many homes is on or under a deck. An ignited deck endangers many portions of a structure and is often adjacent to large windows or sliding glass doors that can break and permit the fire to enter the house.

How vulnerable the deck is to ignition depends on what it's made of and its condition (rotten wood is much more ignition prone), as well as combustible or flammable items kept on and under the deck and the amount and condition of vegetation near the deck.

Although most common decking materials are combustible, there are some noncombustible alternatives, such as metal decking, lightweight concrete and Class A composites. However, testing has indicated that combustible decking products are likely to ignite from other fuel sources (such as firewood, ignition-prone furniture, vegetation or debris) that are on, under or near the deck.[1]

Consider replacing ground level wooden decks with non-combustible patio materials such as brick, stone or concrete.

If you can replace your wooden deck, there are several options that will resist combustion, including using tile, *some* composite materials, etc. You will need to do some homework to find the best option for your home. However, if you can't replace the deck, you can reduce the ignition risk posed by your combustible deck:

- Ensure that the deck is kept clean of debris both above and below.
- Limit the number of combustible items you keep on the deck—think of door mats, plants in baskets, wicker furniture, patio umbrellas and such items.
- On top of or under a deck is a bad place to keep flammable items such as firewood or a gasoline can.
- Embers tend to accumulate where the deck surface meets the wall. To protect vulnerable siding, install 18" of metal flashing between edge of deck and siding, tucked in behind the lap joint where it terminates.

Keep needles and debris from accumulating between deck boards or between deck and siding.

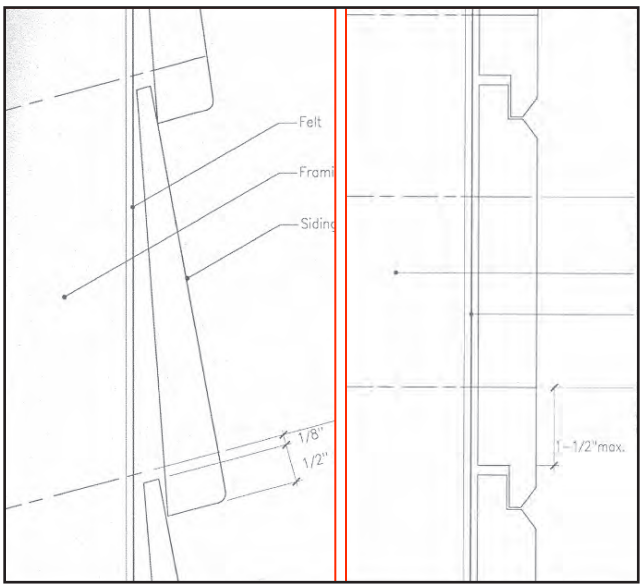
If items stored under the deck can ignite from embers, deck and structure will follow along. Don't store combustibles under decks!

1 Quarles, et. al., *Home Survival in Wildfire Prone Areas*, p. 13.

PRIORITY SIX: Siding

There are several noncombustible siding products on the market: fiber cement boards and panels, traditional three-coat stucco, and so on.

Well-maintained wood siding, though certainly more vulnerable than products such as stucco or fiber cement, is not as big a risk as you might think, assuming that defensible space standards for vegetation have been maintained. However, some wood siding is better than others. For example, plain bevel lap joints are more vulnerable to flame penetration at the joint than are more complicated lap joints, such as a shiplap joint.



Plain bevel lap joint *Shiplap joint*

Take a hard look at your siding. Combustible siding such as wood panels and clapboard should be carefully inspected annually for gaps and filled with a high-quality caulk to prevent hot embers lodging and burning. Partly decayed wood is more vulnerable. If your siding is starting to show signs of aging, you may need to consider replacement.

Do you know what is between your siding and the studs? In research trials, good quality sheathing—which is installed underneath the siding—is a key to protecting the home's studs. Combustible siding in combination with inadequate sheathing may have a higher priority for replacement.

If you have an ignition-prone siding like wood shake, but can't afford to replace it, you may want to consider investing in a gel fire retardant. Gels hold water in suspension on the walls, decreasing likelihood that an ember will cause the siding to burn. These products are applied to the structure when a fire threatens, preferably no more than four hours before the flame front hits—something that may be impossible if the fire is moving very fast and residents need to evacuate immediately. Several products are currently available on the market. Do some research and talk with your local CAL FIRE or Fire Department representative, both with questions about the products and to let them know that it is available on your property.

Home on left is vulnerable to wildfire because of its aging, shrinking wood siding and single pane windows. Home on right was retrofitted with fire-resistant siding, boxed eaves, metal-clad fascia and double-paned windows.

What is Defensible Space?

Defensible Space is a radius of 100+ feet (or up to the property line) around buildings where vegetation has been modified so that an approaching wildfire's power is diminished. Defensible space does **not** mean that all vegetation has been removed. It just means that it has been treated so that there is less fuel available to transmit heat and flames directly to structures or into the tops of trees.

Defensible space need NOT be a moonscape. Thoughtful landscaping can be beautiful and safe.

Creating an effective defensible space means developing a series of **management zones** in which you do greater or lesser fuel modifications. Develop defensible space around each building on your property. Include detached garages, storage buildings, well houses, barns, and other structures in your plan.

Defensible space: before ...

... and after.

Defensible space: before ...

... and after.

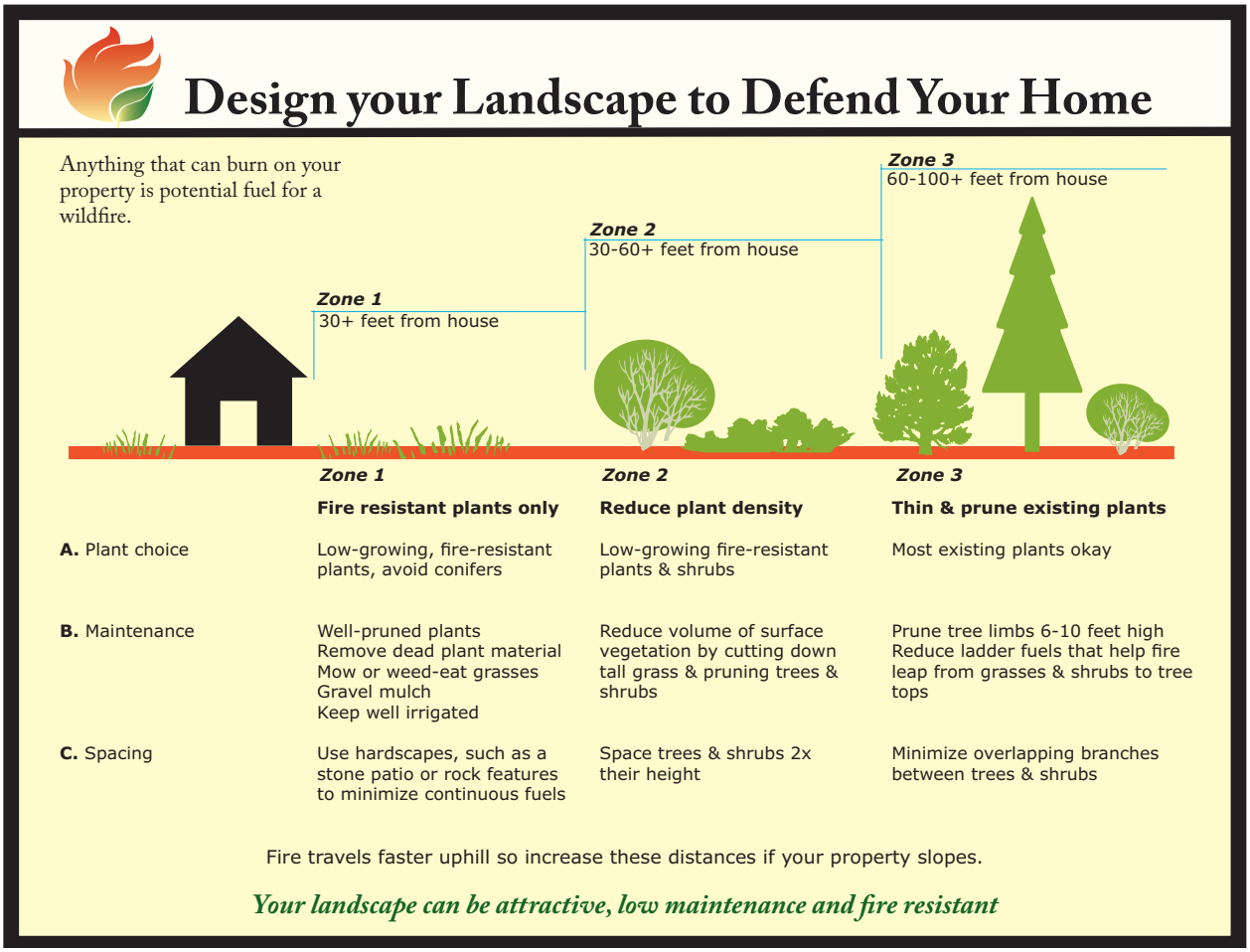
Shaping Your Defensible Space Zones

The actual design and development of your defensible space depends on several factors. A defensible space radius needn't be a perfect circle, it should be shaped to reflect the nature of the property and structures. Consider:

- Size and shape of buildings: Your defensible space radius is not the center of the structures, but starts at the outer edges of structures and decks, and extends out.
- Materials used in construction: If your buildings are constructed of combustible materials, increase defensible space distances to compensate.
- Slope of the ground on which structures are built: Fire moves faster and behaves more aggressively when it is moving uphill. If your house is on a slope, you may need to increase your defensible space radius downhill from structures.
- Surrounding topography: Natural features such as drainages can funnel fire towards structures. Your defensible space zone should compensate.
- Sizes and types of vegetation on your property: Not all vegetation burns with equal vigor. Take the time to learn about risky vegetation around your home.

Defensible Space as Management Zones

Start near the home with the easiest and least expensive actions. **Keep working** outwards and on the more difficult items until you have completed your entire project.



Zone 1: Begin closest to your house and move outward. Create a "clean, lean and green" **30' low fuel zone around all structures**.

- Replace or remove highly combustible plants.
- Remove all dead materials on the ground or in trees adjacent to or overhanging a building.
- Thin and prune trees. Remove dead and dying woody surface fuels.
- Remove "ladder fuels" that fire can use to climb from the ground into the crowns of trees.
- Clean the roof of the structure free of leaves, needles or other dead vegetation.
- Remove any portion of any tree within 10' of a chimney outlet or stovepipe and make sure that there is a screen over the stovepipe or chimney outlet. The screen should be of non-flammable material with openings of one-half inch or less.

Zone 2: at **30'-60+'** from structures create a **Reduced Fuel Zone.**

- Thin and prune trees. Remove dead and dying woody surface fuels.
- Remove "ladder fuels" that fire can use to climb from the ground into the crowns of trees.
- Break up the "horizontal continuity" of fuels so breaks occur between plants that will reduce fire intensity and decrease likelihood that fire will move from plant to plant straight to structures

Zone 3: at **60'-100+'** work on **wildlands vegetation management.**

- Thin, prune and limb up trees and shrubs and reduce horizontal and vertical continuity, but it can be left a bit more wild.

Homeowners interested in learning how to create defensible space can find information in Fire Safe Sonoma's publication, **Living with Fire in Sonoma County** (available at www.firesafesonoma.org) and/or consult with local firefighters.

Other Factors for Safety

Can the Fire Department Find You?

Too frequently, emergency responders have trouble finding homes in rural areas because roads and/or house addresses are not clearly marked. 85% of emergency responses are for medical problems, where seconds can matter for your health and survival. Make sure firefighters can find you! Mark access roads with reflective signs containing numbers and letters at least 4" in height, and make sure signs are visible from both directions. Use reflective or illuminated numbers for your house. If your home is accessed from a long driveway, also put a reflective street number sign at the base of the driveway that is visible from both directions.

Can the Fire Department Safely Drive the Access Roads to Your House?

Vegetation-clogged roads present a multitude of dangers for both you and incoming firefighters. Fire trucks are large, so make sure your driveway has at least 15' of vertical clearance and is at least 10' wide. Access roads clogged with vegetation pose enormous risks to evacuating residents and incoming firefighters. Make sure you can get out safely, and firefighters can get in to help you.

Water Supply

The more water you can store, the better. Mark water supplies for firefighters. Sonoma County Code requires a minimum of 2500 gallons of water in reserve for firefighter use or a hydrant system approved by fire inspectors.

Costs of Creating Defensible Space

By choosing to live in the beautiful wildland-urban interface, we are also choosing to take responsibility for keeping our homes wildfire safe. Creating and maintaining defensible space is simply one of the costs of living in the WUI.

Unless you do the work yourself, creating defensible space can be an expensive prospect for homeowners, especially those who live in forested environments. Tree diseases such as Sudden Oak Death can force homeowners to do the same work year after year as more trees die. Typically, a five person crew with a 15" chipper costs about $2,250 per day. While one day with a crew can be enough to clear defensible space, cost estimates can greatly increase if large trees and/or large numbers of trees need to be removed.

Before you get bids on your job, make sure you know exactly where your property lines are, and decide what needs to be done. You may want to consult with an expert to determine which vegetation should be removed. Always consider erosion for any vegetation management! Remember that you can only work on your own property, even if your defensible space is impacted by issues that are over the property line. If possible, work with neighbors to arrive at mutually acceptable solutions.

Check for current licenses and insurance of anyone you hire to work on your property. Ask to be sure they have sufficient experience to safely do the job. Check references!

The Sonoma County Fire and Emergency Services Department currently has a seasonal free curbside chipper program for residents in some areas at risk to wildfire. The program sends a chipper and crew to chip woody materials that have been cut and stacked by residents. You can find out about the program at *www.sonomacounty.ca.gov/FES/Fire-Prevention/Curbside-Chipper-Program* or by calling 707-565-6070.

Regulations

Defensible space: before...

... and after.

Timber Harvest? Riparian alteration? Endangered species? Such issues are rarely a concern for homeowners creating defensible space, but it's good to know what the laws and regulations are.

If and grant funding is received from state or federal agencies and prior to work performed pursu-ant to a CWPP, or prior to issuance of discretionary permits or other entitlements by any public agencies to which CEQA or NEPA may apply, the lead agency must consider whether the proposed activity is a project under CEQA or NEPA. If the lead agency makes a determination that the proposed activity is a project subject to CEQA or NEPA, the lead agency must perform environmental review pursuant to CEQA or NEPA.

If a landowner conducts a commercial timber operation while removing commercial tree species from protection zones around homes to comply with PRC 4291, a 1038(c) exemption permit from CAL FIRE must first be submitted. No permits are required if there is no commercial sale of timber (unless local ordinances restrict tree cutting—check with local authorities).

The laws relating to wildfire prevention and loss reduction can be found in Public Resource Code 4290-4299. In addition to setting standards for defensible space, the code also addresses other crucial wildfire safety issues.

Other regulations may also apply, including the Threatened and Endangered Species Act and California Environmental Quality Act.

California Department of Fish and Wildlife reviews all timber harvest plans for compliance with section 1600 and the California Endangered Species Act (CESA). Fish and Wildlife may issue permits for road construction across streams and incidental lake permits when endangered species habitat is involved.

CESA usually comes up in bigger forestry projects and isn't usually a concern for landowners creating defensible space. CESA allows the Department to authorize project proponents to take state-listed threatened, endangered,or candidate species if certain conditions are met.

Fish and Wildlife's 1600 jurisdiction includes the clearing of brush in the riparian corridor of stream/river. Section 1600-1616 of the Fish and Game Code, called a Lake or Streambed Alteration Agreement is required for any project that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel, or bank of any river, stream or lake;
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked or ground pavement where it may pass into any river, stream or lake.

Sonoma County regulations may also apply to vegetation management in riparian areas. Contact Permit Sonoma for further information.

Resources

Research over the last 20 years has led to a wealth of information about how to reduce structural ignitions from wildland fires. This document provides an introduction to the basic concepts, and is intended to inspire readers to further research. Here are just a few of the great resources out there.

Steve Quarles is a researcher for **The Insurance Institute for Business and Home Safety.** See the Southern California Guide for information relevant to Sonoma County. Download these materials at *www.disastersafety.org/wildfire*

Home Survival in Wildfire-Prone Areas: Building Materials and Design Considerations *Stephen L. Quarles, et al. UC ANR Publication 8393, May 2010. https://anrcatalog.ucanr.edu/pdf/8393.pdf* This publication is a great place to start for anyone interested in learning a lot more about the design methods and materials that can help your home survive a wildfire. Also from the UC Cooperative Extension, the ***Homeowner's Wildfire Mitigation Guide*** *ucanr.edu/sites/wildfire/* provides easily accessible information about each vulnerable part of a structure.

CAL FIRE's website at *www.fire.ca.gov* provides up to date information about wildfires as well as a wealth of information about forestry issues, grants and wildfire safety and preparation, including access to the excellent **READY SET GO** program materials *www.readyforwildfire.org*

The **California Office of the State Fire Marshal** regularly updates the ***Buildings Materials Listings,*** which lists homebuilding products approved for Wildland /Urban Interface areas. *http://osfm.fire.ca.gov/licensinglistings/licenselisting_bml_searchcotest.php*

Firewise Communities USA *www.firewise.org***.** "The National Fire Protection Association's (NFPA Firewise Communities program encourages local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from the risk of wildfire." The "Firewise You Can Use" section on their website contains a wealth of great information.

Our own **Fire Safe Sonoma** has excellent information specific to our region. *www.firesafesonoma.org*

Fire Safe Marin has a truly excellent website. See the excellent plant list! *www.firesafemarin.org*

The **California Fire Safe Council**'s offers great information as well as access to the Grants Clearinghouse, which provides funding for projects in WUI areas. *www.cafiresafecouncil.org***.**

This document was created by Fire Safe Sonoma, Sonoma County's non-profit fire safe council. Our mission:
To promote fire safety and protect natural and man-made resources in Sonoma County through education, information exchange, resource sharing and community cooperation.

You can learn more about Fire Safe Sonoma at *www.firesafesonoma.org* or by calling 707.206.5467. Join with us to make Sonoma County a Wildfire Adapted Community!