MARCH 2022

KERN COUNTY

COMMUNITY WILDFIRE PROTECTION PLAN

Working together to build fire adapted communities, resilient to wildfire

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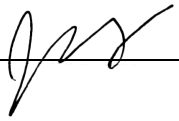
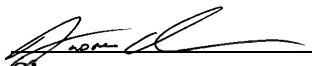
ENVIRONMENTAL CONSULTANTS

Funding for this project provided by the California Department of Forestry and Fire Protection as part of the California Climate Investments Program.

The entities listed below participated in the development of and/or reviewed and are in support of the Kern County Community Wildfire Protection Plan: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EXECUTIVE SUMMARY

This Kern County Community Wildfire Protection Plan (CWPP) addresses hazards and risks of wildland fire throughout Kern County (hereafter referred to as the County) and makes recommendations for fuel reduction projects, public outreach and education, structural ignitability reduction, and fire response capabilities. There are three focus areas in this plan, referred to as Lake Isabella, Tehachapi, and Mount Pinos. The focus areas were delineated based on the 2020 Kern County Fire Department Strategic Plan and the Core Team's input. The County comprises a diverse landscape and land ownership but a population with a common concern: the need to prepare for wildfire to reduce the risk of loss of life and property.

Community members are familiar with large fires, as several have occurred in the southwest region and the County itself in recent years, including the French Fire in the Lake Isabella region, which occurred during the summer of 2021. This Kern County CWPP has been developed to assist the County in managing wildfire risk to ecosystem health and human life by assessing areas at risk and recommending measures to decrease that risk.

The purpose of the Kern County CWPP is to assist in protecting human life and reducing property loss due to wildfire throughout the County. The plan is the result of a community-wide wildland fire protection planning process and the compilation of documents, reports, and data developed by a wide array of contributors. This plan was compiled in 2021 and 2022 as Kern County's first County-specific CWPP. All versions (current and past) of the Kern County CWPP have been developed in response to the federal Healthy Forests Restoration Act (HFRA) of 2003.

The Kern County CWPP meets the requirements of the HFRA by addressing the following:

1. Having been developed collaboratively by multiple agencies at the state and local levels in consultation with federal agencies and other interested parties.
2. Prioritizing and identifying fuel reduction treatments and recommending the types and methods of treatments to protect at-risk communities and pertinent infrastructure.
3. Suggesting multi-party mitigation, monitoring, and outreach.
4. Recommending measures and action items that residents and communities can take to reduce the ignitability of structures.
5. Soliciting input from the public on the Draft Kern County CWPP.

A group of multijurisdictional agencies (federal, state, and local), organizations, and residents joined together as a Core Team to develop this CWPP. Core Team members used their past experience with fire management in the County to contribute to this plan greatly throughout the process.

The planning process has served to identify and map many physical hazards throughout the County that could increase the threat of wildfire to communities. This mapping process allows the planning team to prioritize treatments tailored specifically for the County to reduce fire risk. In addition, public comment was requested from local residents, further ensuring the recommendations are tailored to the communities within the County. Overall, the Kern County CWPP emphasizes the importance of collaboration among multijurisdictional agencies in order to develop fuels mitigation treatment programs to address wildfire hazards.

A combination of these vegetation treatments with homeowner and community awareness, public education, and agency collaboration are necessary to fully reduce wildfire risk. The County has a committed team of career and volunteer firefighters, who work arduously to protect the life and property of citizens, but without homeowners taking on some of the responsibility of reducing fire hazards in and around their own homes, these resources are severely stretched.

A significant amount of fire mitigation work has been completed by the County and other stakeholders thus far. These actions include thousands of acres of vegetation management and fuel reduction (Kern County Fire Department [KCFD] 2021a), adopting the International Wildland Urban Interface Code, property protection developments, public education and awareness efforts, defensible space development, hazardous tree removal (KCFD Office of Emergency Services [OES] 2020), and the development of hazard mitigation plans to support emergency management including the safe and effective evacuation of people and animals in the event of a wildfire or other emergencies.

Some of the highest risk areas identified in the planning area are communities located within and adjacent to National Forest land and the wildland urban interface (WUI), this was confirmed by the 2021 fires, particularly the French Fire. Collaborative efforts between federal, state, and county agencies have applied various treatment methods including mechanical treatments and prescribed fire where appropriate. Treatments to fuels in these high hazard areas contribute to decreasing the likelihood of wildfire's negative impacts on communities in the County WUI. Continued preventive and collaborative activities are needed, however, to further reduce wildfire risk in these regions, as evidenced by the 2021 fire season.

Communities located immediately adjacent to wildland fuels, in areas of steep topography, and within canyons that align with prevailing winds need to prepare for fast-paced wildfire spread in these environments. Recommendations for improving wildfire mitigation in these communities may include focusing on actions to reduce the presence of hazardous fuels within WUI communities, encouraging residents to mow borders around their property, harden their homes to potential flame impingement from fast-moving grass fires, and equipping fire departments to respond quickly to these fast-paced wildfire events. Implementation of these recommendations is critical in protecting communities as is evidenced by the French Fire and others in the region. The French Fire destroyed an estimated 30 structures in and around the Alta Sierra area in summer of 2021 (Burton 2022).

The Kern County CWPP provides background information, a risk assessment, and recommendations. Much of this background information is housed in several appendices to the main document to focus the main document on analysis and action items.

Chapter 1 provides a general overview of CWPPs and describes actions that have been taken to mitigate wildfire risk. Chapter 2 presents an overview of the fire environment and specific information about fuel types. Chapter 3 describes the results of the risk assessment and summary of community risk ratings. Chapter 4 provides recommendations with respect to the three primary goals of the National Cohesive Wildfire Strategy: 1) restore and maintain landscapes, 2) create fire-adapted communities, and 3) improve wildfire response in addition to the California Environmental Quality Act (CEQA) process for implementing vegetation treatment programs. Recommendations outlined under each goal include action plans and monitoring strategies for implementing fuels reduction projects, reducing structural ignitability, improving fire response capabilities, and initiating public outreach and education. Chapter 5 describes monitoring strategies and details regarding implementation of actions.

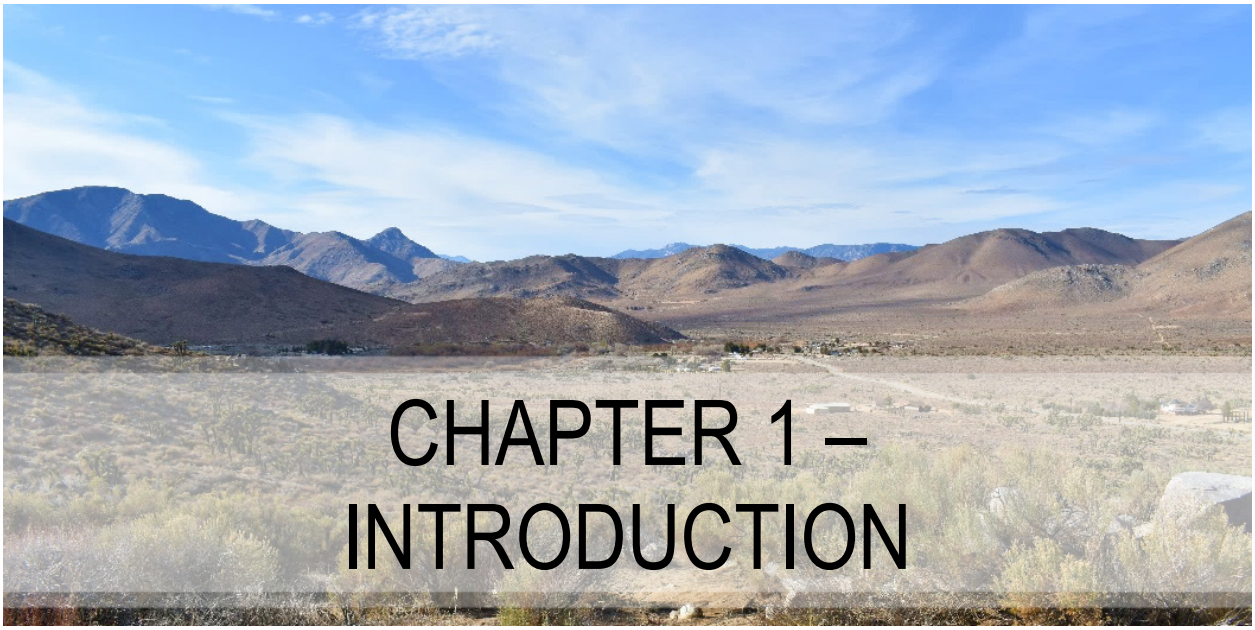
The plan does not require implementation of any of the recommendations, but the message throughout this document is that the greatest fire mitigation could be achieved through the joint actions of individual homeowners and local, state, and federal governments. It is important to stress that this document is an

initial step in raising public awareness and treating areas of concern and should serve as a tool in doing so.

This Kern County CWPP should be treated as a living document to be updated annually or immediately following a significant fire event. The plan should continue to be revised to reflect changes, modifications, or new information. These elements are essential to the success of mitigating wildfire risk throughout Kern County and will be important in maintaining the ideas and priorities of the plan and the communities in the future.

We would like to formally thank the Core Team and all stakeholders for contributing their time and expertise throughout the planning process. Your participation has contributed to creating resilient landscapes, implementing public education, reducing structural ignitability, and ensuring safe and effective wildfire response.

This Kern County CWPP is part of California Climate Investments, a statewide program that puts billions of Cap-and-Trade dollars to work reducing GHG emissions, strengthening the economy, and improving public health and the environment—particularly in disadvantaged communities. The Cap-and-Trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. California Climate Investments projects include affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, more sustainable agriculture, recycling, and much more. At least 35 percent of these investments are located within and benefiting residents of disadvantaged communities, low-income communities, and low-income households across California. For more information, visit the California Climate Investments website at: www.caclimateinvestments.ca.gov.



CHAPTER 1 – INTRODUCTION

The United States is facing urgent forest and watershed health concerns. While the number of annual wildfires throughout the United States has been slightly decreasing (67,700 fires in 2016 vs. 59,000 fires in 2020), the number of acres burned has been on the rise (Congressional Research Service [CRS] 2021). An average of 7 million acres is burned every year due to wildfire, more than doubling the annual average of acres burned in the 1990s (CRS 2021). Communities are seeing the most destructive wildfire seasons in history. The 2015 fire season had the most acreage impacted in a single year since 1960 at 10.13 million acres; 2020 was the second most extensive year for wildfire with 10.12 million acres burned (CRS 2021). These statistics demonstrate that wildfires are becoming larger and harder to control.

The California's Forests and Rangelands 2017 Assessment states that California, like other western states, faces urgent issues concerning frequent and severe pest and wildfire events that are unprecedented. These events threaten the sustainability of these ecosystems, the economic and environmental services they provide, and the built environment. These issues require reexamination of land and fire management policies and practices as human populations demand more from natural systems and climate change continues (California Department of Forestry and Fire Protection [CAL FIRE] 2018a).

The French Fire illustrates the pressing risk of wildfire in and around Kern County. The French Fire consumed a total of 27,285 acres and destroyed 30 structures, threatening and damaging many other homes and triggering the evacuation of many communities (Burton 2022). As wildfire severity increases, communities need a plan to help prepare for, reduce the risk of, and adapt to wildland fire events. Community Wildfire Protection Plans (CWPPs) help accomplish these goals. A CWPP provides recommendations that are intended to reduce, but not eliminate, the extreme severity or risk of wildland fire.

Between the 2004 and 2013, seven regional CWPPs within Kern County were completed. As part of this 2022 CWPP project effort, applicable information from these past documents was incorporated into this plan for a cohesive and up-to-date wildfire planning effort throughout the County.

The development of the CWPP is rooted in meaningful collaboration among many stakeholders, including local, state, and federal officials. The planning process involves looking at past fires and treatment accomplishments using the knowledge and expertise of the professional fire managers who work for the

various agencies and governing entities in the County. From there, the CWPP ultimately identifies the current local wildfire risks and needs that occur in the County, which is further supported with relevant science and literature from the western region.

In addition, this document, the 2022 Kern County CWPP, reviews, verifies, and/or identifies potential new priority areas where mitigation measures are needed to protect from wildfire the irreplaceable life, property, and critical infrastructure in the County. However, this CWPP does not attempt to mandate the type and priority for treatment projects that will be carried out by the land management agencies and private landowners. The responsibility for implementing wildfire mitigation treatments lies at the discretion of the landowner; the 2022 Kern County CWPP will only identify potential treatments and a suggested priority for these projects.

GOAL OF A COMMUNITY WILDFIRE PROTECTION PLAN

The goal of a CWPP is to enable local communities to improve their wildfire-mitigation capacity, while working with government agencies to identify high fire risk areas and prioritize areas for mitigation, fire suppression, and emergency preparedness. Another goal of the CWPP is to enhance public awareness by helping residents better understand the natural- and human-caused risk of wildland fires that threaten lives, safety, and the local economy. The minimum requirements for a CWPP, as stated in the HFRA, are:

- **Collaboration:** Local and State government representatives, in consultation with federal agencies or other interested groups, must collaboratively develop a CWPP (Society of American Foresters [SAF] 2004).
- **Prioritized Fuel Reduction:** A CWPP must identify and prioritize areas for hazardous fuels reduction and treatments and recommend the types and methods of treatment that will protect one or more communities at risk (CARs) and their essential infrastructures (SAF 2004).
- **Treatments of Structural Ignitability:** A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan (SAF 2004).

It is the intent of this 2022 Kern County CWPP to provide a County-wide scale of wildfire risk and protection needs as well as bring together the responsible wildfire management and suppression entities in the County to support planning and implementation of the necessary mitigation measures. Additional information on the planning process is available in Appendix A.

NAVIGATION

The plan provides background information, a risk assessment, and recommendations to reduce or mitigate wildfire risk to communities. The CWPP is designed to be used by the residents of the County, as well as stakeholders tasked with forest, fire, and emergency management. Some information is therefore highly technical in order to provide sufficient detail to aid in project implementation.

This CWPP is organized into several chapters with more detailed information compiled into appendices. Chapter 1 provides an overview of CWPPs and describes the need for a plan; Chapter 2 gives an overview of the fire environment and introduces the reader to fire history information and well as fire response; Chapter 3 describes the methodology for the risk assessment and the results in detail; Chapter 4 outlines the mitigation strategies that could be implemented to reduce wildfire risk under the

umbrella of the National Cohesive Strategy, including action plans that outline priorities and recommendations for reducing fuels, initiating public education and outreach, reducing structural ignitability, and improving fire response capabilities; and Chapter 5 provides suggested approaches to monitoring actions.

The Kern County CWPP does not require implementation of any of the recommendations; however, these recommendations may be used as guidelines for the implementation process if funding opportunities become available. The recommendations for fuels reduction projects are general in nature; site-specific planning that addresses location, access, land ownership, topography, soils, and fuels would need to be employed upon implementation. Also, it is important to note that the recommendations are specific to wildland urban interface (WUI) areas and are expected to reduce the loss of life and property. All recommendation tables can be found within Chapter 4, and the California Environmental Quality Act (CEQA) process for the California Vegetation Treatment Program (CalVTP) can be found within Chapter 4 and Appendix I.

In developing the Kern County CWPP, a large amount of background information on the County is compiled and analyzed, including location and land use data, climate and weather data, baseline vegetation data, historic conditions, population, and demographics, CWPP planning process, fire regime and baseline conditions, fire policy, and other supporting background information. This information is presented in Appendix A, Community and CWPP Background.

Additional appendices to this CWPP include maps in Appendix B; the Core Team contact list in Appendix C; community descriptions and hazard ratings in Appendix D; inspection forms in Appendix E; funding opportunities in Appendix F; homeowner resources in Appendix G; community outreach in Appendix H; and project recommendations in Appendix I.

ALIGNMENT WITH THE NATIONAL COHESIVE STRATEGY

The 2022 plan has been aligned with the National Cohesive Wildland Fire Management Strategy (Cohesive Strategy) and its Phase III Western Regional Action Plan by adhering to the nationwide goal "*To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire*." (Forests and Rangelands 2014:3).

The primary, national goals identified as necessary to achieving the vision are:

- **Restore and maintain landscapes**: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
- **Fire-adapted communities**: Human populations and infrastructure can withstand a wildfire without loss of life and property.
- **Wildfire response**: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

For more information on the Cohesive Strategy, please visit: https://www.forestsandrangelands.gov/strategy/documents/strategy/CSPhaseIIINationalStrategyApr2014.pdf

Alignment with these Cohesive Strategy goals is described in more detail in Chapter 4, Mitigation Strategies.

In addition to aligning with the Cohesive Strategy, the CWPP also incorporates information on post-fire recovery, the significant hazards of a post-fire environment, and the risk that post-fire effects pose to communities (Figure 1.1).

Figure 1.1. CWPP incorporating the three primary goals of the Cohesive Strategy and post-fire recovery and serving as holistic plan for fire prevention and resilience.

ALIGNMENT WITH PLANS AND AGREEMENTS

This CWPP is aligned with multiple local, state, and federal planning documents. These documents or agreements are summarized in Appendix A. In addition, fire policy and legislative direction is also summarized in Appendix A.

CORE TEAM

During the 2021–2022 planning process, representatives from various government agencies—along with members of fire departments and local communities—formed a Core Team to participate in decision-making activities that led to the development of the 2022 Kern County CWPP. Stakeholder involvement is critical in producing a meaningful document that includes all collaborators' diverse perspectives. The Core Team drives the planning process in its decision making, data sharing, experience, and communication with community members who are not on the Core Team. The project kicked off on April 7, 2021; the Core Team met for the second time on November 15, 2021, and for the final time on February 9, 2022. Due to the COVID-19 pandemic, all Core Team communications were limited to email and conference calls.

The Core Team List is provided in Appendix C.

PROJECT AREA

The project area includes all of Kern County as delineated by its geographic and political boundaries (Figure 1.2). The project boundary encompasses several municipalities. The largest municipal area is the county seat of Bakersfield.

Although the project area encircles all of Kern County, the risk of wildfire is particularly high in the areas near or in the WUI, i.e., the forested, mountainous, and foothill regions of the County. As such, this CWPP focuses on three areas at high risk of wildfire (see Figure 1.2): the Lake Isabella, Tehachapi, and Mount Pinos areas (Figure 1.3–1.5).

LAND OWNERSHIP

Kern County has varied land ownership, with much of the land (70.6%) belonging to private owners (Figure 1.6). The Bureau of Land Management (BLM) owns some patches of land (14%) to the west and northeast, namely wilderness and recreation areas. The U.S. Forest Service (USFS) owns about 7.3% of the land, specifically, the Sequoia and Los Padres National Forests (Sequoia and Los Padres NFs). Other federal landowners include the Department of Defense, U.S. Fish and Wildlife Service (USFWS), and the Bureau of Reclamation.

Land ownership broken down by focus area is available in Appendix B.

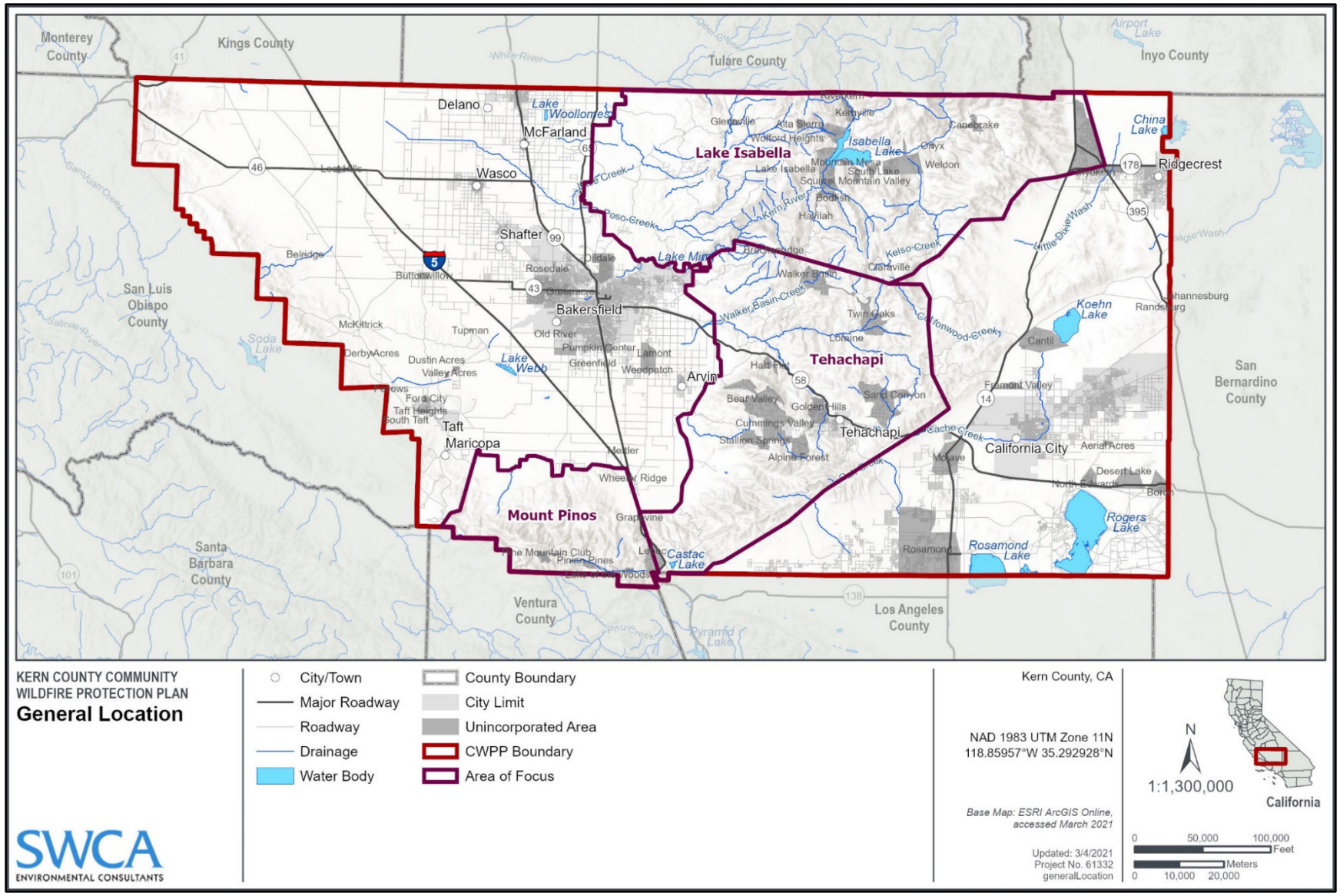


Figure 1.2. Kern County CWPP general location.

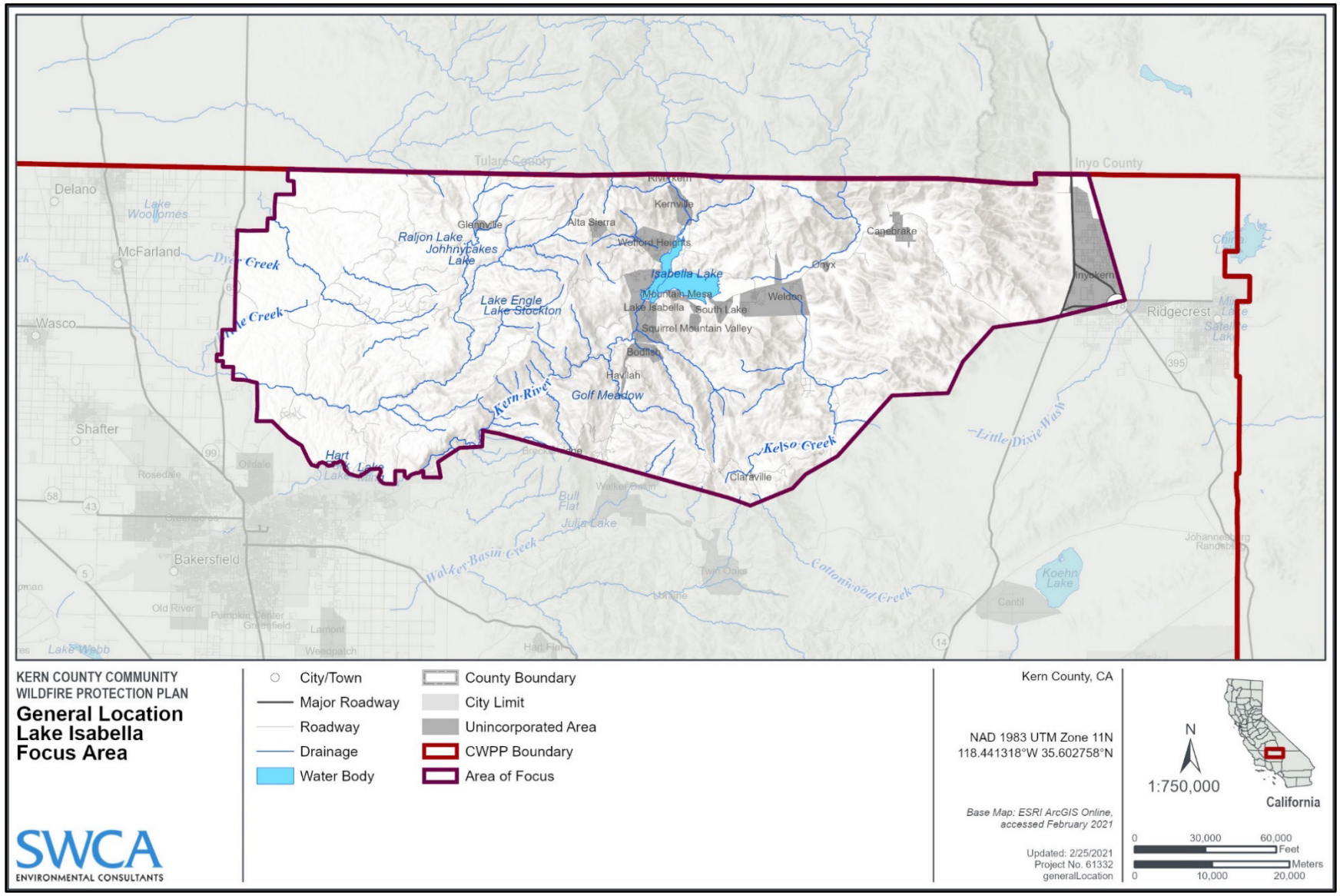


Figure 1.3. Lake Isabella focus area general location.

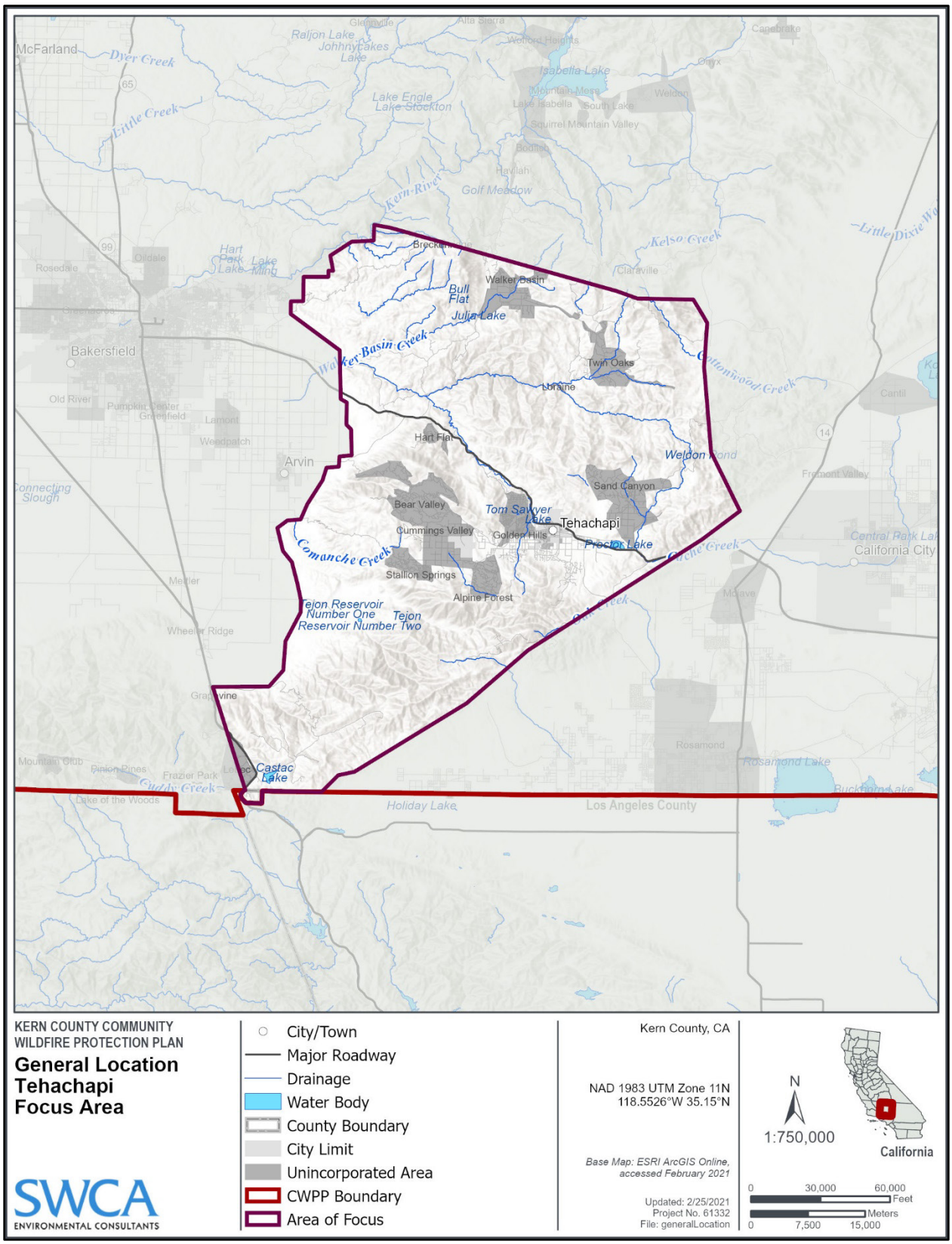


Figure 1.4. Tehachapi focus area general location.

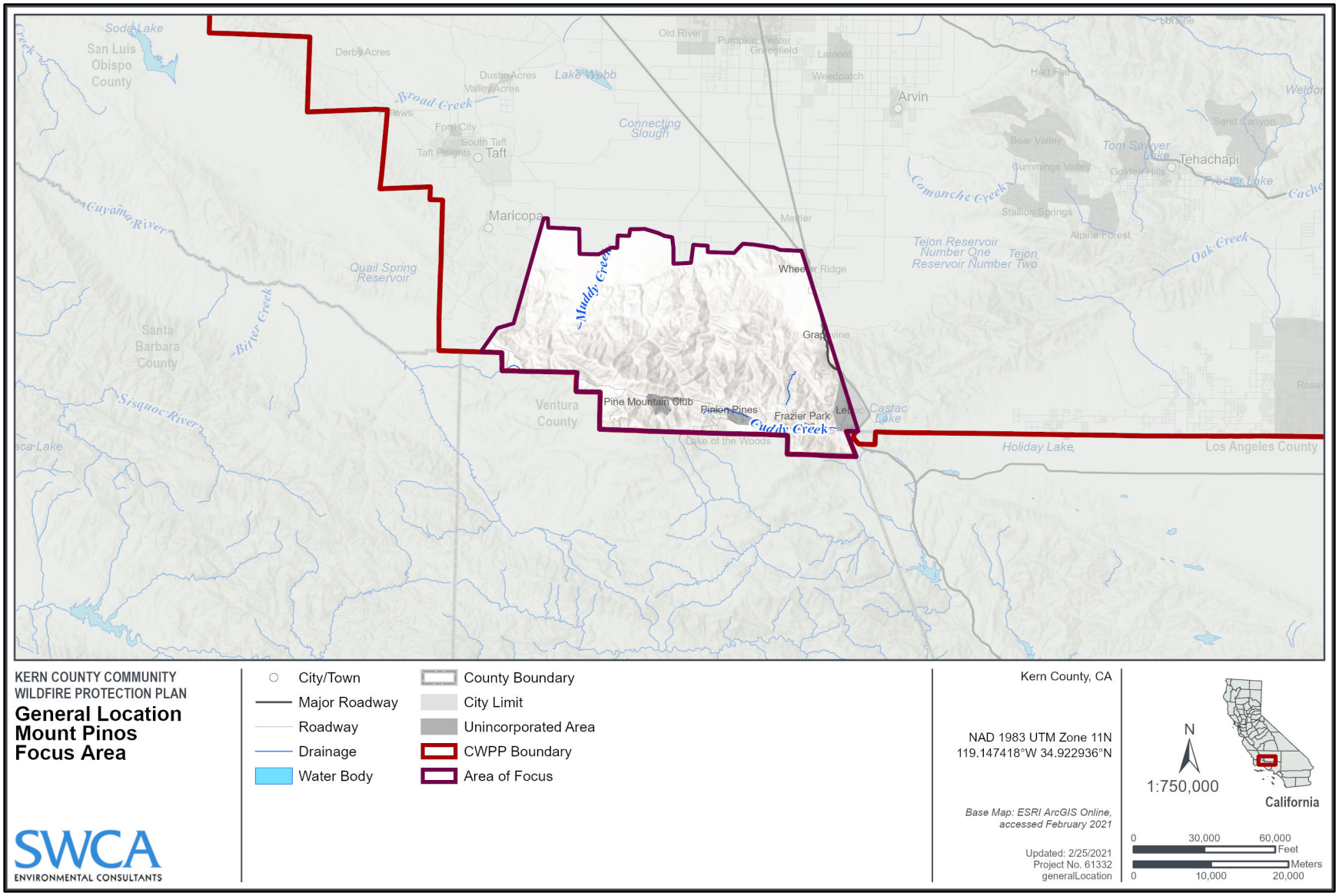


Figure 1.5. Mount Pinos focus area general location.

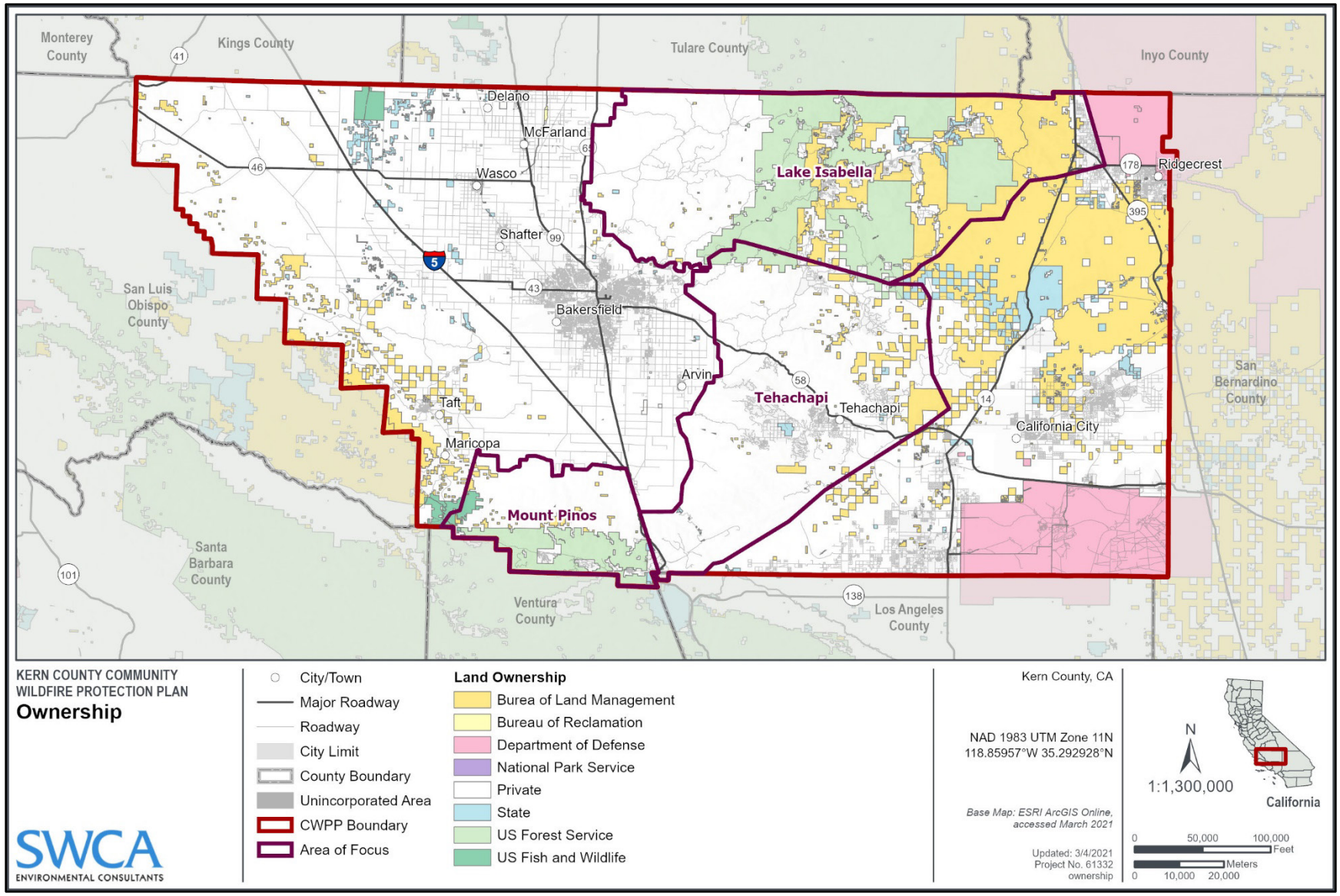


Figure 1.6. Kern County land ownership.

PUBLIC INVOLVEMENT

A key element in the CWPP process is the meaningful discussions it generates among community members regarding their priorities for local fire protection and forest management (SAF 2004). In order to accommodate engagement with the public while adhering to COVID-19 restrictions on public gatherings, a CWPP video and a community survey was developed and dispersed through social media. More information on the details of these online resources (including URLs) can be found in Appendix H.

During subsequent updates to this plan, the County will employ more traditional methods of engagement to ensure the community is able to continue to provide substantive input into the document. Recommendations for future community engagement and outreach are provided in Table 4.4.

Public education and outreach programs are a common factor in virtually every agency and organization involved with the wildfire issue. Detailed information on these programs is provided in Appendix A.

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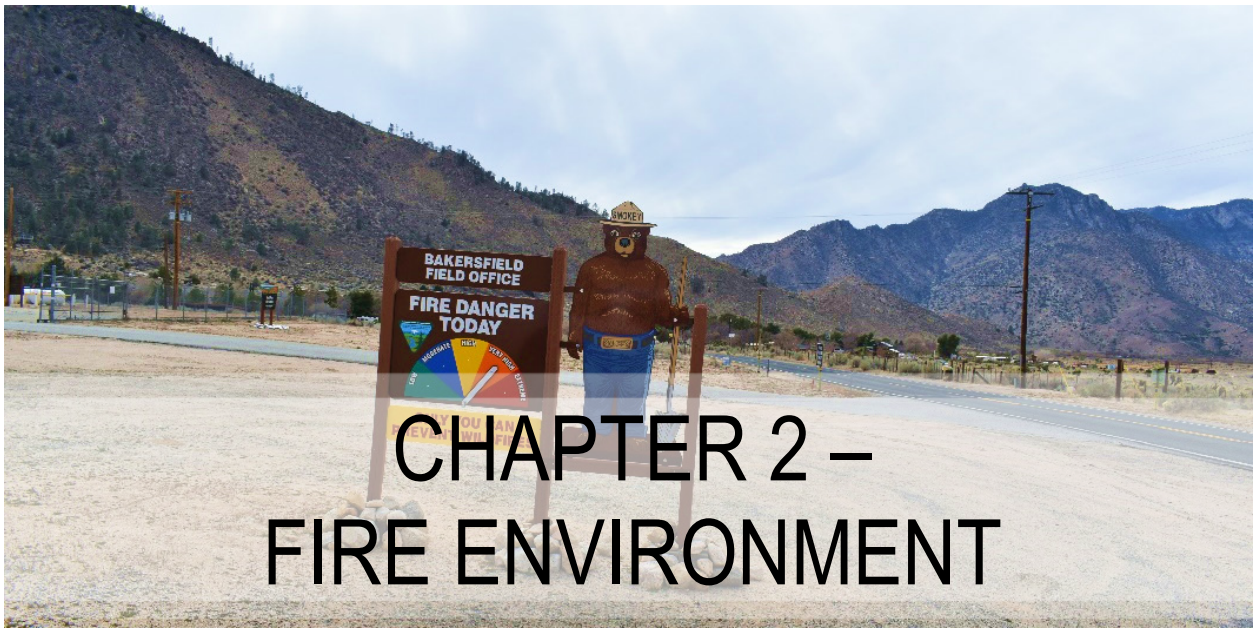


CHAPTER 2 – FIRE ENVIRONMENT

WILDLAND URBAN INTERFACE

A WUI is composed of both interface and intermix communities and is defined as areas where human habitation and development meet or intermix with wildland fuels (U.S. Department of the Interior [DOI] and U.S. Department of Agriculture [USDA] 2001:752–753). Interface areas include housing developments that meet or are in the vicinity of continuous vegetation. Intermix areas are those areas where structures are scattered throughout a wildland area where the cover of continuous vegetation and fuels is often greater than cover by human habitation.

In addition, the WUI has an area of influence, or influence zone. This area is described with respect to wildland and urban fire; it is an area with a set of conditions that facilitate the opportunity for fire to burn from wildland fuels to the home and or structure ignition zone (National Wildfire Coordinating Group [NWCG] 2021a).

A CWPP offers the opportunity for collaboration of land managers to establish a definition and a boundary for the local WUI; to better understand the unique resources, fuels, topography, and climatic and structural characteristics of the area; and to prioritize and plan fuels treatments to mitigate for fire risks. At least 50% of all funds appropriated for projects under the Healthy Forests Restoration Act (HFRA) must be used within the WUI.

According to the HFRA, the WUI can be defined by a CWPP. In this CWPP, the WUI is defined as:

- An area extending 1.5 miles from the boundary of an at-risk community.
    - In the event a strategic fuel project enhances community protection, the WUI boundary may extend beyond the traditional 1.5-mile buffer to include said areas where the strategic project would be completed. For example, sustained slopes and ridgelines may continue beyond the 1.5-mile buffer. However, it is still important that project work is completed in those high-risk areas. Therefore, the entire strategic project area would be considered as WUI, not just the sections within the 1.5-mile buffer.

At-risk communities were delineated prior to the on-the-ground community hazard assessments and were based on the presence of homes and structures surrounded by wildland fuels. Buffers representing the 1.5-mile area for WUI as defined above are presented in Appendix D for each community.

The WUI (Figures 2.1–2.3) creates an environment in which fire can move readily between structural and vegetative fuels, increasing the potential for wildland fire ignitions and the corresponding potential loss of life and property. Human encroachment upon wildland ecosystems within recent decades is increasing the extent of the WUI throughout the country (Figures 2.4 and 2.5), which is having a significant influence on wildland fire management practices. Combined with the collective effects of aggressive suppression policies, resource management practices, land use patterns, climate change, and insect and disease infestations, the expansion of the WUI into areas with high fire risk has created an urgent need to modify fire management practices and policies and to understand and manage fire risk effectively in the WUI (Pyne 2001; Stephens and KCW 2005). Mitigation techniques for fuels and fire management can be strategically planned and implemented in WUI areas; for example, with the development of defensible space around homes and structures.

Cities and counties are continuously challenged to accommodate both current and future residents in need of safe and affordable housing. In California, approximately 180,000 homes need to be constructed annually to meet demand (California Department of Housing and Community Development 2018). Over the past few decades, jurisdictions across the state have approved many new housing units. These are often placed within or near to wildland areas, creating "wildland-urban interface" (WUI) conditions. Today, more than 46 million residences in 70,000 communities are at risk for WUI fires (U.S. Fire Administration [USFA] 2021a). When it comes to wildfire, this trend is of special concern since WUI conditions are linked with an increased risk of loss of human life, property, natural resources, and economic assets. According to the 2018 Strategic Fire Plan for California, “since the turn of the century there has been a steep increase in structures lost compared to the 1990s” (CAL FIRE 2018a Strategic Fire Plan for California).

The Kern County Municipal Code Contains the Fire and WUI Codes of the County and are in Chapters 17.32 and 17.34 for the Municipal Code respectively. WUI policy is detailed in Chapter 4.

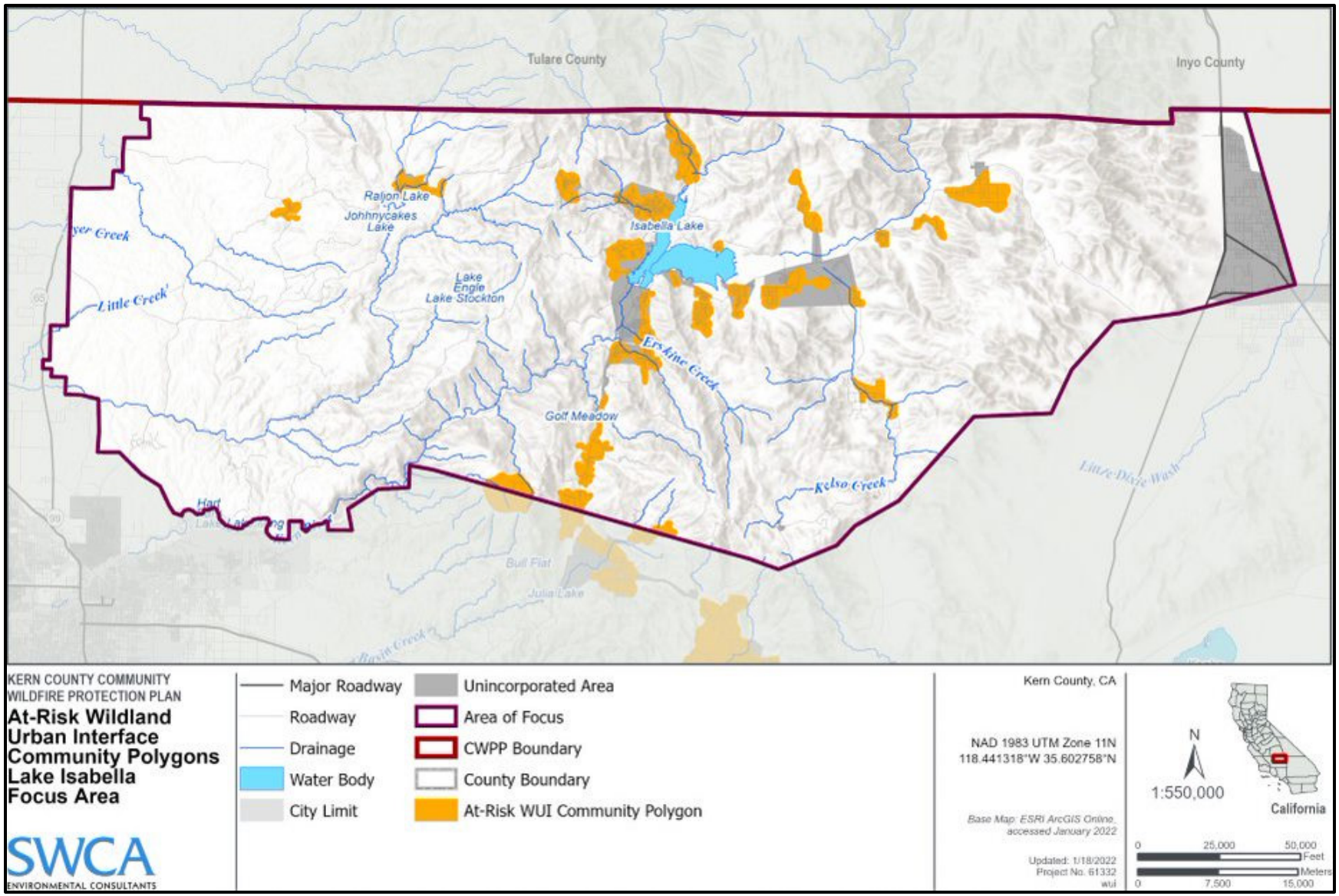


Figure 2.1. At-risk community delineations for Lake Isabella focus area.

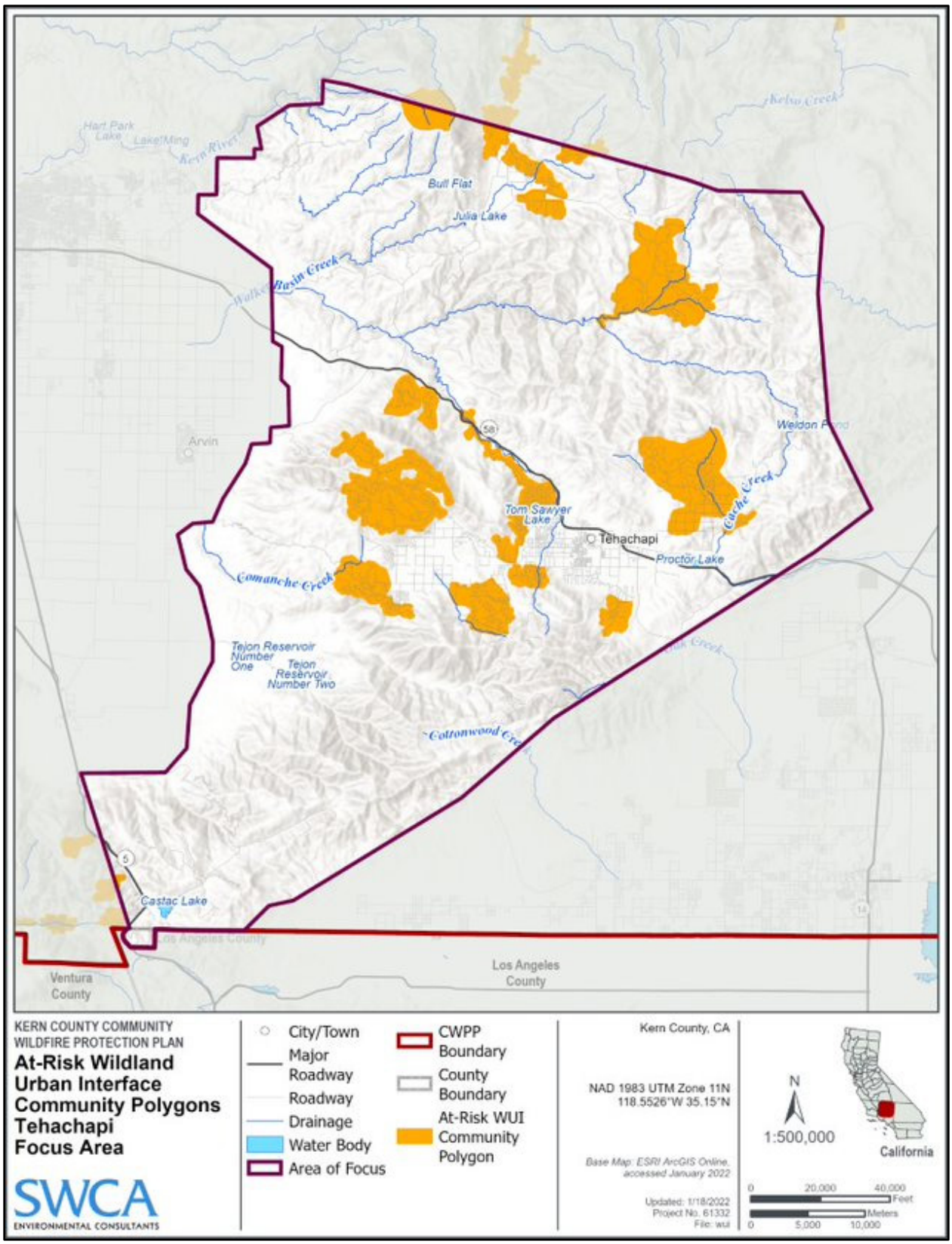


Figure 2.2. At-risk community delineations for Tehachapi focus area.

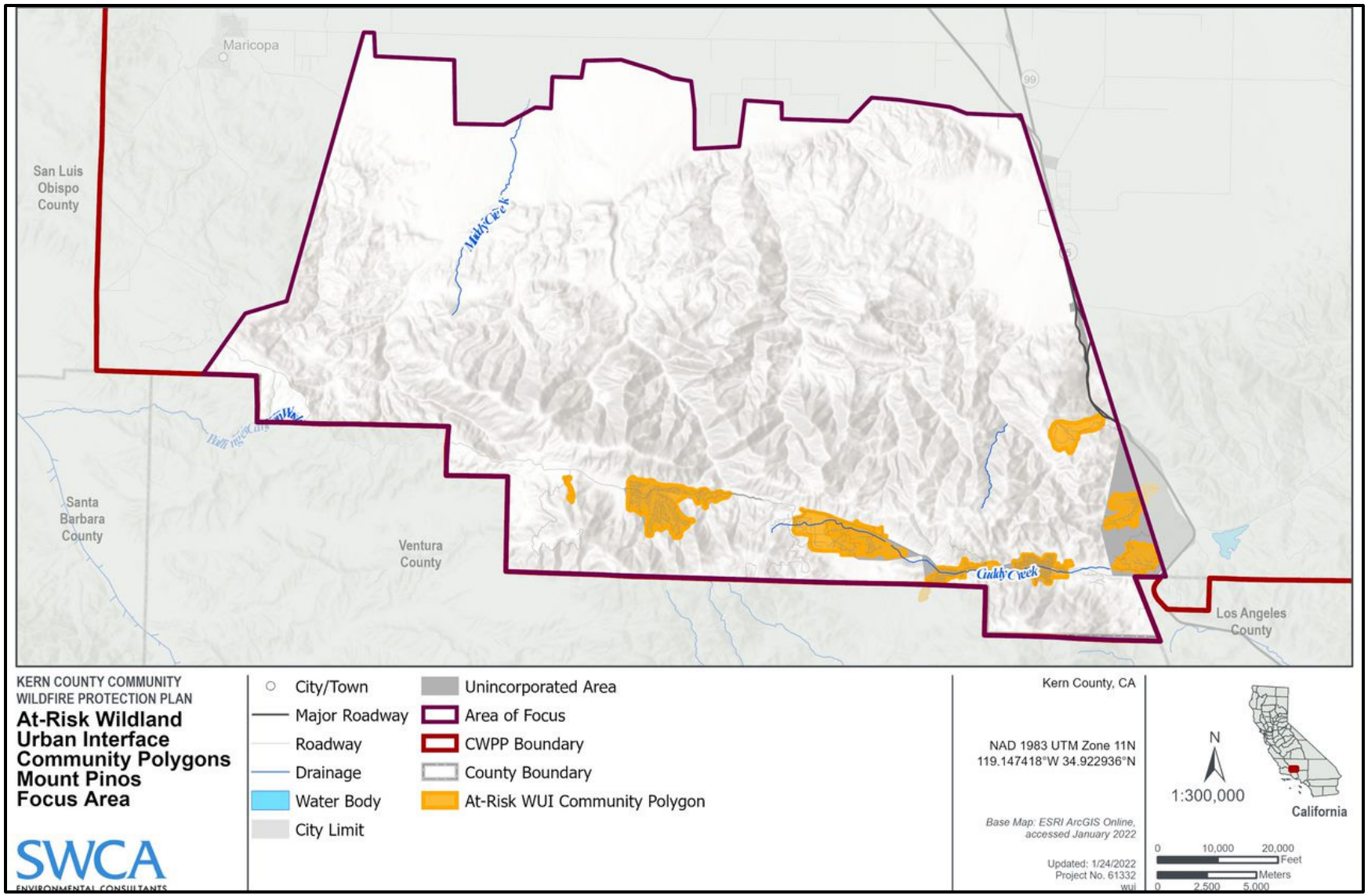


Figure 2.3. At-risk community delineations for Mount Pinos focus area.

Figure 2.4. Example of the WUI in Kern County.

Figure 2.5. Example of the WUI in Kern County.

The following sections describe important wildfire attributes within and around the WUI in the County.

FIRE HISTORY

Fire is a natural part of California's diverse landscapes and is essential to many ecosystems across the state. Almost all of California's diverse ecosystems are fire-dependent or fire-adapted. For centuries, many California Native American tribes recognized this interdependence between fire and the ecosystem

and used prescribed burning to maintain and restore ecosystem health. However, in the 1800s, a shift in management actions—settlers began enforcing strict fire suppression regimes—led to issues such as dense stand conditions and increased vulnerability to fire. Wildland fire suppression regimes, in conjunction with other management actions (e.g., human expansion into wildlands) and climate change, have resulted in an imbalance between wildfire and ecosystem interactions (California Department of Fish and Wildlife [CDFW] 2021).

Recent Fire Occurrence

Historic wildfire activity and information regarding fire regime are described in detail in Appendix A.

Fire history data encompassing the period from 1898 to 2021 suggests a cyclical pattern of short intervals with relatively high fire occurrence followed by longer intervals with fewer fire events (Figure 2.6). However, anomalous patterns are observed for the mid-2000s, with several years exceeding 40 fires per year (see Figure 2.6). Most of the fires in the County have been relatively small (<100 acres), and only about 10% of all fires have been of larger size (>300 acres) (Figure 2.7).

During the more active fire period from 2005 through 2021, human ignitions were the most common cause of fires within the County (Figure 2.8). Most fires are detected early and suppressed before they gain acreage (see Figure 2.7); however, given the right conditions, some fires may grow large and become difficult to suppress. During development of this CWPP, the County experienced the French Fire, a 27,285-acre fire near Lake Isabella. The fire was a result of human activity on August 18, 2021, and demonstrates the potential for fast fire growth as the fire spread to more than 20,000 acres within 1 week. Adjacent counties with similar fuels and topographic conditions have also experienced large fires with similar patterns.

Most fires in the County have occurred surrounding populated areas and along roadways. Figures 2.10 through Figure 2.12 show the fire history across the County, broken up by focus area, since 1898.

Large, destructive fires in recent times include the Cedar, Erskine, Breckenridge Complex, and Comanche Fires—all exceeding 25,000 acres burned. The Erskine Fire consumed about 48,000 acres and destroyed or damaged close to 300 residences (Kern County Fire Department [KCFD] Office of Emergency Services [OES] 2020).

Most fires have occurred within the period of May through September, which is when high temperatures and hot, dry winds are most frequent (Figure 2.9). This trend coincides with California's fire season, which usually occurs between July and November. However, fire seasons are increasing in length. Climate change acts as a key driver of increased fire season duration due to warmer spring and summer temperatures, decreased snowpack, and earlier spring snow melt (CAL FIRE 2021a).

Lake Isabella Focus Area

Fires within the Lake Isabella focus area have historically clustered around the center of the polygon, near Lake Isabella's surrounding communities and major transportation points (see Figure 2.10). Larger fires have occurred predominantly in areas with steeper slopes and heavy vegetation, directly north and directly south of Lake Isabella. A significant amount of stacking (several fires taking place in one location) is shown in this region. Additionally, most fire occurrences are completely overlayed on top of community boundaries. The western and eastern edges of the County have had very few fires compared with the area around Lake Isabella. This focus area is overall of high concern due to repetitive fire occurrence and the concentration of communities.

Tehachapi Focus Area

The Tehachapi focus area has a less influential fire history compared with the Lake Isabella focus area. The northwest corner shows frequent fire events, an overflow from the clusters in the Lake Isabella focus area (see Figure 2.11). This raises concern for communities located in the northern portion of the Tehachapi focus area as fires from the Lake Isabella region could easily spread to the south. However, outside of the northwest corner, past fire occurrences are evenly distributed throughout the focus area with minor stacking. There is a moderate amount of distance between communities and fires in this region with fires minorly spreading into community boundaries and showing small areas of overlap.

Mount Pinos Focus Area

The Mount Pinos focus area shows a cluster of fire events in the southeast corner (see Figure 2.12). This cluster shows small areas of heavy stacking with no separation between fire and community boundaries. However, other fire occurrences, located in the western and northern sections of the focus area, are widely dispersed with minor stacking. Therefore, roughly half of the communities in this area (western portion) have some separation between the community boundary and fire perimeters while the other half of the communities (eastern portion) lack separation.

Information regarding fire regime (a measure of the general pattern of fire frequency and severity typical to a particular area or type of landscape) is described in detail in Appendix A.

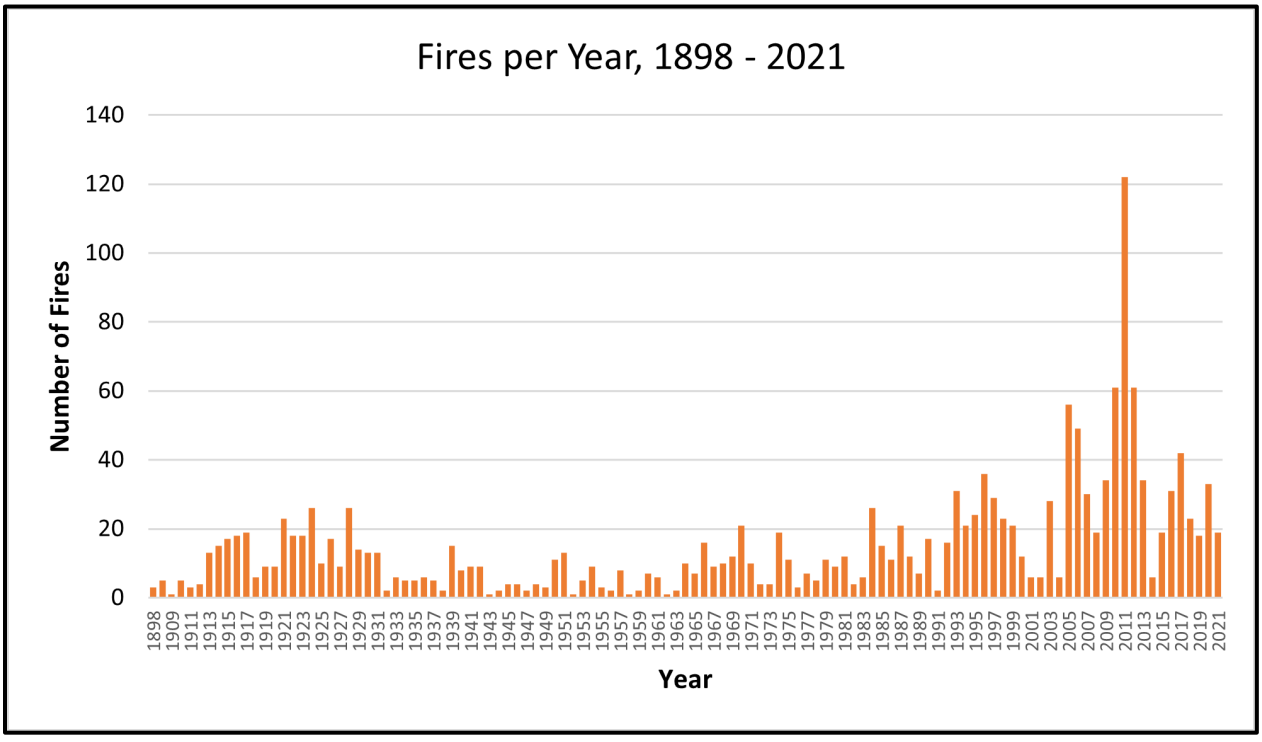


Figure 2.6. Annual wildfire frequency in Kern County from 1898 to 2021, based on available data.
Source: Kern County.

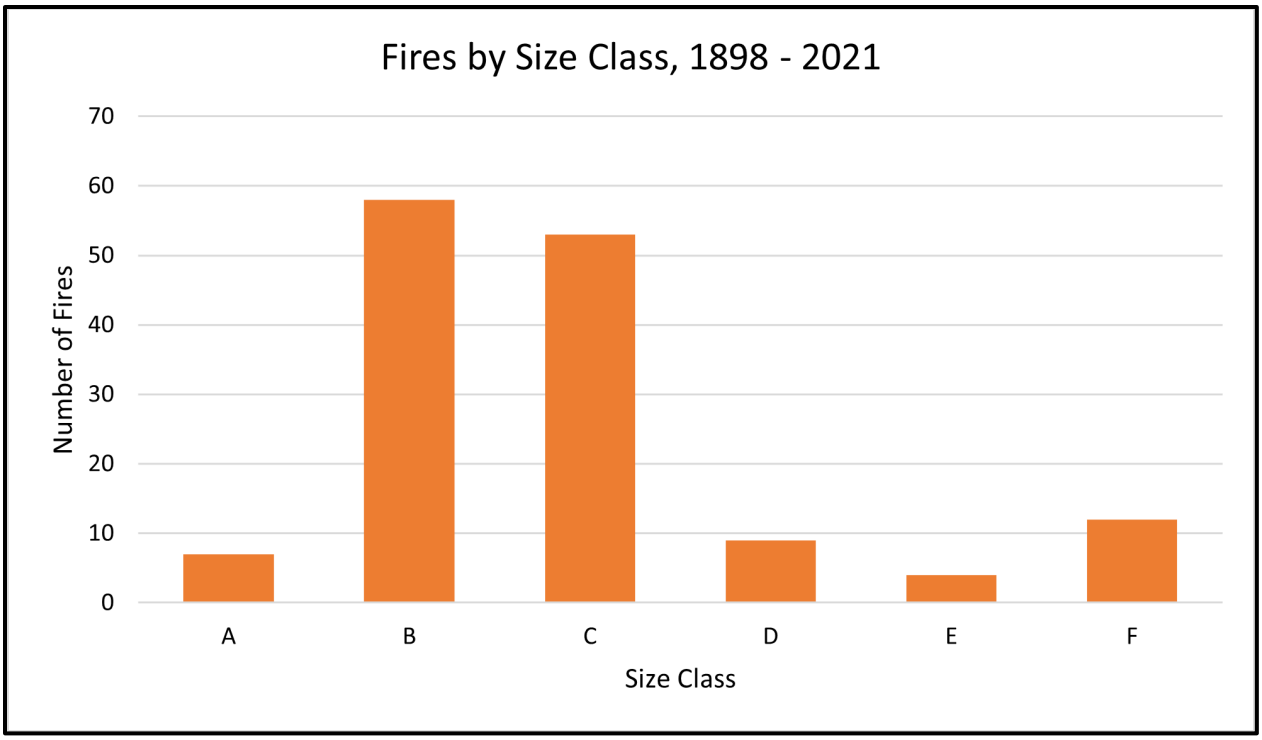


Figure 2.7. Fire size statistics for Kern County based on fire history data from 1898 to 2021.

Size Class: A = 0.25 acre or less; B = greater than 0.25 to 10 acres; C = 10 to 100 acres; D = 100 to 300 acres; E = 300 to 1,000 acres; F = 1,000+ acres.

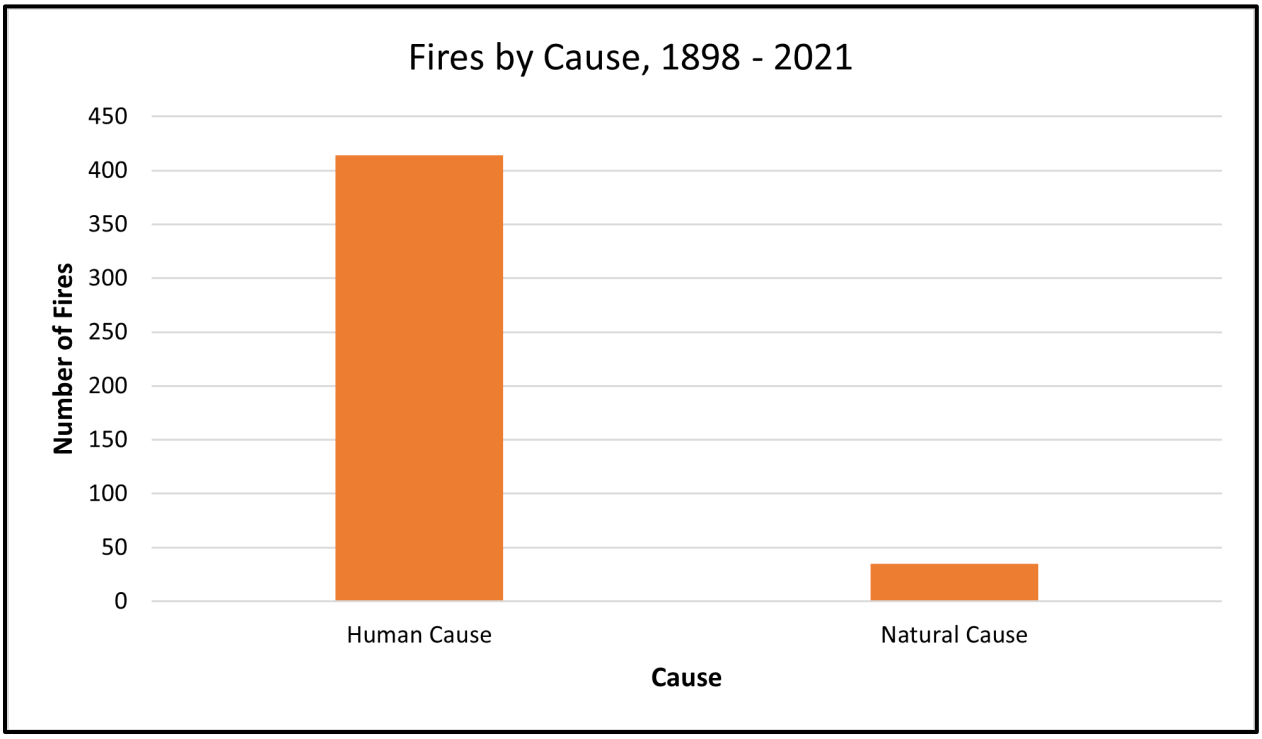


Figure 2.8. Fire causes for Kern County from 1898 to 2021.

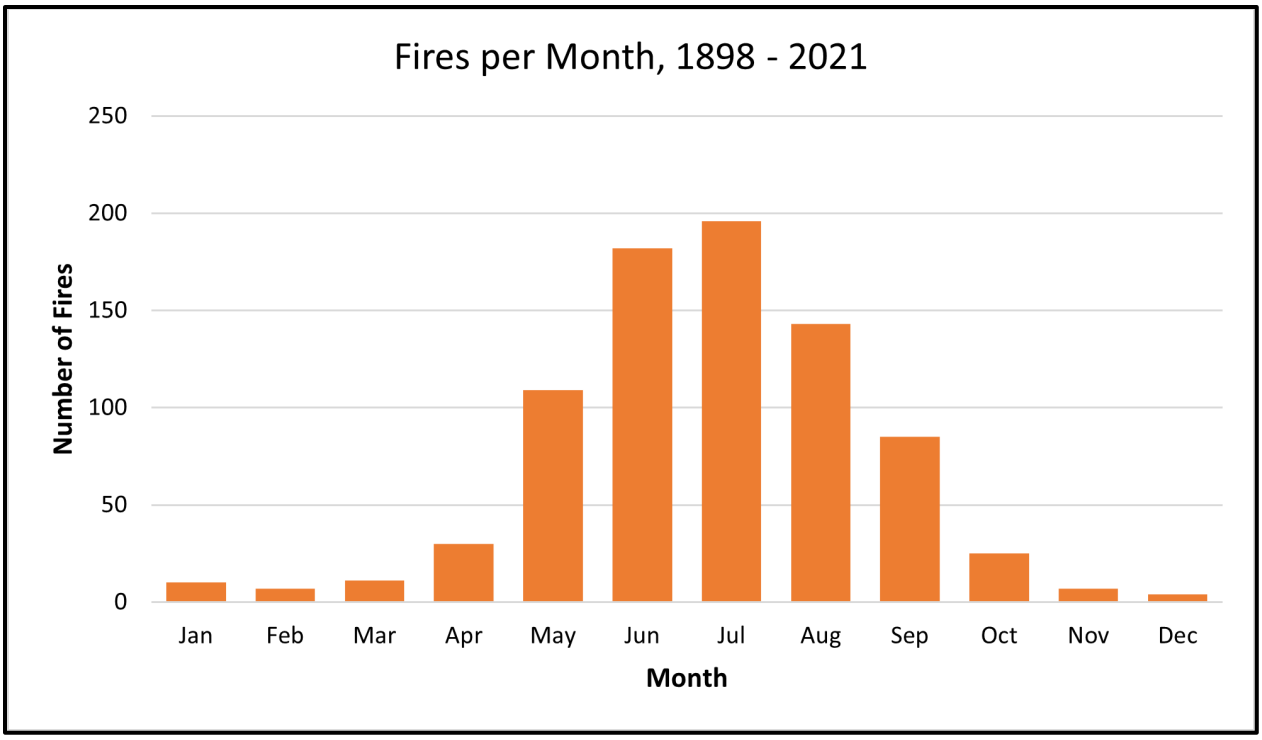


Figure 2.9. Monthly fire frequency in Kern County based on data from 1898 to 2021.

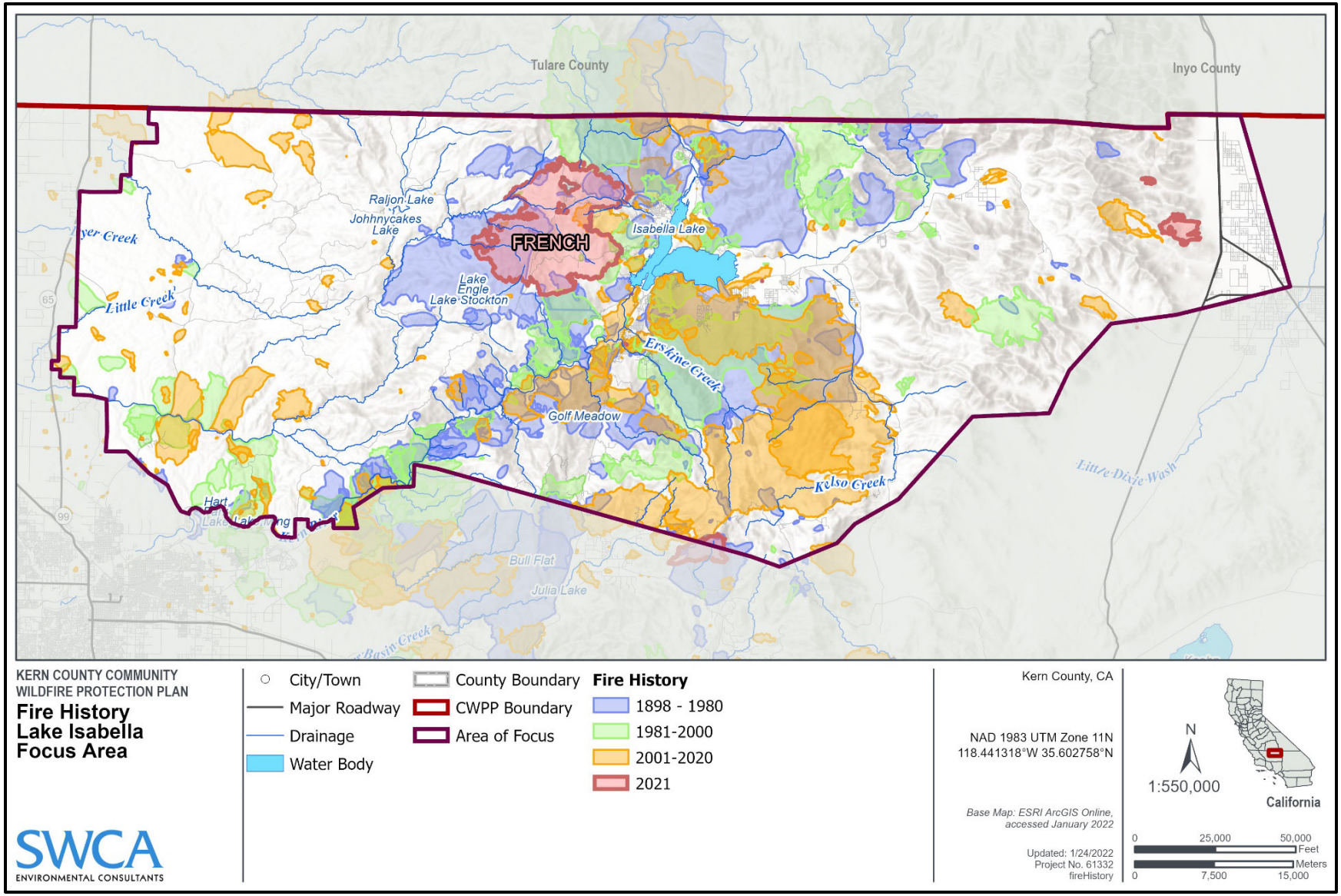


Figure 2.10. Lake Isabella focus area fire history from 1898 to 2021.

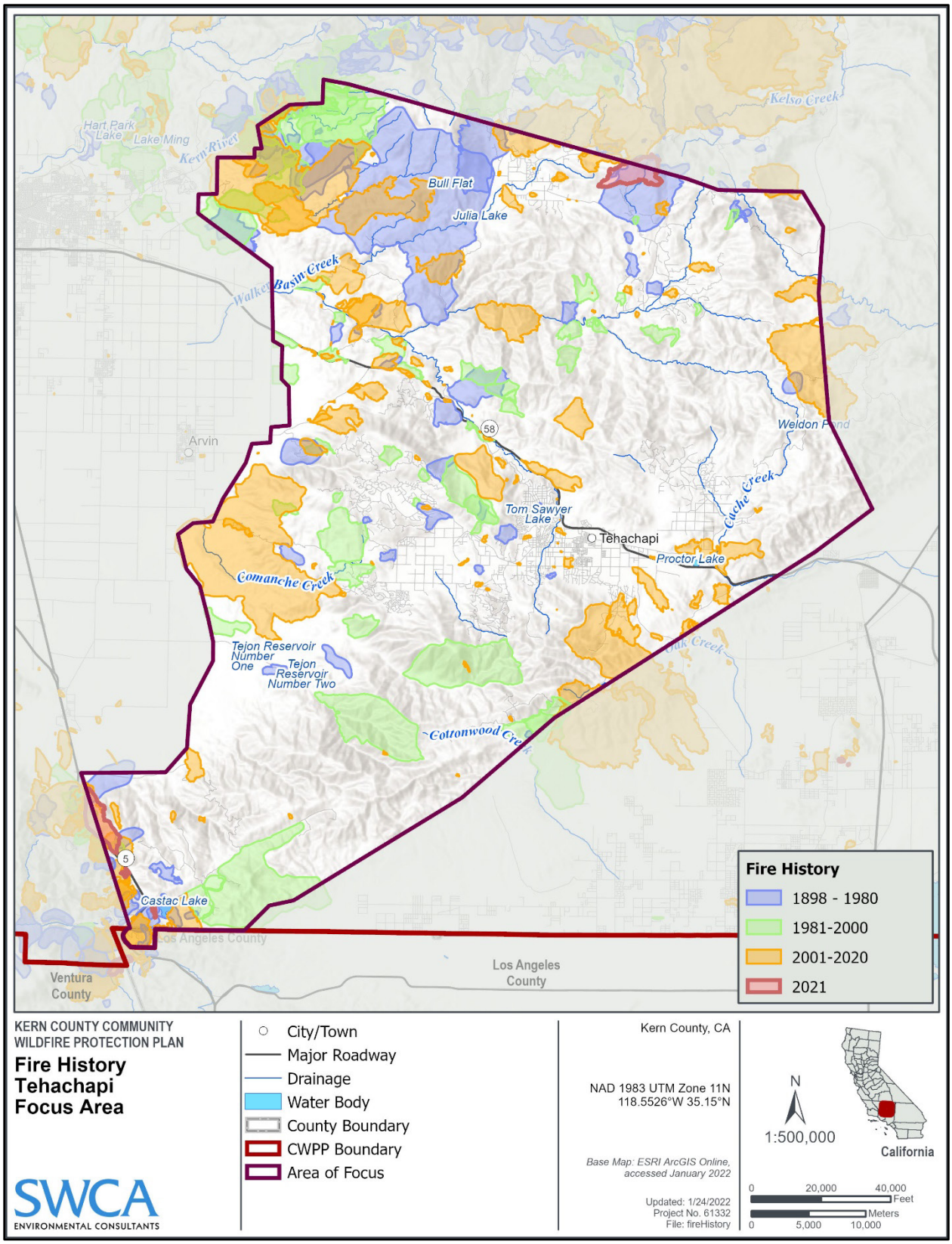


Figure 2.11. Tehachapi focus area fire history from 1898 to 2021.

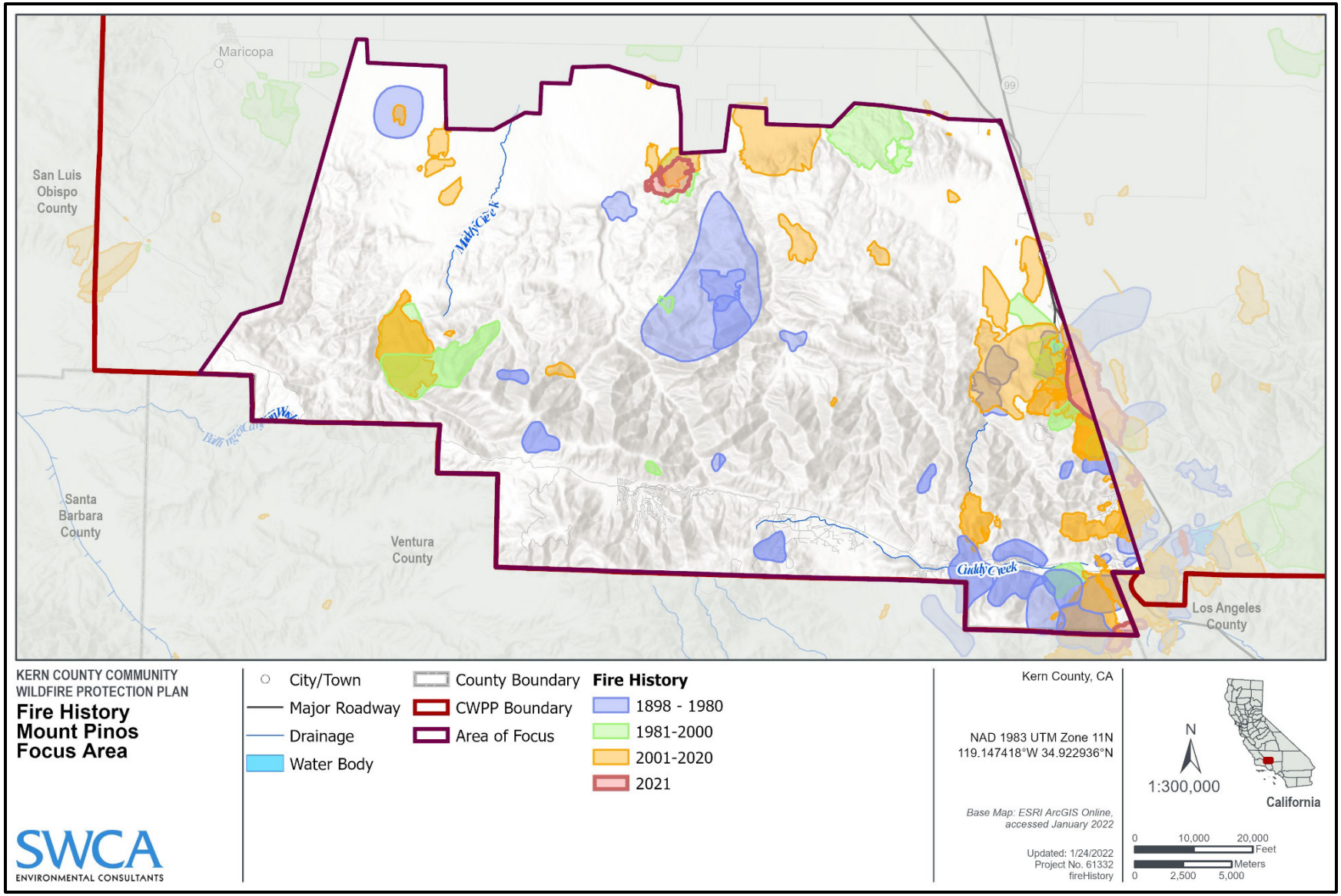


Figure 2.12. Mount Pinos focus area fire history from 1898 to 2021.

Future Challenges

Impact of Climate Change

Frequent drought, suppression-based forest management tactics, and climate change have all worked together to increase forest vulnerability over time. Removing natural fire from a fire-dependent ecosystem, in addition to disturbances such as drought, insects, and diseases, together have resulted in increased fuel buildup and alterations to vegetation composition. These forest changes can increase the risk of uncharacteristically large high-severity fires (CDFW 2021). In the past few years, fires have grown to record sizes and are burning earlier, longer, hotter, and more intensely than they have in the past (Westerling 2016; Westerling et al. 2006).

According to the National Interagency Fire Center (NIFC), occurrence of catastrophic wildfires has greatly increased over the last 20 years. Westerling et al. (2006) claim that a study of large (>1,000 acres) wildfires throughout the western United States for the period 1970 to 2003 saw a pronounced increase in frequency of fire since the mid-1980s (1987–2003 fires were four times more frequent than the 1970– 1986 average). The length of the fire season was also observed to increase by 78 days, comparing 1970–1986 with 1987–2003. An update to Westerling et al.'s 2006 work found that the frequency of large wildfires has continued to increase with each decade since 1970 (Westerling 2016). Within just the last 10 years, a record number of acreages have burned, and numbers are continually getting larger (NIFC 2021a). In 2020, 58,950 fires were reported nationwide, burning 10.1 million acres (NIFC 2021a). In California, 4,257,863 acres were burned by wildfire in 2020 (CAL FIRE 2020b). With increased fires comes increased suppression costs; 2018 beat all previous records, with federal firefighting costs hitting $3,143,256,000 (NIFC 2021b).

The shifting climate, particularly rising temperatures, changing wind patterns, and increasing temporal and spatial variability of water availability, are considerably escalating wildfire risk across the state. The recurrence of severe fire weather during the autumn months has more than doubled in California since the 1980s, and, considering climate change, this prevalence is projected to increase in the future. As stated by California's Fourth Climate Change Assessment, if greenhouse gas emissions continue to increase, California is expected to experience a 50% increase in fires larger than 25,000 acres as well as a potential 77% increase in average area burned by 2100. The state has already begun to encounter the impacts of increased fire occurrence and severity. In fact, all five of the largest wildfires in California occurred in the last 3 years, including the August Complex Fire (August 2020) and the Dixie Fire (July 2021). The August Complex and Dixie Fires alone burned a combined total of nearly 2 million acres and well over 2,000 structures (CAL FIRE 2021b). It is clear that catastrophic wildfire events continue to present a significant threat to California's communities.

In addition to direct damage (e.g., structure and property damage) caused by wildfires, wildfires also cause indirect impacts on the environment and ecosystem services. Wildfires are known to deteriorate local and regional air quality, pollute waterways, displace native species (animal and plant), and increase carbon dioxide emissions. The increased carbon dioxide emissions are of special concern since carbon dioxide is a greenhouse gas. Greenhouse gases are implicated in climate change, and climate change is a critical factor exacerbating frequency and severity of wildfires. Moreover, as energy companies responded to the growing threat of wildfire events and likely risk of ignition by electrical transmission equipment, communities across the state were impacted by public safety power shutoff events. Utility credit reductions result in higher consumer rates and homeowner's insurance in the wildland-urban interface is also becoming more difficult and expensive to obtain in California (California Governor's Office of Planning and Research [CA GOPR] 2019).

It is important to remember that fire is a natural part of California's diverse landscapes and is essential to many ecosystems across the state. Almost all of California's diverse ecosystems are fire-dependent or fire-adapted (CDFW 2021). Frequent, large, high-severity wildfires are the primary source of the catastrophic damage listed above. Wildfire, when not intensified by human actions, works to balance ecosystems and restore their natural functions.

Tree Mortality

Rising temperatures, extensive droughts, extreme wildfires, and insect outbreaks have contributed to widespread tree mortality in the Sequoia and Los Padres NFs. Tree mortality due to the aforementioned factors is a natural process in forest ecosystems. However, if many trees die in a brief time period and in large regions, forest health may be negatively affected. In addition to disrupting ecosystem functions, widespread tree mortality near developed or recreational areas present hazards as they can fall on people and infrastructure. Furthermore, how much fire danger deceased trees pose is contingent on the amount of time that has passed since the trees have died and how much of the leaves, pine needles, branches, and tree trunks have fallen to the forest floor. In the Sequoia NF, due to recent droughts and rising temperatures, fuels that reach the ground tend to persist for a longer period and present a significant wildfire hazard. As such, any increase in tree mortality results in increased fuels and more severe or frequent wildfires (National Park Service [NPS] 2021a).

During the 2012–2016 drought, tree mortality increased significantly throughout the region. Rising temperatures and reduced water availability have stressed trees, thereby increasing their susceptibility to insect and pathogen infestations (California Office of Environmental Health Hazard Assessment 2019). Roughly 129 million trees were estimated to have died between 2012 and 2017. In 2016 alone, 62 million trees died, with 95% of tree mortality occurring in the Sierra Nevada (University of California, Agriculture and Natural Resources [UCANR] 2017). Recent surveys show that the tree mortality trend is likely to continue. In their 2019 annual aerial survey, the USFS detected 15.1 million dead trees statewide, mostly California red or white fir, bringing the cumulative total to 163 million dead trees since 2010 (USFS 2019a). Most of the surveyed tree mortality occurred in the southern areas of the Sierra Nevada range. In Kern County, 17,000 acres with 89,000 deceased trees were detected (USFS 2019a). With respect to National Forests, 1,014,000 dead trees were detected in the Sequoia NF and 45,000 in the Los Padres NF (USFS 2019a).

While it is known that tree mortality affects several aspects of wildfire behavior, it is not well established to what extent tree mortality influences wildfire severity. Researchers from the University of California Davis and the USFS conducted the study, *Recent bark beetle outbreaks influence wildfire severity in mixed-conifer forests of the Sierra Nevada, California, USA* (Wayman and Safford 2021), to answer this question. The researchers focused on the 2015 Rough Fire and the 2016 Cedar Fire areas for their assessment. They found that two measures of wildfire severity (area killed by fire and canopy torch) were significantly influenced by pre-fire tree mortality. That is, the higher the degree of tree mortality in an area, the higher the potential for a canopy fire and fire-killed trees. Considering that deceased trees pose an increased risk of catastrophic wildfire, the researchers emphasized that fuel reduction treatments, such as thinning and prescribed fire, not only reduce the risk of catastrophic wildfire but can also reduce the severity of future bark beetle outbreaks (Wayman and Safford 2021).

Recent fires have also contributed to increased tree mortality in the Sequoia NF. The 2020 Castle Fire resulted in a loss of 10% to 14% of all sequoia trees over 4 feet in diameter in all the Sierra Nevada. The 2021 Windy and KNP Complex Fires burned a combined total of 27 sequoia groves, which translates to 6,109 acres of giant sequoia groves. As a result, it is estimated that 2,261 to 3,637 sequoias over 4 feet in diameter have been killed or will die within the next 3 to 5 years. While sequoias are fire-adapted,

increasing fire severity challenges sequoia persistence. Recruitment failure could arise if the cones/seeds are destroyed during crown fires, seeds are incinerated in the soil, or seeds are carried away by surface erosion in high-severity burn areas (NPS 2021b).

Additional information regarding forest health considerations and wildlife is provided in Appendix A.

FIRE RESPONSE CAPABILITIES

Planning and Decision Support

As wildfires have continued to grow in size and severity over the last decade, fire managers are needing to institute more robust pre-fire planning as well as adapt and improve decision-making tools in order to reduce risk to fire responders and the public and assess impacts on ecological processes.

A primary decision tool utilized by fire managers across all agencies is the Wildland Fire Decision Support System (WFDSS), a system that assists fire managers and analysts in making strategic and tactical decisions for fire incidents (U.S. Geological Survey [USGS] 2021a). WFDSS combines desktop applications for fire modeling into one web-based system. It provides a risk-informed decision process and documentation system for all wildland fires, and it also introduces economic principles into the fire decision process in order to improve efficiencies which also ensuring safe and effective wildfire response.

One intent of WFDSS is to ensure that when fire response decisions are made, they fall in line with agency land and resource management plans. Agencies have recently been moving away from the traditional written fire management plans and instead are developing spatial fire management plans that can be housed within WFDSS (USGS 2015). The Sequoia NF, for example, will have all management requirements and strategic objectives for fire management contained within WFDSS so that in the event of a fire, incident managers are considering this information when making decisions and developing strategic direction for the wildfire incident (USGS 2015).

Fire Response Resources

California contains many federal, state, and local fire protection organizations that are well integrated through a variety of mutual aid and fire protection agreements and are coordinated by organizations such as the California Wildfire Coordinating Group, the Northern and Southern California Geographic Area Coordination Centers, and FIRESCOPE (an interagency resource coordination system for fire and other emergencies in the southern California). Agencies such as California Emergency Management, USFS, and CAL FIRE form the basis for a very substantial wildfire response capacity that can be deployed in wildfire situations throughout the state. California contains what many regard as the strongest wildfire suppression capability in the nation.

Local Response

Kern County Fire Department

The KCFD consists of over 521 firefighters who protect over 8,000 square miles (KCFD 2021b) of Kern County, including the cities of Bakersfield, Taft, Delano, McFarland, Shafter, Wasco, Arvin, and Ridgecrest (KCFD 2021b). In addition to operating the 47 Kern County fire stations, the County department participates in the State Master Mutual Aid system. The department has agreements with the

USFS (Sequoia and Los Padres NFs), the BLM (Bakersfield and Cal Desert District), CAL FIRE, and the USFWS (KCFD 2021a) to assist with fire suppression on other land ownerships.

Kern County is broken up into six fuel management areas by the KCFD (Figure 2.13). All management areas overlap the CWPP focus areas (Lake Isabella, Tehachapi, and Mount Pinos). Below are the battalions associated with each fuel management area (KCFD 2021a). State Responsibility Areas (SRAs) are areas where the state is responsible for fire response. SRAs constitute 69% of the area within Kern County (KCFD 2021a). In most SRAs, fire protection is provided by CAL FIRE; however, in Kern County, the KCFD operates under contract with CAL FIRE to provide fire protection to all SRAs within the County (Figure 2.14). CAL FIRE provides funding to Kern County for fire prevention and suppression of wildland fires on the SRAs which is used to cover salary and wages of suppression staff, maintenance of firefighting facilities, pre-fire management positions, special repairs, and administrative services.

- Battalion 1 serves the Tehachapi area, which covers 951,000 acres, of which 351,276 acres are SRA land.
- Battalion 2 protects the Western Kern area, which covers 1,100,147 acres, of which 455,293 acres are SRA land.
- Battalion 3 safeguards the Northern Kern area. Total acreage in this area is unknown. However, 409,566 acres are SRA land.
- Battalion 5 protects the Mount Pinos communities, an area which is adjacent to the Los Padres NF.
- Battalions 4 and 6 partner up on the Valley/Foothill area, which merges with the Sequoia NF. Most of this land is categorized as a Local Responsibility Area (LRA).
- Battalion 7 serves the Kern River Valley area. This area has 253,776 acres of USFS, BLM, and SRA land.

Volunteer and career firefighters at the County and community level have similar capabilities throughout the entire year. Despite the continuous level of capabilities, inconsistencies occur within the volunteer service. Although several volunteer firefighters are present in the County, not all are available to respond to every fire. The County has taken steps to ensure a fire crew with year-round capacity for County response, such as the County Fire Recruit Assistance Program, which is available to assist volunteer and permanent firefighter recruitment (KCFD 2021c).

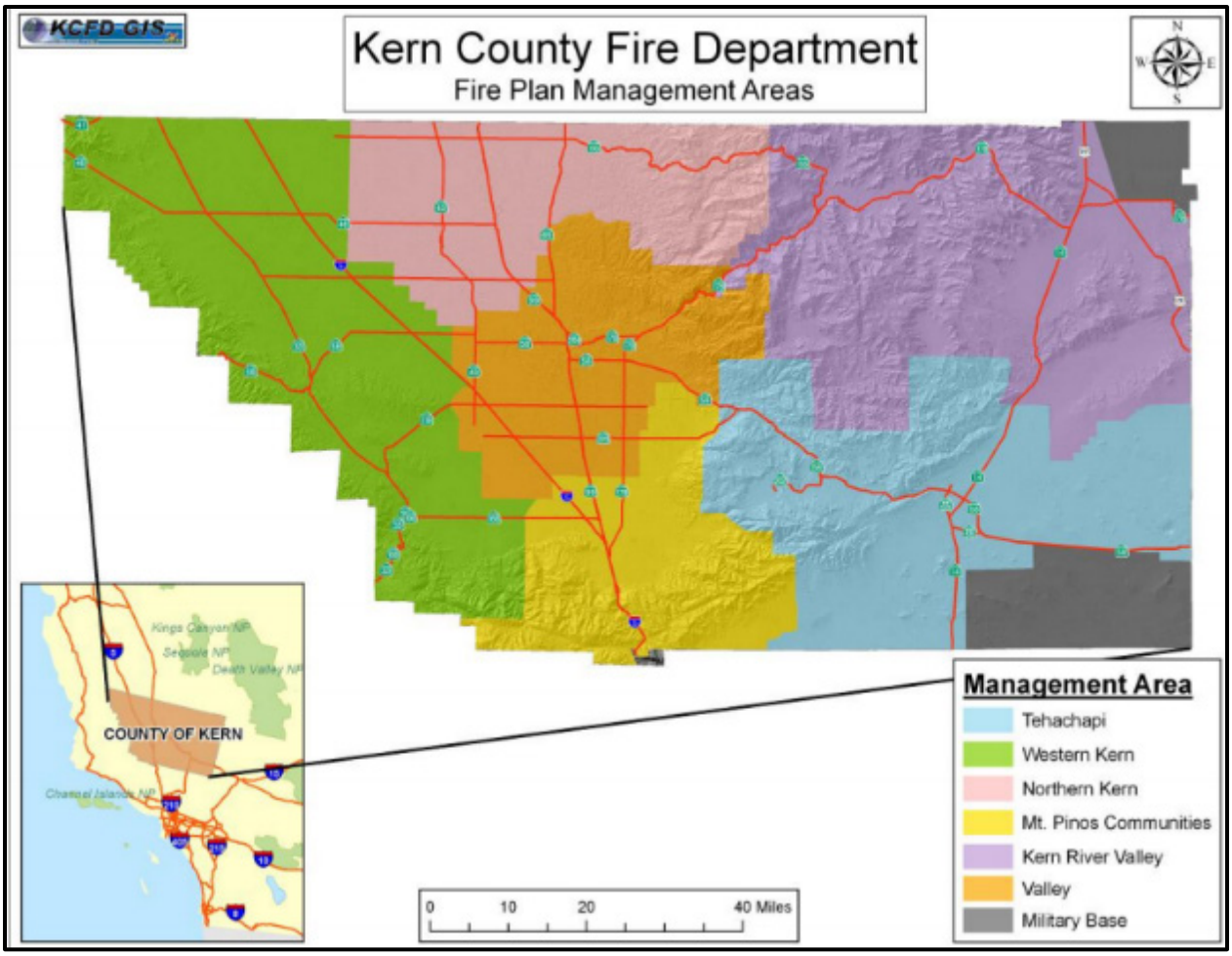


Figure 2.13. KCFD fuel management areas. (KCFD 2021a)

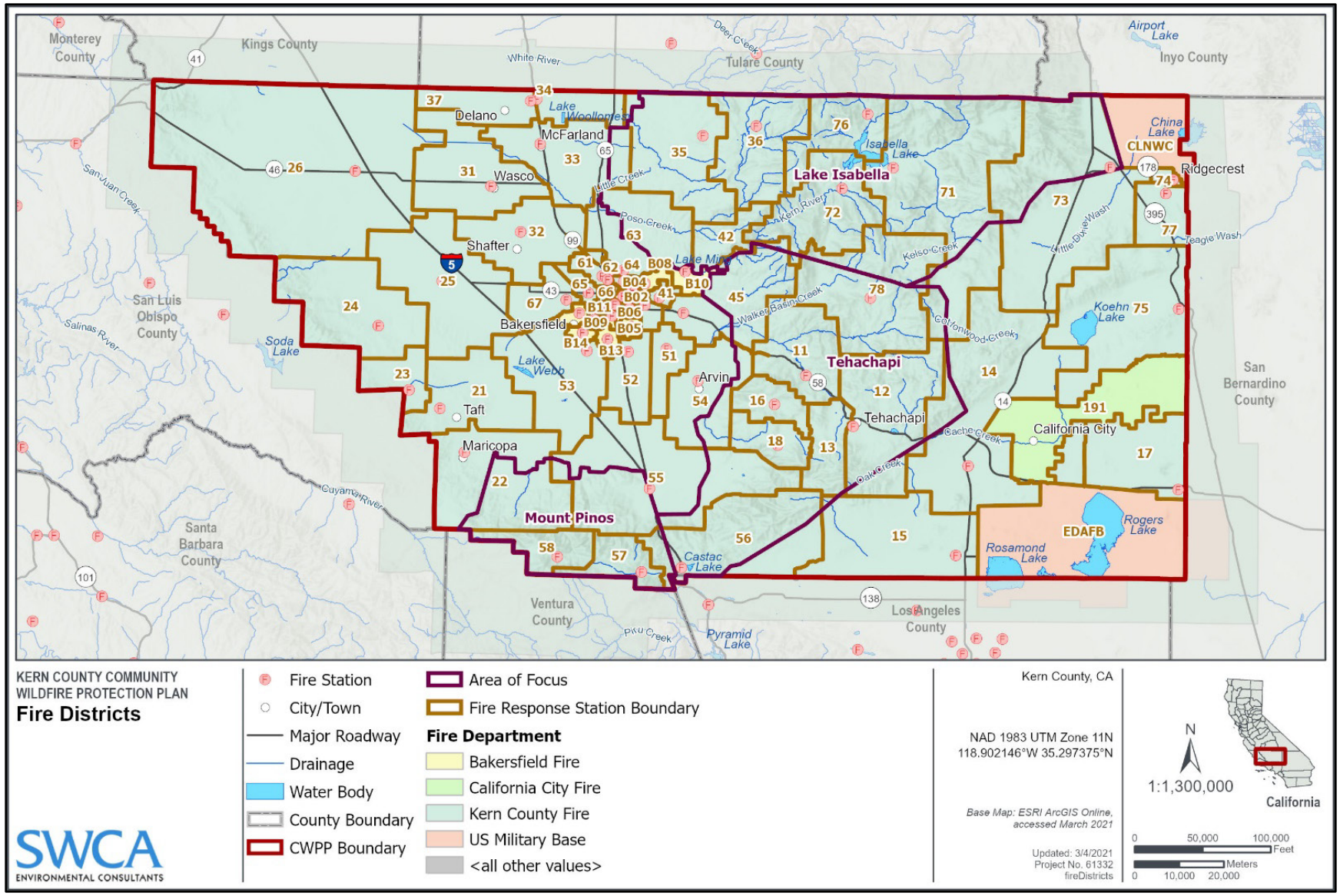


Figure 2.14. Fire department districts within Kern County.

State Response

California Department of Forestry and Fire Protection (CAL FIRE)

Dispatch, coordination, and logistical support is provided via the Southern California Geographic Coordination Center, also known as Operations Southern California (OSCC). Resource distribution for all-risk incidents, such as aircraft and equipment requests, is handled by the Southern Operations Command Center. The OSCC is a cooperative effort amongst various agencies, including the USFS, USFWS, U.S. Department of the Interior, NPS, BLM, California Office of Emergency Services (CA OES), and CAL FIRE (OSCC 2021).

Fire department districts broken down by CWPP focus area can be found in Appendix B.

Federal Response

On federal land, the management of wildfire for multiple resource objectives (managing naturally burning fires in forests as a tool for helping to restore forest health and mitigating the escalating costs of fire suppression) is practiced, but the extent to which it is practiced depends on a thorough assessment of risk to values at risk (VARs). Depending on the location and nature of a wildfire, USFS policies outline appropriate management responses to guide district personnel in the application of specific suppression techniques. All large wildfire response decisions would be based upon assessment using WFDSS (USGS 2021a).

U.S. Forest Service

Overall, the USFS provides wildfire response and management for over 193 million acres of National Forest System land (CRS 2021). National Forest land is considered a Federal Responsibility Area (FRA). FRAs are regions where the federal government is responsible for fire response. On USFS land, the USFS has the responsibility for initial attack (initial response).

Los Padres National Forest

Fire response for the Los Padres NF is coordinated through the OSCC in partnership with the National Interagency Coordination Center (OSCC 2021). Under the OSCC is the Los Padres Communications Center (LPCC), which provides all-risk dispatching services specifically for the Los Padres NF, Santa Ynez Band of Chumash Mission Indians, and Hopper Mountain and Bitter Creek Refuges. The Los Padres NF maintains mutual aid agreements with the KCFD, CAL FIRE, BLM, and USFWS. Under the agreements, agency personnel may respond to incidents outside their agency boundaries.

Sequoia National Forest

Fire response for the Sequoia NF is coordinated through the OSCC in partnership with the National Interagency Coordination Center (OSCC 2021). Under the OSCC is the Central California Interagency Communications Center (CCICC). The CCICC is a cooperative effort among the USFS, BLM, Bureau of Indian Affairs, and the Tule Indian Reservation Fire Department (CCICC 2021). The Sequoia NF maintains mutual aid agreements with KCFD, CAL FIRE, BLM, and USFWS. Under the agreements, agency personnel may respond to incidents outside their agency boundaries.

U.S. Fish and Wildlife Service

Kern National Wildlife Refuge

Fire response for the Kern National Wildlife Refuge is coordinated through the CCICC. A seasonal engine crew is funded collaboratively through the USFWS and BLM. However, no year-round fire staff are in service for the Kern National Wildlife Refuge. Initial response may be executed in collaboration with the Lost Hills Fire Station (KCFD), BLM Bakersfield District, or the Kern County Fire Department (USFWS 2001a).

Bitter Creek National Wildlife Refuge

Fire response for the Bitter Creek National Wildlife Refuge is coordinated through the CCICC. The KCFD provides wildland and structural fire protection to the refuge through a collaborative fire protection agreement. All coordination and dispatch are administered by the KCFD. In addition, the Los Padres NF and the BLM Bakersfield District provide mutual aid resources on wildland fires threatening their jurisdictions through mutual aid agreements (USFWS 2001b).

Bureau of Land Management

Kern County falls under the California Central District, Bakersfield Field Office, and the California Desert District, Ridgecrest Field Office. While the BLM does not have a specific fire and aviation program within the Bakersfield or Ridgecrest offices, the BLM is a member of the California Forest Management Task Force (Task Force). The Task Force is composed of several state, federal, and local wildland firefighting agencies. Additionally, the Task Force joins local communities to prevent or minimize fire danger (BLM 2021).

Mutual Aid

The wildland fire community is well known for its development of mutual aid agreements at the federal, state, and local levels. Such automatic aid agreements allow for closest forces to respond to an incident as quickly as possible regardless of jurisdiction. Such agreements may also describe how reimbursement will be conducted; state resources responding to wildfires on federal land may have their associated costs reimbursed by the responsible federal agency, and the reverse is true for federal resources suppressing a wildfire on state land.

EVACUATION RESOURCES

As part of emergency management protocols, Kern County has adopted Ready, Set, Go! emergency practices. In addition to accessing a wildfire action plan (https://kerncountyfire.org/wp-content/uploads/READY-SET-GO.pdf), under Ready, Set, Go! you can learn what your fire risk is, how to protect your home, what to do before the fire approaches your house, and tips for preparing to leave, leaving, and returning home (KCFD 2021d).

Furthermore, the KCFD Emergency Preparedness links webpage provides various emergency preparedness resources such as a disaster kit checklist, directions for making a home escape plan, evacuation dos and don’ts, and more (KCFD 2021e). The emergency preparedness links page is available at https://kerncountyfire.org/education-safety/preparedness/

Evacuation planning is incorporated into the County's Hazard Mitigation Plan (HMP) and Safety Element of the General Plan, per Section 65302 of the California Government Code, which requires the County to identify evacuation routes and their capacity, safety, and viability under a range of emergency situations. Provisions for safe evacuation are included in the General Plan. With respect to wildland and urban fire hazards, provisions include (Kern County Planning Department 2009):

- Ensuring that new development of structures have adequate access for emergency equipment and for the evacuation of residents
- Requiring that all roads in the WUI are appropriately marked and that properties have addresses conspicuously displayed
- Ensuring that discretionary projects comply with the adopted Fire Code and the requirements of the KCFD
- Promoting public education regarding fire safety at home and at work

Additional evacuation and wildfire preparedness resources are available in Appendix G.

Road Systems

Much of Kern County is accessible via surfaced roads and highways; however, some communities are accessed only via unsurfaced roads (Figures 2.15 and 2.16), which are often narrow and windy with many dead-ends. These routes may prove hazardous during emergency evacuation, especially where they are adjacent to forested land with vegetation close to or overhanging the road. Fuel treatment may be needed along some roads where vegetation is overhanging and could prevent safe evacuation of residents or safe access by emergency responders. Some rural roads and driveways may also have narrow bridges with weight limits that may impact access with large emergency apparatus.

Figure 2.15. Unsurfaced road, example 1.

Figure 2.16. Unsurfaced road, example 2.

People

The safe and efficient evacuation of people from wildfire requires several factors, including:

- Emergency notification methods: The County has implemented Ready Kern, an emergency notification system that utilizes phone, email, and text communication channels. Residents must register their contact information in the system (KCFD 2021f). Social networking sites such as Facebook, Twitter, and email distribution lists are other resources that have become highly valued during wildfires in nearby communities.
- Preplanning by the public about how to evacuate and where to go: limited evacuation routes, poor or missing signage, and conflicts with emergency vehicles driving into the community versus the public trying to leave complicate evacuation. Uncertainty about where to find temporary refuge can cause families to become separated and delay reunions. Some individuals without transportation or with limited mobility may be accidentally left behind.
- Public awareness: These two items will fail to occur throughout CARs if the residents are unaware of notification methods: 1) the need for preplanning and 2) the elements that should be included in preplanning. Therefore, public education and outreach on these topics should be part of all efforts conducted by agencies such as fire departments in a wide variety of venues.

Pets and Animals

Some communities within the County have rural homes with horses and other large animals and livestock, and pets are common in homes throughout the County. In the event of a wildfire, it is important that residents and fire responders have a plan for evacuation of pets and livestock. Evacuation planning often neglects to describe how animals will be evacuated and where they will be taken. The loading of horses, for example, during a fire and smoke situation, and transport of stock vehicles down narrow roads under stressful situations, can be very difficult. Public education could emphasize the need to practice loading horses quickly, for example.

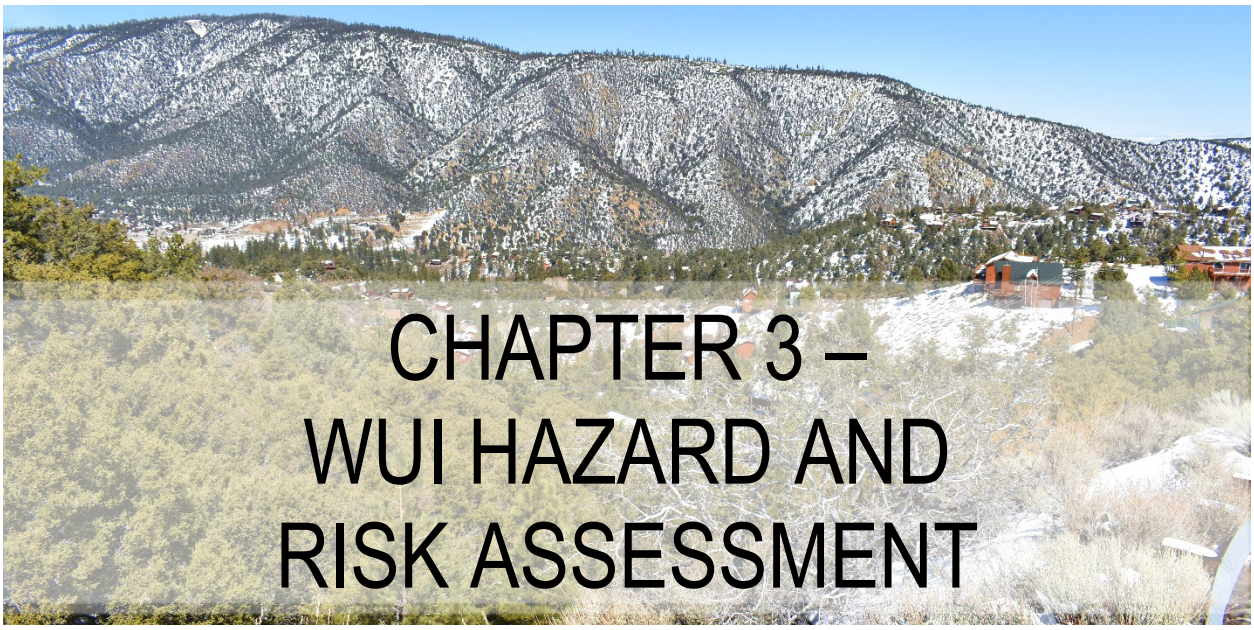
Kern County Animal Services (KCAS) helps with evacuating small and large animals from fire areas. In addition, KCAS offers emergency housing for evacuated animals. KCAS has two shelters in the County that can accommodate a variety of animals, including horses, goats, sheep, pigs, rabbits, birds, and lizards (KCAS 2021a). For more information, see https://www.kerncountyanimalservices.org/who-we-are/about-us/

In addition, KCAS provides animal disaster information, including tips and checklists for making an animal emergency plan (KCAS 2021b). That information is provided here: https://redrover.org/pet-disaster-preparedness/

WATER AVAILABILITY AND SUPPLY

Water supply is variable around the County and may be provided by hydrants and tanks. Many rural and unincorporated communities lack water for fire suppression. Upgrades have been implemented at fire stations in some communities, including installation of aboveground and belowground water tanks. Additional water storage is still needed in many areas.

Lake Isabella could also provide an alternative source for suppression. Many stations have the capability and equipment to draft, but suitable drafting sources are not always known depending on the fire location.



CHAPTER 3 – WUI HAZARD AND RISK ASSESSMENT

PURPOSE

The purpose of developing the risk assessment model described here is to create a unique tool for evaluating the risk of wildland fires to communities within the WUI areas of Kern County. Although many definitions exist for hazard and risk, for the purpose of this document these definitions follow those used by the firefighting community:

> **Hazard** is a fuel complex defined by kind, arrangement, volume, condition, and location that forms a special threat of ignition and resistance to control.
>
> **Risk** is defined as the chance of a fire starting as determined by the presence and activity of causative agents (NWCG 1998).

The risk-hazard assessment is twofold and combines a geographic information system (GIS) model of hazard based on fire behavior and fuels modeling technology (Composite Risk-Hazard Assessment) and a Core Team–generated assessment of on-the-ground community hazards and VARs.

From these assessments, land use managers, fire officials, planners, and others can begin to prepare strategies and methods for reducing the threat of wildfire, as well as work with community members to educate them about methods for reducing the damaging consequences of fire. Furthermore, using this risk assessment, fuels reduction treatments can be focused on high-risk private and public land. Through these treatments, community members may have the opportunity to actively participate, as well as recommend treatments on public land that they use or care about.

The Kern County HMP lists wildfire as a highly likely hazard, with just under half of the population residing within high and very high fire risk zones (KCFD OES 2020). The risk-hazard assessment completed by the CWPP planning team has confirmed the findings of the HMP.

As described previously, the County has experienced some large fires in recent years. The risk assessment for the CWPP was revised to address the fact that residual fuels in these burn areas would exhibit very different fire behavior until areas recover to post-fire fuel loads. The fire behavior modeling and post-fire fuel calibration process is described in Appendix A.

FIRE BEHAVIOR MODEL

OVERVIEW

The wildland fire environment consists of three factors that influence the spread of wildfire: fuels, topography, and weather. Understanding how these factors interact to produce a range of fire behavior is fundamental to determining treatment strategies and priorities in the WUI. In the wildland environment, vegetation is synonymous with fuels. When sufficient fuels for continued combustion are present, the level of risk for those residing in the WUI is heightened.

Fire spreads in three ways: 1) surface fire spread—the flaming front remains on the ground surface (in grasses, shrubs, small trees, etc.) and resistance to control is comparatively low; 2) crown fire—the surface fire "ladders" up into the upper levels of the forest canopy and spreads through the tops (or crowns) independent of or along with the surface fire, and when sustained is often beyond the capabilities of suppression resources; and 3) spotting—embers are lifted and carried with the wind ahead of the main fire and ignite in receptive fuels; if embers are plentiful and/or long range (>0.5 mile), resistance to control can be very high. Crown fire and spotting activity has been a concern for fire managers particularly under extreme weather conditions. In areas where homes are situated close to timber fuels and/or denser shrubs and trees, potential spotting from woody fuels to adjacent fuels should always be acknowledged as this poses significant risk to homes.

Treating fuels in the WUI can lessen the risk of intense or extreme fire behavior (Martinson and Omi 2013; Safford et al. 2009). Studies and observations of fires burning in areas where fuel treatments have occurred have shown that the fire either remains on or drops to the surface, thus avoiding destructive crown fire, as long as activity fuels are treated or removed (Graham et al. 2004; Pollet and Omi 2002; Prichard et al. 2010; Safford et al. 2012; Waltz et al. 2014). Therefore, fuel mitigation efforts should be focused specifically where these critical conditions could develop in or near CARs (for example, implementing fuel treatment projects that reduce ladder fuels to prevent transmission of fire from the surface into the crowns, as well as projects that reduce tree density to increase crown spacing to prevent active crown fire spread through the tree canopies).

For this plan, an assessment of fire behavior has been carried out using well-established fire behavior models: FARSITE, FlamMap, BehavePlus, and FireFamily Plus housed within the Interagency Fuel Treatment Decision Support System (IFTDSS), as well as ArcGIS Desktop Spatial Analyst tools. Data used in the Composite Risk-Hazard Assessment is largely obtained from LANDFIRE.

Information regarding the modeling approach and components is included in Appendix A.

COMPOSITE RISK-HAZARD ASSESSMENT

The Composite Risk-Hazard Assessment modeling approach utilizes a Weighted Sum Model, which "stacks" geographically aligned datasets and evaluates an output value derived from each cell value of the overlaid dataset in combination with the weighted assessment. In a Weighted Sum Model, the weighted values of each pixel from each parameter dataset are added together so that the resulting dataset contains pixels with summed values of all the parameters. This method ensures that the model resolution is maintained in the results and thus provides finer detail and range of values for denoting fire risk. Figure 3.1 illustrates the individual datasets and the relative weights assigned within the modeling framework.

The data layers in Figure 3.1 represent the fire modeling results post summer 2021 following fuel calibration. The French Fire burned 27,285 acres within the County. As a result, the existing fuel model layer used in the fire behavior modeling process required calibration in order to acknowledge that relic vegetation in the burn area would now burn differently from the originally classified fuels.

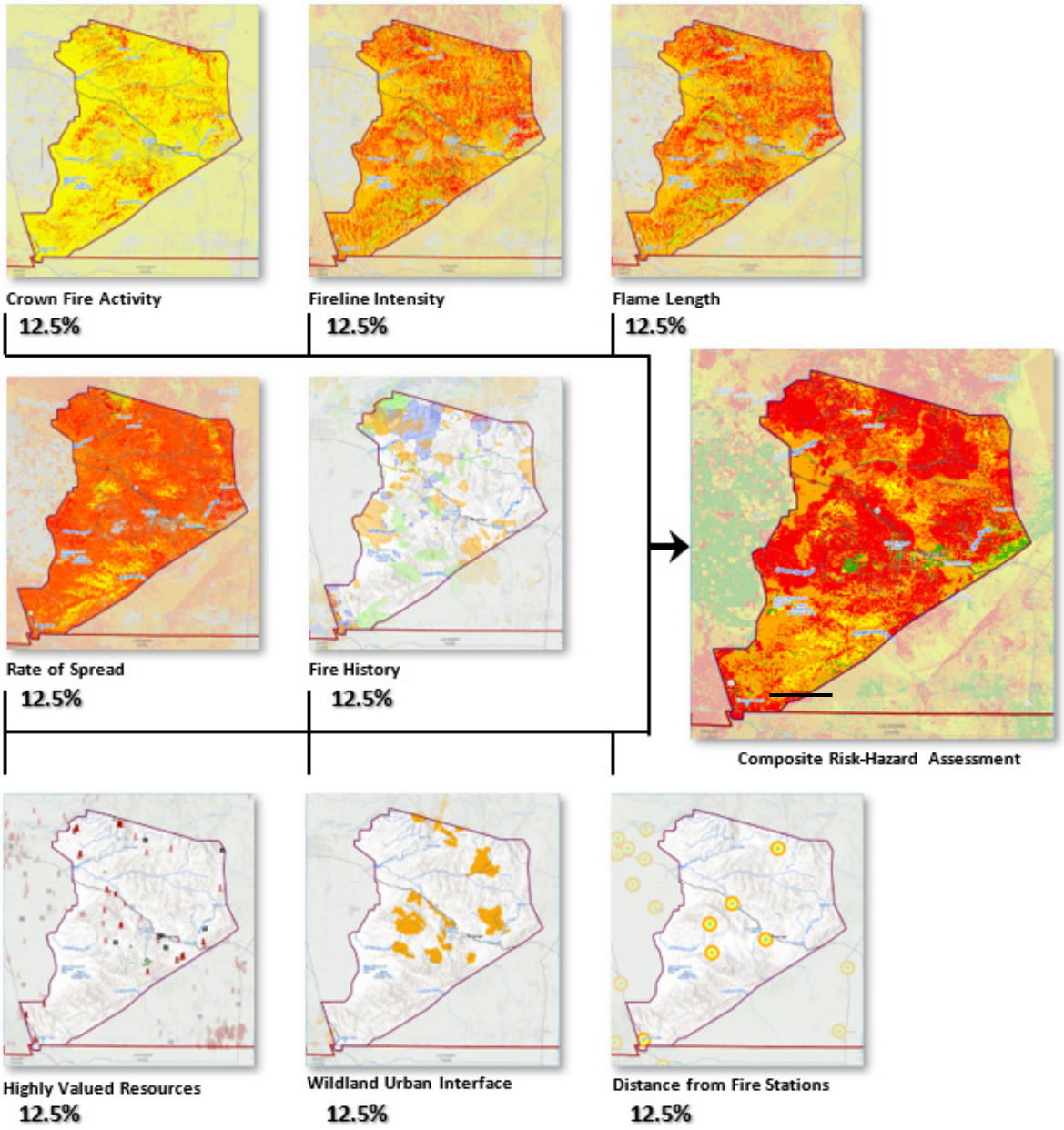


Figure 3.1. Composite risk-hazard overlay process.

Figures 3.2 through 3.4 show the risk assessment for the three focus areas based on the combination of all of the fire behavior parameters described above. The risk assessment classifies the planning area into low, moderate, and high-risk categories.

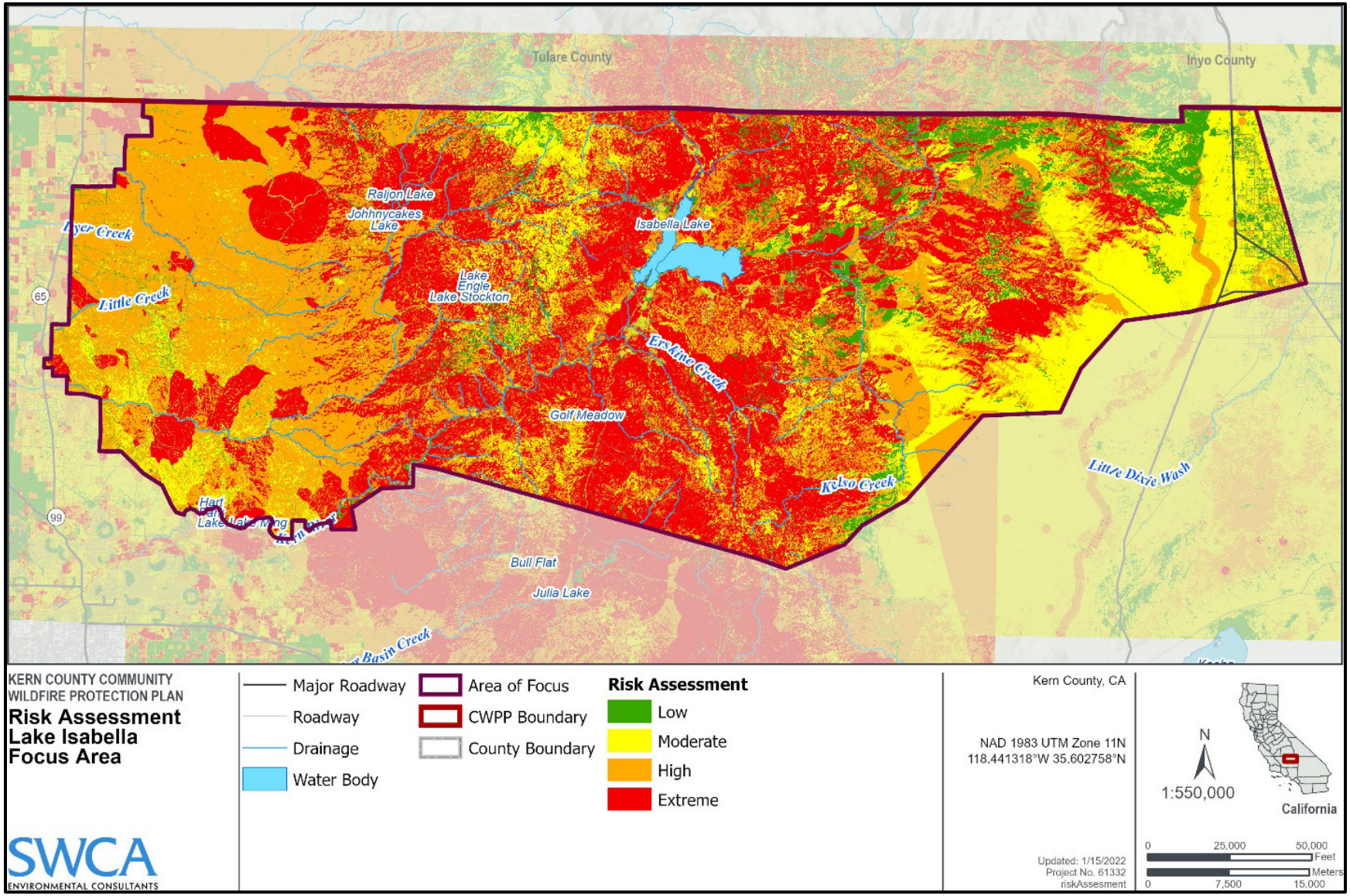


Figure 3.2. Composite risk-hazard assessment for the Lake Isabella focus area.

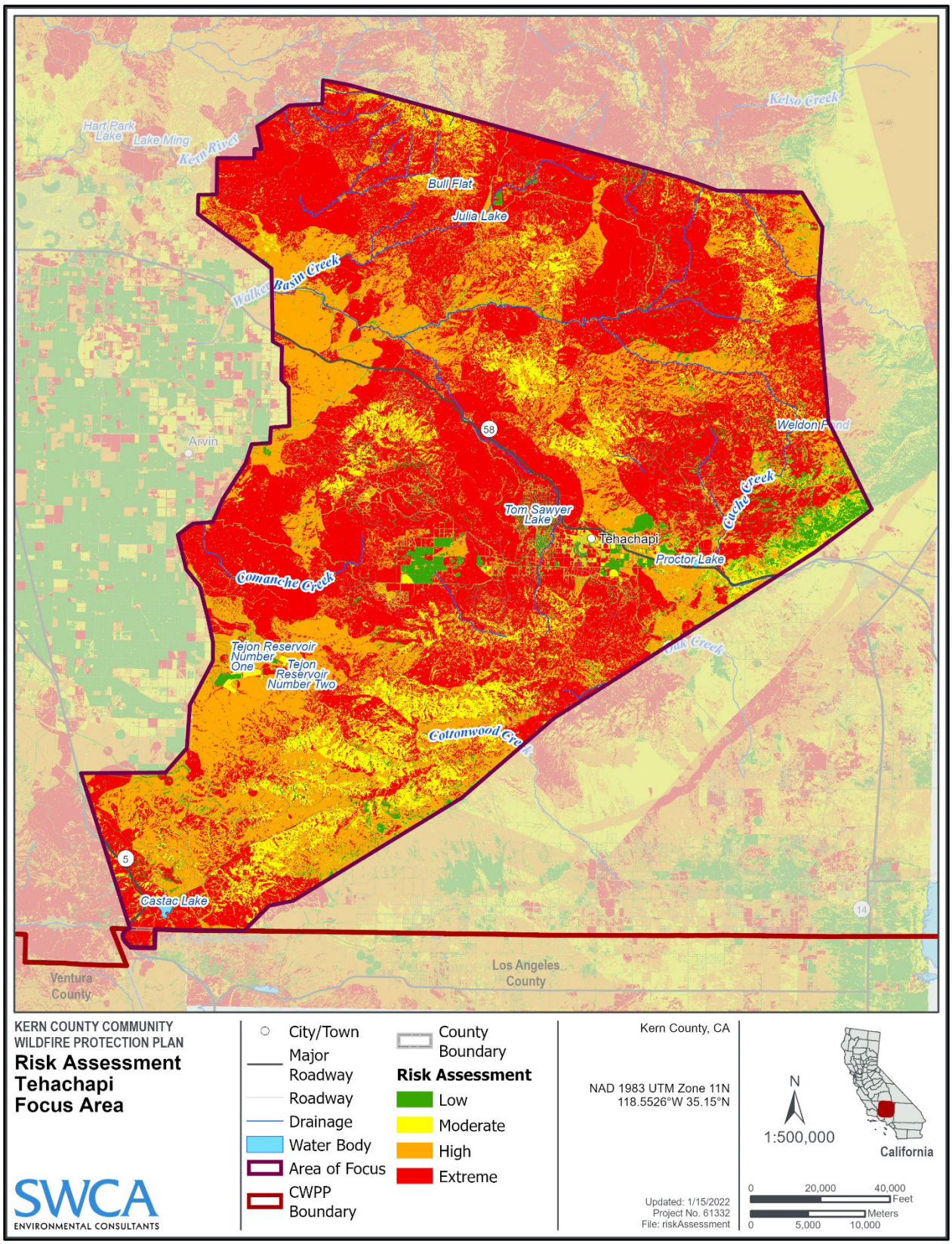


Figure 3.3. Composite risk-hazard assessment for the Tehachapi focus area.

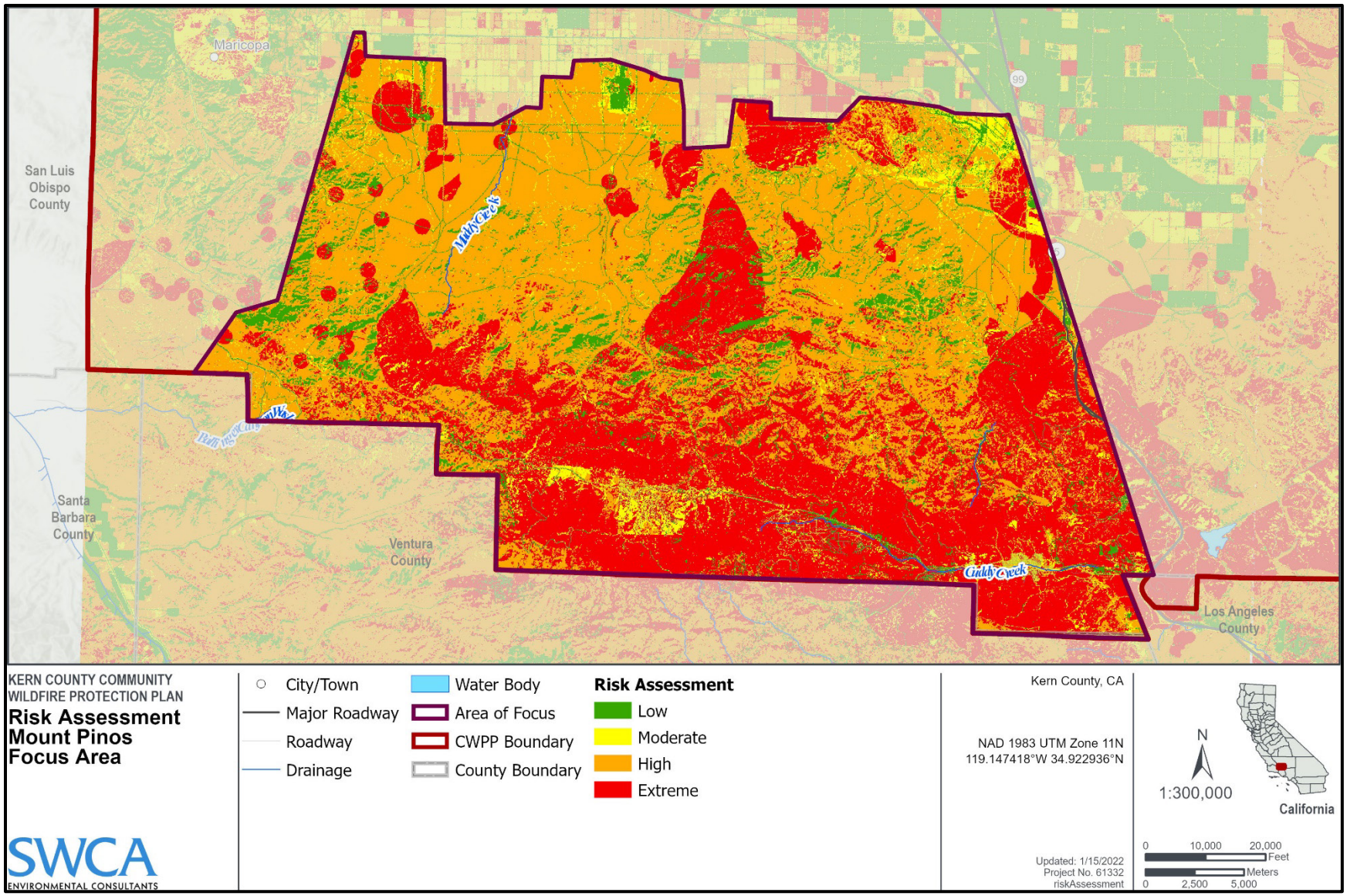


Figure 3.4. Composite risk-hazard assessment for the Mount Pinos focus area.

COMMUNITY HAZARD ASSESSMENTS

To accurately complete the Composite Risk-Hazard Assessment and properly assess hazards in and around perceived “at-risk” communities, several field days were implemented to carry out on-the-ground community assessments.

The assessments were conducted in spring 2021 using the National Fire Protection Association (NFPA) Wildland Fire Risk and Hazard Severity Form 1144 (Appendix E). This form is based on the NFPA Standard for Reducing Structure Ignition Hazards from Wildland Fire 2013 Edition. The NFPA standard focuses on individual structure hazards and requires a spatial approach to assessing and mitigating wildfire hazards around existing structures. It also includes ignition-resistant requirements for new construction and is used by planners and developers in areas that are threatened by wildfire and is commonly applied in the development of Firewise Communities (for more information, see www.firewise.org).

Each area was rated based on conditions within the community and immediately surrounding structures, including access, adjacent vegetation (fuels), defensible space, adjacent topography, roof and building characteristics, available fire protection, and placement of utilities. Where a range of conditions was less easily parsed out, a range of values was assigned on a single assessment form. Each score was given a corresponding adjective rating of low, moderate, or high. Following the assessments, 46 areas were delineated that represent areas of greatest risk within the County. Of these 46 areas, seven were rated as extreme risk and 39 were rated as high risk

The purpose of the community WUI assessment and subsequent hazard ratings is to identify fire hazard and risks and prioritize areas requiring mitigation and more detailed planning. These assessments should not be seen as tactical pre-suppression or triage plans. The community assessments help to drive the recommendations for mitigation of structural ignitability, community preparedness, and public education. The assessments also help prioritize areas for fuels treatment based on the hazard rating.

The CAR hazard ratings from the community assessment are provided in Table 3.1. This table also includes a summary of the positive and negative attributes of a community as they relate to wildfire risk. Full CAR descriptions are provided in Appendix D.

Table 3.1. Communities at Risk List with Assessment Summary

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
Lake Isabella	# 35	Woody	67 Moderate	• Low-grade, surfaced roads • Hydrants in community • Class A roofing • Utilities underground • Close to fire station	• Nonreflective street signs • Minimal defensible space • Combustible siding on structures • Combustible decks and fences
Lake Isabella	# 36	Glennville	66 Moderate	• Two or more roads in/out • Hydrants in community • Low-rolling topography • Utilities underground • Close to fire station	• Nonreflective street signs • Minimal defensible space • Combustible siding on structures • Combustible decks and fences
Lake Isabella	#71	Squirrel Mountain Valley	93 High	• Wide, surfaced roads • Hydrants in community • Close to fire station • Underground gas	• One road in/out • No turnarounds in most driveways • Problematic topography • Minimal defensible space • Combustible construction materials
		Mountain Mesa	73 High	• Wide, flat, surface roads • Short driveways with turnarounds • Topography • Defensible space • Vegetation • Close to fire station	• Combustible construction materials • Nonreflective street signs
		Yankee Canyon	114 Extreme	• Surfaced roads • Class A roofing	• One road in/out • Steep, narrow roads with limited turnaround • Problematic topography • Far from fire station • Utilities above ground

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
		South Lake	75 High	• Two or more roads in/out • Wide, flat, surfaced roads • Short driveways with turnarounds • Hydrants in community	• Minimal defensible space • Combustible building materials • Nonreflective street signs
		South Shore Ranch Estates	70 Moderate	• Two or more roads in/out • Wide, flat, surfaced roads • Short driveways with turnarounds • Good space between homes	• Combustible construction materials • No water sources in community
		Bella Vista	86 High	• Two or more roads in/out • Wide roads • Short driveways with turnarounds • Close to fire station	• Unsurfaced roads • Combustible construction materials • No water sources in community • Limited defensible space
		Robinson Cove	66 Moderate	• Flat, wide roads • Turnarounds • Topography • Defensible space	• One road in/out • Unsurfaced roads • No water sources in community • Far from fire station
		Short Canyon	83 High	• Two or more roads in/out • Flat, wide roads • Topography • Class A roofing	• Unsurfaced roads • No turnarounds in most driveways • Minimal defensible space with debris around homes • No water sources in community
		Kelso Valley	83 Extreme	• Two or more roads in/out • Flat, wide, surfaced roads • Short driveways with turnarounds • Topography	• Dense vegetation • Limited defensible space • Combustible construction materials • No water sources in community • Far from fire station

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
		Onyx	73 High	• Two or more roads in/out • Wide, flat roads • Topography • Hydrants in community • Underground gas	• Unsurfaced roads • Minimal defensible space • Combustible construction materials • Far from fire station
		Cap Canyon	71 High	• Two or more roads in/out • Flat roads • Long driveways with turnarounds • Class A roofing	• Narrow, unsurfaced roads • Problematic topography • Limited defensible space • No water sources in community • Far from fire station
		Canebrake	80 High	• Two or more roads in/out • Flat roads • Short driveways with turnarounds • Topography	• Narrow, unsurfaced roads • Minimal defensible space • No water sources in community • Far from fire station
		Fay Canyon	89 High	• Wide roads • Defensible space • Class A roofing	• One road in/out • Steep, unsurfaced roads • Combustible construction materials • No water sources in community • Far from fire station

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
Lake Isabella	# 72	Bodfish Canyon	102 High	• Wide, surfaced roads • Underground gas • Close to fire station	• One road in/out • No turnarounds in most driveways • Steep topography • Minimal defensible space with heavy fuel loading and debris • Combustible construction materials
		Bodfish	89 High	• Two or more roads in/out • Wide, surfaced roads • Hydrants in community • Close to fire station • Underground gas	• Dense vegetation • Problematic topography • Minimal defensible space with closely spaced homes • No turnarounds in most driveways
		Lake Isabella	86 High	• Two or more roads in/out • Wide, flat roads • Topography • Hydrants in community • Underground gas • Close to fire station	• Unsurfaced roads • Fine fuels • Minimal defensible space • Combustible construction materials
		Isabella Highlands	107 High	• Surfaced roads • Class A roofing • Underground gas • Hydrants on 4th Street	• Problematic fire access • Problematic topography • Minimal defensible space with heavy fuel loading • Far from fire station

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
Lake Isabella	# 76	Kernville/Riverkern	80 High	• Two or more roads in/out • Wide, flat roads • Hydrants throughout community	• No turnarounds in most driveways • Dense fuels • Steep terrain on edges of community • Minimal defensible space
		Wofford Heights	97 High	• Good access and roads at lower elevations and near highway • Class A roofing • Hydrants in community	• Far from fire station • Homes located in drainages with dense fuels • No turnarounds in most driveways • Unsurfaced, narrow roads on steep slopes
		Wofford Heights 2	105 High	• Wide, surfaced roads • Hydrants in community • Utilities underground	• One road in/out • Limited fire access • Heavy fuels • Homes located on slopes with minimal defensible space • Far from fire station
		Alta Sierra	113 Extreme	• Surfaced roads • Class A roofing • Hydrants in community	• One road in/out • Steep, narrow roads • Dense timber and understory fuels • Community located in mountainous terrain with minimal defensible space • No turnarounds in most driveways

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
Tehachapi	# 11	Keene/Marcel	112 High	• Mostly surfaced roads • Mild to moderate slopes	• One road in/out • Narrow roads • Combustible construction materials • Debris stacked between homes • No water sources in community
		Hart Flat	79 High	• Wide, surfaced roads • Short driveways with turnarounds • Topography • Construction materials • Hydrants in community	• One road in/out • Dense vegetation • Limited defensible space • Far from fire station
		West Clear Creek	98 High	• Surfaced roads • Construction materials • Defensible space • Water tanks in community	• One road in/out • Steep, narrow roads • Long driveways with no turnarounds • Steep topography • Utilities above ground
Tehachapi	#12	Old West Ranch	103 High	• Wide roads • Turnarounds in driveways • Class A roofing • Close to fire station	• One road in/out • Gate blocks main fire access • Minimal defensible space • Combustible construction materials • No water sources in community
		Water Canyon	106 High	• Ingress/egress • Class A roofing • Close to fire station	• No turnarounds in most driveways • Dense vegetation • Minimal defensible space • Combustible construction materials • Utilities above ground

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
		Old Town	94 High	• Wide roads • Class A roofing • Hydrants in community • Close to fire station	• Ingress/egress • No turnarounds in most driveways • Dense vegetation along main roads • Combustible construction materials
		Country Club	94 High	• Ingress/egress • Class A roofing • Hydrants in community • Close to fire station	• No turnarounds in most driveways • Problematic topography • Minimal defensible space with vegetation between homes • No water sources in community
		Golden Hills	63 Moderate	• Two or more roads in/out • Defensible space • Vegetation • Topography	• Unsurfaced roads • Combustible construction materials • No water sources in community • Utilities above ground
		Sand Canyon/Cache Creek	89 High	• Ingress/egress • Topography • Class A roofing	• Unsurfaced roads • Dense vegetation • Minimal defensible space • Combustible construction materials • Water sources only in lowland areas

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
Tehachapi	# 16	Bear Valley Springs	67 Moderate	• Defensible space around structures • Surfaced roads with mild slope • Short driveways with turnarounds	• One road in/out • Mixed, dense fuels • Combustible building materials • Home locations problematic • Problematic topography
		Bear Mountain (within Bear Valley Springs)	100 High	• Hydrants in community • Homes on the valley floor have good access for organized response (fire departments) • Surfaced roads	• Heavy, mixed fuels • Very steep slopes • Utilities above ground; most homes with propane tanks • Main road that connects community steep and narrow • No turnarounds in most driveways • Most homes on the mountains have limited access for organized response (fire departments)
Tehachapi	# 18	Commanche Point	85 High	• Two or more roads in/out • Surfaced roads • Sparse vegetation • Defensible space • Construction materials • Hydrants in community	• Steep, narrow roads • No turnarounds in most driveways • Problematic topography • Utilities above ground
		Stallion Springs	88 High	• Ingress/egress • Minimal ground fuels • Construction materials • Close to fire station • Hydrants in community	• Nonreflective, combustible street signs • No turnarounds in most driveways • Minimal defensible space • Utilities above ground

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
		Alpine/Forest Park	111 High	• Two or more roads in/out • Evacuation routes • Class A roofing • Close to fire station	• Steep, narrow, unsurfaced roads • Dense vegetation • Minimal defensible space • No water sources in community • Combustible construction materials
Tehachapi	# 56	Lebec	92 High	• Fire access with turnarounds • Defensible space • Two or more roads in/out • Close to fire station	• Limited ingress/egress • Steep topography • Combustible construction materials • No water sources in community
		O'Neil Canyon	99 High	• Surfaced roads • Home location • Hydrants in community • Close to fire station	• Limited ingress/egress • No turnarounds in most driveways • Problematic topography • Combustible construction materials • Limited defensible space
		Digier	123 Extreme	• Class A roofing • Close to fire station	• Limited ingress/egress • Long driveways with unknown turnarounds • Dense vegetation • No water sources in community • Limited defensible space with heavy fuel loads

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
Tehachapi	# 78	Back Canyon	88 High	• Two or more roads in/out • Class A roofing • Defensible space • Hydrants in community • Close to fire station	• Steep, narrow, unsurfaced roads • Dense fuels • Steep topography • Utilities above ground
		Caliente Creek/Twin Oaks	65 Moderate	• Two or more roads in/out • Vegetation • Topography • Defensible space • Good space between homes • Close to fire station	• Main road narrow with steep walls on sides • Unsurfaced roads • No hydrants in community • Combustible construction materials
		Shadow Mountain Ranch	71 High	• Two or more roads in/out • Wide roads • Topography • Defensible space • Close to fire station	• Unsurfaced roads • No turnarounds in most driveways • Combustible construction materials • No hydrants in community • Utilities above ground
		Thompson Canyon	66 Moderate	• Two or more roads in/out • Short driveways with turnarounds • Vegetation • Topography • Defensible space • Close to fire station • Utilities below ground	• Unsurfaced roads • Combustible decks • No water source in community
		Basin Creek	114 Extreme	• Class A roofing • Street signs throughout community	• Ingress/egress • Dense vegetation • Problematic topography • Minimal defensible space • Far from fire station • No hydrants in community

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
		Johnson Canyon	114 Extreme	• Two or more roads in/out • Surfaced roads • Class A roofing	• Steep, narrow roads with heavy fuels along sides • Long driveways with no turnarounds • No water sources in community • Far from fire station
		Breckenridge	127 Extreme	• Class A roofing	• Ingress/egress • Dense vegetation • Problematic topography • Utilities above ground • Far from fire station
		Havilah Canyon	98 High	• Wide road through center of community • Two or more roads in/out • Class A roofing	• Narrow, unsurfaced roads • Heavy fuels along main road • Combustible construction materials and debris • Minimal defensible space • Far from fire station
Mount Pinos	# 57	Frazier Park	112 High	• Hydrants in community • Close to fire station • Class A roofing	• One road in/out • Problematic topography with dense vegetation • Combustible construction materials • Dense suburban layout with minimal defensible space
		Pinion Estates East	111 High	• Surfaced roads • Hydrants in community • Close to fire station • Class A roofing	• Limited turnarounds • Combustible construction materials • Limited defensible space • Utilities above ground • Homes close to steep topography

Focus Area	Fire Station	Community	CAR Rating (based on NFPA 1144)	Positive	Negative
		Pinion Estates West	79 High	• Close to fire station • Short driveways with turnarounds • Two or more roads in/out • Good separation between structures	• Narrow, unsurfaced roads • Dense vegetation • Combustible construction materials • No water sources in community • Utilities above ground
		Lake of the Woods	104 High	• Two or more roads in/out • Surfaced roads • Hydrants in community • Close to fire station	• Poor street signage • Combustible construction materials • Homes located closely together with minimal defensible space • No turnarounds in most driveways
Mount Pinos	# 58	Pine Mountain Club	126 Extreme	• One road intersecting the community, accessible through the east or west • Surfaced roads • Close to fire station • Well-marked hydrants in community	• Steep, narrow roads • Problematic, very steep topography • Heavy, dense fuels • Utilities above ground • Most homes with minimal defensible space and combustible materials • Structures with highly combustible wood shake roofs
		Camp Condor	99 High	• Turnarounds in driveways • Close to fire station • Few decks in community	• One gated road in/out • Narrow, unsurfaced roads • No water sources in community • Limited defensible space and set-back • Utilities above ground

VALUES AT RISK

Earlier compilation of the critical infrastructure in the planning area, coupled with the community assessments, public outreach, pas planning efforts, and Core Team input, has helped in the development of a list of VARs from wildland fire. These data are also supplemented with highly valued resource or asset (HVRA) data, which are being gathered nationwide and available through IFTDSS. The public is encouraged to provide additional VARs during the public outreach period via the project email. Based on feedback provided, this section and the associated mapping will be revised.

In addition to critical infrastructure, VARs can also include natural, social, and cultural resources (see Maps 14–19 in Appendix B). It is important to note that although an identification of VARs can inform treatment recommendations, several factors must be considered in order to fully prioritize areas for treatment; these factors include appropriateness of treatment, land ownership constraints, locations of ongoing projects, available resources, and other physical, social, or ecological barriers to treatment.

The scope of this CWPP does not allow determination of the absolute natural, socioeconomic, and cultural values that could be impacted by wildfire in the planning area. In terms of socioeconomic values, the impact due to wildfire would cross many scales and sectors of the economy and call upon resources locally, regionally, and nationally.

NATURAL VALUES AT RISK

The CWPP planning area has a variety of natural resources of particular concern to land managers, such as rare habitats and listed plant and wildlife species. Public outreach throughout the County has emphasized the importance of natural/ecological values to the general public. Examples of natural values within Kern County include the following:

- Public land
- Rangelands
- Trail systems
- Agricultural land
- Viewsheds/scenic areas (Figure 3.5)
- Air quality
- Wildlife habitat and game species
- Timber resources
- Watersheds and water quality

Figure 3.5. Example of a natural VAR, a scenic landscape.

SOCIOECONOMIC VALUES AT RISK

Social values include population, recreation, infrastructure, agriculture, and the built environment. Much of the built environment in the planning area falls within the WUI zones. Examples include the following:

- Tourism
- Schools
- Fire departments
- Highways
- Churches
- Care homes, senior housing, day care centers, and other group homes
- Water storage
- Hydroelectric power
- Recreation sites (Figure 3.6)

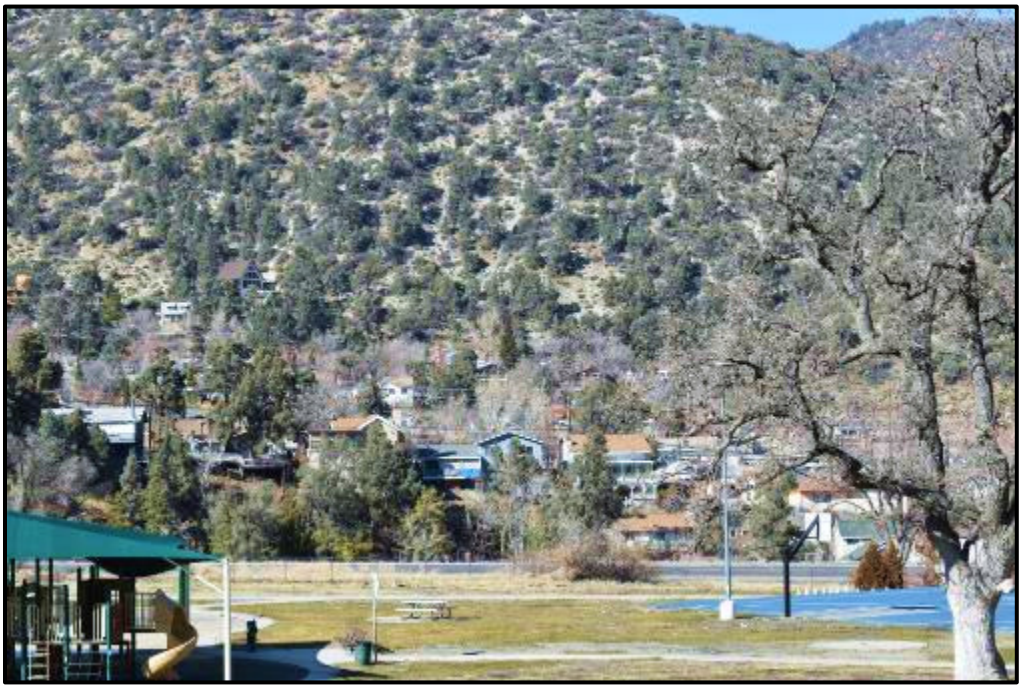


Figure 3.6. Example of a socioeconomic VAR, a playground.

CULTURAL VALUES AT RISK

Many culturally important features/structures are scattered throughout Kern County:

- Archeological resources
- Churches
- Barns
- Historic houses
- Agricultural infrastructure

Figure. 3.7. Kern County Historical Society.
Source: https://kernhistoricalsociety.org/

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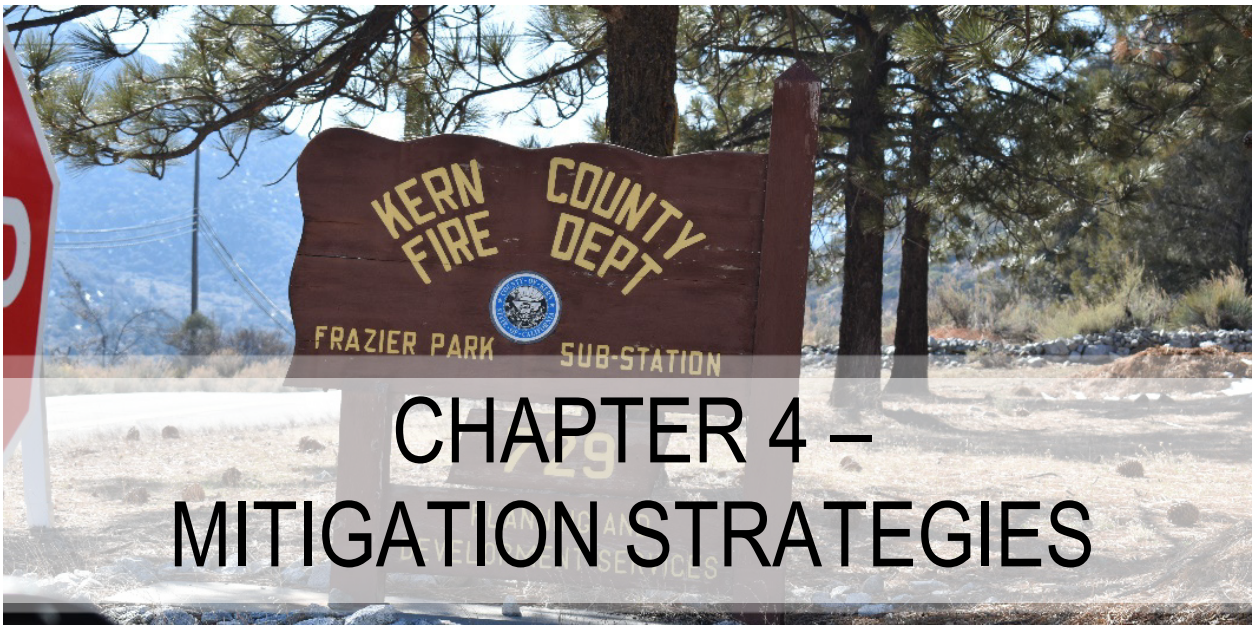


CHAPTER 4 – MITIGATION STRATEGIES

As part of the 2022 CWPP, this plan has been aligned with the Cohesive Strategy and its Phase III Western Regional Action Plan by adhering to the nationwide goal "To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire." (Forests and Rangelands 2014:3).

In order to do this, the CWPP recommendations have been structured around the three main goals of the Cohesive Strategy: restoring and maintaining landscapes, fire-adapted communities, and wildfire response.

This chapter provides guidance for implementing recommendations under each Cohesive Strategy goal. Many of these community-specific recommendations can be implemented at the homeowner or community level. Projects requiring large-scale support can be prioritized based on the Community Hazard Assessments and Composite Risk-Hazard Assessment.

Recommendation matrixes are used throughout this chapter to serve as an action plan for implementation. Recommendations have been aligned with the strategies in the California's Wildfire and Forest Resilience Action Plan (California Forest Management Task Force 2021a) wherever possible. All recommendation tables are provided in Appendix I.

COHESIVE STRATEGY GOAL 1: RESTORE AND MAINTAIN LANDSCAPES

Goal 1 of the Cohesive Strategy and the Western Regional Action Plan is Restore and Maintain Landscapes: Landscapes across all jurisdictions are resilient to fire and other disturbances in accordance with management objectives.

> *"Sustaining landscape resiliency and the role of wildland fire as a critical ecological process requires a mix of actions that are consistent with management objectives. The West will use all available methods and tools for active management of the landscape to consider and conserve a diversity of ecological, social, and economic values. The West will coordinate with all partners and seek continued stakeholder engagement in developing market based, flexible and proactive solutions that*

can take advantage of economies of scale. All aspects of wildland fire will be used to restore and maintain resilient landscapes. Emphasis will be placed on protecting the middle lands near communities." (Western Regional Strategy Committee [WRSC] 2013:14).

In this CWPP, recommendations to restore and maintain landscapes focus on vegetation management and hazardous fuel reduction.

This region has been home to an active and committed fuel treatment program by land managers for many years. Figures 4.1 through 4.3 shows existing fuel treatments that have been completed or planned in and around the planning area. This information is derived from CAL FIRE and the USFS. The reader is referred to agency websites and the Federal Register for the latest information on planned or ongoing actions on adjacent public land (Figures 4.1-4.3). The treatment momentum already observed surrounding the planning area should be built upon in order to increase fuel treatment effectiveness across the landscape.

Future fuels treatments projects are also in the works for Kern County. The proposed Tecuya Ridge Shaded Fuelbreak Project aims to provide safe and effective locations to perform fire suppression activities, slow the spread of wildland fire at fuelbreak locations, allow for the construction of strategic fire lines when needed, and minimize the potential for loss of life, property, and natural resources. The project would also improve forest resilience to drought, insects, and wildfire by reducing stand densities. The project is proposed to take place on private land within the Mount Pinos Place Management Area and would treat 100 acres of land. Treatment methods for the proposed project include the removal of dead trees and the use of mastication, chipping, or pile and burn for surface fuels. This project is in the final phase of the CEQA process for CalVTP (Approved Project) (Figure 4.4).

Another proposed project regarding fuels reductions is the Kern County Fuel Reduction Project. The project aims to reduce vegetation density and remove fuels to protect communities and assets from the risk associated with wildland fire and to provide emergency access points and staging areas for firefighters within WUI areas in the SRA. The project would also protect the public, firefighters, property, natural resources, and infrastructure throughout the treatment areas. The project would treat 700 acres per year in the SRAs of KCFD's Battalions 1, 5, and 7, which are in the focus areas of Tehachapi, Mount Pinos, and Lake Isabella respectively. Treatment methods for the proposed project include a combination of mechanical thinning, mastication of brush and smaller trees, hand treatments, pile burning, chipping, and lop and scatter. This project is in the Project Specific Analysis phase of the CalVTP for CEQA compliance (Figure 4.4).

The Los Padres NF also has various proposed and ongoing fuels treatments projects in and around Kern County, including:

- Lake of the Woods CDZ
- Frazier Park CDZ
- Pine Mountain Club Project
- Frazier Mountain Project
- Cuddy Valley Forest Health/Fuels Reduction Project
- Tecuya Ridge Shaded Fuel Break Project
- Mount Pinos Forest Health Project

See Appendix I for a larger version of Figure 4.4.

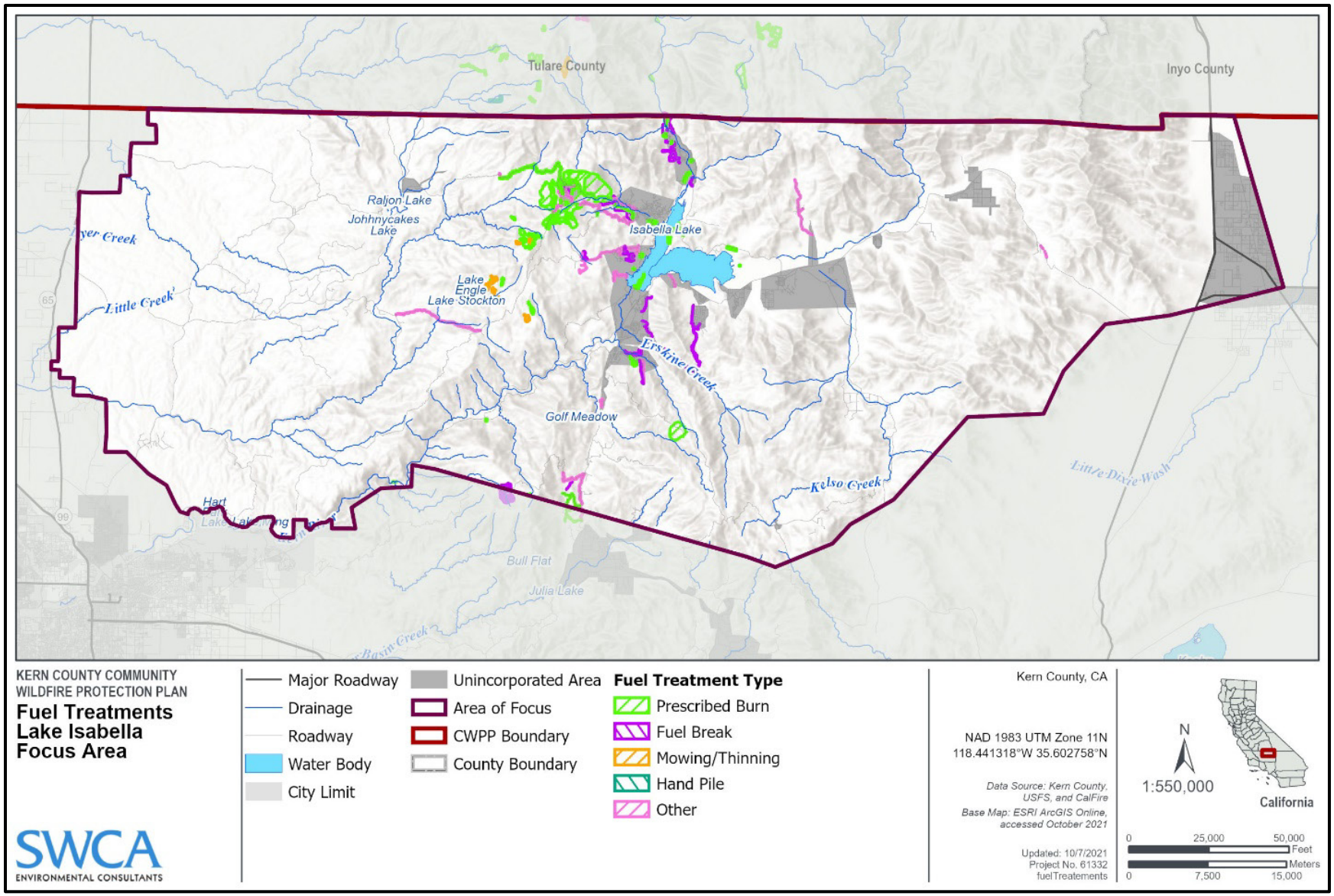


Figure 4.1. Existing fuel treatments for the Lake Isabella focus area.

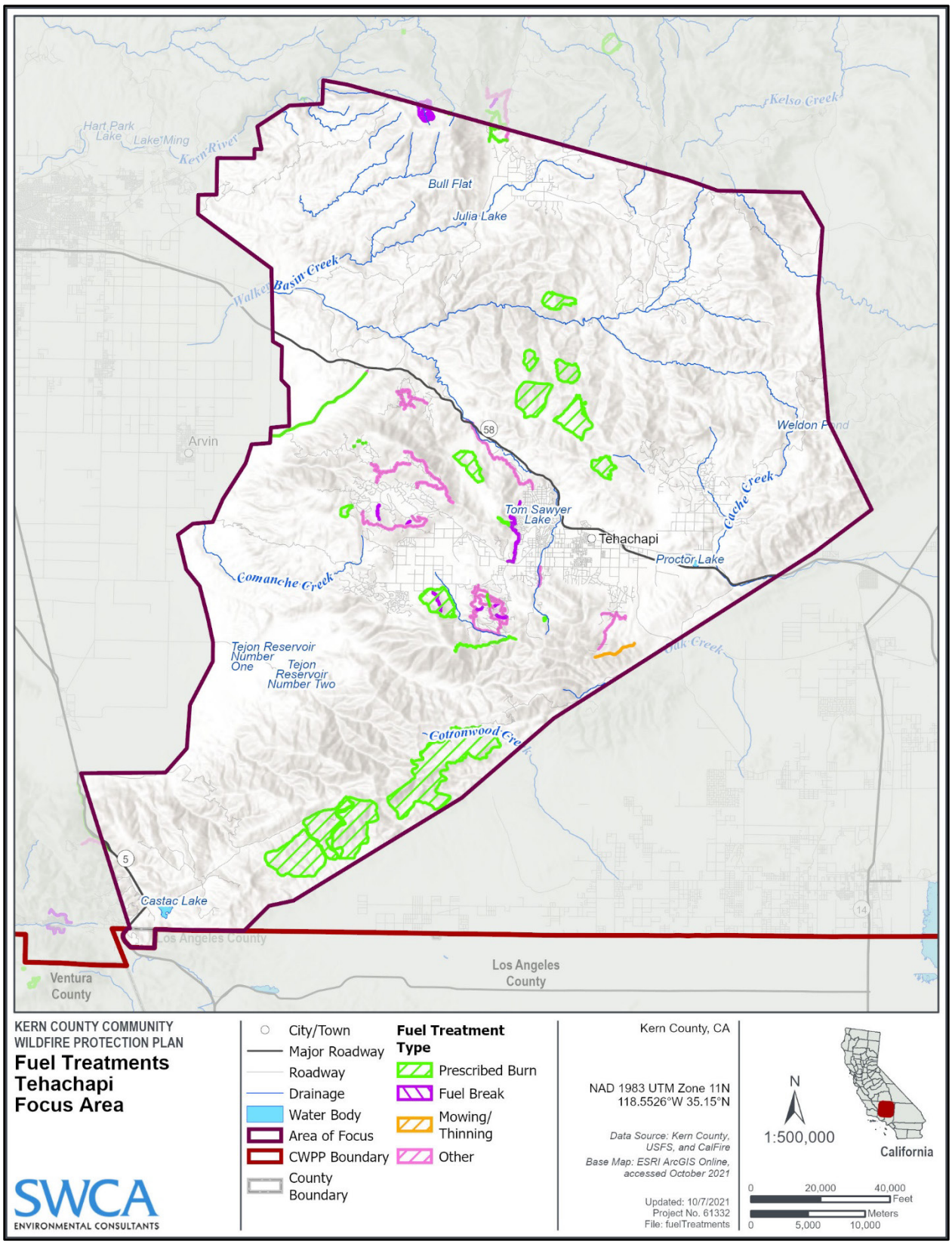


Figure 4.2. Existing fuel treatments for the Tehachapi focus area.

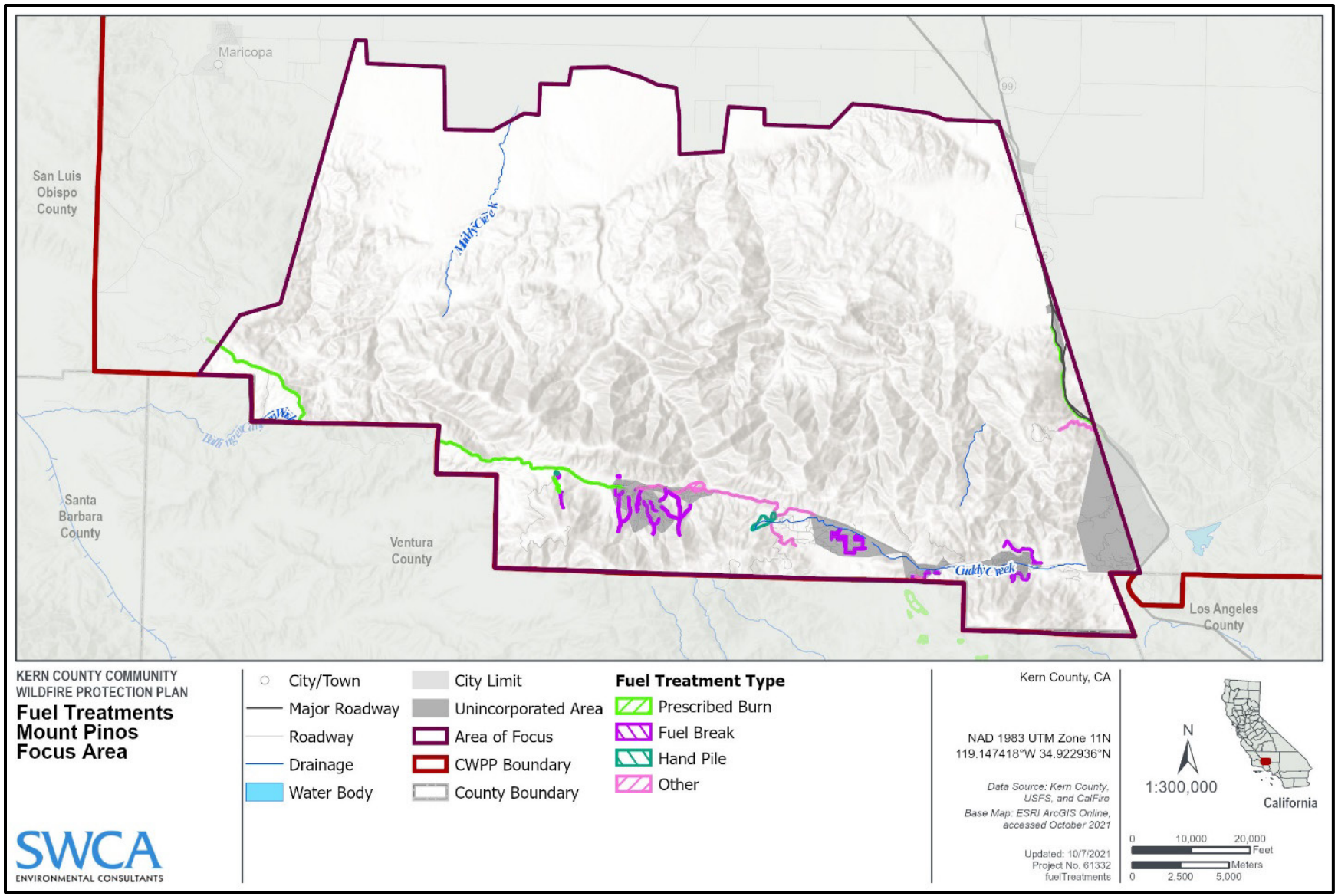


Figure 4.3. Existing fuel treatments for the Mount Pinos focus area.

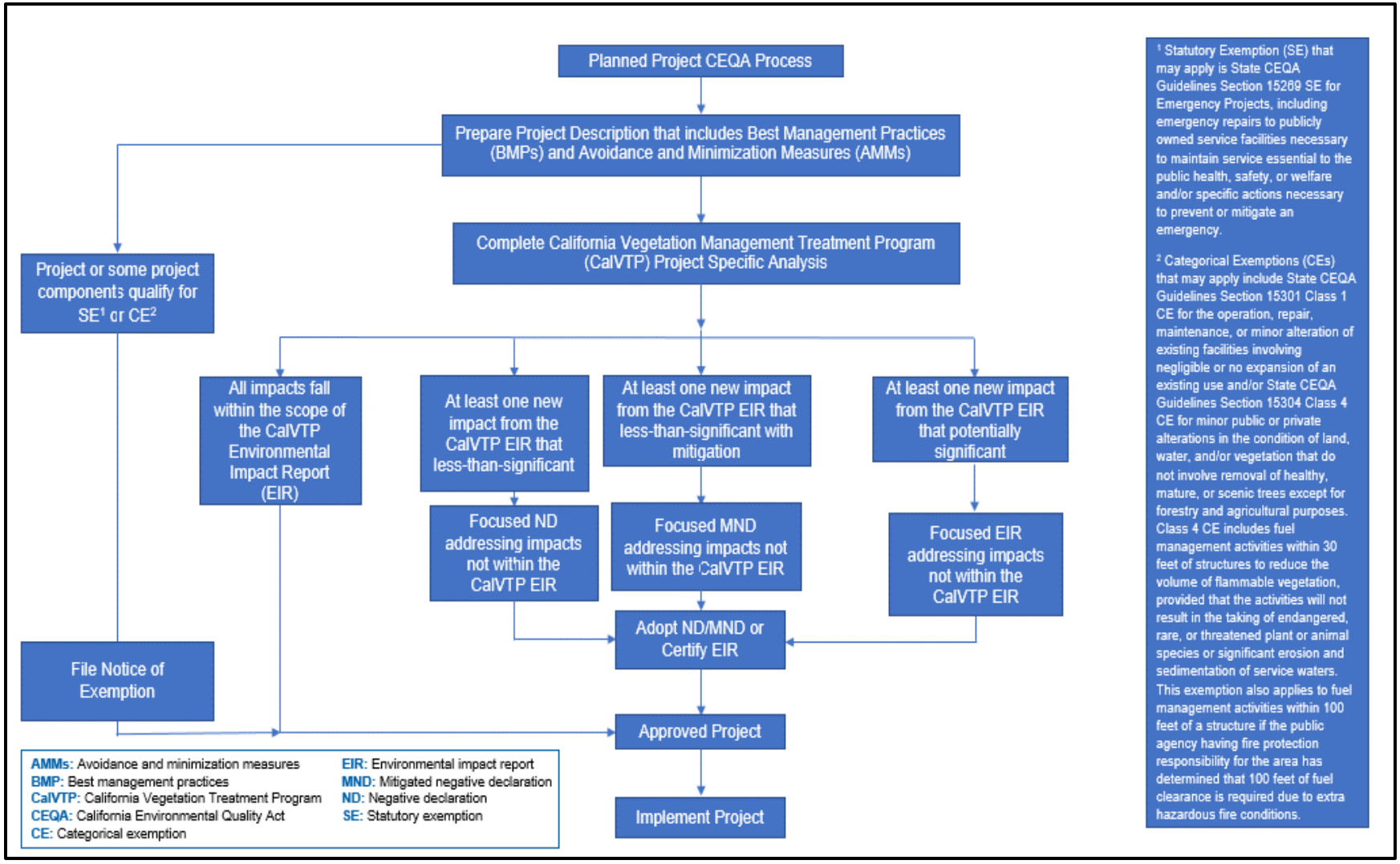


Figure 4.4. CEQA process for CalVTP implementation.

RECOMMENDATIONS FOR HAZARDOUS FUEL REDUCTION

Fuels management of public and private land in the WUI is key to the survival of homes during a wildfire event, as well as the means to meet the criteria of Goal 1. Research has shown how fuel treatments in the WUI can change fire behavior to support suppression activities and protect homes (Evans et al. 2015). Furthermore, well-managed fuels reduction projects often result in ecological benefits to wildlife and watershed health. The importance of fuels management is reflected in policy at the federal level, with the HFRA requiring that federal land management agencies spend at least 50% of their fuels reduction funds on projects in the WUI. One of the major goals of the Kern County HMP is to remove hazardous fuel and increase defensible space (KCFD OES 2020).

This CWPP has been developed with a priority placed on implementation of actions that would reduce hazardous fuels. Fuels should be modified with a strategic approach across Kern County to reduce the threat that high- intensity wildfires pose to lives, property, and other values. This section provides information on fuel treatment methodologies that can be applied to protect structures (defensible space), then near community boundaries (fuel breaks, cleanup of adjacent open spaces), and finally in the wildlands beyond community boundaries (larger-scale forest health and restoration treatments).

While not necessarily at odds with one another, the emphasis of each of these treatment types is different. Proximate to structures, the recommendations focus on reducing fire intensity consistent with Firewise and International Fire Code standards. Further into open space areas, treatments will tend to emphasize forest health and increasing resiliency to catastrophic wildfire and other disturbances. Cooperators in fuels management should include federal, state, and local agencies as well as interested members of the public. Federal land management plans focus on these more landscape level treatments, so the CWPP incorporates most federal land management by reference to those land management planning documents. The CWPP focuses primarily on projects within or adjacent to WUI areas.

Table 4.1 summarizes the types of treatments recommended throughout the planning area. The majority of the treatments are focused on higher risk areas, as defined by the Composite Risk-Hazard Assessment and Core Team input. Many of these treatment recommendations are general across the communities because similar conditions occur in each area. Figure 4.5 presents areas of concern that should be prioritized for future fuel treatments in alignment with projects outlined in Table 4.1. Table 4.1 also addresses the requirement for an action plan and assessment strategy by providing monitoring guidelines and a timeline for implementation. This timeline is obviously dependent on available funding and resources, as well as National Environmental Policy Act (NEPA) and CEQA protocols for any treatments pursued on public land. Figure 4.4 illustrates the CEQA process for CalVTP implementation.

The areas of concern have been delineated based on the Risk-Hazard Assessment and Core Team input. Areas of concern include regions of high concentrations of HVRA that coincide with high potential exposure to wildfire (see Figure 3.2) and/or areas where land management agencies have ongoing vegetation management treatments that could be enhanced by adjacent projects. These are areas where land managers should consider employing mitigation measures to protect life, property, and other values. It is recommended that treatment plans be developed to execute mitigation measures in these areas. Treatment types will be site specific but should address a need to slow fire spread or mitigate potential extreme fire behavior parameters, such as high flame lengths or fireline intensity. This section outlines various different treatment approaches that could be considered for the future management of the planning area. Many projects may be eligible for grant funds available from federal and/or state sources. For a list of funding sources, please refer to Appendix F.

When applying fuel treatments, every effort should be made to align treatments with the State Forest Action Plan Assessment and Strategy (CAL FIRE 2018a, 2018b) with consideration of all appropriate best management practices and sound science. In addition, treatments should be strategically located in areas to maximize effectiveness of other existing and ongoing projects (Figures 4.1–4.3).

When possible, simultaneously planning for the management of multiple resources while reducing fuels will ensure that the land remains viable for multiple uses in the long term. The effectiveness of any fuel reduction treatment depends on the degree of maintenance and monitoring that is employed. Monitoring will also ensure that objectives are being met in a cost-effective manner.

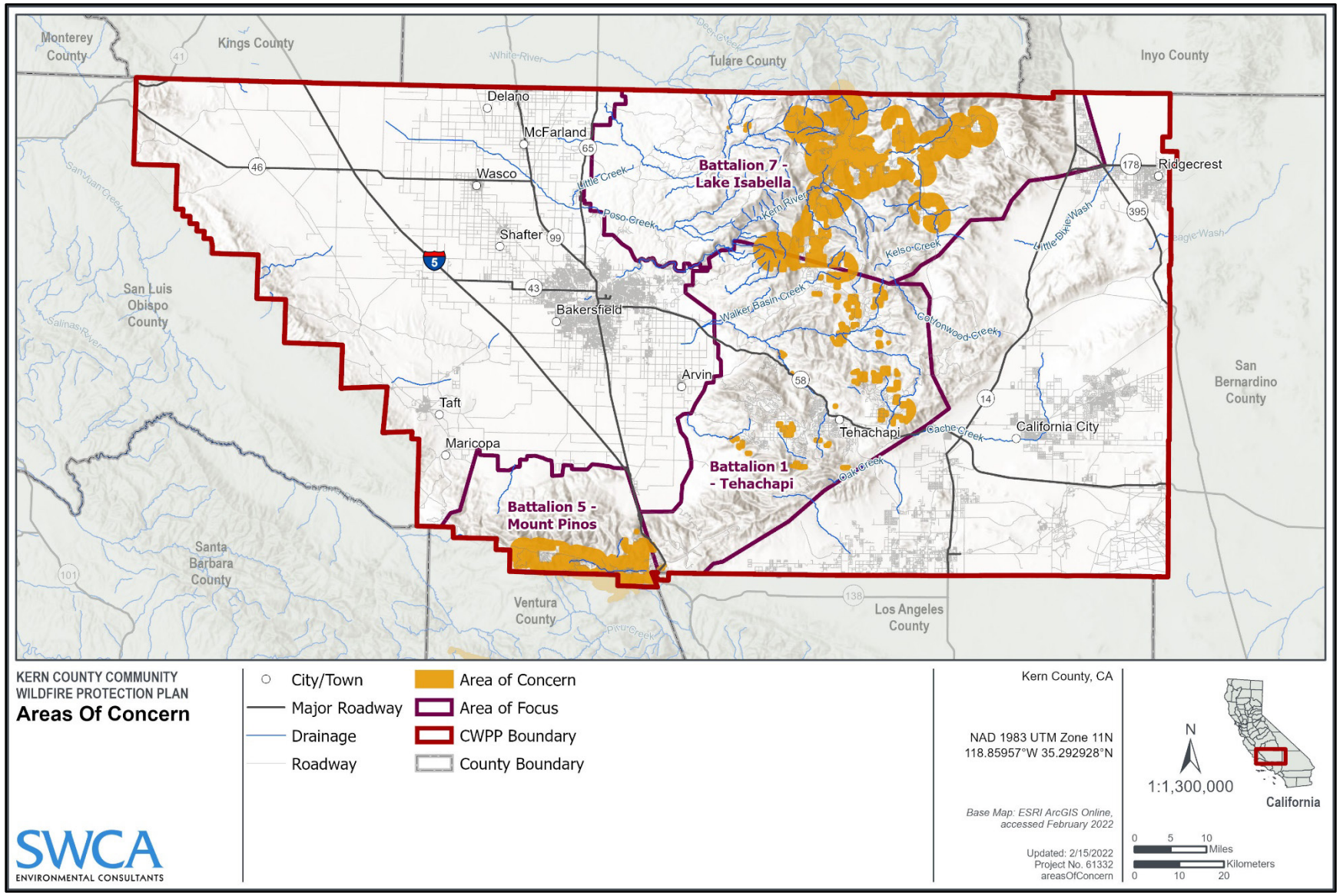


Figure 4.5. Areas of concern within Kern County.

FUEL TREATMENTS IN KERN COUNTY

As aforementioned, fuel treatments are an effective means of reducing fire risk to communities in the WUI. Fuel treatments such as mastication, thinning, prescribed burning and dead tree removal serve to remove or lessen fuel loading and continuity and result in reduced fire behavior. For example, reducing ladder fuels minimizes transmission of fire from the surface into the crowns, and reducing tree density to increase crown spacing mitigates active crown fire spread through the tree canopies. In Kern County, previous and ongoing fuels modification projects diminished the impact of the 2021 French Fire.

Fuels reduction projects in and around the Alta Sierra and Wofford Heights communities created significant defensible space perimeters and fuel breaks that protected the communities from the large potential for structure loss. Embers from the French Fire had difficulty establishing in areas that had received fuel reductions, and where the embers did establish, the fires didn't burn as long or as intensely (Figure 4.6). Stand fires and brief crown runs were noted in untreated areas, whereas the fire stayed on the ground in areas with shaded fuel breaks. Direct fire spread was also minimized in treated areas since fuel quantity and continuity were reduced. In addition, treated areas enhanced firefighter safety and accessibility, allowing firefighters to reach fires quickly and safely for early suppression (Great Basin Interagency Incident Management Team 6 2021).

The French Fire case study demonstrates the pivotal role fuels reduction projects, such as fuel breaks, play in mitigating wildfire risk to communities. Therefore, the maintenance of such projects is vital to community protection.

Figure 4.6. Relatively low-intensity burns in treated areas.
Source: https://storymaps.arcgis.com/stories/6a25e85ecb7e4ea3acc6e8f1a129a152

Table 4.1. Recommendations for Creating Resilient Landscapes (Fuel Treatment Recommendations)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
1	Ongoing	H		Identify needed road maintenance and strategic road buffers (aligns with 6006 Mount Pinos and 2005 Meyers Canyon CWPPs)	Highest risk roadways as identified in the risk assessment.	County, State, Interstate	<u>Roadway improvements:</u> • Although increasing roadway width may not be feasible in many locations, prioritize creation of passing areas where possible. • Grade and maintain roads to reduce hazards to emergency apparatus (potholes and poor surfacing). • Advocate for a County-wide street width ordinance (aligns with 2004 Alta Sierra CWPP). • Implement roadside brushing where appropriate. <u>Road ROW vegetation improvements:</u> • Frequently maintain ROW. • Treat surface fuels for a minimum 10-foot buffer and up to 30 feet where possible. • Reduce ladder fuels along the road to prevent transmission of fire from the surface into the crowns. • Reduce tree density along the road to increase crown spacing to prevent active crown fire spread through the tree canopies. • Trim fuels (limbing-up timber) to allow safe passage of emergency vehicles. • Control for invasive species that may contribute to rapid fire spread (i.e., weeds and grasses). • Install roadside disc beaks (aligns with 2020 MJHMP). • Work with HOAs and communities to increase road width within/install cul-de-sacs within communities to provide sufficient space for response vehicles to maneuver (aligns with 2005 Meyers Canyon CWPP). • Implement a fire break around the perimeter of extreme risk communities (aligns with 2005 Greater Tehachapi Area (GTA) CWPP).	Provide for safe and effective wildfire response capabilities. Create a strategic fuel break along roadways to create potential firebreak	Regular maintenance needed to ensure the roads are drivable for emergency response vehicles	• Hazard Mitigation Grant Program (HMGP)/HMGP – Post Fire • Pre-Disaster Mitigation (PDM)/Building Resilient Infrastructure and Communities (BRIC) • Firewise Grants • National Fire Plan (NFP) Grants • California Department of Forestry and Fire Protection (CAL FIRE) Grant Programs • Emergency Forest Restoration Program (EFRP)
2	Ongoing	H		Protect rare species habitats	County and adjacent state and federal lands (public and private)	County, State, Federal	• Work with land management agencies to ensure all fuels treatments are aligned with environmental regulations relating to protection of sensitive species. • Incorporate prescribed burns and/or cultural burns where appropriate to restore habitat.	Balance the reduction of hazardous fuels with the protection of highly sensitive resources.	Monitor accomplishments in addressing species protections while reducing wildfire risk.	• Environmental Quality Incentives Program (EQIP) • BLM Forest and Woodlands Resource Management (Catalog of federal funding sources) • CAL FIRE Grant Programs • Leonardo DiCaprio Foundation Grants
3	Ongoing	H	Fall/winter 2022	Collaborate with local HOAs or community associations to develop fuel break measures and associated access improvements for increased community protection.	Kern County (all lands) Prioritize highest risk areas as identified in the risk assessment.	Private, County	• To ensure defensible space in WUI will be maintained, require property owners and HOAs to establish sufficient structure clearance around all structures. • Work with HOAs to identify needed access improvements.	Create resilient landscapes and address potential for extreme wildfire behavior in and around communities. Create and maintain accountability with local landowners.	Carry out a 2-year review of accomplishments in improving defensible space. Repeat NFPA1144 assessments every 5 years to document improvements in defensible space.	• PDM/BRIC • National Urban and Community Forestry Challenge Cost Share Grant Program • Firewise grants • State Farm Good Neighbor Citizenship (GNC) Grants • NFP • Fire Management Assistance Grant (FMAG)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
4	Ongoing	H	Fall/winter 2022	Identify mitigation projects within areas of high exposure potential	Kern County (all lands) Prioritize highest risk areas as identified in the risk assessment.	County, State	Utilize the fire behavior modeling to identify areas that would burn with uncharacteristically high flame lengths and rapid rates of spread, to mitigate fire behavior and provide for areas where fire fighters could more safely suppress future wildfire. Focus on the following treatments: • Remove ladder fuels to reduce the potential for surface to canopy continuity and extreme fire behavior. • Reduce tree density to increase crown spacing to prevent active crown fire spread through the tree canopies. • Carry out understory vegetation management to minimize horizontal continuity. • Treat small patches of land tucked into residential areas. • Create mosaics of vegetation types and stand ages to reduce horizontal and vertical continuity of vegetation to limit fire spread. • Prepare to treat fine fuels that establish in fuel treatment areas. • Preferentially treat hazardous fuel types first- e.g., chapparal. • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I).	Assess hazard mitigation opportunities to protect values at risk within areas of highest exposure potential. Consider a full tool kit of mitigation measures.	Carry out a 2-year review of accomplishments in reducing hazardous fuels. Calibrate fuel model based on treatment effectiveness at altering fuel loading. Re-run fire behavior modeling after 5 years to quantify impacts of treatment on fire behavior potential.	• PDM/BRIC • HMGP/HMGP – Post Fire • FMAG • Regional Catastrophic Preparedness Grants (RCP) • National Urban and Community Forestry Challenge Cost Share Grant Program
5	Ongoing	H		Integrate wildfire management with meeting other resource management objectives	State and Public Lands	County, Federal Agencies	• Leverage the information from the development of the CWPP and the HMP to combine fuel reduction and habitat restoration projects. • Maximize funding sources through integrating fuel projects with other land management goals, including ecological restoration, habitat improvements and recreation. • Utilize the Good Neighbor Authority, as appropriate, to facilitate cross-boundary actions.	Restore degraded landscapes to build a more resilient fire environment.	Periodically review accomplishments in reducing hazardous fuels and success at meeting other resource management objectives.	• EQIP • BLM Forest and Woodlands Resource Management • CAL FIRE Grant Programs • Northern California Forests and Watersheds Program • Leonardo DiCaprio Foundation Grants
6		H		Implement CEQA and CalVTP training for select Kern County staff	Kern County (all lands)	Fire Department, partnering agencies	• Require select personnel (those working on project implementation and permitting) to complete CEQA and/or CalVTP training • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I). • https://bof.fire.ca.gov/projects-and-programs/calvtp/	Increase the level of project preparation/ permitting that can be completed in-house.	Designate specific roles that will need to complete the training. Update qualifications annually or as needed to maintain the certification.	• CAL FIRE Grant Programs • California Fire Safe Council Grant Programs • EQIP • EFRP
7		H		Remove standing dead trees (and other biomass) on public and private property (aligns with 2004 Alta Sierra CWPP and 2020 MJHMP).	Kern County (all lands) Priority areas: WUI communities	County, Federal Agencies	• Preferentially remove beetle (or other insect or disease) killed trees that pose a hazard adjacent to homes or structures. • Work from structure outwards to edge of property line. • Remove slash and dispose of appropriately, following beetle slash protocols. • Consult with tree removal specialists • Remove hazard trees along trails and other public ROW. Especially focus on hazard tree removal along community ingress and egress routes to prevent roadways from becoming blocked during a fire. • Utilize references for insect and disease management as outlined by the CA Forest Insect and Disease Training Manual: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_046410.pdf • Identify incentives to promote private operators to remove trees with removed trees as payment. • Utilize the bark beetle forecasting tool for strategic planning and maintenance: https://www.usda.gov/media/blog/2018/02/05/new-tool-helps-california-land-managers-predict-tree-mortality Promote homeowner/landowner education regarding insect and disease (see Appendix G)	Reduce wildfire risk by reducing fuels. Reduce/manage insect/disease infestations by removing damaged vegetation. Create resilient landscapes and address potential for extreme wildfire behavior in and around the WUI.	Convene agency representatives annually to determine progress.	• PDM • HMGP/HMGP – Post Fire • EFRP • U.S. Endowment for Forestry and Communities • NFP

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
8		H		Implement fuel reduction projects within/around the WUI and high-risk communities (aligns with 2004 Alta Sierra, 2005 Meyers Canyon. and 2009 KRV CWPPs)	Kern County (all lands)	All agencies	• Utilize multi-agency coordination to develop a long-term fuel reduction/vegetation management strategic plan, including monitoring and maintenance (aligns with 2009 KRV CWPP) • Break down plans into focus areas/high risk communities • Utilize thinning and prescribed burns (where appropriate)to reduce fuel load in high-risk areas • Implement and maintain shaded fuel breaks and reduce ladder fuels (aligns with 2009 KRV and 2005 Meyers Canyon CWPP) • Aim for 300 ft shaded fuel breaks around communities (aligns with 2006 Mount Pinos CWPP) • Reduce tree density to increase crown spacing to prevent active crown fire spread through the tree canopies. • Remove brush piles prior to fire season (aligns with 2006 Mount Pinos CWPP) • Target vacant lots with accumulating vegetation (aligns with 2005 Meyers Canyon CWPP). • Reduce fuel continuity where appropriate, focusing on high-risk areas and the WUI (aligns with 2005 Meyers Canyon CWPP). • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I). • Utilize the Good Neighbor Authority, as appropriate, to facilitate cross-boundary actions.	Reduce the risk of wildfire within the built environment. Reduce the risk of home and structure ignitions. Reduce the potential for crown fires.	Long-term multi-agency coordination and planning. Regular vegetation maintenance.	• National Urban and Community Forestry Challenge Cost Share Grant Program • CAL FIRE Grant Programs • California Fire Safe Council Grant Programs • Firewise grants • U.S. Endowment for Forestry and Communities • NFP
9	Ongoing	M		Improve and maintain existing fuel breaks and potential fire containment features (aligns with 2006 Mount Pinos and 2005 GTA CWPP)	Kern County (all lands) Highest risk areas as identified in the risk assessment:	County, State, Federal	Strategic placement of fuel breaks will help to limit the spread of wildland fire and increase access to difficult areas. Fuel break prescriptions should be site specific depending on the fuel type, topography, soils, adjacent land management practices and environmental regulations (NEPA/CEQA). The prescriptions will incorporate the use of best management practices for habitat protection (i.e., protection of vulnerable species and habitat and prevention of invasive species). • Look for opportunities to develop and/or increase fire breaks to double as access within the WUI or difficult to access areas and look for opportunities to widen some public trails, especially those running along ridgelines, to better serve as fuel breaks/fire access roads on lands adjacent to WUI. • Maintain fuel breaks under high tension power lines (aligns with 2004 Alta Sierra CWPP). Work must only be carried out in full coordination and conjunction with utility providers and must be within parameters established under agency ROW agreements. • Encourage clearance of an additional width when possible. • Create additional buffer zones between existing development and the forest, ensuring fire suppression access. Maintain existing fire breaks and buffers (Figures 4.1–4.3) • Work with adjacent landowners to develop internal capacity to help enhance fire access-through road and trail improvements on those lands • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I).	Protect life and property by mitigating fuels, providing defensible space for firefighters protecting structures. Create a fuel arrangement unlikely to support crown fire. Ensure the protection of vulnerable ecosystems and values at risk.	Regular maintenance needed to ensure the fuel break remains clear of vegetation. Monitor for invasive species. Continued management of fire breaks maintained by grazing, brush breaking, controlled burns.	• CAL FIRE Grant Programs • Emergency Watershed Protection (EWP) Program • National Forest Foundation (NFF); Innovative Finance for National Forests Grant Program • HMGP/HMGP – Post Fire • (PDM)/(BRIC) • Firewise Grants • NFP

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
10		M	Winter 2022	Increase capacity to complete and maintain needed hazardous fuels projects across multiple jurisdictions	County and adjacent state and federal lands (public and private)	County, State, Federal	• Collaboratively identify vegetation and fuels management needs based on the risk/hazard assessment. • Develop equipment needs to accomplish work (including maintenance) and seek funding for purchase. • Create an educational tool/resource for land /property owners re: various methods, techniques, and cost for various fuel treatments. Utilize Appendix G, homeowner resources. • Cultivate and support partnerships with NGOs and volunteer groups to support implementation of projects. • Collaborate with federal agencies to create long-term implementation and monitoring plans. • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I). • Utilize the Good Neighbor Authority, as appropriate, to facilitate cross-boundary actions.	Create resilient landscapes and address potential for extreme wildfire behavior in and around the WUI. Create and maintain accountability with local landowners.	Set up a standing multi-agency meeting every fall to review accomplishments and address future needs.	• GSA Federal Excess Personal Property (FEPP) • Firewise Grants • PDM/BRIC • HMGP/HMGP – Post Fire • CAL FIRE Grant Programs • RCP
11	Ongoing	M		Consider use of prescribed burning and/or cultural burning where appropriate	Los Padres and Sequoia National Forests State Responsibility Area	Fire Department, Federal Agencies	• Utilize prescribed burn planning that follows agency and regulator protocols. • Closely follow plan prescriptions. • Utilize prescribed burn program to provide training for local fire department personnel and volunteers. • Implement prescribed fire within the WUI where possible (aligns with 2004 Alta Sierra CWPP).	Protect communities and infrastructure by reducing fuel loads. Increase capacity and training for fire departments. Restore/maintain habitat.	Carry out inventory each year of number and acreage of prescribed fire completed. Collaboratively set goals for upcoming year. Establish training needs and funding.	• Access to Ancestral Lands Grant (AALG) • CAL FIRE Grant Programs • BLM Forest and Woodlands Resource Management • RCP

Fuels Treatment Scales

Defensible Space

Defensible space is perhaps the fastest, most cost-effective, and most efficacious means of reducing the risk of loss of life and property. Although fire agencies can be valuable in providing guidance and assistance, creating defensible space is the responsibility of the individual homeowner (Figure 4.7).

The definition of defensible space via state and local codes, its maintenance by homeowners, and enforcement by fire agencies as needed is a common part of wildfire risk mitigation. The California State Board of Forestry issued General Guidelines for Creating Defensible Space in 2008, following a change in Public Resources Code 4291 that expanded defensible space clearance requirements from 30 to 100 feet around buildings and structures within SRAs or very high fire hazard severity zones within LRAs. The guidelines were updated again in January 2021 to require an ember-resistant zone within 5 feet of a home. Some aspects about WUI defensible space that are often overlooked include:

- Greater defensible space may be needed due to local conditions, such as slope, fuel density, building materials, or location.
- Fuel reduction has more to do with disrupting fuel continuity so that the spread of fire is impeded, rather than creating a denuded zone around a home. For example, pruning the lower limbs of trees creates a break between ground fuels and tree canopies, reducing the chances that a fire will move from a ground fire to a crown fire.
- Communities may wish to develop defensible space areas that are greater than 100 feet for even better protection; the code sets only a minimum distance. However, expanding treatments beyond property lines can only be done with if allowed by state law, local ordinance, rule, or regulation.
- Defensible space also provides a safer environment within which firefighters can work. This environment is more than vegetation clearance; defensible space also involves emergency vehicle access, water supply, and clear street signs and addresses. All of these factors, and many more as identified by previous community-level CWPPs, affects the usefulness of defensible space in structure protection.
- Vegetation fuel reduction projects require compliance with all federal, state, or local environmental protection laws.

Additionally, the Public Resources Code was amended in January 2021 to require an ember-resistant zone within 5 feet of the home/structure on or before January 1, 2023. This translates to having a clearance of 5 feet between the home/structure and any materials that would likely be ignited by embers (CAL FIRE 2021c).

Effective defensible space consists of creating an essentially fire-free zone adjacent to the home, a treated secondary zone that is thinned and cleaned of surface fuels, and (if the parcel is large enough) a transitional third zone that is basically a managed forest area. These components work together in a proven and predictable manner. Zone 1 keeps fire from burning directly to the home; Zone 2 reduces the adjacent fire intensity and the likelihood of torching, crown fire, and ember production; and Zone 3 does the same at a broader scale, keeping the fire intensity lower by maintaining a more natural, historic condition (Figures 4.7 and 4.8).

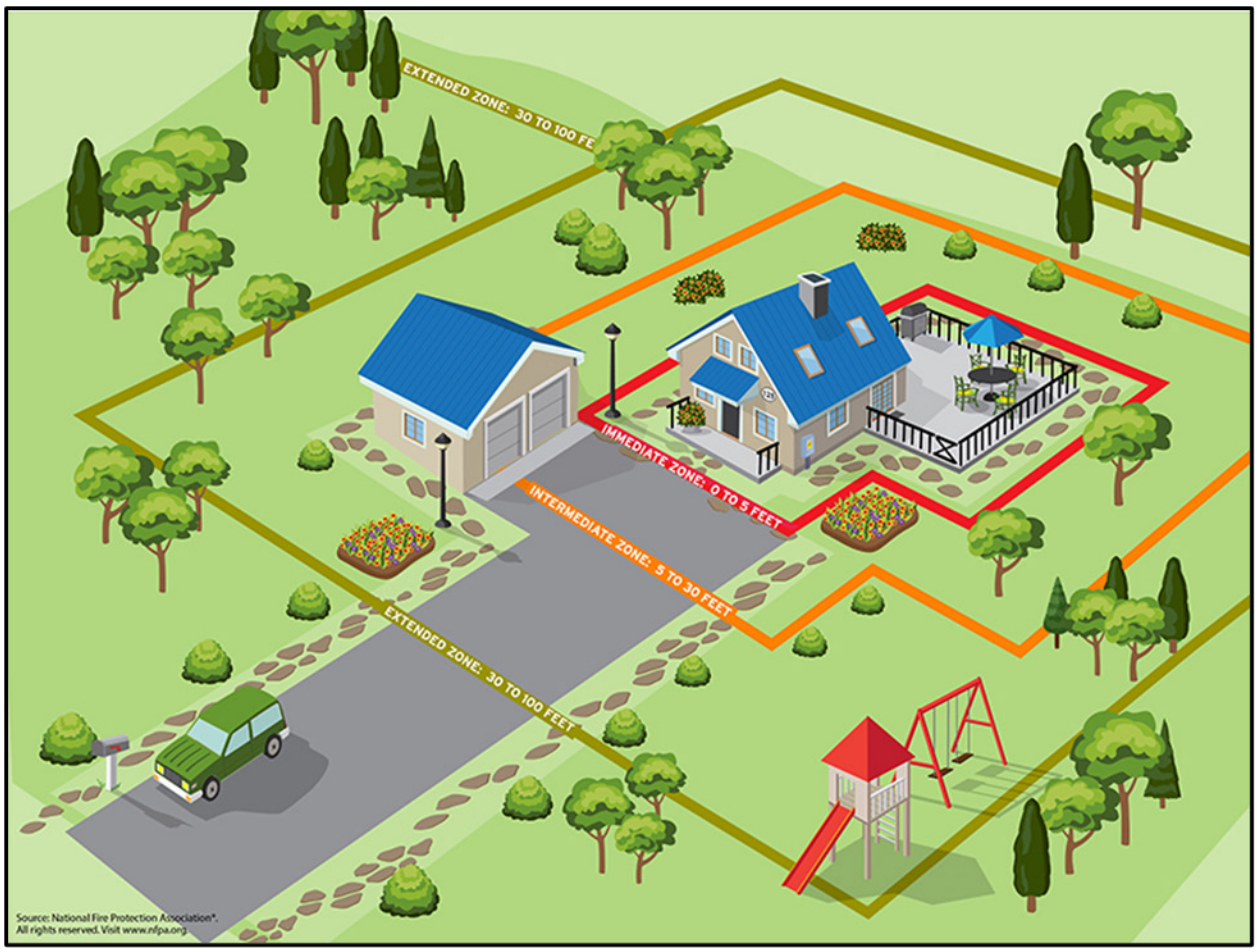


Figure 4.7. Defensible space providing clearance between a structure and adjacent woodland or forest fuels.

Source: Firewise.org.

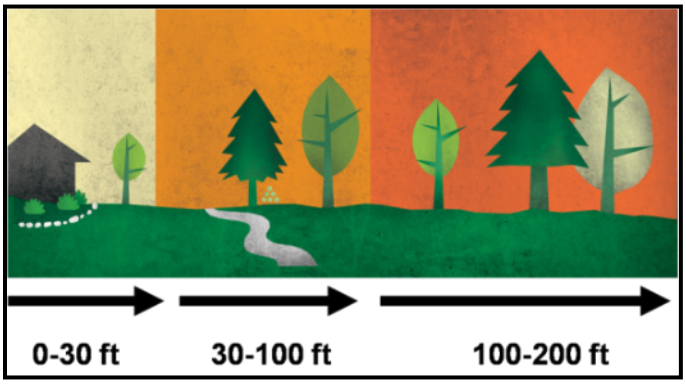


Figure 4.8. Defensible space zones.

Source: www.firewise.org.

It should be emphasized that defensible space is just that—an area that allows firefighters to work effectively and with some degree of safety to defend structures. While defensible space may increase a home's chance of surviving a fire on its own, a structure's survival is not guaranteed, with or without firefighter protection. Nevertheless, when these principles are consistently applied across a

neighborhood, everybody benefits. The three zones for defensible space actions are described below (CAL FIRE 2021c):

Zone 0 – Immediate Zone—Ember Resistant: This zone is not currently required by state law. However, as of January 1, 2023, Assembly Bill 3074 will require the Board of Forestry and Fire Protection to develop the regulation for Zone 0. While not yet required, Zone 0 has been proven to be the most important defensible space zone for protecting homes against wildfire. This zone consists of the immediate area around a home and is defined as 0 to 5 feet from the property structure, including areas under and around all structure attachments, such as sheds or decks. Zone 0 requires the most stringent wildfire fuel reduction methods as actions taken within this zone can directly influence whether a property ignites. Recommendations for treating Zone 0 include (CAL FIRE 2021c):

- Use non-combustible landscaping materials, such as gravel in place of mulch.
- Clear all dead and dying debris from around a structure, including branches, dead leaves, pinecones, pine needles, grasses, and shrubs. Remember to check areas where the debris can accumulate, such as gutters, stairways, porches, and roofs.
- Clear all branches or vegetation within 10 feet of any chimney or stovepipe outlet.
- To keep vegetation within the 5-foot buffer around a structure, ensure plants are thoroughly watered, and keep non-woody, low-growing plant species if possible.
- Limit the use of combustible materials, such as outdoor furniture, on decks or patios.
- Relocate firewood or lumber to Zone 2.
- Replace structures attached to a home, such as fencing or gates, with non-combustible materials.
- If possible, keep garbage receptacles outside of Zone 0.
- If possible, keep all vehicles, boats, ATVs, and any other machines outside of Zone 0.

Zone 1 – Intermediate Zone—Clean and Green: Zone 1 consists of the first 30 feet from structures, including home, decks, garages, etc. If a property line extends less than 30 feet, Zone 1 would be the distance from structures to property line. This zone features fuel reduction efforts and serves as a transitional area between Zones 0 and 2. Recommendations for treating Zone 1 include (CAL FIRE 2021c):

- Remove all dead and dying vegetation, including vegetation debris such as leaf litter. Be sure to check roof and gutters as well.
- Maintain a minimum buffer of 10 feet between a chimney and any vegetation, including dead or overhanging branches. Be sure to remove all branches that hang over the roof.
- Maintain trees by trimming them regularly and keeping a minimum 10-foot buffer between tree canopies.
- Relocate firewood or lumber to Zone 2.
- Trim or remove any flammable vegetation near windows.
- Remove any items or vegetation that could catch fire and ignite other property structures, such as vegetation under decks or stairs.
- Separate any items that could ignite, such as trees, shrubs, swing sets, patio furniture, etc.

Zone 2 – Extended Zone—Reduced Fuel: This zone encompasses an area 30 feet from a structure out to 100 feet, or the property line, whichever is closer. This zone addresses fuel reduction to prevent wildfires from spreading. Recommendations for treating Zone 2 include (CAL FIRE 2021c):

- Maintain all grasses to reach a maximum height of 4 inches.
- For shrubs or trees, maintain a distance between plants of at least two times a plant's size between. Additional space between vegetation is needed for properties on slopes.
    - Flat to mild slope (less than 20%): Minimum distance of 10 feet between trees and two times the size of other plants. Example: For shrubs 2 feet in diameter, at least 4 feet are needed between shrubs.
    - Mild to moderate slope (20%–40%): Minimum distance of 20 feet between trees and four times the size of other plants. Example: For shrubs 2 feet in diameter, at least 8 feet are needed between shrubs.
    - Moderate to steep slope (greater than 40%): Minimum distance of 30 feet between trees and six times the size of other plants. Example: For shrubs 2 feet in diameter, at least 12 feet are needed between shrubs.
- Create vertical space between vegetation by clearing all branches at least 6 feet from the ground for isolated trees, or for trees with nearby shrubs, clear at least 3 times the shrub height.
    - Example: A 4-foot shrub is growing near a tree; a clearance of 12 feet (3 × 4 feet) is needed between the top of the shrub and the lowest tree branch.

Vegetation debris such as dead leaves, branches, twigs, pinecones, etc., may be allowed up to 3 inches in depth. However, it is best to remove vegetation debris.

All wood or lumber piles must have a 10-foot buffer of bare mineral soil in all directions; no vegetation is allowed.

Specific recommendations should be based on the hazards adjacent to a structure such as slope steepness and fuel type. The KCFD provides fire safety inspections, new construction inspections, and a Hazard Reduction Program that minimizes the risk of fire due to excess flammable vegetation and other exterior combustible hazards (e.g., overgrown weeds and grass). The Hazard Reduction Program is enforced by the KCFD. The KCFD issues citations for non-compliance in the SRAs and LRAs, however, violations in the LRA are primarily identified through complaints. Specific requirements of the Hazard Reduction Program can be found here: https://kerncountyfire.org/wp-content/uploads/HAZARD-REDUCTION-CLEARANCE-REQUIREMENTS-CHECKLIST.pdf

Homeowners are encouraged to take advantage of local resources for fire prevention and mitigation. Firewise guidelines and the Homeowner's Guide (Appendix G) are excellent resources but creating defensible space does not have to be an overwhelming process. Assisting neighbors may be essential in many cases. Homeowners should consider assisting the elderly, sharing ladders for gutter cleaning, and assisting neighbors with large thinning needs. Homeowner actions have been found to also motivate neighbors to act, increasing the scope of the wildfire mitigation across a community (Evans et al. 2015). Adopting a phased approach can make the process more manageable and encourage maintenance (Table 4.2).

Additional homeowner resources regarding defensible space and fuels treatments can be found in Appendix G.

Table 4.2. Example of a Phased Approach to Mitigating Home Ignitability

Year	Project	Actions
1	Basic yard cleanup (annual)	Dispose of clutter in the yard and under porches. Remove dead branches from yard. Mow and rake. Clean off roofs and gutters. Remove combustible vegetation near structures. Coordinate disposal as a neighborhood or community. Post 4-inch reflective address numbers visible from road.
2	Understory thinning near structures	Repeat basic yard cleanup. Limb trees up to 6–10 feet. Trim branches back 15 feet from chimneys. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
3	Understory thinning on private property along roads and drainages	Limb trees up to 6–10 feet. Trim or cut down brush. Remove young trees that can carry fire into forest canopy. Coordinate disposal as a neighborhood or community.
4	Overstory treatments on private property	Evaluate the need to thin mature or diseased trees. Prioritize and coordinate tree removal within neighborhoods to increase cost effectiveness.
5	Restart defensible space treatment cycle	Continue the annual basic yard cleanup. Evaluate need to revisit past efforts or catch those that were bypassed.

The next location priority for fuels treatments should be where the community meets the wildland. This may be the outer margins of a town or an area adjacent to occluded open spaces such as a park.

Fuel Breaks

Fuel breaks (also known as shaded fuel breaks) are strips of land where fuel (for example, living trees and brush, as well as dead branches, leaves, or downed logs) has been modified or reduced to limit the fire's ability to spread rapidly. Fuel breaks should not be confused with firebreaks, which are areas where vegetation and organic matter is removed down to mineral soil. Shaded fuel breaks may be created to provide options for suppression resources or to provide opportunities to introduce prescribed fire. In many cases, shaded fuel breaks may be created by thinning along roads. This provides access for mitigation resources and firefighters, as well as enhancing the safety of evacuation routes.

Fire behavior in the CWPP planning area has been modeled using FlamMap. This assessment provides estimates of flame length and rate of spread; the information should be used by land managers when prescribing treatments. Land managers are cautioned, however, that fuel breaks will not always stop a fire under extreme fire behavior or strong winds; these should only be seen as a mitigating measure and not a fail-safe method for fire containment. Furthermore, fuel break utility is contingent upon regular maintenance, as regrowth in a fuel break can quickly reduce its effectiveness and vegetation in this ecosystem is known to quickly re-sprout and reestablish. Maintenance of existing breaks could be more cost efficient than installation of new features.

Strategic placement of fuel breaks is critical to prevent fire from moving from wildland fuels into adjacent neighborhoods. For effective management of most fuels, fuel breaks should be prescribed based on the conditions in each treatment area. It is not possible to provide a standard treatment prescription for the entire landscape because fuel break dimensions should be based on the local fuel conditions and prevailing weather patterns. For example, in some areas, clearing an area too wide could open the landscape to strong winds that could generate more intense fire behavior and/or create wind throw. Finally, in some situations it can be best to leave the site in its current condition to avoid the introduction of more flammable, exotic species which may respond readily following disturbance.

Larger-scale Treatments

Farther from WUI communities, the emphasis of treatments often becomes broader. While reducing the buildup of hazardous fuels remains important, other objectives are often included, such as forest health and resiliency to catastrophic wildfire and climate change considerations. Wildfires frequently burn across jurisdictional boundaries, sometimes on landscape scales. As such, these larger treatments need to be coordinated on a strategic level. This requires coordination between projects and jurisdictions, as is currently occurring.

Land managers have carried out numerous forest restoration projects across the Sequoia and Los Padres NFs and have ongoing projects planned on public land that are designed to reduce hazardous fuels to protect communities and resources, while restoring fire-adapted communities. Figures 4.1 through 4.3 show existing fuel treatments and Figure 4.5 shows areas of concern across the three areas of interest. This information is derived from CAL FIRE and the USFS. The reader is referred to agency websites and the Federal Register for the latest information on planned or ongoing actions on federal land within the County.

The areas of concern are within the three areas of interest: Mount Pinos, Tehachapi, and Lake Isabella (see Figures 4.1–4.3 and 4.5). While existing large-scale fuel treatments are underway, there are large portions of the areas of concern with no existing large-scale fuel treatment. Currently, the Tehachapi focus area, which has the smallest proportion of areas of concern, has the largest proportion of its area that has undergone large fuel treatment projects (see Figure 4.2). Lake Isabella has undergone a moderate amount of large fuel treatments, though it has the highest proportion of areas of concern (see Figure 4.1). Mount Pinos has undergone only small-scale fuel treatments, despite having a high proportion of areas of concern. These mainly consist of small, prescribed burns along roads (see Figure 4.3). Future large-scale fuel treatments must be considered for the areas of concern within the three areas of interest for successful wildfire planning and mitigation efforts. Additionally, these fuel treatments should be a collaborative effort across local, state, and federal partners, as wildfires do not adhere to pollical boundaries. Furthermore, planning and implementation efforts for future large-scale fuel treatments should also account for forest health, climate change, fuel connectivity, VARs, communities at risk to wildfire, and other considerations.

Fuel Treatment Methods

Several treatment methods are commonly used, including manual treatments, mechanized treatments, and prescribed fire (Table 4.3). This brief synopsis of treatment options is provided for general knowledge; specific projects will require further planning. The appropriate treatment method and cost will vary depending on factors such as the following:

- Diameter of materials
- Proximity to structures
- Acreage of project
- Fuel costs
- Steepness of slope
- Area accessibility
- Density of fuels
- Project objectives

It is imperative that long-term monitoring and maintenance of all treatments is implemented. Post-treatment rehabilitation such as seeding with native plants and erosion control may be necessary.

Table 4.3. Summary of Fuels Treatment Methods

Treatment	Comments
Machine mowing	Appropriate for large, flat, grassy areas on relatively flat terrain.
Prescribed fire	Can be very cost effective. Ecologically beneficial. Can be used as training opportunities for firefighters. May require manual or mechanical pretreatment. Carries risk of escape, which may be unacceptable in some WUI areas. Unreliable scheduling due to weather and smoke management constraints.
Brush mastication	Brush species tend to re-sprout vigorously after mechanical treatment. Frequent maintenance of treatments are typically necessary. Mastication tends to be less expensive than manual (chainsaw) treatment and eliminates disposal issues.
Timber mastication	Materials up to 10 inches in diameter and slopes up to 30% can be treated. Eliminates disposal issues. Environmental impact of residue being left on site is still being studied.
Manual treatment with chipping or pile burning	Requires chipping, hauling, pile burning of slash in cases where lop and scatter is inappropriate. Pile burning must comply with smoke management policy.
Feller buncher	Mechanical treatment on slopes more than 30% or of materials more than 10 inches in diameter may require a feller buncher rather than a masticator. Costs tend to be considerably higher than masticator.

Treatment	Comments
Grazing (goats)	Can be cost effective. Ecologically sound. Can be applied on steep slopes and shrubby and flashy fuels. Requires close management.

Manual Treatment

Manual treatment refers to crew-implemented cutting with chainsaws. Although it can be more expensive than mechanized treatment, crews can access many areas that are too steep or otherwise inaccessible with machines. Treatments can often be implemented with more precision than prescribed fire or mechanized methods allow. Merchantable materials and firewood can be removed while non-merchantable materials are often lopped and scattered, chipped, or piled and burned on-site. Care should be exercised to not increase the fire hazard by failing to remove or treat discarded material in a site-appropriate manner.

Strategic timing and placement of fuels treatments is critical for effective fuels management practices and should be prescribed based on the conditions of each treatment area. Some examples of this would be to place fuel breaks in areas where the fuels are heavier and in the path of prevailing winds and to mow grasses just before they cure and become flammable. Also, fuel reductions on slopes/ridgelines extending from the WUI to enhance community protection. In areas where the vegetation is sparse and not continuous, fuels treatments may not be necessary to create a defensible area where firefighters can work. In this situation, where the amount of fuel to carry a fire is minimal, it is best to leave the site in its current condition to avoid the introduction of exotic species.

Mechanized Treatments

Mechanized treatments include mowing, mastication (ground-up timber), and whole tree felling. These treatments allow for more precision than prescribed fire and are often more cost-effective than manual treatment.

Mowing, including ATV and tractor-pulled mower decks, can effectively reduce grass fuels adjacent to structures and along highway rights-of-way and fence lines. For heavier fuels, several different masticating machines can be used, including drum- or blade-type masticating heads mounted on machines and ranging in size from a small skid-steer to large front-end loaders. Some masticators can grind standing timber up to 10 inches in diameter. Other masticators are more effective for use in brush or surface fuels. Mowing and mastication do not actually reduce the amount of on-site biomass but alter the fuel arrangement to a less combustible profile.

In existing fuel break areas maintenance is crucial especially in areas of encroaching shrubs or trees. In extreme risk areas more intensive fuels treatments may be necessary to keep the fire on the ground surface and reduce flame lengths. Within the fuel break, shrubs should be removed, and the branches of trees should be pruned from the ground surface to a height of 4 to 8 feet, depending on the height of the fuel below the canopy, and thinned with a spacing of at least two to three times the height of the trees to avoid movement of an active fire into the canopy.

Mechanical shears mounted on feller bunchers are used for whole tree removal. The stems are typically hauled off-site for utilization while the limbs are discarded. The discarded material may be masticated, chipped, or burned in order to reduce the wildfire hazard and to speed the recycling of nutrients.

Grazing

Fuel modifications targeted toward decreasing both vertical and horizontal continuity in fuels is critical as a prevention method against fire proliferation. The primary objectives for these modifications are treating surface fuels and producing low-density and vertically disconnected stands. Goat grazing is an effective, nontoxic, nonpolluting, and practically carbon-neutral vegetation treatment method. A goat grazing system typically consists of a high density of goats enclosed by a metallic or electrified fence guided by herders. Goats feed on a variety of foliage and twigs from herbaceous vegetation and woody plants (Lovreglio et al. 2014).

Prescribed Burning

Prescribed burning is also a useful tool to reduce the threat of extreme fire behavior by removing excessive standing plant material, litter, and woody debris while limiting the encroachment of shrubby vegetation. Where possible, prescribed fire could occur on public land since fire is ecologically beneficial to this fire-adapted vegetation community and wildlife habitat. KCFD and USFS are already implementing prescribed burning in Kern County.

Following any type of fuels reduction treatment, post-treatment monitoring should continue to ensure that management actions continue to be effective throughout the fire season. The vegetation within this ecosystem can change rapidly in response to drought or moisture from year to year and during the course of the season, so fuels treatments should be adjusted accordingly.

Several burns may be needed to meet full resource management objectives, so a solid maintenance plan is needed to ensure success.

Cultural Burning

Within the Pacific West, fire has historically been a means forest management and restoration by Indigenous communities (Long et al. 2021). Cultural burning has been defined as the “purposeful use of fire by a cultural group (e.g., family unit, Tribe, clan/moiety, society) for a variety of purposes and outcomes,” and is included under the terms Indigenous fire management, Indigenous burning, and Indigenous stewardship (Long et al. 2021).

Rather than focusing solely on fuel reduction, or as a means of wildfire mitigation, cultural burning is done with a more holistic view, under the philosophy of “reciprocal restoration,” meaning, as stewardship responsibilities to the land are fulfilled, those actions will in turn benefit the peoples who depend on those ecosystems (Long et al. 2021). Cultural burning is typically performed with a variety of objectives, such as landscape management, ecosystem and species biodiversity and health, transmission of environmental and cultural knowledge, ceremonies and spiritual wellbeing, a sense of place, and material services (i.e., food, medicine, plan materials, etc.). Extensive site preparation is typically done before a burn, and post-burn monitoring and additional cultural practices are a common factor of the land stewardship tradition (Long et al. 2021).

Impacts of Prescribed Fire on Communities

Prescribed burning produces smoke which is composed of toxic particulate and gaseous pollutants. Inappropriate management of prescribed fires can be bothersome to residents, and it can negatively affect community health. Smoke from burning vegetation produces air pollutants that are regulated by both the U.S. Environmental Protection Agency (EPA) and the state of California (EPA 2019). Additionally, smoke can increase ambient air pollution levels to a point where it exceeds air quality

standards (California Air Resources Board [CARB] 2003). Therefore, effective smoke management is a vital component of planning and conducting prescribed fires.

The California Air Resources Board has smoke management guidelines that protect the health and welfare of Californians from the impacts of smoke (CARB 2001). In Kern County, a permit from Kern County Air Pollution Control District must be obtained to start a prescribed burn and can only do so during "permissive burn days" (Figure 4.9), which are determined by the State Air Resources Board or the local air district (Kern County Air Pollution Control District 2001).

Figure 4.9. Photograph showing a prescribed burn in the Kern River Ranger District.
Source: Kern Valley Sun: https://kernvalleysun.com/stories/573263150-kern-river-ranger-district-prescribed-burns-beginning-this-week

Management of Non-native Plants

The California Department of Food and Agriculture (CDFA) maintains a list of noxious weeds rated from A to C based on the current degree of infestation of the species and the potential for eradication (CDFA 2021a). Fuel treatment approaches should always consider the potential for introduction or proliferation of invasive non-native species as a result of management actions.

COHESIVE STRATEGY GOAL 2: FIRE-ADAPTED COMMUNITIES

Goal 2 of the Cohesive Strategy/Western Regional Action Plan is: Fire-Adapted Communities: Human populations and infrastructure can withstand a wildfire without loss of life and property. The basic premise of this goal is:

> *"Preventing or minimizing the loss of life and property due to wildfire requires a combination of thorough pre-fire planning and action, followed by prudent and immediate response during a wildfire event. Post-fire activities can also speed community recovery efforts and help limit the long-term*

effects and costs of wildfire. CWPPs should identify high-risk areas and actions residents can take to reduce their risk. Fuels treatments in and near communities can provide buffer zones to protect structures, important community values and evacuation routes. Collaboration, self-sufficiency, acceptance of the risks and consequences of actions (or non-action), assisting those who need assistance (such as the elderly), and encouraging cultural and behavioral changes regarding fire and fire protection are important concepts. Attention will be paid to values to be protected in the middle ground (lands between the community and the forest) including watersheds, viewsheds, utility and transportation corridors, cultural and historic values, etc." (WRSC 2013:15).

In this CWPP, recommendations for fire-adapted communities include public education and outreach actions and actions to reduce structural ignitability.

RECOMMENDATIONS FOR PUBLIC EDUCATION AND OUTREACH

Just as environmental hazards need to be mitigated to reduce the risk of fire loss, so do the human hazards. Lack of knowledge, lack of positive actions (e.g., failing to create adequate defensible space), and negative actions (e.g., keeping leaf litter and exposed propane tanks close to structures) all contribute to increased risk of loss in the WUI.

Most residents in the WUI understand the risk that wildfire poses to their communities. However, it is important to continually engage the community as a partner in order to expand wildfire mitigation options across land ownership (McCaffrey 2004, 2020; McCaffrey and Olsen 2012; Winter and Fried 2000).

Methods to improve public education could include increasing awareness about fire department response and resource needs; providing workshops at demonstration sites showing Firewise Communities landscaping techniques or fuels treatment projects; organizing community cleanups to remove green waste; publicizing availability of government funds for treatments on private land; and, most importantly, improving communication between homeowners and local land management agencies to improve and build trust, particularly since the implementation of fuel treatments and better maintenance of existing treatments needs to occur in the interface between public and private land.

The KCFD already carries out many public education activities throughout the County, such as an education page and a Smokey for Kids website with educational games (KCFD 2021g). The fire department is a great resource for information and contacts regarding wildfire mitigation and wildfire prevention.

Please see Appendix G for a list of educational resources.

Table 4.4 lists public education recommendations to be implemented in the County.

RECOMMENDATIONS FOR REDUCING STRUCTURAL IGNITABILITY

Table 4.4 provides a list of community-based recommendations to reduce structural ignitability that should be implemented throughout the Kern County CWPP planning area. Reduction of structural ignitability depends largely on public education which provides homeowners the information they need to take responsibility for protecting their own properties. A list of action items that individual homeowners can follow can be found below. Carrying out fuels reduction treatments on public land may only be effective in

reducing fire risk to some communities; if homeowners have failed to provide mitigation efforts on their own land, the risk of home ignition remains high, and firefighter lives are put at risk when they carry out structural defense.

Preparing for wildland fire by creating defensible space around the home is an effective strategy for reducing structural ignitability as discussed under Cohesive Strategy Goal 1: Resilient Landscapes. Studies have shown that burning vegetation beyond 120 feet of a structure is unlikely to ignite that property through radiant heat (Butler and Cohen 1996), but fire bands that travel independently of the flaming front have been known to destroy houses that had not been impacted by direct flame impingement. Hardening the home to ignition from embers, including maintaining vent coverings and other openings, is also strongly advised to protect a home from structural ignitability. Managing the landscape around a structure by removing weeds and debris within a 30-foot radius and keeping the roof and gutters of a home clean are two maintenance measures proven to limit combustible materials that could provide an ember bed and ignite the structure. In essence, reducing structural ignitability and creating defensible space are key for protecting from the potential loss and damage due as was seen during the 2021 French Fire.

Below you will find pertinent information regarding recent legislation related to Goal 2 of the Cohesive Strategy.

Assembly Bill 38: Assembly Bill 38 (2019) amended sections of the Civil, Government, and Public Resources Codes to set forth a comprehensive wildfire mitigation financial support program, which facilitates cost-effective home/structure hardening and retrofitting to create fire-resistant homes, businesses, and public structures. The amendments require the State Fire Marshal, in consultation with the Director of Forestry and Fire Protection and the Director of Housing and Community Development to identify building retrofits and hardening measures eligible for financial assistance under the program. Additionally, the amendments require that CAL FIRE identify defensible space, vegetation management, and fuel treatment procedures eligible for financial assistance. Wildfire hazard areas eligible for financial assistance under the program include LRAs situated within very high fire hazard severity zones and SRAs within any fire hazard severity zone (CA GOPR 2020).

California Fire Code Title 19 and Title 24, PRC 4291, and International WUI Code: The KCFD 2021 Strategic Fire Plan (KCFD 2021b) requires that all new development complies with the current adopted edition of the California Fire Code (Titles 19 and 24), PRC 4291, and International WUI code. Collectively, these codes establish minimum standards for the protection of life and property by increasing the ability of a home/building to resist the intrusion of flames or embers released by a vegetation fire (KCFD 2021b).

Table 4.4. Recommendations for Creating Fire-Adapted Communities (Public Education and Reducing Structural Ignitability)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
1	Ongoing	H	Fall/winter 2022	Identify vulnerable populations located in the WUI	Kern County (all lands) Prioritize high risk areas	Fire Department, HOA's, community leaders	• The County needs to identify vulnerable populations (elderly, disabled, low income) who may need additional help to mitigate home hazards and to evacuate during a wildfire. • Seek grant opportunities to support assistance for vulnerable populations.	Protect life and property of the most vulnerable members of the community.	Annual review of number of actions taken to address vulnerable populations	• Pre-Disaster Mitigation (PDM)/Building Resilient Infrastructure and Communities (BRIC) • Firewise grants • California Department of Forestry and Fire Protection (CAL FIRE) Grant Programs • California Climate Investments Fire Prevention Grant Program (CAL FIRE) • California Fire Safe Council Grant Programs • National Urban and Community Forestry Challenge Cost Share Grant Program
2		H	Fall/Winter 2022	Develop a Story Map version of the 2022 CWPP	N/A	County, Fire Department	• Develop a Hub site and Story Map for use by civilians/residents (aligns with 2009 KRV CWPP): • Create "tabs" for each major section of the CWPP such as fire environment and homeowner resources • Condense the CWPP text into easily digestible Story Map text blurbs to maximize readership • Utilize the public facing side of the Hub as a one-stop-shop for up-to-date wildfire information and resources, such as a homeowner's guide, emergency notifications, and preparedness plans • Include community risk information such as hazard ratings and assessment findings/themes. • Utilize the internal side of the Hub for multi-agency collaboration, project tracking, and planning	Maximize CWPP readership and therefore public engagement in wildfire planning. Provide a platform for multi-agency collaboration and coordination.	Update Hub and Story Map resources as planning documents and links are edited/updated.	• The Urban Land Institute (ULI) • Urban & Community Forestry Grant Programs (CAL FIRE) • Firewise Communities • National Urban and Community Forestry Challenge Cost Share Grant Program • The National Fire Plan (NFP)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
3	Ongoing	H	Fall/winter 2022	Educate the public on how to mitigate risk and damage from wildfire (aligns with 2005 GTA CWPP and 2009 General Plan and 2020 MJHMP)	Kern County (all lands) Prioritize highest threat areas as identified in the risk assessment	Fire Department, HOA, Private Landowners	• Increase education through community training classes as well as YouTube videos on defensible space, fire safe landscaping, structural hardening components, and WUI building construction requirements. • Create/distribute wildfire education documents to distribute, including topics such as home hardening, defensible space (including information on above ground utilities and firewood), how wildfire spreads, etc. (aligns with 2004 Alta Sierra CWPP). • Distribute a list of mitigation actions broken down by cost. • Utilize Appendix G of the CWPP: Homeowner Resources • Create/distribute education material on evacuations. Promote the KCFD emergency preparedness webpage. • Implement youth fire prevention programs (can work with camps, schools, clubs, etc.) (aligns with 2005 GTA CWPP) • Use existing signage • Spread seasonally adjusted fire prevention messages along highways and in public open space areas to reduce human ignitions and promote defensible space. • Promote the use of existing electronic signs at firehouses and other locales to display fire prevention information, safety messages, and fire danger ratings linked to safety actions. • Increase Firewise/Ready, Set, GO! Workshops • Offer hands-on workshops to highlight individual home vulnerabilities and how-to techniques to reduce ignitability of common structural elements. • Home assessments conducted in a neighborhood often include groups of neighbors participating with the assessor to learn from each other's homes. Homeowners get a better understanding by viewing a home other than their own and feel more comfortable asking questions as a group. • Assessments and workshops can be requested by an HOA. • Utilize a train-the-trainer model. Develop a team of trained citizens that could perform hazard assessments within their community. Seek funding to pay volunteer fire departments to assist. • Provide educational resources during assessments.	Reduce wildfire risk through greater adoption of Firewise and structure hardening measures. Protect communities and infrastructure by raising awareness of local citizens and those traveling in the area about actions that can prevent fires.	Yearly updates to materials. Annual review of number of events implemented. Set goals for the following year.	• PDM/BRIC • Firewise grants • The Fire Prevention and Safety Grants (FP&S) • CAL FIRE Grant Programs • Environmental Protection Agency (EPA) Environmental Education Grants
4	Ongoing	H	Fall/winter 2022	Implement Community events	Kern County (all lands) Focus on highest threat areas as identified in the risk assessment and populations at risk	Fire Department, Community Service Groups.	• Host County chipper program or chipper days (aligns with 2006 Mt. Pinos and 2005 GTA CWPPs) • A community-led day of yard cleanup with fire mitigation in mind may encourage large numbers within the community to carry out mitigation measures and implement defensible space. • Residents should assist elderly, disabled, or vulnerable residents. • Hold a community gardening event with volunteers – construct a firesafe demonstration garden or home landscaping for the public to view (aligns with 2006 Mt Pinos CWPP) • Aim to draw all populations, especially those at risk. Ensure that all interactions result in follow up engagement by collecting contact information for residents interested in action.	Reduce wildfire risk through greater adoption of Firewise and structure hardening measures.	Annual review of number of events implemented. Set goals for next year.	• PDM/BRIC • Firewise grants • CAL FIRE Grant Programs • FP&S • National Urban and Community Forestry Challenge Cost Share Grant Program • State Farm Good Neighbor Citizenship (GNC) Grants
5	Ongoing	H	Fall/winter 2022	Create robust program/dashboard to track, maintain, and prioritize wildfire mitigation projects.	N/A	Fire department, GIS, IT	• Create a program for tracking the completion of wildfire mitigation projects. • Redesign website to make wildfire education more prominent. • Utilize Survey 123 technology for tracking accomplishments.	Reduce wildfire risk through wildfire mitigation projects in the County.	Annual assessment of program success.	• Conservation Innovation Grants (CIG) • Firewise grants • National Interagency Fire Center (NIFC) • CAL FIRE Grant Programs

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
6	Ongoing	H	Fall/winter 2022	Improve/increase enforcement of Defensible Space Standards (aligns with 2006 Mt. Pinos and 2005 GTA CWPPs) and Kern County and California WUI code (Fire/Building Code) (aligns with 2009 Kern River Valley (KRV) CWPP)	Kern County (all lands) Prioritize high risk areas:	Fire Department, County, HOAs, Private landowners	• Defensible Space • A professional assessment would help identify the most critical actions that an individual could take. • Assessments could also include marking trees and shrubs suggested for removal. • Continue to enforce the Fire Hazard Reduction Program. • Implement annual vegetation and defensible space inspections within LRAs (focusing on VHFSZs), rather than relying on civilian complaints. • Increase inspections to twice a year. Include pre-determined inspection schedule. • Develop staffing plan to support enforcement and seek funding to implement the plan. • Provide tax incentives for defensible space actions. • Work with insurance companies to determine the potential to provide incentives for defensible space associated with reduced insurance premiums. • Increase green waste pickup/disposal options. • Fire/WUI Code • The Fire Code applies to new and existing construction and requires that structures meet the parameters of the Code in order to secure building permits. Develop a process to better identify when permits come into the County to flag them for special home hardening requirements. • Use education campaign to encourage WUI code actions even for those properties that are not required to adhere to it.	Reduce loss of life and structures through defensible space. Reduce wildfire risk through greater adoption of Firewise and structure hardening measures. Reduce risk of home ignitions. Empower homeowners to take the most effective actions.	Conduct on-site inspections with owners; identify and mark trees or shrubs for removal within the 100-foot safety zone. Develop a community task force to carry out assessments of properties. Annual program evaluation and updates as necessary.	• Firewise grants • CAL FIRE Grant Programs • GNC Grants • FP&S • EPA Environmental Education Grants
7	Ongoing	H		Improve agency coordination of outreach both private and public	Kern County (all lands)	All Agencies, Insurance Brokers	• Agency coordinated meeting to ensure a consistent message. • Implement a platform for raising cross-boundary issues. • Engaging insurance agency in dialogue. • Provide incentives for mitigation actions.	Provides a consistent message regarding wildfire activity, fire prevention goals, actions for homeowners. Reduce redundancy and improve efficiency. Align insurance company requirements with County codes and ordinances. Possible incentives of homes that have completed wildfire mitigation (AB 38).	Annual agency coordination meeting to assess priorities and action items.	• Firewise grants • California Fire Safe Council Grant Programs CAL FIRE Grant Programs • Regional Catastrophic Preparedness (RCP) Grants • Emergency Management Performance Grant (EMPG)
8		H	Spring of 2023	Implement strategically placed safety zones or temporary refuge areas	Communities with difficult egress, either due to large population funneling or poor road conditions	All agencies	• Develop fire-proof zones for emergency refuge/shelter. • Utilize areas such as parking lots or school yards. • Implement extreme defensible space, potentially including fire breaks around the safe zone. • May utilize his area as a living example of fire-resistant landscaping.	Protect lives when egress routes have become blocked. Provide safe zones for firefighters.	Regular maintenance of safe zones.	• PDM/BRIC • Hazard Mitigation Grant Program (HMGP) • HMGP – Post Fire • Fire Management Assistance Grants (FMAG) • RCP Grants
9		M		Implement Fire Safe Campground/ Tourist hubs (aligns with 2004 Alta Sierra CWPP)	Kern County		• Provide firesafe structures at campgrounds/recreational areas • Host/distribute wildfire educational resources at all major campgrounds/recreational areas • Provide real-life examples of defensible space around campground/recreational structures • Install signage identifying firesafe landscaping, construction materials, and defensible space zones	Reduce wildfire risk within recreation areas. Promote wildfire awareness and education, Provide tangible examples of risk reduction work.	Vegetation and sign maintenance, Yearly updates to educational materials.	• Firewise grants • CAL FIRE Grant Programs • FP&S • California Climate Investments Fire Prevention Grant Program (CAL FIRE)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
10	Ongoing	M		Identify priority ignition concerns, including location and cause (aligns with 2009 KRV CWPP)	Kern County Extreme threat areas:	Public agencies, Fire Department, Department of Emergency Management	Utilize fire history data to identify areas with frequent fire starts and develop strategy to reduce incidence of ignitions. Utilize multi-agency collaboration and convene a working group to develop strategies to reduce human starts: • Education campaign • Signage • Fire response plans • Law enforcement	Reduce unnecessary ignition through unlawful or irresponsible behavior.	Annual evaluation of priority ignition concerns. 5-year re-run of risk assessment to determine success in mitigating hazards. Review fire history data on a 2-year frequency to monitor trends.	• FP&S • PDM/BRIC • EMPG • Firewise grants • EPA Grant Programs
11		M	Winter 2022	Increase staffing to address wildfire mitigation workload.	Prioritize understaffed programs that provide the most impact.	Fire Department, County Administration and Finance	• Establish fuels mitigation crew • Pursue continuous and repeat interactions with residents.	Reduce wildfire risk through greater capacity in the County for wildfire projects.	Annual assessment of capacity needs.	• Funding for Fire Departments and First Responders • RCP • EMPG • PDM
12	Ongoing	M		Improve engagement and sustainability of mitigation actions by residents (aligned with 2009 General Plan).	Focus on highest threat areas as identified in the risk assessment	All Agencies	To encourage engagement in mitigation actions and sustain engagement, entities should: • Provide recognition and incentives • Assist and facilitate actions by providing services for treating and removing slash • Identify barriers to engagement and address • Track progress and identify areas requiring support	Increase sustainability for mitigation actions and combat fatigue amongst residents.	Annual evaluation of program effectiveness and updates as necessary. Accomplishment tracking through an interactive online tracking system. Regularly update content to keep messaging fresh and relevant.	• PDM/BRIC • Firewise grants • CAL FIRE Grant Programs • EPA Environmental Education Grants • National Urban and Community Forestry Challenge Cost Share Grant Program
13		M	2023	Integrate CWPP components/findings into existing plans (LHMP, EOP, structure protection plan, etc.)	Kern County (all lands)	Fire Department, Emergency Management Department	Review relevant existing planning documents and, where applicable, incorporate CWPP findings and components during planning document updates.	Incorporate wildfire planning into broader-scale emergency management planning for the County.	Yearly updates to materials	• Firewise grants • FP&S • California Climate Investments Fire Prevention Grant Program (CAL FIRE) • PDM • HMGP • Agency Budgets
14	Ongoing	M	Fall/winter 2022	Improve wildfire preparedness through safe and effective emergency response.	Kern County (all lands) Prioritize high risk areas.	Fire Department, Emergency Management Department	• Develop a plan to effectively utilize the CERT program. Use the risk assessment to focus efforts on evacuation strategies for vulnerable populations in the County.	Protect life through emergency response education.	Annual updates to education materials.	• ULI • Urban & Community Forestry Grant Programs (CAL FIRE) • Firewise Communities • National Urban and Community Forestry Challenge Cost Share Grant Program • NFP • EPA Environmental Education Grants

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
15	Ongoing	M		Increase Structural Hardening – Although newer construction is built to current standards, there is a large percentage of construction prior to 2008 and the WUI code that exists within the County.	Kern County (all lands) Prioritize high risk areas:	Fire Department, Prevention and Community Development, HOAs	• Develop and distribute educational materials and resources on the importance of home hardening and how wildfires may ignite homes. • Develop and distribute information regarding topography, slope, vegetation, and how it all impacts a home's risk level and defensible space needs. • Continue to develop and adopt the latest building standards and codes. • Retrofit existing structures, both public and private (aligns with 2020 MJHMP). • Research and utilize new law to help with retrofits. • Develop a home inspection program which includes information on risk reduction. • Opportunities for tax breaks to harden your home. • Surveys sent to homeowners to inform the Fire Department and other groups about public perceptions of risk, as well as priority areas in which to focus efforts. • Open up a line of dialogue between the fire department and residents regarding actions they can take to reduce their wildfire risk. Remove dilapidated or condemned structures (aligns with 2004 Alta Sierra CWPP).	Reduce wildfire risk and loss of structures through home hardening and community education.	Annual updates to standards as necessary.	• PDM/BRIC • Firewise grants • FP&S • CAL FIRE Grant Programs • EPA Environmental Education Grants

Action Items for Homeowners to Reduce Structural Ignitability

Low or No Cost Investment (<$50)	Regularly check fire extinguishers and have a 100-foot hose available to wet perimeter.
	Maintain defensible space for 30 feet around home. Work with neighbors to provide adequate fuels mitigation in the event of overlapping property boundaries.
	Make every effort to keep lawn mowed and green during fire season.
	Screen vents with non-combustible meshing with mesh opening not to exceed nominal ¼-inch size.
	Ensure that house numbers are easily viewed from the street.
	Keep wooden fence perimeters free of dry leaves and combustible materials. If possible, non-combustible material should link the house and the fence.
	Keep gutters free of vegetative litter. Gutters can act as collecting points for fire brands and ashes.
	Store combustible materials (firewood, propane tanks, grills) away from the house; in shed, if available.
	Clear out materials from under decks and/or stacked against the structure. Stack firewood at least 30 feet from the home, if possible.
	Reduce your workload by considering local weather patterns. Because prevailing winds in the area are often from the west-southwest, consider mitigating hazards on the west corner of your property first, then work around to cover the entire area.
	Seal up any gaps in roofing material and enclose gaps that could allow fire brands to enter under the roof tiles or shingles.
	Remove flammable materials from around propane tanks.
Minimal Investment (<$250)	When landscaping in the home ignition zone (HIZ) (approximately 30 feet around the property), select non-combustible plants, lawn furniture, and landscaping material. Combustible plant material like junipers and ornamental conifers should be pruned and kept away from siding. If possible, trees should be planted in islands and no closer than 10 feet to the house. Tree crowns should have a spacing of at least 18 feet when within the HIZ. Vegetation at the greatest distance from the structure and closest to wildland fuels should be carefully trimmed and pruned to reduce ladder fuels, and density should be reduced with approximately 6-foot spacing between trees crowns.
	Box in eaves, attic ventilation, and crawl spaces with non-combustible material.
	Work on mitigating hazards on adjoining structures. Sheds, garages, barns, etc., can act as ignition points to your home.
	Enclose open space underneath permanently located manufactured homes using non-combustible skirting.
	Clear and thin vegetation along driveways and access roads so they can act as a safe evacuation route and allow emergency responders to access the home.
	Purchase or use a National Oceanic and Atmospheric Administration weather alert radio to hear fire weather announcements.

Moderate to High Investment (>$250)	Construct a non-combustible wall or barrier between your property and wildland fuels. This could be particularly effective at mitigating the effect of radiant heat and fire spread where 30 feet of defensible space is not available around the structure.
	Construct or retrofit overhanging projections with heavy timber that is less combustible.
	Replace exterior windows and skylights with tempered glass or multilayered glazed panels.
	Invest in updating your roof to non-combustible construction. Look for materials that have been treated and given a fire-resistant roof classification of Class A. Wood materials are highly combustible unless they have gone through a pressure-impregnation fire-retardant process.
	Construct a gravel turnaround in your driveway to improve access and mobilization of fire responders.
	Treat construction materials with fire-retardant chemicals.
	Install a roof irrigation system.
	Replace wood or vinyl siding with nonflammable materials.
	Relocate propane tanks underground.

Additional resources regarding home hardening can be found in Appendix G.

COHESIVE STRATEGY GOAL 3: WILDFIRE RESPONSE

Goal 3 of the Cohesive Strategy/Western Regional Action Plan is Wildfire Response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions:

> *"A balanced wildfire response requires integrated pre-fire planning with effective, efficient, and coordinated emergency response. Pre-fire planning helps tailor responses to wildfires across jurisdictions and landscape units that have different uses and management objectives. Improved prediction and understanding of weather, burning conditions, and various contingencies during wildfire events can improve firefighting effectiveness, thereby reducing losses and minimizing risks to firefighter and public health and safety. Wildfire response capability will consider the responsibilities identified in the Federal Response Framework. Local fire districts and municipalities with statutory responsibility for wildland fire response are not fully represented throughout the existing wildland fire governance structure, particularly at the NWCG, NMAC, and GACC levels."* (WRSC 2013:15).

This section provides recommended actions that jurisdictions could undertake to improve wildfire response.

RECOMMENDATIONS FOR IMPROVING FIRE RESPONSE CAPABILITIES

Educating the public so they can reduce dependence on fire departments is essential because these resources are often stretched thin due to limited personnel. Education to enhance community preparedness is a key factor in supporting local fire departments in fire response, particularly educating

residents about emergency notifications and evacuation protocols so that residents are able to safely evacuate an area while emergency responders prepare to protect life and property.

Table 4.5 provides recommendations for improving firefighting capabilities. Many of these recommendations are general in nature.

Table 4.5. Recommendations for Safe and Effective Wildfire Response

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
1		H	End of 2022	Enhance emergency notification and information dissemination capabilities	Kern County	Fire Department, Emergency Management, State	Build on current emergency notification and information dissemination capabilities to ensure redundant and alternate means of alerting the public. • Improve "ReadyKern ("Reverse 911" system). • Leverage emerging County wide system • Ensure ability to notify all mobile devices (aligns with 2004 Alta Sierra, 2006 Mount Pinos, 2005 GTA, and 2005 Meyers Canyon CWPPs) Install a County-wide siren system (similar to a tornado siren) to notify those the electronic system may not reach (aligns with 2004 Alta Sierra, 2005 Meyers Canyon, 2005 GTA, and 2006 Mount Pinos CWPPs).	Alert the public to emergencies, spread information about ongoing incidents. Improve situational awareness and community safety.	Annual review of effectiveness Post-incident lessons learned	• Pre-Disaster Mitigation (PDM)/Building Resilient Infrastructure and Communities (BRIC) • Emergency Management Performance Grant (EMPG) • Regional Catastrophic Preparedness Grant (RCP) • Funding for Fire Departments and First Responders • California Department of Forestry and Fire Protection (CAL FIRE) Grant Programs or California Fire Safe Council Grant Programs
2		H		Increase/improve water supply for fire suppression	Kern County Initially focus on areas of highest wildfire hazard as determined in the risk assessment and areas with limited water pressure or no existing water supply	Fire Department, All Agencies	• Install helicopter dip tanks where appropriate (aligns with 2006 Mount Pinos and 2005 GTA CWPPs). • Initiate a detailed study of feasible locations for water development improvements. Fire Hydrant with solid fill • Install hand pumps or other methods independent of the grid for accessing private well water Install additional tanks and standpipes (aligns with 2005 Meyers Canyon CWPP)	Improve fire-fighting response if water is more readily available or closest locations could be identified on a GIS map on a tablet/computer. Alleviates public and agency concern for limited water supply in some WUI areas.	Convene annually Document number of meetings held Document number of actions taken	• Firewise grants • PDM/BRIC • CAL FIRE Grant Programs • RCP • Northern California Forests and Watersheds Program • State of CA Grants Portal
3		H		Set up a unified messaging system and direct people to the County Fire Department for the most up to date information	Kern County	County, Fire Department	• Notify the public of the messaging system via online and in person (door hangers, mailers, etc.). • Provide sign-up incentives (i.e., raffles for those subscribed to the notification system) • Coordinate messaging/develop a plan with other organizations, such as the County and/or Fire Department before emergency events occur. Select a webpage for the County and create a one-stop-shop for all emergency/evacuation notifications.	Keep the public informed in a clear and concise manner.	• Ensure someone is responsible for continuously updating the webpage with up-to-date information during an emergency, Maintain webpage functionality.	• PDM/BRIC • EMPG • RCP • Funding for Fire Departments and First Responders • CAL FIRE or California Fire Safe Council Grant Programs
4		H	Second half of 2022	Identify evacuation Routes	All communities where appropriate. Prioritize high risk areas based on risk assessment. Mountain communities.	Fire Department, GIS, Maintenance Services	• Identify parcel owners along primary evacuation routes. • Map call communities with limited ingress/egress. • Install reflective signage along evacuation routes. • Adopt/distribute official evacuation protocols and resources (aligns with 2005 Meyers Canyon CWPP) • Encourage residents and vacationers to sign up for the emergency notification system before fire season. • Create County-wide regulation for address markers and signage – ensure they are visible and reflective and that the ordinance is enforced (aligns with 2004 Alta Sierra, 2006 Mount Pinos, 2005 GTA, and 2005 Meyers Canyon CWPPs and 2009 General Plan) • Require all roads within areas of elevated wildfire risk are marked , identifying the risk (aligns with 2009 General Plan). • Provide reflective address markers to all WUI residents for use (aligns with 2020 MJHMP) Seek grant opportunities to support priority project implementation.	Protect life and lessen high-risk fire behavior along important roads. Fuel treatments adjacent to roads can reduce fire behavior along important travel routes used for ingress by emergency vehicles and egress by residents.	Annual Maintenance	• PDM/BRIC • Fire Management Assistance Grant (FMAG) • NFP • State Farm Good Neighbor Citizenship (GNC) Grants • National Forest Foundation (NFF); Innovative Finance for National Forests Grant Program • Emergency Forest Restoration Program (EFRP) • CAL FIRE Grant Programs

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
5	Ongoing	H		Develop strategies to enhance safe wildfire response in areas with poor ingress and egress.	Priority areas:	Fire Department	• Address narrow access concerns for wildfire apparatus through road improvements, new egress points, or development of response plans. • Identify alternative apparatus for access into narrow areas. • Identify potential areas that threaten entrapment of response crews and develop response plans and/or safety zones. • Map all weak bridges and develop alternative ingress/egress or response plan. • Reduce fuel loading along ingress/egress routes. Remove fuel overhanging road and reduce fuel on both sides of road to an extent depending on potential fire behavior • Identify and remove hazard trees that have potential to fall and block ingress/egress routes during a fire. • Identify areas with limited all-weather access and develop response plan. • Work with HOAs and Community Associations to address locked gates and access concerns	Improve fire-fighting response if smaller more agile vehicles are available to navigate narrow unimproved roads	NA	• The Fire Prevention and Safety Grants (FP&S) • PDM/BRIC • Firewise grants • Hazard Mitigation Grant Program (HMGP)/HMGP – Post Fire • RCP
6		H		Solidify a coordination plan for all fire response agencies (County, State, and Federal)	Kern County	All Agencies	• Example- Initiate an annual pre-fire coordinated training/wildland fire drills to improve communication between departments. • Develop Unified Command and communication plans. • Coordinate with municipalities and fire departments to develop cohesive fire safety plans with overlapping coverage • Coordinate with federal agencies regarding the implementation of community defense zone plans. • Pre-season coordination and pre-fire planning for multi-jurisdictional areas and known areas of concern.	Facilitates communication and collaboration between jurisdictions	Initiate a standing annual review and annual meetings of departments.	• PDM/BRIC • CAL FIRE Grant Programs • FP&S • Firewise grants • RCP
7		H	Spring 2022	Develop and coordinate an online comprehensive emergency preparedness, response, and recovery plan for wildfire.	Kern County	Fire Department, Emergency Management	Create an online dashboard for use by **emergency management** agency decision support. Dashboard could be created in a Story Map or “Hub” format and would include: • Break dashboard into sections of the emergency management cycle: preparedness, response, recovery • Identify roles and responsibilities for each agency/partner under each section of the cycle • Include BMPs for each section of the cycle • Include coordination plan for interagency communications before, during and after an event • Include a tracking module to track actions needed and status • include a funding matrix to support implementation of actions • align actions as closely as possible with the County and State HMP	Improve fire response and readiness.	Would be an active and live platform, updated in real time and reviewed on an annual basis	• FP&S • PDM/BRIC • Firewise grants • HMGP/HMGP – Post Fire • RCP • PDM • EMPG

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
8	Ongoing	M		Proactive in addressing future wildfire challenges with climate change.	Kern County and adjacent jurisdictions	County, State, Federal	Convene a working group tasked with the following: • Assess impact of climate change on wildfire potential through modeling of fire behavior under various climate scenarios. • Establish fuel treatment plans to mitigate climate related influences on wildfire risk in existing vegetation communities. • Establish plans and build infrastructure for water supply needs to alleviate future drought emergencies.	Enhance wildfire response as conditions change.	Meet annually to review plans and assess status of wildfire risk. Re-run the fire behavior analysis to determine change in wildfire risk.	• PDM/BRIC • National Urban and Community Forestry Challenge • CAL FIRE Grant Programs • Leonardo DiCaprio Foundation Grants • EQIP • Emergency Watershed Protection (EWP) Program • Conservation Innovation Grants (CIG)
9	Ongoing	M		Reduce incidence of frequent ignitions	Priority areas:	County, Private	Utilize fire history data to identify areas with frequent fire starts and develop strategy to reduce incidence of ignitions. Convene a working group to develop strategies to reduce human starts: - Education campaign - Signage - Fire response plans - Law enforcement	Reduce ignition frequency	Review fire history data on a 2-year frequency to monitor trends.	• PDM/BRIC • EMPG • Firewise grants • FP&S • EPA Grant Programs
10		M	2023	Develop a coordinated approach between the fire department and water districts to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard as determined in the risk assessment and areas with limited water pressure or no existing water supply.	Priority areas:	County	Initiate a detailed study of feasible locations for water development improvements. Install hand pumps or other methods independent of the grid for accessing private well water. Evaluate and consider heli hydrants through the interface	Improve fire-fighting response if water is more readily available or closest locations could be identified on a GIS map on a tablet/computer. Alleviates public and agency concern for limited water supply in some WUI areas	Convene annually Document number of meetings held Document number of actions taken	• Firewise grants • PDM/BRIC • CAL FIRE Grant Programs • RCP • Northern California Forests and Watersheds Program • State of CA Grants Portal

POST-FIRE RESPONSE AND REHABILITATION

The recent increase in severe fires has highlighted the numerous complexities of post-fire response. Research indicates that high-severity burn areas may produce erosion and runoff rates 5 to 10 times higher than the rates produced by moderate-severity burn areas (Sierra Nevada Conservancy 2021). Following a fire, heavy rains may result in widespread floods carrying trees, boulders, and soil through canyons, ultimately damaging communities and critical infrastructure. In Kern County, the areas that are susceptible to debris flows and mudslides include the mountain and foothill areas, e.g., the Tehachapi Mountains (KCFD OES 2020).

The French Fire, which is the County's largest fire in recent times, occurred in August 2021 and scorched 27,285 acres. According to the USFS Burned Area Emergency Response (BAER) Team, the French Fire resulted in 40% of the burned area sustaining moderate burn severity and 6% high burn severity (USFS-BAER 2021). Soil cover is dramatically reduced in areas with moderate soil burn severity (SBS), leading to increased water repellency and runoff. By contrast, soil cover is nearly non-existent in areas experiencing high SBS and the surface mineral soil has been burned to fine powder. Exposed, granular mineral soil is readily transported during rain events resulting in elevated soil erosion and sediment loading in streams, creeks, and rivers (USFS-BAER 2021).

There are many facets to post-fire recovery, including but not limited to:

- Ensuring public health and safety—prompt removal of downed and hazard trees, addressing watershed damage, and mitigating potential flooding.
- Rebuilding communities and assessing economic needs—securing the financial resources necessary for communities to rebuild homes, business, and infrastructure.
- Restoring the damaged landscape—restoration of watersheds, soil stabilization, and tree planting.
- Reducing fire risk in the future—identifying hazard areas and implementing mitigation.
- Prioritizing the needs of vulnerable and disadvantaged communities during response and disaster recovery efforts.
- Reducing post-fire recovery time by replanting native species.
- Ensuring fire protection measures enhance sustainability of restoration projects e.g., introducing prescribed fire to a fire-dependent ecosystem where fire had previously been excluded.
- Retaining downed logs for erosion control and habitat maintenance.
- Evaluating and updating disaster recovery plans every 5 years to respond to changing needs and characteristics of the community.
- Coordinating with planning, housing, health and human services, and other local, regional or state agencies to develop contingency plans for meeting short-term, temporary housing needs of those displaced during a catastrophic wildfire event.
- Incorporating forecasted impacts from climate change intro trends and projections of future risk and consideration of policies to address identified risk.
- Updating codes and ordinances to specify procedures and standards for planning and permitting the reconstruction of buildings destroyed by wildfire.

Recovery of the vegetated landscape is often more straightforward than recovery of the human environment. Assessments of the burned landscape are often well-coordinated through the use of interagency crews who are mobilized immediately after a fire to assess the post-fire environment and make recommendations for rehabilitation efforts.

For the community impacted by fire, however, there is often very little planning at the local level to guide their return after the fire. Residents impacted by the fire need assistance making insurance claims; finding temporary accommodation for themselves, pets, and livestock; rebuilding or repairing damaged property; removing debris and burned trees; stabilizing the land for construction; mitigating potential flood damage; repairing infrastructure; reconnecting to utilities; and mitigating impacts to health. Oftentimes, physical impacts can be mitigated over time, but emotional impacts of the loss and change to surroundings are long-lasting and require support and compassion from the community.

AFTER THE FIRE

Rebuilding and recovery from wildfire can vary greatly across income levels and demographics. Rural areas, low-income neighborhoods, and immigrant communities generally do not have the necessary resources to cover insurance and rebuilding expenses that occur after a fire. Due to this, many of these areas take more time to recover than those with greater access to resources. In addition, the occurrence of wildfire can worsen existing mental health conditions and lead to post-traumatic stress (PTS), low self-esteem, and depression for at-risk populations (CA GOPR 2020).

Returning Home

First and foremost, follow the advice and recommendations of emergency management agencies, fire departments, utility companies, and local aid organizations regarding activities following the wildfire. Do not attempt to return to your home until fire personnel have deemed it safe to do so.

When driving, watch for trees, brush, and rock which may have been weakened or loosened by the fire. Be aware of any damage or debris on roads and driveways. Traffic may be delayed, or lanes closed due to firefighter operations. Use extreme caution around trees, power poles, and any other tall objects that may have been weakened by the fire (CAL FIRE 2020c).

Even if the fire did not damage your house, do not expect to return to normal routines immediately. Expect that utility infrastructure may have been damaged and repairs may be necessary. When you return to your home, check for hazards, such as gas or water leaks and electrical shorts. Turn off damaged utilities if you did not do so previously. Request that the fire department or utility companies turn the utilities back on once the area is secured. Similarly, water supply systems may have been damaged; do not drink from the tap until you have been advised that it is safe to do so. Finally, keep a “fire watch”; look for smoke or sparks in houses and other buildings. Once at home, check for the following (CAL FIRE 2019b):

- Check the roof and exterior areas for sparks or embers
- Check grounds for hot spots, smoldering stumps, and vegetation
- Check for fire damage to your home, turn off all appliances and make sure the meter is not damaged before turning on the main circuit breaker
- Check the attic and throughout your house for any hidden burning sparks or embers

- Do not drink water from the faucet until emergency officials say it is okay, water supply systems can be damaged and become polluted during wildfires
- Discard any food that has been exposed to heat, smoke, flood water, or soot
- If you have a propane tank or natural gas, leave valves closed until the supplier or utilities can inspect your system
- If you have a solar electrical system, this system should be inspected by a licensed technician to verify that the solar panels and electrical wiring are safe for continued operation
- Consult local experts on the best way to restore and plant your land with fire-safe landscaping
- Contact 911 if any danger is perceived
- Ash contains toxic substances and may be irritating to the eyes, nose, throat, and skin. Ash is harmful to breathe and may trigger asthma attacks. Follow these tips to reduce your exposure to ash (California Department of Public Health 2017):
- Do not allow children to play in ash and wash off children's toys before children play with them.
- Immediately was any part of your body that touches ash to avoid irritation.
- Wash fruits and vegetables from your garden thoroughly before eating them.
- Keep pets out of ash areas.
- Frequently clean indoor surfaces by wet mopping.
- Wear protective clothing and a respirator when working outside.

Insurance Claims

Your insurance agent is the best source of information for submitting a claim. It is recommended you take photos of your home in preparation of an emergency and keep the photos in a safe place as this will make the insurance claim process easier. Most expenses incurred during the time you are forced to live elsewhere may be reimbursed, so be sure to keep all receipts. Additional items that may be covered are extra transportation costs to and from work or school, telephone installation, furniture rental, extra food costs, and water damage. Do not start any repairs without the approval of your claims adjuster (California Department of Insurance 2021).

Community Safety: Post-Fire Floods and Debris Flows

There are numerous natural hazards after a wildfire. Perhaps most dangerous are potential flash floods and landslides following rainfall in a burned area upstream of a community. Wildfires increase risk of flooding because burned soil is unable to absorb rainfall and it becomes hydrophobic. Factors that contribute to flooding and debris flows are steep slopes, heavy rainfall, weak or loose rock and soil, and improper construction and grading. Even small rainfall can cause a flash flood, transporting debris and damaging homes and other structures. Listen and look for emergency updates, weather reports, and flash flood warnings (California Department of Conservation 2019). Develop an evacuation plan with your family and stay away from waterways, storm channels, and arroyos. Be aware of your risk, pay attention to weather forecasts, listen to local authorities, and have a household inventory with copies of critical documents (California Department of Water Resources 2021).

Mobilizing Your Community

Wildfires that produce extensive damage require a community-scale response for recovery efforts. The local Emergency Manager will collaborate with state and federal partners to manage disaster response and urgent needs. Still, mobilizing a response and recovery team or a group of teams in a community can function as a vital part of the recovery procedure. Coordinated and informed direction throughout community-level volunteers and all levels of government are necessary for successful recovery (California Silver Jackets Team [California SJT] 2019).

As opposed to wildfire response, post-fire response is not typically managed by a unified state or federal team. Rather, each organization and each tier of government acts on its own authority. This produces a greater demand for coordination at the local level and the sharing of information between organizations to coordinate recovery efforts (California SJT 2019).

Residents throughout California are encouraged to join forces to create local Fire Safe Councils (FSCs) to minimize and prevent wildfire losses. FSCs are community-based organizations that mobilize residents to protect their properties, communities, and environments from disastrous wildfires. FSCs educate homeowners about community wildfire preparedness activities while collaborating with local fire officials to plan and implement projects that increase the wildfire resilience of their communities (California Fire Safe Council 2021).

In addition, each community is encouraged to create its own type of a Post-Fire Coordination Group (PFCG) to direct the response to any ensuing post-wildfire natural hazards and aid in determining post-fire mitigation actions. The PFCG should work directly with local, state, or federal agencies, emergency response officials, and others to aid in a coordinated response. Primary duties of the PFCG include coordinating the exchange of information among agencies and the risk assessment, assembling and exchanging geospatial data, assisting public communications, and coordinating with elected officials (California SJT 2019).

Communities are also encouraged to establish a post-fire coordinator. The post-fire coordinator is appointed by the community to assist a coordinated response to a wildfire and to aid the community's post-fire recovery efforts. The post-fire coordinator is likely to collaborate with local, state, and federal organizations that participate in emergency response and post-fire recovery efforts. It is important that the post-fire coordinator have demonstrated management, internet, and social media skills, community knowledge, and experience with government agencies and programs (California SJT 2019).

The recovery coordinator should become familiar with representatives from local, state, and government agencies that will be helping with coordination or funding of post-fire recovery. The following resources may be helpful for the post-fire and volunteer coordinators (California SJT 2019):

1. Housing
    a. FEMA
    b. Federal Housing Administration
    c. California Department of Housing and Community Development
    d. The Salvation Army
2. Debris Removal
    a. California Department of Resources Recycling and Recovery
    b. USACE

3. Debris Modeling
    a. USGS
4. Hazardous Waste and Pollution
    a. California Environmental Protection Agency
5. Pets and Livestock
    a. American Society for the Prevention of Cruelty to Animals
    b. CDFA
6. Food
    a. USDA Supplemental Nutrition Assistance Program
    b. California Department of Social Services, Disaster CalFresh
7. Social Services
    a. California Employment Development Department
    b. FEMA Disaster Unemployment Assistance
    c. U.S. Administration for Children and Families
    d. Office of Access and Functional Needs
    e. California Foundation for Independent Living Centers
8. Farm Rehabilitation
    a. Farm Service Agency
    b. USDA Rural Development Disaster Assistance
    c. Natural Resources Conservation Service (NRCS) General Environmental Quality Incentives Program Financial Assistance
9. General
    a. The American Red Cross
    b. California Governor's Office of Emergency Services
    c. USFS
    d. NPS
    e. CAL FIRE

Any large wildfire will also involve an Incident Command System (ICS), an appropriately sized team assigned to aid in post-fire recovery. Learn more are https://www.nps.gov/articles/wildland-fire-incident-command-system-levels.htm.

Communication

After a team is assembled and immediate tasks are identified, find the best way to spread information in your community. You may distribute flyers, set up a voicemail box, work to find pets or livestock that have been displaced, develop a mailing list for property owners, hold regular public meetings, etc. It is important that a long-term communications plan is developed (California SJT 2019). Applying the following steps can aid in successful communication (California SJT 2019):

- Convey post-wildfire hazards to the public.

- Develop and maintain emergency notification systems that allow authorized official to alert residents of emergency situations.
- Public meetings to inform the public about programs and services available in the community.
- Determine the best way to relay information, e.g., phone calls, radio, TV, or social media.
- Find out how emergency response teams, local officials, and volunteers will communicate with the community.

Post-Fire Rehabilitation and Resources

Wildfires that cause extensive damage necessitate dedicated efforts to avert issues afterwards. As aforementioned, loss of vegetation increases soil susceptibility to erosion; water runoff may increase and lead to flooding; sediments and debris may be transported downstream and damage properties or saturate reservoirs putting endangered species and water reserves at risk (USFS 2021a). Following a fire, the primary priority is emergency stabilization to prevent additional damage to life, property, or natural resources. The soil stabilization work starts immediately and may proceed for up to a year. The rehabilitation effort to restore damage caused by the fire starts after the fire is out and may persist for various years. For the most part, rehabilitation efforts focus on the lands not likely to recover naturally from wildfire damage (USFS 2021a).

The USFS's post-fire emergency stabilization program is called the Burned Area Emergency Response (BAER) program. The goal of the BAER program is to discover post-wildfire threats to human life and safety, property, and critical natural or cultural resources on USFS lands and take appropriate actions to mitigate unacceptable risks (USFS 2021b). BAER groups are composed of trained professionals in different fields: soil scientists, engineers, hydrologists, biologists, botanists, archaeologists, and others who quickly assess the burned area and advise emergency stabilization treatments (USFS 2021b).

The NRCS Emergency Watershed Protection (EWP) program provides technical and financial services for watershed repair on **public (state and local) and private land**. The goal is reduced flood risk via funding and expert advice for land treatments. The EWP program can provide up to 75% of funds; remaining funds can be paid with in-kind volunteer labor (Coalition for the Upper South Platte [CUSP] 2016). This funding is used by the State Emergency Rehabilitation Team (a multi-agency group assembled by the NRCS) to develop specific recovery and treatment plans.

Examples of potential treatments include (USFS 2021b):

- Hillside stabilization (for example, placing bundles of straw parallel to the slope to slow erosion)
- Hazard tree cutting
- Felling trees perpendicular to the slope contour to reduce runoff
- Mulching areas seeded with native vegetation
- Stream enhancements and construction of catchments to control erosion, runoff, and debris flows
- Planting or seeding native species to limit spread of invasive species

The USFS provides a science-based framework to guide post-fire restoration efforts in National Forest lands in California. The framework is based on a five-step process that leads to the development of a restoration portfolio that can inform project planning and monitoring (USFS 2021c). The framework is available at: https://www.fs.fed.us/psw/publications/documents/psw_gtr270/psw_gtr270.pdf

A comparison of potential hillside, channel, and road treatments is available at: https://www.afterwildfirenm.org/post-fire-treatments/which-treatment-do-i-use

The effectiveness of various treatments is described at: https://www.fws.gov/fire/downloads/ES_BAR/Post-Fire_Hillslope_Treatment_Synthesis.pdf

Specific Treatment Details

Hillslope Treatments

Cover Applications:

- Dry mulch: provides immediate ground cover with mulch to reduce erosion and downstream flow.
- Wet mulch (hydromulch): provides immediate cover to hold moisture and seeds on slopes using a combination of organic fibers, glue, suspension agents, and seeds (most effective on inaccessible slopes).
- Slash spreading: provides ground cover to reduce erosion by felling trees in burned areas.
- Seeding: reduces soil erosion over time with an application of native seed mixtures (most successful in combination with mulching). Breaking up and loosening topsoil to break down the hydrophobic layer on top of the soil is also effective.

Erosion Barrier Applications:

- Erosion control mat: organic mats staked on the soil surface to provide stability for vegetation establishment.
- Log erosion barrier: trees felled perpendicular to the hillslope to slow runoff.
- Fiber rolls (wattles): rolls placed perpendicular to the hillslope to reduce surface flows and reduce erosion.
- Silt fencing: permeable fabric fencing installed parallel to the slope contour to trap sediment as water flows down the hillslope.

Channel Treatments

- Check dam: small dams built to trap and store sediment in stream channels.
- In-channel tree felling: felling trees in a staggered pattern in a channel to trap debris and sediment.
- Grade stabilizer: structures made of natural materials placed in ephemeral channels for stabilization.
- Stream bank armoring: reinforcing streambanks with natural materials to reduce bank cutting during stream flow.
- Channel deflector: an engineered structure to direct flow away from unstable banks or nearby roads.
- Debris basin: constructed to store large amounts of sediment moving in a stream channel.

Road and Trail Treatments

- Outsloping and rolling dips (water bars): alter the road shape or template to disperse water and reduce erosion.
- Overflow structures: protect the road by controlling runoff and diverting stream flow to constructed channels.
- Low water stream crossing: culverts replaced by natural fords to prevent stream diversion and keep water in the natural channel.
- Culvert modification: upgrading culvert size to prevent road damage.
- Debris rack and deflectors: structure placed in a stream channel to collect debris before reaching a culvert.
- Riser pipes: filter out debris and allow the passage of water in stream channels.
- Catchment-basin cleanout: using machinery to clean debris and sediment out of stream channels and catchment basins.
- Trail stabilization: constructing water bars and spillways to provide drainage away from the trail surface.

These treatments and descriptions are further detailed at: https://afterwildfirenm.org/post-fire-treatments/treatment-descriptions

For more information about how to install and build treatments, see the Wildfire Restoration Handbook at: https://www.rmfi.org/sites/default/files/hero-content-files/Fire-Restoration-HandbookDraft_2015_2.compressed_0.pdf

Timber Salvage

Timber harvest on private land is regulated by the California Forest Practice Rules, which provide for the protection of all resources during the harvest process. A private landowner should contact a local Registered Professional Forester, a sawmill, or CAL FIRE for information. Several programs are in place to assist landowners with timber salvage, reforestation, and rehabilitation, including CalFire's California Forest Improvement Plan, and the NRCS's Environmental Quality Incentives Program.

Invasive Species Management and Native Revegetation

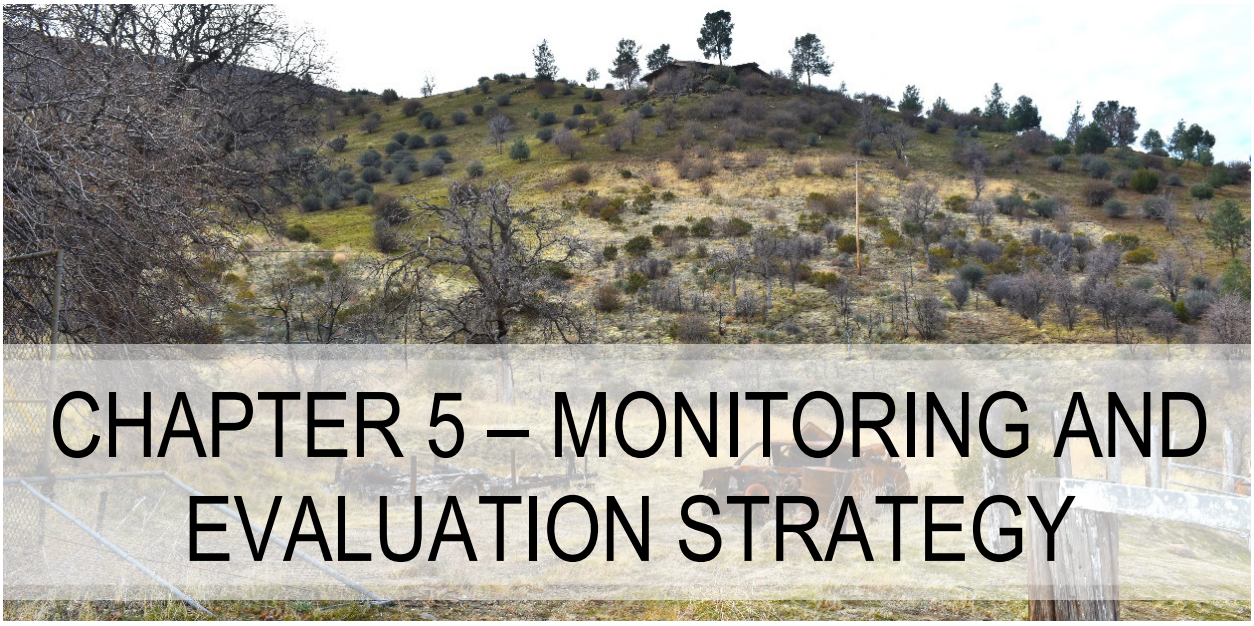
Wildfire provides opportunity for many invasive species to dominate the landscape because many of these species thrive on recently burned landscapes. It is imperative that landowners prevent invasive establishment by eradicating weeds early, planting native species, and limiting invasive seed dispersal (CUSP 2016).

Planting native seeds is an economical way to restore a disturbed landscape. Vegetation provides protection against erosion and stabilizes exposed soils. In order to be successful, seeds must be planted during the proper time of year and using correct techniques. Use a native seed mixture with a diversity of species and consider the species' ability to compete with invasive species. Before planting, the seedbed must be prepared with topsoil and by raking to break up the hydrophobic soil layer. If you choose to transplant or plant native species, consider whether the landscape has made a sufficient recovery to ensure the safety of the individuals (CUSP 2016).

Long-Term Community Recovery

On non-federal land, recovery efforts are the responsibility of local governments and private landowners. Challenges associated with long-term recovery include homes that were severely damaged or were saved but are located in high-severity burn areas. Furthermore, homes saved but located on unstable slopes or in areas in danger of flooding or landslides present a more complicated challenge. Economically, essential businesses that were burned or were otherwise forced to close pose a challenge to communities of all sizes. Given these complications, rebuilding and recovery efforts can last for years, with invasive species control and ecosystem restoration lasting even longer (CUSP 2016). It is critical that a long-term plan is in place and there is sufficient funding and support for all necessary ecosystem and community recovery. To learn about more post-fire recovery resources, visit the After the Flames website here: https://aftertheflames.com/resources/.

Additional resources regarding post-fire return and recovery can be found in Appendix G.



CHAPTER 5 – MONITORING AND EVALUATION STRATEGY

Developing an action plan and an assessment strategy that identifies roles and responsibilities, funding needs, and timetables for completing highest-priority projects is an important step in organizing the implementation of the Kern County CWPP. The previous chapter identifies tentative timelines and monitoring protocols for project recommendations, the details of which are outlined below.

All stakeholders and signatories to this CWPP desire worthwhile outcomes. It is also known that risk reduction work on the ground, for the most part, is often not attainable in a few months—or even years. The amount of money and effort invested in implementing a plan such as this requires that there be a means to describe, quantitatively and/or qualitatively, if the goals and objectives expressed in this plan are being accomplished according to expectations.

Monitoring and reporting contribute to the long-term evaluation of changes in ecosystems, as well as the knowledge base about how natural resource management decisions affect both the environment and the people who live in it. Furthermore, as the CWPP evolves over time, there may be a need to track changes in policy, requirements, stakeholder changes, and levels of preparedness. These can be significant for any future revisions and/or addendums to the CWPP.

It is recommended that project monitoring be a collaborative effort. There are many resources for designing and implementing community based, multi-party monitoring that could support and further inform a basic monitoring program for the CWPP (Egan 2013). Multi-party monitoring involves a diverse group consisting of community members, community-based groups, regional and national interest groups, and public agencies. Using this multi-party approach increases community understanding of the effects of restoration efforts and trust among restoration partners. Multi-party monitoring may be more time consuming due to the collaborative nature of the work; therefore, a clear and concise monitoring plan must be developed.

Table 5.1 Identifies monitoring strategies for various aspects of all categories of CWPP recommendations and the effects of their implementation, both quantifiable and non-quantifiable, for assessing the progress of the CWPP and increase sustainability of projects. It must be emphasized that these strategies are 1) not exhaustive and 2) dependent on available funds and personnel to implement them.

Table 5.1. Recommended Monitoring Strategies

Strategy	Task/Tool	Lead	Remarks
Project tracking system	On-line web app to track hazardous fuels projects spatially, integrating wildfire risk layer to show progress towards wildfire hazard and risk reduction. Web app would include attribute tables that outline project details	County	Interactive tool will be easily updated and identify areas that require additional efforts
Photographic record (documents pre- and post-fuels reduction work, evacuation routes, workshops, classes, field trips, changes in open space, treatment type, etc.)	Establish field global positioning system (GPS) location; photo points of cardinal directions; keep photos protected in archival location	Core Team member	Relatively low cost; repeatable over time; used for programs and tracking objectives
Number of acres treated (by fuel type, treatment method)	GPS/GIS/fire behavior prediction system	Core Team member	Evaluating costs, potential fire behavior
Number of home ignition zones/defensible space treated to reduce structural ignitability	GPS	Homeowner	Structure protection
Number of residents/citizens participating in any CWPP projects and events	Meetings, media interviews, articles	Core Team member	Evaluate culture change objective
Number of homeowner contacts (brochures, flyers, posters, etc.)	Visits, phone	Agency representative	Evaluate objective
Number of jobs created	Contracts and grants	Core Team member	Evaluate local job growth
Education outreach: number, kinds of involvement	Workshops, classes, field trips, signage	Core Team member	Evaluate objectives
Emergency management: changes in agency response capacity	Collaboration	Agency representative	Evaluate mutual aid
Codes and policy changes affecting CWPP	Qualitative	Core Team	CWPP changes
Number of stakeholders	Added or dropped	Core Team	CWPP changes
Wildfire acres burned, human injuries/fatalities, infrastructure loss, environmental damage, suppression, and rehabilitation costs	Wildfire records	Core Team	Compare with 5- or 10-year average

FUELS TREATMENT MONITORING

It is important to evaluate whether fuel treatments have accomplished their defined objectives and whether any unexpected outcomes have occurred.

The strategies outlined in this section consider several variables:

- Do the priorities identified for treatment reflect the goals stated in the plan? Monitoring protocols can help address this question.
- Can there be ecological consequences associated with fuels work? Items to consider include soil movement and/or invasive species encroachment post-treatment. Relatively cost-effective monitoring may help reduce long term costs and consequences.

- Vegetation will grow back. Thus, fuel break maintenance and fuels modification in both the home ignition zone and at the landscape scale require periodic assessment. Monitoring these changes can help decision-makers identify appropriate treatment intervals.
- Monitoring for all types of fuels treatment is recommended. For example, in addition to monitoring mechanical treatments, it is important to carry out comprehensive monitoring of burned areas to establish the success of pre-fire fuels reduction treatments on fire behavior, as well as monitoring for ecological impacts, repercussions of burning on wildlife, and effects on soil chemistry and physics. Adaptive management is a term that refers to adjusting future management based on the effects of past management. Monitoring is required to gather the information necessary to inform future management decisions. Economic and legal questions may also be addressed through monitoring. In addition, monitoring activities can provide valuable educational opportunities for students.

The monitoring of each fuels reduction project would be site-specific, and decisions regarding the timeline for monitoring and the type of monitoring to be used would be determined by project. The most important part of choosing a fuels project monitoring program is selecting a method appropriate to the people, place, and type of project. Several levels of monitoring activities meet different objectives, have different levels of time intensity, and are appropriate for different groups of people. They include the following:

Minimum—Level 1: Pre- and Post-project Photographs

Appropriate for many individual homeowners who conduct fuels reduction projects on their properties.

Moderate—Level 2: Multiple Permanent Photo Points

Permanent photo locations are established using rebar or wood posts, global positioning system (GPS)-recorded locations, and photographs taken on a regular basis. Ideally, this process would continue over several years. This approach might be appropriate for more enthusiastic homeowners or for agencies conducting small-scale, general treatments.

High—Level 3: Basic Vegetation Plots

A series of plots can allow monitors to evaluate vegetation characteristics such as species composition, percentage of cover, and frequency. Monitors then can record site characteristics such as slope, aspect, and elevation. Parameters would be assessed pre- and post-treatment.
The monitoring agency should establish plot protocols based on the types of vegetation present and the level of detail needed to analyze the management objectives. This method is appropriate for foresters or other personnel monitoring fuel treatments on forested lands.

Intense—Level 4: Basic Vegetation Plus Dead and Downed Fuels Inventory

The protocol for this level would include the vegetation plots described above but would add more details regarding fuel loading. Crown height or canopy closure might be included for live fuels. Dead and downed fuels could be assessed using other methods, such as Brown's transects (Brown 1974), an appropriate photo series (Ottmar et al. 2000), or fire monitoring (Fire Effects Monitoring and Inventory System [FIREMON]) plots. This method is ideal for foresters or university researchers tracking vegetation changes in forested lands.

IMPLEMENTATION

The Kern County CWPP makes recommendations for prioritized fuels reduction projects, for measures to reduce structural ignitability, and methods with which carry out public education and outreach. Implementation projects need to be tailored to the specific project and will be unique to the location

depending on available resources and regulations. As aforementioned, on-the-ground implementation of the recommendations in the Kern County CWPP planning area will require development of an action plan and assessment strategy for completing each project. This step will identify the roles and responsibilities of the people and agencies involved, as well as funding needs and timetables for completing the highest-priority projects (SAF 2004). Information pertaining to funding is provided in Appendix F.

CWPP EVALUATION

CWPPs are intended to reduce the risk from wildfire for a community and surrounding environment. However, over time, communities change and expand, vegetation grows back, and forests and wildlands evolve. As such, the risk of wildfire to communities is constantly changing. The plans and methods to reduce risk must be dynamic to keep pace with the changing environment. An evaluation of the CWPP will gather information and identify whether the plans and strategies are on course to meet the desired outcomes or if modifications are needed to meet expectations.

Four general steps can be used to evaluate the CWPP:

1. Identify objectives: What are the goals identified in the plan? How are they reached? Is the plan performing as intended?
    a. Structural ignitability
    b. Fuel treatments
    c. Public education and outreach
    d. Multi-agency collaboration
    e. Emergency response
2. Assess the changing environment: How have population characteristics and the wildfire environment changed?
    a. Population change
        i. Increase or decrease
        ii. Demographics
    b. Population settlement patterns
        i. Distribution
        ii. Expansion into the WUI
    c. Vegetation
        i. Fuel quantity and type
        ii. Drought and disease impacts
3. Review action items: Are actions consistent with the plan's objectives?
    a. Check for status, i.e., completed/started/not started
    b. Identify completed work and accomplishments
    c. Identify challenges and limitations
    d. Identify next steps
4. Assess results: What are the outcomes of the action items?
    a. Multi-agency collaboration
        i. Who was involved in the development of the CWPP?

   ii. Have partners involved in the development process remained involved in the implementation?
   iii. How has the planning process promoted implementation of the CWPP?
   iv. Have CWPP partnerships and collaboration had a beneficial impact on the community?

b. Risk assessment
   i. How is the risk assessment utilized to make decisions about fuel treatment priorities?
   ii. Have there been new wildfire-related regulations?
   iii. Are at-risk communities involved in mitigating wildfire risk?

c. Hazardous fuels
   i. How many acres have been treated?
   ii. How many projects are cross-boundary?
   iii. How many residents have participated in creating defensible space?

d. Structural ignitability
   i. Have there been updates to fire codes and ordinances?
   ii. How many structures have been lost to wildfire?
   iii. Has the CWPP increased public awareness of structural ignitability and reduction strategies?

e. Public education and outreach
   i. Has public awareness of wildfire and mitigation strategies increased?
   ii. Have residents been involved in wildfire mitigation activities?
   iii. Has there been public involvement?
   iv. Have vulnerable populations been involved?

f. Emergency response
   i. Has the CWPP been integrated into relevant plans (e.g., hazard mitigation or emergency operations)?
   ii. Is the CWPP congruent with other hazard mitigation planning efforts?
   iii. Has availability and capacity of local fire departments changed since the CWPP was developed?

TIMELINE FOR UPDATING THE CWPP

The HFRA allows for maximum flexibility in the CWPP planning process, permitting the Core Team to determine the time frame for updating the CWPP. However, it is suggested that a formal revision be made on the fifth anniversary of signing and every 5 years following. The Core Team members are encouraged to meet on an annual basis to review the project list, discuss project successes, and strategize regarding project implementation funding.

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ABBREVIATIONS AND ACRONYMS

°F	degrees Fahrenheit
AMMs	avoidance and minimization measures
ATV	all-terrain vehicle
BAER	Burned Area Emergency Rehabilitation
BLM	Bureau of Land Management
BMP	best management practice
BTU/ft/sec	British Thermal Units per foot per second
CA GOPR	California Governor's Office of Planning and Research
CAL FIRE	California Department of Forestry and Fire Protection
CalVTP	California Vegetation Treatment Program
CAR	community at risk
CCICC	Central California Interagency Communications Center
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CE	categorical exemption
CEQA	California Environmental Quality Act
ch/hr	chains per hour
CIG	Conservation Innovation Grants
Cohesive Strategy	National Cohesive Wildland Fire Management Strategy
County	Kern County
CRS	Congressional Research Service
CWA	Clean Water Act
CWPP	Community Wildfire Protection Plan
DEM	digital elevation model
DHS	Department of Homeland Security
EAS	Emergency Alert System
EIR	Environmental Impact Report
EMS	Emergency Management System
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESRI	Environmental Systems Research Institute
FAC	Fire-adapted Community
FEMA	Federal Emergency Management Agency
FLAME	Federal Land Assistance, Management and Enhancement Act

FP&S	Fire Prevention and Safety
FRA	Federal Responsibility Area
FRI	fire return interval
GAID	Geographic Area Interagency Division
GIS	geographic information system
GPS	global positioning system
HFRA	Healthy Forests Restoration Act
HIZ	home ignition zone
HMP	hazard mitigation plan
HVRA	highly valued resource or asset
ICC	International Code Council
IFTDSS	Interagency Fuel Treatment Decision Support System
ISO	Insurance Services Office
JPA	Joint Powers Agreement
KCAS	Kern County Animal Services
KCFD	Kern County Fire Department
Los Padres NF	Los Padres National Forest
LRA	Local Responsibility Area
MFI	mean fire interval
MND	mitigated negative declaration
NEPA	National Environmental Policy Act
ND	negative declaration
NFP	National Fire Plan
NFPA	National Fire Protection Association
NIFC	National Interagency Fire Center
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWCG	National Wildfire Coordinating Group
OES	Office of Emergency Services
OSCC	Southern California Geographic Coordination Center
PERI	Public Entity Risk Institute
PPE	personal protective equipment
RAWS	remote automated weather station
RFA	Rural Fire Assistance
SAF	Society of American Foresters

SAFER	Staffing for Adequate Fire and Emergency Response
SE	statutory exemption
Sequoia NF	Sequoia National Forest
SHPO	State Historic Preservation Office
SRA	State Responsibility Area
SWCA	SWCA Environmental Consultants
Task Force	California Forest Management Task Force
UCANR	University of California, Agriculture and Natural Resources
ULI	Urban Land Institute
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAR	value at risk
VCC	Vegetation Condition Class
VDEP	Vegetation Departure
WFDSS	Wildland Fire Decision Support System
WRSC	Western Regional Strategy Committee
WUI	wildland urban interface

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GLOSSARY

Aspect: Cardinal direction toward which a slope faces in relation to the sun (NWCG 2021b).

Active Crown Fire: A crown fire in which the entire fuel complex is involved in flame, but the crowning phase remains dependent on heat released from surface fuel for continued spread. An active crown fire presents a solid wall of flame from the surface through the canopy fuel layers. Flames appear to emanate from the canopy as a whole rather than from individual trees within the canopy. Active crown fire is one of several types of crown fire and is contrasted with **passive crown fires**, which are less vigorous types of crown fire that do not emit continuous, solid flames from the canopy (SWCA).

Available Canopy Fuel: The mass of canopy fuel per unit area consumed in a crown fire. There is no post-frontal combustion in canopy fuels, so only fine canopy fuels are consumed. We assume that only the foliage and a small fraction of the branchwood is available (Wooten 2021).

Available Fuel: The total mass of ground, surface and canopy fuel per unit area available fuel consumed by a fire, including fuels consumed in postfrontal combustion of duff, organic soils, and large woody fuels (Wooten 2021).

Backfiring: Intentionally setting fire to fuels inside a control line to contain a fire (Wooten 2021).

Biomass: Organic material. Also refers to the weight of organic material (e. g. biomass roots, branches, needles, and leaves) within a given ecosystem (Wooten 2021).

Burn Severity: A qualitative assessment of the heat pulse directed toward the ground during a fire. Burn severity relates to soil heating, large fuel and duff consumption, consumption of the litter and organic layer beneath trees and isolated shrubs, and mortality of buried plant parts (SWCA).

Canopy: The more or less continuous cover of branches and foliage formed collectively by adjacent trees and other woody species in a forest stand. Where significant height differences occur between trees within a stand, formation of a multiple canopy (multi-layered) condition can result (SWCA).

Chain: Unit of measure in land survey, equal to 66 feet (20 M) (80 chains equal 1 mile). Commonly used to report fire perimeters and other fireline distances. Popular in fire management because of its convenience in calculating acreage (example: 10 square chains equal one acre) (New Mexico Future Farmers of America 2021).

Climate adaptation: Adaptation is an adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. (CA GOPR 2020).

Climate Change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (CA GOPR 2020).

Community Assessment: An analysis designed to identify factors that increase the potential and/or severity of undesirable fire outcomes in wildland urban interface communities (SWCA).

Communities at Risk: Defined by the HFRA as “Wildland-Urban Interface Communities within the vicinity of federal lands that are at high risk from wildfire.”

- CAL FIRE expanded on this definition for California including all communities (regardless of distance from federal lands) for which a significant threat to human life or property exists as a result of a wildland fire event. California uses the following three factors to determine at risk communities: 1) high fuel hazard, 2) probability of a fire, and 3) proximity of intermingled wildland fuels and urban environments that are near fire threats (CA GOPR 2020).

Community Emergency Response Team (CERT): The CERT program educates volunteers about disaster preparedness for the hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. CERT offers a consistent, nationwide approach to volunteer training and organization that professional responders can rely on during disaster situations, allowing them to focus on more complex tasks (Ready 2021).

Community Wildfire Protection Plan (CWPP): A planning document that seeks to reduce the threat to life and property from wildfire by identifying and mitigating wildfire hazards to communities and infrastructure located in the wildland urban interface (WUI). Developed from the HFRA, a CWPP addresses issues such as wildfire response, hazard mitigation, community preparedness, or structure protection (SWCA).

Conditional Surface Fire: A potential type of fire in which conditions for sustained conditional surface fire active crown fire spread are met but conditions for crown fire initiation are not. If the fire begins as a surface fire, then it is expected to remain so. If it begins as an active crown fire in an adjacent stand, then it may continue to spread as an active crown fire (Wooten 2021).

Contain: A tactical point at which a fire's spread is stopped by and within specific contain features, constructed or natural; also, the result of stopping a fire's spread so that no further spread is expected under foreseeable conditions. For reporting purposes, the time and date of containment. This term no longer has a strategic meaning in Federal wildland fire policy (Wooten 2021).

Control: To construct fireline or use natural features to surround a fire and any control spot fires therefrom and reduce its burning potential to a point that it no longer threatens further spread or resource damage under foreseeable conditions. For reporting purposes, the time and date of control. This term no longer has a strategic meaning in Federal wildland fire policy (Wooten 2021).

Cover type: The type of vegetation (or lack of it) growing on an area, based on cover type minimum and maximum percent cover of the dominant species, species group or non-living land cover (such as water, rock, etc.). The cover type defines both a qualitative aspect (the dominant cover type) as well as a quantitative aspect (the abundance of the predominant features of that cover type; Wooten 2021).

Creeping Fire: A low-intensity fire with a negligible rate of spread (Wooten 2021).

Crown Fire: A fire that advances at great speed from crown to crown in tree canopies, often well in advance of the fire on the ground (National Geographic 2021).

Defensible Space: An area around a structure where fuels and vegetation are modified, cleared, or reduced to slow the spread of wildfire toward or from a structure. The design and distance of the defensible space is based on fuels, topography, and the design/materials used in the construction of the structure (SWCA).

- In California, PRC Section 4291, “defensible space” refers to a 100-foot perimeter around a structure in which vegetation (fuels) must be maintained in order to reduce the likelihood of ignition. This space may extend beyond property lines, or 100 feet as required by State law as well as local ordinances, rules, and regulations (CA GOPR 2020).

Duff: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil (SWCA).

Ecosystem: An interacting natural system including all the component organisms together with the abiotic environment and processes affecting them (SWCA).

Environmental Conditions: That part of the fire environment that undergoes short-term changes: weather, which is most commonly manifest as windspeed, and dead fuel moisture content (Wooten 2021).

Escape Route: A preplanned and understood route firefighters take to move to a safety zone or other low-risk area. When escape routes deviate from a defined physical path, they should be clearly marked (flagged; SWCA).

Evacuation: The temporary movement of people and their possessions from locations threatened by wildfire (SWCA).

Federal Responsibility Area (FRA): A term specific to California, designating areas where the federal government is responsible for fire response efforts. These areas include lands under federal ownership (CA GOPR 2020).

Fire-Adapted Community: A fire-adapted community collaborates to identify its wildfire risk and works collectively on actionable steps to reduce its risk of loss. This work protects property and increases the safety of firefighters and residents (USFA 2021b).

Fire Behavior: The manner in which fuel ignites, flame develops, and fire spread and exhibits other related phenomena as determined by the interaction of fuels, weather, and topography (Fire Research and Management Exchange System 2021).

Fire Break: Areas where vegetation and organic matter are removed down to mineral soil (SWCA).

Fire Environment: The characteristics of a site that influence fire behavior. In fire modeling the fire environment is described by surface and canopy fuel characteristics, windspeed and direction, relative humidity, and slope steepness (Wooten 2021).

Fire Frequency: A broad measure of the rate of fire occurrence in a particular area. For historical analyses, fire frequency is often expressed using the fire return interval calculation. For modern-era analyses, where data on timing and size of fires are recorded, fire frequency is often best expressed using fire rotation (SWCA).

Fire Hazard: Fire hazard is the potential fire behavior or fire intensity in an area, given the type(s) of fuel present – including both the natural and built environment – and their combustibility (CA GOPR 2020).

Fire Hazard Severity Zones: Fire hazard severity zones are defined based on vegetation, topography, and weather (temperature, humidity and wind), and represents the likelihood of an area burning over a 30- to 50-year time period without considering modifications such as fuel reduction efforts. In California, CAL FIRE maintains fire hazard severity zone (FHSZ) data for the entire state. There are three classes of fire hazard severity ratings within FHSZs: Moderate, High, and Very High (CA GOPR 2020).

Fire History: The chronological record of the occurrence of fire in an ecosystem or at a specific site. The fire history of an area may inform planners and residents about the level of wildfire hazard in that area (SWCA).

Fire Intensity: A general term relating to the heat energy released in a fire (SWCA).

Fireline Intensity: Amount of heat release per unit time per unit length of fire front. Numerically, the product of the heat of combustion, quantity of fuel consumed per unit area in the fire front, and the rate of spread of a fire, expressed in kilowatts per minute (SWCA). This expression is commonly used to describe the power of wildland fires, but it does not necessarily follow that the severity, defined as the vegetation mortality, will be correspondingly high (Wooten 2021).

Fire Prevention: Activities such as public education, community outreach, planning, building code enforcement, engineering (construction standards), and reduction of fuel hazards that is intended to reduce the incidence of unwanted human-caused wildfires and the risks they pose to life, property or resources (CA GOPR 2020).

Fire Regime: A measure of the general pattern of fire frequency and severity typical to a particular area or type of landscape: The regime can include other metrics of the fire, including seasonality and typical fire size, as well as a measure of the pattern of variability in characteristics (SWCA).

Fire Regime Condition Class: Condition classes are a function of the degree of fire regime condition class departure from historical fire regimes resulting in alterations of key ecosystem components such as composition structural stage, stand age, and canopy closure (Wooten 2021).

Fire Return Interval: Number of years (interval) between two successive fires in a designated area (SWCA).

Fire Severity: A qualitative measure of the immediate effects of fire on the fire severity ecosystem. It relates to the extent of mortality and survival of plant and animal life both aboveground and belowground and to loss of organic matter. It is determined by heat released aboveground and belowground. Fire Severity is dependent on intensity and residence dependent of the burn. For trees, severity is often measured as percentage of basal area removed. An intense fire may not necessarily be severe (Wooten 2021).

Fire Risk: “Risk” takes into account the intensity and likelihood of a fire event to occur as well as the chance, whether high or low, that a hazard such as a wildfire will cause harm. Fire risk can be determined by identifying the susceptibility of a value or asset to the potential direct or indirect impacts of wildfire hazard events (CA GOPR 2020).

Flammability: The relative ease with which fuels ignite and burn regardless of the quantity of the fuels (SWCA).

Flame Length: The length of flames in the propagating fire front measured along the slant of the flame from the midpoint of its base to its tip. It is mathematically related to fireline intensity and tree crown scorch height (Wooten 2021).

Foliar Moisture content: Moisture content (dry weight basis) of live foliage, foliar moisture content expressed as a percent. Effective foliar moisture content incorporates the moisture content of other canopy fuels such as lichen, dead foliage, and live and dead branchwood (Wooten 2021).

Forest Fire: uncontrolled burning of a woodland area (National Geographic 2021).

Fuel Break: A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled (NWCG 2021c).

Fuel Complex: The combination of ground, surface, and canopy fuel strata (Wooten 2021).

Fuel Condition: Relative flammability of fuel as determined by fuel type and environmental conditions (SWCA).

Fuel Continuity: A qualitative description of the distribution of fuel both horizontally and vertically. Continuous fuels readily support fire spread. The larger the fuel discontinuity, the greater the fire intensity required for fire spread (Wooten 2021).

Fuel Loading: The volume of fuel in a given area generally expressed in tons per acre (SWCA). Dead woody fuel loadings are commonly described for small material in diameter classes of 0 to 0.25, 0.25 to 1, and 1 to 3 inches and for large material greater than 3 inches (Wooten 2021).

Fuel Management/Fuel Reduction: Manipulation or removal of fuels to reduce the likelihood of ignition and to reduce potential damage in case of a wildfire. Fuel reduction methods include prescribed fire, mechanical treatments (mowing, chopping), herbicides, biomass removal (thinning or harvesting or trees, harvesting of pine straw), and grazing. Fuel management techniques may sometimes be combined for greater effect (SWCA).

Fuel Model: A set of surface fuel bed characteristics (load and surface-area-to- fuel model volume-ratio by size class, heat content, and depth) organized for input to a fire model (Wooten 2021).

Fuel Modification: The manipulation or removal of fuels (i.e., combustible biomass such as wood, leaves, grass, or other vegetation) to reduce the likelihood of igniting and to reduce fire intensity. Fuel modification activities may include lopping, chipping, crushing, piling and burning, including prescribed burning. These activities may be performed using mechanical treatments or by hand crews. Herbicides and prescribed herbivory (grazing) may also be used in some cases. Fuel modification may also sometimes be referred to as “vegetation treatment” (CA GOPR 2020).

Fuel Moisture Content: This is expressed as a percent or fraction of oven dry fuel moisture content weight of fuel. It is the most important fuel property controlling flammability. In living plants, it is physiologically bound. Its daily fluctuations vary considerably by species but are usually above 80 to 100 percent. As plants mature, moisture content decreases. When herbaceous plants cure, their moisture content responds as dead fuel moisture content, which fluctuates according to changes in temperature, humidity, and precipitation (Wooten 2021).

Fuel Treatment: The manipulation or removal of fuels to minimize the probability of ignition and/or to reduce potential damage and resistance to fire suppression activities (NWCG 2021d). Synonymous with fuel modification.

Grazing: There are two types of grazing: (1) traditional grazing, and (2) targeted grazing. Traditional grazing refers to cattle that are managed in extensive pastures to produce meat. Targeted grazing involves having livestock graze at a specific density for a given period of time for the purpose of managing vegetation. Even though both kinds of grazing manage fuel loading in range- and forested lands, targeted grazing is different in that its sole purpose is to manage fuels. Targeted grazing is done by a variety of livestock species such as sheep, goats, or cows (UCANR 2019).

Ground Fire: Fire that burns organic matter in the soil, or humus; usually does not appear at the surface (National Geographic 2021).

Ground Fuels: Fuels that lie beneath surface fuels, such as organic soils, duff, decomposing litter, buried logs, roots, and the below-surface portion of stumps (Wooten 2021).

Hazard: A “hazard” can be defined generally as an event that could cause harm or damage to human health, safety, or property (CA GOPR 2020).

Hazardous Areas: Those wildland areas where the combination of vegetation, topography, weather, and the threat of fire to life and property create difficult and dangerous problems (SWCA).

Hazardous Fuels: A fuel complex defined by type, arrangement, volume, condition, and location that poses a threat of ignition and resistance to fire suppression (NWCG 2021e).

Hazardous Fuels Reduction: Any strategy that reduces the amount of flammable material in a fire-prone ecosystem. Two common strategies are mechanical thinning and controlled burning (Wooten 2021).

Hazard Reduction: Any treatment that reduces the threat of ignition and spread of fire (SWCA).

Highly Valued Resources and Assets: Landscape features that are influenced positively and/or negatively by fire. Resources are naturally occurring, while Assets are human-made (IFTDSS 2021b).

Ignition: The action of setting something on fire or starting to burn (SWCA).

Incident: An occurrence or event, either natural or person-caused, which requires an emergency response to prevent loss of life or damage to property or natural resources (Wooten 2021).

Influence Zone: An area that, with respect to wildland and urban fire, has a set of conditions that facilitate the opportunity for fire to burn from wildland fuels to the home and or structure ignition zone (NWCG 2021a).

Initial Attack: The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire (SWCA).

Invasive Species: An introduced, nonnative organism (disease, parasite, plant, or animal) that begins to spread or expand its range from the site of its original introduction and that has the potential to cause harm to the environment, the economy, or to human health (USGS 2021b).

Ladder Fuels: Fuels that provide vertical continuity allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease (SWCA).

Litter: Recently fallen plant material that is only partially decomposed and is still discernible (SWCA).

Local Responsibility Area: A term specific to California, designating areas where the local government is responsible for wildfire protection. The Local Responsibility Area (LRA) includes incorporated cities, cultivated agricultural lands, and portions of the desert. Local responsibility area fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government (CA GOPR 2020).

Manual Treatments: Felling and piling of fuels done by hand. The volume of material generated from a manual fuel treatment is typically too small to warrant a biomass sale therefore collected material is disposed of by burning or chipping. The work can be performed by either a single individual or a large organized crew with powered equipment (UCANR 2021a).

Mechanized Treatments: Mechanical treatments pulverize large continuous patches of fuel to reduce the volume and continuity of material. Mechanical treatments can be applied as either mastication or chipping treatments. Both treatments shred woody material, but mastication leaves residue on-site while chipping collects the particles for transportation off site. Similar to hand treatments, mechanical treatments can target specific areas and vegetation while excluding areas of concern. In addition, mechanical treatment is easily scalable to large areas (>30 acres) with little added cost. (UCANR 2021b).

Mitigation: Action that moderates the severity of a fire hazard or risk (SWCA).

Mutual Aid: Assistance in firefighting or investigation by fire agencies, irrespective of jurisdictional boundaries (NWCG 2021f).

Native Revegetation: The process of replanting and rebuilding the soil of disturbed land (e.g., burned) with native plant species (USDA 2005).

Native Species: A species that evolved naturally in the habitat, ecosystem, or region as determined by climate, soil, and biotic factors (USDA 2005).

National Cohesive Strategy: The National Cohesive Wildland Fire Management Strategy is a strategic push to work collaboratively among all stakeholders and across all landscapes, using best science, to make meaningful progress toward three goals:

- Resilient Landscapes
- Fire-Adapted Communities
- Safe and Effective Wildfire Response

Vision: To safely and effectively extinguish fire when needed; use fire where allowable; manage our natural resources; and as a nation, to live with wildland fire (Forests and Rangelands 2021).

Overstory: That portion of the trees in a forest which forms the upper or uppermost layer (SWCA).

Passive Crown Fire: A type of crown fire in which the crowns of individual trees or small groups of trees burn, but solid flaming in the canopy cannot be maintained except for short periods. Passive crown fire encompasses a wide range of crown fire behavior, from occasional torching of isolated trees to nearly active crown fire. Passive crown fire is also called torching or candling. A fire in the crowns of the trees in which trees or groups of trees torch, ignited by the passing front of the fire. The torching trees reinforce the spread rate, but these fires are not basically different from surface (SWCA).

Prescribed Burning: Any fire ignited by management actions under specific, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. Usually, a written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition (USFS 2021c).

Rate of Spread: The relative activity of a fire in extending its horizontal dimensions. It is expressed as rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. Usually, it is expressed in chains or acres per hour for a specific period in the fire's history (NWCG 2021g).

Resilience: Resilience is the capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience (CA GOPR 2020).

Response: Movement of an individual firefighting resource from its assigned standby location to another location or to an incident in reaction to dispatch orders or to a reported alarm (SWCA).

Safety Element: One of the seven mandatory elements of a local general plan (a county plan that forms the foundation for future development), the safety element must identify hazards and hazard abatement provisions to guide local decisions related to zoning, subdivisions, and entitlement permits. The element should contain general hazard and risk reduction strategies and policies supporting hazard mitigation measures (CA GOPR 2020).

Slash: Debris left after logging, pruning, thinning, or brush cutting. Slash includes logs, chips, bark, branches, stumps, and broken trees or brush that may be fuel for a wildfire (SWCA).

Slope Percent: The ratio between the amount of vertical rise of a slope and horizontal distance as expressed in a percent. One hundred feet of rise to 100 feet of horizontal distance equals 100 percent (NWCG 2021h).

State Responsibility Area: A term specific to California, designating areas where the state has financial responsibility for wildland fire protection. Incorporated cities and lands under federal ownership are not included in the SRA. Lands under federal ownership are in the federal responsibility area (CA GOPR 2020).

Suppression: The most aggressive fire protection strategy, it leads to the total extinguishment of a fire (SWCA).

Surface Fire: fire that typically burns only surface litter and undergrowth (National Geographic 2021).

Surface Fuel: Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low stature living plants (SWCA).

Structural Ignitability: The ability of structures (such as homes or fences) to catch fire (SWCA).

Topography: The arrangement of the natural and artificial physical features of an area (SWCA).

Total Fuel Load: The mass of fuel per unit area that could possibly be consumed in a hypothetical fire of the highest intensity in the driest fuels (Wooten 2021).

Tree Crown: The primary and secondary branches growing out from the main stem, together with twigs and foliage (SWCA).

Understory: Low-growing vegetation (herbaceous, brush or reproduction) growing under a stand of trees. Also, that portion of trees in a forest stand below the overstory (SWCA).

Understory Fire: A fire burning in the understory, more intense than a surface fire with flame lengths of 1 to 3 m (Wooten 2021).

Values and Assets at Risk: The elements of a community or natural area considered valuable by an individual or community that could be negatively impacted by a wildfire or wildfire operations. These values can vary by community and can include public and private assets (natural and manmade) -- such as homes, specific structures, water supply, power grids, natural and cultural resources, community infrastructure-- as well as other economic, environmental, and social values (CA GOPR 2020).

Vulnerable Community: Vulnerable communities experience heightened risk and increased sensitivity to natural hazard and climate change impacts and have less capacity and fewer resources to cope with, adapt to, or recover from the impacts of natural hazards and increasingly severe hazard events because of climate change. These disproportionate effects are caused by physical (built and environmental), social, political, and/ or economic factor(s), which are exacerbated by climate impacts. These factors include, but are not limited to, race, class, sexual orientation and identification, national origin, and income inequality (CA GOPR 2020).

Wildfire: A “wildfire” can be generally defined as any unplanned fire in a “wildland” area or in the wildland-urban interface (WUI) (CA GOPR 2020).

Wildfire Exposure: During fire suppression activities, an exposure is any area/property that is threatened by the initial fire, but in National Fire Incident Reporting System (NFIRS) a reportable exposure is any fire that is caused by another fire, i.e., a fire resulting from another fire outside that building, structure, or vehicle, or a fire that extends to an outside property from a building, structure, or vehicle (USFA 2020).

Wildfire Influence Zone: A wildland area with susceptible vegetation up to 1.5 miles from the interface or intermix WUI (CA GOPR 2020).

Wildland: Those unincorporated areas covered wholly or in part by trees, brush, grass, or other flammable vegetation (CA GOPR 2020).

Wildland Fire: Fire that occurs in the wildland as the result of an unplanned ignition (CA GOPR 2020).

Wildland Fuels (aka fuels): Fuel is the material that is burning. It can be any kind of combustible material, especially petroleum-based products, and wildland fuels. For wildland fire, it is usually live, or dead plant material, but can also include artificial materials such as houses, sheds, fences, pipelines, and trash piles. In terms of vegetation, there are 6 wildland fuel types (Fuel Type: An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of spread or resistance to control under specified weather conditions.) The 6 wildland fuel types are (NWCG 2021i):

- Grass
- Shrub
- Grass-Shrub
- Timber Litter
- Timber-Understory
- Slash-Blowdown

Wildland Urban Interface (WUI): The WUI is the zone of transition between unoccupied land and human development. It is the line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels (USFA 2021b). In the absence of a Community Wildfire Protection Plan, Section 101 (16) of the Healthy Foresters Restoration Act defines the wildland urban interface as " (I) an area extending ½ mile from the boundary of an at-risk community; (II) an area within 1 ½ miles of the boundary of an at-risk community, including any land that (1) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community; (2) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or (3) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; (III) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuels reduction to provide safer evacuation from the at-risk community." A Community Wildfire Protection Plan offers the opportunity to establish a localized definition and boundary for the wildland urban interface (USFS 2021c, 2021d).

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APPENDIX A:

Community and CWPP Background Information

CONTENTS

Figures

FIRE MANAGEMENT POLICY

The primary responsibility for WUI fire prevention and protection lies with property owners and state and local governments. Property owners must comply with existing state statutes and local regulations. These primary responsibilities should be carried out in partnership with the federal government and the private sector. The current Federal Fire Policy states that protection priorities are 1) life, 2) property, and 3) natural resources. These priorities often limit flexibility in the decision-making process, especially when a wildland fire occurs within the WUI.

LEGISLATIVE DIRECTION

Municipal Direction

Fire Code

The Kern County Municipal Code contains the Fire Code of the County and is found in Chapter 17.32. The Fire Code of the County is adopted from the 2019 California Fire Code as well as the 2018 International Fire Code and amended as appropriate to suit the needs of the County. This section is cited as "California Fire Code—Adopted" and referred to as the Kern County Fire Code. The Fire Code is effective within the boundaries of the County, including private land. Implementation, administration, and enforcement of the provisions of the Fire Code are carried out by the KCFD. The Fire Code applies to all new construction and contains provisions for, but not limited to, fire protection water supply, access road width, and locations of above-ground propane tanks. You can find more information on the Fire Code here: https://library.municode.com/ca/kern_county/codes/code_of_ordinances?nodeId=TIT17BUCO_CH17.32FICO

The Kern County Municipal Code also contains the WUI Code of the County and is found in Chapter 17.34. The WUI code of the County is adopted from the 2018 International WUI code and amended as appropriate to suit the needs of the County. This section is cited as "Wildland Urban Interface Code—Adopted" and referred to as the Kern County Wildland-Urban Interface Code. The WUI code is effective within the boundaries of the County, including private land. Implementation, administration, and enforcement of the provisions of the WUI Code are carried out by the KCFD. The WUI Code applies to all new construction and contains provisions for, but not limited to, construction materials, identification of WUI areas, firefighting water supply, and permits for construction in the WUI. You can find more information on the WUI Code here: https://library.municode.com/ca/kern_county/codes/code_of_ordinances?nodeId=TIT17BUCO_CH17.34WIBAINCO

State Direction

The 2021 California Wildfire and Forest Resilience Action Plan recognizes that California faces continued and urgent threats from catastrophic wildfire. The purpose of this plan is to provide a foundation for supporting healthy, resilient, fire adapted forests. The plan is organized into four overarching goals which break down into sub-goals and their correlated action items. Some of the goals/strategies specific to wildfire include:

1. **Increase Fuel Breaks:** Reduce the risk of wildfire and slow fire spread within the WUI.

2. **Protect Wildfire-Prone homes and Neighborhoods:** Expand and extend defensible space programs.
3. **Improve Utility related wildfire risk:** Ensure electrical corporations are compliant with wildfire regulations.
4. **Create Fire-Safe Roadways**: Ensuring emergency evacuation routes and acts as a fuel break.

Like the 2014 national strategy, California's 2019 Strategic Plan, California's Wildfire and Forest Resilience Action Plan, and Federal Emergency Management Agency (FEMA) Disaster Mitigation Act of 2000, all mandate community-based planning efforts with full stakeholder participation, coordination, project identification, prioritization, funding review, and multiagency cooperation. In compliance with Title 1 of the HFRA, a CWPP must be mutually agreed upon by the local government, local fire departments, and the state agency responsible for forest management. As outlined in HFRA, this CWPP is developed in consultation with interested parties and the federal agencies managing land surrounding the at-risk communities. See Figure A.1 for an overview of California's wildfire regulatory environment.

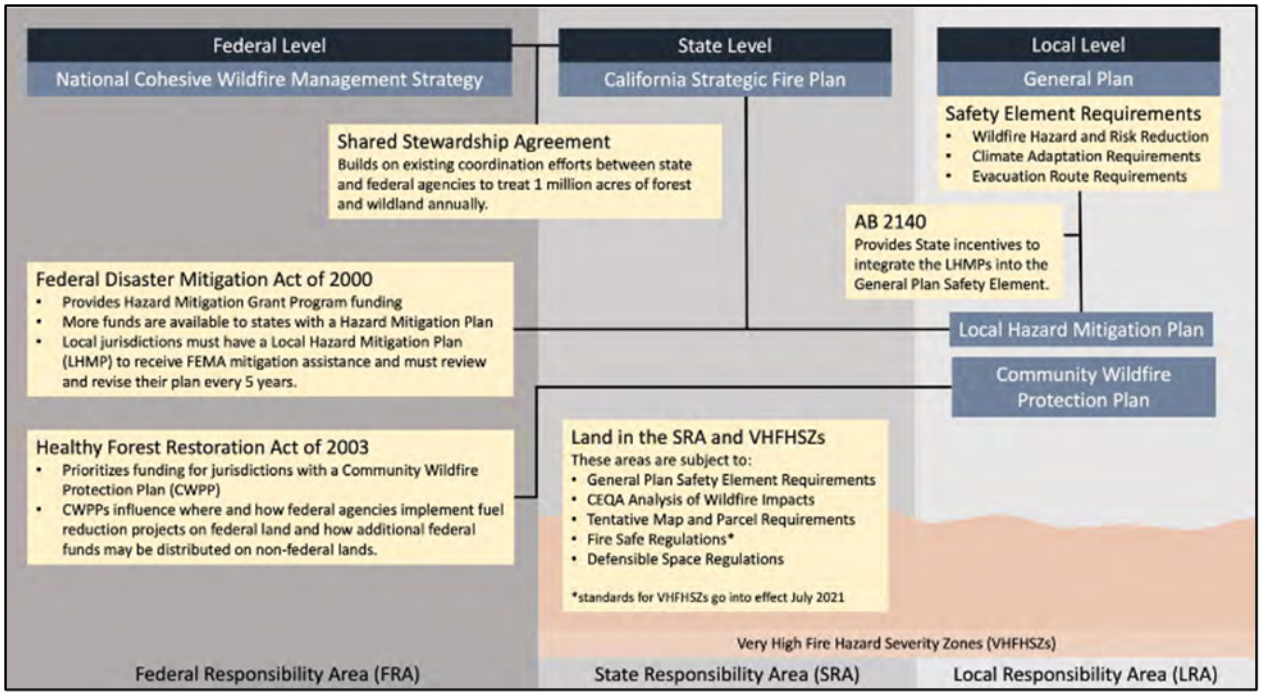

Figure A.1. California's wildfire regulatory framework. Source: CA GOPR (2020)

Assembly Bill 1823: This CWPP is in alignment with the requirement stipulated by Assembly Bill (AB) 1823 (2019). The Bill requires that on or before July 1, 2022, the State Board of Forestry and Fire Protection to develop criteria for and maintain a "Fire Risk Reduction Community" list of local agencies located in a State Responsibility Area (SRA) or a very high hazard severity zone that meet best practices for local fire planning. The existing law requires the State board to consider specific factors when developing the criteria for the list, including recently developed or updated community wildfire protection plans (CWPPs; CA GOPR 2020).

Senate Bill 1241: Senate Bill 1241 (2012) revised the safety element stipulations in State law to instruct all cities and counties whose planning area is within the SRA or a very high fire hazard severity zone to address and include specific information concerning wildfire hazards and risk, and strategies and policies to address and minimize unreasonable risks associated with wildfire. The specific requirements are codified in chapter 311 of the Bill. As a result, CAL FIRE maintains fire hazard severity zone maps and

data for the entire State. Three classes of fire hazard severity classifications exist: moderate, high, and very high. Fire hazard severity considers the amount of vegetation, temperature, wind, humidity, and topography, and represents the likelihood of an area burning over a 30 to 50-year interval (CA GOPR 2020).

Senate Bill 379: Senate Bill 379 (2015) amended GC § 65302(g)(4) to require that all general plans in California address climate change adaptation and resilience as part of the safety portion of the plan. This amendment requires local jurisdictions to add this change as part of the next revision to their local hazard mitigation plan or, if a local hazard mitigation plan has not been adopted, the safety element must be reviewed and updated to include applicable climate adaptation and resilience strategies (CA GOPR 2020). The CWPP should be integrated into the Safety Element of the City General Plan, during the next scheduled revision.

Senate Bill 246: As established by Senate Bill 246 in 2015, the Integrated Climate Adaptation and Resiliency Program (ICARP) is the leading program responsible for coordinating response to climate change impacts on a local, regional, and State scale. ICARP utilizes the Adaptation Clearing House, an online database of climate resources, and coordinates with the Technical Advisory Council to aid in facilitation of resiliency efforts. It is recommended by the CA Office of Planning and Research that climate change related safety updates be made in alignment with ICARP vision, principals, definitions, and wildfire requirements where applicable (CA GOPR 2020).

PRC Section 4291: Public Resources Code Section 4291 details mandatory defensible space requirements for any person who owns, leases, controls, operates, or maintains a building in the SRA or in the very high fire hazard severity zone within the Local Responsibility Area (LRA). The requirements include but are not limited to 100 feet of defensible space around homes, removal of vegetation debris from the perimeter and the roof of homes/structures, and removal of vegetation from chimneys or stovepipes. This code was updated in January 2021 to require an ember-resistant zone within 5 feet of the home/structure on or before January 1, 2023.

Assembly Bill 38: Assembly Bill 38 (2019) amended sections of the Civil, Government, and Public Resources Codes to set forth a comprehensive wildfire mitigation financial support program, which facilitates cost-effective home/structure hardening and retrofitting to create fire-resistant homes, businesses, and public structures. The amendments require the State Fire Marshal, in consultation with the Director of Forestry and Fire Protection and the Director of Housing and Community Development to identify building retrofits and hardening measures eligible for financial assistance under the program. Additionally, the amendments require that CAL FIRE identify defensible space, vegetation management, and fuel treatment procedures eligible for financial assistance. Wildfire hazard areas eligible for financial assistance under the program include LRAs situated within very high fire hazard severity zones and SRAs within any fire hazard severity zone (CA GOPR 2020).

Federal Direction

In response to a landmark fire season in 2000, the National Fire Plan (NFP) was established to develop a collaborative approach among various governmental agencies to actively respond to severe wildland fires and ensure sufficient firefighting capacity for the future. The NFP was followed by a report in 2001 entitled *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: A 10-year Comprehensive Strategy*, which was updated in 2002 to include an implementation plan. This plan was updated once more in 2006, with a similar focus on using a collaborative framework for restoring fire-adapted ecosystems, reducing hazardous fuels, mitigating risks to communities, providing economic benefits, and improving fire prevention and suppression strategies. The 2006 implementation plan also

emphasizes information sharing and monitoring of accomplishments and forest conditions, a long-term commitment to maintaining the essential resources for implementation, a landscape-level vision for restoration of fire-adapted ecosystems, the importance of using fire as a management tool, and continued improvements to collaboration efforts (Forests and Rangelands 2006). Progress reports and lessons learned reports for community fire prevention are provided annually.

In 2003, the U.S. Congress recognized widespread declining forest health by passing the Healthy Forests Restoration Act (HFRA), and President Bush signed the act into law (Public Law 108–148, 2003). The HFRA was revised in 2009 to address changes to funding and provide a renewed focus on wildfire mitigation (H.R. 4233 - Healthy Forest Restoration Amendments Act of 2009). The HFRA expedites the development and implementation of hazardous fuels reduction projects on federal land and emphasizes the need for federal agencies to work collaboratively with communities. A key component of the HFRA is the development of Community Wildlife Protection Plans (CWPPs), which facilitate the collaboration between federal agencies and communities in order to develop hazardous fuels reduction projects and place priority on treatment areas identified by communities in a CWPP. A CWPP also allows communities to establish their own definition of the WUI, which is used to delineate priority areas for treatment. In addition, priority is placed upon municipal watersheds, critical wildlife habitat, and areas impacted by wind throw, insects, and disease. Communities with an established CWPP are given priority for funding of hazardous fuels reduction projects carried out in accordance with the HFRA.

In 2014, the final stage of the development of a national cohesive strategy for wildfire was developed: *The National Strategy: The Final Phase in the Development of the National Cohesive Wildland Fire Management Strategy* (Forests and Rangelands 2014). The national strategy takes a holistic approach to the future of wildfire management:

To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.

In order to achieve this vision, the national strategy goals are:

1. **Restore and maintain landscapes**: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
2. **Fire-adapted communities**: Human populations and infrastructure can withstand a wildfire without loss of life and property.
3. **Wildfire response**: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions (Forests and Rangelands 2014:3).

PAST PLANNING EFFORTS

Local

Prior to the 2022 Kern County CWPP, several CWPPs had been written for portions of the county. The details of which are below (Table A.1).

Table A.1. Past CWPPs written for areas within Kern County.

CWPP Name	Location	Year	URL
The Alta Sierra Community Wildfire Protection Plan	Alta Sierra	2004	https://www.dropbox.com/s/nfk6320d3j5vg2l/Alta%20Sierra%20CWPP%201204.pdf?dl=0

CWPP Name	Location	Year	URL
The Greater Tehachapi Area Community Wildfire Protection Plan	Greater Tehachapi Area	2005	https://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=48eaad9b-b2ab-4abc-841e-79dd5320d8dd&forceDialog=0
Kern River Valley Community Wildfire Protection Plan Update	Kern River Valley	2009	https://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=832a9071-7585-4756-affd-4f17e587735a
Kern River Valley Community Wildfire Protection Plan Update	Kern River Valley	2012	https://www.dropbox.com/s/5ia29n0nt0by10e/Community%20Wildfire%20Protection%20Plan-February%202012%20Update1.pdf?dl=0
Kern River Valley Community Wildfire Protection Plan Update	Kern River Valley	2013	http://www.krvfiresafecouncil.org/pdfs/Community%20Wildfire%20Protection%20Plan-January%202013.pdf
The Mt. Pinos Communities Wildfire Protection Plan	Mt. Pinos Communities	2006	https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/17575/CA_029_MtPinos_2006.pdf?sequence=1&isAllowed=y
The Meyers Canyon Community Wildfire Protection Plan	Meyers Canyon	2005	https://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=2cbfcc4e-9d92-4375-b593-f7e614054a4f&forceDialog=0

Kern County Emergency Operations Plan: In 2008 the Kern County Fire Department (KCFD) developed their Emergency Operations Plan to provide a guide for emergency policies, procedures, and organization for Kern County (KCFD 2008). The plan provides an overview of Federal, State, and Local authorities, an outline of the emergency management program including emergency management phases and employee responsibilities, a summary of the Standardized Emergency Management System (SEMS), National Incident Management System (NIMS), and the Kern County Code. Federal, State, and County level emergency management organizational levels are also found in the plan along with hazard mitigation and recovery operations (KCFD 2008).

Kern County General Plan: In 2009 The Kern County Planning Department Developed the Kern County General Plan. The plan was created to provide County officials a guiding document regarding land use policy (KCPD 2009). The General Plan provides an overview of residential, commercial, industrial, and resource-based land use within the County. Energy and resource generation, safety concerns, such as wildfire, and general provisions such as air quality, threatened and endangered species, and oak tree conservation are also included in the plan. Fuel breaks and vegetation clearance zones are encouraged to prevent wildland fire in this plan (KCPD 2009).

Kern County Multi-Jurisdiction Hazard Mitigation Plan: In 2020 the Kern County Multi-Jurisdiction Hazard Mitigation Plan Update was developed. This plan was created to aid water districts, school districts, administrators, special districts, and city and county officials in protecting citizens from natural disasters (KCFD OES 2020). Outlined in the plan are risk assessments, hazard exposure and damage estimates, mitigation goals and strategies, and county-wide mitigation priorities. Defensible space, community education, and hazard tree removal are included as mitigation strategies (KCFD OES 2020).

Kern County Strategic Fire Plan: In 2021, the KCFD released Kern County Fire Department 2021 Strategic Fire Plan (SFP). The SFP was collectively developed, with City, County, State, and Federal agencies. The goal of the SFP is to identify and prioritize pre-fire and post fire management strategies intended to minimize the loss of values at risk. Fire prevention strategies include pre-fire engineering,

information and education, community engagement, enforcement of California's Forestry and Fire Laws, vegetation management, fire control road maintenance, and updated attack plans supported by GIS technology (KCFD 2021a). Fire unit descriptions, fire response collaborators, community values, pre-fire management strategies, vegetation management, and fire prevention tactics are outlined in the plan (KCFD 2021a). Kern County lists proper vegetation management as critical to successful wildfire prevention planning in this plan (KCFD 2021a).

State

Strategic Fire Plan: In 2018 CAL FIRE, along with the State Board of Forestry and Fire Protection, developed the Strategic Fire Plan for California (CAL FIRE 2018a). The plan was developed to create a more wildfire resistant environment and community, to increase the understanding of wildfires, and increase cooperation amongst local, State, federal, tribal, and private partnerships. Goals outlined within the plan include identifying natural resources at risk, integrating fire and fuels management tactics with landowners, and implementing post-fire assessments and programs (CAL FIRE 2018a).

California's Forests and Rangelands 2017 Assessment: In 2017, CAL FIRE published California's Forests and Rangelands 2017 Assessment. CAL FIRE's Fire and Resource Assessment Program evaluates the amount and size of California's forests and rangelands and analyzes their conditions to establish management and regulatory guidelines. The assessment is used to delineate priority landscapes that aid in focusing investments and other programs to ameliorate issues. The goal of the assessment is to meet both State and federal mandates for natural resource inventories and planning (CAL FIRE 2018b).

California State Hazard Mitigation Plan: In 2018 the California Office of Emergency Services released the latest California State Hazard Mitigation Plan. The intention of the plan was to provide a current update of all past and potential hazards and disasters within California and outline mitigation strategies, risk reduction methods, goals, objectives, strategies, and priorities (CA Office of Emergency Services [CA OES] 2018). Mitigation strategies recommended include strengthening inter-agency coordination, incorporating climate change into future planning efforts, and establishing a mitigation registry (CA OES 2018).

Community Wildfire Prevention & Mitigation Report: In 2019 CAL FIRE published the Community Wildfire Prevention & Mitigation Report in response to executive order N-05-19. Executive order N-05-19 directs CAL FIRE and other State agencies to recommend administrative, regulatory, and policy changes to prevent and mitigate wildfires. The order stresses taking necessary actions to protect vulnerable populations and identifying backlogs in fuels treatments projects. CAL FIRE identified 35 priority projects that could be implemented right away to reduce public safety risk for over 200 communities. Potential projects included removal of dead trees, vegetation clearing, creation of ingress and egress paths, and creation of fuel breaks and community defensible spaces (CAL FIRE 2019a).

Fire Hazard Planning Technical Advisory: In 2020 the Fire Hazard Planning Technical Advisory was updated. This plan is part of the General Plan Technical Advice Series. The plan was developed with the goal of reducing fire risk, increasing reliance, and providing a planning framework specifically for fire hazards (California Governor's Office of Planning and Research [CA GOPR] 2020). The plan provides an overview of risks and fire hazards to communities within California, fire hazard planning guidance, State and federal policy background, and example policies. In regard to fire planning guidance, the plan recommends implementing public outreach with the community, performing fire hazard and risk assessments, and implementing policy aligned with these goals (CA GOPR 2020).

California Cooperative Forest Management Plan: In 2020 the California Cooperative Forest Management Plan (CCFMP) was developed to be used by CALFIRE, the USFS, and the NRCS. This plan is more of a template for fire management plans. The plan outlines topics which should be discussed while planning for fires such as road systems, property history and conditions, wildlife, water resources, and others (CAL FIRE 2020a).

California's Wildfire and Forest Resilience Action Plan: In 2021 the California Forest Management Task Force developed California's Wildfire and Forest Resilience Action Plan (CA Forest Management Task Force [CA FMTF] 2021a). The purpose of the plan was to sustain economic strength of the forests, improve forest health and resilience, and increase the level of fire safety within communities. The plan is broken up into four major goals and strategies to achieve said goals (CA FMTF 2021a). The goals include increasing the pace and scale of forest health projects, strengthening the protection of communities, managing the forest to achieve the state's economic and environmental goals, and driving innovation while measuring progress. Strategies for increasing community fire safety include increasing fuel breaks, creating fire-safe roadways, and supporting community risk reduction (CA FMTF 2021a).

Wildfire and Forest Resilience Task Force Organizational Charter: In 2021 the California Forest Management Task Force developed the Wildfire and Forest Resilience Task Force Organizational Charter. The Charter was created to provide a framework for accomplishing goals and actions within the 2021 California Wildfire and Forest Resilience Action Plan (CA FMTF 2021). The deliverables will be distributed amongst five working groups: Forest Management, Wildfire Adapted Communities, Regional Frameworks, Communications, and Monitoring, Reporting, and Assessment (CA FMTF 2021).

Vegetation Management Program: In addition to planning documents, CALFIRE operates a Vegetation Management Program which focuses on addressing resource management and wildfire fuel hazards within SRA lands (CAL FIRE 2021d). The program has three management objectives with various sub-goals. The management objectives include the reduction of conflagration of fires, optimization of soil and water productivity, and the protection and improvement of intrinsic floral and faunal species (CAL FIRE 2021d).

California Vegetation Treatment Program: Furthermore, the State of California operates the California Vegetation Treatment Program developed by the Board of Forestry and Fire Protection to create healthy fire regimes, reduce hazardous vegetation that increases wildfire risk, and reduce risk within communities. Prescribed burning, prescribed herbivory, herbicides, mechanical treatments, and manual treatments are used for vegetation management. In addition, the California Vegetation Treatment Program Implementation Database provides current and approved projects. To learn more about this program, visit https://bof.fire.ca.gov/projects-and-programs/calvtp/.

Federal

BLM

The Bureau of Land Management (BLM) does not have a general fire management plan; however, BLM collaborates with several federal, state, and local organizations to develop and implement wildland fire programs. For instance, BLM's fuels management program directs a wide range of active management vegetation treatments using mechanical, biological, and chemical tools, and prescribed fire. The program consists of creating fuel breaks, reducing fuel loads, reducing fire risk near communities, targeted grazing, and herbicide to break fire-grass cycles. Fuels treatments are planned and implemented jointly with other BLM programs, and with federal, state, local, and non-governmental collaborators (BLM 2021).

There are 5 Wilderness Areas (Domeland, Owens Peak, Kiavah, Bright Star, and El Paso Mountains) and 1 Wilderness Study Area (Piute Cypress) owned and managed by the BLM in Kern County. All the wilderness areas are in the northeastern corner of Kern County. On these lands, manipulation of vegetation through mechanical treatment, chemical application, or prescribed fire, is usually not allowed. However, during emergencies, vegetation may be manipulated when wildfires threaten non-federal lands and there is no practical alternative (BLM 2012).

USFS

Sequoia National Forest

The existing guiding document is the Revised Draft Land Management Plan for the Sequoia National Forest (USFS 2019b). The Draft Plan satisfies the National Land Management Act of 1976 and directs all fire management activities in the forest, among other things. However, the plan is in the draft phase and the USFS expects to release the final plan after the new year (January 2022). The new plan considers the altered forest conditions from the 2020 fire season and includes goals such as reducing the risk of catastrophic wildfires and improving ecosystem health (USFS 2021e).

Los Padres National Forest

In 2005, the USFS published the Los Padres National Forest Land Management Plan (Forest Plan). The purpose of the Forest Plan is to sustain the health, diversity, and productivity of the Nation's forests to meet the needs of present and future generations. The Forest Plan provides management direction for the National Forest System lands within the boundary of the Los Padres National Forest (Los Padres NF). It emphasizes programs and strategies that allow for the long-term sustainability of multiple land uses. In addition, the fire management component of the plan includes a hazardous fuels program. The hazardous fuels program consists of planning and assessing forest conditions, fuel treatments, and protecting communities and resource values (USFS 2005).

USFWS

Bitter Creek National Wildlife Refuge

In 2013, the U.S. Fish & Wildlife Service (USFWS) prepared the Final Comprehensive Conservation Plan and Environmental Assessment for the Hopper Mountain, Bitter Creek, and Blue Ridge National Wildlife Refuges. The plan guides the management of the listed refuges to accomplish the objectives for which each refuge was established. The plan also addresses legal policies and mandates and National Environmental Policy Act compliance. The fire management element includes fire preparedness activities such as fuel breaks at the WUI and prescribed burning in the form of pile burning (USFWS 2013a).

Kern National Wildlife Refuge

In 2005, the USFWS published the Final Comprehensive Conservation Plan for the Kern and Pixley National Wildlife Refuges (USFWS 2005). The plan directs the management of the refuges to meet desired future conditions and to achieve the purpose for which each refuge was established. However, the plan does not incorporate a fire management component and defers to the 2001 Kern National Wildlife Refuge Complex Wildland Fire Management Plan (USFWS 2001a) for fire planning. The 2001 Wildland Fire Management Plan details guidelines for suppression and prevention activities and

emphasizes firefighter safety and the protection of refuge resources and adjacent private properties (USFWS 2001a).

Stewardship Agreements

In 2020, the State of California and the U.S. Forest Service (USFS) signed a shared stewardship agreement to commit to collaborative forest management and set landscape scale priorities. The shared stewardship agreement includes a commitment to coordinate and share tools, processes, and innovative approaches in respect to fire management. You can find the stewardship agreement here: https://www.gov.ca.gov/wp-content/uploads/2020/08/8.12.20-CA-Shared-Stewardship-MOU.pdf

PUBLIC LAND MANAGEMENT

LAND MANAGEMENT STRATEGIES

Between 2021 and 2022, utility companies in California expect to spend approximately 11 billion dollars on wildfire risk mitigation after the record breaking 2020 fire season. The funds are being spent on annual wildfire mitigation plans which include mitigation recommendations and strategies. Some of the activities expected to be implemented include ensuring proper vegetation clearance around utility infrastructure, system hardening, and increased equipment inspection and repair (Balaraman 2021).

In 2020, California and the Federal government signed an agreement of the shared stewardship for California forests and rangelands. The agreement sets many goals for the state of California and the Federal government to accomplish together (CA Office of the Governor 2020).These goals include: treating at least 1 million acres of California lands per year to reduce the risk of wildfires, developing a 20-year cooperative forest management plan which will outline projects and priorities, encouraging and increasing the use of sustainable land management practices such as prescribed fire, increase the forest management workforce and in turn increase the pace and scale of forest management, and prioritizing forest health benefits such as carbon sequestration and healthy watersheds. Funding for this agreement will be provided from The Great American Outdoors Act (CA Office of the Governor 2020).

Forest managers in the region are addressing land management objectives through the use of prescribed fire, mechanical, and manual treatments to promote more resilient forest lands. Private, state, and federal lands are interspersed creating a matrix of land ownership, which is often a hurdle to implementation of landscape level treatments. By working with private landowners, forest managers are enhancing landscape-scale efforts to create more resilient forest communities.

State Land

State Responsibility Area (SRA) is a legal term defining the area where the State has financial responsibility for the prevention and suppression of wildfire. The majority of Kern County (69%) is within SRAs. Fire protection is usually provided by CAL FIRE in SRAs, however, in Kern County, the KCFD is responsible for fire protection services through contract with CAL FIRE.

In California, CAL FIRE maintains fire hazard severity zone (FHSZ) data for the entire state. There are three classes of fire hazard severity ratings within FHSZs: Moderate, High, and Very High (CA GOPR 2020). Fire hazard severity zones are defined based on vegetation, topography, and weather, and represent the probability of the area burning and potential fire behavior in the area. Most of the focus

areas are comprised of high fire hazard severity zones (HFHSZs), which are mostly located in or near the WUI, particularly in the Tehachapi, Lake Isabella, and Mount Pinos areas (CAL FIRE 2021e).

Federal Land

Los Padres National Forest

The Los Padres NF covers 1.75 million acres with land spanning from the coast and into semi-deserts. The vegetation is categorized as approximately 70% chaparral and 30% forested lands. The forest has a wide variety of ecosystems, from marine habitats to mixed conifer forests, grasslands, chaparral, oak woodlands, pinyon juniper stands, and redwood forests. The diverse habitats provide permanent and transitory habitat for about 468 species of fish and wildlife, including 23 threatened or endangered species (USFS 2021f).

The Los Padres NF is managed by the USFS, and the guiding document is the Land Management Plan (USFS 2005). The forest has 10 designated wilderness areas, comprising 875,000 acres. Wilderness areas are managed to sustain their wilderness values and to improve their ability to maintain a desired range of values and benefits. In wilderness areas, minimum impact fire suppression tactics are emphasized. However, prescribed fire may be employed in wilderness areas where there is a need for community protection, e.g., the WUI. With respect to fire management, the Land Management Plan emphasizes fire prevention, community protection, firefighter safety, and hazardous fuel reductions (USFS 2005).

Sequoia National Forest

The Sequoia NF covers overs an area of 1.1 million acres and its southern edge is situated in Kern County. The forest takes its name from the giant sequoia, which grows in the forest's lower elevations. The Forest hosts a diversity of landscapes, including fast moving rivers, waterfalls, glacier-carved canyons, and granite monoliths. Elevations throughout the Forest range from 790 feet in the Lower Kern River Valley to 12,432 feet in the Golden Trout Wilderness (USFS 2019b).

The SQNF is managed by the USFS, and the guiding document is the Revised Draft Land Management Plan for the Sequoia National Forest (USFS 2019b). The Draft Plan divides the Forest into 7 management areas and 9 designated areas. Management areas are managed according to the purpose of the specified area, e.g., wildlife habitat. Designated areas are composed of areas or characteristics that have been identified to keep a particular purpose or feature, e.g., research natural areas. In addition, the USFS has created 4 Strategic Fire Management Zones within the Forest (USFS 2019b):

- **Community Wildfire Protection Zone**: this zone comprises locations where communities and private lands could be at elevated risk of damage from wildfire, particularly where ample fuels exist. Priorities for this zone include identifying and using community buffer areas to implement strategic fuel treatments near structures and access points. In this zone, wildfires are suppressed under most fuel and weather conditions because of the elevated risk to public safety and the potential economic loss presented by a wildfire.
- **General Wildfire Protection Zone**: this zone consists of locations where wildfire threatens natural resources and/or community values. Wildfires in this area may adversely impact natural resources due to the condition of the ecosystem and natural fire regime. Wildfires that commence in this area have the potential to spread to the Community Wildfire Protection Zone. Priorities in this zone include hazardous fuel reduction and targeted ecological restoration.

- **Wildfire Restoration Zone**: this zone contains locations where existing conditions pose a moderate risk of wildfire damage to a particular natural resource. Generally, wildfires that begin in this zone present a low to moderate threat to communities under typical fire season conditions. Priorities in this zone include ecological restoration.
- **Wildfire Maintenance Zone**: this zone contains locations where wildfire presents a minor threat to communities under average fire season conditions and where the ecosystem benefits from wildland fires. Priorities in this zone include the implementation of prescribed fire for ecological restoration and to accomplish resource goals (Figure A.2).

Figure A.2. The Sequoia National Park has an active prescribed burning program.

Source: (Gina Ferazzi/ Los Angeles Times): https://www.latimes.com/environment/story/2019-12-26/california-decade-extreme-weather-climate-change-anxiety

GOAL OF A COMMUNITY WILDFIRE PROTECTION PLAN

The goal of a CWPP is to enable local communities to improve their wildfire-mitigation capacity, while working with government agencies to identify high fire risk areas and prioritize areas for mitigation, fire suppression, and emergency preparedness. Another goal of the CWPP is to enhance public awareness by helping residents better understand the natural- and human-caused risk of wildland fires that threaten lives, safety, and the local economy. The minimum requirements for a CWPP, as stated in the HFRA, are:

Collaboration: Local and state government representatives, in consultation with federal agencies or other interested groups, must collaboratively develop a CWPP (SAF 2004).

Prioritized Fuel Reduction: A CWPP must identify and prioritize areas for hazardous fuels reduction and treatments and recommend the types and methods of treatment that will protect one or more communities at risk (CARs) and their essential infrastructures (SAF 2004).

Treatments of Structural Ignitability: A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan (SAF 2004).

PLANNING PROCESS

The SAF, in collaboration with the National Association of Counties and the National Association of State Foresters, developed a guide entitled *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland-Urban Interface Communities* (SAF 2004) to provide communities with a clear process in developing a CWPP. The guide outlines eight steps for developing a CWPP and has been followed in preparing the SCCWPP:

Step One: Convene Decision-makers. Form a Core Team made up of representatives from the appropriate local governments, local fire authorities, and state agencies responsible for forest management.

Step Two: Involve Federal Agencies. Identify and engage local federal representatives and contact and involve other land management agencies as appropriate.

Step Three: Engage Interested Parties. Contact and encourage active involvement in plan development from a broad range of interested organizations and stakeholders.

Step Four: Establish a Community Base Map. Work with partners to establish a base map(s) defining the community's WUI and showing inhabited areas at risk, wildland areas that contain critical human infrastructure, and wildland areas at risk for large-scale fire disturbance.

Step Five: Develop a Community Risk Assessment. Work with partners to develop a community risk assessment that considers fuel hazards; risk of wildfire occurrence; homes, businesses, and essential infrastructure at risk; other values at risk (VARs); and local preparedness capability. Rate the level of risk for each factor and incorporate this information into the base map as appropriate.

Step Six: Establish Community Priorities and Recommendations. Use the base map and community risk assessment to facilitate a collaborative community discussion that leads to the identification of local priorities for treating fuels, reducing structural ignitability and other issues of interest, such as improving fire response capability. Clearly indicate whether priority projects are directly related to the protection of communities and essential infrastructure or to reducing wildfire risks to other community values.

Step Seven: Develop an Action Plan and Assessment Strategy. Consider developing a detailed implementation strategy to accompany the CWPP as well as a monitoring plan that will ensure its long-term success.

Step Eight: Finalize Community Wildfire Protection Plan. Finalize the CWPP and communicate the results to community and key partners.

LOCATION AND GEOGRAPHY

Kern County is 8,132 square miles and is bordered by nine California counties: Kings, Tulare, and Inyo to the north, Monterey, San Luis Obispo, and Santa Barbara to the west, Ventura and Los Angeles to the south, and San Bernardino to the east. Kern County encompasses eight lakes, including Lake Isabella and Castac Lake. The County contains the southern terminus of the Sequoia NF, eastern fringes of the

Los Padres NF, and two National Wildlife Refuges. The County also encloses the southern boundary of the Central Valley (for typical landscapes, see Figure A.3 and A.4).

The three CWPP focus areas are primarily composed of privately owned land, with private ownership of lands ranging from 45.08% in Lake Isabella to 89.65% in Tehachapi. The next biggest landowners include the USFS and the BLM, with the USFS and BLM owning a combined total ranging from 53.77% in Lake Isabella to 9.55% in Tehachapi. The remaining portion of public lands on the focus areas are managed by different state and federal agencies, including the state, the USFWS, and the NPS (Table A.2).

Table A.2. Breakdown of Land Ownership in Kern County Focus Areas

Focus Area	Land Ownership	Acres	% of Focus Area
Lake Isabella	Private	411,803.3	45.08%
	U.S. Forest Service	289,884.9	31.73%
	Bureau of Land Management	201,329.7	22.04%
	State	8337.6	0.91%
	Department of Defense	2,058.1	0.23%
	Other Federal	117.1	0.01%
Mount Pinos	Private	144,313.8	62.34%
	U.S. Forest Service	7,034.9	30.25%
	Bureau of Land Management	8,277.6	3.58%
	U.S. Fish and Wildlife Service	6,892.2	2.98%
	State	1,878.05	0.81%
	Other Federal	87.7	0.04%
Tehachapi	Private	647,376.0	89.65%
	Bureau of Land Management	48,387.5	6.70%
	U.S. Forest Service	20,611.3	2.85%
	State	5,696.0	0.79%
	Other Federal	81.56	0.01%
	National Park Service	1.95	0.0003%

Figure A.3. Typical landscape in Kern County, showing mountains, a valley, Joshua Trees, and saltbush/blackbrush shrubland.

Figure A.4. Typical landscape in Kern County, showing mountains, scattered shrubs, and pinyon-juniper woodland.

ROADS AND TRANSPORTATION

The main transportation corridors include Route 33, which intersects the County vertically, running north to south on the far western edge of the County; Interstate 5, which intersects the County just east of

Bakersfield; Highway 99, which intersects the County through the city of Bakersfield; Highway, 14 which runs north to south from China Lake to Rosamond Lake on the eastern side of the County; Route 58, which runs east to west from the southeastern corner of the County to Bakersfield; and Highway 178 which runs east to west starting in the northeast corner and continuing west until it reaches Bakersfield. Other local transportation corridors include Highway 46 (east-west starting in the northwestern corner until it merges with Highway 99); Highway 65 (branches off of 99 just north of Bakersfield and hugs the western border of the Sequoia National Forest); and Highway 395 (starts in the center of the eastern boarder of Kern County and travels north until it connects with Highway 14).

In addition to the surfaced highways, numerous smaller roads, and forest roads traverse the County, with variable road conditions. Some steep grades and gravel road surfaces may impede travel in the event of a wildfire evacuation or emergency response (Figure A.5).

Figure A.5. Photograph showing a wet unsurfaced road.

TOPOGRAPHY

There are five mountain ranges located within Kern County. The Greenhorn Mountains flow down the western side of Lake Isabella. To the northeast of Lake Isabella, the Domeland Wilderness dips across county borders and traverses Kern. To the east of Lake Isabella is the southern edge of the Sequoia NF, which is contain the Scodie Mountains. Traveling south of Lake Isabella are the Piute Mountains, located within the Sequoia NF. The Piute Mountains continue south until they hit the Tehachapi Mountains in south central Kern. The Tehachapi mountains continue south at a western angle until they hit the San Emigdio Mountains in southwestern Kern. The Temblor Mountain Range hugs the western border of Kern County, separating Kern from San Luis Obispo. The Temblor Mountain Range flanks the western edge of the county, adjacent to the Carrizo Plain National Monument.

POPULATION

The following information is drawn primarily from U.S. census data (U.S. Census Bureau 2020). In 2019, the population estimate of Kern County was 900,202 persons, an increase of 7.2% over the 2010 census numbers of 839,631. Between 2015 and 2019, there were 270,282 households in the County. The County has a population density of 103.3 people per square mile. According to the 2019 population estimate, about one third of Kern County residents, 384,145 people, live in the county seat, Bakersfield.

RECREATION

Outdoor recreation is extremely popular in the County, with the Sequoia and Los Padres National Forests, César E. Chávez National Monument, Wildlife Refuges, Wilderness Areas, city and state parks, and cultural attractions throughout the County, attracting thousands of visitors. Camping, swimming, and fishing are popular on public land (Figure A.6).

During peak seasons and large events, a significant number of people can congregate in relatively small areas, which result in large populations potentially needing to evacuate should an emergency occur.

Figure A.6. Visitors camping and swimming in Lake Isabella.
Source: Kern Valley Sun: https://kernvalleysun.com/stories/554079345-camping-along-lake-isabella-and-kern-river-banned

CLIMATE AND WEATHER PATTERNS

Highly varied topographical characteristics along the WUI contribute to slope variability within the planning area. Shifts in elevation affect wildland fuels, wind speed and direction, and the configuration of the interface (downslope fuels). The County has various ridges and canyons that interface with the main

wildland interface (e.g., Sequoia NF, Tehachapi Mountains, Mount Pinos), but most of the communities in the foothills and rural areas are surrounded by steep terrain.

Differences in topographical features throughout Kern County contribute to the divergent climatic regimes within the planning area. Temperatures in the valley and desert areas can rise well over 100 ºF in the summer, while winter temperatures can drop below 20 ºF in the mountains. Kern County is typically categorized as semi-arid, with dry, hot summers and mild, humid winters (KCFD OES 2020). Most precipitation falls on the Sequoia NF and Tehachapi, while the valley and desert stay relatively dry.

Table A.3. Mean Annual Temperature and Precipitation by Station in Kern County

			Mean Annual Temperature (°F)		
Station	**Period of Record**	**Mean Annual Precipitation (Inches)**	**Max**	**Min**	**Mean Annual**
Buttonwillow	1991-2020	6.01	78.0	51.0	64.5
Randsburg	1991-2020	6.71	78.3	50.1	64.2
Kern River	1991-2020	11.84	77.6	44.9	61.3

Source: NOAA (2021)

July is typically the hottest month of the year in the County, with average July maximum temperatures ranging from 98.6 ºF in the Kern River area to 101 ºF in Randsburg. December is usually the coldest month, with average December minimum temperatures ranging from 31.2 ºF in the Kern River area to 35.6 ºF in Buttonwillow (National Oceanic and Atmospheric Administration [NOAA] 2021). Mean annual temperatures are consistent throughout the valley and desert, however, mean annual temperatures decrease in areas closer to the Sierra Nevada Mountains. For example, the Kern River weather station, which is near the base of the range, records a mean annual temperature of 61.3 ºF (Table A.3). In general, communities located in or near the valley and desert experience warmer temperatures and communities in the foothills and closer to the mountains experience cooler temperatures.

Mean annual precipitation within the County is light, ranging from 6.01 inches in Buttonwillow to 11.84 inches in Kern River. However, drought is common in the area; the County experienced 3 consecutive years of prolonged drought from 2014 to 2017 (KCFD OES 2020). The highest precipitation levels usually occur from late fall to early spring in Kern. Generally, December, January, February, and March are the wettest months of the year, with around 70% of total annual precipitation occurring in these months (NOAA 2021). The lowest precipitation levels occur from early summer to mid fall. The driest period in the County occurs from June to September, however, precipitation levels are contingent on location. Areas closer to the mountains typically receive more precipitation than the valley and desert. For example, Buttonwillow gets an average total precipitation of 6.01 inches during the drier months whereas Kern River receives 11.84 inches (Table A.3).

Monthly climate normals (30-year averages) for Kern are graphed by weather stations below (Figures A.7–A.9).

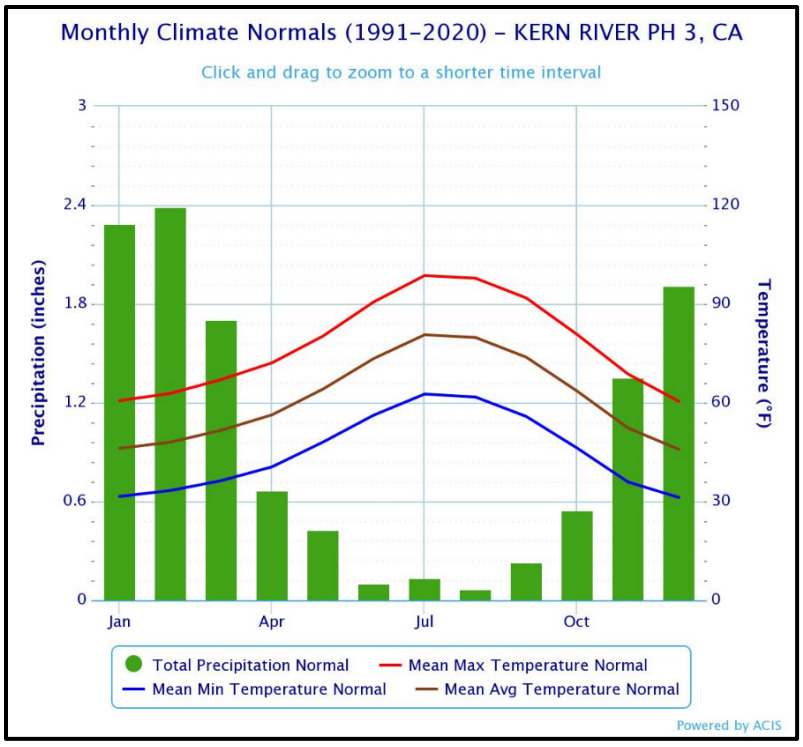

Figure A.7. Monthly average total precipitation for Kern River PH 3 for the period of record (1991–2020).

Source: NOAA (2021)

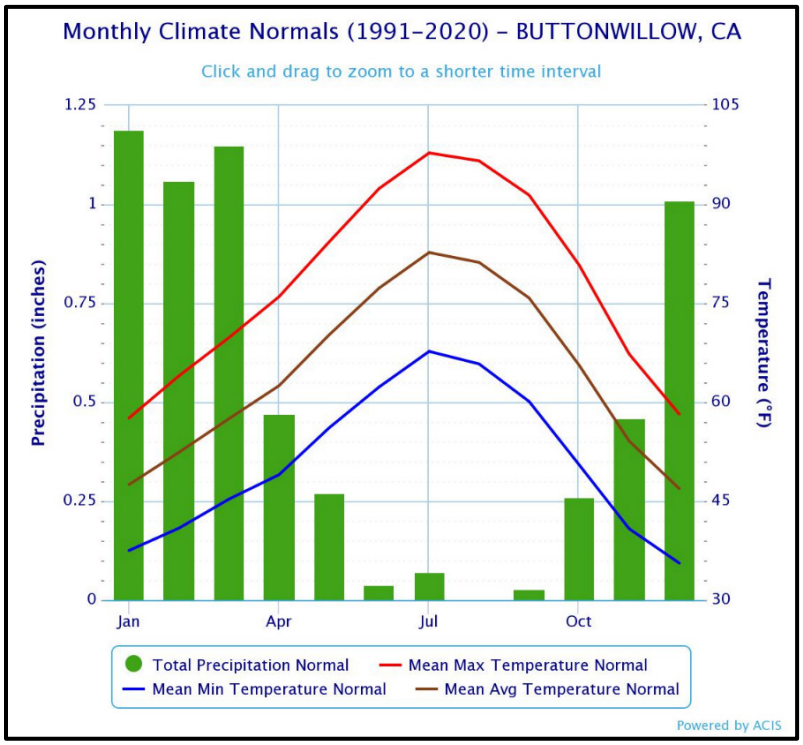

Figure A.8. Monthly average total precipitation for Buttonwillow for the period of record (1991–2020).

Source: NOAA (2021)

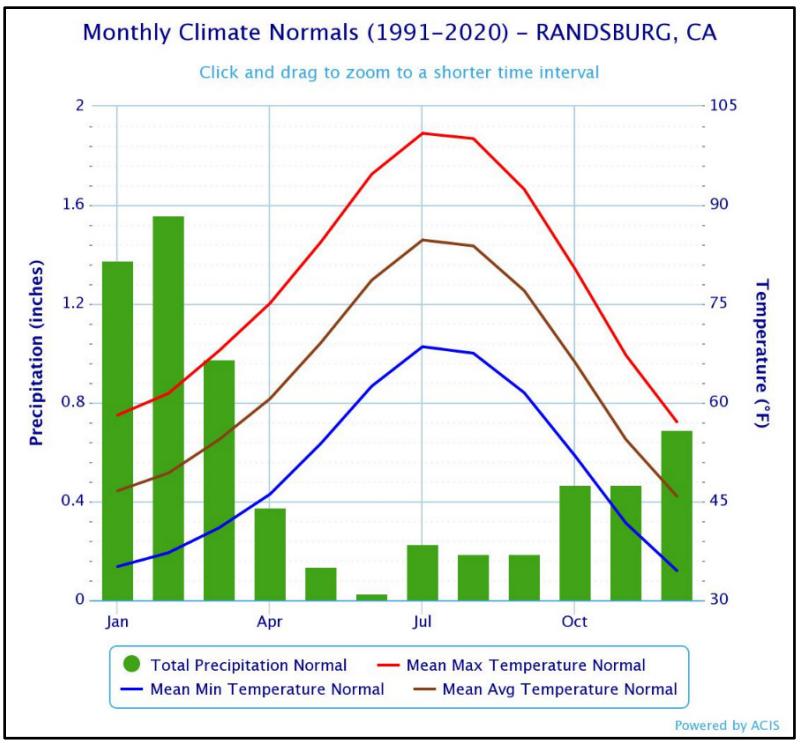

Figure A.9. Monthly average total precipitation for Randsburg for the period of record (1991–2020).
Source: NOAA (2021)

VEGETATION AND LAND COVER

Vegetation zones within the focus areas are primarily a function of elevation, slope, aspect, substrate, and associated climatic regimes. Since a broad range in elevation and topography exists across the focus areas, characteristics in vegetative communities are quite variable from site to site (Figure A.9-A.11).

Dominant vegetation types within the focus areas are described based on a large spatial scale and represent the overall community structure that will play a general role in fire occurrence and behavior. Although the vegetation types are outlined and described for the 3 focus areas in this plan, site-specific evaluations of the vegetative composition and structure in each area of focus should be taken into consideration when planning fuels treatments.

The major vegetation types in the focus areas are listed in Tables A.4-A.6 and are described below the table in more detail using the NatureServe United States Ecological Systems categories. Other types of land cover (e.g., agricultural and developed) also exist in the focus areas and are not described in more detail as they do not play a significant role in fire behavior.

Table A.4. Major Vegetation Types within the Focus Areas

Focus Area	Existing Vegetation Type	Acres	Percent
Lake Isabella	Temperate & Boreal Grassland & Shrubland Subclass	435,019	50.60%
	Temperate & Boreal Forest & Woodland Subclass	294,386	34.24%
	Cool Semi-Desert Scrub & Grassland Subclass	115,927	13.50%
	Warm Desert & Semi-Desert Woodland, Scrub & Grassland Subclass	12,590	1.46%
	Shrub & Herb Wetland Subclass	1,729	0.20%
Mount Pinos	Temperate & Boreal Grassland & Shrubland Subclass	144,358	63.65%
	Temperate & Boreal Forest & Woodland Subclass	64,979	28.65%
	Cool Semi-Desert Scrub & Grassland Subclass	16,953	7.48%
	Warm Desert & Semi-Desert Woodland, Scrub & Grassland Subclass	388	0.17%
	Shrub & Herb Wetland Subclass	122	0.05%
Tehachapi	Temperate & Boreal Grassland & Shrubland Subclass	376,882	53.87%
	Temperate & Boreal Forest & Woodland Subclass	277,132	39.61%
	Cool Semi-Desert Scrub & Grassland Subclass	43,805	6.26%%
	Warm Desert & Semi-Desert Woodland, Scrub & Grassland Subclass	925.6	0.13%
	Shrub & Herb Wetland Subclass	905.9	0.13%

TEMPERATE & BOREAL GRASSLAND & SHRUBLAND SUBCLASS

Most of the vegetation in all 3 focus areas consists primarily of temperate and boreal grassland and shrubland communities (Table A.4 and Figures A.10-A.12). These types of communities occur in areas of moderately wet to dry Mediterranean climates. Grasslands and shrublands within the area are composed almost entirely of mesomorphic (plants which are neither adapted to particularly dry nor particularly wet environments) grasses and shrubs but may also include scattered trees. The grassland and shrubland communities vary from open grasslands to dense bunch or sod grasses, usually scattered with trees and shrubs, to low open to dense shrublands and soft chaparral scrub (NatureServe 2020a).

TEMPERATE & BOREAL FOREST & WOODLAND SUBCLASS

The most common forested community in all 3 focus areas consists of temperate and boreal forest and woodlands (Table A.4 and Figures A.10-A.12). This ecological system occurs in a broad range of climactic conditions, from warm-temperate to very cold subarctic conditions. Tree species diversity is typically low in temperate forests and woodlands. Temperate and boreal forest and woodlands are generally dominated by broad-leaved deciduous and needle-leaved trees, with some broad-leaved evergreens in warmer environments. Trees usually range in height from 10 to 30 meters (NatureServe 2020b).

COOL SEMI-DESERT SCRUB & GRASSLAND SUBCLASS

Cool Semi-Desert Scrub & Grassland communities are scattered in all 3 focus areas but are particularly concentrated to the east of Lake Isabella (Table A.4. and Figures A.10-A.12). These communities occur in dry, cool-temperate climates, usually in the interior of continents. This ecological system consists primarily of xeromorphic (drought-adapted plants) plants and vary from low shrublands to open grassland and shrub-steppe, including sandy semi-desert vegetation (NatureServe 2021a).

WARM DESERT & SEMI-DESERT WOODLAND, SCRUB & GRASSLAND SUBCLASS

Warm Desert & Semi-Desert Woodland, Scrub & Grassland communities constitute a small percentage of vegetation land cover across all 3 focus areas (Tables A.4 and Figures A.10-A.12). This variety is noted in some patches throughout the valley and desert areas but is primarily concentrated east of Lake Isabella in and around the Bright Star Wilderness area. These communities occur in dry, warm-temperate climates, usually in the mainland. This ecological system consists primarily of xeromorphic (drought-adapted plants) plants and vary from open to closed woodlands, open shrub-scrub to amalgamations of succulents, thornscrub, and subshrubs. These plant communities are common in open deserts where vegetation is scattered, and where the surface is sandy, stony, desert pavement (NatureServe 2021b).

SHRUB & HERB WETLAND SUBCLASS

Shrub and herb wetland communities constitute a very small percentage of vegetation land cover across all 3 focus areas (Tables A.4 and Figures A.10-A.12). This variety occurs in areas frequently inundated by creeks and washes. The shrub and herb wetland subclass includes fresh and saltwater marshes, wet meadows, wet shrublands, and open bogs. This community is dominated by grasses and shrubs, with or without scattered trees, occasionally with a wet moss layer, halophytic (plants adapted to saline conditions) plants, with seasonally to annually saturated (flooded) soils (NatureServe 2020c).

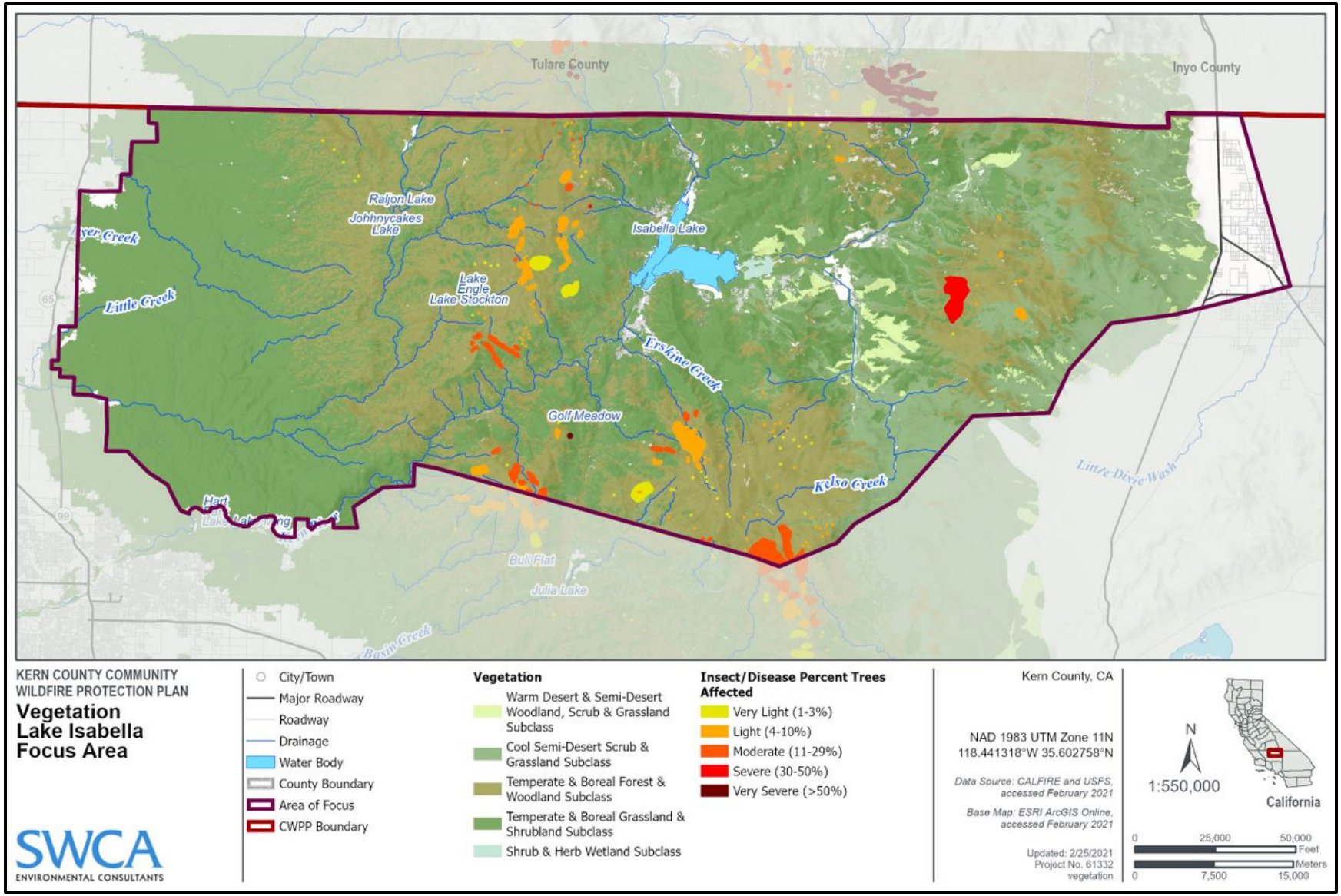

Figure A.10. Lake Isabella focus area, Kern County, existing vegetation cover.

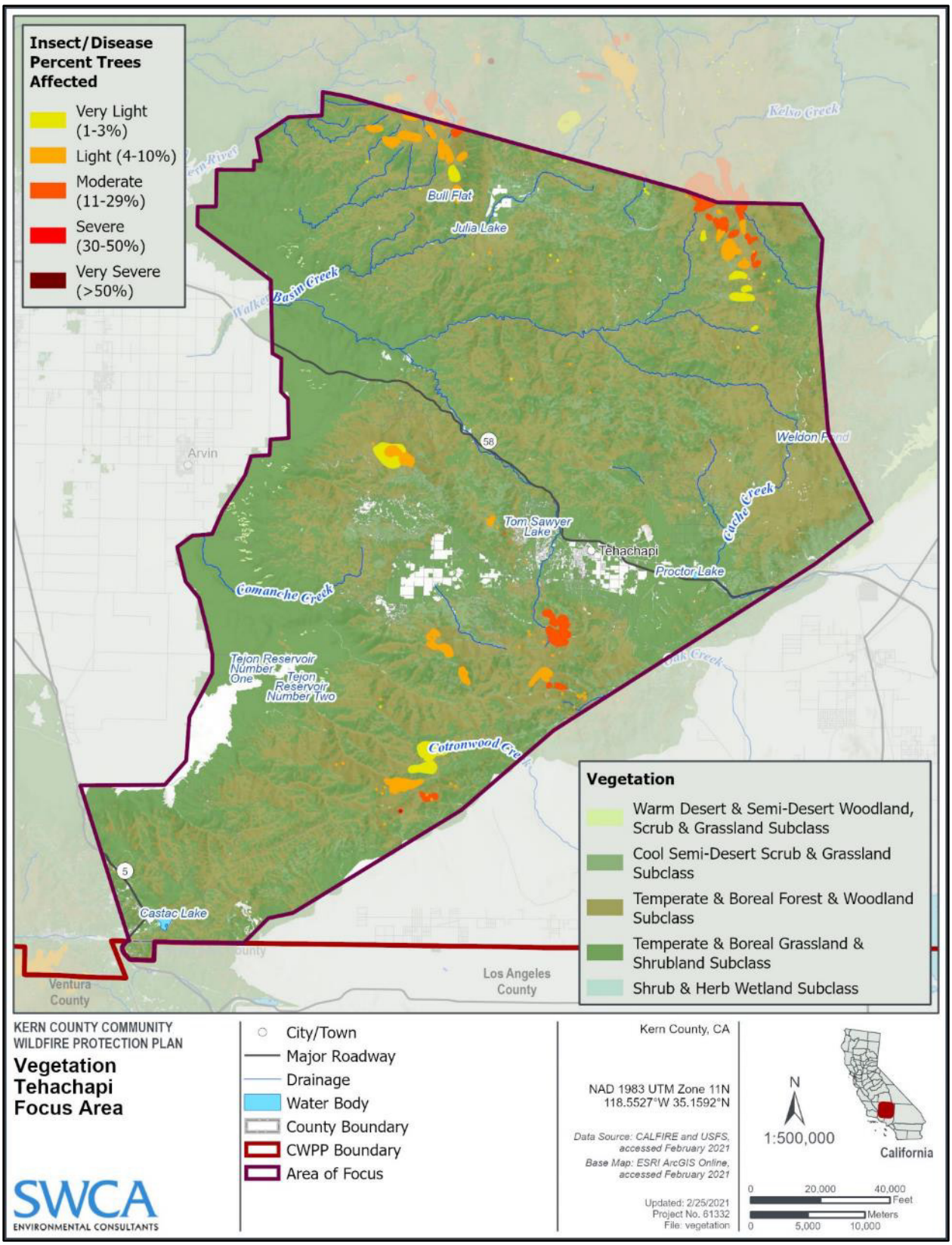

Figure A.11. Tehachapi focus area, Kern County, existing vegetation cover.

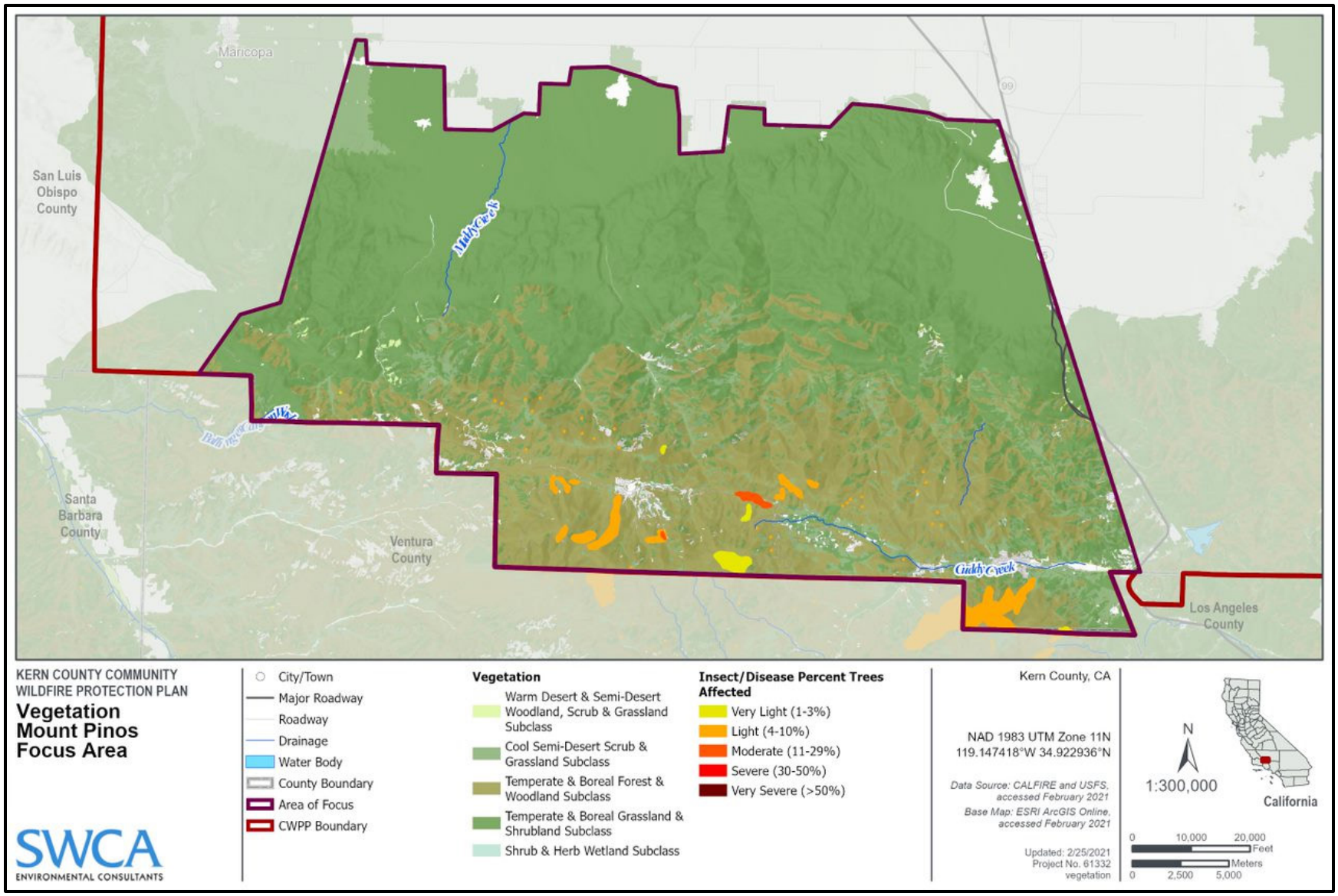

Figure A.12. Mount Pinos focus area, Kern County, existing vegetation cover.

FOREST HEALTH CONSIDERATIONS

INSECTS

Native insect epidemics within plant communities are usually part of a natural disturbance cycle similar to wildfire. They are often cyclic in nature and are usually followed by the natural succession of vegetation over time. Of primary interest are those that attack tree species because of the implications for fire management.

In addition to native insect epidemics, exotic pests also pose a significant threat to forest ecosystems. Invasive species are organisms that are introduced into an area beyond their natural range and become pests in the new environment. They are also referred to as exotic pests, alien, non-native, or introduced pests. The majority of introductions have been unintentional and accidental. Having evolved in a different environment, these invasive species may have few natural enemies in their new locations, which can often lead to rapid population increases that can out-compete native species for resources.
The introduction of exotic pests is likely to cause economic, environmental, and agricultural harm as well as harm to human health (CDFA 2021b). In general, traits of invasive species include fast growth, rapid reproduction, rapid adaptability, tolerating a wide range of environmental conditions, and utilizing a variety of different foods (CDFA 2021b).

Insect epidemics in California forests continue to persist. In 2019, USFS's annual aerial survey showed tree mortality in 2.2 million acres out of 41 million acres that were surveyed. Tree mortality is strongly correlated with extreme and prolonged drought and subsequent bark beetle attacks (USFS 2019b). Stands of trees that have been killed by insects have varying degrees of associated fire danger depending on the time lapse following an insect attack and structure of the dead fuels that remain. However, forests with a large degree of mortality following an insect attack may have the potential to experience extremely high fire danger, especially if a large degree of needle cover remains in the canopy.

Insects that have infested or have the potential to infect the forests within and around the Kern County CWPP planning area are discussed below.

Bark Beetles (Ips Beetles) (*Ips* spp. and *Dendroctonus* spp.). Ips beetles, also called engraver beetles, are a group of native insects to North American forests. They attack ponderosa, pinyon, and Jeffrey pines as well as other conifers and are responsible for Jeffrey pine die-off in the Los Padres NF over the last several years. In 2019, the USFS reported 11,000 beetle-killed Jeffrey pine trees in the Mount Pinos area of the Los Padres NF (USFS 2019b). Each of these species creates egg galleries, which are distinct to that species in form and shape, which eventually girdle the infected tree. The natural defense of a healthy, vigorous tree is to *pitch out*, or excrete sap into the beetle entrance holes, covering it with sap and killing the invader. Trees are most likely to be successful at this strategy when they are not stressed by competition because of high tree density or drought.

Western Bark Beetle (*Phloeosinus punctatus*). Western bark beetle are tiny, around 1.5 mm, reddish black and shiny beetles that bore through the outer bark and into the phloem of the branches and main stems of host trees. Western bark beetle primarily attacks cedar trees but have also been infecting giant sequoias. In fact, beetle kill in giant sequoias is a novel occurrence, which is associated with increased temperatures and drought (NPS 2019). In 2015, around 2,215,000 total trees (mostly cedar) were estimated to have been killed by western bark beetle in the Sequoia NF (USFS 2015).

Velvet longhorned beetle (*Trichoferus campestris)* The velvet longhorned beetle (VLB) is native to Asia and Russia, but now has an extended geographic range across Europe and North America—it has been introduced to the southern San Joaquin Valley and it has been recorded in Tulare, Fresno, Los Angeles, Riverside, and San Bernardino counties. The VLB has a wide host range, affecting over 40 genera of coniferous and broadleaf plants. VLB lays eggs under bark of trees and the larvae tunnel into and feed on the cambium and xylem. Symptoms of larval feeding in trees include yellowing or thinning of the crown. It is most commonly a pest of orchards and forests; target trees include birch, mulberry, fir, apple, pine, walnut, oak, cherry, peach, maple, grape, and beech. Although the VLB is not known to rapidly kill trees, it may affect fruit yield and tree longevity (CDFA 2021c).

Mountain Pine Beetle *(Dendroctonus ponderosae*). Adult mountain pine beetles (MPB) are 0.25 inch long, dark brown to black in color, and cylindrically shaped. Traditional hosts include Lodgepole, ponderosa, coulter, knobcone, western white, sugar, and whitebark pines. MPB is the most aggressive, persistent, and destructive bark beetle in the western United States. In addition, MPB have been reported on lodgepole pine in the Sierra Nevada. These insects target weak or damaged trees, attacking one or multiple at a time. Damage from these beetles is conspicuous: pitch tubes are observed at the point of attack. Outbreaks can escalate quickly, killing 80% of trees in a stand. Drought seasons can increase the severity of MPB infestations as the drought weakens the trees and the beetles are most active during drought season (USFS 2011).

Fir Engraver Beetle *(Scolytus ventralis).* Fir engraver beetles (FEB) are native to California. Adult FEBs are black, shiny, and around 4 mm long. Larvae are white, legless grubs with body morphology akin to adults. The beetle is responsible for increasing tree mortality in the southern Sierra Nevada Range; in 2019 Sequoia and Kings Canyon National Parks had approximately 2 dead trees per acre. Trees may be killed singly or in groups. FEB infestation causes topkill, dead branches, discoloration, and dead patches of cambium (California Forest Pest Council [CFPC] 2019).

Walnut Twig Beetle (*Pityophthorus juglandis*). Walnut twig beetles are tiny, about 1.5 mm, reddish-brown bark beetles that bore through the outer bark and into the phloem of the branches and main stems of walnut trees. Larvae are white, c-shaped, and found in the phloem. The insect is present throughout California walnut orchards and in black walnut trees, including English walnut orchards in nearby counties (e.g., Tulare). In addition to the physical damage from boring and feeding, the twig beetle is also a vector of a pathogenic fungus, *Geosmithia morbida*. Fungal spores are carried on the surface of the beetle's wing covers. As beetles bore through the bark, the spores are transferred to the phloem. The fungal infection causes cankers that surround the gallery system. Numerous cankers may overlap and girdle branches and main scaffolds, leading to crown decline. Eventually, it is likely that colonization by twig beetle and subsequent infection by the pathogenic fungus will kill the tree (UCANR 2021c).

Black Pineleaf Scale (*Nuculaspis californica*). Black pineleaf scale is a type of sucking insect belonging to the armored scales. These insects use their mouthparts to extract sap from trees, possibly introducing toxic enzymes in the saliva. Severe infestation of black pineleaf scale can deteriorate tree health or kill the host. Outbreaks are usually restricted to small regions; however, outbreaks covering larger regions have occurred. For instance, large areas of ponderosa and Jeffrey pines in southern California have had repeated outbreaks since 1940. In 2018, the USFS reported black pineleaf scale infestation on over 75 ponderosa and Jeffrey pines in Bear Valley Springs (USFS 2018a).

Glassy-Winged Sharpshooter *(Homalodisca vitripennis).* Glassy-winged sharpshooters (GWSS) were introduced from the southeastern U.S. as eggs on nursery stock and were first observed in Orange and Ventura counties in California in 1989. However, they have spread further north and are now found in Kern County. GWSS have a large plant-host range and are particularly abundant on citrus. Females lay

egg masses, in groups of 8 to 12, under the leaf surface of young, fully developed leaves. GWSS feed on plants through straw-like mouthparts inserted into the xylem tissue. Since nutrients are diluted in xylem fluid, GWSS must feed on large volumes to meet nutritional needs. Therefore, this invasive pest produces plentiful excreta and are a social nuisance as the excreta rains down. In addition to being a social nuisance, GWSS has the capacity to acquire and spread a plant pathogen (bacteria), *Xylella fastidiosa*. Different strains of this pathogen induce grave diseases in many agricultural and ornamental plants. The best known of these ailments is Pierce's disease of grapevines. Other crops at risk include alfalfa and almonds as well as ornamental and fruit trees (University of California Riverside 2021).

DISEASES

Diseases of trees, such as parasitic plants, fungi, and bacteria, can also affect forests in the Kern County CWPP planning area. These diseases impact forest systems by degrading the productivity and health of the forest. Some of the more common forest diseases that are found in the County are described below. Trees that are killed by disease have the similar potential to increase fire hazards.

White Pine Blister Rust *(Cronartium ribicola*) is a non-native disease caused by a fungus that first arrived in America in the early twentieth century from Asia and Europe. All western U.S. species of five-needle white pines are threatened by the invasive pathogen, including pines found in the Sequoia NF (NPS 2021c). The complex life history of the fungus ultimately results in a lethal infestation of the host tree. The branch and stem canker that result from infestation can result in top kill, branch die-back, and eventually tree mortality.

Red-Belted Conk (*Fomitopsis pinicola*) is a tree stem decay fungus, which usually occurs on conifers and hardwoods. Wood impacted by this fungus might become more brittle and susceptible to felling in strong winds. In 2020, the fungus was detected in mature white fir trees in the Sequoia NF (CFPC 2020).

Mistletoe (*Arceuthobium* spp., *Phoradendron* spp.). Both dwarf and true mistletoe are common in the Sequoia NF and in the County. Mistletoes are parasitic plants that gradually degrade tree vigor and may eventually kill their hosts over a long period of time following further infestation. Essential water and nutrients within the host are used by the mistletoe, thus depriving the host of needed nutrients. Dwarf mistletoe is found on gray and pinyon pines and white fir. Both types of mistletoe spread from tree to tree and are difficult to control. In 2015, the USFS reported that dwarf mistletoe was a contributing factor to grey pine mortality in the Sierra Nevada (USFS 2015).

WILDLIFE

Vegetation management treatments are commonly applied throughout the County to benefit habitat for general wildlife species or game habitat. Most native wildlife species found in the region evolved with a frequent fire regime.

Threatened and Endangered Species

Several threatened and endangered species reside in and around Kern County. The Sequoia NF is home to the Sierra Nevada bighorn sheep, California condor, Mountain yellow-legged frog, Yosemite toad, and Little Kern golden trout, all which are federally listed species (NPS 2021d). The Bitter Creek and Kern Wildlife Refuges provide habitat for the San Joaquin kit fox, giant kangaroo rat, blunt-nosed leopard lizard and California Condor (USFWS 2013b; USFWS 2019). The Los Padres NF also provides important habitat for 23 threatened and endangered species (USFS 2021f). In addition to mammals, amphibians,

fish, lizards, and birds, many of the natural areas (e.g., National Forests and Wildlife Refuges) contain various listed plants.

Treatments on federal land would be subject to the National Environmental Policy Act (NEPA) and associated analysis of impacts to these species. Treatments in areas that may impact threatened and endangered species would require application of certain mitigation measures to prevent degradation to habitat.

FIRE REGIMES

In order to classify, prioritize, and plan for fuels treatments across a fire management region, methods have been developed to stratify the landscape based on physiographic and ecological characteristics.

MIXED CONIFER FORESTS

Montane mixed conifer forests consist of several species of conifers. In the project area, predominant conifer species are Jeffrey pine and pinyon-juniper. Less prominent members include sugar, ponderosa, and limber pines, white fir, big cone Douglas Fir, and juniper and incense cedar. Historical fire regimes in these communities were marked by frequent, low- to moderate-severity fires. Historic average fire return intervals in mixed conifer forests ranged from 11 to 16 years (USFS 2018b). Fires in these ecosystems were usually low severity surface fires; large, high severity fires were infrequent. However, in recent times, the fires have been more frequent and severe. Contemporary fires are burning at higher severities than they did historically (30-35% high severity burn vs. 3-15%; USFS 2018b). The changes in fire regimes have been attributed to several factors, notably, human encroachment into the wildlands, centuries of fire suppression, insect outbreaks, warming temperatures, and severe droughts (USFS 2019c). Fire typically spreads through ground surface fuels and litter (e.g., fallen needles). However, extreme fire weather conditions, in conjunction with dense stands, can result in fire spreading to the canopy to produce a crown fire (USFS 2019c).

SHRUBLAND AND GRASSES

Shrubland communities are dominated by drought-resistant shrubs, particularly blackbrush and sagebrush vegetation types. The community is also distinguished by an understory of perennial grasses and forbs within the open spaces between shrubs. Composition of blackbrush/sagebrush shrubland communities are highly varied at both local and regional scales and is oftentimes intermixed with chaparral vegetation. Blackbrush/sagebrush shrubland is a disconnected fuel bed that interrupts the occurrence of many large wildfires. Natural fire frequency in these communities range from 32 to 70 years. Historic fires were usually small, high-intensity surface fires that maintained the composition of the community. However, anthropogenic disturbances have altered this regime—the modern fire regime is a short fire-return interval of large, intense fires. Disturbances such as livestock grazing prevent the propagation of native bunchgrasses and allow for invasive species (e.g., cheatgrass) to invade and proliferate. Cheatgrass, a highly combustible fuel, has further contributed to changing the fire regime. Cheatgrass produces an abundance of light, flashy, and continuous fuel, which create the perfect conditions for frequent fires (USFWS 2013c). Cheatgrass has been reported in the Sierra Nevada, specifically in the Cedar Grove area, but also widely dispersed at elevations between 2,000 and 8,000 feet. Although most of the cheatgrass populations exist in disturbed areas, numerous other

populations occur in undisturbed open areas (NPS 2020). The Los Padres NF has also recorded invasions by cheatgrass (USFS 2021g).

CHAPPARAL

Well over 100 shrub species have been noted in chapparal; most of these shrubs have elliptical or round leaves. However, a few species, particularly chamise (*Adenostoma fasciculatum*)—the most widespread of chaparral shrubs—have needle-thin leaves which enhances its flammability. When chaparral communities burn, fire spreads through the shrub canopy, typically resulting in a stand-replacement crown fire (USFS 2018c). According to the USFS, the estimated historical fire-return intervals for chamise-redshank and mixed chaparral range from 30 to 90 years (USFS 2018c). However, fires now occur more frequently in southern California chaparral environments because of human encroachment into wildlands. Although chaparral vegetation is fire-adapted and regrows quickly after fire, either from underground seeds or sprouting from stem bases, altered fire regimes may adversely impact the regenerative cycles of chaparral species. The repetition of fires at short intervals (<10 years) that kill juvenile plants before they produce seed can decrease populations of shrub species that usually follow fire disturbances. Additionally, invasive grasses frequently colonize chaparral stands that are in recovery and persist until the shrubs close the canopy; however, if fire occurs during the grass succession phase, competition from chapparal shrub species is reduced and can allow grass seeds to survive and propagate a cycle of more frequent fires and decreased shrub cover (USFS 2021h).

FOOTHILL OAK WOODLANDS

Foothill oak woodlands are dominated by blue oak (*Quercus douglasii*), usually with interior live oak (*Q. engelmannii*), and valley oak (*Q. lobata)*. Foothill oak woodlands typically mix with annual grasslands or valley oak woodlands at lower elevations and pine woodlands at higher elevations. Oaks are also prominent members in chaparral communities. In the Tehachapi range, this community mixes with California juniper and single-leaf pinyon. Normally, these woodlands consist of scattered trees, however, the canopy can be nearly closed in high-quality environments. The understory is usually composed of annual grassland vegetation (California Department of Fish and Game 1999). Fire plays an important role in foothill oak woodland ecosystems; enhanced oak recruitment and sprout growth are typically noted after a fire (Standiford et al. 2012). However, oak survival is largely dependent on tree species, location, fire frequency, adjacent vegetation types, and fire severity. Generally, oak trees are adapted to moderate-frequency, low-intensity fires, not the high-frequency, high-severity fires recorded in recent times.
In communities where oak is associated with chaparral and grassland, fire may spread quickly through the shrub canopy; if fire intensity is high and tress are in a closed stand the fire may spread through large lateral branches or the crown (Steinberg 2002).

RIPARIAN COMMUNITIES

Lowland riparian environments in many regions of California have been altered extensively by human utilization. As a result of these modifications, species composition and spatial dimensions of riparian plant communities have changed. In most cases, native riparian vegetation has been eliminated completely. Studies suggest that fire frequency and severity are increasing in many riparian environments where non-native plants constitute a significant part of the plant community (Webb et al., 2019). Native riparian trees such as sycamores, willows, and cottonwoods typically do not recover well from high-intensity crown fires, contrarily, invasives such as saltcedar (*Tamarix* spp.), giant reed (*Arundo donax*), and Russian olive

(*Elaeagnus angustifolia*) recover quickly from even the highest-intensity fires (UCANR 2009). Non-native vegetation alters fuel properties such as flammability and continuity, and fuel loading, which leads to increased fire risk. Giant reed (*Arundo donax*) is the most common non-native plant in riparian habitats of southern California; it grows high and dense and becomes dry and highly flammable in the fall. Fires in these riparian areas are extensive and severe, and fire spreads easily from the surface into the canopies of the tallest native trees (UCANR 2009). Giant reed and saltcedar have been detected in the Los Padres NF, although in small, scattered populations (USFS 2021g).

RISK ASSESSMENT COMPONENTS

FIRE BEHAVIOR MODELS

LANDFIRE

LANDFIRE is a national remote sensing project that provides land managers a data source for all inputs needed for FARSITE, FlamMap, and other fire behavior models. The database is managed by the USFS and the USDI and is widely used throughout the United States for land management planning. More information can be obtained from http://www.landfire.gov.

FARSITE

FARSITE is a computer model based on Rothermel's spread equations (Rothermel 1983); the model also incorporates crown fire models. FARSITE uses spatial data on fuels, canopy cover, crown bulk density, canopy base height, canopy height, aspect, slope, elevation, wind, and weather to model fire behavior across a landscape. FARSITE is a spatial and temporal fire behavior model. FARSITE is used to generate fuel moisture and landscape files as inputs for FlamMap. Information on fire behavior models can be obtained from http://www.fire.org.

FlamMap

Like FARSITE, FlamMap uses a spatial component for its inputs but only provides fire behavior predictions for a single set of weather inputs. In essence, FlamMap gives fire behavior predictions across a landscape for a snapshot of time; however, FlamMap does not predict fire spread across the landscape. FlamMap has been used for the SCCWPP to predict fire behavior across the landscape under extreme (97% worst case) weather scenarios. For this CWPP assessment, the model was run within the Interagency Fuel Treatment Decision Support System (IFTDSS) modeling platform.

FIRE BEHAVIOR MODEL INPUTS

Fuels

The fuels in the planning area are classified using Scott and Burgan's (2005) Standard Fire Behavior Fuel Model classification system. This classification system is based on the Rothermel surface fire spread equations, and each vegetation and litter type is broken down into 40 fuel models.

The general classification of fuels is by fire-carrying fuel type (Scott and Burgan 2005):

(NB) Non-burnable
(GR) Grass
(GS) Grass-Shrub
(SH) Shrub
(TU) Timber-Understory
(TL) Timber Litter
(SB) Slash-Blowdown

Table A.7 provides a description of each fuel type.

Map 1 in Appendix B illustrates the fuels classification throughout the planning area.

Following the 2021 fire season, the fuel model layer was calibrated in order to reflect the composition of residual fuels in the French Fire burn area, as well as other fires that has occurred since the fuel model was sourced in 2016. The fuel calibration utilized the post-fire fuel succession process described by Davis et al. (2009), developed specifically for Yosemite, Kings Canyon and Sequoia National Parks. RAVG basal loss area data was acquired for fire perimeters that were from 2017-2021 and above 1000 acres. For areas with over 50% basal loss, all timber fuels were calibrated to a GS1 to indicate the fuel load of the area for the next 10 years of recovery, as projected by Davis et al. (2009).

Table A.7. Fuel Model Classification for SCCWPP Planning Area

1.	**Nearly pure grass and/or forb type (Grass)**
i.	**GR1:** Grass is short, patchy, and possibly heavily grazed. Spread rate is moderate (5–20 chains/hour); flame length low (1–4 feet); fine fuel load (0.40 ton/acre).
ii.	**GR2:** Moderately coarse continuous grass, average depth about 1 foot. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load (1.10 tons/acre).
iii.	**GR3:** Very coarse grass, average depth 2 feet. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet).
2.	**Mixture of grass and shrub, up to about 50% shrub cover (Grass-Shrub)**
i.	**GS1:** Shrubs are about 1-foot high, low grass load. Spread rate moderate (5–20 chains/hour); flame length low (1–4 feet); fine fuel load (1.35 tons/acre).
ii.	**GS2:** Shrubs are 1–3 feet high, moderate grass load. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet); fine fuel load (2.1 tons/acre).
3.	**Shrubs cover at least 50% of the site; grass sparse to non-existent (Shrub)**
i.	**SH1:** Low fuel load, depth about 1 foot, some grass fuels present. Spread rate very low (0–2 chains/hour); flame length very low (0–1 feet).
ii.	**SH2:** Moderate fuel load (higher than SH1), depth about 1 foot, no grass fuels present. Spread rate low (2–5 chains/hour); flame length low (1–4 feet); fine fuel load (5.2 tons/acre).
iii.	**SH3:** Moderate shrub load. Fuel bed depth 2–3 feet. Spread rate low (2–5 chains/hour), flame length low (1–4 feet).
iv.	**SH4:** Low to moderate shrub and litter load, possibly with pine overstory. Fuel bed depth about 3 feet. Spread rate high (20–50 chains/hour); flame length moderate (4–8 feet).
v.	**SH5:** Heavy shrub load. Fuel bed depth 4–6 feet. Spread rate very high (50–150 chains/hour), flame length very high (12–25 feet).
vi.	**SH7:** Very heavy shrub load, possibly with pine overstory. Fuel bed depth 4–6 feet. Spread rate high (20–50 chains/hour); flame length very high (12–25 feet).

4.	**Grass or shrubs mixed with litter from forest canopy (Timber-Understory)**
i.	**TU1:** Fuel bed is low load of grass and/or shrub with litter. Spread rate low (2–5 chains/hour); flame length low (1–4 feet); fine fuel load (1.3 tons/acre).
ii.	**TU2:** Moderate litter load with shrub component. Spread rate moderate (5-20 chains/hour); flame length low (1-4 feet).
iii.	**TU3:** Moderate litter load with grass and shrub components. Spread rate high (20-50 chains/hour); flame length moderate (4-8 feet).
iv.	**TU5:** Fuel bed high load conifer with shrub understory. Spread rate moderate (5–20 chains/hour); flame length moderate (4–8 feet).
5.	**Dead and downed woody fuel (litter) beneath a forest canopy (Timber Litter)**
i.	**TL1:** Low to moderate load, fuels 1–2 inches deep. Spread rate very low (0–2 chains/hour); flame length very low (0–1 foot).
ii.	**TL2:** Low load, compact. Spread rate very low (0–2 chains/hour); flame length very low (0–1 foot).
iii.	**TL3:** Moderate load. Spread rate very slow (0–2 chains/hour); flame length low (1–4 foot); fine fuel load (0.5 ton/acre).
iv.	**TL4:** Moderate load. Spread rate very slow (0–2 chains/hour); flame length low (1–4 foot).
v.	**TL5:** High load conifer litter. Spread rate slow (2–5 chains/hour); flame length low (1–4 foot).
vi.	**TL6:** Moderate load. Spread rate moderate (5–20 chains/hour); flame length low (1–4 foot).
vii.	**TL7: Heavy load.** Spread rate low (2–5 chains/hour); flame length low (1–4 feet).
viii.	**TL8:** Long needle litter; long needle fuel. Spread rate moderate (5–20 chains/hour); flame length low (1–4 feet).
ix.	**TL9:** Very high load fluffy dead and downed fuel littler. Spread rate moderate (5–20 chains/hour); flame length moderate (4–8 feet).
6.	**Insufficient wildland fuel to carry wildland fire under any condition (Non-burnable)**
i.	**NB1:** Urban or suburban development; insufficient wildland fuel to carry wildland fire.
ii.	**NB3:** Agricultural field, maintained in non-burnable condition.
iii.	**NB8:** Open water.
iv.	**NB9:** Bare ground.

Notes: Based on Scott and Burgan's (2005) 40 Fuel Model System.

Topography

Topography is important in determining fire behavior. Steepness of slope, aspect (direction the slope faces), elevation, and landscape features can all affect fuels, local weather (by channeling winds and affecting local temperatures), and rate of spread of wildfire. There are some steep slopes in Kern County that would influence fire behavior and spread.

Weather

Of the three fire behavior components, weather is the most likely to fluctuate. Accurately predicting fire weather remains a challenge for forecasters. As dry southern and southwestern winds and rising temperatures dry fuels in the spring and summer, conditions can deteriorate rapidly, creating an environment that is susceptible to wildland fire (Figures A.13-A.16). Fine fuels (grass and leaf litter)

can cure rapidly, making them highly flammable in as little as 1 hour following light precipitation. Low live fuel moistures of shrubs and trees can significantly contribute to fire behavior in the form of crowning and torching. With a high wind, grass fires can spread rapidly, engulfing communities, often with limited warning for evacuation. The creation of defensible space is of vital importance in protecting communities from this type of fire. For instance, a carefully constructed fuel break placed in an appropriate location could protect homes or possibly an entire community from fire. This type of defensible space can also provide safer conditions for firefighters, improving their ability to suppress fire and protect life and property.

One of the critical inputs for FlamMap are the fuel moisture files. The initial run of the risk assessment utilized the IFTDSS Auto 97th modeling parameters, which integrate historic fire weather data from nearby RAW stations. The Core Team noted that some of the fire behavior outputs did not reflect the intensity and severity of fire behavior that has been observed during recent fires. Therefore, the risk assessment was revised using more extreme live and dead fuel moistures to better align with extreme fire behavior conditions.

FIRE BEHAVIOR MODEL OUTPUTS

The following is a discussion of the fire behavior outputs from IFTDSS.

Flame Length

Maps 2-4 in Appendix B illustrate the flame length classifications for the planning area. Flame lengths are determined by fuels, weather, and topography. Flame length is a particularly important component of the risk assessment because it relates to potential crown fire (particularly important in timber areas) and suppression tactics. Direct attack by hand lines is usually limited to flame lengths less than 4 feet. In excess of 4 feet, indirect suppression is the dominant tactic. Suppression using engines and heavy equipment will move from direct to indirect with flame lengths in excess of 8 feet.

Flame lengths across the planning area range from 0 to more than 25 feet. The highest flame lengths are associated with the timber fuels found in the higher elevations of the County.

Following fuel calibration in the recently burned areas, the flame length was reduced slightly as areas previously classified as timber fuels were calibrated to a grass-shrub fuel for at least the next 10 years.

Fireline Intensity

Maps 5-7 in Appendix B illustrates the predicted fireline intensity throughout the planning area. Fireline intensity describes the rate of energy released by the flaming front and is measured in British thermal units per foot, per second (Btu/ft/sec). This is a good measure of intensity and is used for planning suppression activities. The expected fireline intensity throughout the planning area is similar in pattern to predicted flame length, as fireline intensity is a function of flame length.

The pattern for fireline intensity is similar to flame length in that intensities range from low (less than 100 Btu/ft/sec) through moderate (100–500 Btu/ft/sec) high and extreme intensity (greater than 1000 Btu/ft/sec), which tend to be associated with areas dominated by tall shrub and timber fuel loads.

Following fuel calibration in the recently burned areas, the fireline intensity was reduced slightly as areas previously classified as timber fuels were calibrated to a grass-shrub fuel for at least the next 10 years.

Rate of Spread

Maps 8-10 in Appendix B illustrates the rate of spread classifications for the planning area.

The rates of spread in the project area range from 0 to 5 chains/hour up to 150 chains/hour. Low rates of spread are associated with timber dominated areas, while moderate and high rates of spread are associated with grass and shrub fuels.

Following fuel calibration in the recently burned areas, the rate of spread was increased slightly as areas previously classified as timber fuels were calibrated to a grass-shrub fuel for at least the next 10 years.

Crown Fire Potential

Maps 11-13 in Appendix B illustrates the range of crown fire activity from surface fire (in grass-dominated areas) to passive and active crown fire (in timber dominated fuels).

Fire Occurrence/Density of Starts

Figures 2.10-2.12 in Chapter 2 illustrate the fire history for the planning area. These perimeters have been provided by the USFS and CALFIRE, and these perimeters show the location of fires within the planning area from 1878 to 2021. Figures 2.10-2.12 (Chapter 2) reveal a cluster pattern of fires in the mountainous regions of the County, associated with forested areas and USFS land. The fire history map is used to provide information on areas where human-ignited fires are prevalent and hence could be more prone to fire in the future and where there is a higher density of lightning ignitions due to topographic conditions and receptive forest fuels.

Composite Risk-Hazard Assessment Model

All data used in the risk assessment have been processed using ESRI ArcGIS Desktop and the ESRI Spatial Analyst Extension. Information on these programs can be found at http://www.esri.com. Data have been gathered from all relevant agencies, and the most current data have been used.

All fire parameter datasets have been converted to a raster format (a common GIS data format comprising a grid of cells or pixels, with each pixel containing a single value). The cell size for the data is 30 × 30 meters (98 × 98 feet). Each of the original cell values have been reclassified with a new value between 1 and 4, based on the significance of the data (1 = lowest, 4 = highest). Prior to running the models on the reclassified datasets, each of the input parameters have been weighted; that is, they are assigned a percentage value reflecting that parameter's importance in the model. We used the weighted sum raster overlay geoprocessing tool to stack each geographically aligned dataset and evaluate an output value derived from each cell value of the overlaid dataset in combination with the weighted assessment. In a Weighted Sum Model, the weighted values of each cell from each parameter dataset are added together so that the resulting dataset contains cells with summed values of all the parameters. This method ensures that the model resolution is maintained in the results and thus provides finer detail and range of values for denoting fire risk.

Composite Risk-Hazard Assessment Modeling Process

Our Composite Risk-Hazard Assessments comprise multiple inputs, which can be grouped into three categories: hazard, threat, and values. The result is a raster data layer that weighs and sums those inputs to determine risk. Datasets in the hazard category include historical weather data, topography, and

vegetation and fuel regimes. Datasets in the threat category include fire history points and perimeters. The values category includes the WUI, distance from fire station, and natural, cultural, and socioeconomic assets datasets.

As shown in Figure A.13 with the elements in the black shaded box, we began by using the Interagency Fuel Treatment Decision Support System (IFTDSS) application to prepare a landscape file for the project area. This landscape file compiles multiple LANDFIRE datasets, including fuels (calibrated to recent fires), slope, elevation, and aspect, into one layer that can then be used to develop fire behavior outputs. We then edited the fuels model to match the more precise local datasets and used the edited fuels and landscape file to create custom fire behavior outputs.

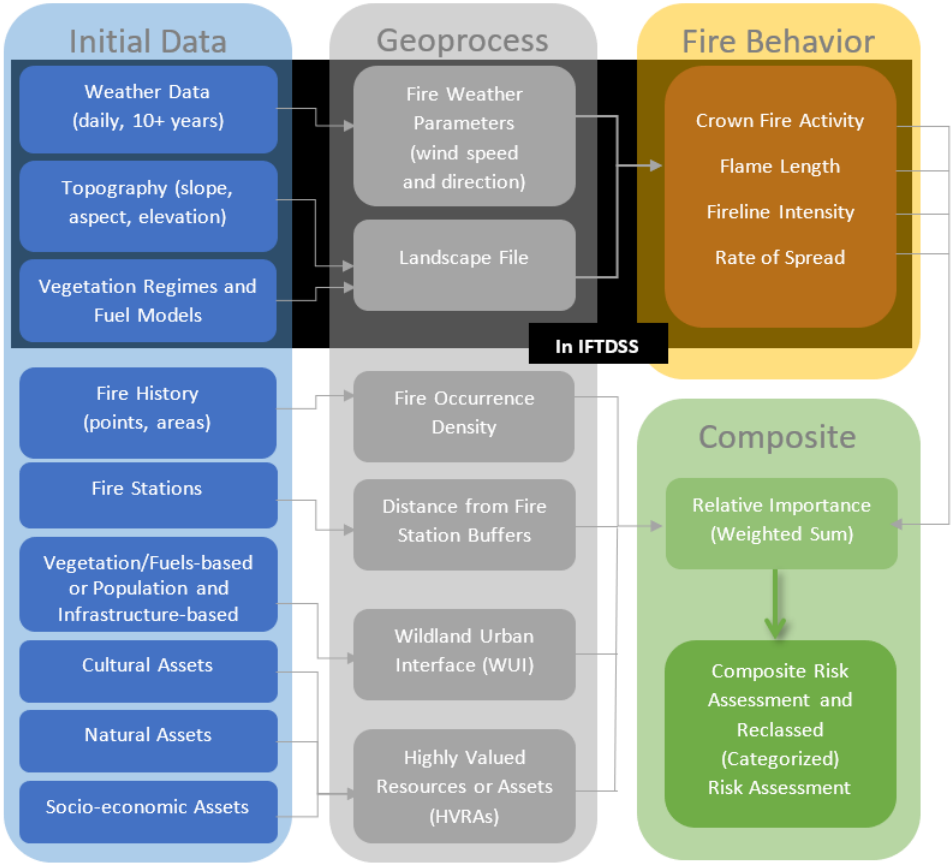

Figure. A.13. Composite Risk-Hazard Assessment breakdown.

Next, in Esri ArcGIS Pro, we processed the fire history, fire station, WUI, and HVRA datasets to merge and create buffers where appropriate and converted the layers to rasters with the same spatial extent and resolution as the IFTDSS fire behavior outputs (30-meter cell size).

Last, we used ArcGIS Pro to run a weighted sum raster process to add all the inputs together. We assigned weights for input layers, based on feedback from the Core Team on the importance that each layer should contribute to the Composite Risk-Hazard Assessment (Figures 3.2-3.4). While weighted sum composite rasters can be better for describing more detailed variations in risk, they can be overwhelming and difficult to understand, so we also created a reclassified raster from the weighted sum composite, using the natural breaks (Jenks) method, with four categories of low, medium, high, and extreme risk.

As described previously, the risk assessment was re-run to accommodate fuel model calibration following the 2021 fires.

PUBLIC EDUCATION AND OUTREACH PROGRAMS

Public education and outreach programs are a common factor in virtually every agency and organization involved with the wildfire issue.

LOCAL AND STATE PROGRAMS

Kern County Fire Department

The KCFD offers various resources for topics such as home safety, disaster preparedness, evacuation planning, and communication plans. The fire related resources include *How to Make a Home Escape Plan* and the *Close Your Door Safety Initiative* (KCFD 2021e). In addition, the KCFD offers a wide range of services such as the ride along program, an emergency notification system, and community emergency response team training.

You can find more information on the KCFD Preparedness webpage located here: https://kerncountyfire.org/education-safety/preparedness/

The KCFD also has a Fire Hazard Reduction Program. The program is specifically enforced in the SRAs, however, all properties within the County are subject to the ordinance. The KCFD requires that property owners in the SRAs comply with defensible space requirements before June 1st of each year. The defensible space requirements are broken down by zones (KCFD 2021h). Detailed information regarding the defensible space zones can be found in Chapter 4.

Kern Fire Safe Council

The Kern Fire Safe Council (FSC) was formed in 2019 when the Kern River Valley FSC, the Mount Pinos FSC, and the Tehachapi FSC merged. The Council works to identify and implement projects to increase community wildfire resilience using a collaborative approach. Collaborators work on projects to minimize wildfire risk to the water supply, critical infrastructure, and cultural resources in the County. The Council recommends preparing for wildfire diligently and remaining alert year-round. To aid with preparedness, the Council provides various resources to the community (Kern Fire Safe Council 2021):

- The *Firewise Community Preparedness Day Toolkit*
- *2020 Kern Fire Risk Map*
- *Firewise Planting Guide*
- *Firewise; How to Prepare Your Home for Wildfires*

California Department of Forestry and Fire Protection (CALFIRE)

CALFIRE is an all-risk emergency services provider which specializes in wildfire response. CALFIRE is responsible for wildfire response on all California SRA lands except for 6 Counties, one of which being Kern. Kern County is a contract County within CALFIRE. Under this agreement, KCFD is responsible for providing initial fire response to fires on SRAs within Kern County. CAL FIRE provides funding to Kern

County for fire prevention and suppression of wildland fires on the SRAs. In addition, CALFIRE provides a plethora of fire education resources to ensure Californians are prepared for wildfire. These educational materials include but are not limited to:

- CALFIRE Fire and Emergency Response Guide
- California Fire Plan Overview
- CALFIRE Cooperative Emergency Response
- Ready Set Go! Wildfire Action Plan
- Are you Ready? Defensible Space and Home Hardening
- Are you Set? Wildfire Preparedness
- Defensible Space Guide
- Before, During, and After a Wildfire

NATIONAL PROGRAMS

Ready, Set, Go!

The Ready, Set, Go! Program, which is managed by the International Association of Fire Chiefs, was launched in 2011 at the WUI conference. The program seeks to develop and improve the dialogue between fire departments and residents, providing teaching for residents who live in high-risk wildfire areas—and the WUI—on how to best prepare themselves and their properties against fire threats (International Association of Fire Chiefs 2021). The County utilizes the Ready, Set, Go Program for their public outreach with a focus on making communities "fire adapted".

The tenets of Ready, Set, Go! as included on the website (http://www.wildlandfirersg.org) are:

> **Ready –** Take personal responsibility and prepare long before the threat of a wildland fire so your home is ready in case of a fire. Create defensible space by clearing brush away from your home. Use fire-resistant landscaping and harden your home with fire-safe construction measures. Assemble emergency supplies and belongings in a safe place. Plan escape routes and ensure all those residing within the home know the plan of action.
>
> **Set –** Pack your emergency items. Stay aware of the latest news and information on the fire from local media, your local fire department, and public safety.
>
> **Go –** Follow your personal wildland fire action plan. Doing so will not only support your safety but will allow firefighters to best maneuver resources to combat the fire.

National Fire Protection Association

The NFPA is a global non-profit organization devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards. Its 300 codes and standards are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation around the world.

The NFPA develops easy-to-use educational programs, tools, and resources for all ages and audiences, including Fire Prevention Week, an annual campaign that addresses a specific fire safety theme.

The NFPA's Firewise Communities program (www.firewise.org) 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 wildfire risks.

The NFPA is a premier resource for fire data analysis, research, and analysis. The Fire Analysis and Research division conducts investigations of fire incidents and produces a wide range of annual reports and special studies on all aspects of the nation's fire problem.

National Interagency Fire Center

The National Interagency Fire Center (NIFC) provides a wide array of fire resources and services. The National Interagency Coordination Center offers communication assistance to over 32,000 firefighters and 50 major events at one given time (NIFC 2021c). The Predictive Services Group creates wildfire forecasts and predictions from fuel and weather data. The NIFC has a Remote Automated Weather Base with over 2,000 weather stations which help inform the Predictive Services Group. The National Wildfire Coordinating Group, which is nested under the NIFC, provides operational coordination to federal, state, local, tribal, and territorial partners (NIFC 2021c). The NIFC also has a training branch where training curriculums are developed to be used across the nation. For those too young to participate in the standard trainings, the NIFC offers FireWorks, an educational program designed for kids K-12. The program teaches children topics such as wildland fire science, ecosystem fluctuations, human interaction on the environment, and other environmental science topics (NIFC 2021d). The NIFC also provides public education resources (NIFC 2021e):

- Wildfire Readiness – Home
- Wildfire Readiness – Business
- Wildfire Readiness – Farm and Ranch
- Weekend Wildfire Preparedness
- What to Do if a Wildfire is Approaching
- Wildfire Risk – Community
- Prepare and Protect Your Home
- Prepare Your Community
- One Less Spark, One Less Wildfire
- Only You Can Prevent Wildfires

U.S. Fire Administration's WUI Toolkit

The U.S. Fire Administration (USFA) is an entity of the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) that aids in the preparation for and response to fire. Their WUI toolkit consists of a list of websites and other information regarding risk assessment, public outreach, and community training. Find the toolkit here: https://www.usfa.fema.gov/wui_toolkit/wui_training.html.

Wildfire Research Center (WiRē)

Wildfire Research (WiRē) is a non-profit organization that works with local wildfire services to achieve community-tailored pathways to reduce risk to wildfire while simultaneously promoting pathways to fire

adaptation. WiRē's mission states that fire adaptation is "about living with fire", while "creating safe and resilient communities that reduce wildfire risk on their properties before a fire, and supporting effective response when fires threaten a community." Finally, WiRē states that wildfire is an integral component of many ecosystems and that fire must be allowed, when safe, to ensure the health of forests. Core to WiRē's approach are four main concepts 1) residents are critical actors in the WUI wildfire problem; 2) action is central to adaptation; 3) people and their decisions are complex; and 4) decisions are not made in a vacuum. To achieve its goals and serve communities, WiRē will typically conduct a "rapid wildfire risk assessment," which assesses contributors to wildfire risk, such as building materials, vegetation near homes, background fuels, local topography, and access to emergency fire services. Additionally, WiRē also conducts "social surveys", which assess residents' perceptions about wildfire, wildfire risk, risk mitigation behavior, and their willingness toward taking action to reduce wildfire risk. For more information, please visit: https://wildfireresearchcenter.org/.

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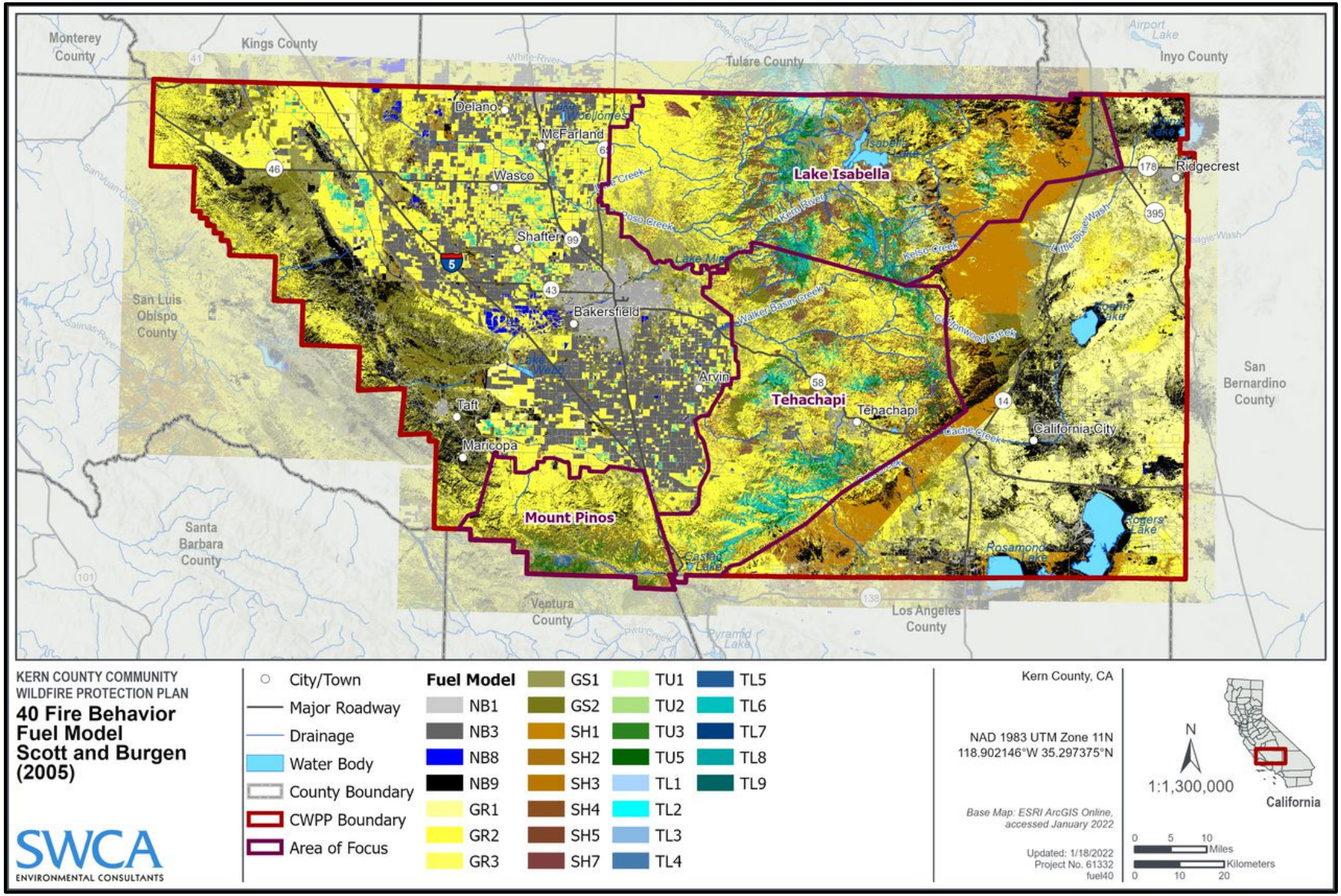
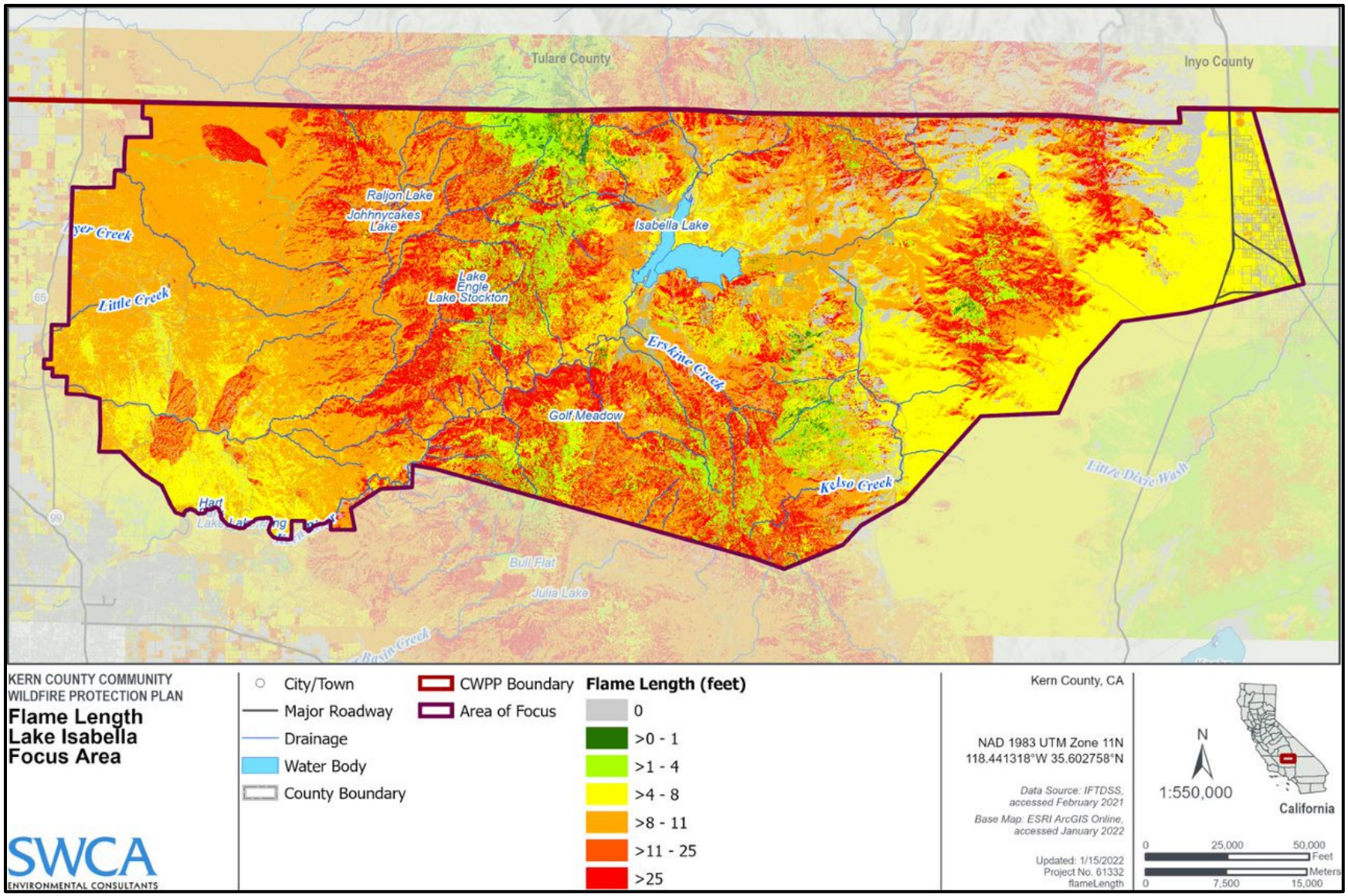
APPENDIX B:

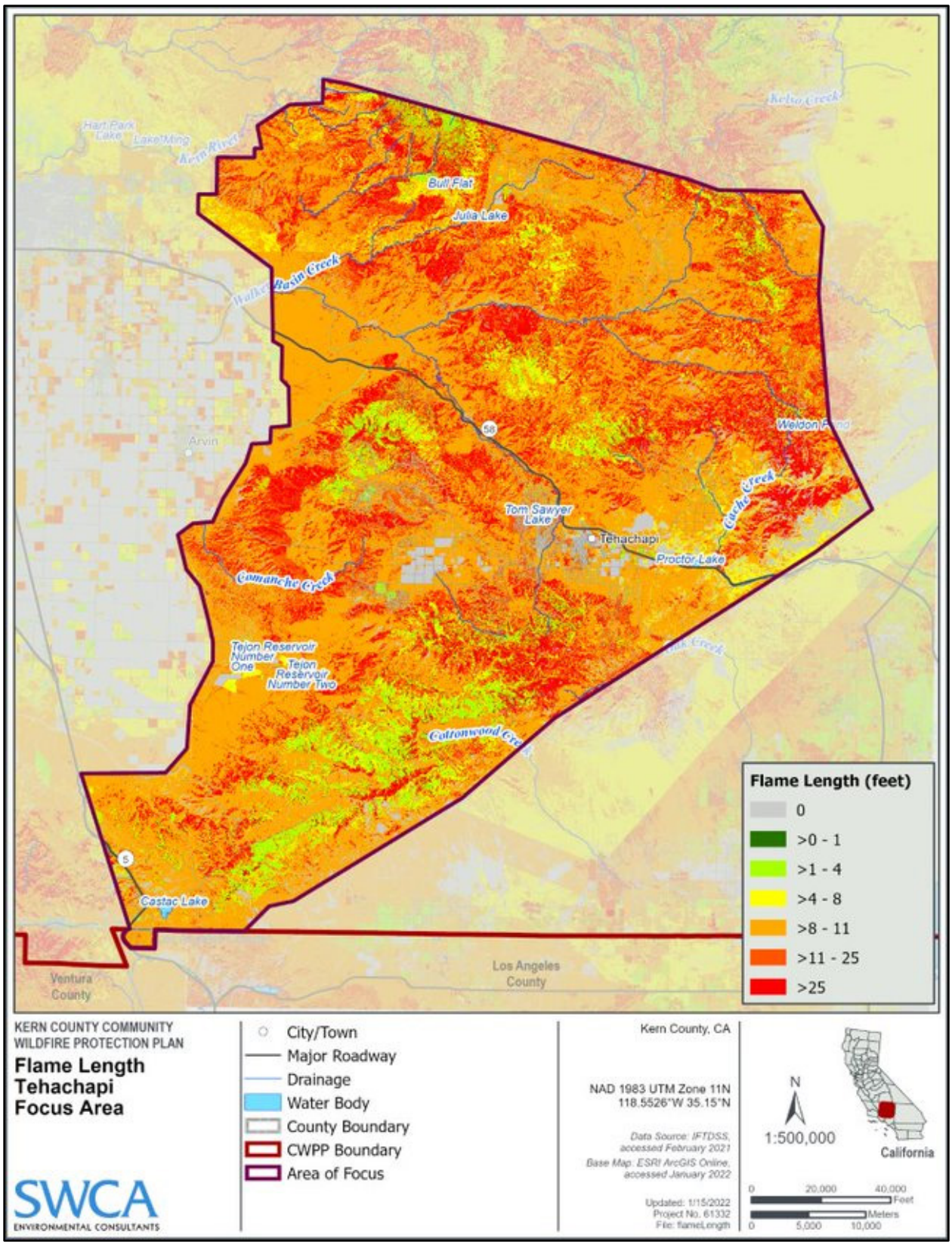
Additional Mapping



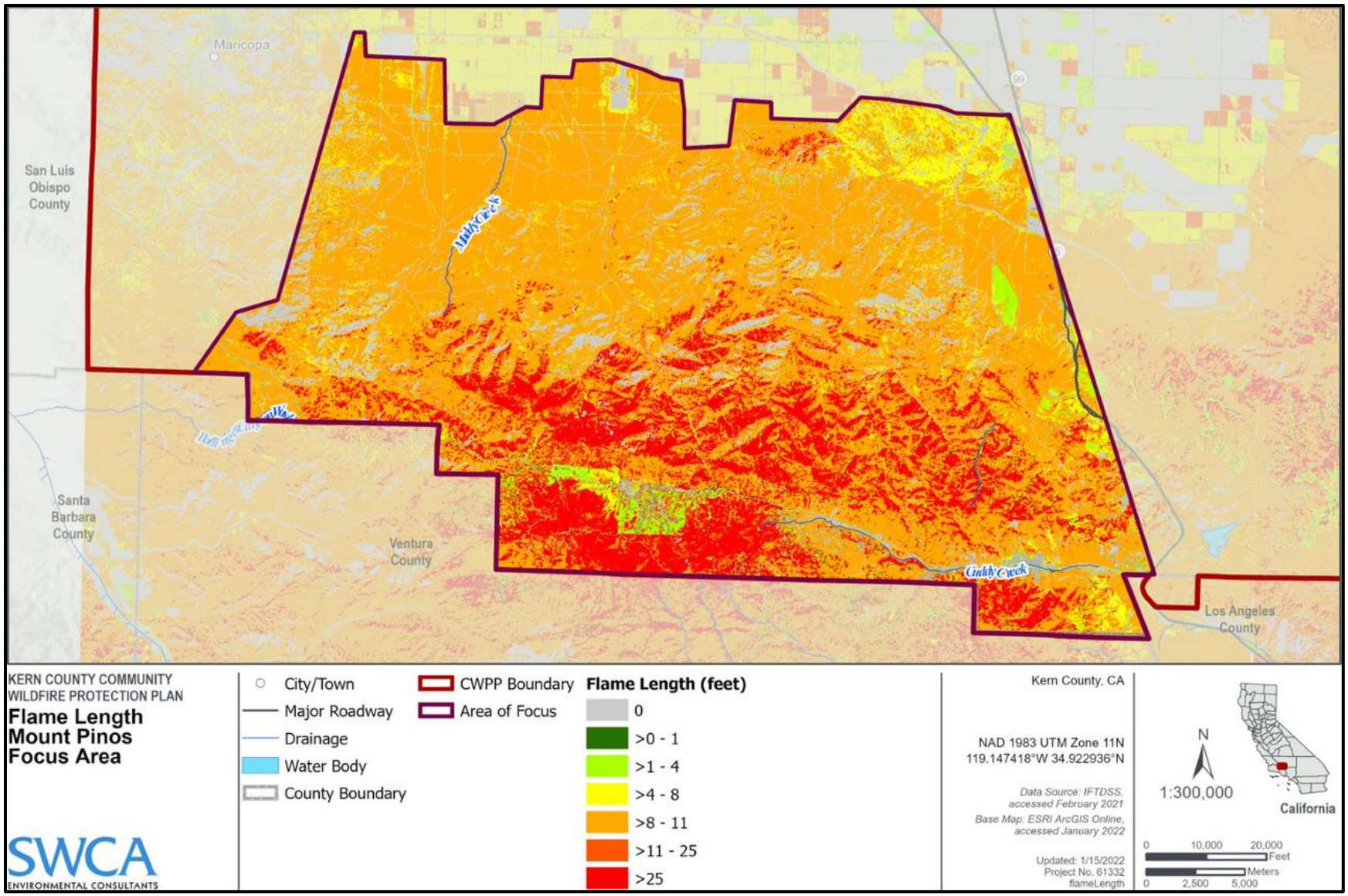
Map 1. Scott and Burgan 40 Fire Behavior Fuel Models.



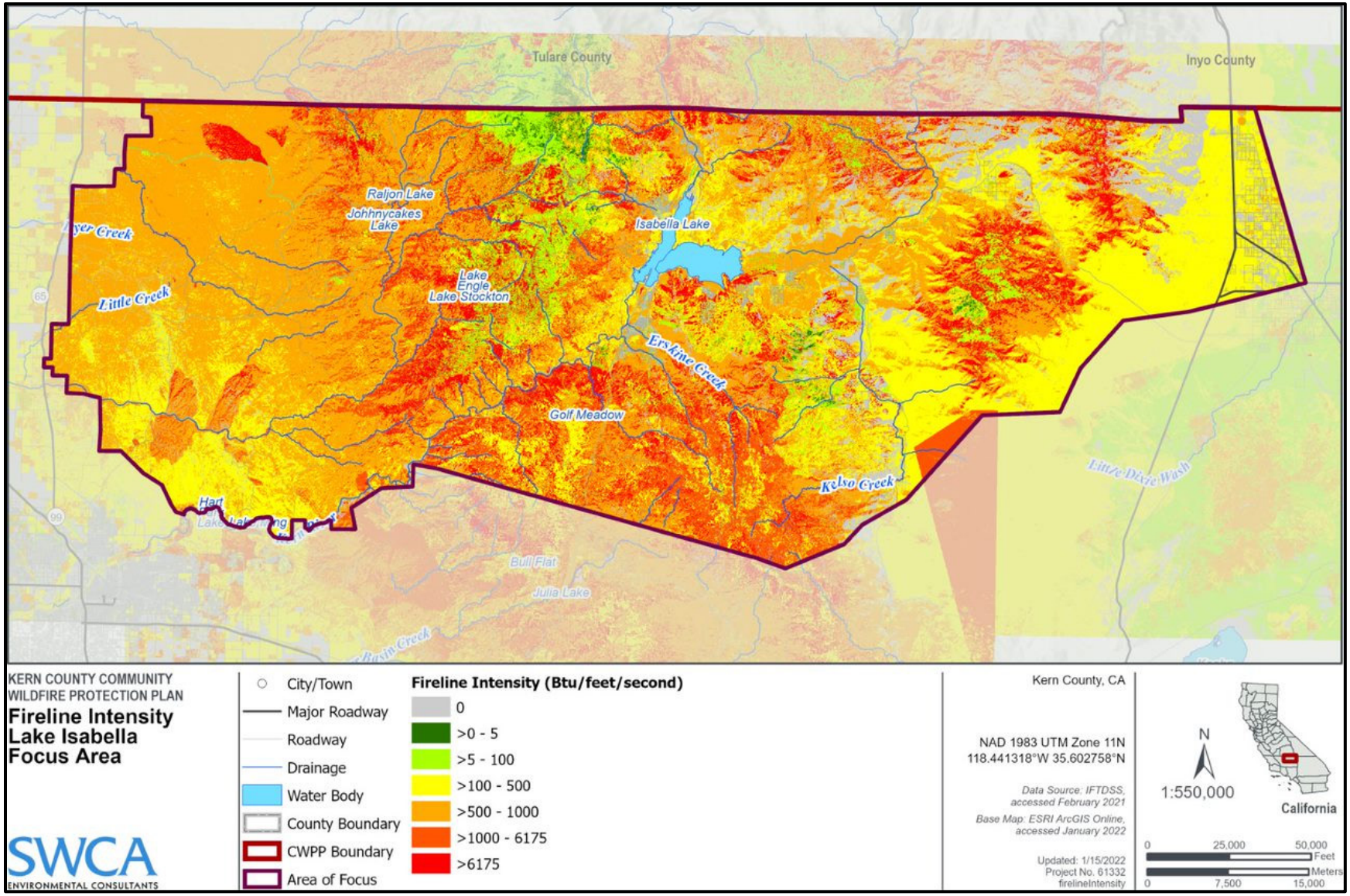
Map 2. Risk assessment inputs: flame length (Lake Isabella focus area).



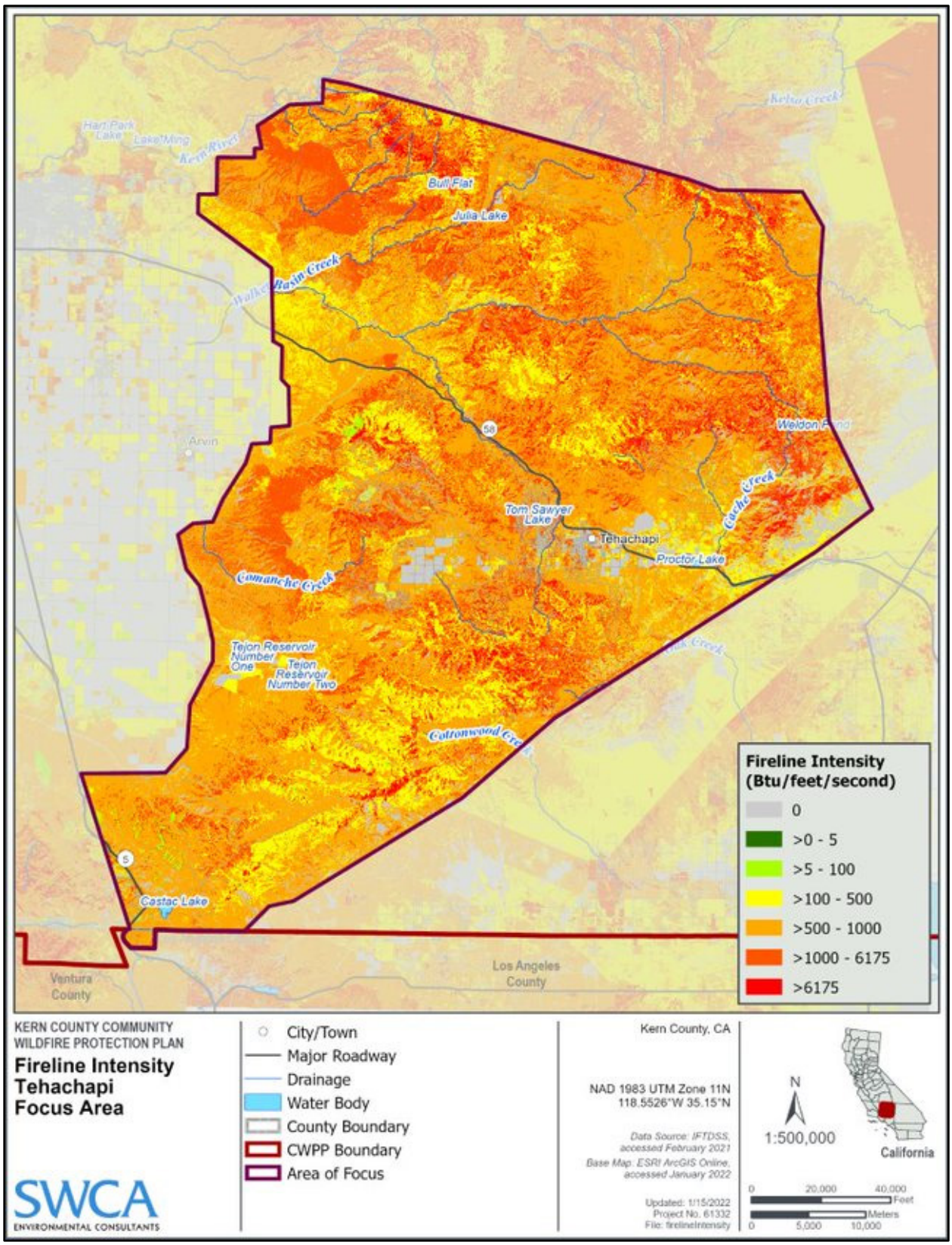
Map 3. Risk assessment inputs: flame length (Tehachapi focus area).



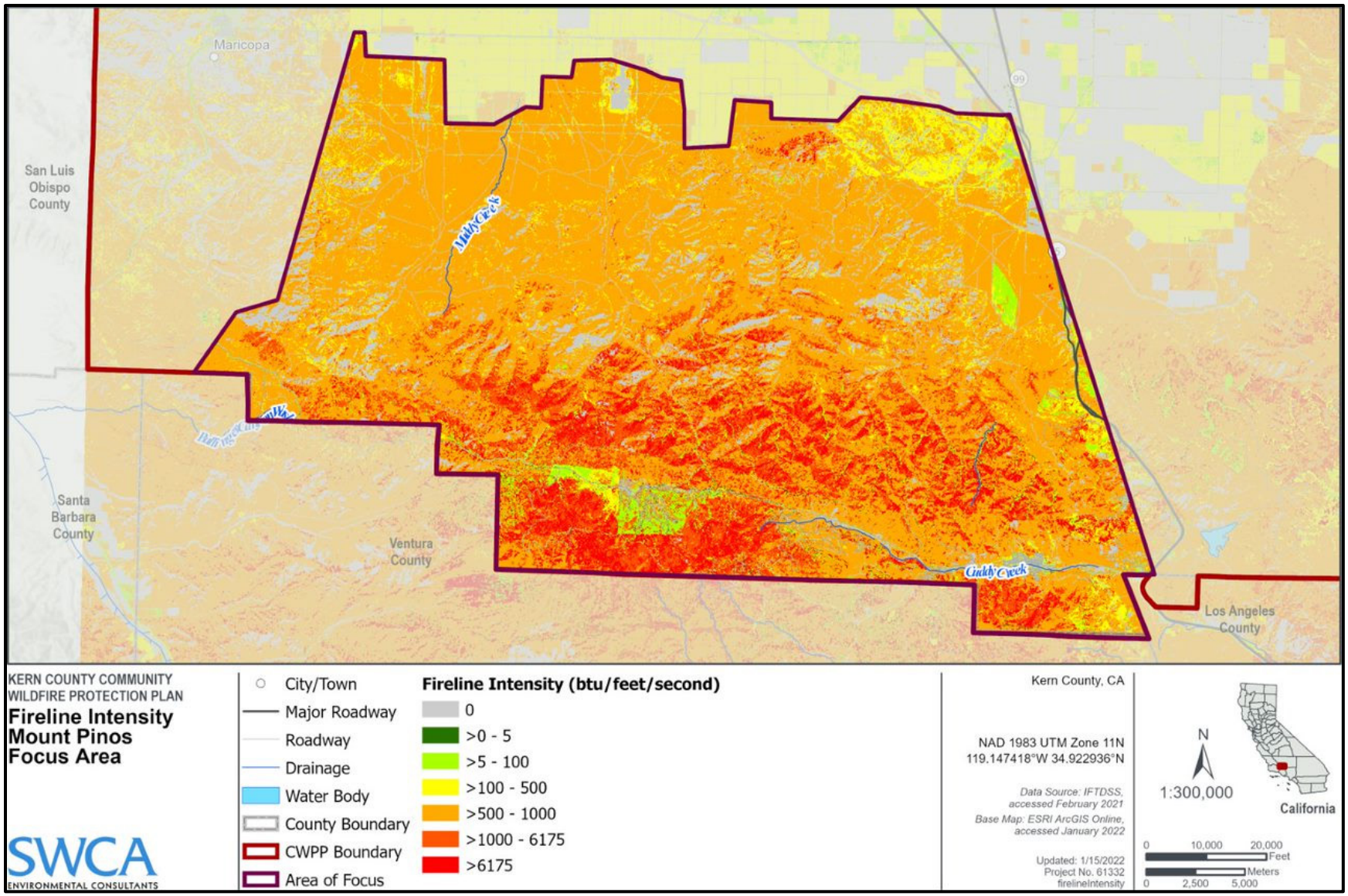
Map 4. Risk assessment inputs: flame length (Mount Pinos focus area).



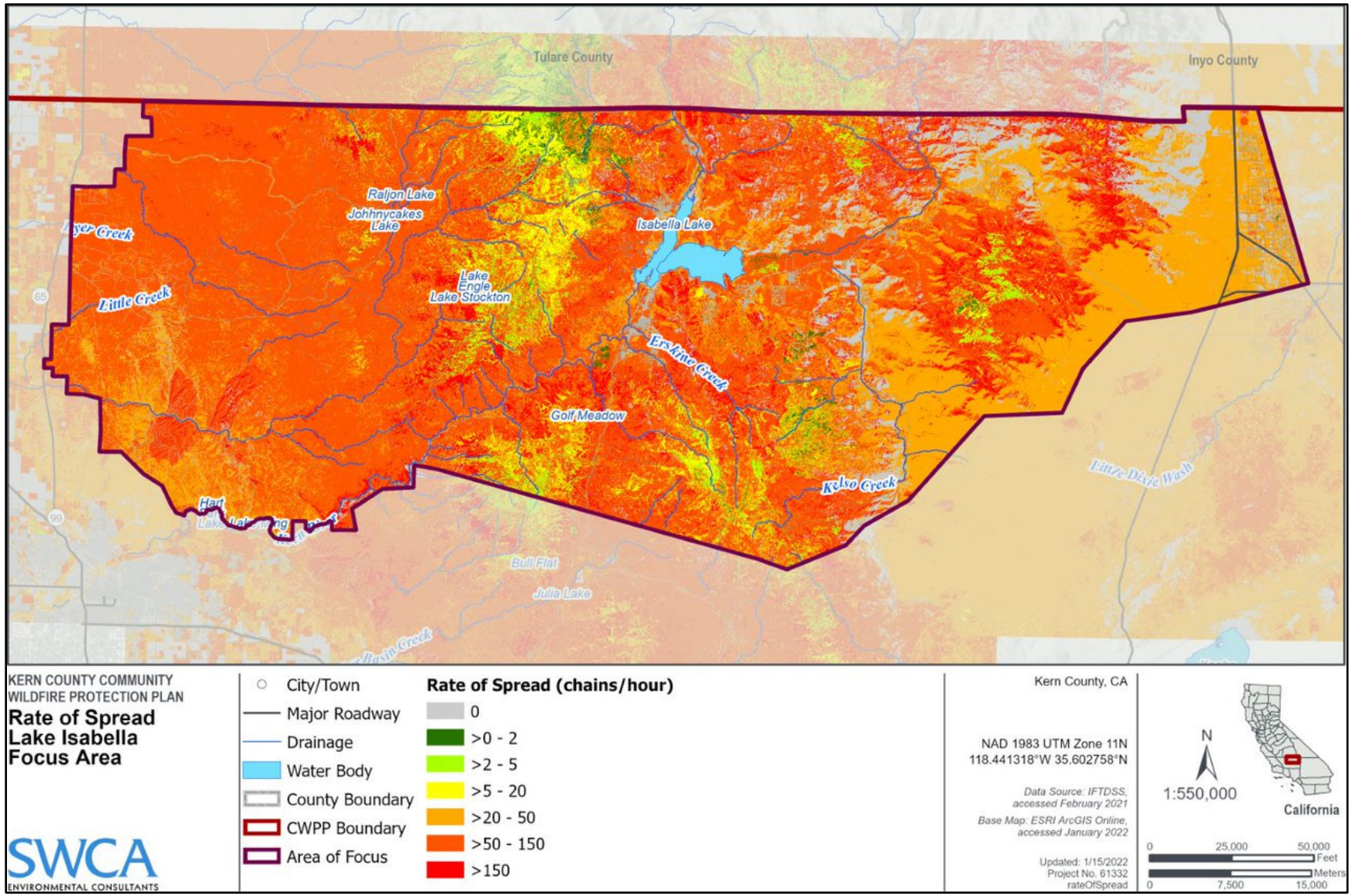
Map 5. Risk assessment inputs: fireline intensity (Lake Isabela focus area).



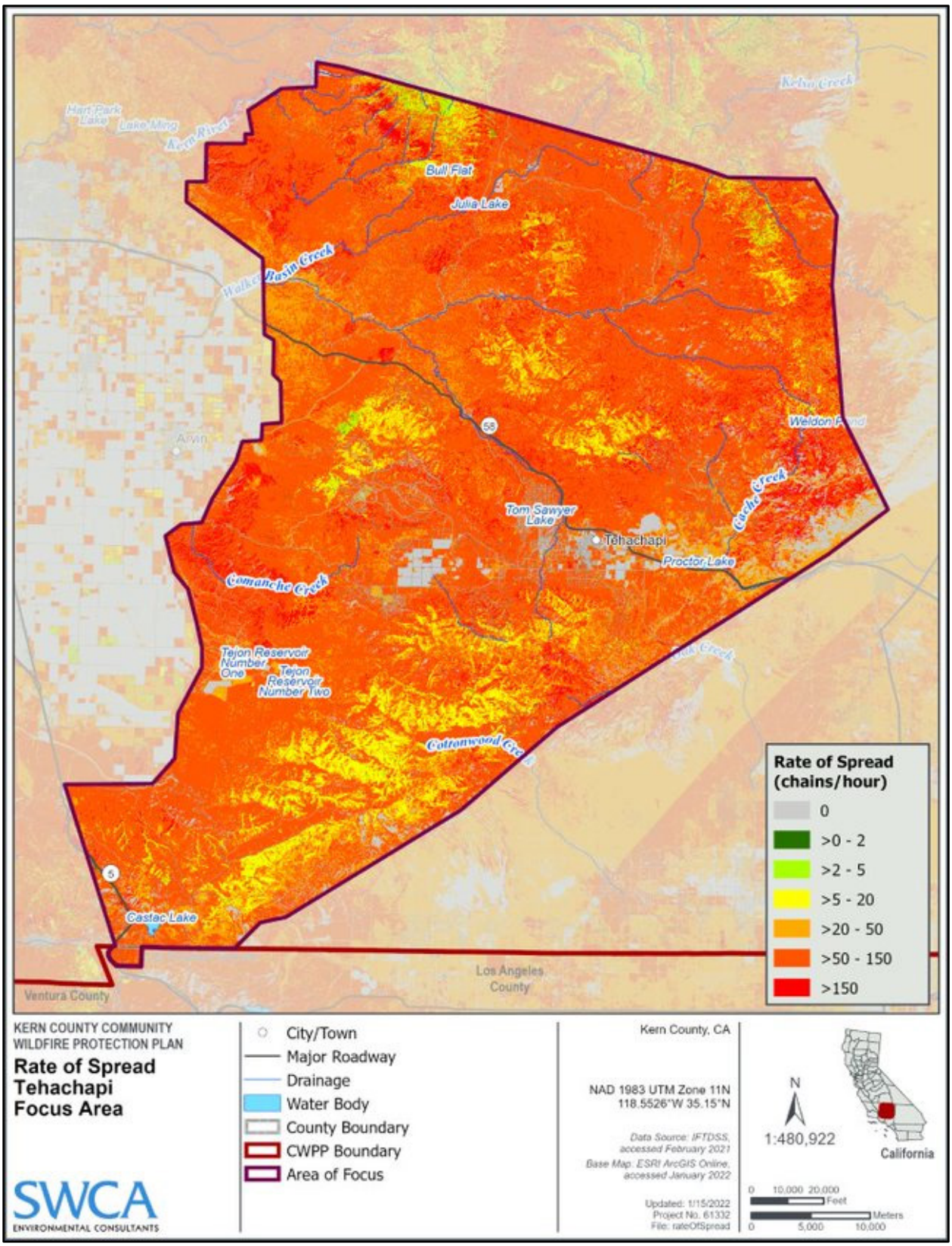
Map 6. Risk assessment inputs: fireline intensity (Tehachapi focus area).



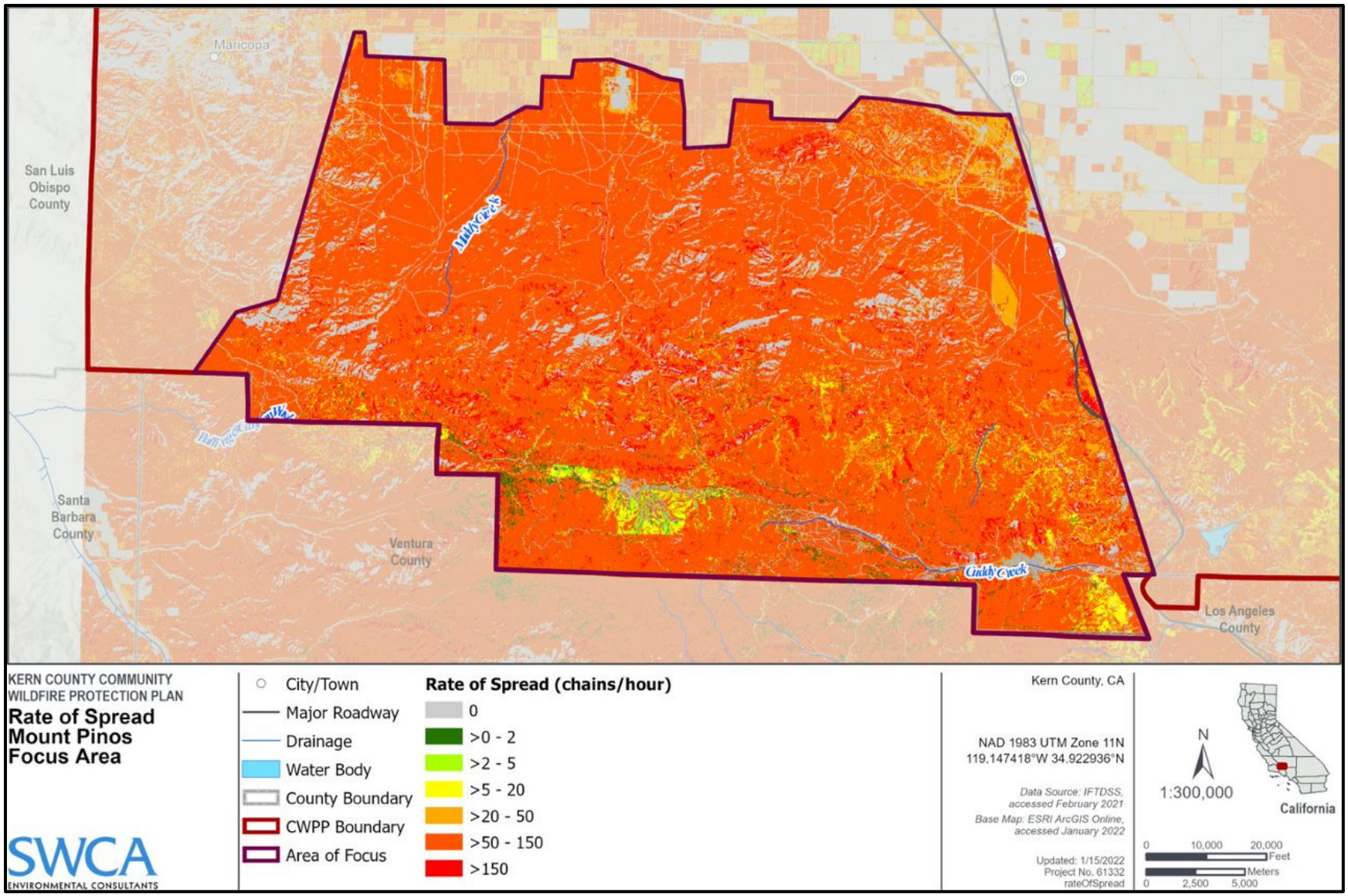
Map 7. Risk assessment inputs: fireline intensity (Mount Pinos focus area).



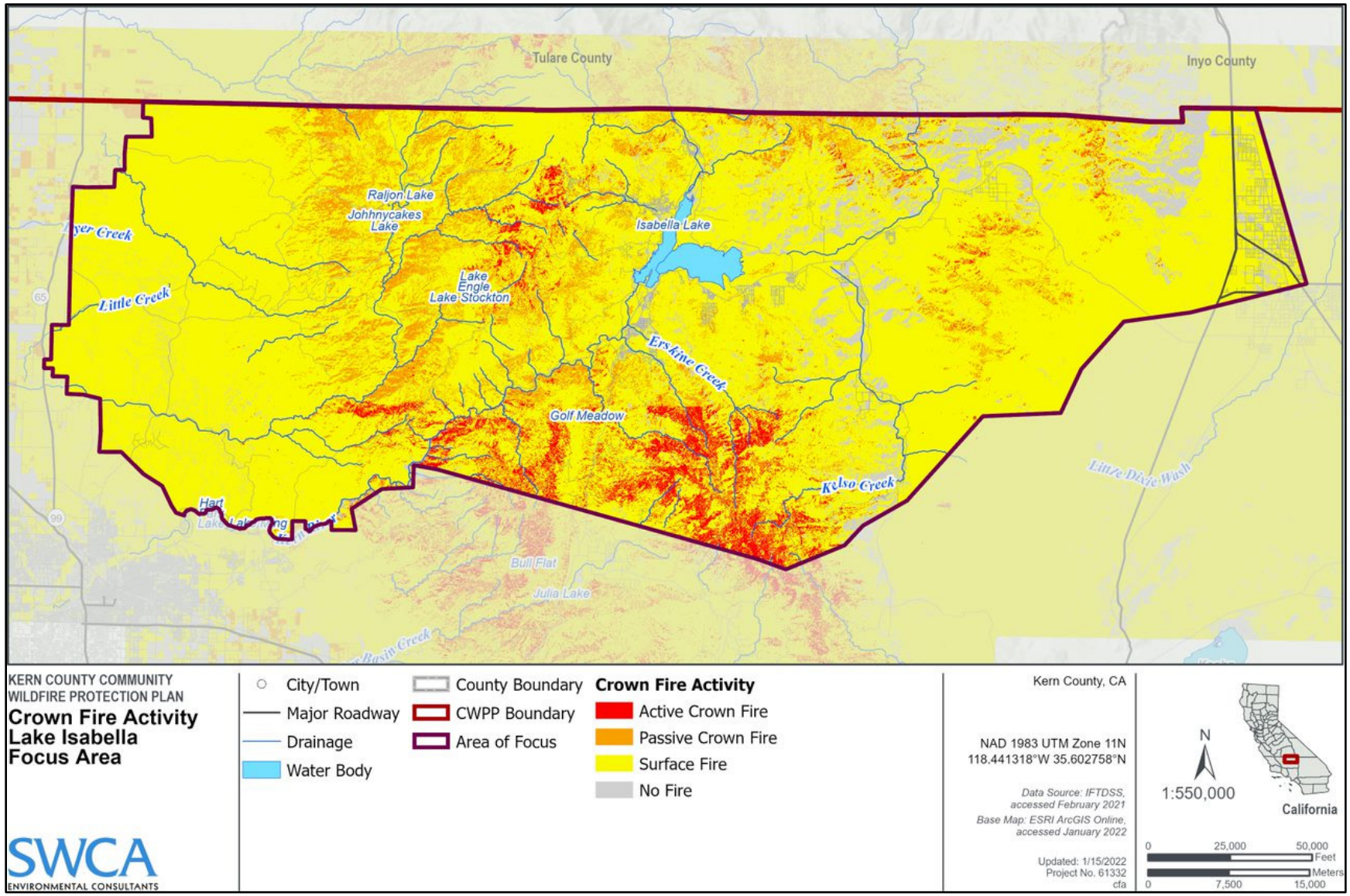
Map 8. Risk assessment inputs: rate of spread (Lake Isabella focus area).



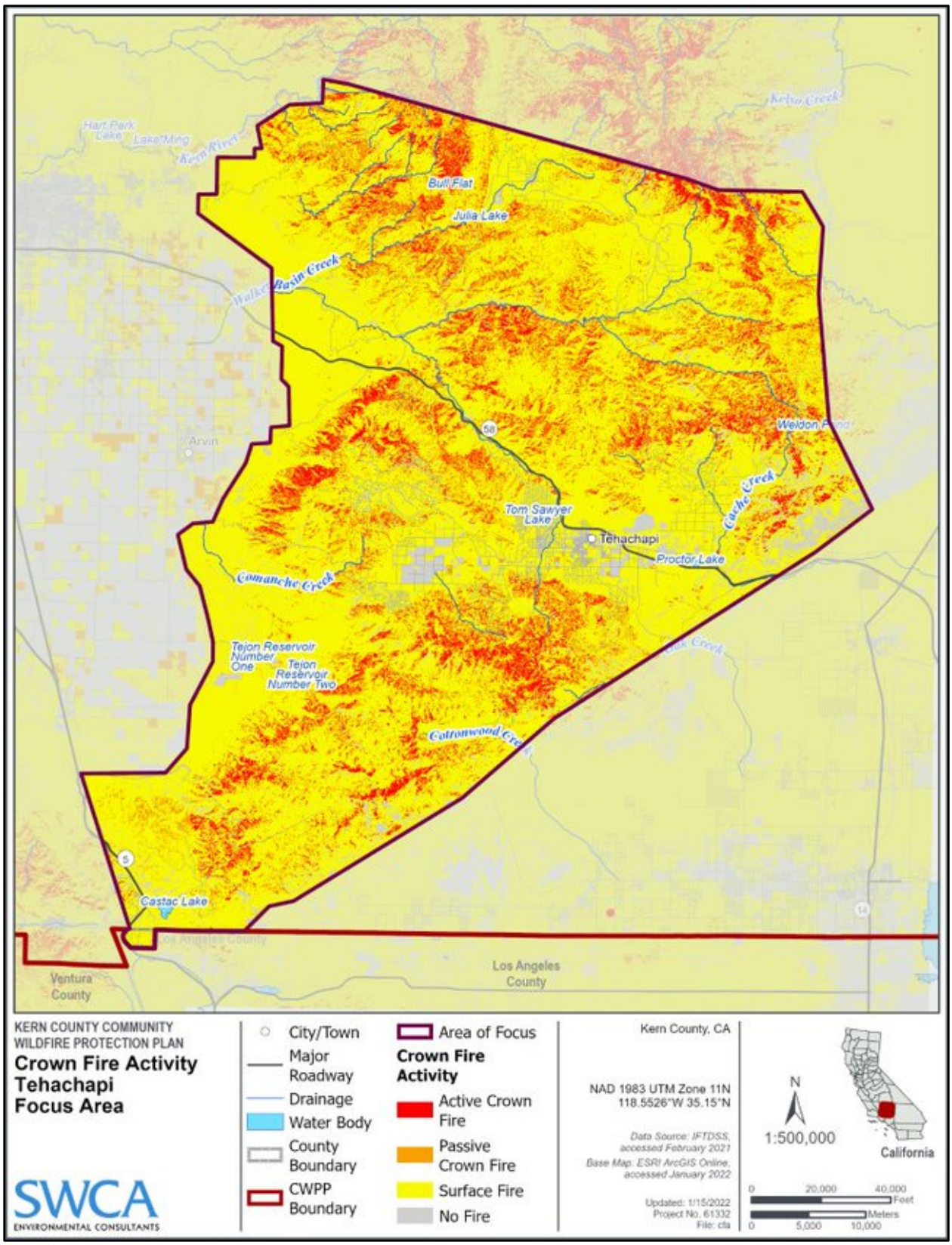
Map 9. Risk assessment inputs: rate of spread (Tehachapi focus area).



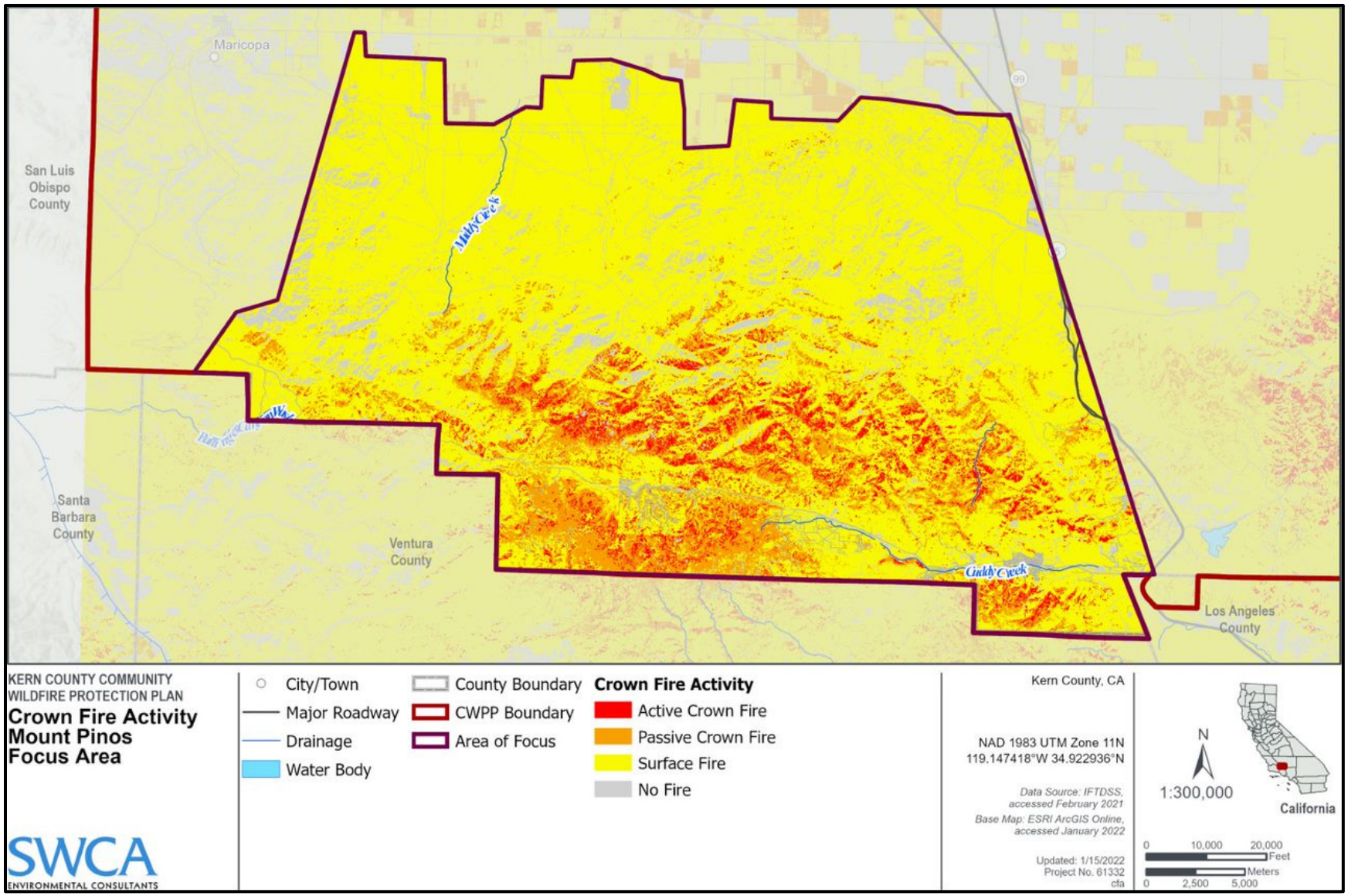
Map 10. Risk assessment inputs: rate of spread (Mount Pinos focus area).



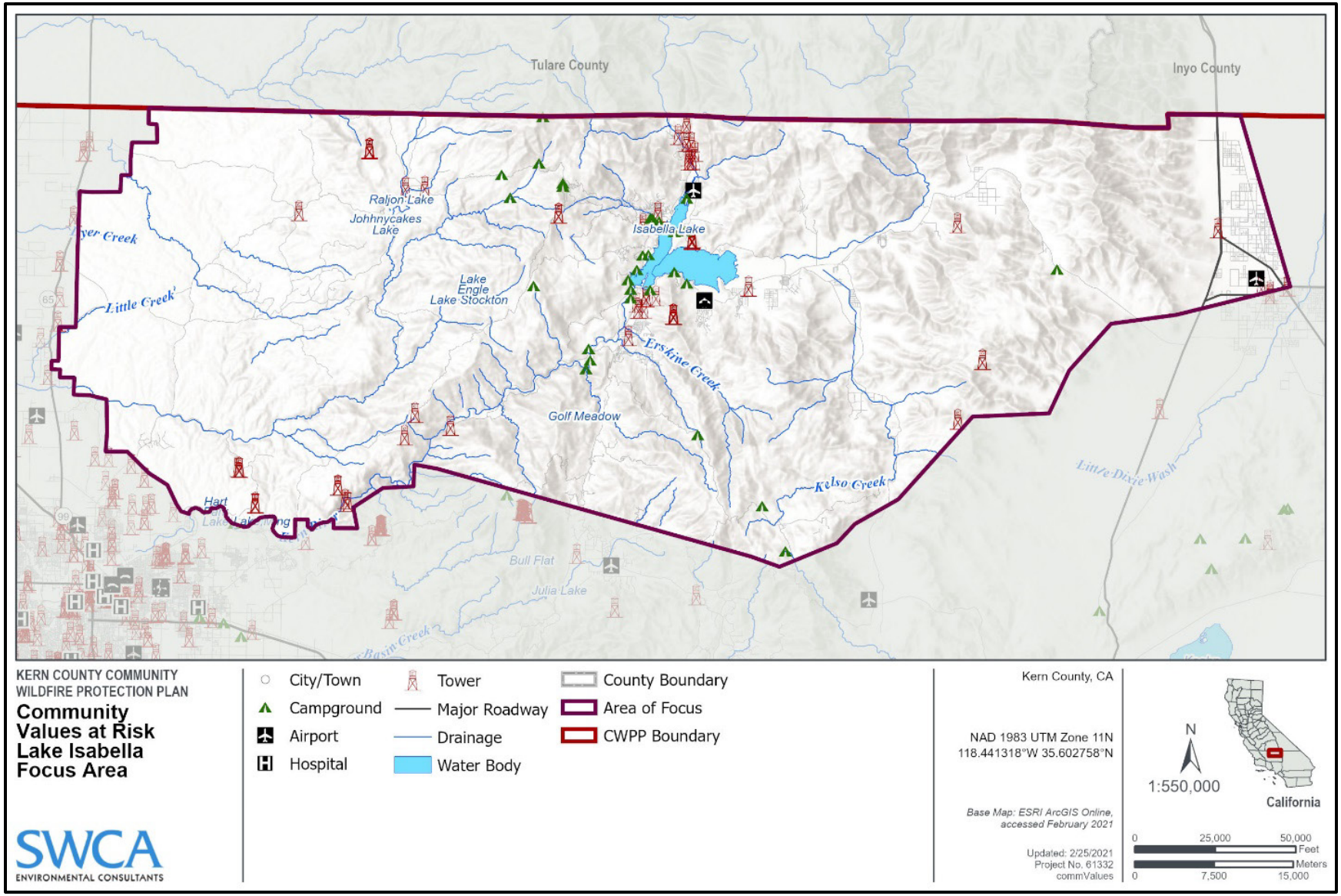
Map 11. Risk assessment inputs: crown fire activity (Lake Isabella focus area).



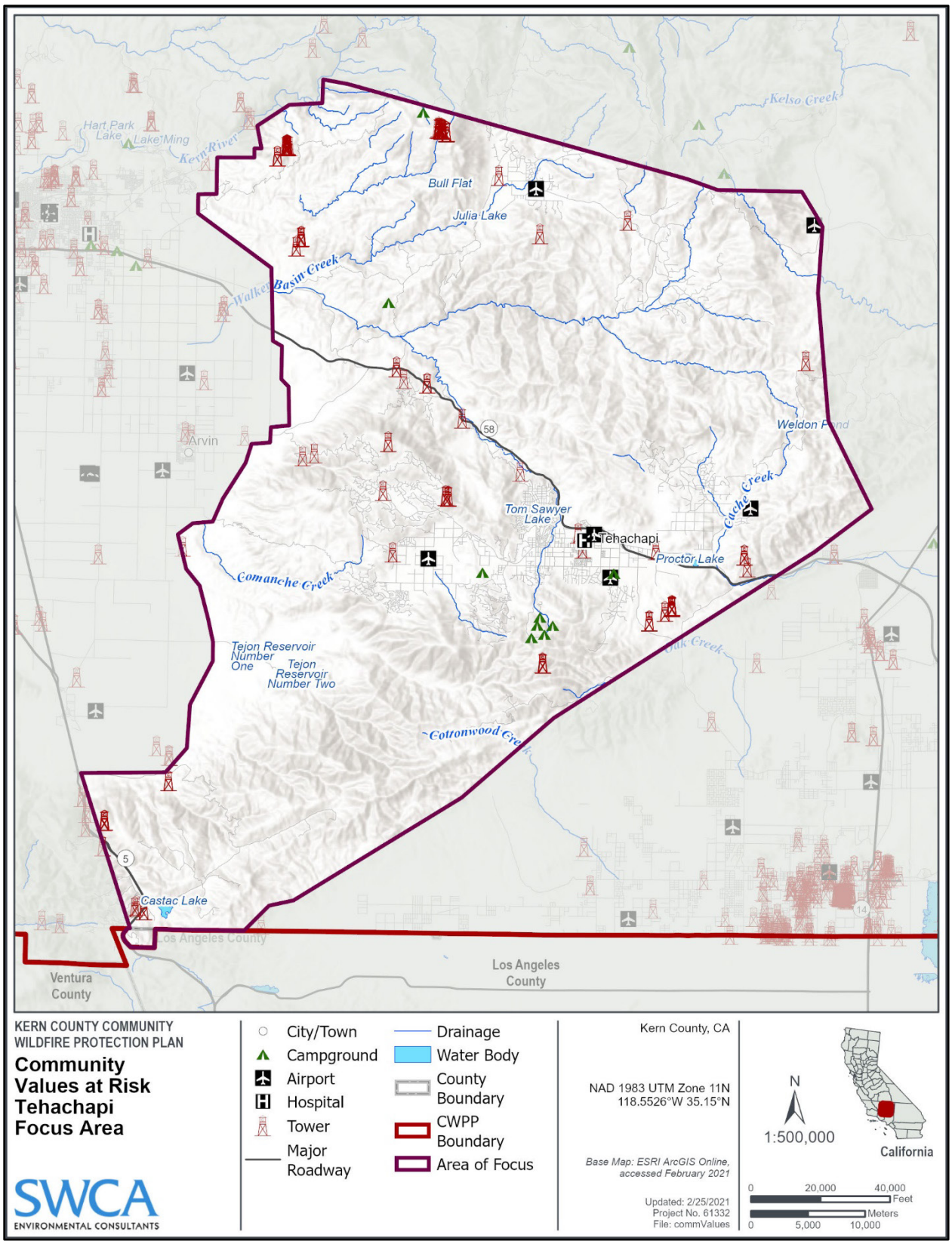
Map 12. Risk assessment inputs: crown fire activity (Tehachapi focus area).



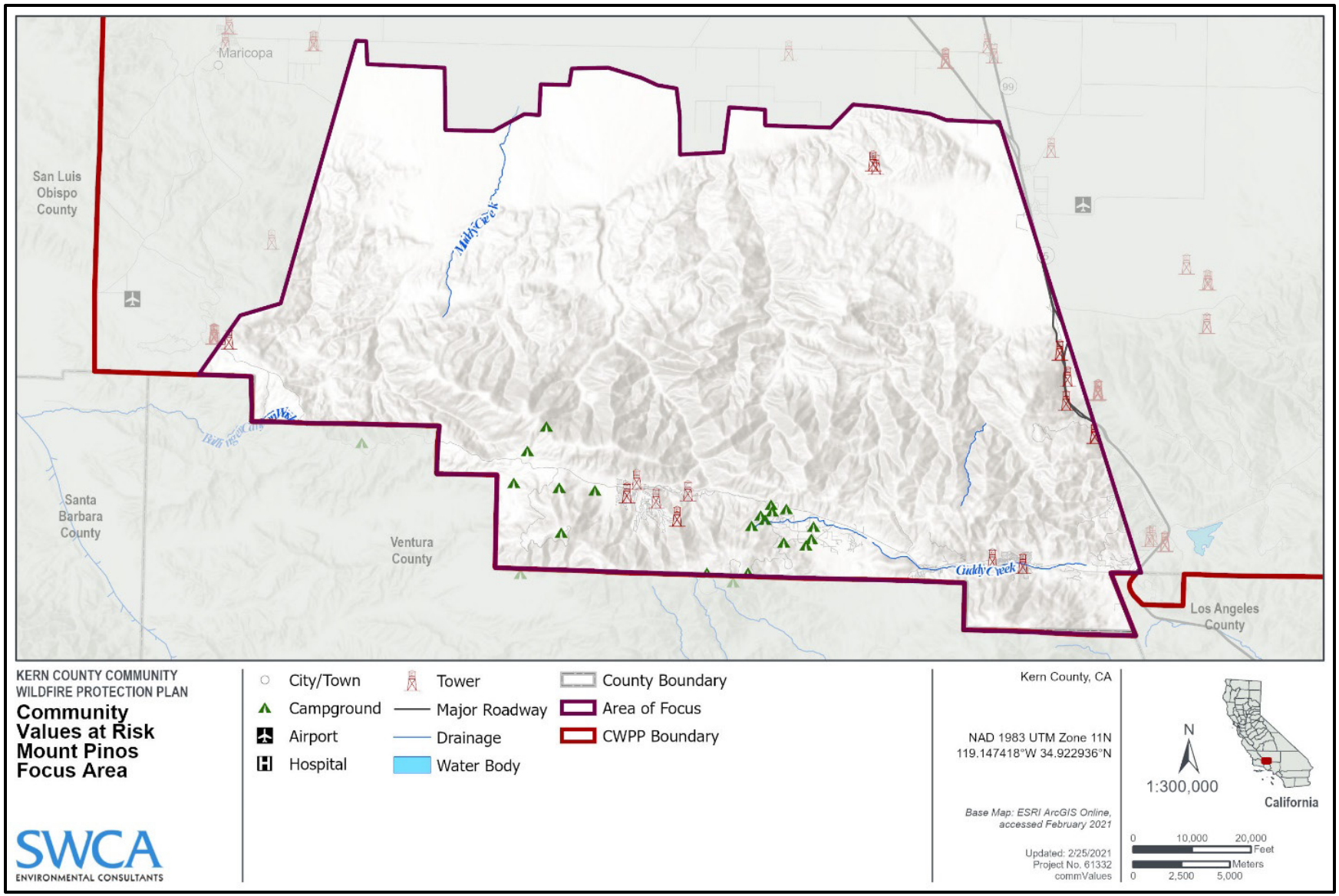
Map 13. Risk assessment inputs: crown fire activity (Mount Pinos focus area).



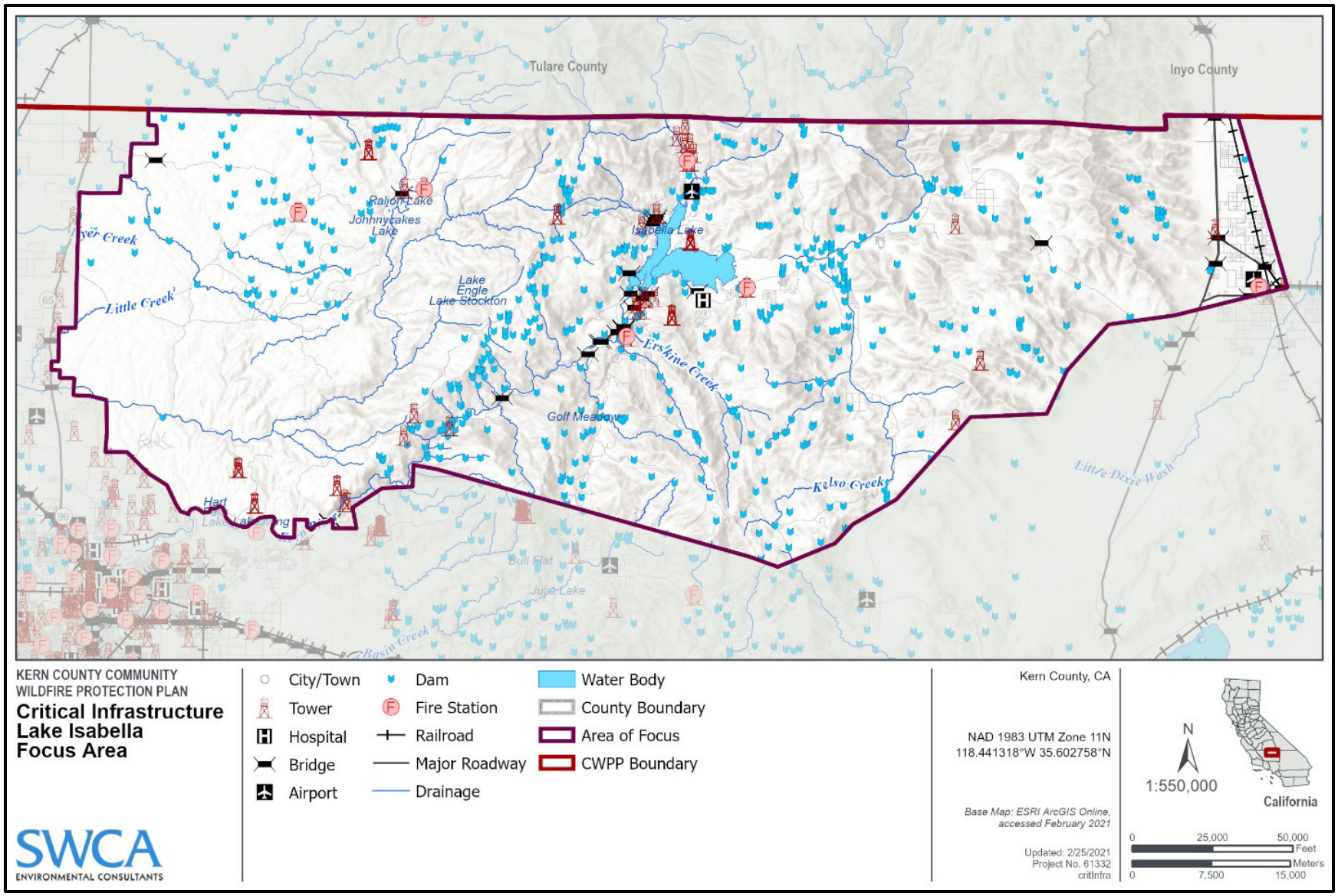
Map 14. Values at risk (Lake Isabella focus area).



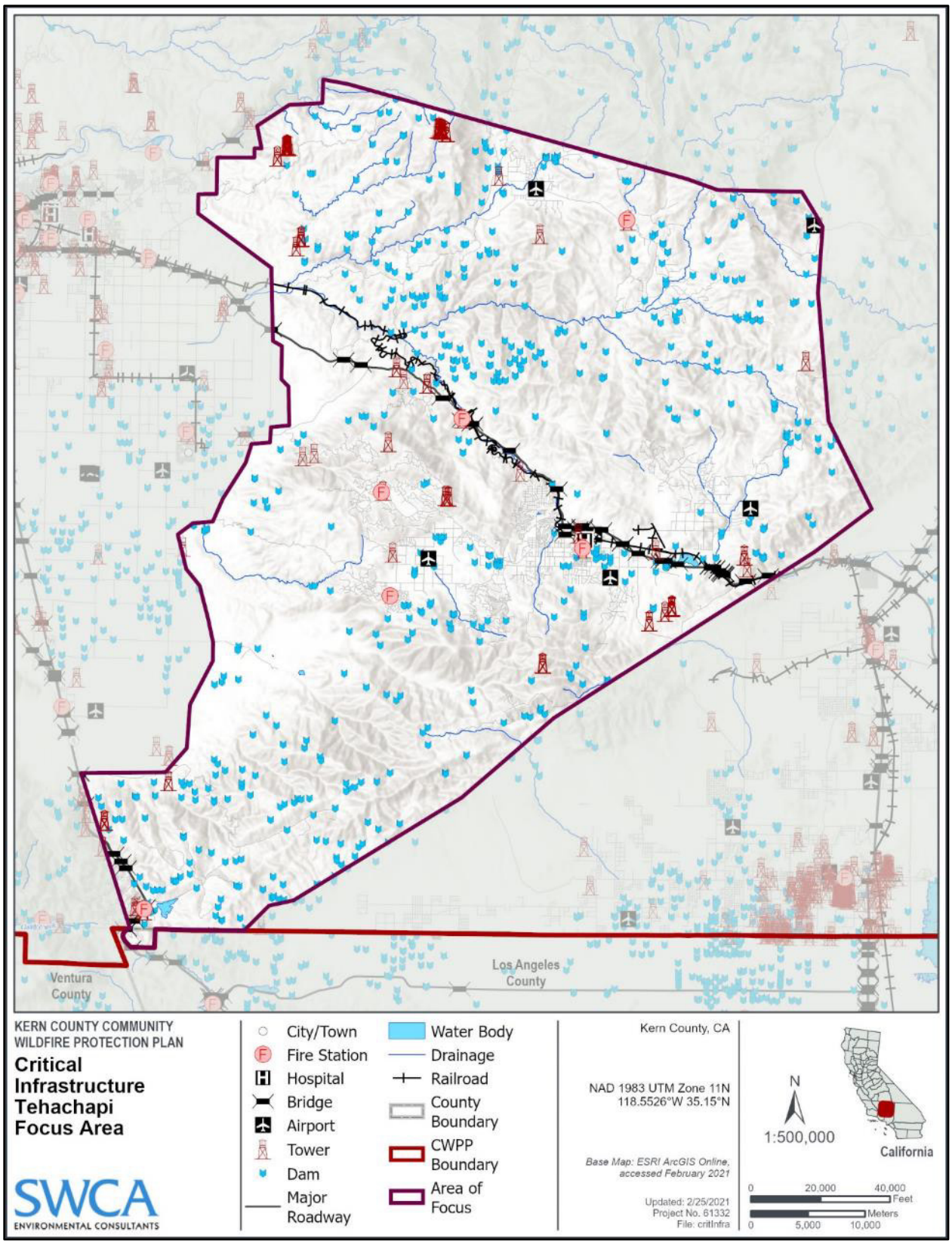
Map 15. Values at risk (Tehachapi focus area).



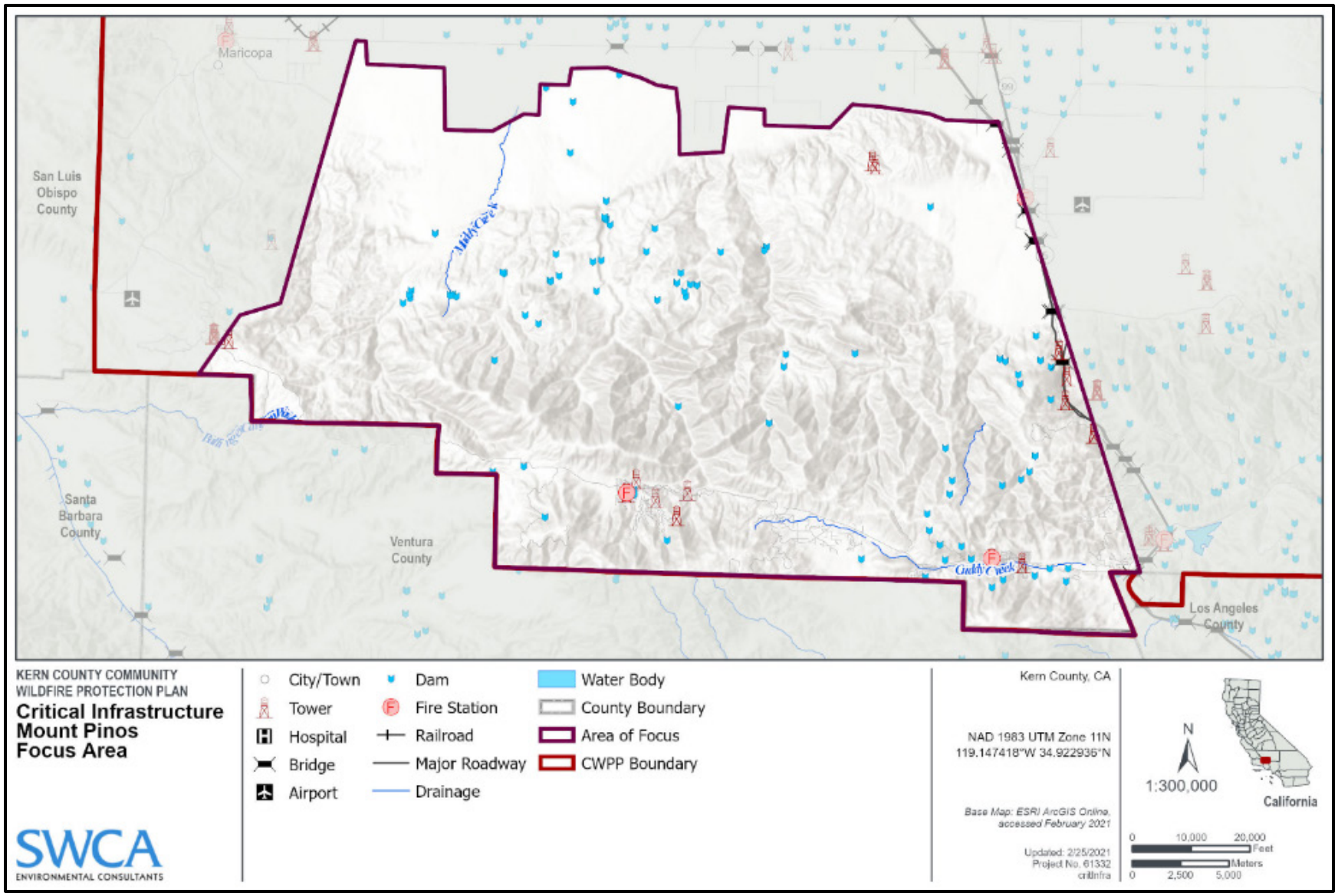
Map 16. Values at risk (Mount Pinos focus area).



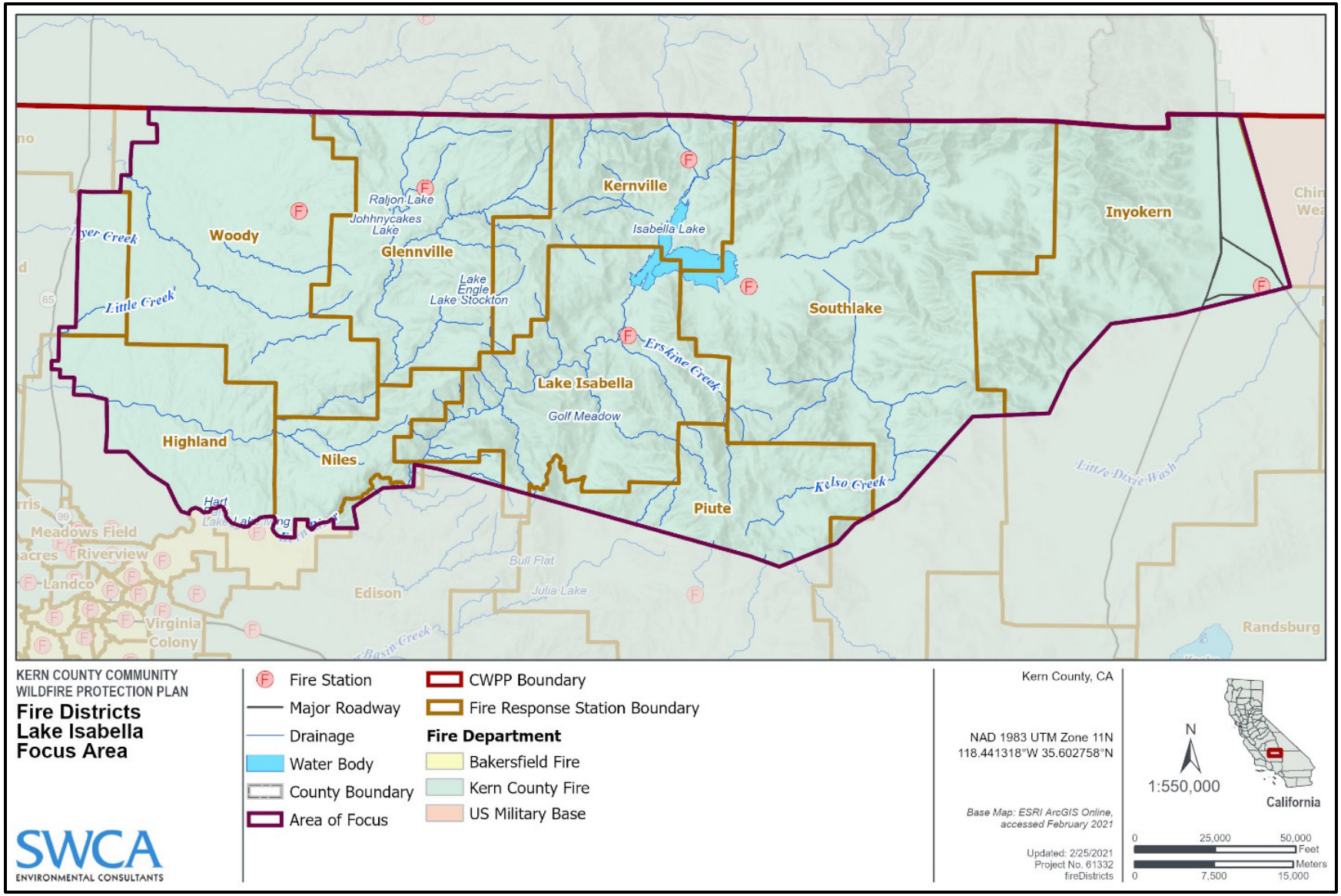
Map 17. Critical infrastructure (Lake Isabella focus area).



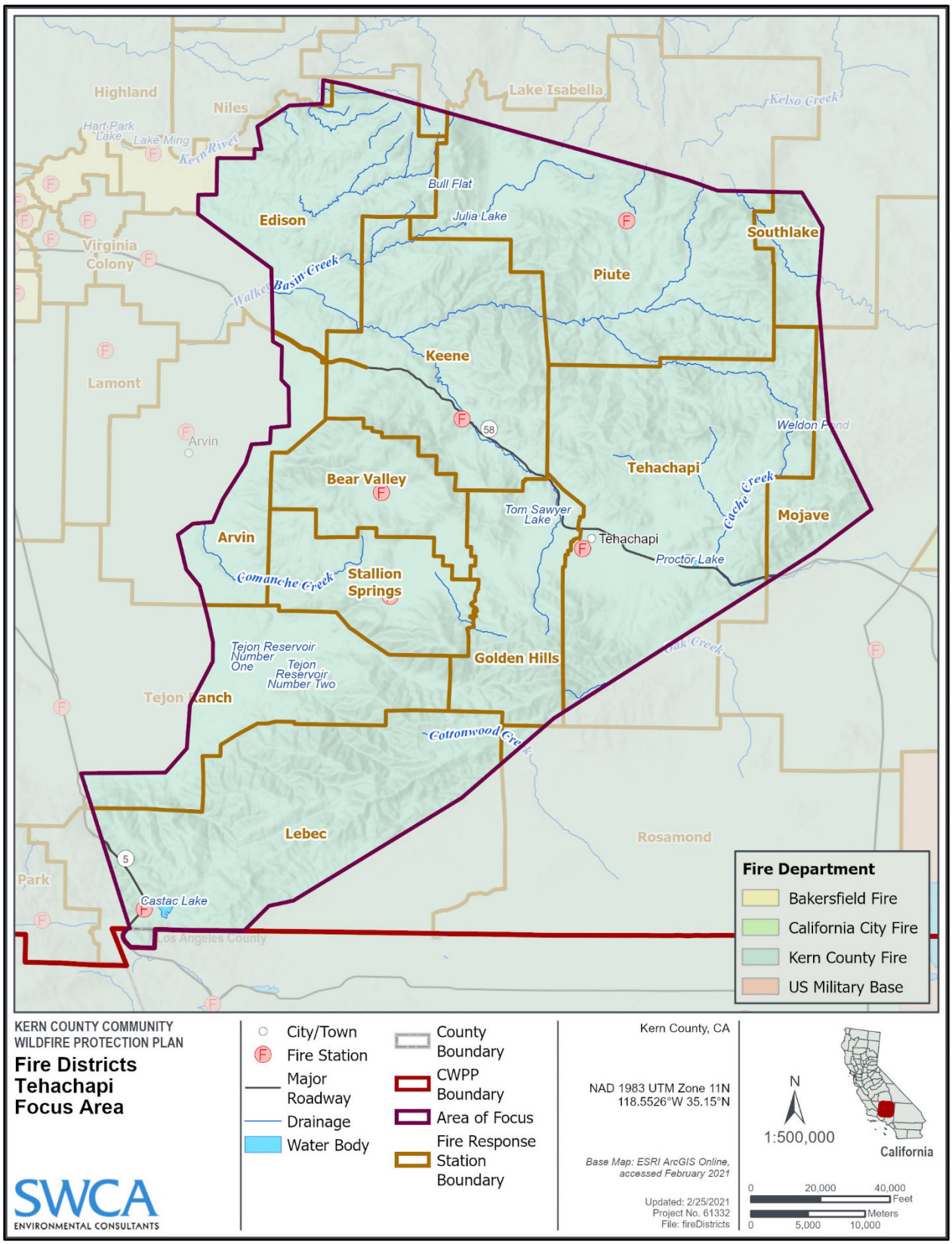
Map 18. Critical infrastructure (Tehachapi focus area).



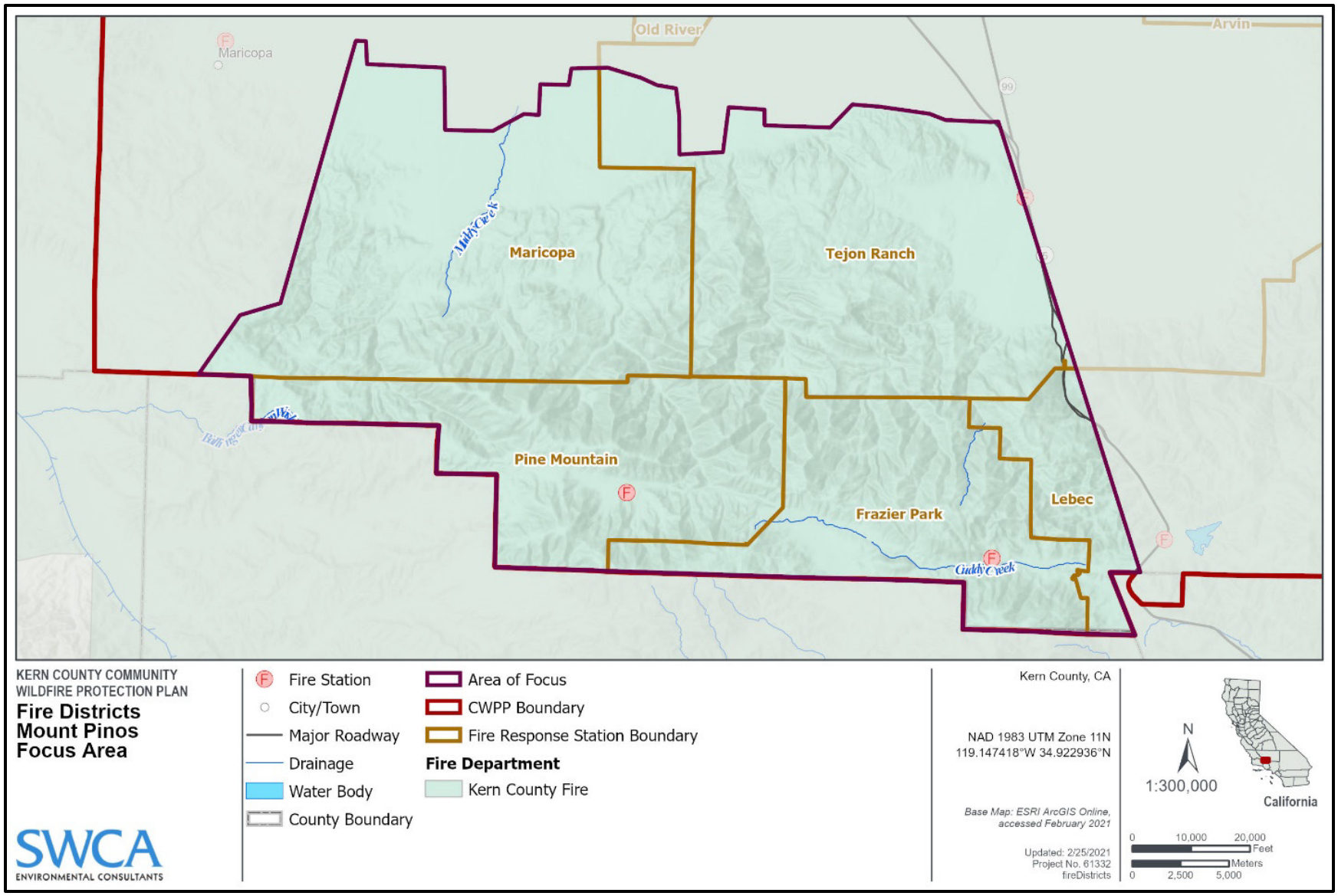
Map 19. Critical infrastructure (Mount Pinos focus area).



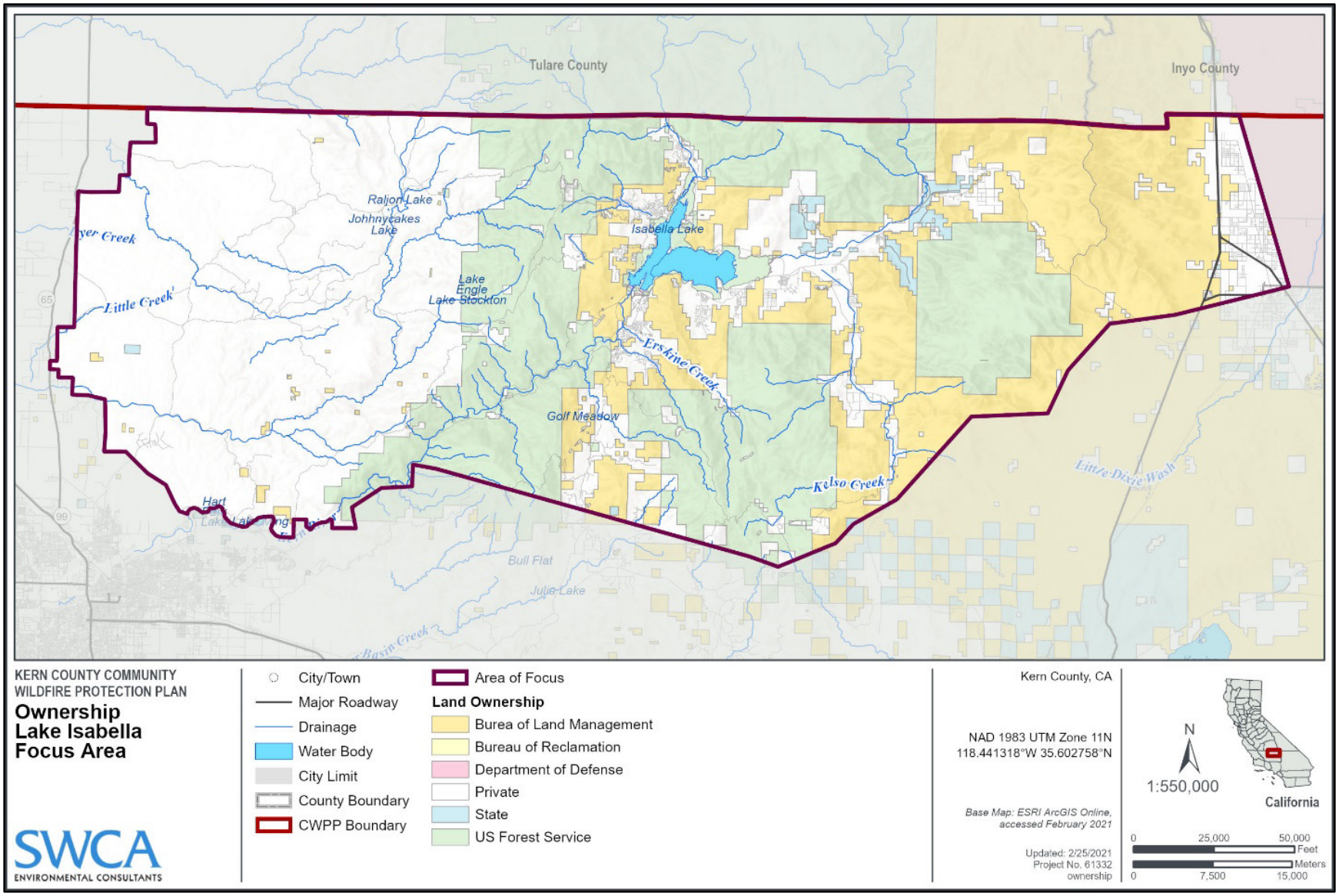
Map 20. Fire districts (Lake Isabella focus area).



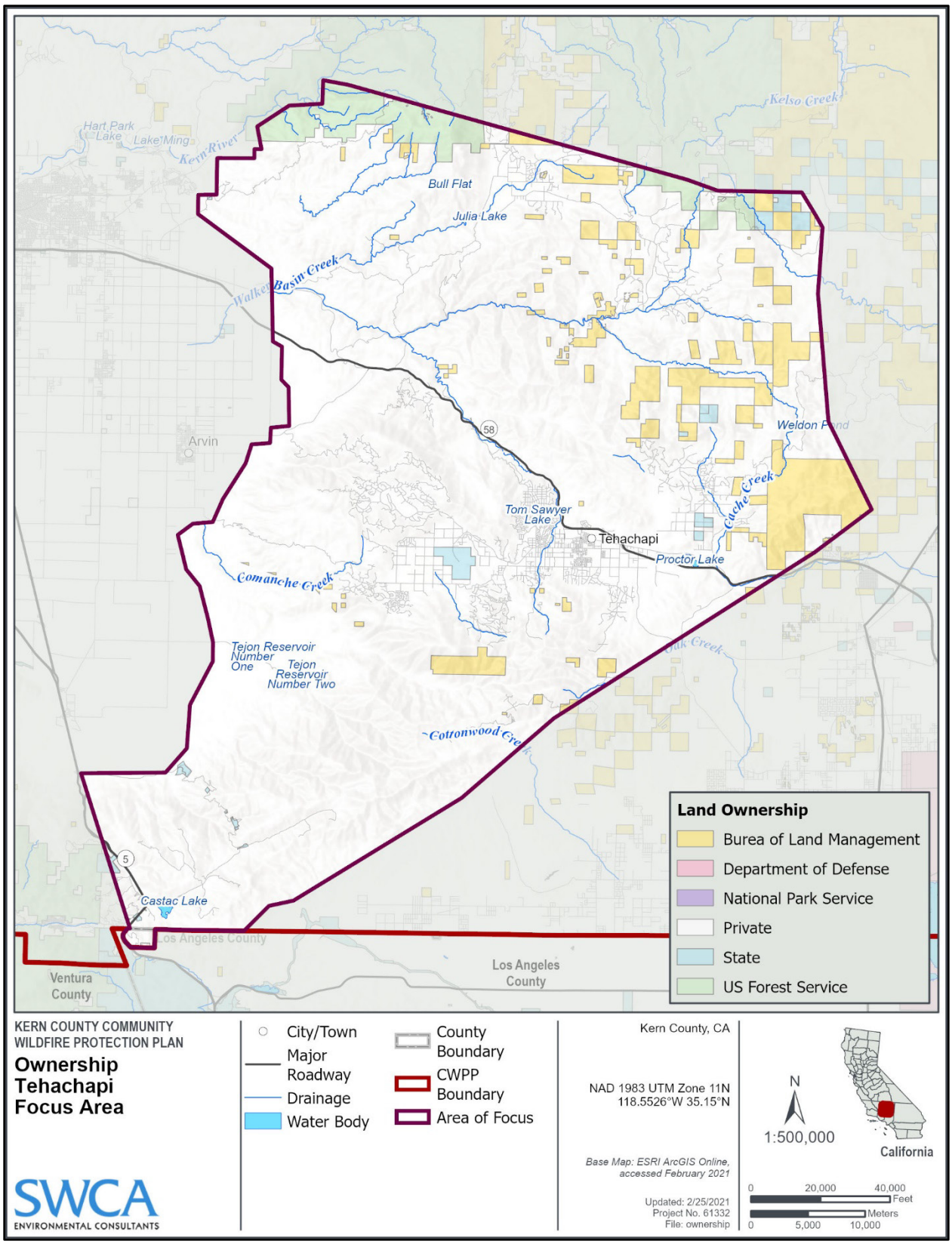
Map 21. Fire districts (Tehachapi focus area).



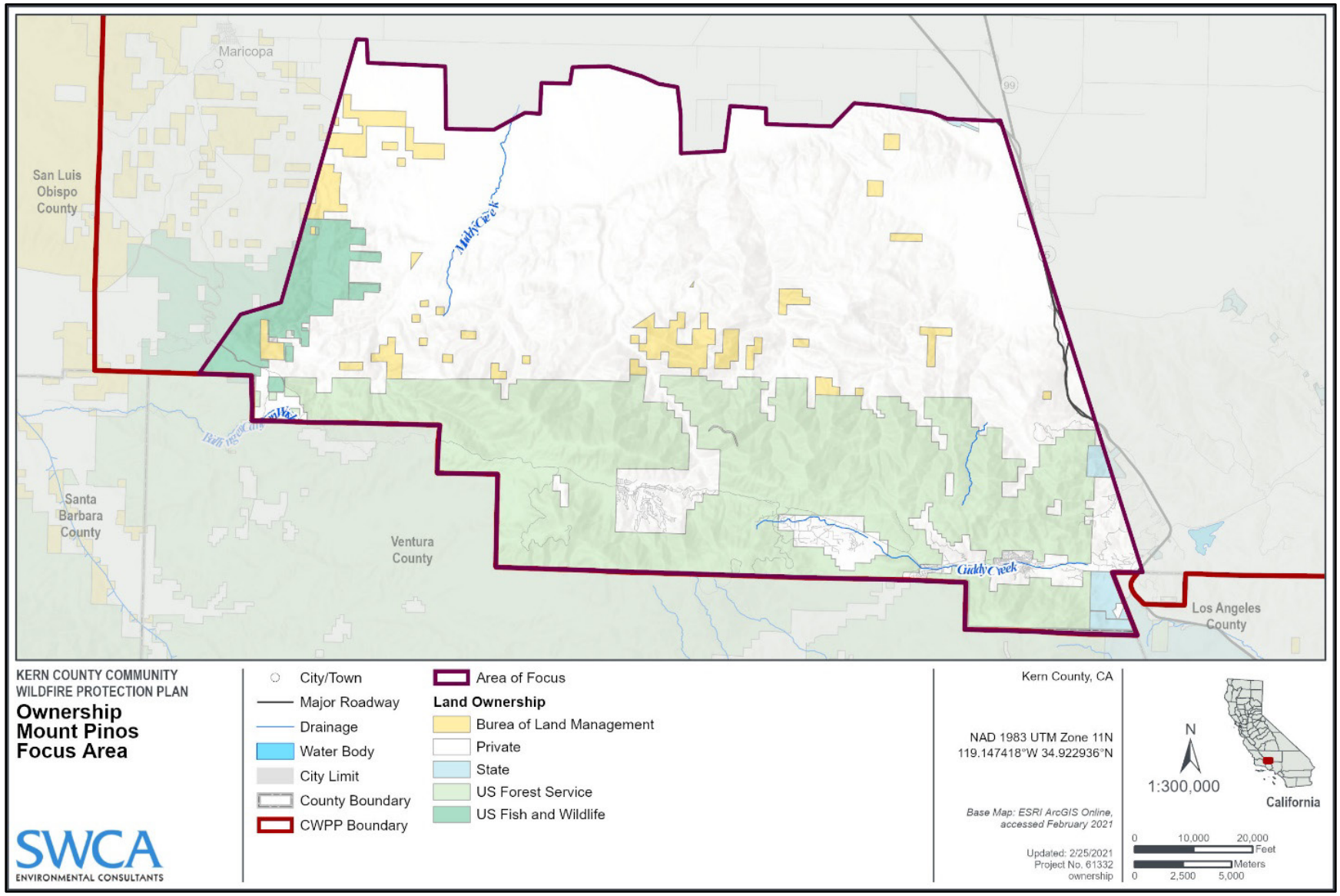
Map 22. Fire districts (Mount Pinos focus area).



Map 23. Ownership (Lake Isabella focus area).



Map 24. Ownership (Tehachapi focus area).



Map 25. Ownership (Mount Pinos focus area).

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APPENDIX C:

Core Team List

Name	Organization
Craig Murphy	Kern County Planning and Natural Resources
Wendy Benson	Kern County Fire Department, Office of Emergency Services
Zack Bittle	Kern County Sheriff's Office, Search and Rescue Explorers
Jeannine Giuffre	Tehachapi Resource Conservation District
Corey Regan	Kern County Fire Department
Jeff Gletne	Kern County Fire Department
David Brinsfield	BLM
Ryan Edmonson	BLM
Shane Santos	BLM
Burns Brimhall	BLM
Greg Thompson	USFS - Los Padres NF
Rebecca Dykes	USFS - Los Padres NF
John Lange	USFS - Sequoia NF
Angel Prieto	USFS - Sequoia NF
Chris Bockey	SWCA Environmental Consultants
Victoria Amato	SWCA Environmental Consultants
Elizabeth Hitzfelder	SWCA Environmental Consultants
Arianna Porter	SWCA Environmental Consultants
Breanna Plucinski	SWCA Environmental Consultants
Montiel Ayala	SWCA Environmental Consultants

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APPENDIX D:

Community Descriptions and Hazard Ratings

KERN COUNTY
WILDLAND URBAN INTERFACE COMMUNITIES
COMMUNITY ASSESSMENT SUMMARIES

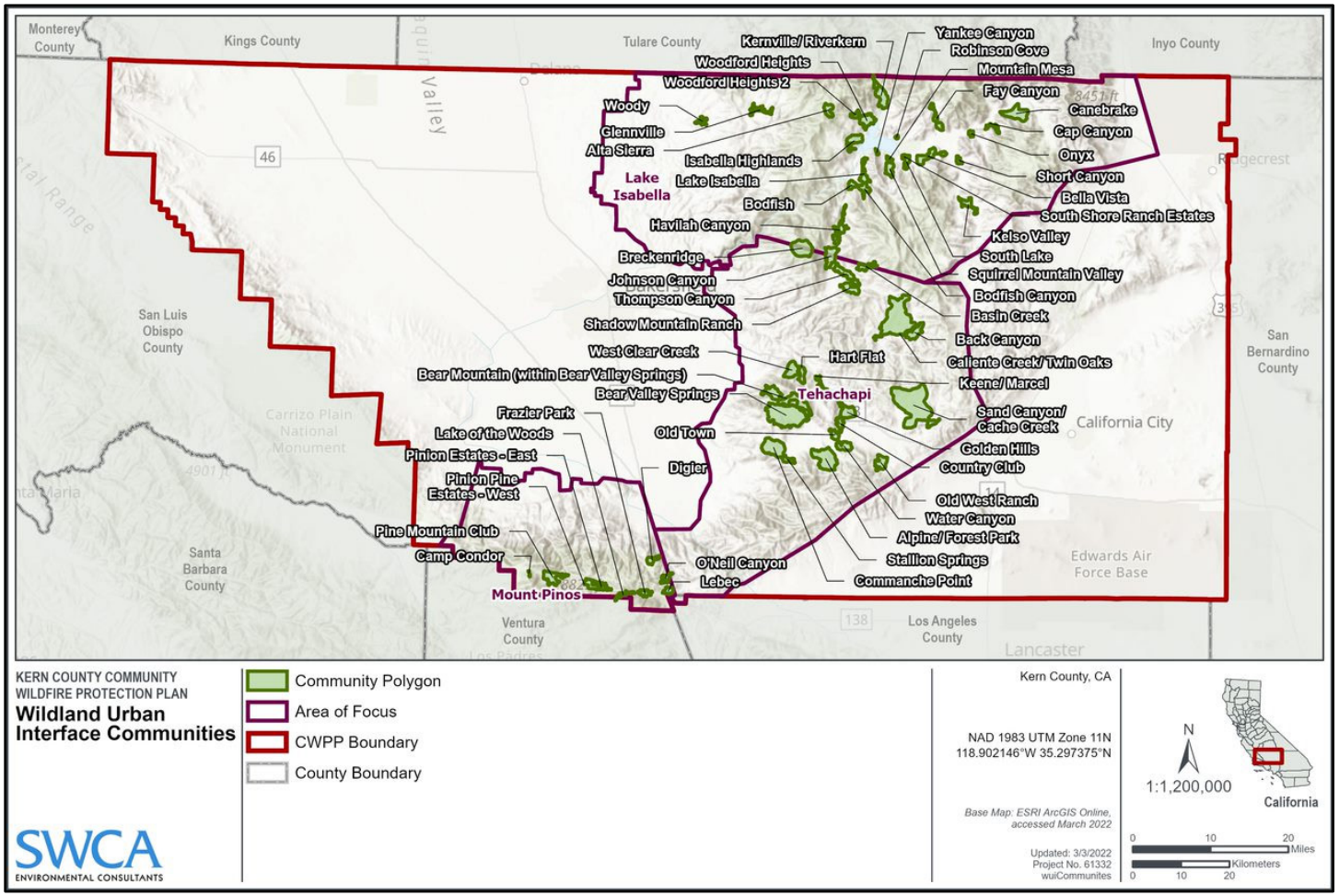


Figure D.1. Kern County CWPP polygon delineations.

CAMP CONDOR SUMMARY STATISTICS

Polygon/Community:	Camp Condor	**Building count:**	23
Land Area (acres):	46.8	**Building Density (buildings/acre*):***	0.49

Percent of Polygon by Modeled Wildfire Risk

Low	Moderate	High	Extreme
9.8%	65.8%	23.3%	1.2%

Fire Station Statistics

Fire station: #58

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0 Portable Pumps: 0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – turnarounds present
- Building construction – class A roofs
- Deck and fencing – few decks present
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – gated access with one road in and out
- Ingress and egress – narrow roads, unsurfaced
- Street signs – not present
- Topography – moderate slope (10-20%)
- Topography – located within a narrow draw
- Vegetation – timber-litter understory with moderately dense timber and areas of dead and down
- Building construction – combustible
- Defensible space – limited
- Building set-back – limited set-back
- Deck and fencing – combustible
- Water source – no known water source
- Utility placement – both aboveground

Values at Risk	
• Residential properties • Seasonal use recreation facilities • Campgrounds – Camp Condor	
NFPA 1144 Final Rating	
Community Polygon Name	Total Score
Camp Condor	(99) high

Figure D.2. Dispersed ranch homes in a canyon. Many homes have limited defensible space.
Source: Google.

PINE MOUNTAIN CLUB SUMMARY STATISTICS

Polygon/Community:	Pine Mountain Club	**Building count:**	2,186
Land Area (acres):	1,735.5	**Building Density (buildings/acre):**	1.26

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
2.2%	58.3%	38.5%	0.3%

Fire Station Statistics

Fire station #58

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0 Portable Pumps: 0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 27%
- 0.5-1.0 (mi.): 27%
- 1.0-1.5 (mi.): 25%
- >1.5 (mi.): 21%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – one road intersecting the community, accessible through the east or west
- Ingress and egress – surfaced road
- Street signs – present
- Building construction – class A roofs
- Water source – well marked hydrants
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – steep and narrow roads
- Street signs – non reflective
- Fire access – no turnaround in most driveways
- Topography – Community located in steep mountainous topography. Slopes at 100% in some areas. Many steep and narrow draws.
- Vegetation – Heavy fuel load of sage brush, juniper brush, juniper trees and pine trees. Dense fuel loading along most roads.
- Building construction – combustible siding
- Decking and fencing – combustible decks over hillsides with vegetation below decks
- Defensible space – minimal defensible space around almost every structure.

	Homes built within draws and on steep slopes with vegetation <30 feet from home • Structures with highly combustible wood shake roofs • Utilities – both above ground. Propane tanks with vegetation or wooden boxes over them.

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Pine Mountain Club	126 (extreme)

Figure D.3. All homes have wood siding, some with exposed propane tanks. Many homes are situated mid-slope with fuels below.

Source: Google.

PINION PINE ESTATES – WEST SUMMARY STATISTICS

Polygon/Community:	Pinion Pine Estates – West	**Building count:**	216
Land Area (acres):	1,111.5	**Building Density (buildings/acre):**	0.19

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
10.6%	33.1%	56.1%	0.2%

Fire Station Statistics

Fire station: #57

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	0	0
Type 7:	0	0

Port-A-Tanks: 0 Portable Pumps: 0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Fire access – driveways <300ft with turnarounds
- Street signs – present
- Building construction – class A roofs
- Defensible space – good separation between structures
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – narrow, unsurfaced roads
- Street signs – non reflective
- Topography – Center of community is primarily flat / minimal slope with gently rising terrain to the south.
- Vegetation – Center of community is moderately dense sage brush. Perimeter of community has 60 – 80 ft pines with sage brush / grass understory.
- Building construction – combustible siding
- Decking and fencing – combustible decks and fencing
- Defensible space – most homes have at least 30 feet but not more than 70.
- Water source – no known water source
- Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Pinion Pine Estates – West	79 (High)

Figure D.4. Area has mainly flat topography with scattered sagebrush. Narrow roads are lined with sagebrush.
Source: Google.

PINION PINE ESTATES – EAST SUMMARY STATISTICS

Polygon/Community:	Pinion Pine Estates – East	**Building count:**	345
Land Area (acres):	558.82	**Building Density (buildings/acre):**	0.62

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
10.3%	34.7%	54.0%	1.0%

Fire Station Statistics

Fire station: #57

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	0	0
Type 7:	0	0

Port-A-Tanks: 0 Portable Pumps: 0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Surfaced road, low grade
- Street signs – present
- Building construction – class A roofs
- Water source – hydrants present

Negative Attributes (High Scores)
- Ingress and egress – limited turnarounds
- Street signs – non reflective
- Topography – 31-40% slope within 300 feet of structures
- Vegetation – mix of fuels including pines, cedar, and juniper on slopes and ridge tops. Sagebrush along the flats and base of slope.
- Building construction – combustible siding
- Decking and fencing – combustible decks and fencing
- Defensible space – most homes have less than 30 feet around structure
- Utilities – both above ground
- Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Pinion Pine Estates – East	111 (High)

Figure D.5. Area with ridge bisecting the center of the community with a variety of vegetation types and densities. Homes have insufficient defensible space, and many are close to hillsides with decks over the slopes.

Source: Google.

LAKE OF THE WOODS SUMMARY STATISTICS

Polygon/Community:	Lake of the Woods	**Building count:**	527
Land Area (acres):	446.7	**Building Density (buildings/acre):**	1.18

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
26.5%	46.6%	26.7%	0.2%

Fire Station Statistics

Fire station: #57

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	0	0
Type 7:	0	0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 1%
- 0.5-1.0 (mi.): 14%
- 1.0-1.5 (mi.): 10%
- >1.5 (mi.): 75%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – surfaced roads
- Building construction – class A roofs
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – steep and narrow roads
- Street signs – non reflective, inconsistent / often missing
- Fire access – no turnaround in most driveways
- Topography – Community divided by Frazier road. South side of road is built along north aspect crossing multiple spur ridges. Some areas at 60% slope with steep drainages. North side of road has less slope and south aspect
- Vegetation – Fuel on ridges is well spaced but timber in drainages is very dense. Brush and ladder fuels present.
- Building construction – combustible siding
- Decking and fencing – combustible decks over hillsides with vegetation below decks

	• Defensible space – minimal defensible space • Defensible space – Houses are built close together with material stacked between homes. • Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Lake of the Woods	104 (high)

Figure D.6. Majority of homes have limited defensible space. Structures have poor separation in between; high probability of structure-to-structure ignition.

Source: Google.

FRAZIER PARK SUMMARY STATISTICS

Polygon/Community:	Frazier Park	**Building count:**	1,530
Land Area (acres):	613.6	**Building Density (buildings/acre*):***	2.5

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
1.1%	50.3%	47.4%	1.2%

Fire Station Statistics

Fire station: #57

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	0	0
Type 7:	0	0

Port-A-Tanks: 0 Portable Pumps: 0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 18%
- 0.5-1.0 (mi.): 36%
- 1.0-1.5 (mi.): 35%
- >1.5 (mi.): 10%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Street signs – present
- Building construction – class A roofs
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – one road in and out. Only one paved road in and out on south side. Most residents will have to use one road on north side.
- Ingress and egress – steep, narrow, unsurfaced roads
- Street signs – non reflective
- Fire access – no turnaround in most driveways
- Topography – Steep terrain on both the north and south side of Frazier Road. Center of community in flats but houses outside the center are in steep slopes and draws.

	• Vegetation – North side of community is on a south aspect with pockets of dense sage brush and scattered pines. South side is a north aspect with dense oaks, pines and brush with vegetation right up against the road. • Building construction – combustible siding • Decking and fencing – combustible decks over hillsides with vegetation below decks • Defensible space – minimal defensible space • Defensible space – Center is dense and suburban with homes within 10ft of each other. Outer edges are typical WUI with poor defensible space. • Utilities – both above ground.

Values at Risk	
• Residential properties – dense suburban development	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Frazier Park	112 (high)

Figure D.7. Center of polygon has high density of homes with poor separation. Outer edge has dispersed homes with vegetation in between.

Source: Google.

O'NEIL CANYON SUMMARY STATISTICS

Polygon/Community:	O'Neil Canyon	**Building count:**	357
Land Area (acres):	624.4	**Building Density (buildings/acre):**	0.6

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
16.8%	44.9%	35.5%	2.8%

Fire Station Statistics

Fire station #56

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0 Portable Pumps: 0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – surfaced roads
- Street signs – present
- Building construction – class A roofs
- Topography – houses are primarily built in the flats with some just above the toe of the slope
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – one road in and out.
- Ingress and egress – areas of steep, narrow roads
- Street signs – non reflective
- Fire access – no turnaround in most driveways
- Topography – perimeter of community turns into steep draws and box canyons. Many of the homes are at the base/entrances of draws. Canyon sides are 60-100% slope.
- Vegetation – Light flashy fuels consisting of grass and sage brush with scattered oaks and scrub oak
- Building construction – combustible siding
- Decking and fencing – combustible decks
- Defensible space – minimal defensible space
- Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
O'Neil Canyon	99 (high)

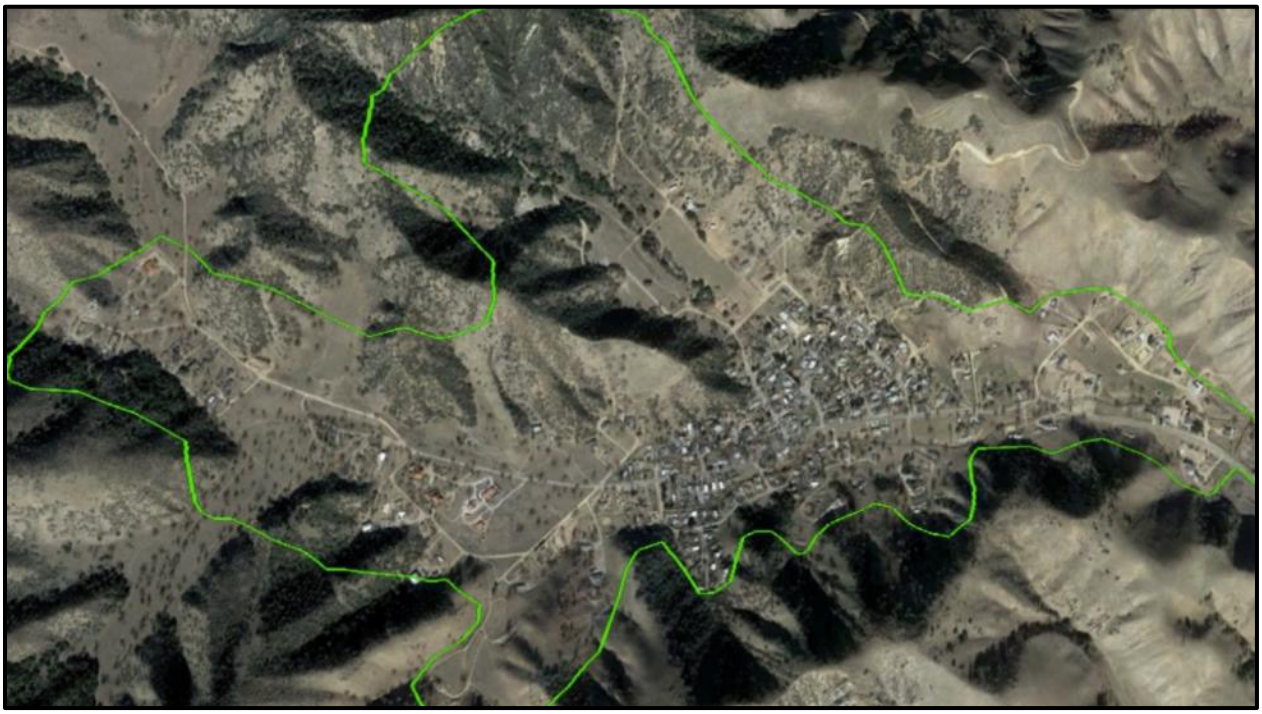


Figure D.8. Homes are mostly located in the flats of the canyon; some are just above the base of the slope. Mainly light and flammable fuels in the area, which consist of grass and sage brush with scattered oaks.

Source: Google.

LEBEC SUMMARY STATISTICS

Polygon/Community:	Lebec	**Building count:**	129
Land Area (acres):	558.9	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
13.5%	26.5%	49.2%	10.8%

Fire Station Statistics

Fire station #56

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 28%
- >1.5 (mi.): 72%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Fire access – large lots with turnarounds
- Defensible space – 30 to 70 ft of defensible space on most structures. Homes are well spaced
- Building construction – class A roofs
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – steep, unsurfaced, narrow roads
- Ingress and egress – primary road is mid-slope with vegetation on both sides
- Street signs – not present
- Vegetation – light flashy fuels consisting of grass, brush and scrub oak. High fuel continuity.
- Topography – Steep hillsides over 45% slope. Many canyons and small draws
- Building construction – combustible
- Deck and fencing – combustible decks built on slopes with fuel below
- Water source – no known water source
- Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Lebec	92 (high)

Figure D.9. Narrow roads are lined with dense brush. Primary road is mid-slope. Vegetation consists of grass, sagebrush, and shrub oak.

Source: Google.

DIGIER SUMMARY STATISTICS

Polygon/Community:	Digier	**Building count:**	41
Land Area (acres):	622	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
4.4%	71.1%	24.4%	0.1%

Fire Station Statistics

Fire station #56: Fulltime Firefighters: 9*; On-call Firefighters: 0; Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Steet signs – present
- Building construction – class A roofs
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – unsurfaced, steep, narrow, mid-slope road. Poorly maintained.
- Fire access – long driveways with dense vegetation and unknow turnarounds. Houses located far off main road (¼ mile for some).
- Street signs – non reflective
- Vegetation – South aspect of canyon is grass and sage. Drainages and north aspects of canyon are dense with oak and scrub oak. High fuel continuity with ladder fuels. Vegetation against steep mid-slope access road.
- Topography – Steep canyon with slopes well over 100%. Multiple draws within larger canyon.

	• Defensible space – inadequate defensible space when compared with potential fire behavior. Houses either perched on spur ridges within canyon or set into hillside. Heavy fuel loading leading up to homes. • Building construction – combustible • Deck and fencing – combustible deck built over hillside with fuel below • Water source – no know water source • Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Digier	123 (extreme)

Figure D.10. Remote community up on a steep canyon with poor access. Access is limited to a poorly maintained, winding dirt road.

Source: Google.

STALLION SPRINGS SUMMARY STATISTICS

Polygon/Community:	Stallion Springs	**Building count:**	213
Land Area (acres):	579.4	**Building Density (buildings/acre):**	0.4

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.1%	13.8%	43%	43.1%

Fire Station Statistics

Fire station: #18

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 16%
- 0.5-1.0 (mi.): 51%
- 1.0-1.5 (mi.): 30%
- >1.5 (mi.): 3%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – surfaced and minimal slope
- Street signs – present
- Vegetation – minimal ground fuels with scattered large oaks
- Building construction – class A roofs
- Building construction – primarily stucco with some wood siding
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 18)

Negative Attributes (High Scores)
- Ingress and egress – narrow roads
- Street signs – non reflective, combustible wood
- Fire access – no turnaround in most driveways
- Vegetation – drainages have dense oak overstory
- Topography – mild slope / flat in center but east and west side become sloped with hills and draws
- Defensible space – minimal defensible space. Homes are built close to each other in center of community
- Decking and fencing – combustible decks with vegetation below
- Utilities – both above ground.

Values at Risk	
• Residential properties – suburban style development	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Stallion Springs	88 (high)

Figure D.11. Dense housing at the center of community; high chance for structure-to-structure spread. Exposed propane tanks noted in some areas.

Source: Google.

COMMANCHE POINT SUMMARY STATISTICS

Polygon/Community:	Commanche Point	**Building count:**	553
Land Area (acres):	3,273.7	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
1.3%	6.9%	55%	36.8%

Fire Station Statistics

Fire station: #18

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 0
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
0-0.5 (mi.): 3%
0.5-1.0 (mi.): 14%
1.0-1.5 (mi.): 19%
>1.5 (mi.): 63%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – 2 or more roads in and out
- Ingress and egress – surfaced roads
- Street signs – present
- Vegetation – ridges have sparse grass a few large well separated oaks. Majority of community has well-spaced oaks with grass understory.
- Defensible space – 30 to 70 ft of defensible space on most structures. Homes are well spaced
- Building construction – class A roofs
- Building construction – primarily stucco with some wood siding
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 58)

Negative Attributes (High Scores)

- Ingress and egress – steep, narrow roads
- Fire access – narrow driveways with no turnaround in most cases
- Street signs – non reflective
- Vegetation – draws contain dense oaks with canopies touching.
- Topography – rolling topography with multiple drainages and steep exposed cliff faces on western edge. Many micro draws and saddles.
- Deck and fencing – combustible decks built on slopes with fuel below
- Utilities – both above ground

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Commanche Point	85 (high)

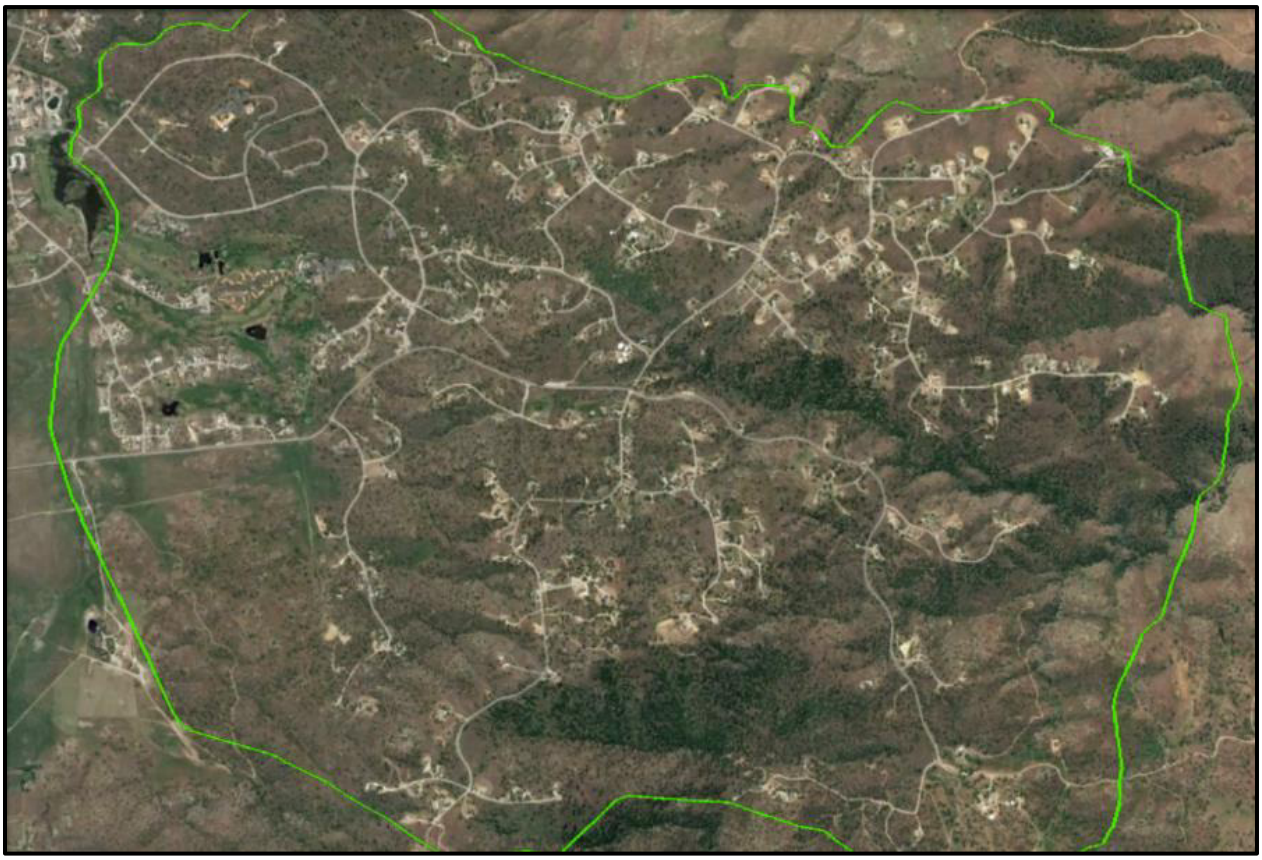


Figure D.12. Community is located in rolling topography with steep, exposed cliffs. Many narrow driveways with limited opportunities for turnarounds.

Source: Google.

BEAR VALLEY SPRINGS SUMMARY STATISTICS

Polygon/Community:	Bear Valley Springs	**Building count:**	2,791
Land Area (acres):	7,335	**Building Density (buildings/acre*):***	0.4

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
3.9%	10.5%	54.3%	31.3%

Fire Station Statistics

Fire station: #16

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
- 0-0.5 (mi.): 7%
- 0.5-1.0 (mi.): 17%
- 1.0-1.5 (mi.): 24%
- >1.5 (mi.): 52%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – majority of the community has surfaced roads with mild slope, some steeper roads to access homes on ridges that surround valley
- Steet signs – present
- Fire access – short driveways with turnarounds
- Defensible space – 30 to 70 ft of defensible space on most structures
- Building construction – class A roofs
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 16)
- Utilities – below ground gas

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Street signs – non reflective
- Vegetation – primarily grass in valley then transitions to sage brush and scattered oaks with grass understory along the ridges. Dense fuel in the drainages
- Topography – Broad valley with rising terrain on all sides. Grade of slopes surrounding valley is 30-70%
- Building construction – combustible, occasional stucco but mostly wood
- Building construction – majority of the homes are built in the valley, but homes also dot the hillsides surrounding the valley and some are perched on ridge tops
- Deck and fencing – combustible

Values at Risk	
• Residential properties – urban/suburban style development	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Bear Valley Springs	67 (moderate)

Figure D.13. Broad valley surrounded by mountains and ridges. Homes are located on the valley floor and side slopes.

Source: Google.

BEAR MOUNTAIN (WITHIN BEAR VALLEY SPRINGS) SUMMARY STATISTICS

Polygon/Community:	Bear Mountain (within Bear Valley Springs)	**Building count:**	633
Land Area (acres):	3,933.2	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
7.4%	16.3%	41.8%	34.5%

Fire Station Statistics

Fire station: #16

Fulltime Firefighters: 9*

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 0
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

*9 firefighters are assigned to the station but only 3 are on duty per day

Dist. From Fire Station
0-0.5 (mi.): 0%
0.5-1.0 (mi.): 3%
1.0-1.5 (mi.): 12%
>1.5 (mi.): 85%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – surfaced roads
- Street signs – present
- Building construction – class A roofs
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 16); good access to homes on the valley floor

Negative Attributes (High Scores)

- Ingress and egress – main road for ingress and egress comes from Bear Springs Valley. All driveways and other roads eventually funnel onto this main road.
- Ingress and egress – fairly steep and narrow road
- Street signs – non reflective
- Fire access – no turnaround in most driveways
- Vegetation – at lower elevation primarily grass, sage and scattered oaks. Higher up transitions to brush and scrub oak with high fuel loading in drainages. At highest point occasional dense stands of Ponderosa Pine

	• Topography – very steep slopes with many draws and spur ridges off the main ridge • Building construction – combustible siding • Decking and fencing – combustible decks built over hillsides with fuel below • Defensible space – minimal defensible space • Utilities – both above ground; most homes with propane tanks • Organized response – most homes on the mountains have limited access

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Bear Mountain (within Bear Valley Springs)	100 (high)

Figure D.14. Community is situated in the upper elevations of Bear Mountain. Access is limited to roads with steep grades. High probability of bottleneck during evacuation.
Source: Google.

WEST CLEAR CREEK SUMMARY STATISTICS

Polygon/Community:	West Clear Creek	**Building count:**	186
Land Area (acres):	1,608.9	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
19.4%	22.8%	55.9%	0%

Fire Station Statistics

Fire station: #11

Fulltime Firefighters: 3

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 2

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – surfaced roads
- Street signs – present
- Building construction – class A roofs
- Building construction – fire resistive siding, primarily stucco with some wood
- Defensible space – most structures have at least 30 feet but could still use improvement
- Water source – water tanks present but sporadic

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – very steep and narrow roads
- Street signs – non reflective
- Fire access – Long driveways with no turnarounds. Evacuation of area would be challenging due to very narrow and steep roads
- Vegetation – timber with grass understory. Moderate density.
- Topography – Steep slopes and drainages
- Deck and fencing – combustible decks built on slopes with fuel below
- Utilities – both above ground

Values at Risk

- Residential properties

NFPA 1144 Final Rating

Polygon Name	Total Score
West Clear Creek	98 (high)

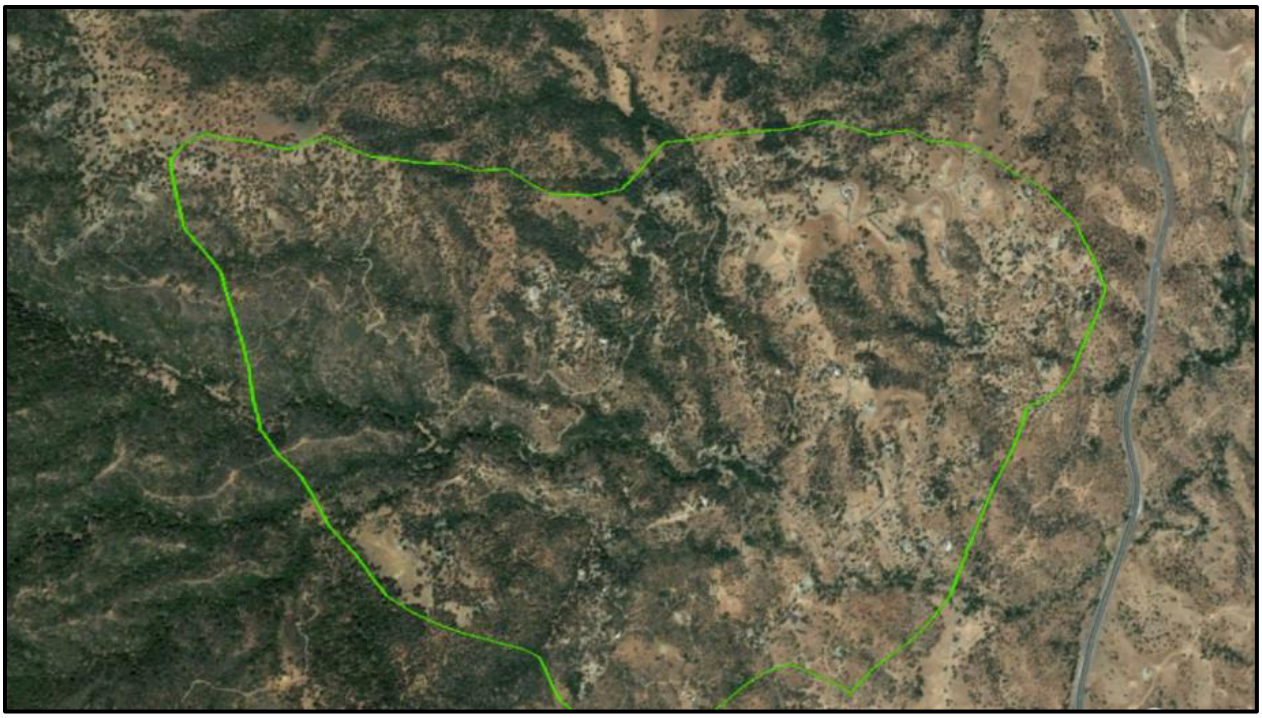


Figure D.15. Community is in the northern foothills of Bear Mountain. Access constrained to very steep and narrow paved roads.

Source: Google.

HART FLAT SUMMARY STATISTICS

Polygon/Community:	Hart Flat	**Building count:**	95
Land Area (acres):	849.7	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.1%	18.7%	61.5%	19.7%

Fire Station Statistics

Fire station: #11

Fulltime Firefighters: 3

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 2

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 1%
- >1.5 (mi.): 99%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – main roads are 24ft wide
- Ingress and egress – surfaced roads with minimal grade
- Street signs – present and reflective
- Fire access – short driveways with turnarounds
- Topography – community located in the flats of a broad valley – mild slope where homes are located. However steep slopes surround valley.
- Building construction – class A roofs
- Building construction – fire resistive, mostly stucco with occasional wood
- Water source – dwarf hydrants present

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Vegetation – grassy oak woodlands with occasional pines. Dense in drainages and fuel often right up against road
- Defensible space – less than 30 feet for most homes
- Building construction – combustible
- Deck and fencing – combustible decks with fuel below
- Organized response – fire station great than 5 miles away

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Hart Flat	79 (high)

Figure D.16. Homes are situated along eastern elevations of Bear Mountain. Many homes have extremely limited defensible space.

Source: Google.

KEENE / MARCEL SUMMARY STATISTICS

Polygon/Community:	Keene / Marcel	**Building count:**	123
Land Area (acres):	998.5	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
4.1%	14.5%	65.1%	16.3%

Fire Station Statistics

Fire station: #11

Fulltime Firefighters: 3

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 0
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 2

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0 Portable Pumps: 0

Dist. From Fire Station
0-0.5 (mi.): 16%
0.5-1.0 (mi.): 16%
1.0-1.5 (mi.): 5%
>1.5 (mi.): 62%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – primarily surfaced roads, not steep. However, homes off main road have dirt road access.
- Topography – mild to moderate slope

Negative Attributes (High Scores)

- Ingress and egress – one road in and out.
- Ingress and egress – narrow roads
- Street signs – not present or infrequent
- Fire access – no turnaround in most driveways
- Vegetation – primarily grass with scattered oaks and pines
- Topography – rolling terrain at the base of a broad valley
- Building construction – mix of roofing material, much of it is Class B
- Building construction – combustible siding
- Building construction – homes built close to each other with debris stacked between homes
- Decking and fencing – combustible decks build over hillsides with fuel below
- Defensible space – minimal defensible space
- Utilities – both above ground.
- Water source – no know water source

Values at Risk	
• Residential properties • Historical values – Cesar Chavez National Monument	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Keene / Marcel	112 (high)

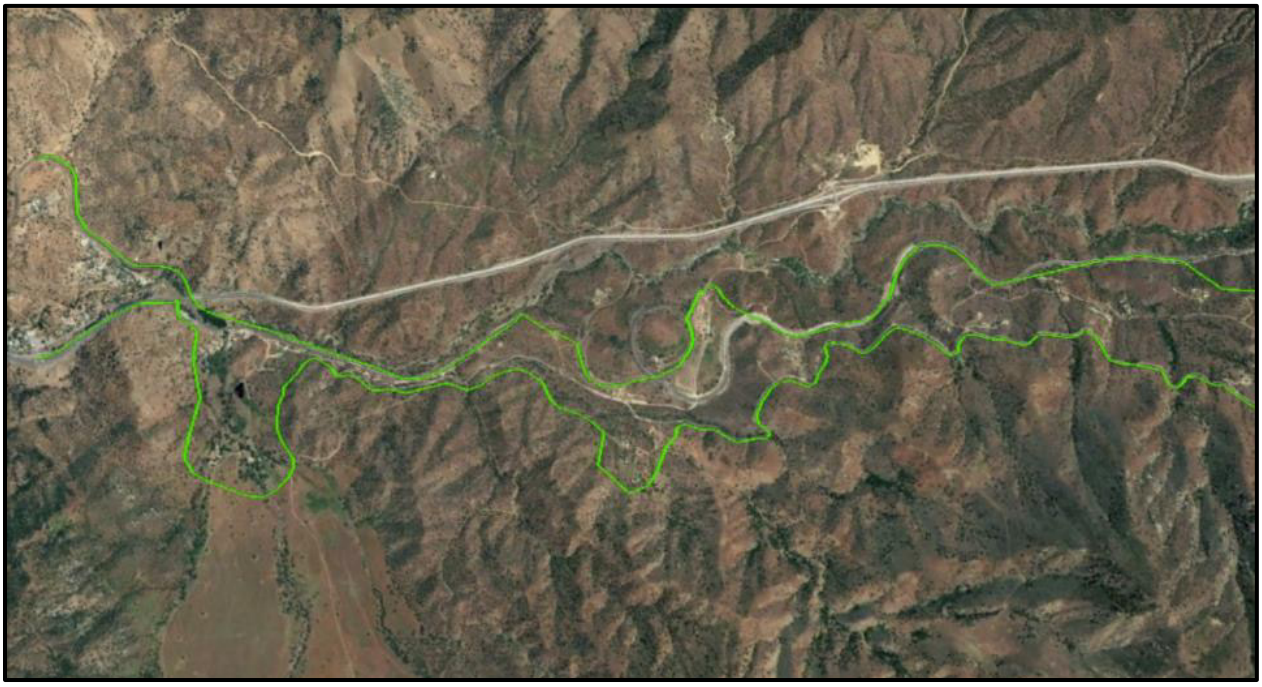


Figure D.17. Scattered homes are located west of Union Pacific Railroad. Some homes have poor separation, many with combustible siding materials.

Source: Google.

GOLDEN HILLS SUMMARY STATISTICS

Polygon/Community:	Golden Hills	**Building count:**	386
Land Area (acres):	1,505.5	**Building Density (buildings/acre):**	0.3

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
13.9%	14.1%	69.5%	2.5%

Fire Station Statistics

Fire station: #12

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 1
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 1

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – wide roads
- Street signs – present
- Defensible space – 30 to 70 ft of defensible space on most structures. Homes are well spaced
- Vegetation – Grass with fairly low fuel loading
- Topography – mostly flat with areas of rolling terrain but minimal slope
- Building construction – class A roofs
- Organized response – fire station within 5 miles (KCFD Station 12)

Negative Attributes (High Scores)
- Ingress and egress – primarily unsurfaced roads
- Fire access – no turnarounds in most driveways
- Street signs – non reflective
- Building construction – combustible
- Deck and fencing – combustible
- Water source – no known water source
- Utilities – both above ground

Values at Risk

- Residential properties

NFPA 1144 Final Rating

Polygon Name	Total Score
Golden Hills	63 (moderate)

Figure D.18. Western portion of community is backed up against the east facing slopes of Black Mountain. Center of polygon has large parcel densities and low fuel loading.

Source: Google.

COUNTRY CLUB SUMMARY STATISTICS

Polygon/Community:	Country Club	**Building count:**	808
Land Area (acres):	767.8	**Building Density (buildings/acre):**	1.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
26.1%	16.6%	57.2%	0.2%

Fire Station Statistics

Fire station: #12

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 1
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 1

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – roads 20-24 feet wide
- Ingress and egress – surfaced roads
- Steet signs – present and reflective
- Building construction – class A roofs
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 12)

Negative Attributes (High Scores)
- Ingress and egress – sections of steep roads
- Fire access – no turnarounds in most driveways
- Vegetation – grass with scattered oak and pines. Dense in some drainages
- Topography – community lies at the base and toe of the east facing slope of Black Mountain. East side of community is in steeper terrain with many small draws.
- Defensible space – minimal defensible space. Homes built close to each other with mature vegetation mixed in.
- Building construction – combustible
- Deck and fencing – combustible deck built over hillside with fuel below
- Water source – no known water source
- Utilities – both above ground

Values at Risk	
• Residential properties – dense suburban structure	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Country Club	94 (high)

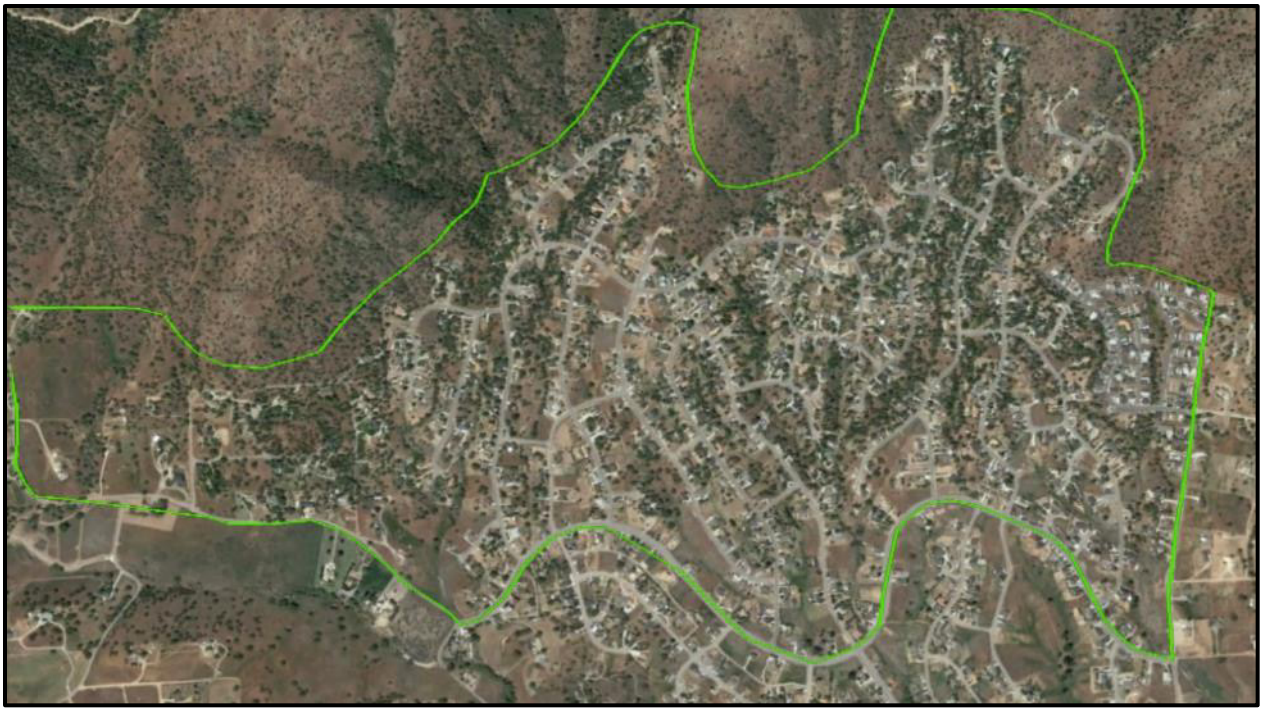


Figure D.19. Relatively high density of suburban structures with tight spacing and mature vegetation throughout. Complex road networks noted. One road in and out of polygon.
Source: Google.

OLD TOWN SUMMARY STATISTICS

Polygon/Community:	Old Town	**Building count:**	67
Land Area (acres):	642.5	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
1.7%	1.7%	85.9%	10.7%

Fire Station Statistics

Fire station: #12

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 1
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 1

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – roads 20-24 feet wide
- Street signs – present and reflective
- Building construction – class A roofs
- Water source – hydrants located along Old Town Road
- Organized response – fire station within 5 miles (KCFD Station 12)

Negative Attributes (High Scores)
- Ingress and egress – one road in and out.
- Ingress and egress – unsurfaced roads
- Fire access – no turnaround in most driveways
- Vegetation – grassy oak woodlands. Most dense along Old Town Road and more dispersed on the west side of the community
- Topography – mix of terrain with rolling hills and multiple valleys and ridgelines.
- Defensible space – minimal defensible space
- Building construction – combustible siding
- Decking and fencing – combustible decks built over hillsides with fuel below
- Utilities – both above ground. Portions of the community have underground gas

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Old Town	94 (high)

Figure D.20. Small community north of West Valley Blvd. Jury Street is the only access to remote WUI areas. Many homes have extremely limited defensible space.

Source: Google.

WATER CANYON SUMMARY STATISTICS

Polygon/Community:	Water Canyon	**Building count:**	282
Land Area (acres):	1,129	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
6.6%	10.5%	59.8%	24%

Fire Station Statistics

Fire station: #12

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 1
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 1

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – surfaced roads
- Street signs – present
- Building construction – class A roofs
- Organized response – fire station within 5 miles (KCFD Station 12)

Negative Attributes (High Scores)
- Ingress and egress – steep, narrow roads
- Street signs – non reflective
- Fire access – no turnarounds in most driveways
- Vegetation – grass understory with moderately dense oaks throughout. Canopies often touching or within 10 feet of each other.
- Topography – north aspect foothills. Many small but drainages and ridges run halfway into the community before diminishing.
- Defensible space – minimal defensible space
- Building construction – combustible and homes not well marked
- Deck and fencing – combustible decks built on slopes with fuel below
- Water source – no know water source
- Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Water Canyon	106 (high)

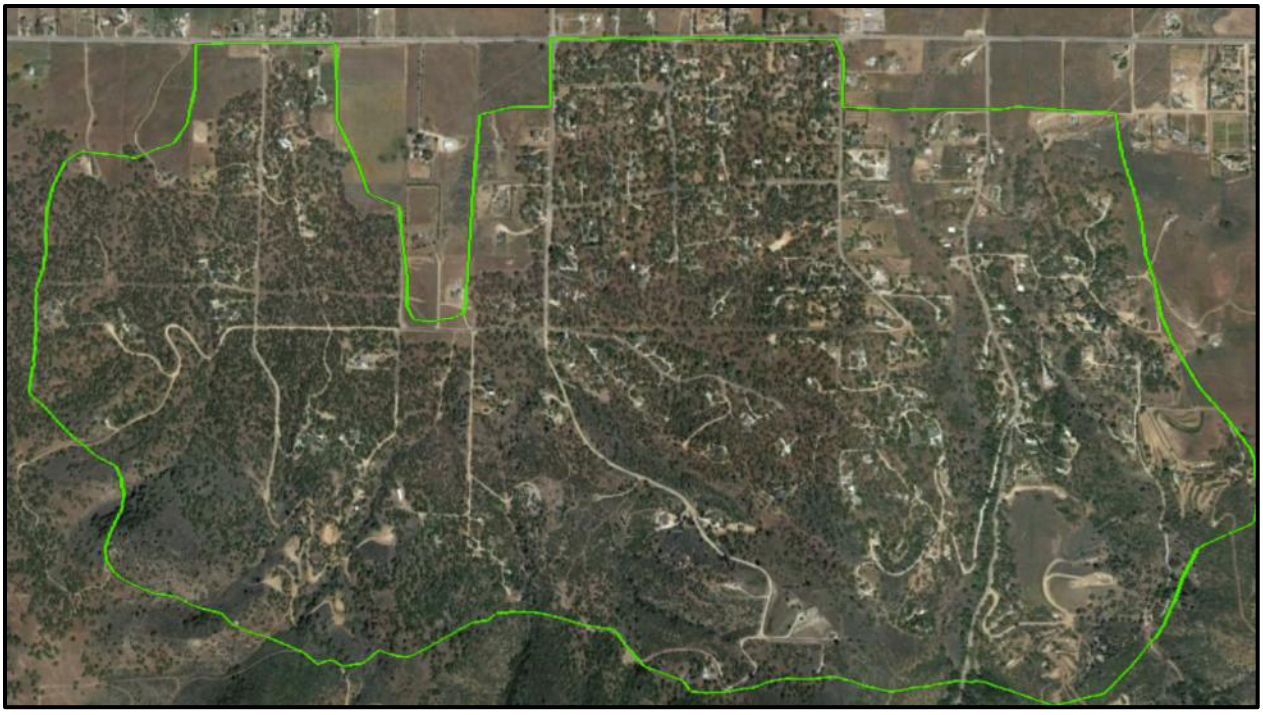


Figure D.21. Community located along sloping foothills. Homes are distributed on large lots with dense overstory vegetation. Many canopies have poor separation.

Source: Google.

OLD WEST RANCH SUMMARY STATISTICS

Polygon/Community:	Old West Ranch	**Building count:**	62
Land Area (acres):	1,316.1	**Building Density (buildings/acre*):***	0.05

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.8%	2.2%	26.%	71%

Fire Station Statistics

Fire station: #12

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 1
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 1

Port-A-Tanks: 1

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
0-0.5 (mi.): 0%
0.5-1.0 (mi.): 0%
1.0-1.5 (mi.): 0%
>1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – roads 20-24 feet wide
- Fire access – long driveways but turnarounds are present
- Building construction – class A roofs
- Organized response – fire station within 5 miles (KCFD Station 12)

Negative Attributes (High Scores)

- Ingress and egress – 1 primary road in and out
- Ingress and egress – unsurfaced
- Fire access – gate blocks main access
- Street signs – not present
- Vegetation – grass and brush with occasional oaks.
- Topography – homes dispersed across numerous drainages and ridges at the mouth of Blackburn Canyon
- Defensible space – minimal defensible space around most homes
- Building construction – combustible
- Deck and fencing – combustible deck built over hillside with fuel below
- Water source – no know water source
- Utilities – both above ground

Values at Risk	
• Residential properties / gated community	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Old West Ranch	103 (high)

Figure D.22. Private community with gated access. Homes are scattered throughout drainages and ridges, many with severely limited defensible space.

Source: Google.

ALPINE/FOREST PARK SUMMARY STATISTICS

Polygon/Community:	Alpine/Forest Park	**Building count:**	335
Land Area (acres):	3,383.3	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
1.9%	10.9%	56.6%	30.6%

Fire Station Statistics

Fire station: #18

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – some location have signs indicating evacuation routes
- Street signs – present and reflective
- Building construction – class A roofs
- Organized response – fire station within 5 miles (KCFD Station 18)

Negative Attributes (High Scores)
- Ingress and egress – narrow roads, steep and often unsurfaced
- Fire access – no turnaround in most driveways
- Vegetation – grass understory with large oak trees. Tight spacing of oak trees in drainages and north aspects. Trees overhanging road and structures. Southern portion of community more of a brush component.
- Topography – varying steep terrain. Many steep draws and spur ridges with multiple different peaks in the community
- Defensible space – minimal defensible space.
- Building construction – combustible siding
- Building construction – appears to have many seasonal use homes
- Decking and fencing – combustible decks with vegetation below

• Water source – no known water source • Utilities – both above ground

Values at Risk
• Residential properties • Tourism values – seasonal use homes

NFPA 1144 Final Rating	
Polygon Name	Total Score
Alpine Forest Park	111 (high)

Figure D.23. Mountain home community on the Cummings Mountains. Access is limited to narrow roads with limited turnarounds. Exposed propane tanks noted near homes.

Source: Google.

SAND CANYON / CACHE CREEK SUMMARY STATISTICS

Polygon/Community:	Sand Canyon / Cache Creek	**Building count:**	500
Land Area (acres):	11,298	**Building Density (buildings/acre):**	0.04

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
3.9%	4.5%	83%	8.6%

Fire Station Statistics

Fire station: #12

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 1
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 1

Port-A-Tanks: 1

Portable Pumps: 0

Wildland Engines	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
0-0.5 (mi.): 0%
0.5-1.0 (mi.): 0%
1.0-1.5 (mi.): 0%
>1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – 2 or more roads in and out
- Ingress and egress – roads 20-24 feet wide and fairly flat
- Street signs – present and reflective
- Topography – rolling hills with mild to moderate slope.
- Building construction – class A roofs

Negative Attributes (High Scores)

- Ingress and egress – unsurfaced roads
- Fire access – no turnaround in most driveways
- Vegetation – heavy brush on hillsides and moderate bush and grass in the flats.
- Defensible space – minimal defensible space
- Building construction – combustible siding
- Deck and fencing – combustible decks built on slopes with fuel below
- Water source – small hydrants present in flats along main road but otherwise no know water sources
- Utilities – both above ground

Values at Risk

- Residential properties
- Riparian values

NFPA 1144 Final Rating	
Polygon Name	Total Score
Sand Canyon / Cache Creek	89 (high)

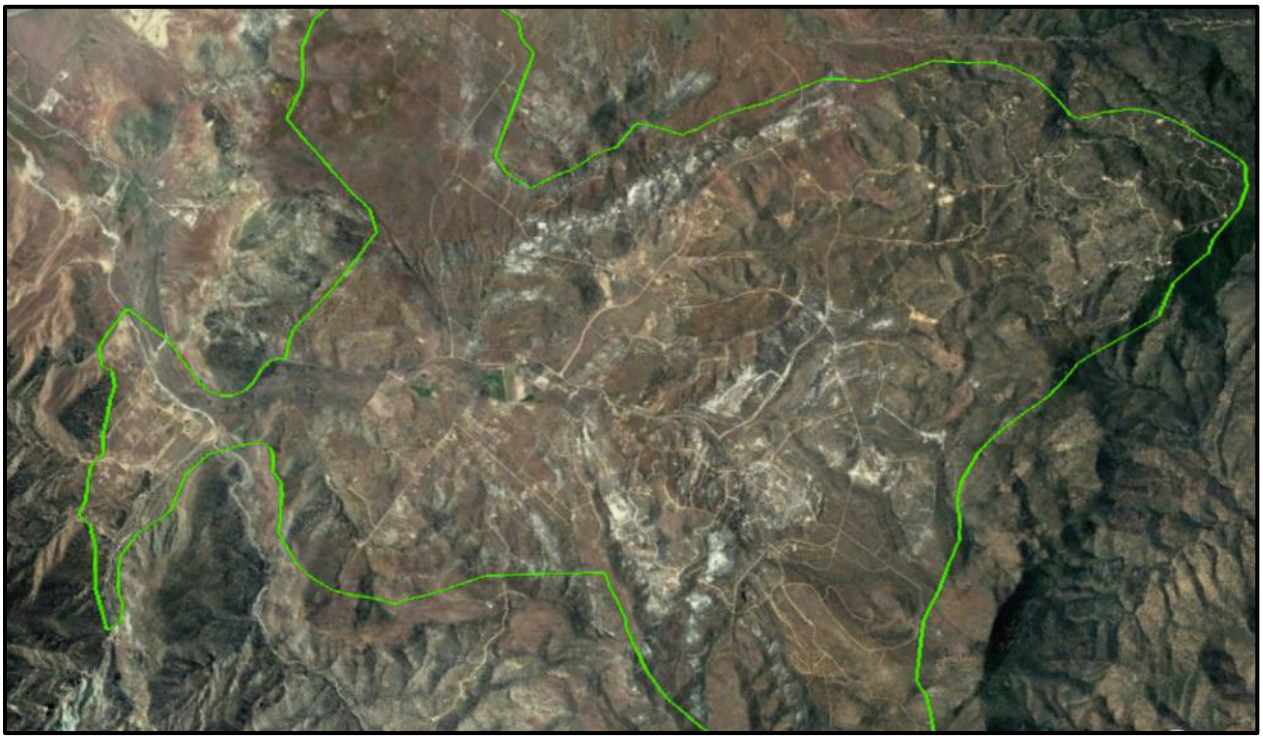


Figure D.24. Large, isolated, and scattered community within the Sand Creek Drainage. Some homes are located on flats, others on ridges and along steep hills. Exposed propane tanks noted.
Source: Google.

CALIENTE CREEK / TWIN OAKS SUMMARY STATISTICS

Polygon/Community:	Caliente Creek / Twin Oaks	**Building count:**	485
Land Area (acres):	8,988	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
3.7%	4%	82.8%	9.4%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 0
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
0-0.5 (mi.): 0%
0.5-1.0 (mi.): 2%
1.0-1.5 (mi.): 3%
>1.5 (mi.): 95%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – 2 or more roads in and out
- Steet signs – present
- Fire access – long driveways with turnarounds
- Vegetation – primarily low grasses with occasional brush and juniper
- Topography – large low-lying basin with mountains around perimeter. Rolling hills with minimal slope
- Defensible space – 30 to 70 ft of defensible space on most structures
- Building construction – class A roofs
- Building construction – mostly ranch homes that are well spaced / dispersed throughout community
- Organized response – fire station within 5 miles (KCFD Station 78)

Negative Attributes (High Scores)

- Ingress and egress – primary road into community is narrow and runs along a river drainage with steep walls on both sides
- Ingress and egress – narrow, unsurfaced roads
- Street signs – non reflective
- Building construction – combustible
- Deck and fencing – combustible
- Water source – no hydrants but water tanks present at many properties

Values at Risk	
• Residential properties • Agricultural/livestock values • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Caliente Creek / Twin Oaks	65 (moderate)

Figure D.25. Large, isolated, and scattered community with many ranching and grazing properties. Area has network of dirt roads with a few paved roads along the fringe.

Source: Google.

BACK CANYON SUMMARY STATISTICS

Polygon/Community:	Back Canyon	**Building count:**	51
Land Area (acres):	1,476	**Building Density (buildings/acre):**	0.3

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
2.1%	1.5%	79.4%	17%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Street signs – present
- Building construction – class A roofs
- Defensible space – 30 to 70 feet defensible space on most homes
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 78)

Negative Attributes (High Scores)
- Ingress and egress – steep, narrow, unsurfaced roads with few turnarounds
- Street signs – non reflective
- Fire access – long driveways with no turnaround in most
- Vegetation – mix of sage brush, juniper and scrub oak with grass in between. Fuel is spread out on the ridges but quite dense in the drainages. Fuel up against road in many places
- Topography – steep terrain with many draws and spur ridges. Roads and homes in steep drainages.
- Building construction – combustible siding
- Decking and fencing – combustible decks built over hillsides with fuel below
- Water source – no hydrants but water tanks present at many properties
- Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Back Canyon	88 (high)

Figure D.26. Remote structures and homes intermixed within varied topography. Limited access with steep and narrow dirt roads.

Source: Google.

THOMPSON CANYON SUMMARY STATISTICS

Polygon/Community:	Thompson Canyon	**Building count:**	267
Land Area (acres):	1,612	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
4.6%	1.7%	91.7%	2.4%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – roads 20-24 feet wide and fairly flat
- Street signs – present
- Fire access – short driveways with turnarounds
- Vegetation – short grass with scattered oak trees. Pockets of sage brush scattered throughout
- Topography – mostly flat with gently rising / rolling terrain around the Northwest edge of the community
- Building construction – class A roofs
- Defensible space – most structures have 30-70 feet defensible space
- Organized response – fire station within 5 miles (KCFD Station 78)
- Utilities – gas below ground

Negative Attributes (High Scores)
- Ingress and egress – unsurfaced roads
- Street signs – non reflective
- Deck and fencing – combustible decks
- Water source – no known water source

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Thompson Canyon	66 (moderate)

Figure D.27. Scattered community along foothills of Johns Peak and Red Mountain. Homes are situated within a mix of fine fuels with overstory.

Source: Google.

SHADOW MOUNTAIN RANCH SUMMARY STATISTICS

Polygon/Community:	Shadow Mountain Ranch	**Building count:**	72
Land Area (acres):	1,245.9	**Building Density (buildings/acre):**	0.06

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.8%	2.4%	81.8%	14.9%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 0
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
0-0.5 (mi.): 0%
0.5-1.0 (mi.): 0%
1.0-1.5 (mi.): 0%
>1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – 2 or more roads in and out
- Ingress and egress – roads at least 24 ft wide and fairly flat
- Street signs – present
- Topography – community in lower elevation with minimal slope
- Defensible space – most structures have 30-70 feet defensible space
- Building construction – class A roofs
- Organized response – fire station within 5 miles (KCFD Station 78)

Negative Attributes (High Scores)

- Ingress and egress – unsurfaced roads
- Street signs – non reflective
- Fire access – no turnarounds in most driveways
- Vegetation – mix of grass and brush
- Building construction – combustible siding
- Deck and fencing – combustible decks with fuel below
- Water source – no hydrants but water tanks present
- Utilities – both above ground

Values at Risk

- Residential properties

NFPA 1144 Final Rating

Polygon Name	Total Score
Shadow Mountain Ranch	71 (high)

Figure D.28. Dispersed community within Walker Basin along northern slopes of Harper Peak. Homes are located within a mix of fine fuels and overstory.

Source: Google.

BASIN CREEK SUMMARY STATISTICS

Polygon/Community:	Basin Creek	**Building count:**	59
Land Area (acres):	909.5	**Building Density (buildings/acre):**	0.07

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0%	2.9%	70.8%	26.3%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Street signs – present
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – narrow, steep, unsurfaced roads
- Street signs – non reflective
- Fire access – long driveways with no turnaround in most
- Vegetation – ridges are grass with scattered oaks. Drainages are dense with brush and scrub oak. Heavy fuel loading along the roads
- Topography – many different spur ridges, draws and independent hills that trend toward Piute Peak. Areas of steep terrain.
- Defensible space – minimal defensible space.
- Decking and fencing – combustible decks with vegetation below
- Organized response – fire station greater than 5 miles away

	• Water source – occasional water tanks but no hydrants • Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Basin Creek	114 (extreme)

Figure D.29. Remote community dispersed within the Walker Basin. Only one way in and out on dirt road, with heavy fuels lining much of the road.

Source: Google.

BRECKENRIDGE SUMMARY STATISTICS

Polygon/Community:	Breckenridge	**Building count:**	30
Land Area (acres):	2,920.4	**Building Density (buildings/acre):**	0.01

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.1%	54.2%	11.9%	33.8%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – steep, narrow, unsurfaced roads
- Ingress and egress – primary access is along steep slopes with switchbacks on dirt road
- Fire access – long driveways with no turnarounds
- Street signs – not present
- Vegetation – grass and brush with scattered oaks and pines. Dense fuel higher up the slope, especially in drainages. Fuel consistently against and over road.
- Topography – steep topography with prominent drainages. Community lies in somewhat of a box canyon.
- Building construction – combustible siding
- Deck and fencing – combustible decks built on slopes with fuel below

	• Water source – no known water source • Organized response – fire station greater than five miles away. • Utilities – both above ground

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Breckenridge	127 (extreme)

Figure D.30. Scattered residences intermixed in dense vegetation. Access is constrained to narrow dirt roads with limited turnarounds.

Source: Google.

JOHNSON CANYON SUMMARY STATISTICS

Polygon/Community:	Johnson Canyon	**Building count:**	75
Land Area (acres):	1,847.3	**Building Density (buildings/acre):**	0.04

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
1.1%	8.4%	58.8%	31.7%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – surfaced roads
- Steet signs – present
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – steep, narrow roads
- Ingress and egress – roads built mid slope on steep cut banks, often with heavy fuel loading against road.
- Street signs – non reflective
- Fire access – long driveways with no turnarounds in most
- Vegetation – heavy fuel loading with grass and brush understory and oak overstory. Especially heavy in drainages. Ladder fuels leading into oaks.
- Topography – many different ridges and steep draws running through community. Some homes built within these draws.
- Defensible space – minimal defensible space around most homes
- Building construction – combustible
- Deck and fencing – combustible decks built over hillsides with fuel below
- Water source – no known water source

	• Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Johnson Canyon	114 (extreme)

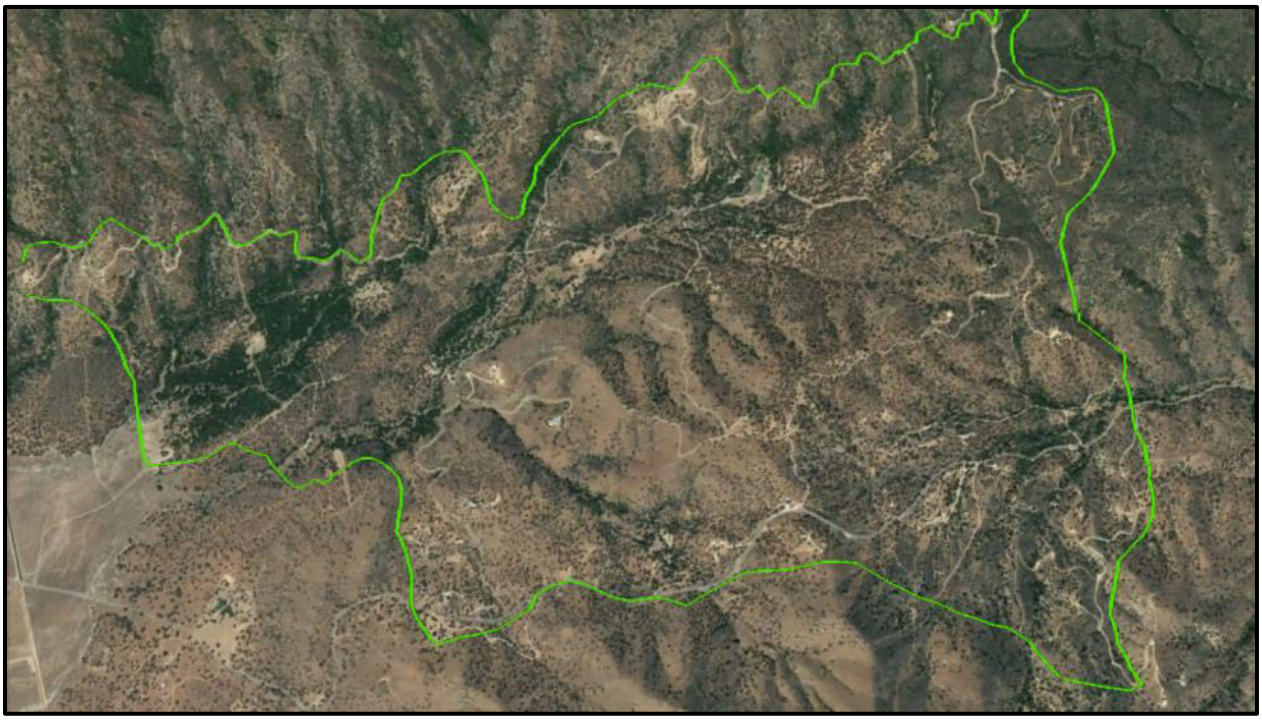


Figure D.31. High elevation community located between Breckenridge and Red Mountains. Heavy fuel loading in drainages. Ladder fuels lead to large, dense oaks.

Source: Google.

HAVILAH CANYON SUMMARY STATISTICS

Polygon/Community:	Havilah Canyon	**Building count:**	199
Land Area (acres):	1,537.3	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
2.7%	10.4%	67.7%	19.2%

Fire Station Statistics

Fire station: #78

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 0
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
0-0.5 (mi.): 0%
0.5-1.0 (mi.): 0%
1.0-1.5 (mi.): 0%
>1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – surfaced road runs through center of community and is 24 ft wide
- Ingress and egress – 2 or more roads in and out
- Street signs – present
- Building construction – class A roofs

Negative Attributes (High Scores)

- Ingress and egress – roads off main road are narrow and unsurfaced
- Street signs – non reflective
- Fire access – long driveways with no turnaround in most
- Vegetation – primarily grass and sage bush with scrub oaks on hillsides. Heavy fuel loading along parts of the main road. Especially dense in drainages
- Topography – steep rising terrain on both sides of the main road with many drainages.
- Building construction – combustible siding. Many trailers and mobiles homes. Some with debris stacked next to them
- Decking and fencing – combustible decks built over hillsides with fuel below
- Defensible space – minimal defensible space

• Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties / mobile homes & trailers • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Havilah Canyon	98 (high)

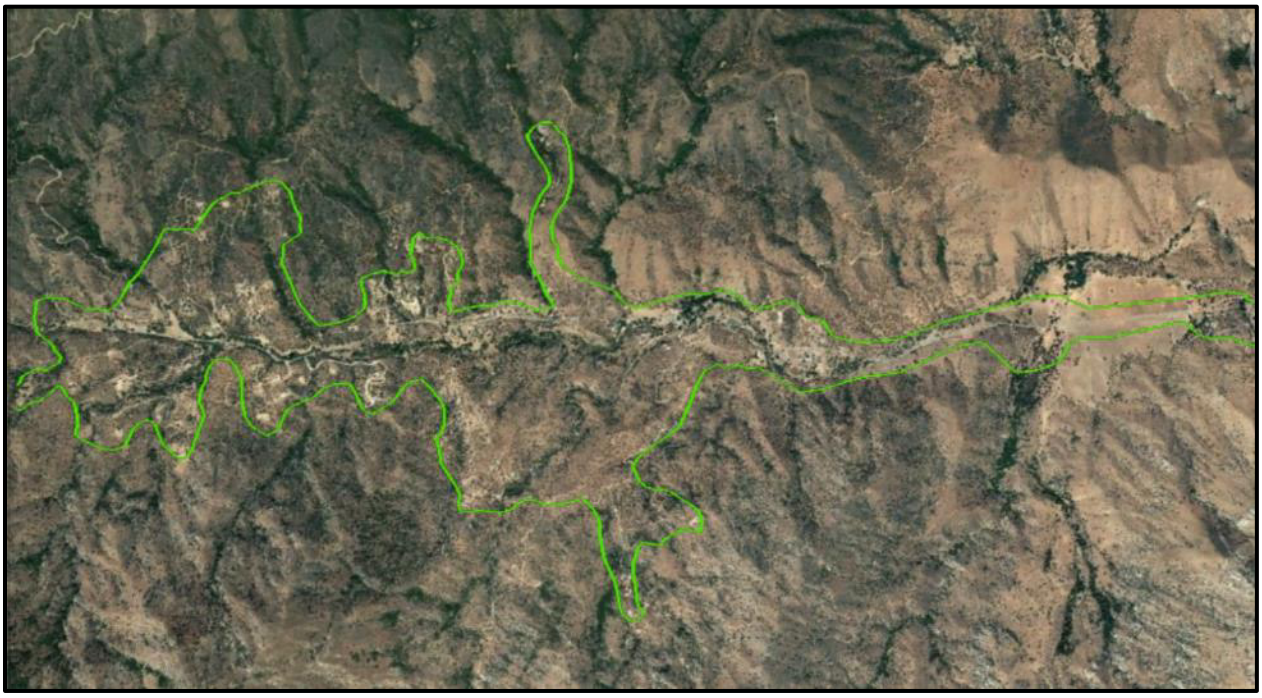


Figure D.32. Community located in north-south oriented canyon. Heavy and dense vegetation in the area due to low fire occurrence.

Source: Google.

KELSO VALLEY SUMMARY STATISTICS

Polygon/Community:	Kelso Valley	**Building count:**	59
Land Area (acres):	953.8	**Building Density (buildings/acre):**	0.06

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
2.8%	45.8%	37%	14.4%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – surfaced, flat roads 20-24 feet wide
- Fire access – short driveways with turnarounds
- Topography – Wide flat valley with Kelso Creek running through the center.
- Building construction – class A roofs

Negative Attributes (High Scores)
- Street signs – not present
- Vegetation – scattered sage brush. Riparian areas along Kelso Creek with denser thick fuel. Evidence of previous fires in riparian zones.
- Defensible space – varied quite a bit but most homes had less than 30 feet.
- Building construction – combustible siding. Mix of mobile homes and larger ranch homes
- Deck and fencing – combustible decks/fences
- Water source – no known water source
- Organized response – fire station greater than 5 miles away

Values at Risk

- Residential properties / mobile homes
- Riparian values

NFPA 1144 Final Rating	
Polygon Name	Total Score
Kelso Valley	83 (high)

Figure D.33. Community located in a flat, broad valley with some riparian zones. Most homes have limited defensible space.

Source: Google.

BODFISH CANYON SUMMARY STATISTICS

Polygon/Community:	Bodfish Canyon	**Building count:**	744
Land Area (acres):	823.8	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
2.1%	35%	59.7%	3.1%

Fire Station Statistics

Fire station: #72

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 13%
- >1.5 (mi.): 87%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – roads 20-24 ft wide
- Ingress and egress – surfaced roads
- Street signs – present and reflective
- Building construction – class A roofs
- Water source – hydrants present
- Utilities – underground gas
- Organized response – fire station less than 5 miles away (KCFD Station 72)

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – sections of steep road and a few isolated dirt roads
- Fire Access – no turnarounds in most driveways
- Vegetation – heavy fuel loading throughout community. Grass with scrub oak, juniper and scattered pines. Heaviest fuel loading in drainages.
- Topography – steep terrain with many steep draws. Community in small valley surrounded by rising steep terrain.
- Defensible space – minimal defensible space with heavy fuel loading between some homes. Some homes built within draws. Debris in yards.
- Building construction – combustible
- Deck and fencing – combustible decks over hillsides with fuel below

Values at Risk	
• Residential properties / mobile homes	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Bodfish Canyon	102 (high)

Figure D.34. Community in a canyon with multiple ridges. Heavy fuel loading noted throughout community. Most structures have heavy fuels in between.

Source: Google.

BODFISH SUMMARY STATISTICS

Polygon/Community:	Bodfish	**Building count:**	773
Land Area (acres):	537.5	**Building Density (buildings/acre):**	1.4

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
4.7%	33.3%	47%	15%

Fire Station Statistics

Fire station: #72

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 31%
- 1.0-1.5 (mi.): 54%
- >1.5 (mi.): 15%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – wide, surfaced roads
- Street signs – present and reflective
- Building construction – class A roofs
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 72)
- Utilities – gas underground

Negative Attributes (High Scores)
- Ingress and egress – sections with steep roads
- Fire access – no turnaround in most driveways
- Vegetation – grass understory with thick brush and scrub oak mixed in. Dense brush in drainages. Scattered oaks and pines.
- Topography – community located in a basin with predominantly mild slope. Rising terrain on 3 sides of the community.
- Defensible space – minimal defensible space. Homes built close to each other with potential for structure-to-structure ignition.
- Building construction – combustible siding
- Decking and fencing – combustible decks

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Bodfish	89 (high)

Figure D.35. Suburban community with dense clustering of homes intermixed in vegetation and topography. Situated in a basin with limited defensible space.

Source: Google.

LAKE ISABELLA SUMMARY STATISTICS

Polygon/Community:	Lake Isabella	**Building count:**	650
Land Area (acres):	1,018.5	**Building Density (buildings/acre):**	0.6

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
3.4%	26.5%	49%	21.2%

Fire Station Statistics

Fire station: #72

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 13%
- 1.0-1.5 (mi.): 46%
- >1.5 (mi.): 41%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat roads, 20-24 feet wide
- Street signs – present
- Topography – majority of community in the flats. Eastern edge has gradually rising terrain as it transitions to the toe of a steep slope.
- Building construction – class A roofs
- Water source – hydrants present but infrequent
- Organized response – fire station within 5 miles (KCFD Station 72)
- Utilities – gas below ground

Negative Attributes (High Scores)
- Ingress and egress – unsurfaced roads
- Street signs – non reflective
- Fire access – no turnaround in most driveways
- Vegetation – grass and fine fuels throughout majority of community. East edge of community transitions to grass with brush and scrub oak. Pines scattered in drainages
- Defensible space – minimal defensible space around most homes
- Building construction – combustible siding. Many manufactured homes, densely packed in some areas.
- Deck and fencing – combustible decks/fences

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Lake Isabella	86 (high)

Figure D.36. Urban community located at the base of steep slopes. Many homes are on flat terrain, some are against steep hillsides.

Source: Google.

SQUIRREL MOUNTAIN VALLEY SUMMARY STATISTICS

Polygon/Community:	Squirrel Mountain Valley	**Building count:**	572
Land Area (acres):	945.4	**Building Density (buildings/acre):**	0.6

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0%	53.3%	39.6%	7.1%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 1

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – surfaced roads, 20-24 ft wide
- Steet signs – present
- Building construction – class A roofs
- Water source – hydrants present
- Organized response – fire station within 5 miles (KCFD Station 71)
- Utilities – below ground gas

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – steep roads on outer edges of community
- Street signs – non reflective
- Fire access – no turnarounds in most driveways
- Vegetation – grass and scrub oak with pines, oaks and juniper scattered throughout.
- Topography – community located in the base of a box canyon with steep sides. Majority of community located in flats but edges become steep with 80-100% slope
- Defensible space – minimal defensible space
- Building construction – combustible
- Deck and fencing – combustible deck/fencing

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Squirrel Mountain Valley	93 (high)

Figure D.37. Many homes are within Squirrel Mountain Valley, with larger properties along the base of the slope and at higher elevations along slopes.

Source: Google.

MOUNTAIN MESA SUMMARY STATISTICS

Polygon/Community:	Mountain Mesa	**Building count:**	470
Land Area (acres):	202.7	**Building Density (buildings/acre):**	2.3

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.1%	80.6%	16.6%	2.7%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 1

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat, surfaced roads, 20-24 ft wide
- Fire access – short driveways with turnarounds
- Street signs – present
- Vegetation – sparse fuels. Pockets of fine fuel and bush in undeveloped areas. Domestic species around homes.
- Topography – flat topography with gently rising terrain to east and west boarders of community
- Defensible space – adequate defensible space given the fuels and topography. However, structure to structure ignition is possible in high wind events
- Building construction – class A roofs
- Water source – hydrants present
- Utilities – gas underground

Negative Attributes (High Scores)
- Street signs – non reflective
- Building construction – combustible siding
- Decking and fencing – combustible decks/fencing

• Organized response – fire station within 5 miles (KCFD Station 71)

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Mountain Mesa	73 (high)

Figure D.38. Small subdivision community south of Lake Isabella, bordered by grasses and dense shrub mix.

Source: Google.

SOUTH LAKE SUMMARY STATISTICS

Polygon/Community:	South Lake	**Building count:**	604
Land Area (acres):	522.5	**Building Density (buildings/acre):**	1.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.1%	26.4%	62.9%	10.7%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 1

Dist. From Fire Station
- 0-0.5 (mi.): 11%
- 0.5-1.0 (mi.): 39%
- 1.0-1.5 (mi.): 25%
- >1.5 (mi.): 25%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat, surfaced roads, greater than 24 ft wide
- Street signs – present
- Fire Access – short driveways with turnarounds
- Building construction – class A roofs
- Water source – hydrants present
- Utilities – gas underground
- Organized response – fire station within 5 miles (KCFD Station 71)

Negative Attributes (High Scores)
- Street signs – non reflective
- Vegetation – community surrounded by grass and brush. Interior of community has scattered trees mixed in with homes.
- Topography – community at the base of a box canyon. Most homes in flats but edges turn to steeply rising terrain.
- Defensible space – minimal defensible space. Dense homes with potential for structure to structure ignition.
- Building construction – combustible siding
- Deck and fencing – combustible decks/fencing

Values at Risk

- Residential properties
- Riparian values

NFPA 1144 Final Rating

Polygon Name	Total Score
South Lake	75 (high)

Figure D.39. Community is located at the mouth of the Goat Ranch Canyon. Recent burn scars are visible along southern edge in foothills.

Source: Google.

SOUTH SHORE RANCH ESTATES SUMMARY STATISTICS

Polygon/Community:	South Shore Ranch Estates	**Building count:**	46
Land Area (acres):	165.5	**Building Density (buildings/acre):**	0.3

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.4%	34.7%	54%	11%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 1

Dist. From Fire Station
- 0-0.5 (mi.): 7%
- 0.5-1.0 (mi.): 21%
- 1.0-1.5 (mi.): 22%
- >1.5 (mi.): 0%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat, surfaced roads, 20-24 ft wide
- Street signs – present
- Fire access – short driveways with turnarounds
- Vegetation – primarily low grasses with clusters of trees and shrubs boarding homes and lots
- Topography – mostly flat
- Building construction – class A roofs
- Building construction – good separation between homes
- Organized response – fire response from KCFD Station 71

Negative Attributes (High Scores)
- Street signs – non reflective
- Building construction – combustible siding
- Deck and fencing – combustible decks/fence
- Water source – no known water source

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
South Shore Ranch Estates	70 (high)

Figure D.40. Community is located southeast of Lake Isabella. Structures have good separation with low grasses and shrubs intermixed.

Source: Google.

SHORT CANYON SUMMARY STATISTICS

Polygon/Community:	Short Canyon	**Building count:**	224
Land Area (acres):	324.5	**Building Density (buildings/acre):**	0.7

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
44.5%	42.6%	12.9%	0%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat roads greater than 24 ft wide
- Street signs – present
- Topography – community sits in broad drainage. Topography is flat within community.
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – unsurfaced road
- Street signs – non reflective
- Fire access – no turnaround in most driveways
- Vegetation – grass with scattered brush and trees planted around homes
- Defensible space – minimal defensible space. Homes are built close to each other with potential for structure to structure ignition.
- Defensible space – debris in yards
- Decking and fencing – combustible decks/fencing
- Water source – no known water source
- Organized response – fire station greater than 5 miles

Values at Risk	
• Residential properties / mobile homes • Agricultural values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Short Canyon	83 (high)

Figure D.41. Remote residential community situated within the Kelso Valley. Community consists of single-family homes, mostly trailers and mobile homes with debris in yards.
Source: Google.

YANKEE CANYON SUMMARY STATISTICS

Polygon/Community:	Yankee Canyon	**Building count:**	44
Land Area (acres):	100.6	**Building Density (buildings/acre):**	0.4

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.2%	41%	44.5%	14.4%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – surfaced roads
- Street signs – present
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – steep, narrow roads
- Fire access – no turnaround in most driveways
- Fire access – steep, tight roads with limited turnaround options
- Street signs – non reflective
- Vegetation – grass and brush with scattered oaks and pines.
- Topography – community located within a steep drainage causing difficult access and potentially dangerous fire behavior.
- Building construction – combustible siding
- Deck and fencing – combustible decks built on slopes with fuel below
- Water source – no known water source
- Organized response – fire station greater than 5 miles away
- Utilities – both above ground

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Yankee Canyon	114 (extreme)

Figure D.42. Small community located on the southern edge of Lake Isabella. Access is limited to steep, tight roads with limited turnarounds.

Source: Google.

ISABELLA HIGHLANDS SUMMARY STATISTICS

Polygon/Community:	Isabella Highlands	**Building count:**	197
Land Area (acres):	1475.4	**Building Density (buildings/acre):**	0.14

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
1%	16%	74.8%	8.3%

Fire Station Statistics

Fire station: #72

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	0	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – surfaced roads
- Steet signs – present
- Building construction – class A roofs
- Water source – hydrants present on 4th street but otherwise no know water sources
- Utilities – below ground gas

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – narrow, steep roads
- Street signs – non reflective
- Fire access – extremely difficult access. Community located up a steep, narrow, winding road. Few pull outs and too narrow to pass on road. Very few turnarounds.
- Vegetation – grass with sage brush and scrub oak. Pines and oaks mixed in. Heavy fuel load in drainages and lighter on spur ridges.
- Topography – community located in steep, diverse terrain. Rapid changes in topography over a short distance. Many ridges, draws and peaks with slope over 100%
- Defensible space – minimal defensible space. Many homes built within drainages with heavy fuel loading

	• Building construction – combustible siding • Deck and fencing – combustible decks built over hillsides with fuel below • Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Isabella Highlands	107 (extreme)

Figure D.43. Community is located on the western border of Lake Isabella. Very steep and variable terrain with severely limited fire access.

Source: Google.

KERNVILLE / RIVERKERN SUMMARY STATISTICS

Polygon/Community:	Kernville / Riverkern	**Building count:**	1304
Land Area (acres):	2,153.9	**Building Density (buildings/acre):**	0.6

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
2.4%	27.4%	57.5%	12.7%

Fire Station Statistics

Fire station: #76

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 23%
- 0.5-1.0 (mi.): 39%
- 1.0-1.5 (mi.): 25%
- >1.5 (mi.): 13%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – fairly flat surfaced roads greater than 24 ft wide
- Street signs – present
- Building construction – class A roofs
- Water source – hydrants present throughout
- Organized response – fire station within 5 miles (KCFD Station 76)

Negative Attributes (High Scores)
- Street signs – non reflective
- Fire access – no turnaround in most driveways
- Vegetation – center of community, closer to river has grass understory and frequent pines. Edges of community have brush and areas of dense fuel loading.
- Topography – community located along broad river drainage. Close to the river is flat but outer edges of community become rising, steep terrain.
- Defensible space – minimal defensible space around most homes. Homes on outer edge built into steep terrain.
- Building construction – combustible siding
- Decking and fencing – combustible decks/fencing

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Kernville / Riverkern	80 (high)

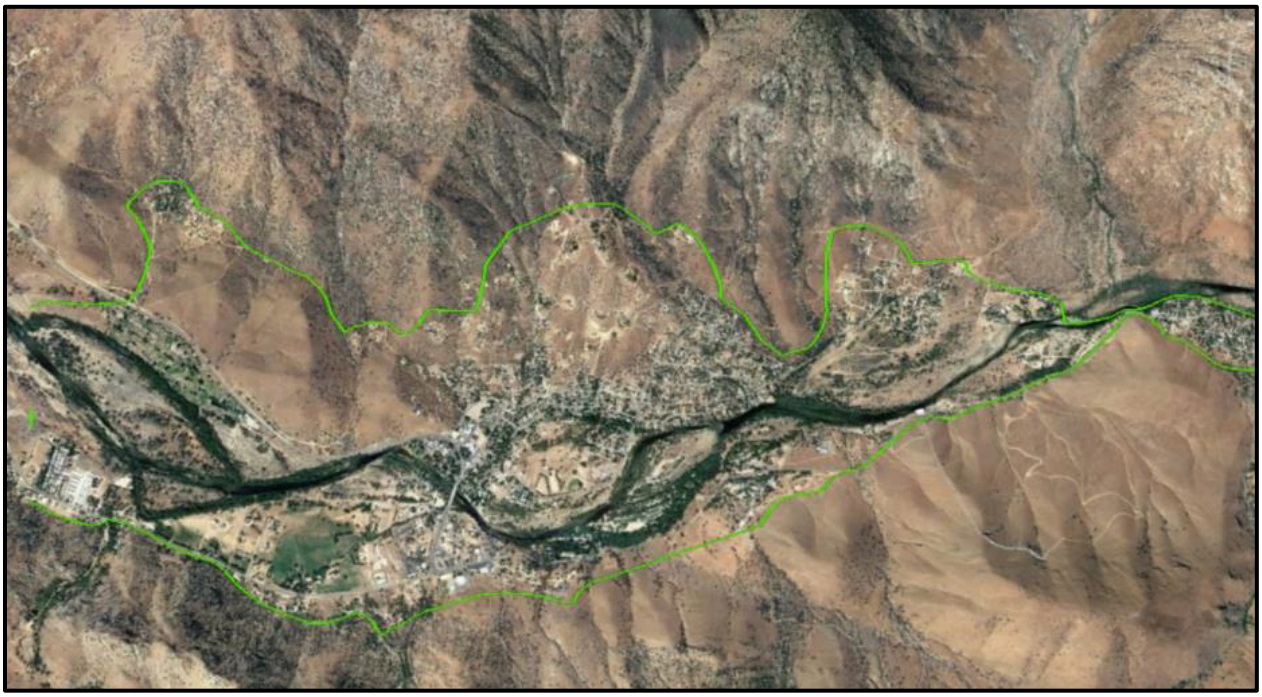


Figure D.44. Community is located along a river. Vegetation is mainly grass and pine at the center, but the fringes have more brush and dense fuel loading.

Source: Google.

WOFFORD HEIGHTS SUMMARY STATISTICS

Polygon/Community:	Wofford Heights	**Building count:**	1,944
Land Area (acres):	1,512.1	**Building Density (buildings/acre*):***	1.3

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
20.7%	35.4%	41.4%	2.5%

Fire Station Statistics

Fire station: #76

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – at lower elevations / close to highway roads are paved and at least 24 feet wide
- Street signs – present
- Building construction – class A roofs
- Water source – hydrants present
- Utilities – underground gas

Negative Attributes (High Scores)
- Ingress and egress – outside of the flats roads become steep, narrow and a mix of surfaced and unsurfaced.
- Street signs – non reflective
- Fire access – no turnarounds in most driveways
- Vegetation – grass and brush with scattered oaks and pines. Dense brush in the large drainages. Grass with patchy brush on the ridges.
- Topography – lower sections of community, near the highway are flat but west half of community is in steep rising terrain with a series of spur ridges and drainages.
- Defensible space – minimal defensible space. Many homes built into drainages surrounded by dense fuel
- Building construction – combustible siding

	• Deck and fencing – combustible decks built on slopes with fuel below • Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Wofford Heights	97 (high)

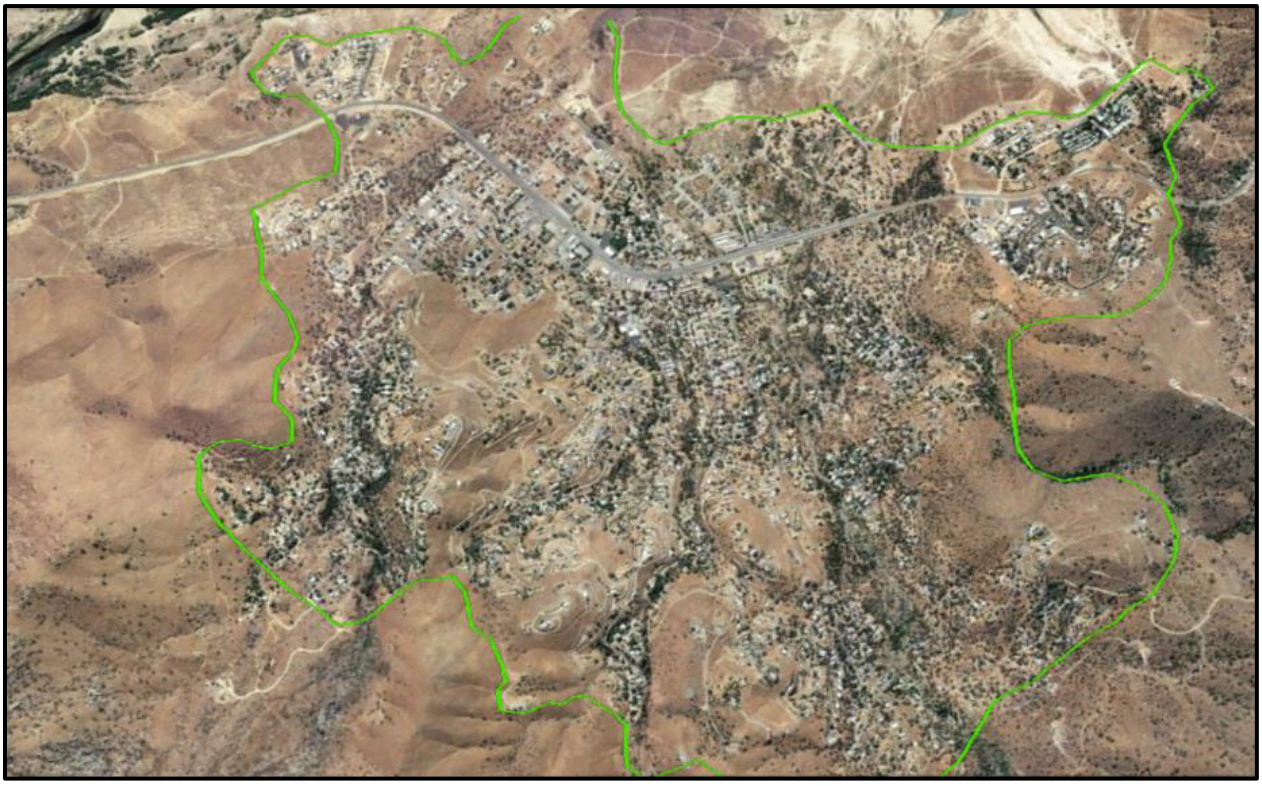


Figure D.45. Community is bordered by Lake Isabella to the southeast. Many homes have combustible construction materials and limited defensible space.

Source: Google.

WOFFORD HEIGHTS 2 SUMMARY STATISTICS

Polygon/Community:	Wofford Heights 2	**Building count:**	285
Land Area (acres):	441.6	**Building Density (buildings/acre):**	0.6

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
17.6%	24.1%	53.6%	4.6%

Fire Station Statistics

Fire station: #76

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – surfaced roads, 20-24 ft wide
- Street signs – present
- Building construction – class A roofs
- Water source – hydrants present
- Utilities – gas underground

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – steep mid-slope roads
- Street signs – non reflective
- Fire access – difficult fire access due to steep terrain and remote location. No turnarounds in most driveways.
- Vegetation – heavy brush throughout drainages. Grass and scattered brush on ridges and peaks
- Topography – community sits mid slope in a large drainage. Many smaller steep drainages and spur ridges run through community.
- Defensible space – minimal defensible space. Many homes built within or on the slopes of steep drainages
- Building construction – combustible
- Deck and fencing – combustible decks with fuel below

• Organized response – fire station great than 5 miles away

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Wofford Heights 2	105 (high)

Figure D.46. Community is intersected by highway 155 and Earl Pascoe Road. Limited fire access with extremely steep slopes and limited turnarounds. Many homes perched mid slope.

Source: Google.

ALTA SIERRA SUMMARY STATISTICS

Polygon/Community:	Alta Sierra	**Building count:**	176
Land Area (acres):	876.5	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
5.1%	82.6%	9.5%	2.8%

Fire Station Statistics

Fire station: #76

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – surfaced roads
- Street signs – present
- Building construction – class A roofs
- Water source – hydrants present

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – steep, narrow roads
- Street signs – non reflective
- Fire access – very narrow roads that will make access difficult for fire trucks. No turnaround in most driveways
- Vegetation – timber comprised of cedar and pine. Dense in most areas with canopies touching. Understory of leaf litter, small pines and brush.
- Topography – community located in steep mountainous terrain. Many steep draws with homes perched on hillsides.
- Defensible space – minimal defensible space
- Building construction – combustible siding
- Decking and fencing – combustible decks built over hillsides with vegetation below
- Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Alta Sierra	113 (extreme)

Figure D.47. Community is in Shirley Meadows. Area is heavily wooded and has extremely steep slopes. Fire access is severely limited; one narrow road in and out.

Source: Google.

WOODY SUMMARY STATISTICS

Polygon/Community:	Woody	**Building count:**	86
Land Area (acres):	437.2	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0%	13.6%	86.4%	0%

Fire Station Statistics

Fire station: #35

Fulltime Firefighters: 3

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 55%
- 0.5-1.0 (mi.): 37%
- 1.0-1.5 (mi.): 8%
- >1.5 (mi.): 0%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – fairly flat, surfaced roads, 20-24 ft wide
- Street signs – present
- Fire access – easily accessible home with short driveways and turnarounds
- Vegetation – grass with scattered oaks
- Topography – rolling hills with occasional rocky outcroppings. A few shallow drainages with denser fuel.
- Building construction – class A roofs
- Water source – hydrants present
- Utilities – gas underground
- Organized response – fire station within 5 miles (KCFD Station 35)

Negative Attributes (High Scores)
- Street signs – non reflective
- Defensible space – minimal defensible space around most structures
- Building construction – combustible siding
- Deck and fencing – combustible decks and fences

Values at Risk

- Residential properties

NFPA 1144 Final Rating	
Polygon Name	Total Score
Woody	67 (moderate)

Figure D.48. Community is west of Glennville. Most of community is situated on rolling hills, with some steeper slopes on the eastern flank.

Source: Google.

GLENNVILLE SUMMARY STATISTICS

Polygon/Community:	Glennville	**Building count:**	231
Land Area (acres):	896.5	**Building Density (buildings/acre):**	0.3

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
0.6%	10.7%	66.7%	22%

Fire Station Statistics

Fire station: #36

Fulltime Firefighters: 3

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 0

Port-A-Tanks: 0

Portable Pumps: 0

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 28%
- 0.5-1.0 (mi.): 23%
- 1.0-1.5 (mi.): 44%
- >1.5 (mi.): 5%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – fairly flat, surfaced roads, 20-24 ft wide
- Street signs – present
- Fire access – most homes just off highway. A few down longer driveways but overall homes are easily accessible with turnarounds
- Vegetation – grass with scattered oaks. Most grass is grazed and canopies have good separations. Drainages have denser oaks with some canopies touching.
- Topography – flat through the center of the community with rolling hills on the sides. Overall mild topography.
- Building construction – class A roofs
- Water source – hydrants present

Negative Attributes (High Scores)
- Street signs – non reflective
- Defensible space – minimal defensible space
- Building construction – combustible siding
- Deck and fencing – combustible deck and fencing

- Organized response – fire station within 5 miles (KCFD Station 36)
- Utilities – gas underground

Values at Risk

- Residential properties

NFPA 1144 Final Rating

Polygon Name	Total Score
Glennville	66 (moderate)

Figure D.49. Community is west of Alta Sierra, with mild topography. Area has mostly surfaced roads but poor fire access.

Source: Google.

BELLA VISTA SUMMARY STATISTICS

Polygon/Community:	Bella Vista	**Building count:**	332
Land Area (acres):	1,627.4	**Building Density (buildings/acre):**	0.2

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
6.5%	25.8%	66.2%	1.5%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 1%
- 1.0-1.5 (mi.): 16%
- >1.5 (mi.): 83%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – roads 20-24ft wide
- Street signs – present
- Fire access – short driveways with turnarounds
- Topography – community at toe of a slope with gently rising terrain
- Building construction – class A roofs
- Utilities – underground gas
- Organized response – fire station within 5 miles (KCFD Station 71)

Negative Attributes (High Scores)
- Ingress and egress – unsurfaced roads, some in poor condition
- Street signs – non reflective
- Vegetation – Grass and sage brush with pines planted near homes
- Building construction – combustible siding
- Decking and fencing – combustible decks and fencing
- Defensible space – some good examples but overall defensible space could be improved. Most homes have less than 30 feet.
- Water source – no known water sources

Values at Risk

- Residential properties / mobile homes
- Agricultural values
- Riparian values

NFPA 1144 Final Rating	
Polygon Name	Total Score
Bella Vista	86 (high)

Figure D.50. Community is situated at base of slope. Adjacent community consists of dense clustering of homes — mostly trailers and mobile homes with poor separation.

Source: Google.

ONYX SUMMARY STATISTICS

Polygon/Community:	Onyx	**Building count:**	335
Land Area (acres):	261.3	**Building Density (buildings/acre):**	1.3

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
47.6%	33.2%	19.2%	0%

Fire Station Statistics

Fire station #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 1

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat roads at least 24 feet wide
- Topography – community lies in the flats
- Building construction – class A roofs
- Water source – hydrants present
- Utilities – underground gas

Negative Attributes (High Scores)
- Ingress and egress – unsurfaced roads
- Street signs – not present / infrequent
- Fire access – short driveways but most do not have turnarounds
- Vegetation – sage brush and grass with pines planted around and between homes.
- Defensible space – minimal defensible space with homes built close to each other for a high chance of structure to structure spread.
- Building construction – trailers and mobile homes with combustible siding
- Deck and fencing – combustible decks and fences
- Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties / trailer & mobile homes • Agricultural values • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Onyx	73 (high)

Figure D.51. Community with dense housing in the flats. Pines and trees are planted around and between homes. High probability of structure-to-structure spread.

Source: Google.

CAP CANYON SUMMARY STATISTICS

Polygon/Community:	Cap Canyon	**Building count:**	48
Land Area (acres):	466.9	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
2%	33.4%	63.1%	1.6%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
Type 1: 0
Type 2: 0
Type 3: 0

Structure Engines
Type 1: 0
Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
0-0.5 (mi.): 0%
0.5-1.0 (mi.): 0%
1.0-1.5 (mi.): 0%
>1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)

- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat roads
- Street signs – present
- Fire access – long driveways with turnarounds
- Building construction – class A roofs

Negative Attributes (High Scores)

- Ingress and egress – narrow, unsurfaced roads
- Street signs – non reflective
- Vegetation – sage brush and grass with pines planted around homes
- Topography – community located in the flats. However, surrounded by a box canyon. Steep rising terrain on three sides.
- Defensible space – mix of defensible space. Larger properties have good defensible space but some smaller properties have less than 30 feet.
- Building construction – combustible
- Deck and fencing – combustible decks and fences
- Water source – no known water source
- Organized response – fire station great than 5 miles away. BLM station nearby but unknown if staffed

Values at Risk	
• Residential properties	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Cap Canyon	71 (high)

Figure D.52. Community with dispersed ranch homes in a canyon. Larger properties have good defensible space. Smaller properties have limited defensible space.

Source: Google.

CANEBRAKE SUMMARY STATISTICS

Polygon/Community:	Canebrake	**Building count:**	134
Land Area (acres):	2,440.4	**Building Density (buildings/acre):**	0.06

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
10.1%	65.8%	23.8%	0.3%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – 2 or more roads in and out
- Ingress and egress – flat roads
- Street signs – present
- Fire access – short driveways with turnarounds
- Topography – community in the flats and runs along the toe of a steep slope
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – narrow, unsurfaced roads
- Street signs – non reflective
- Vegetation – sage brush with grass intermixed and occasional pines around homes
- Defensible space – minimal defensible space
- Building construction – mainly combustible siding with some adobe mixed in
- Decking and fencing – combustible decks and fences
- Water source – no known water source
- Organized response – fire station greater than 5 miles away. BLM station nearby but unknown if staffed.

Values at Risk	
• Residential properties • Agricultural values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Canebrake	80 (high)

Figure D.53. Community is situated along base of slope. Vegetation consists of sage brush with grass intermixed. Homes have limited defensible space.

Source: Google.

FAY CANYON SUMMARY STATISTICS

Polygon/Community:	Fay Canyon	**Building count:**	115
Land Area (acres):	922.5	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
4%	16.7%	70%	9.3%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Port-A-Tanks: 0

Portable Pumps: 1

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – roads 20-24 feet wide
- Fire access – turnarounds present
- Defensible space – 30 to 70 ft of defensible space on most structures
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out
- Ingress and egress – steep, unsurfaced roads
- Street signs – not present
- Vegetation – Grass and sage brush with pines around homes and denser fuel loading in drainages.
- Topography – Community lies in a large drainage with steep rising terrain to the east and west. Some homes built into hillsides.
- Building construction – combustible siding
- Deck and fencing – combustible decks built on slopes with fuel below
- Water source – no known water source
- Organized response – fire station greater than 5 miles away

Values at Risk	
• Residential properties • Riparian values	
NFPA 1144 Final Rating	
Polygon Name	Total Score
Fay Canyon	89 (high)

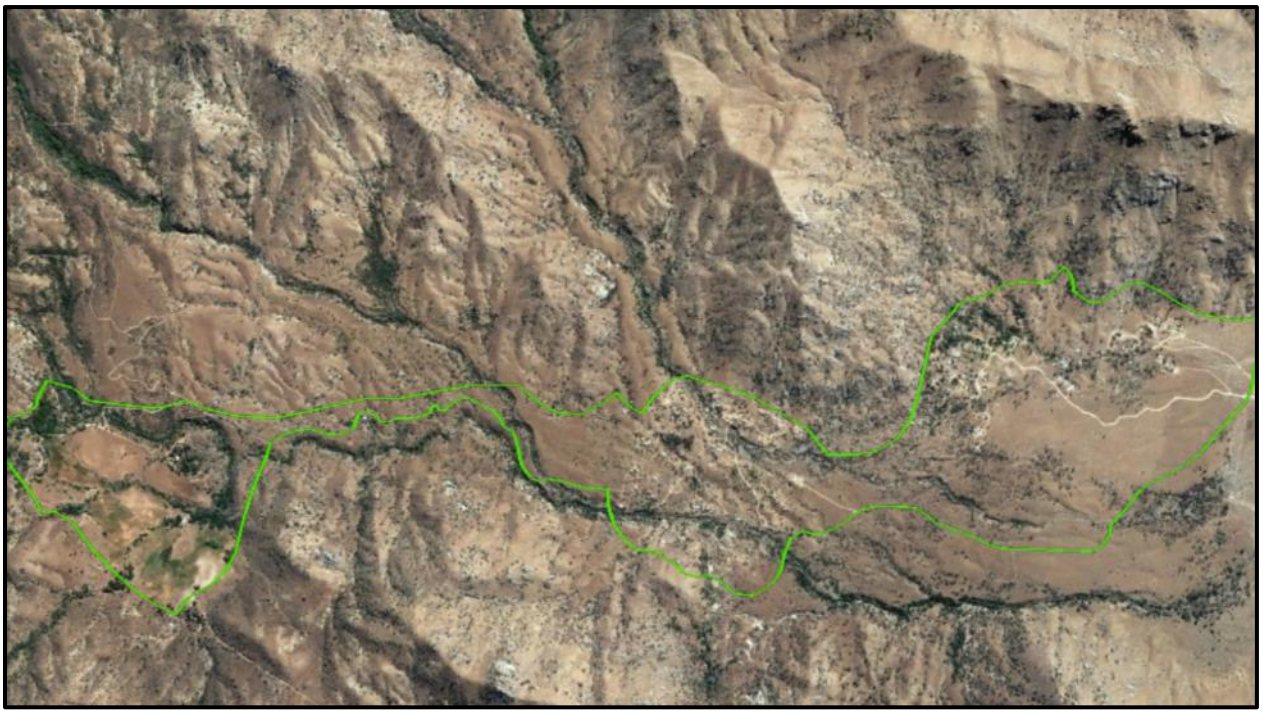


Figure D.54. Community is situated in a canyon. Maze-like network of mainly dirt roads provide access from Fay Ranch Road. Homes have primarily combustible materials.

Source: Google.

ROBINSON COVE SUMMARY STATISTICS

Polygon/Community:	Robinson Cove	**Building count:**	10
Land Area (acres):	87.9	**Building Density (buildings/acre):**	0.1

Percent of Town by Modeled Wildfire Risk

Low	Moderate	High	Extreme
3.2%	23.4%	73.4%	0%

Fire Station Statistics

Fire station: #71

Fulltime Firefighters: 9

On-call Firefighters: 0

Volunteer Firefighters: 0

Water Tender
- Type 1: 0
- Type 2: 0
- Type 3: 0

Structure Engines
- Type 1: 0
- Type 2: 1

Port-A-Tanks: 0

Portable Pumps: 1

Wildland Engines

	Standard	Brush Breaker
Type 3:	1	0
Type 4:	0	0
Type 5:	0	0
Type 6:	1	0
Type 7:	0	0

Dist. From Fire Station
- 0-0.5 (mi.): 0%
- 0.5-1.0 (mi.): 0%
- 1.0-1.5 (mi.): 0%
- >1.5 (mi.): 100%

Current Fire and Fuel Management Programs and Plans

- Kern County Fire Department 2020 Strategic Fire Plan
- 2020 Kern County Multi-Jurisdiction Hazard Mitigation Plan

1144 Survey Summary

Positive Attributes (Low Scores)
- Ingress and egress – flat roads, 20-24 feet wide
- Steet signs – present
- Fire access – turnarounds present
- Topography – community primarily in the flats with minimal slope
- Defensible space – good defensible space around most structures – 70 to 100 feet
- Building construction – class A roofs

Negative Attributes (High Scores)
- Ingress and egress – 1 road in and out. Isolated gated community
- Ingress and egress – unsurfaced roads
- Street signs – non reflective
- Vegetation – grass and sage brush with pines around homes
- Building construction – combustible siding
- Deck and fencing – combustible decks and fencing
- Water source – no know water source
- Organized response – fire station greater than 5 miles away

Values at Risk

- Residential properties

NFPA 1144 Final Rating

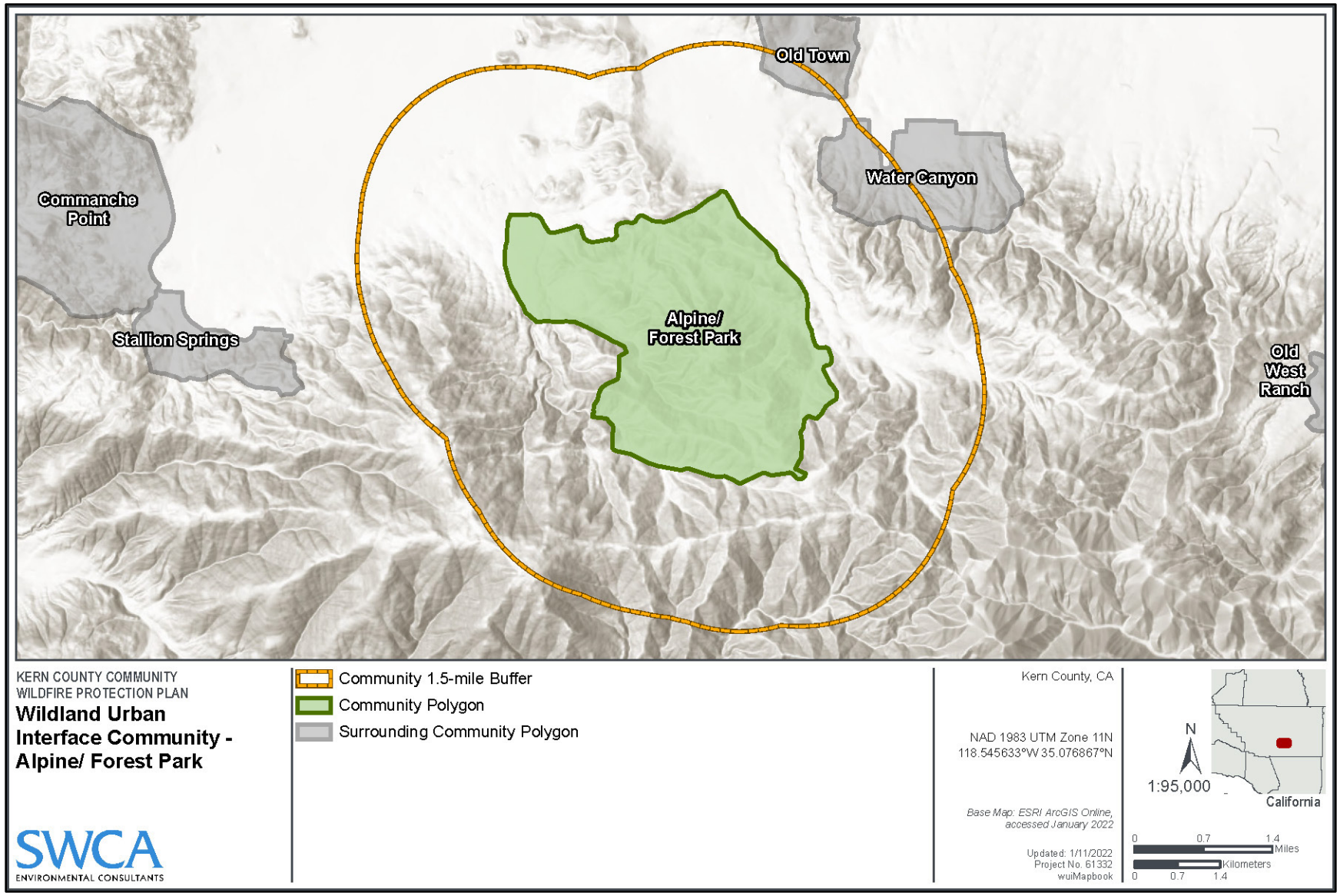
Polygon Name	Total Score
Robinson Cove	66 (moderate)

Figure D.55. Isolated and dispersed community along north of Lake Isabella. Only one road in and out of polygon.

Source: Google.

1.5-MILE WUI BUFFERS*

*The maps use different scales to provide detail, but all buffer distances are the same (1.5 mile).


Old Town
Water Canyon
Commanche Point
Alpine/ Forest Park
Stallion Springs
Old West Ranch
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Alpine/ Forest Park
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.545633°W 35.076867°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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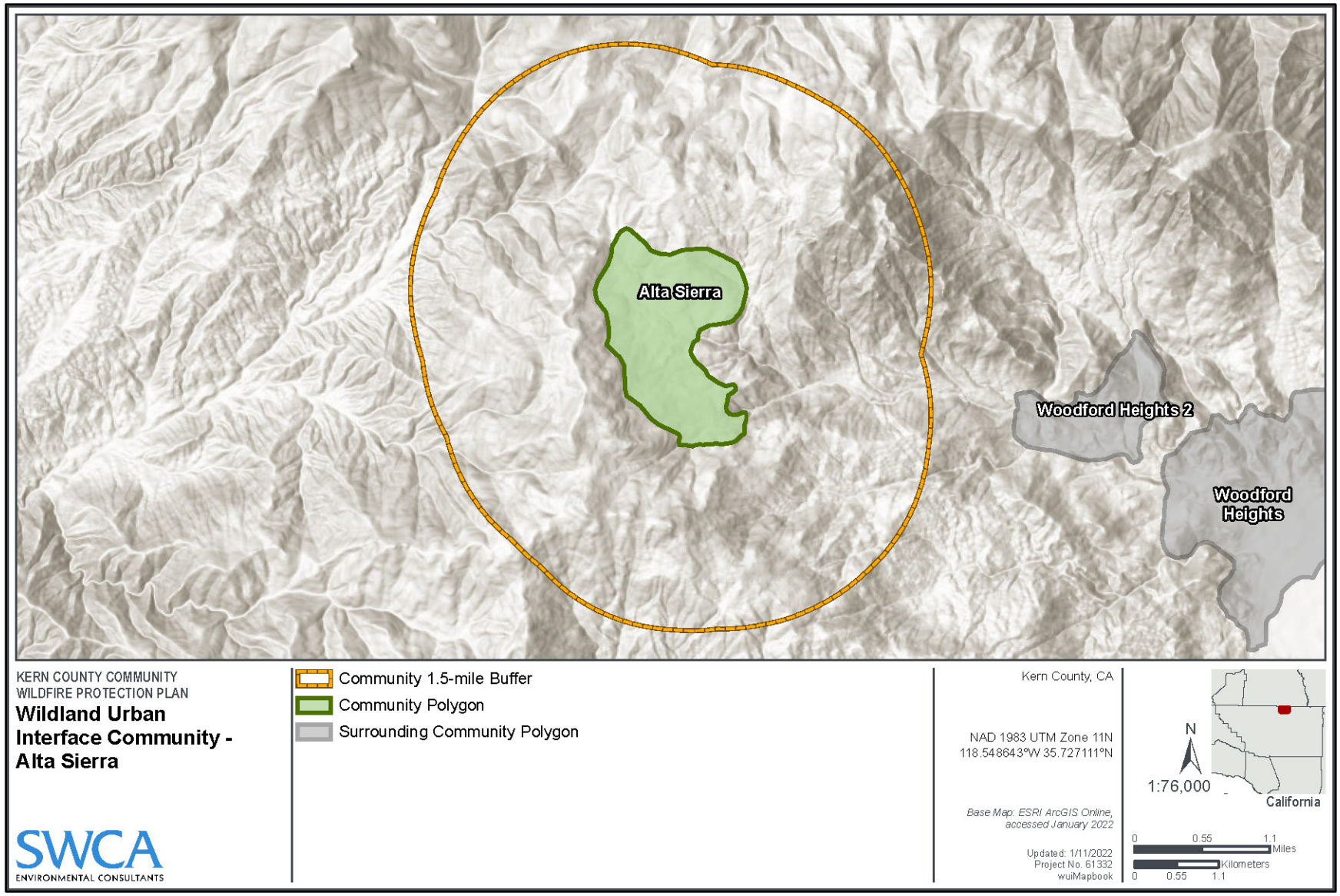
California
0 0.7 1.4 Miles
0 0.7 1.4 Kilometers


Alta Sierra
Woodford Heights 2
Woodford Heights
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Alta Sierra
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.548643°W 35.727111°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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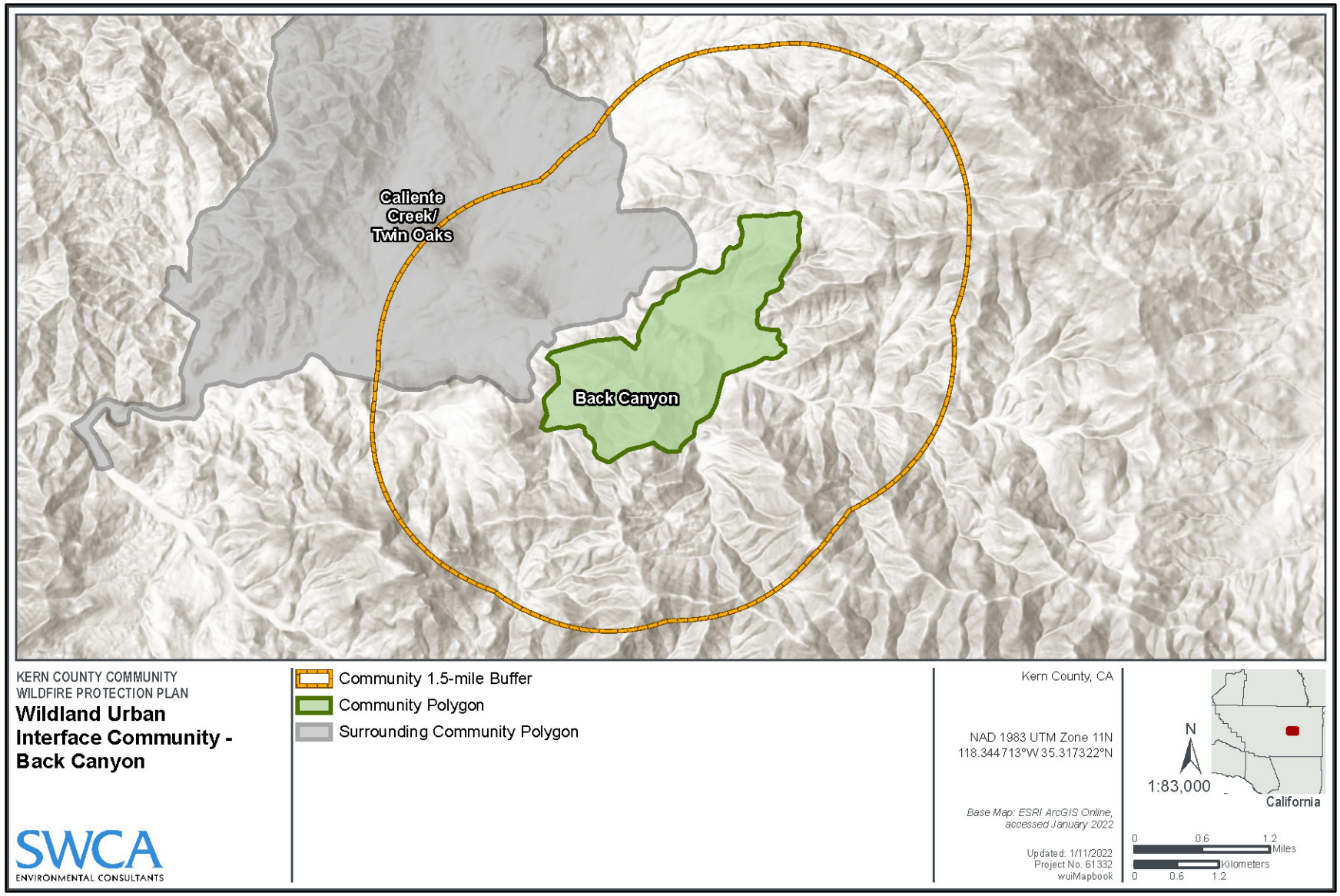
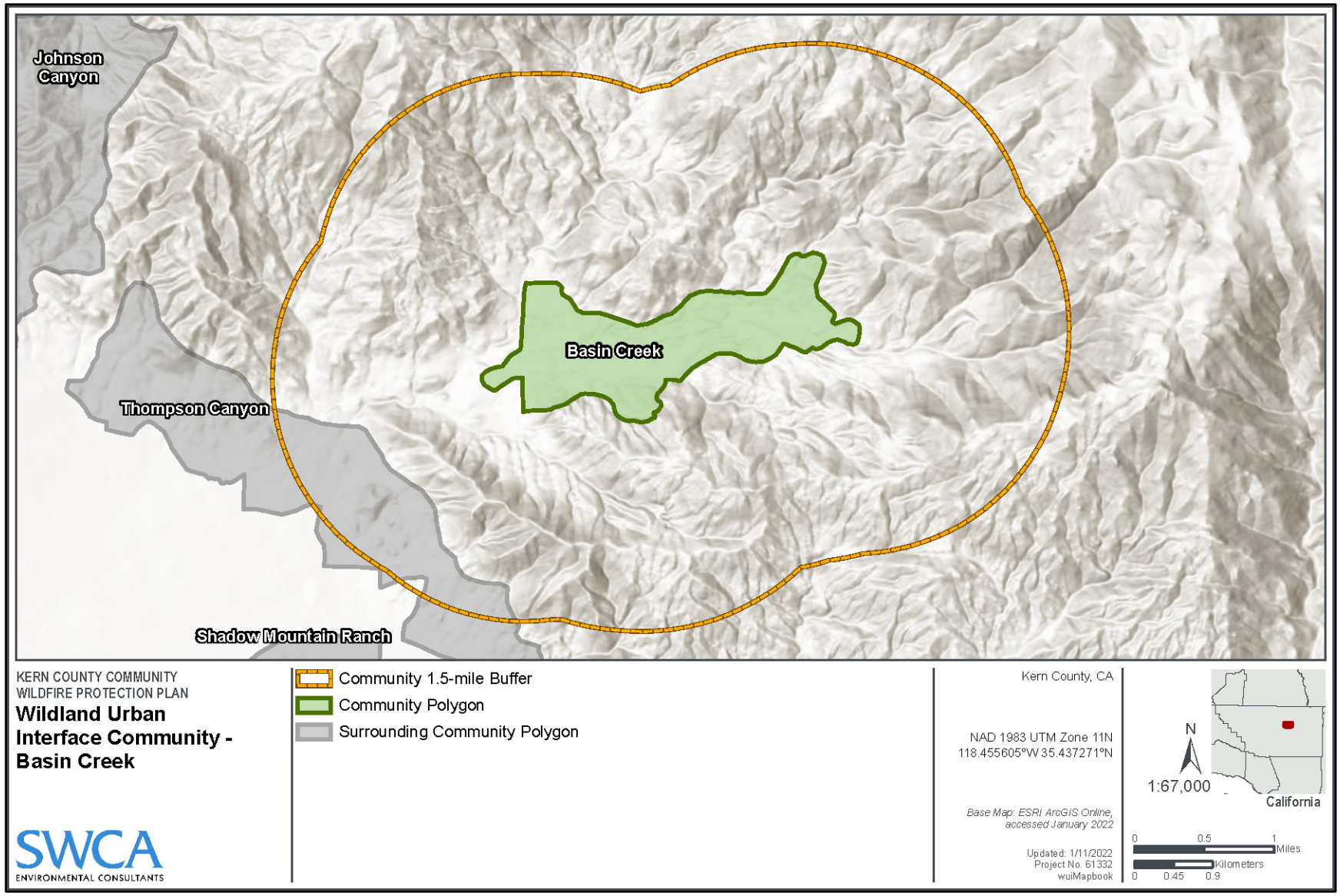
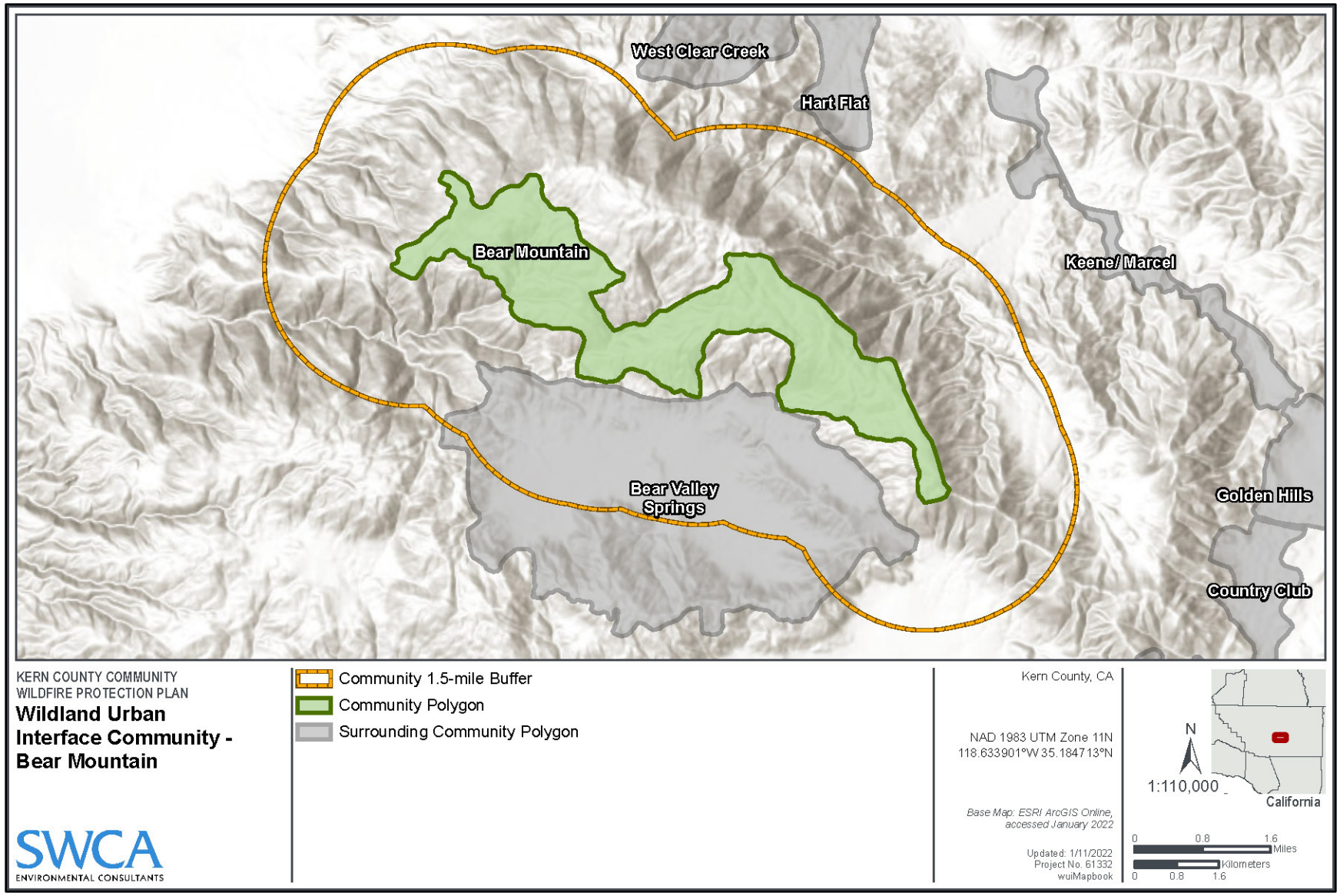
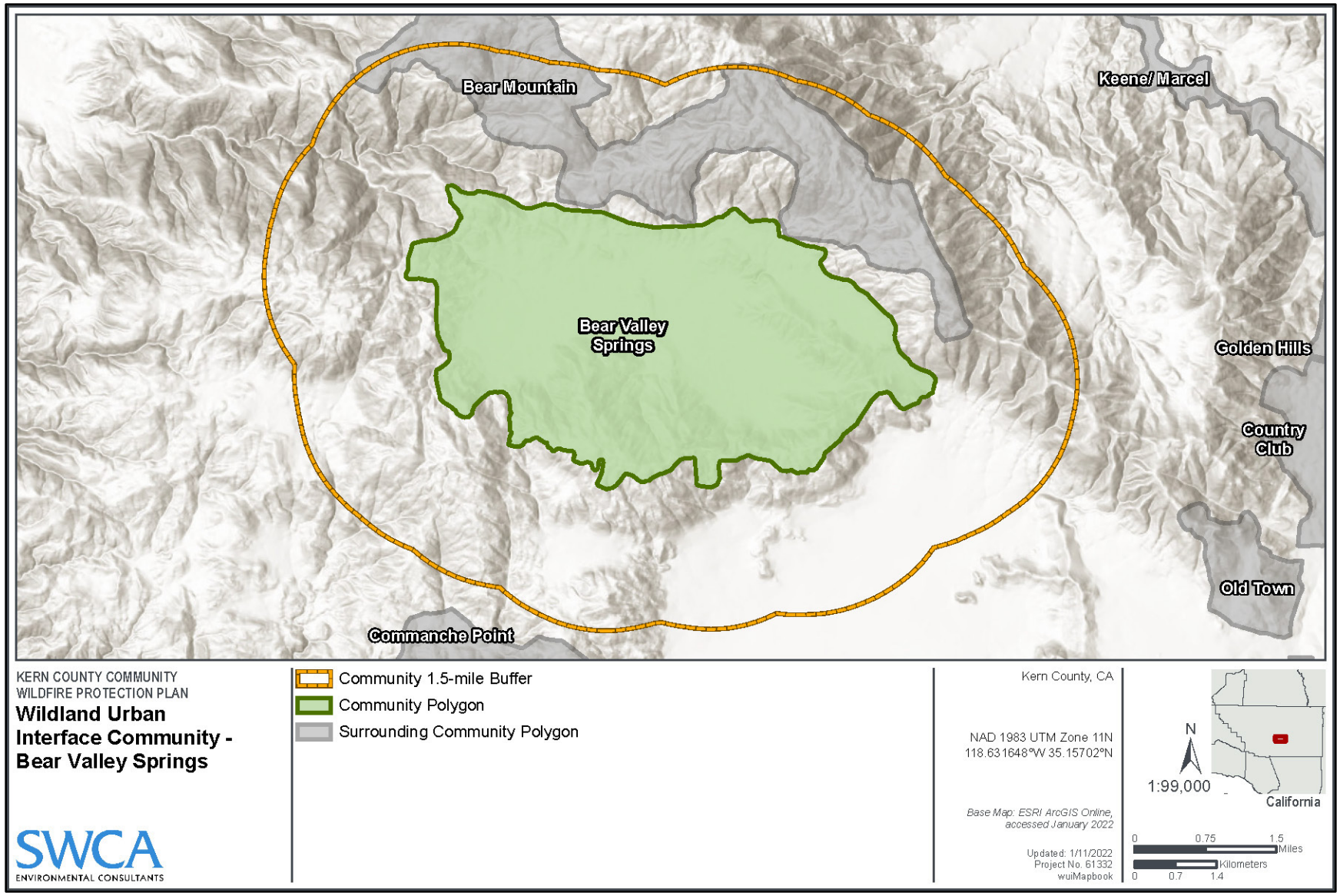
California
0 0.55 1.1
Miles
Kilometers
0 0.55 1.1


Caliente Creek/ Twin Oaks
Back Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Back Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.344713°W 35.317322°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:83,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers


Johnson Canyon
Basin Creek
Thompson Canyon
Shadow Mountain Ranch
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Basin Creek
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.455605°W 35.437271°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:67,000
California
0 0.5 1 Miles
0 0.45 0.9 Kilometers


West Clear Creek
Hart Flat
Bear Mountain
Keene/ Marcel
Bear Valley Springs
Golden Hills
Country Club
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Bear Mountain
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.633901°W 35.184713°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:110,000
California
0 0.8 1.6 Miles
0 0.8 1.6 Kilometers


Bear Mountain
Keene/ Marcel
Bear Valley Springs
Golden Hills
Country Club
Old Town
Commanche Point
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Bear Valley Springs
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.631648°W 35.15702°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
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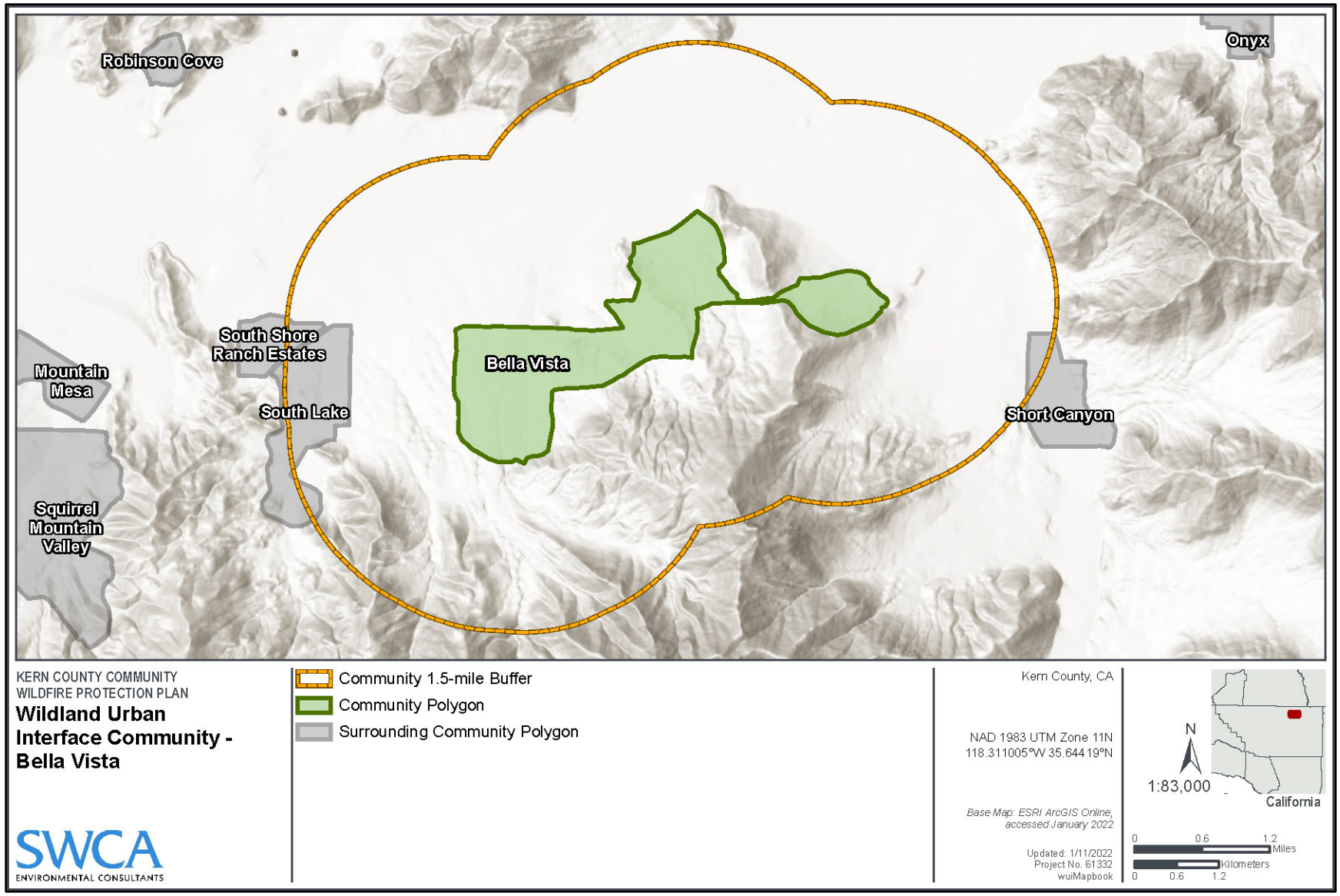
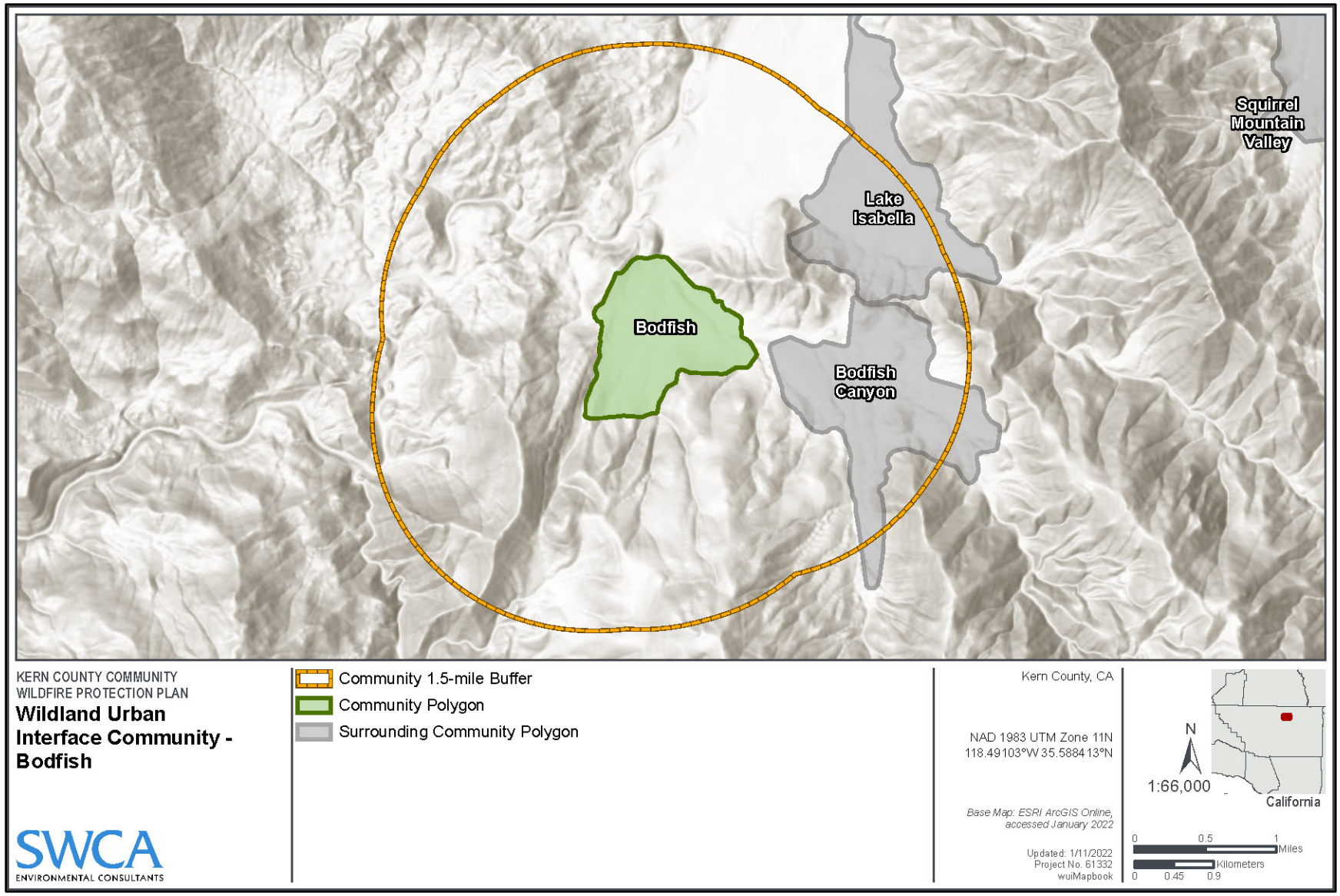
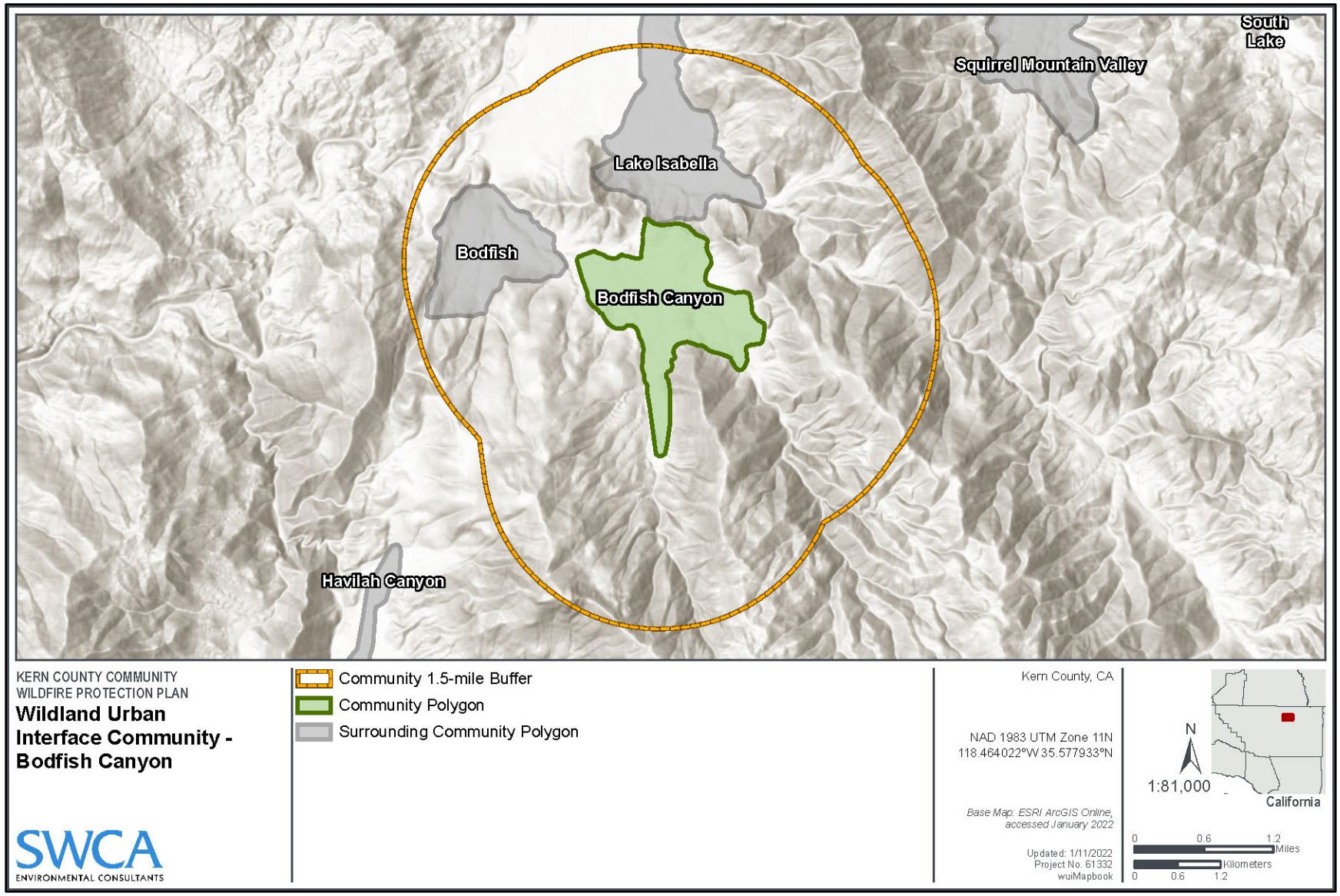
1:99,000
California
0 0.75 1.5 Miles
0 0.7 1.4 Kilometers


Robinson Cove
Onyx
South Shore Ranch Estates
Mountain Mesa
Bella Vista
South Lake
Short Canyon
Squirrel Mountain Valley
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Bella Vista
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.311005°W 35.644119°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:83,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers


Squirrel Mountain Valley
Lake Isabella
Bodfish
Bodfish Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Bodfish
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.49103°W 35.588413°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:66,000
California
0 0.5 1 Miles
0 0.45 0.9 Kilometers


South Lake
Squirrel Mountain Valley
Lake Isabella
Bodfish
Bodfish Canyon
Havilah Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Bodfish Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.464022°W 35.577933°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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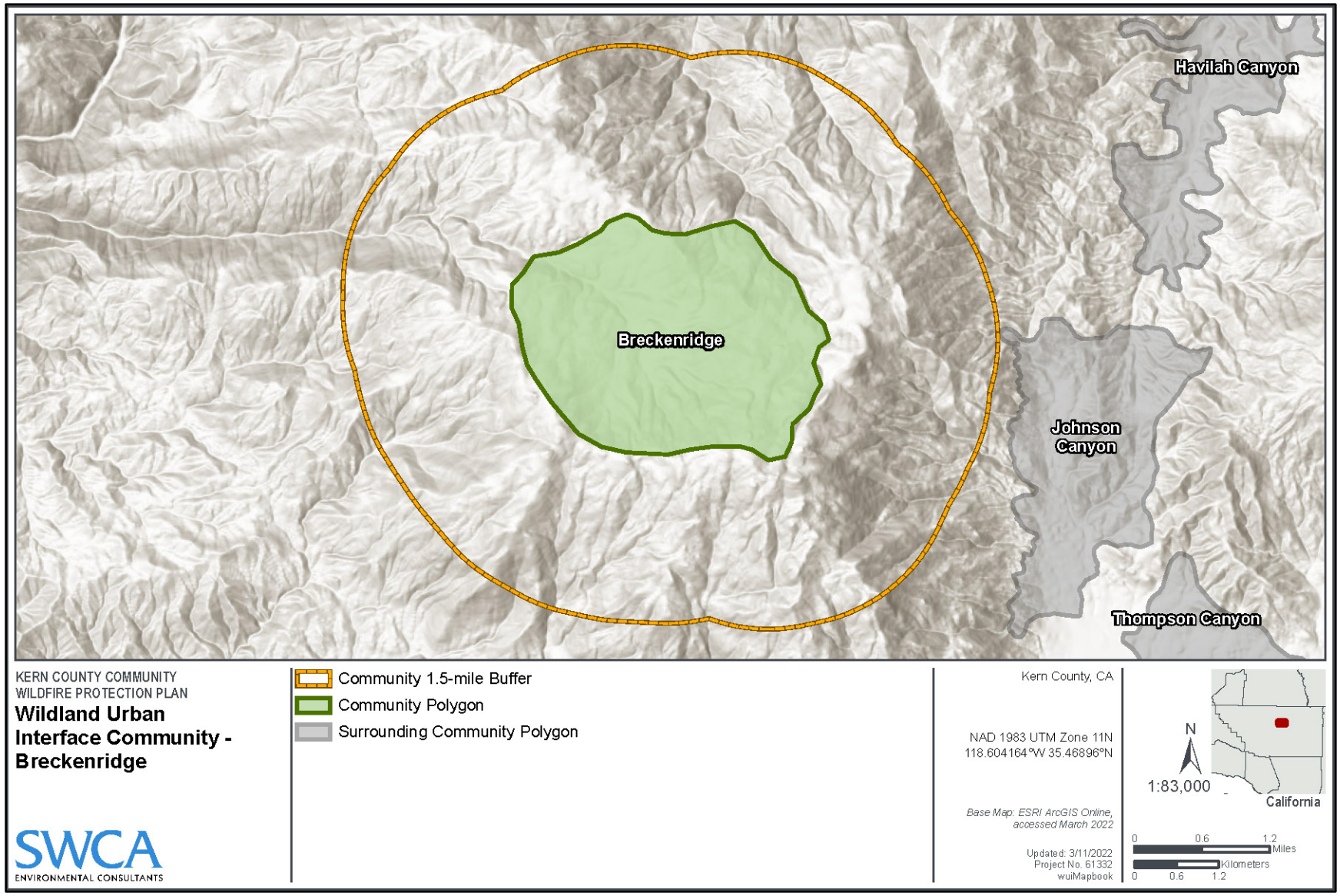
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers


Havilah Canyon
Breckenridge
Johnson Canyon
Thompson Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Breckenridge
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.604164°W 35.46896°N
Base Map: ESRI ArcGIS Online, accessed March 2022
Updated: 3/11/2022
Project No. 61332
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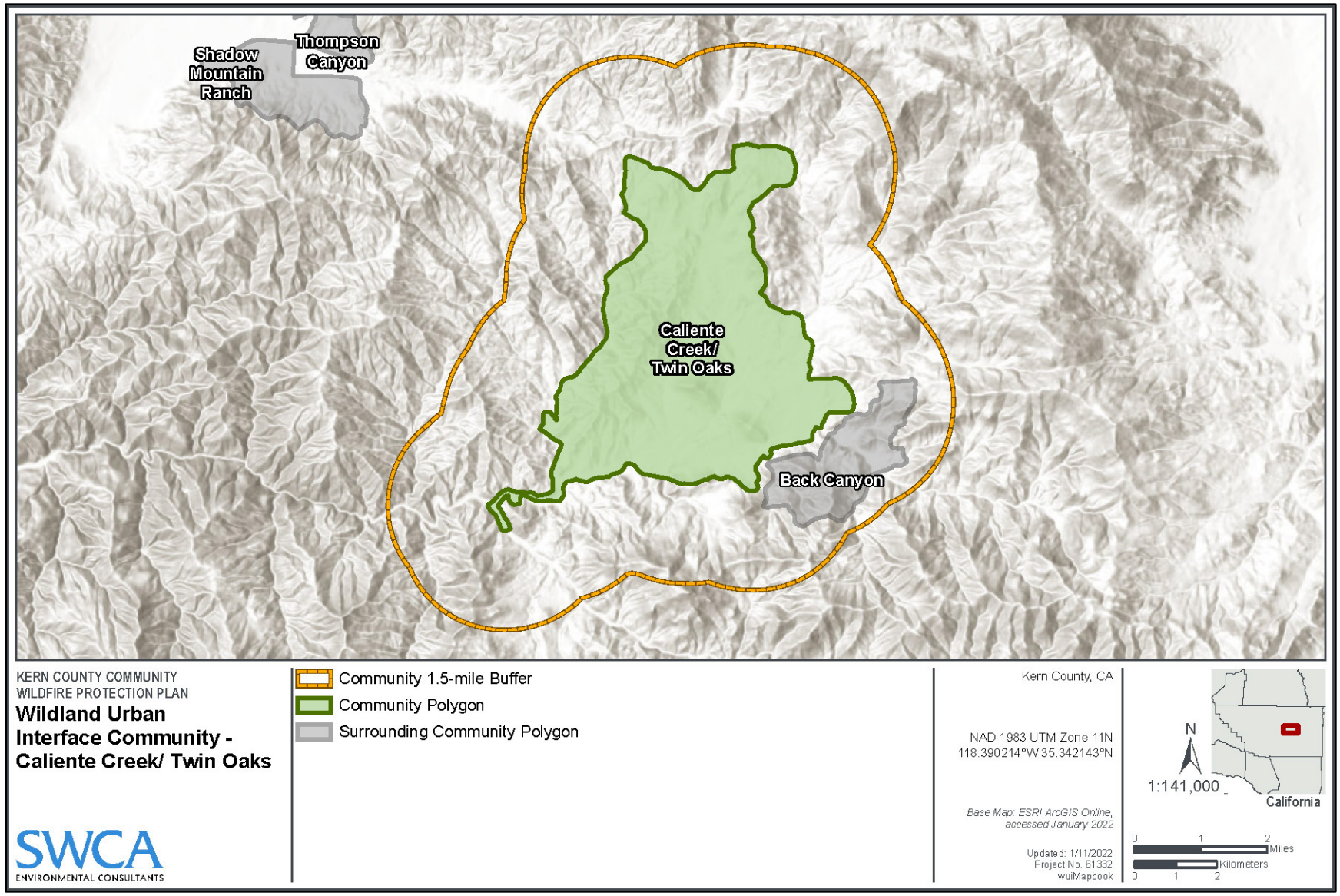
1:83,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers


Shadow Mountain Ranch
Thompson Canyon
Caliente Creek/ Twin Oaks
Back Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Caliente Creek/ Twin Oaks
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.390214°W 35.342143°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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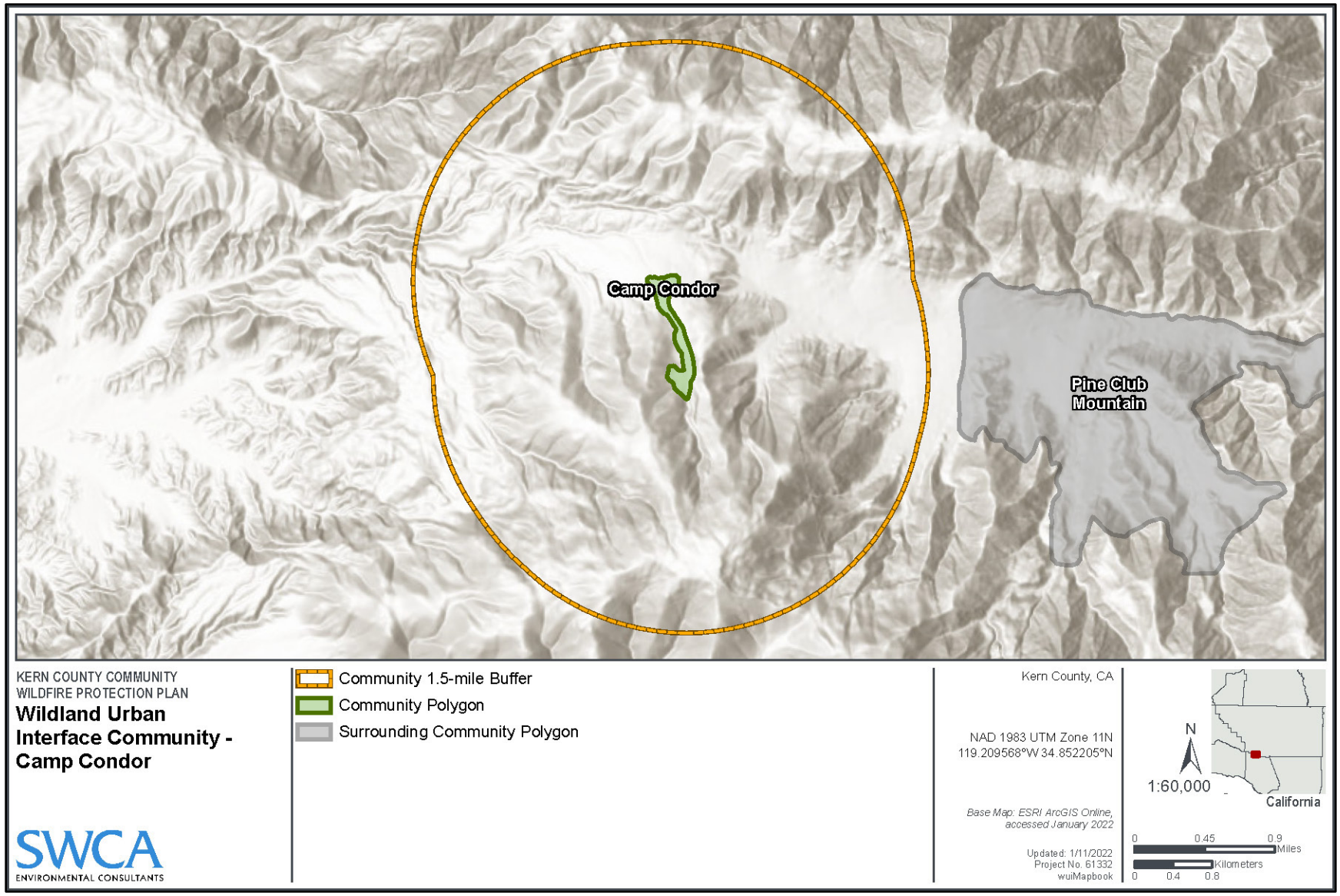
N
1:141,000
California
0 1 2 Miles
0 1 2 Kilometers


Camp Condor
Pine Club Mountain
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Camp Condor
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
119.209568°W 34.852205°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
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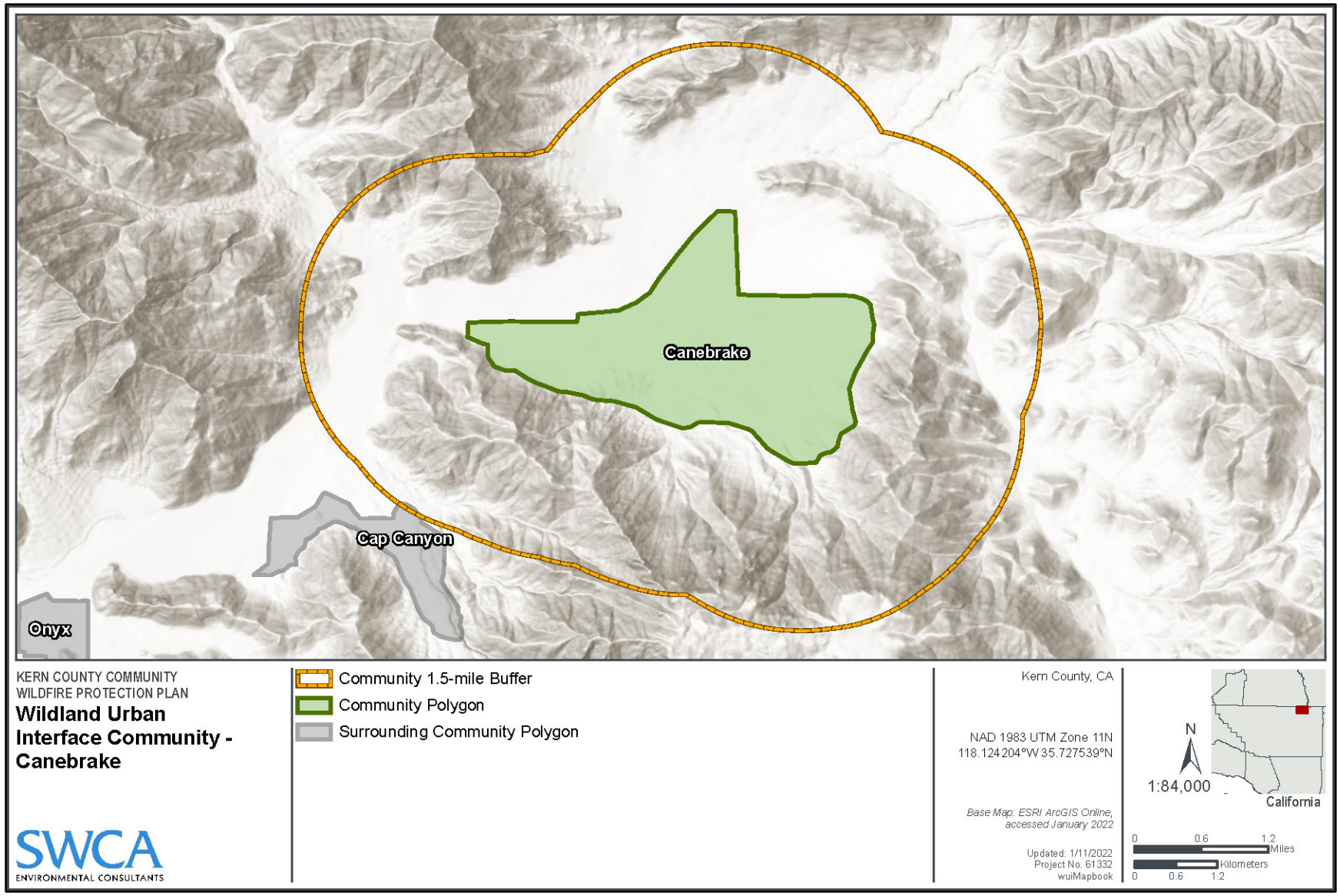
1:60,000
California
0 0.45 0.9 Miles
0 0.4 0.8 Kilometers


Canebrake
Cap Canyon
Onyx
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Canebrake
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.124204°W 35.727539°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
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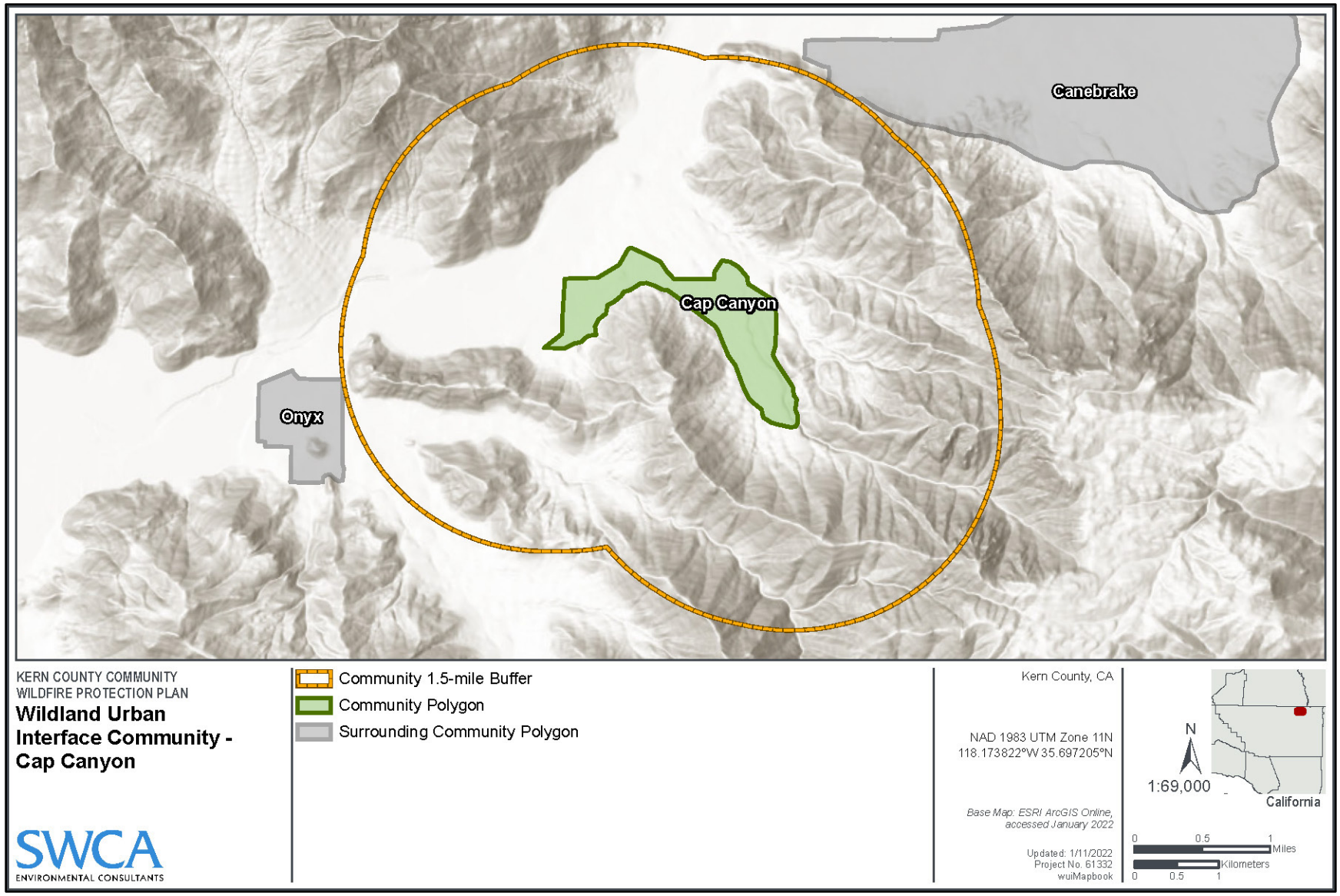
1:84,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers


Canebrake
Cap Canyon
Onyx
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Cap Canyon
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.173822°W 35.697205°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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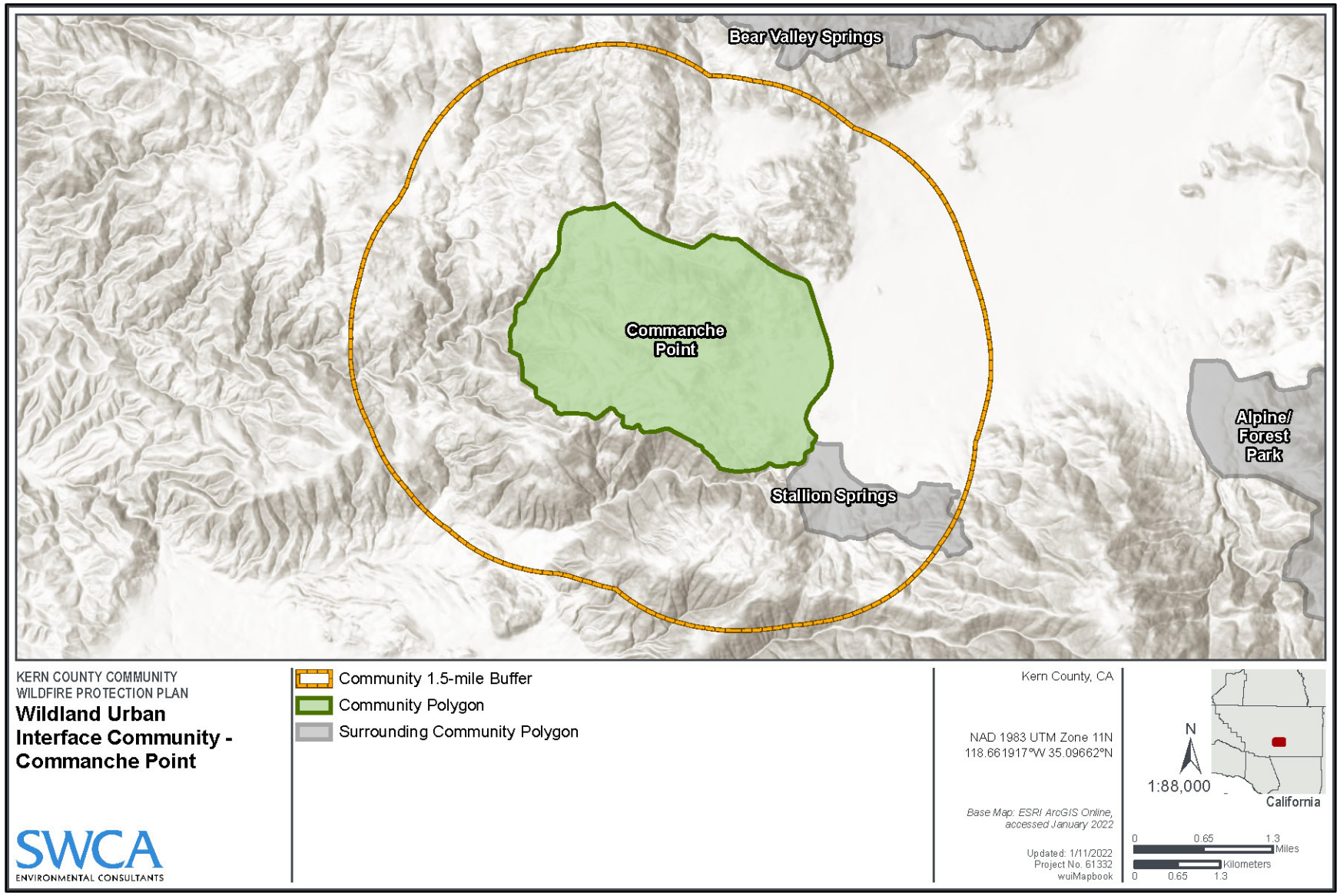
California
0 0.5 1
Miles
Kilometers
0 0.5 1


Bear Valley Springs
Commanche Point
Alpine/ Forest Park
Stallion Springs
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Commanche Point
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.661917°W 35.09662°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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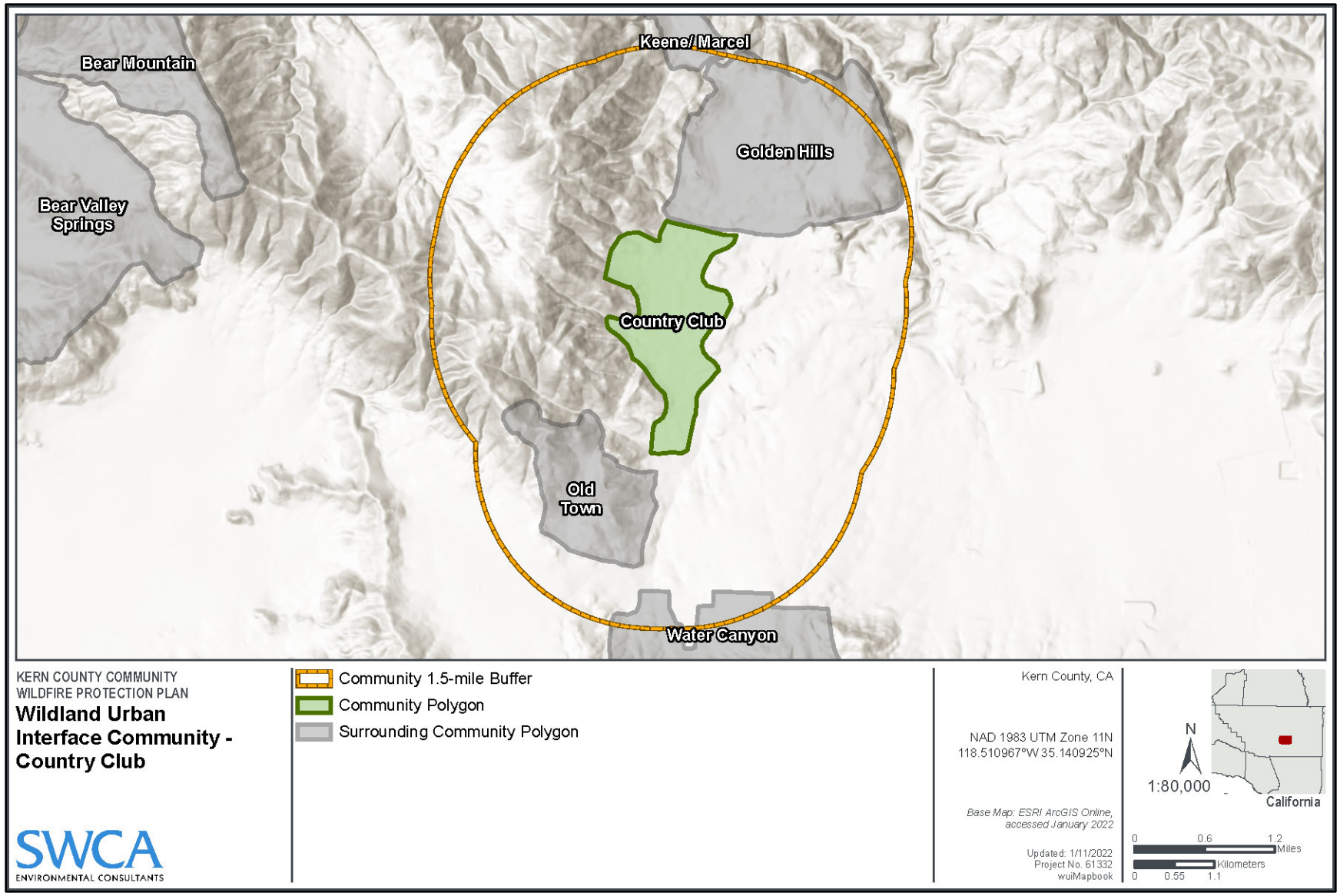
California
0 0.65 1.3 Miles
0 0.65 1.3 Kilometers


Keene/Marcel
Bear Mountain
Golden Hills
Bear Valley Springs
Country Club
Old Town
Water Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Country Club
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.510967°W 35.140925°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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California
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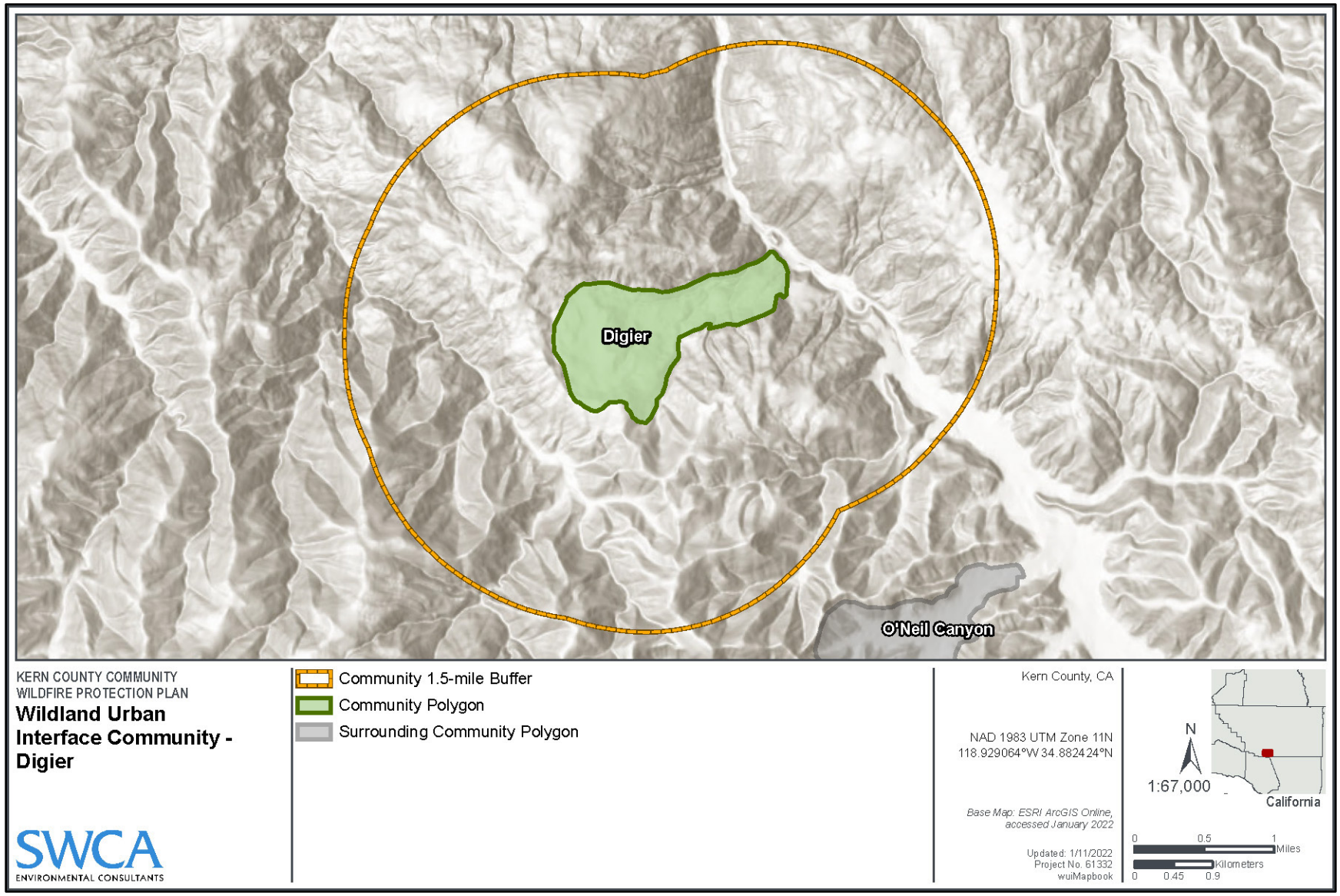
0 0.55 1.1 Kilometers


Digier
O'Neil Canyon
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Digier
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.929064°W 34.882424°N
Base Map: ESRI ArcGIS Online, accessed January 2022
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Project No. 61332
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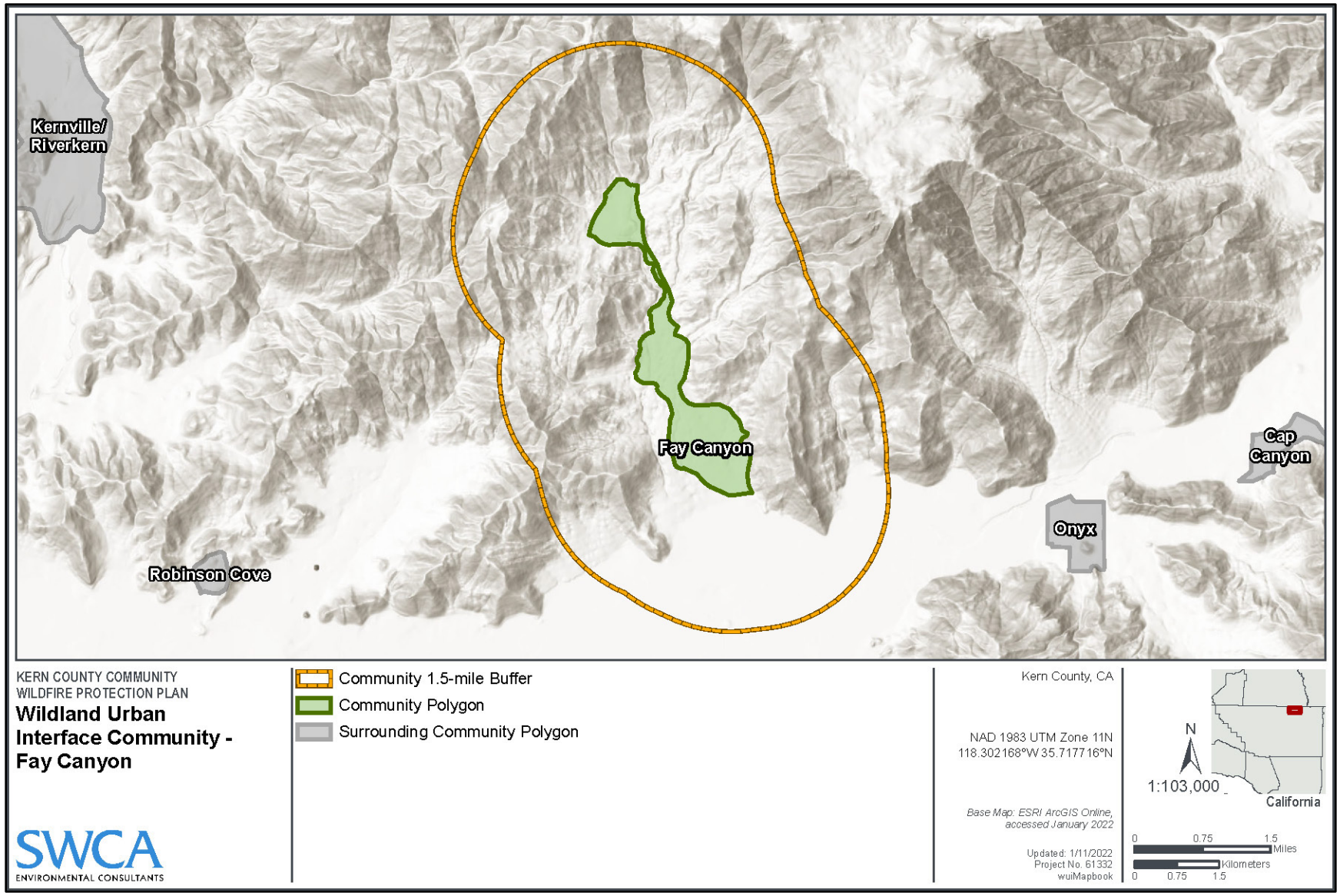
0 0.5 1 Miles
0 0.45 0.9 Kilometers


Kernville/
Riverkern
Fay Canyon
Cap
Canyon
Onyx
Robinson Cove
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban
Interface Community -
Fay Canyon
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.302168°W 35.717716°N
Base Map: ESRI ArcGIS Online,
accessed January 2022
Updated: 1/11/2022
Project No. 61332
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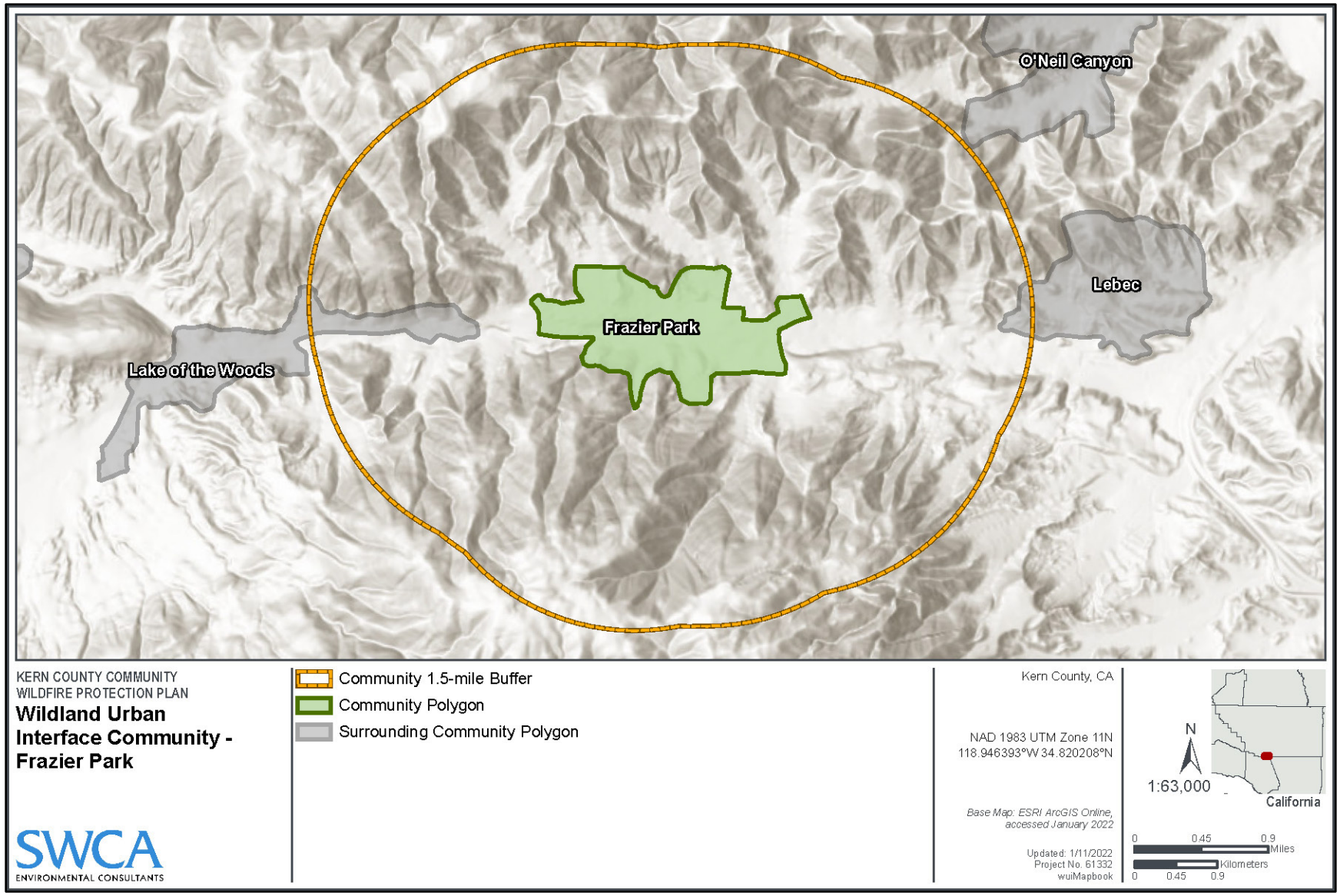
California
0 0.75 1.5
Miles
Kilometers
0 0.75 1.5


O'Neil Canyon
Lebec
Frazier Park
Lake of the Woods
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Frazier Park
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.946393°W 34.820208°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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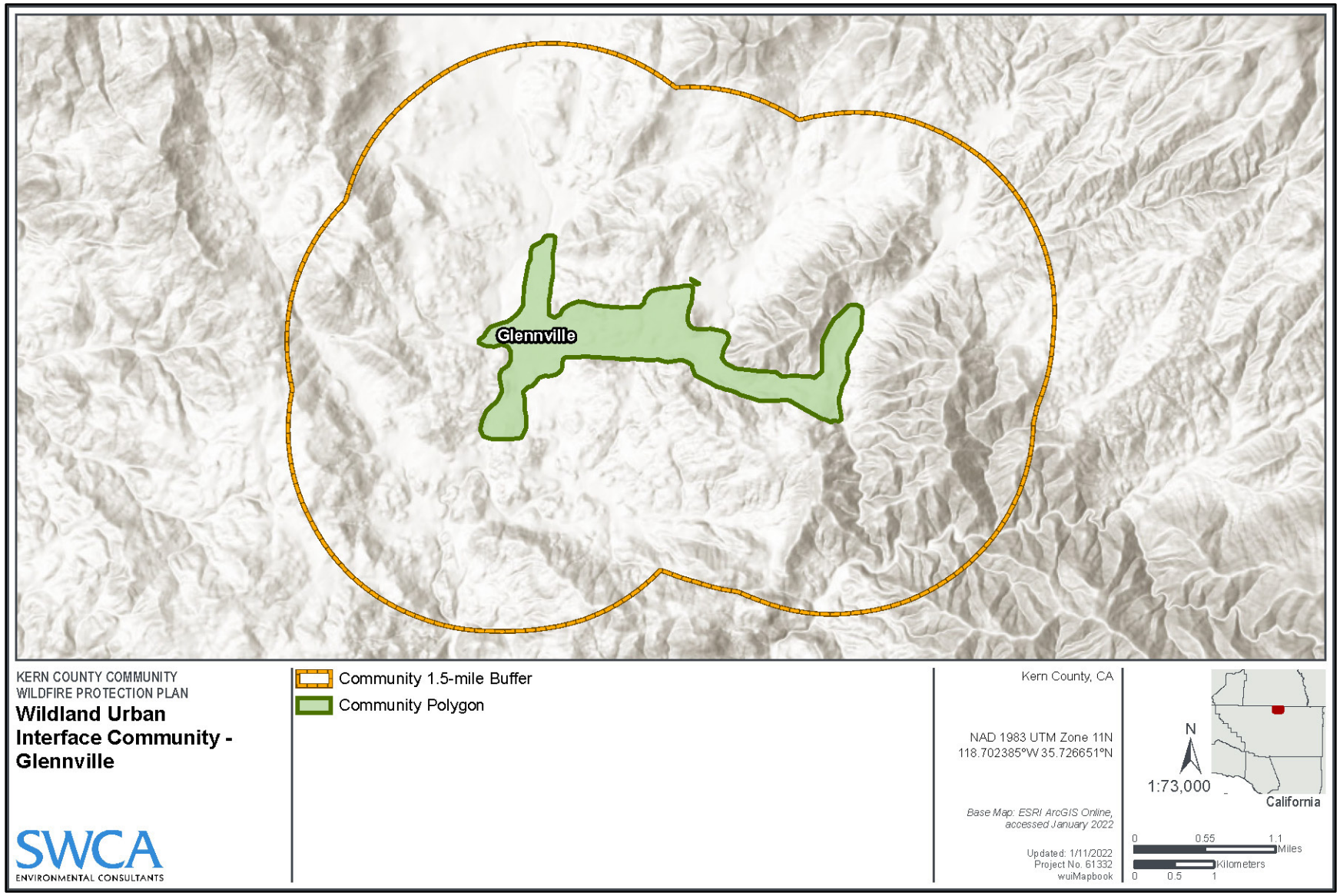
California
0 0.45 0.9 Miles
0 0.45 0.9 Kilometers


Glennville
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Glennville
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.702385°W 35.726651°N
Base Map: ESRI ArcGIS Online, accessed January 2022
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Project No. 61332
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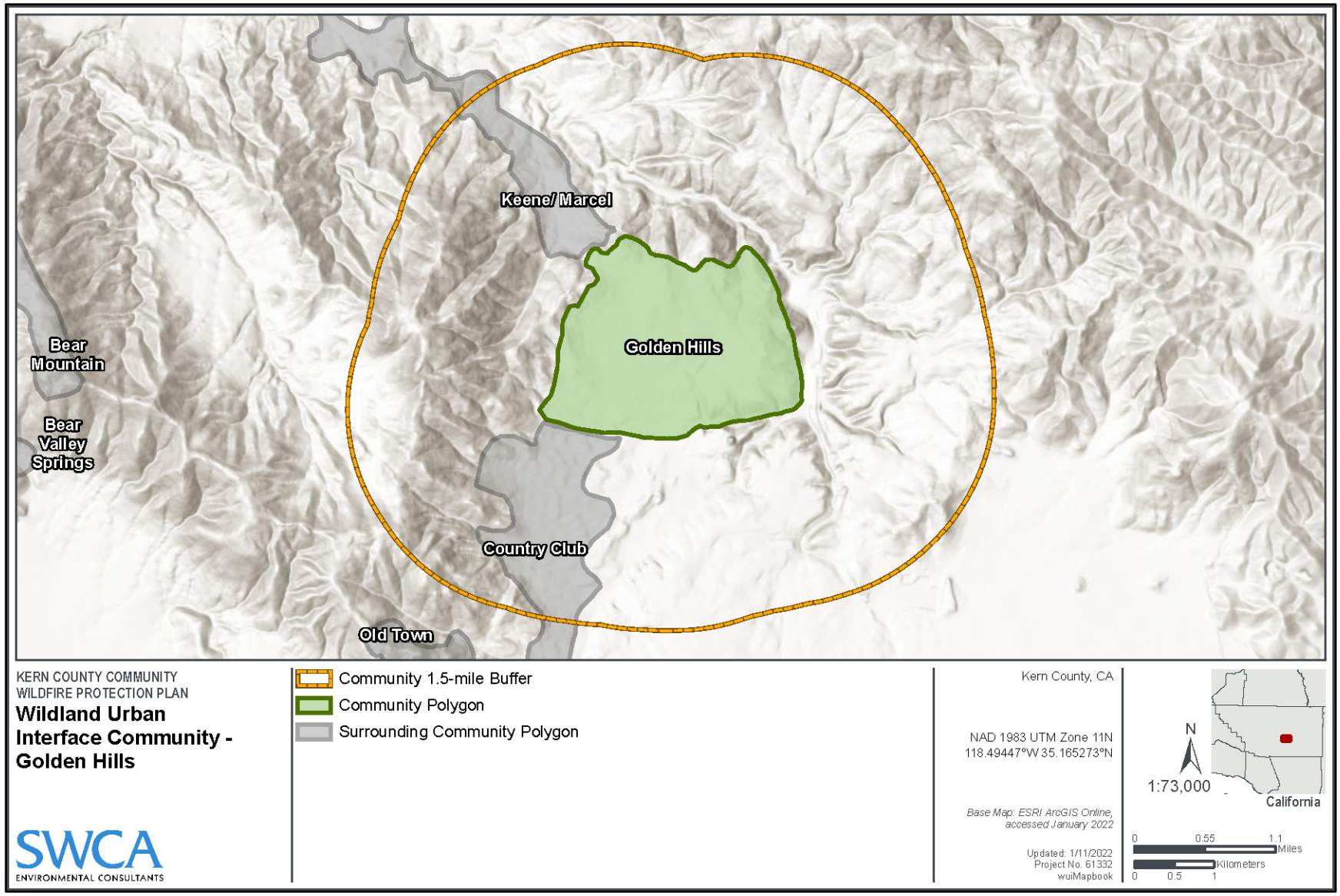
0 0.5 1 Kilometers


Keene/ Marcel
Golden Hills
Bear Mountain
Bear Valley Springs
Country Club
Old Town
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Golden Hills
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.49447°W 35.165273°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
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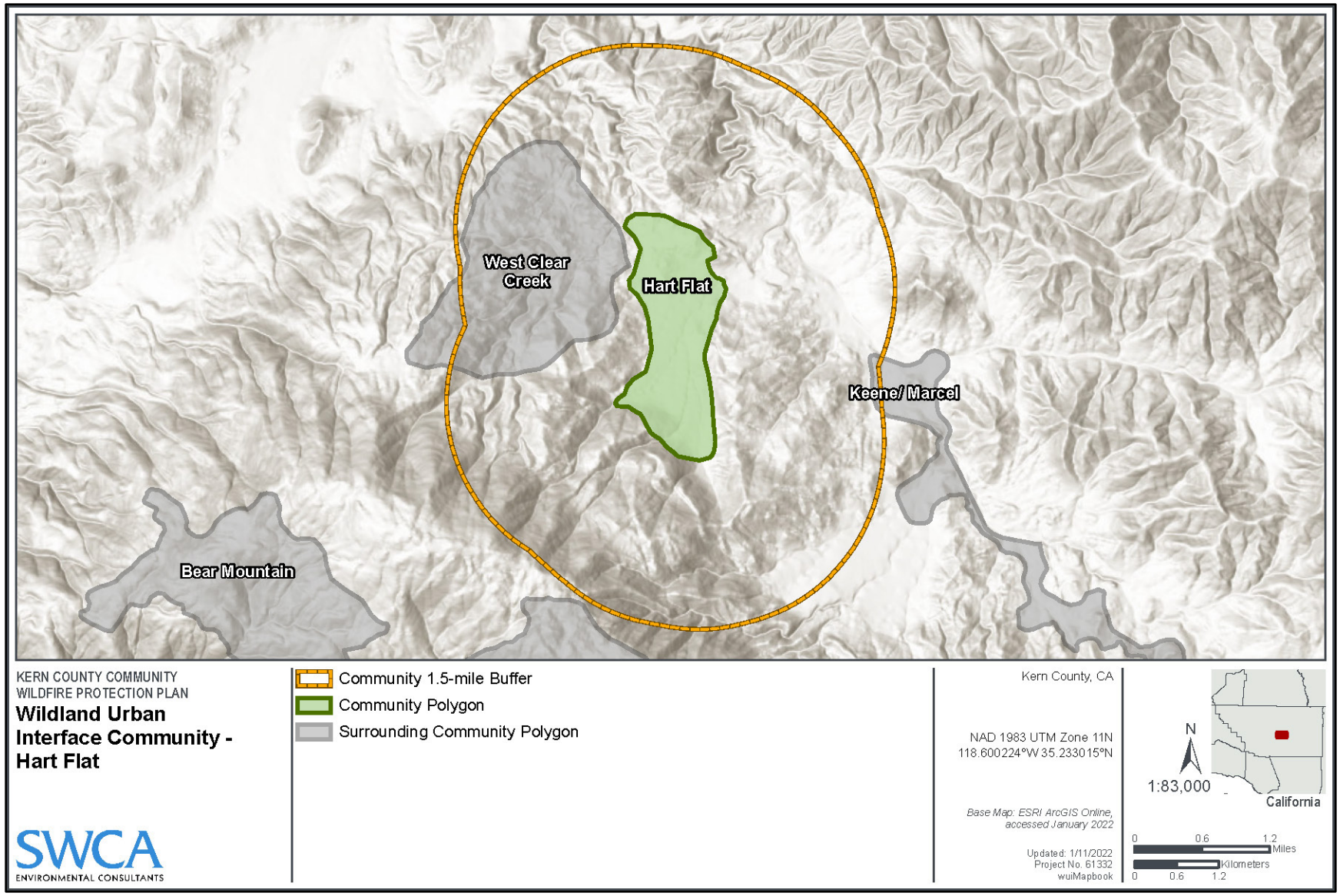
California
0 0.55 1.1 Miles
0 0.5 1 Kilometers


West Clear Creek
Hart Flat
Keene/ Marcel
Bear Mountain
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Hart Flat
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.600224°W 35.233015°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
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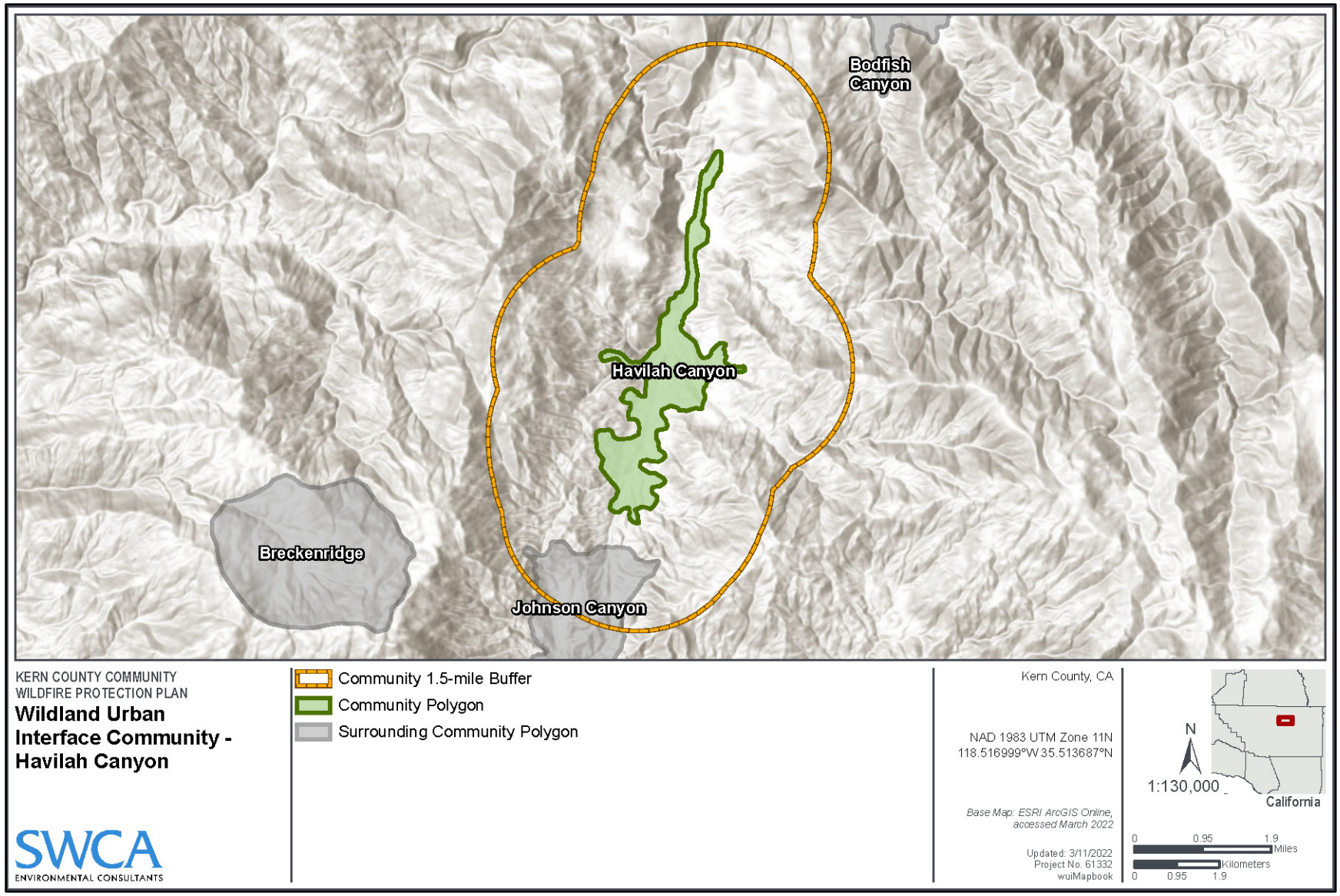
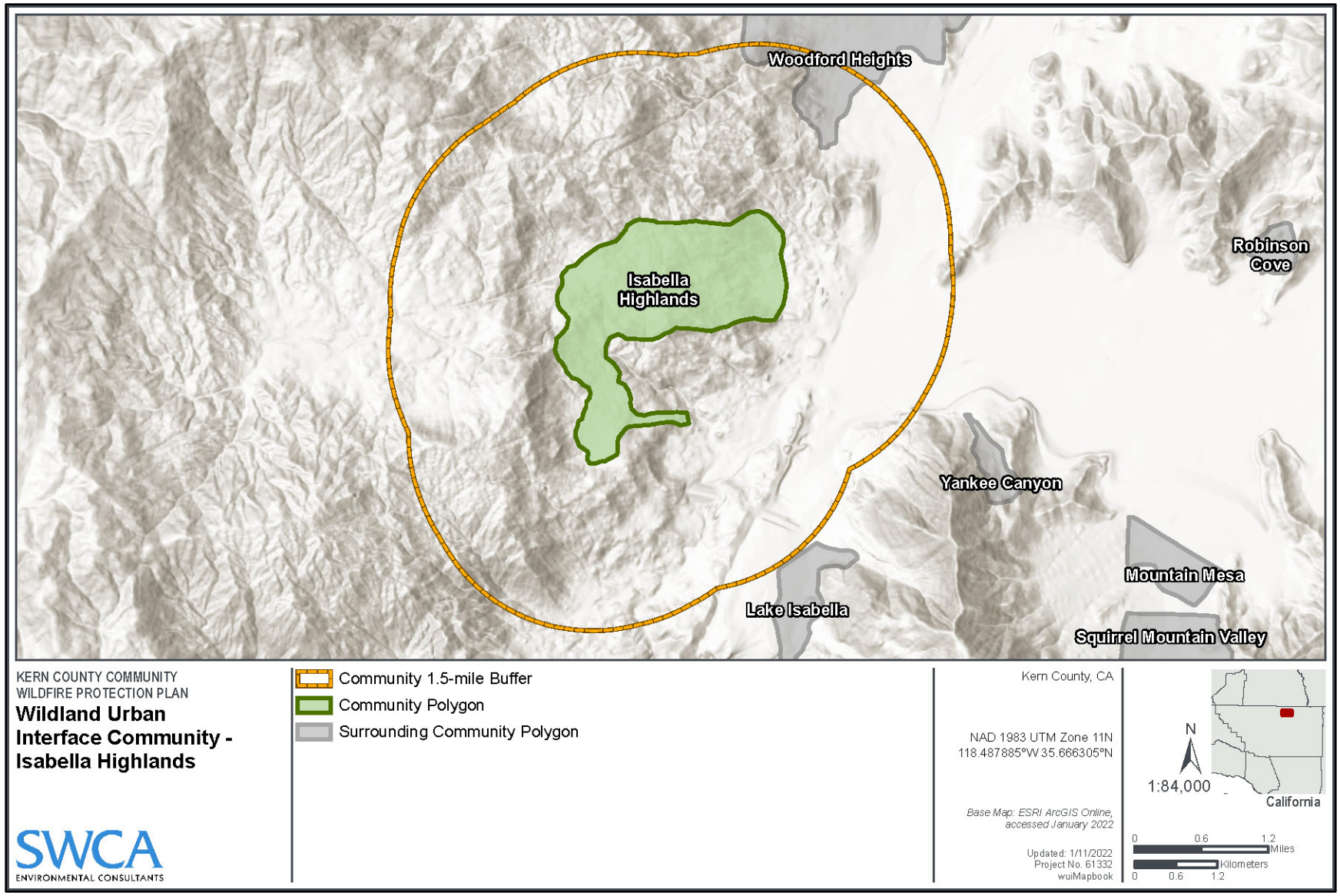
1:83,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers


Bodfish Canyon
Havilah Canyon
Breckenridge
Johnson Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Havilah Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.516999°W 35.513687°N
Base Map: ESRI ArcGIS Online, accessed March 2022
Updated: 3/11/2022
Project No. 61332
wuiMapbook
N
1:130,000
California
0 0.95 1.9
Miles
Kilometers
0 0.95 1.9


Woodford Heights
Isabella Highlands
Robinson Cove
Yankee Canyon
Mountain Mesa
Lake Isabella
Squirrel Mountain Valley
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Isabella Highlands
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.487885°W 35.666305°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
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California
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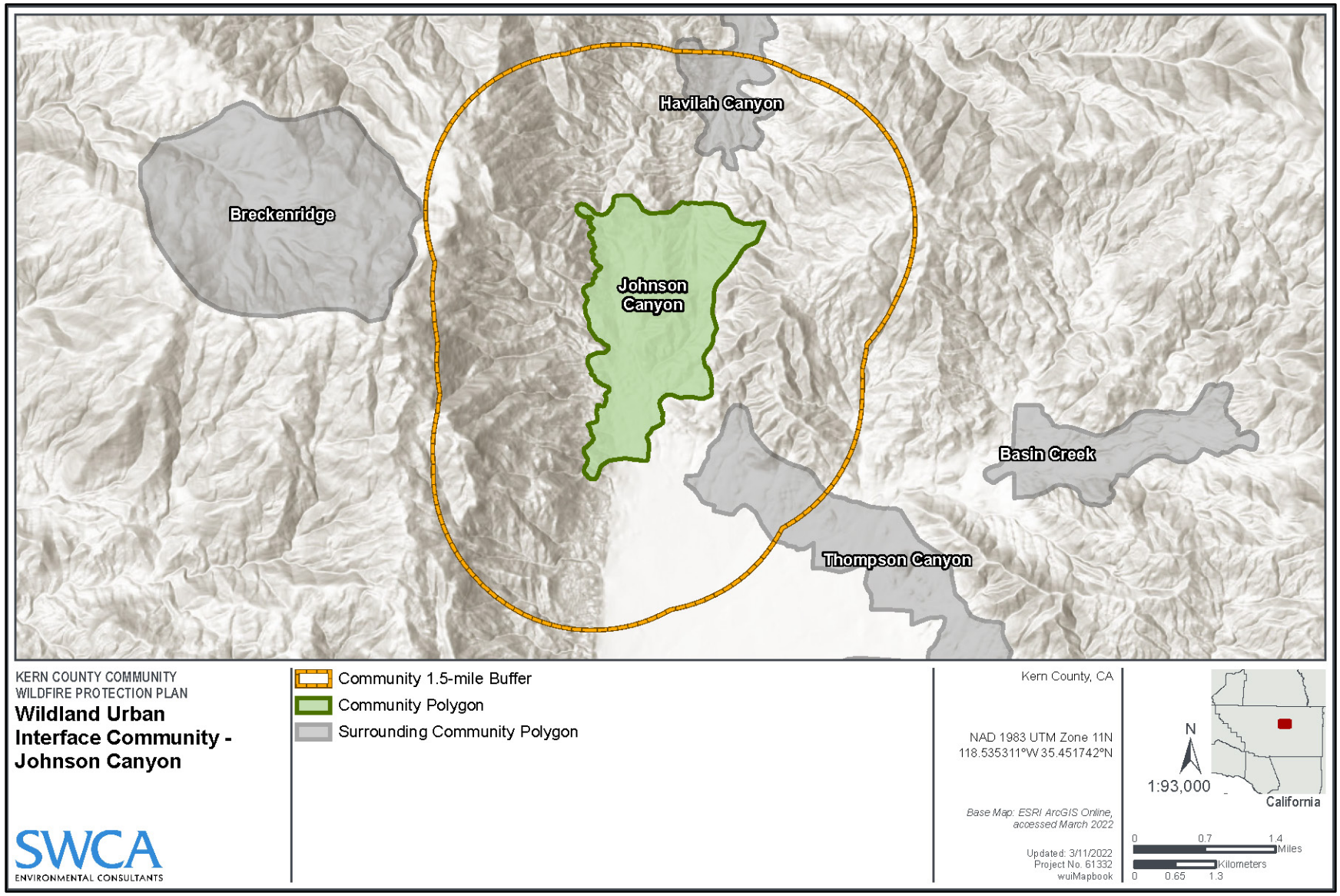
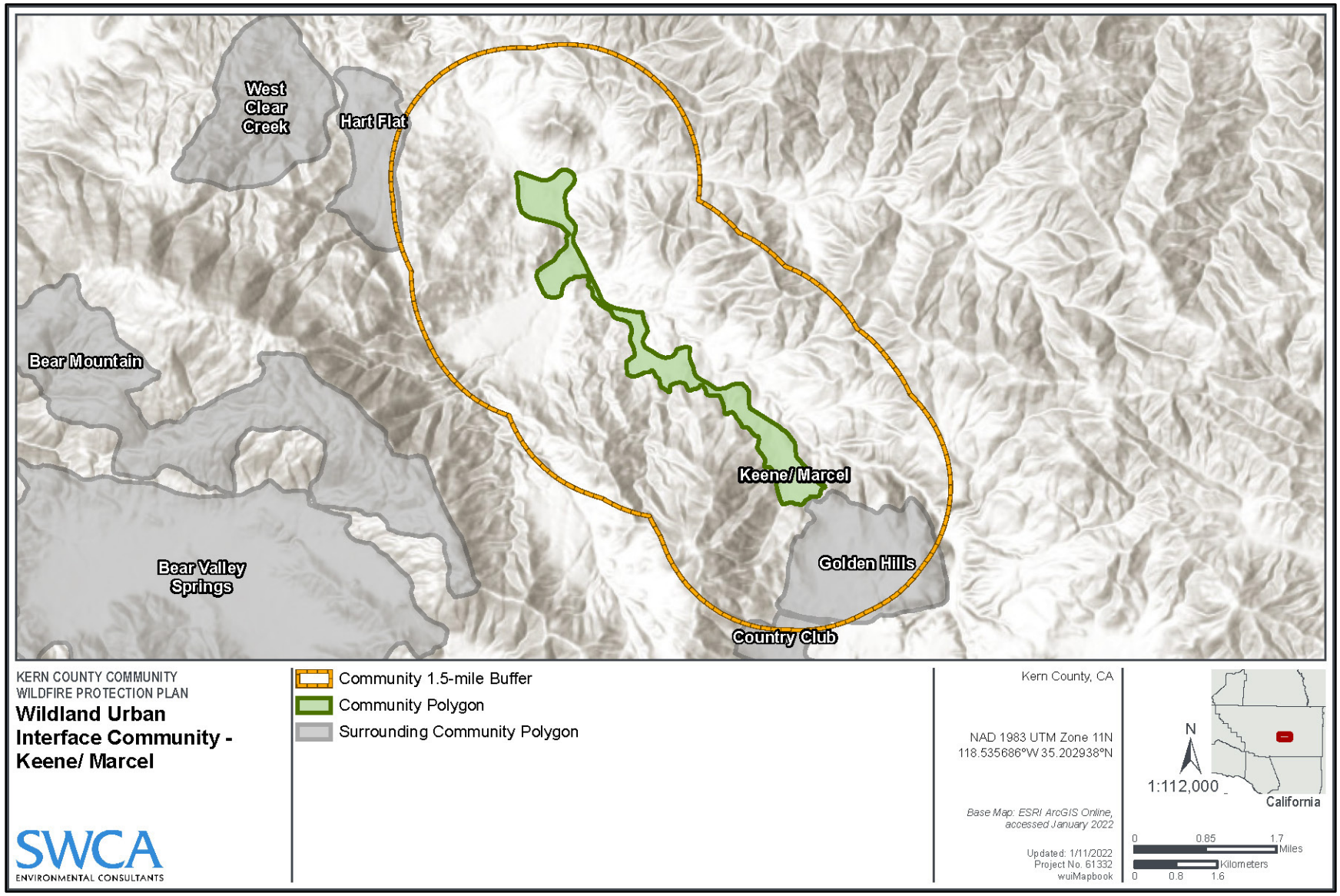
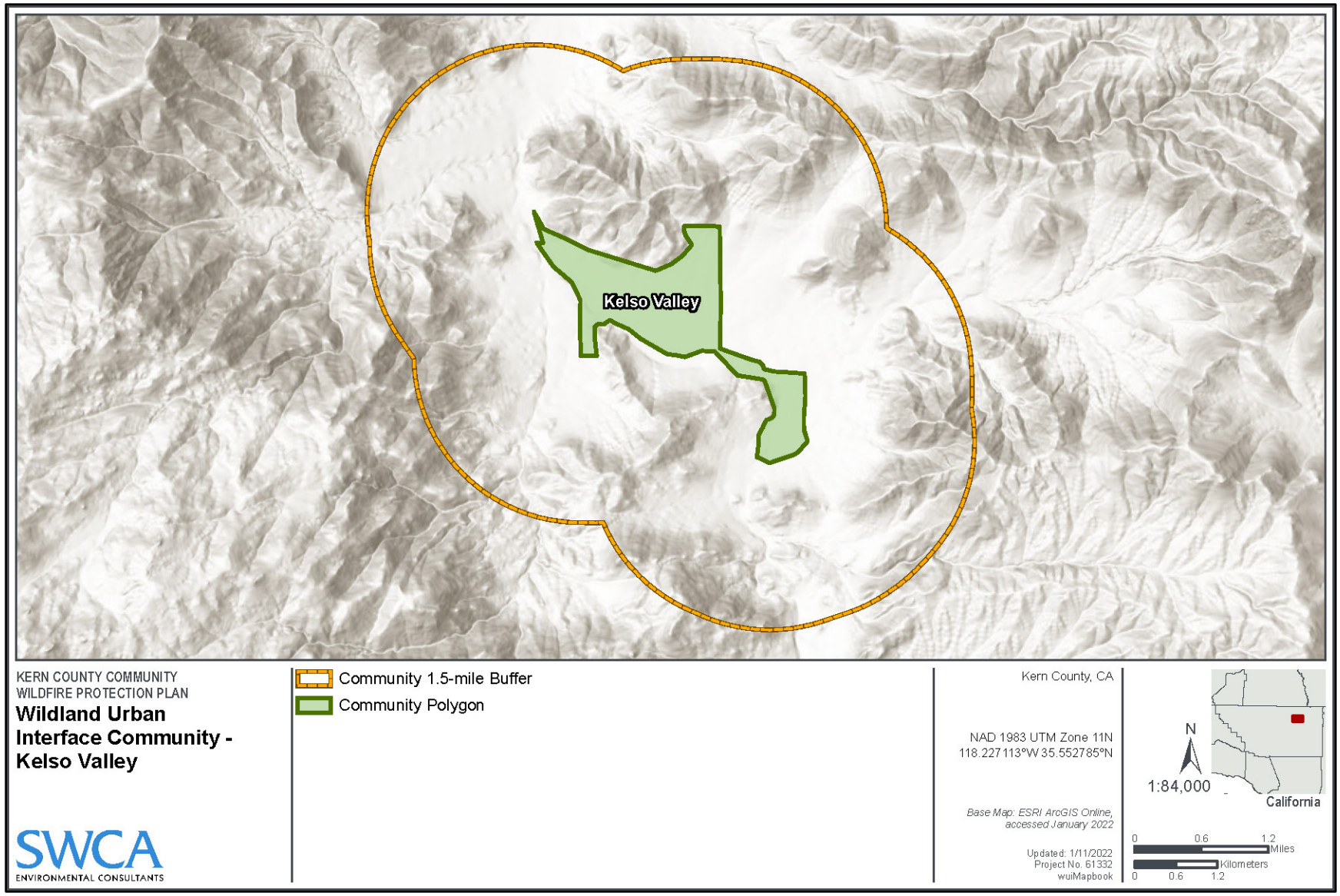
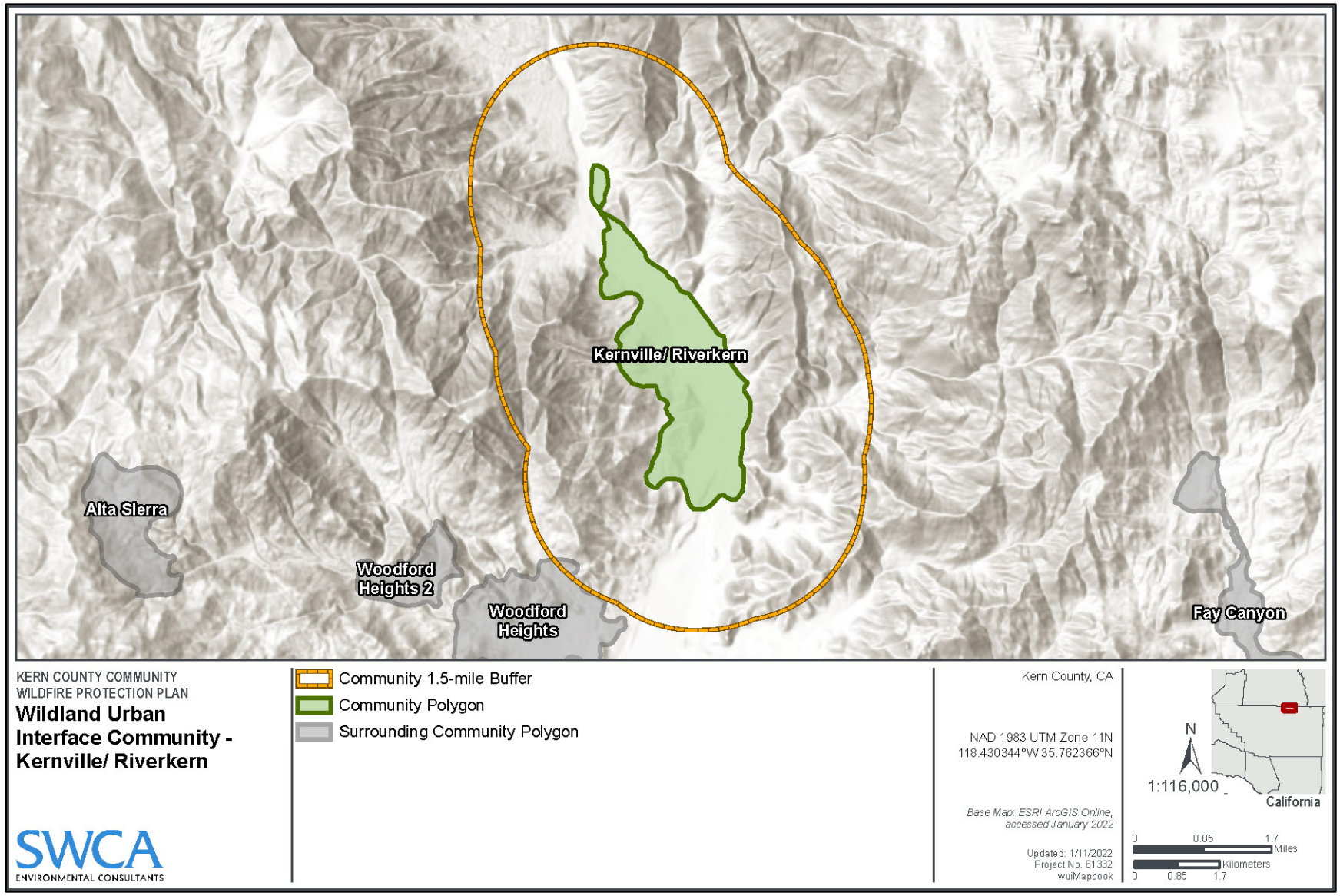
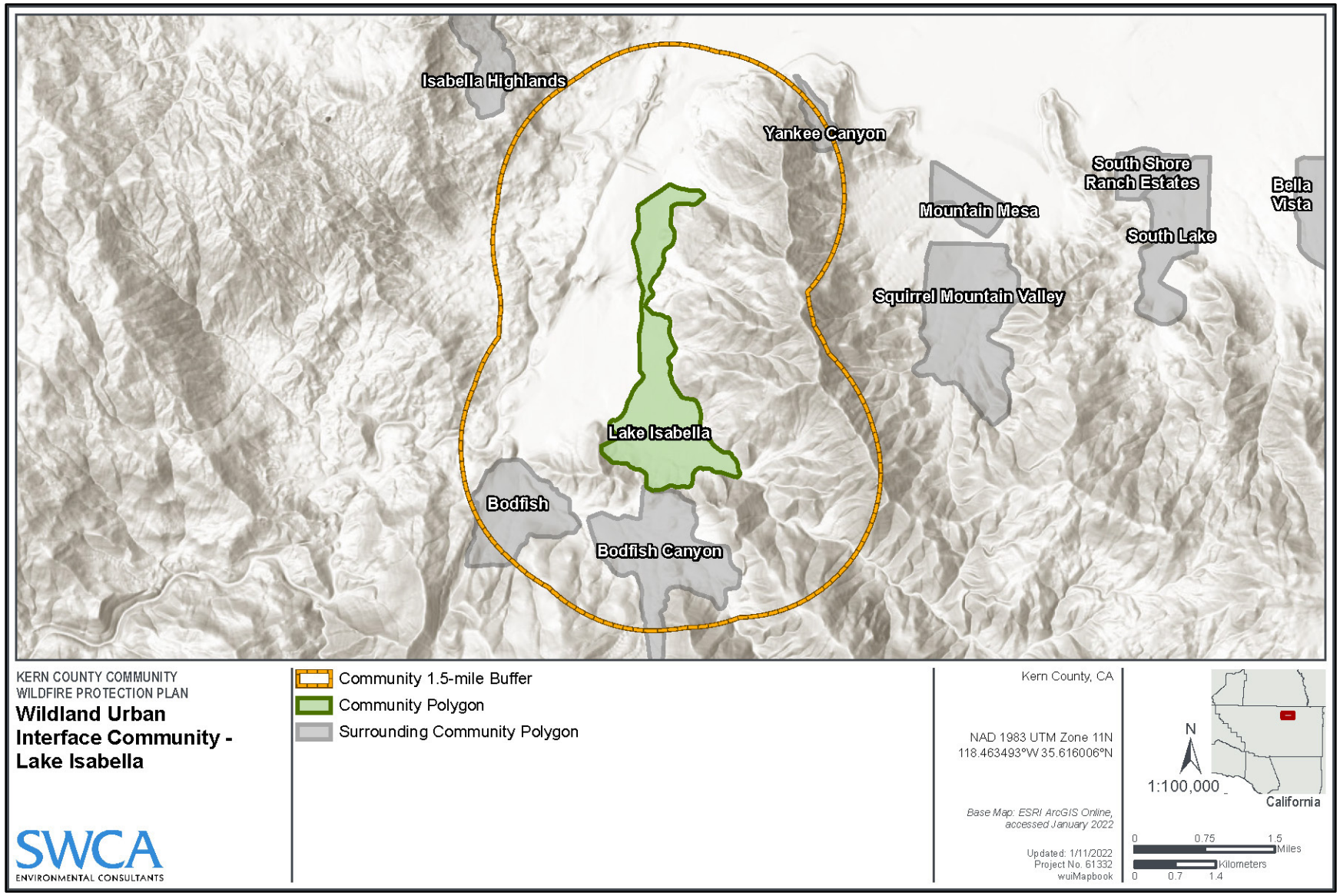
0 0.6 1.2 Kilometers

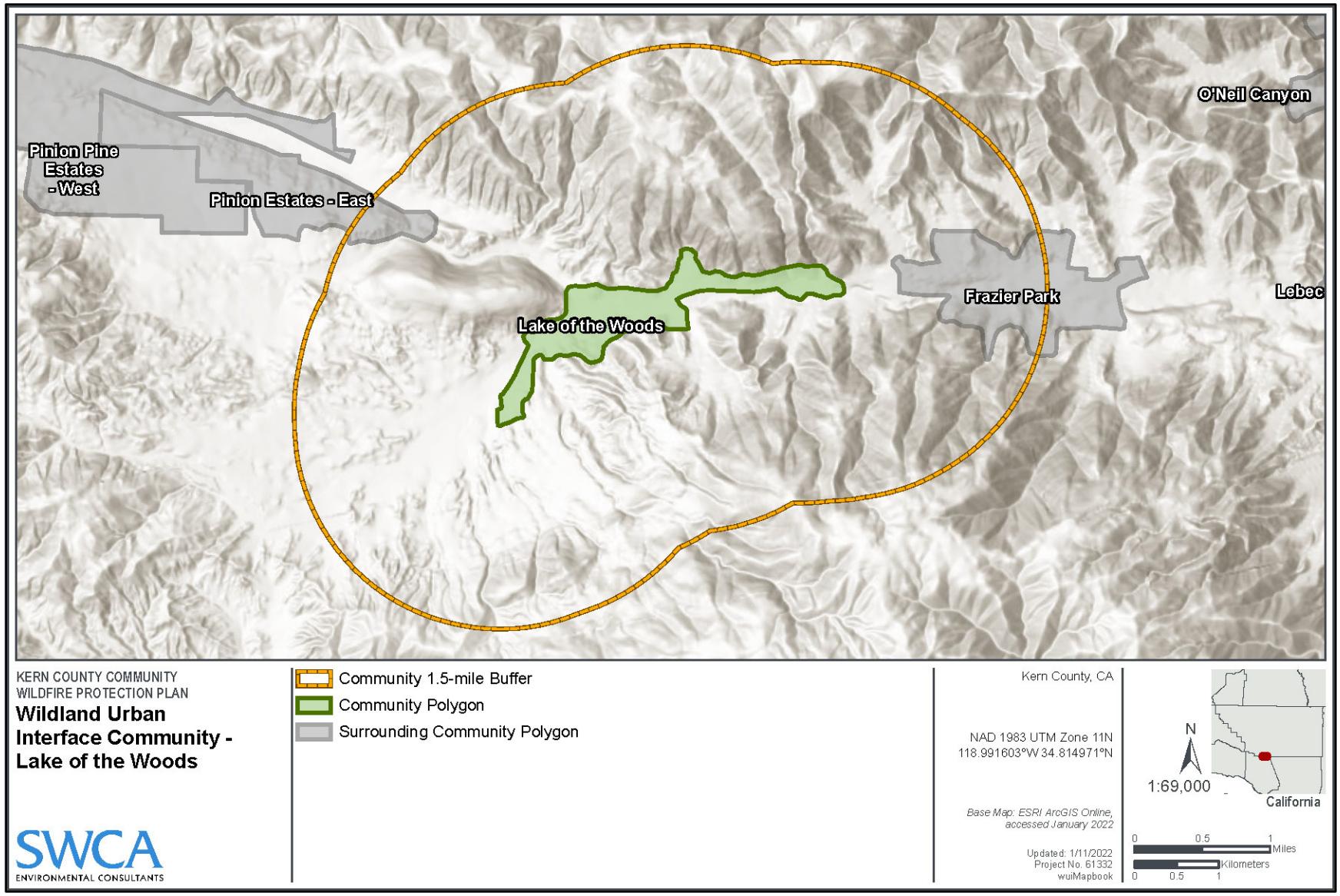

Havilah Canyon
Breckenridge
Johnson Canyon
Basin Creek
Thompson Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Johnson Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.535311°W 35.451742°N
Base Map: ESRI ArcGIS Online, accessed March 2022
Updated: 3/11/2022
Project No. 61332
wuiMapbook
N
1:93,000
California
0 0.7 1.4 Miles
0 0.65 1.3 Kilometers

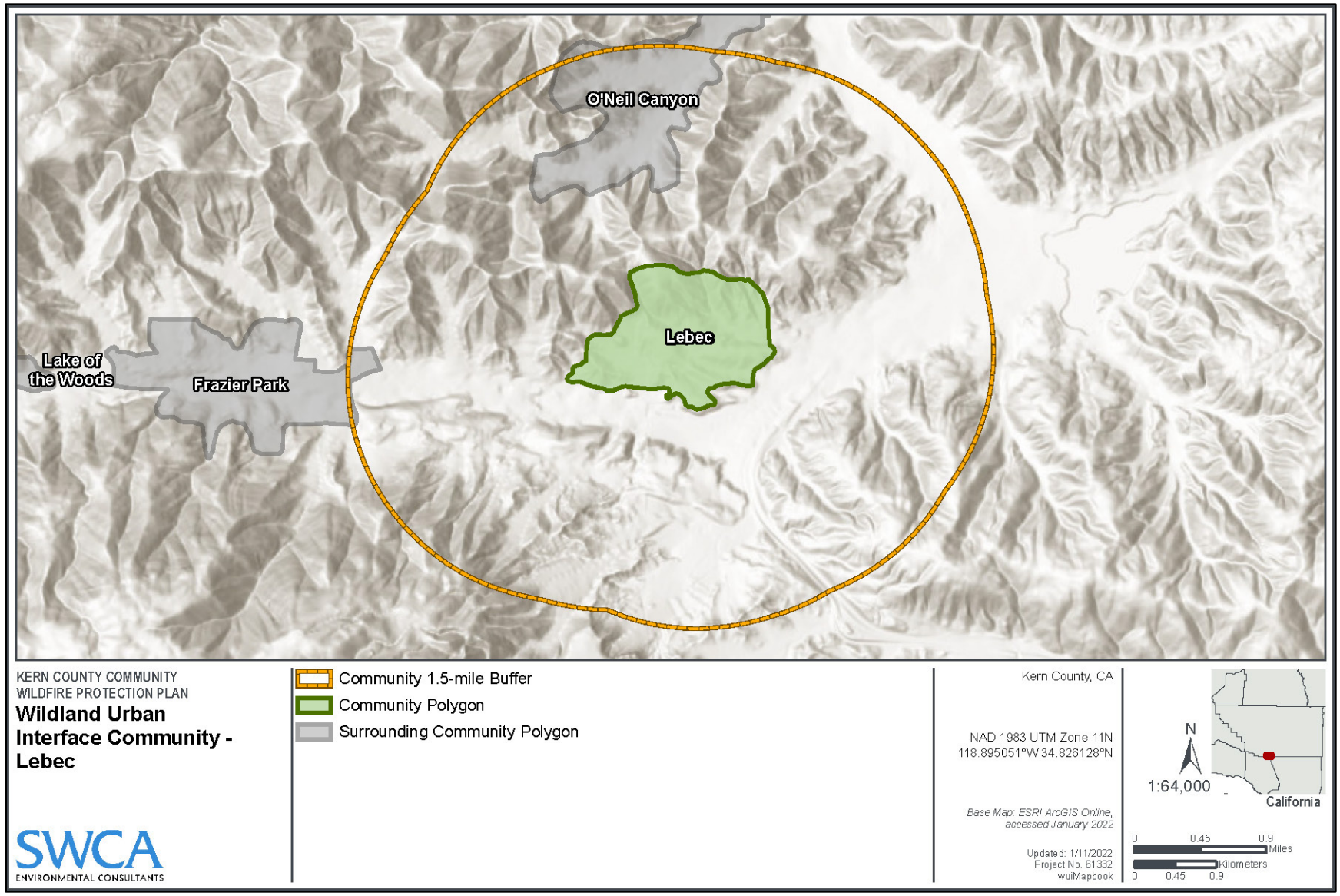

West Clear Creek
Hart Flat
Bear Mountain
Keene/ Marcel
Golden Hills
Bear Valley Springs
Country Club
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Keene/ Marcel
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.535686°W 35.202938°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:112,000
California
0 0.85 1.7 Miles
0 0.8 1.6 Kilometers

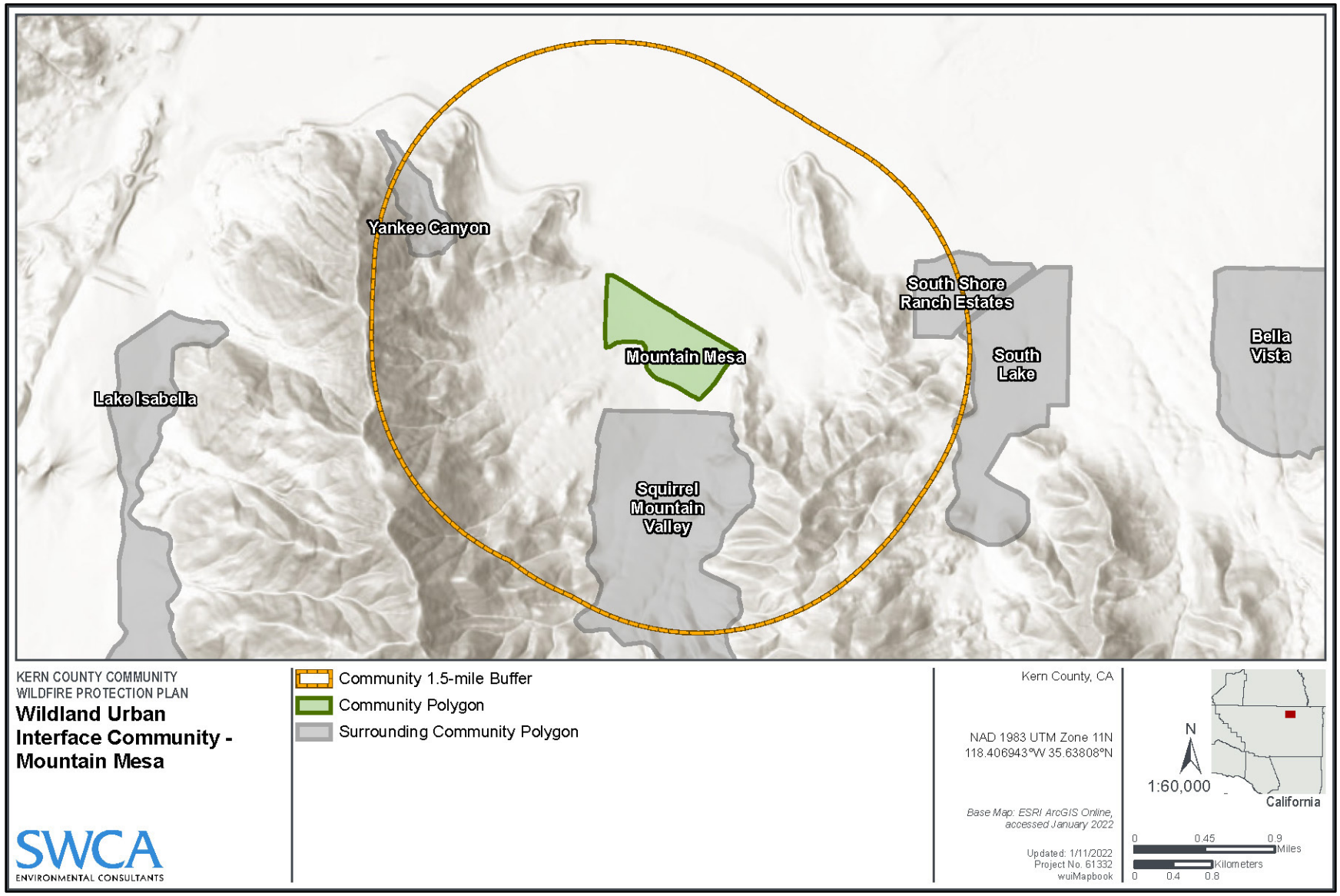

Kelso Valley
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Kelso Valley
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.227113°W 35.552785°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:84,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers

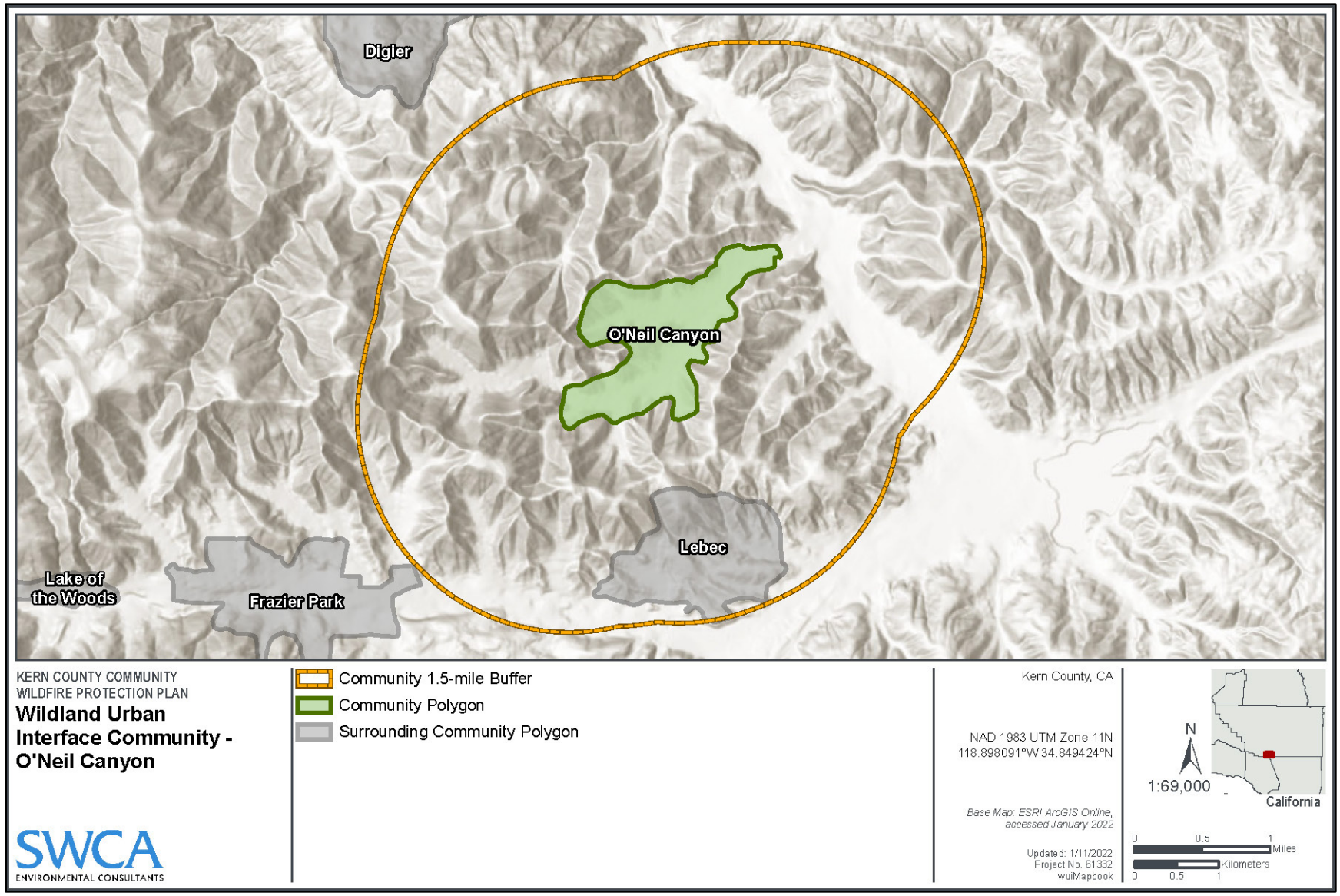

Kernville/ Riverkern
Alta Sierra
Woodford Heights 2
Woodford Heights
Fay Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Kernville/ Riverkern
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.430344°W 35.762366°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:116,000
California
0 0.85 1.7 Miles
0 0.85 1.7 Kilometers

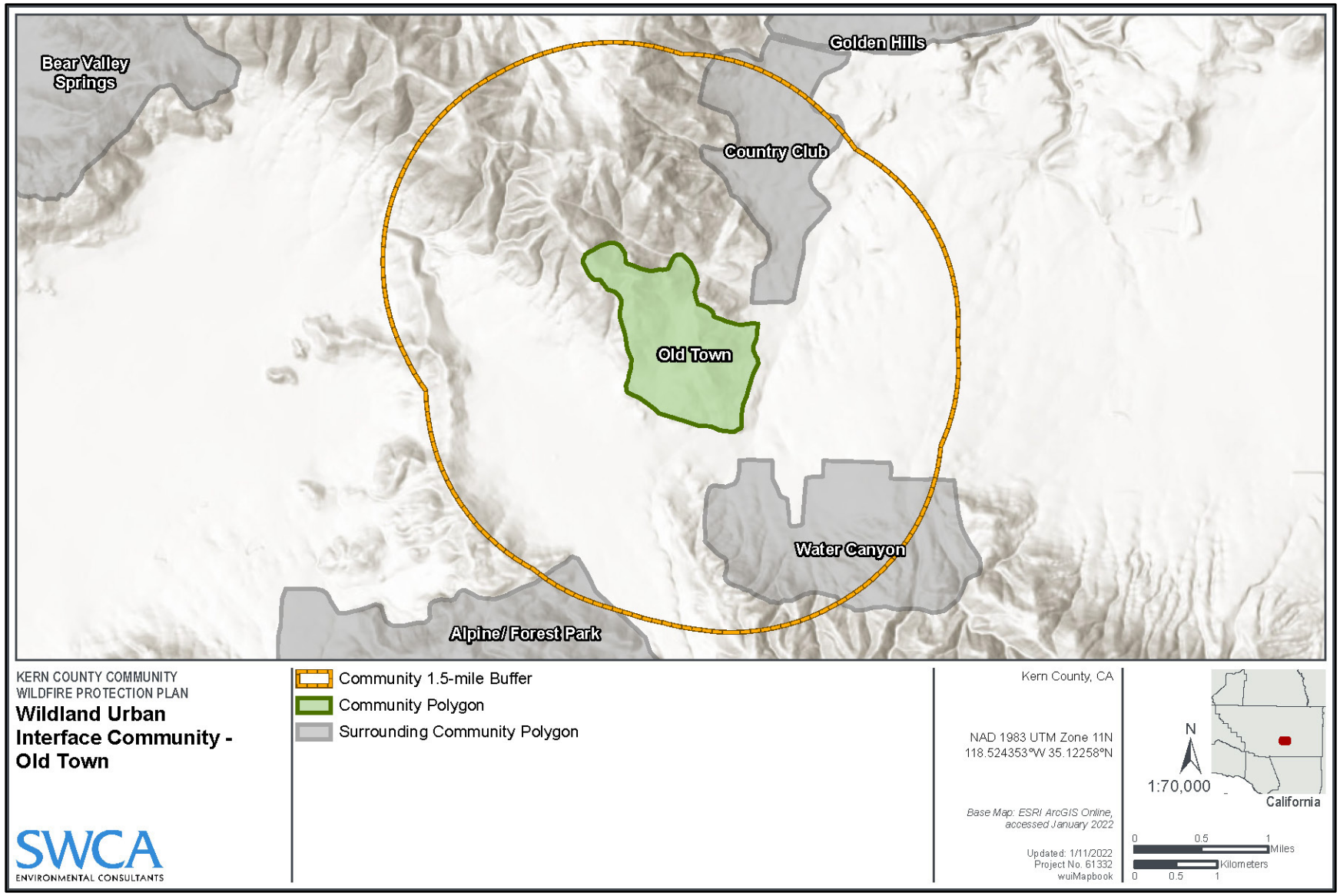

Isabella Highlands
Yankee Canyon
South Shore Ranch Estates
Bella Vista
Mountain Mesa
South Lake
Squirrel Mountain Valley
Lake Isabella
Bodfish
Bodfish Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Lake Isabella
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.463493°W 35.616006°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:100,000
California
0 0.75 1.5 Miles
0 0.7 1.4 Kilometers

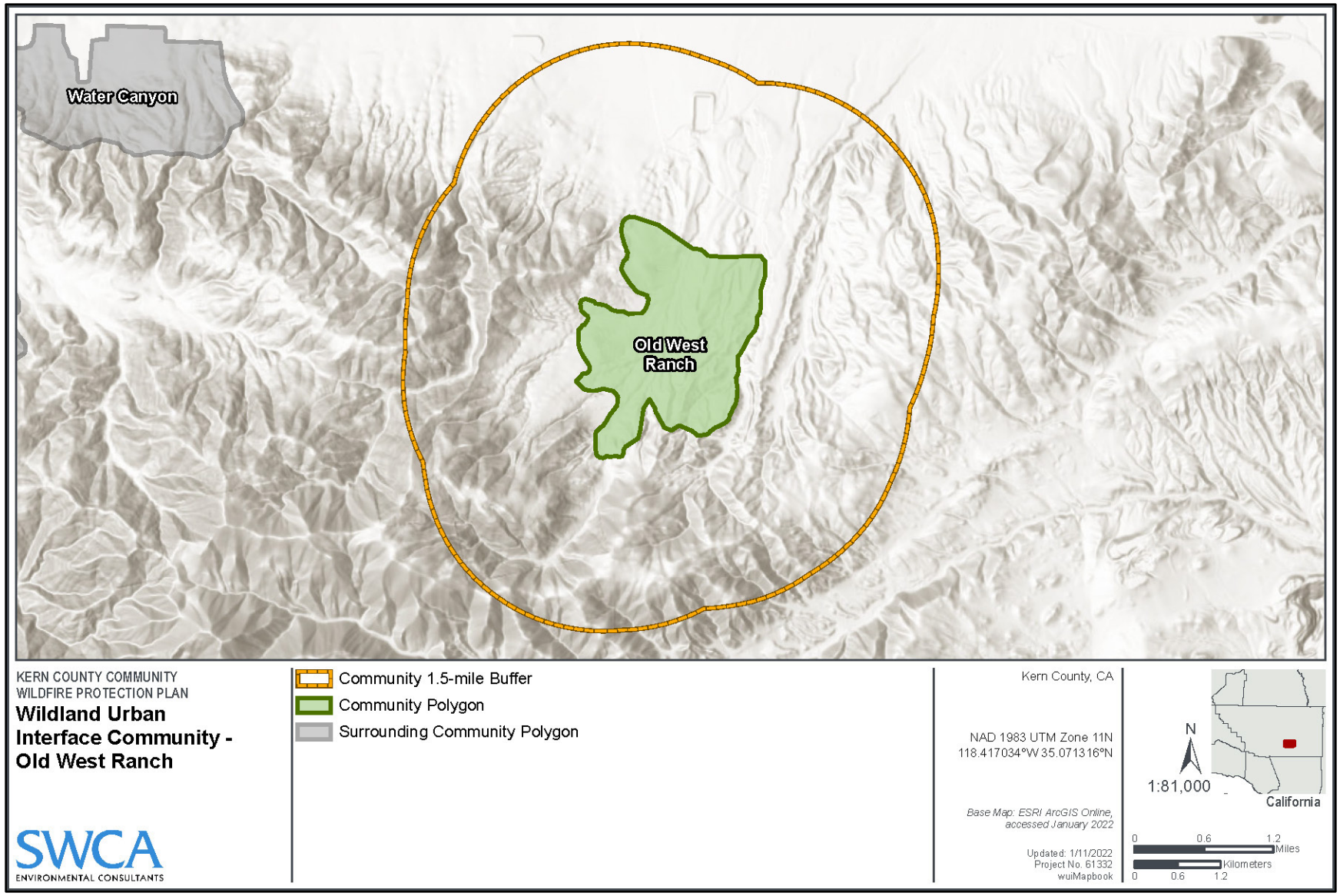

Pinion Pine Estates - West
Pinion Estates - East
Lake of the Woods
Frazier Park
O'Neil Canyon
Lebec
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Lake of the Woods
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.991603°W 34.814971°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:69,000
California
0 0.5 1 Miles
0 0.5 1 Kilometers

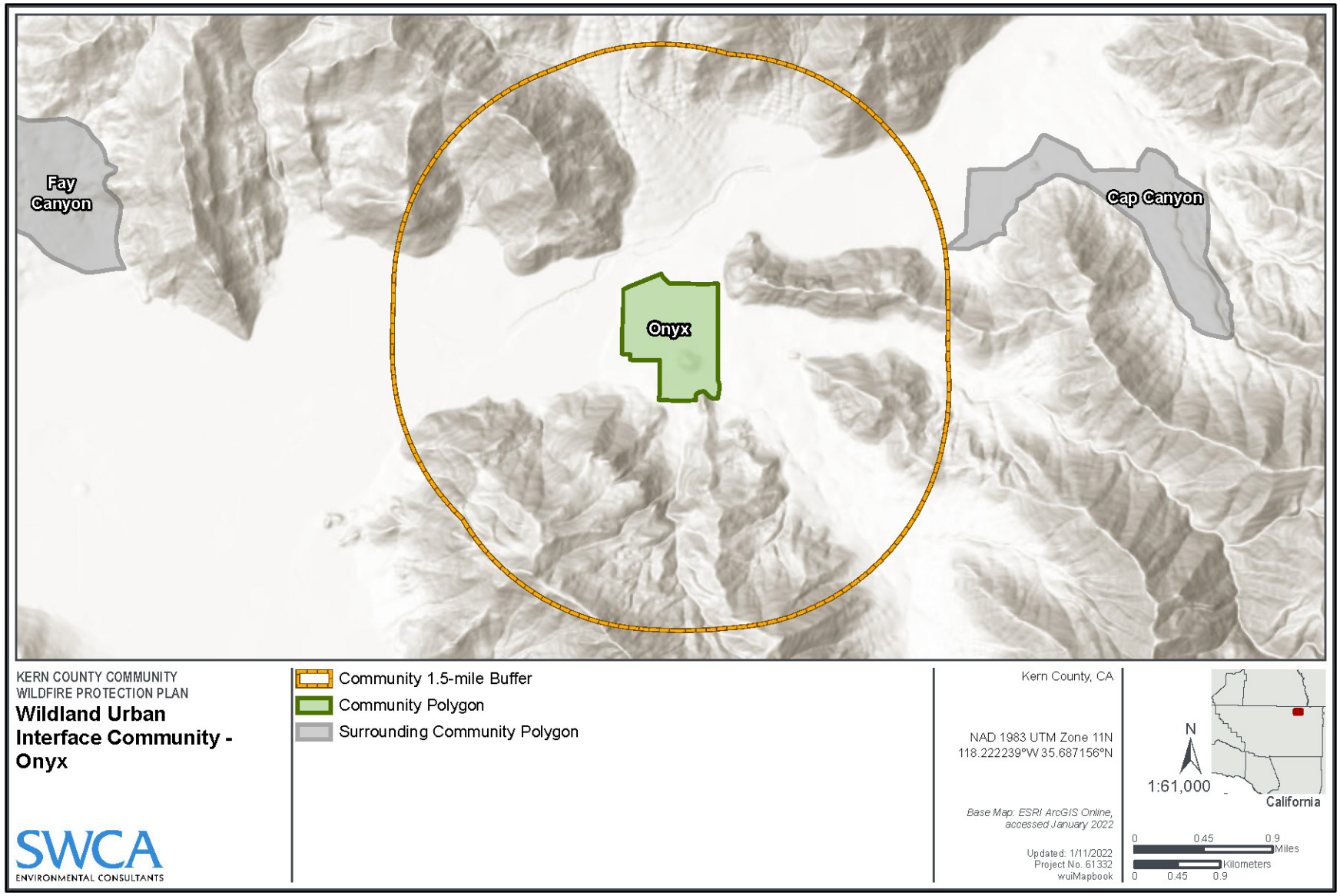

O'Neil Canyon
Lebec
Lake of the Woods
Frazier Park
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Lebec
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.895051°W 34.826128°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:64,000
California
0 0.45 0.9 Miles
0 0.45 0.9 Kilometers

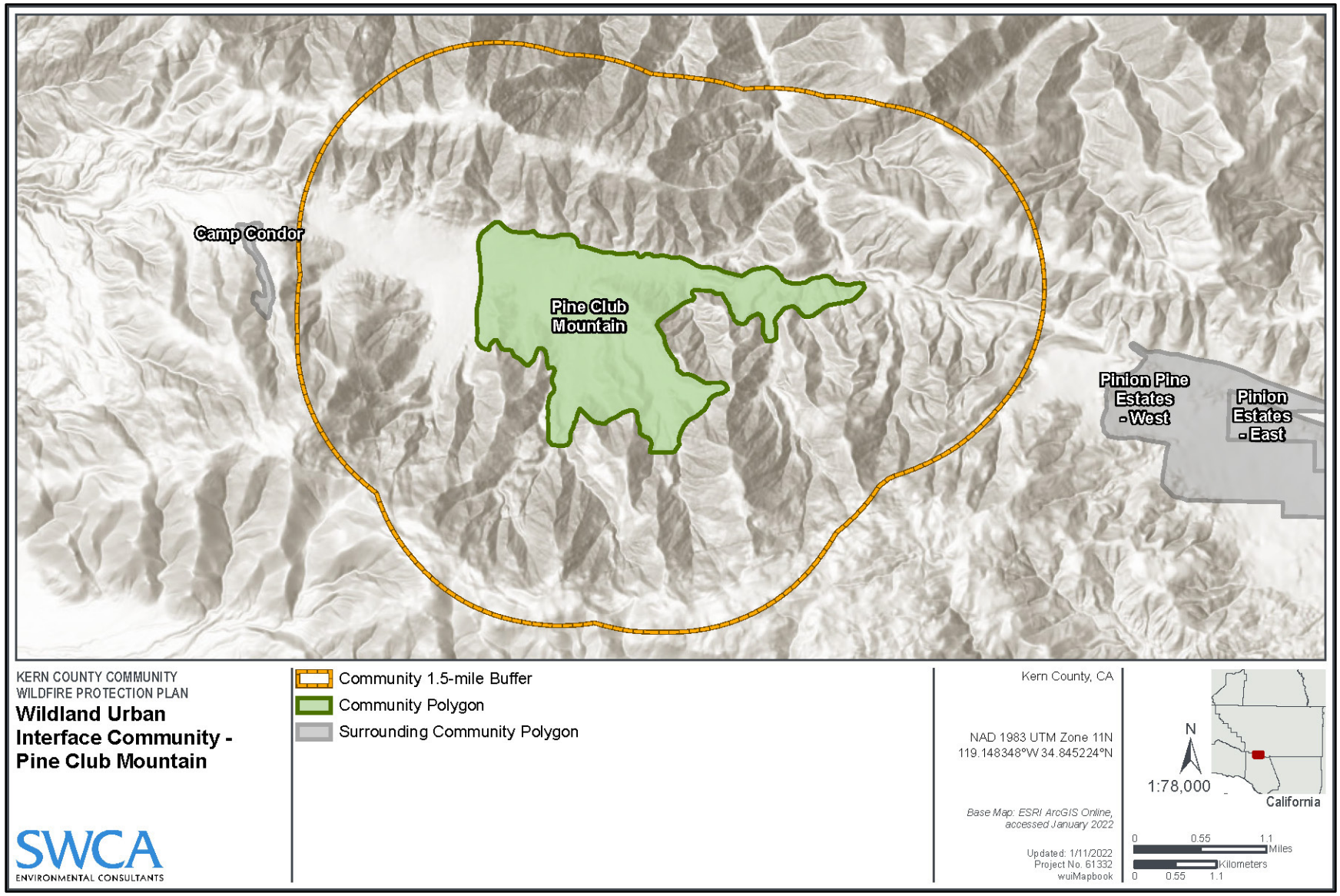

Yankee Canyon
Mountain Mesa
South Shore Ranch Estates
South Lake
Bella Vista
Lake Isabella
Squirrel Mountain Valley
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Mountain Mesa
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.406943°W 35.63808°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:60,000
California
0 0.45 0.9 Miles
0 0.4 0.8 Kilometers

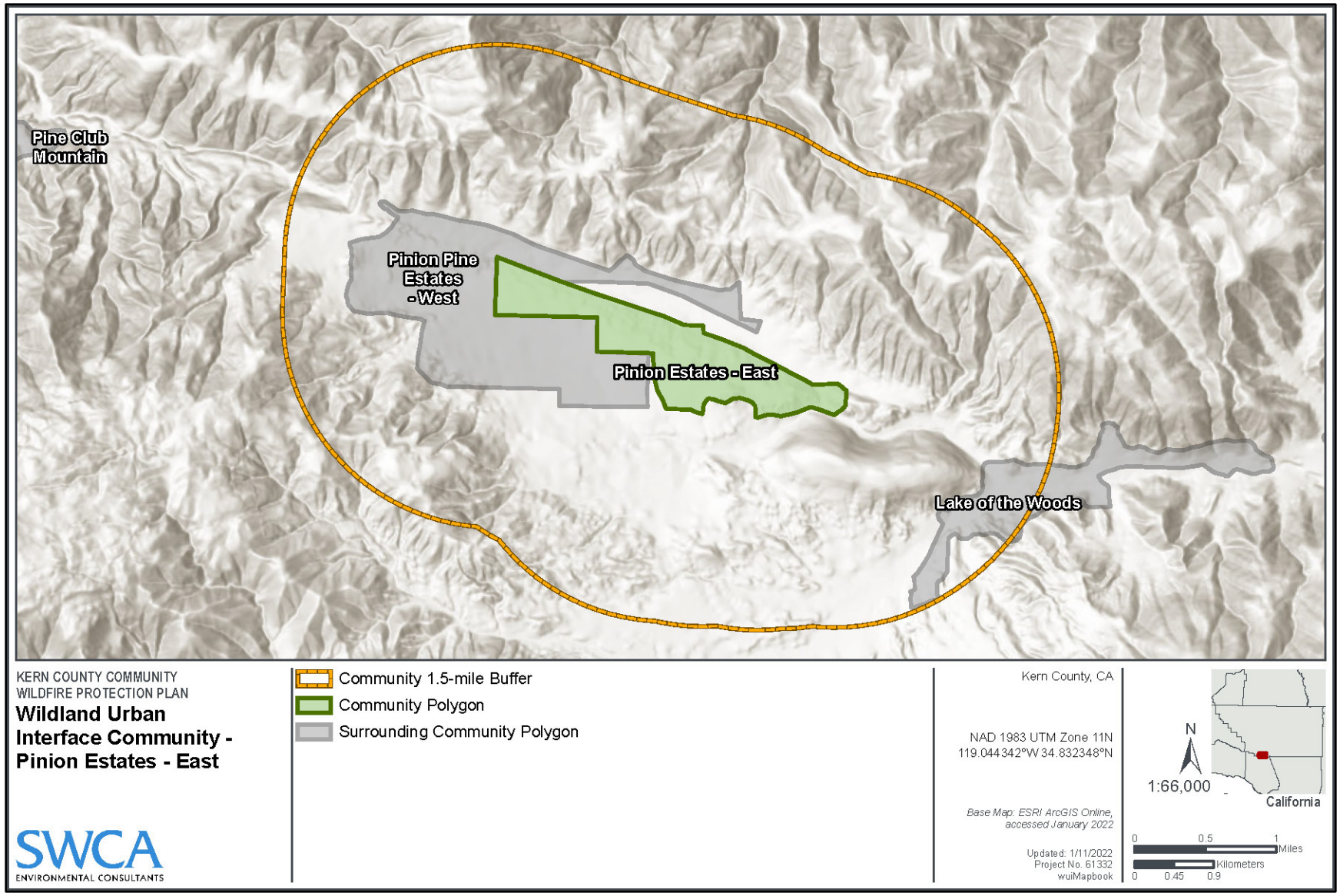

Digier
O'Neil Canyon
Lebec
Lake of the Woods
Frazier Park
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - O'Neil Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.898091°W 34.849424°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:69,000
California
0 0.5 1 Miles
0 0.5 1 Kilometers

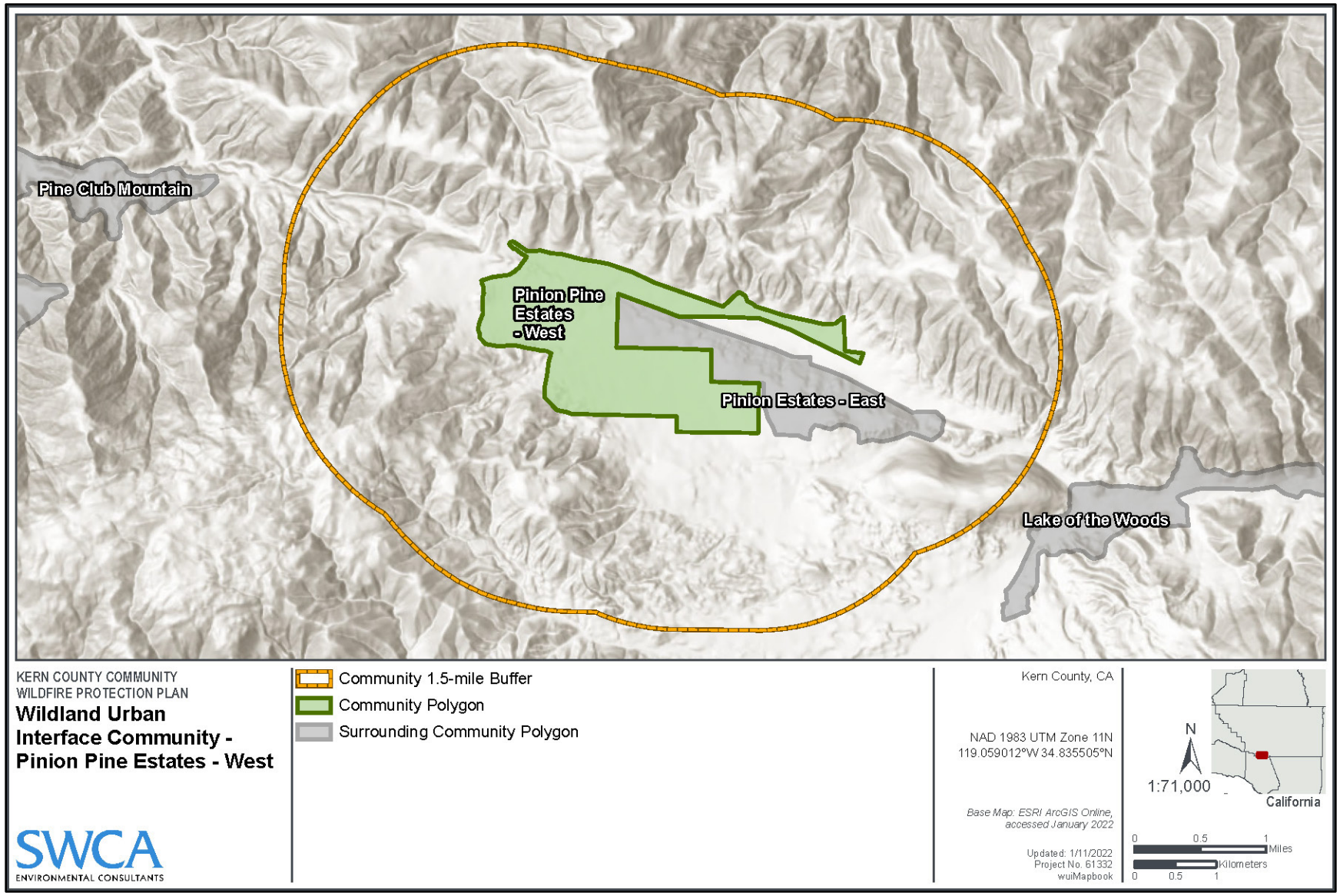

Bear Valley Springs
Golden Hills
Country Club
Old Town
Water Canyon
Alpine/ Forest Park
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Old Town
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.524353°W 35.12258°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:70,000
California
0 0.5 1 Miles
0 0.5 1 Kilometers

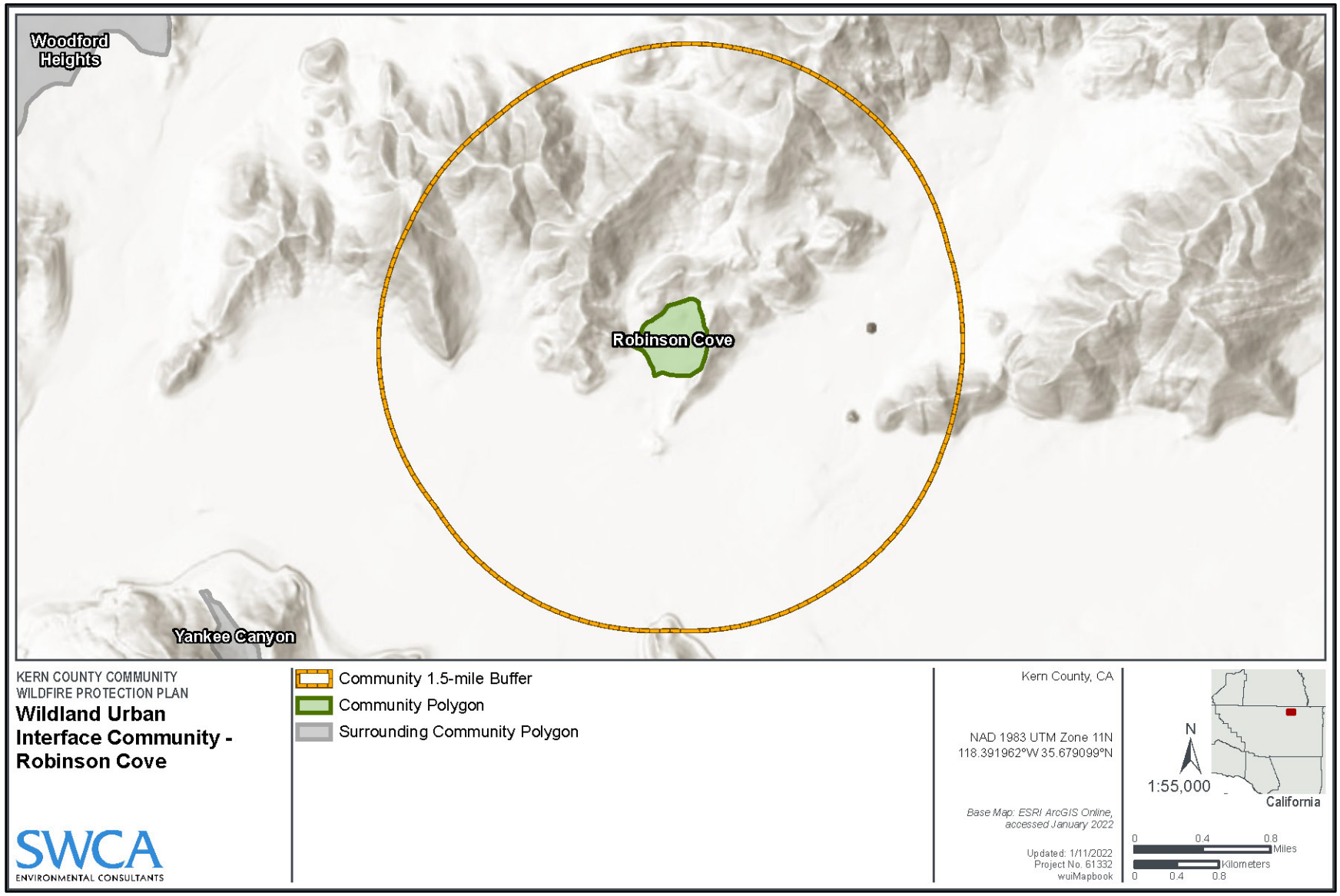

Water Canyon
Old West Ranch
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Old West Ranch
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.417034°W 35.071316°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:81,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers

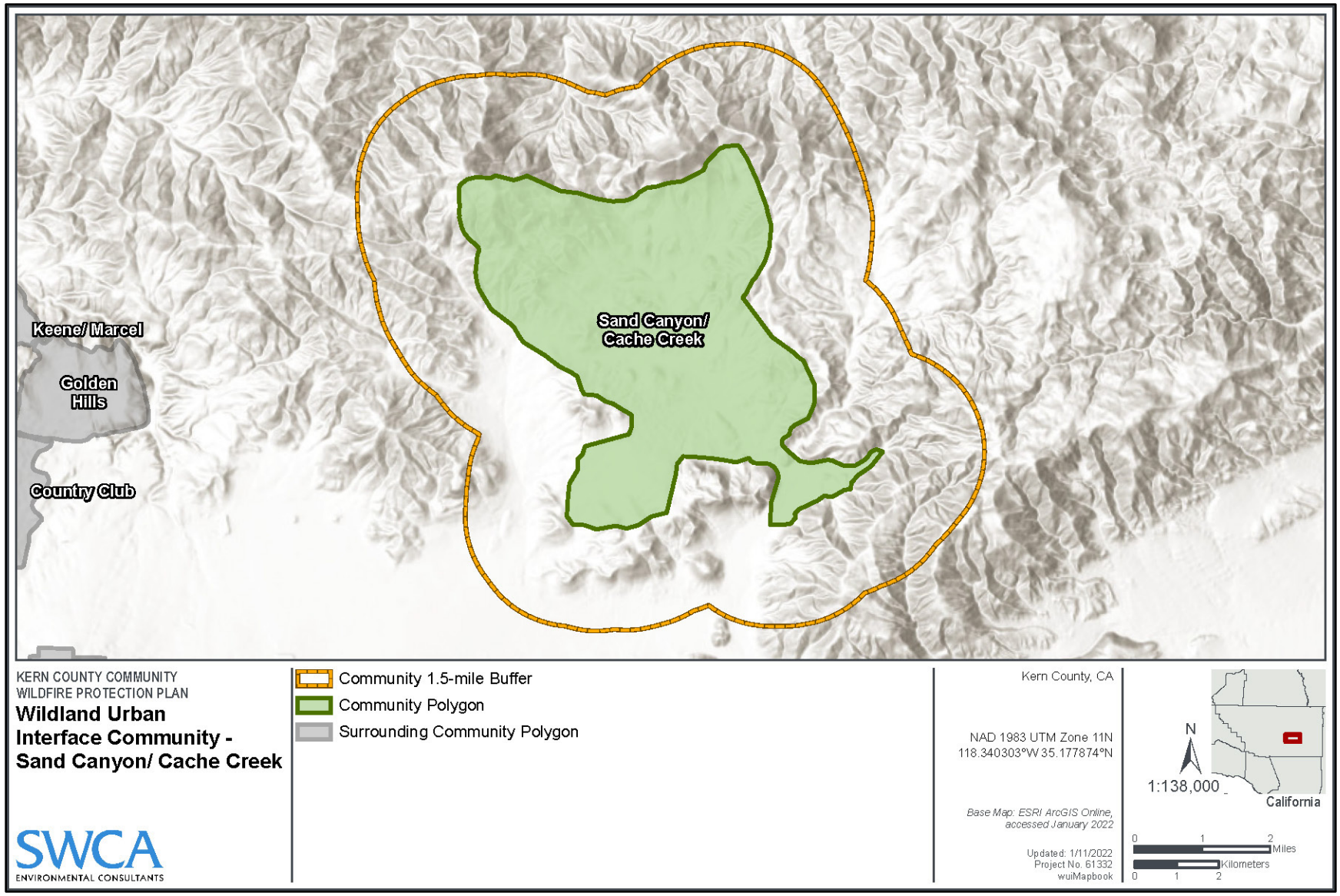

Fay Canyon
Onyx
Cap Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Onyx
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.222239°W 35.687156°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:61,000
California
0 0.45 0.9 Miles
0 0.45 0.9 Kilometers

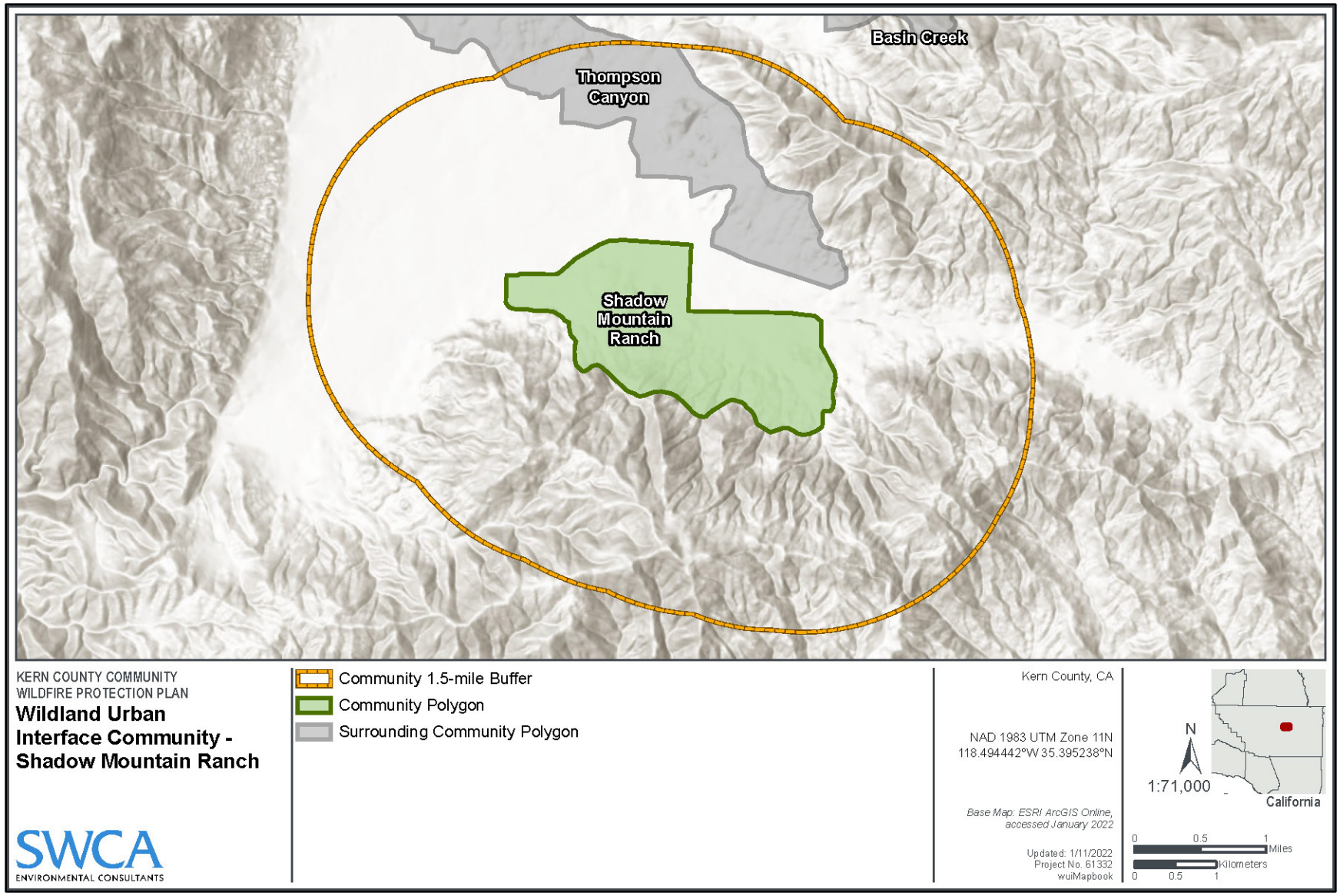

Camp Condor
Pine Club Mountain
Pinion Pine Estates - West
Pinion Estates - East
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Pine Club Mountain
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
119.148348°W 34.845224°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:78,000
California
0 0.55 1.1 Miles
0 0.55 1.1 Kilometers

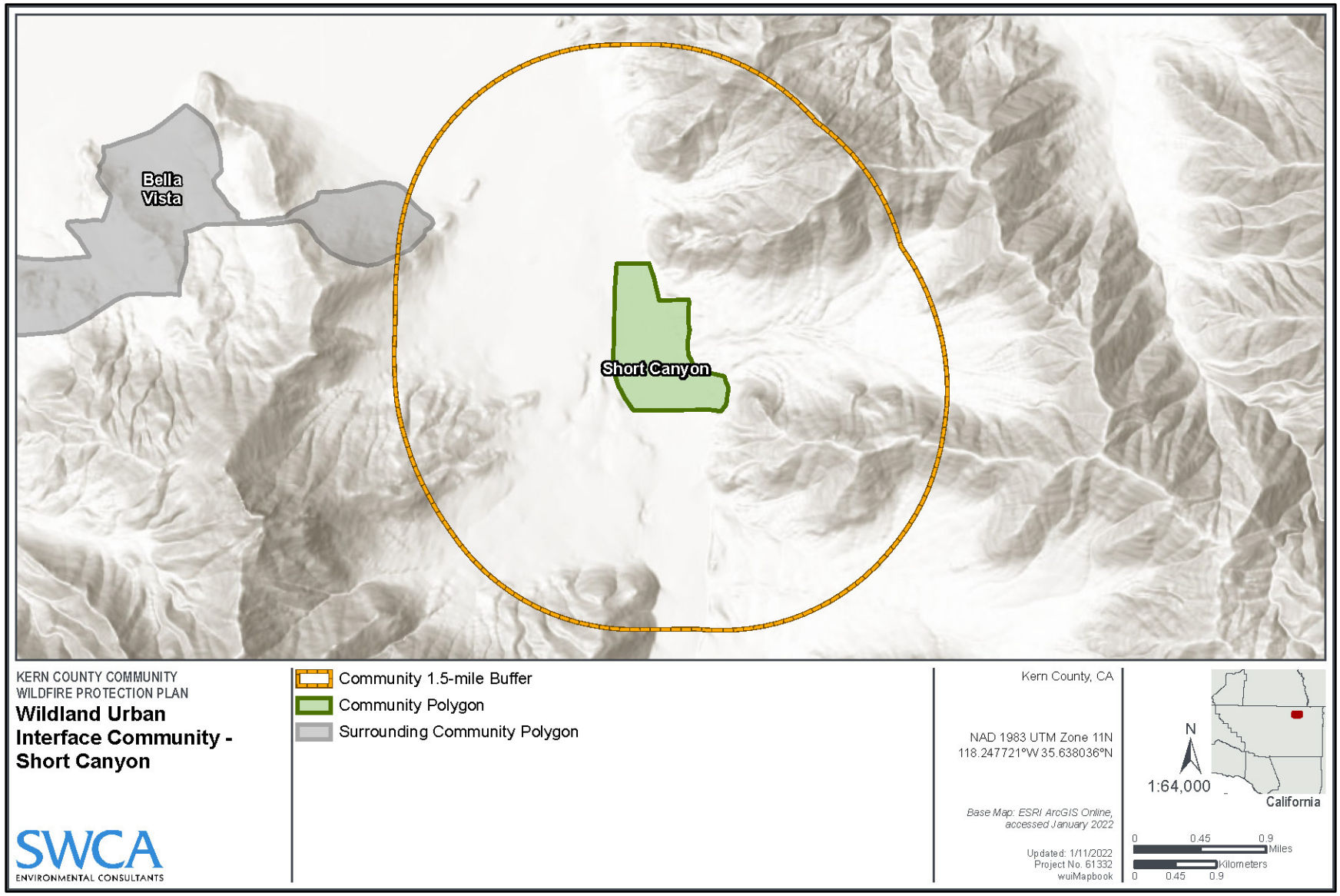

Pine Club Mountain
Pinion Pine Estates - West
Pinion Estates - East
Lake of the Woods
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Pinion Estates - East
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
119.044342°W 34.832348°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:66,000
California
0 0.5 1 Miles
0 0.45 0.9 Kilometers

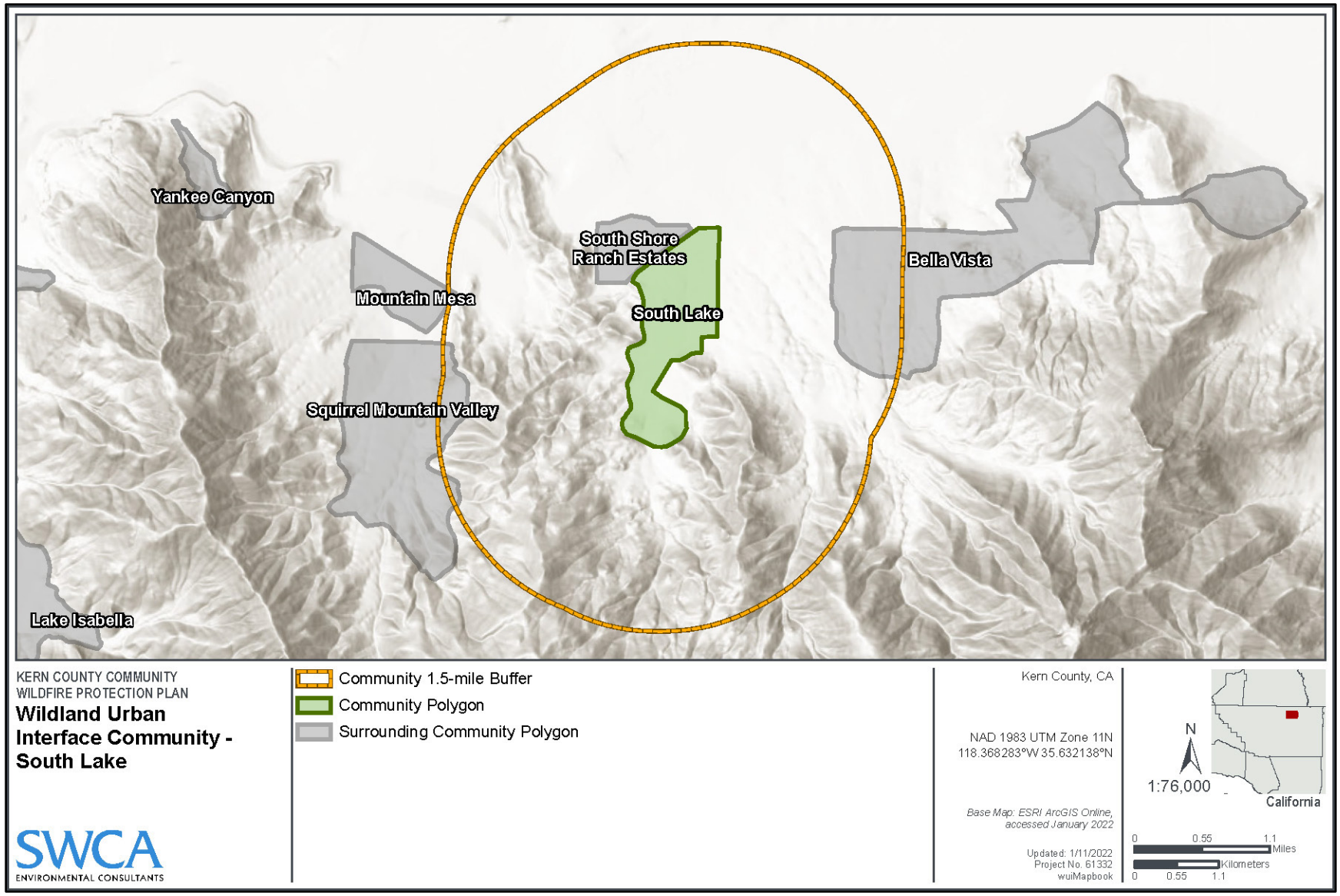

Pine Club Mountain
Pinion Pine Estates - West
Pinion Estates - East
Lake of the Woods
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Pinion Pine Estates - West
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
119.059012°W 34.835505°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:71,000
California
0 0.5 1 Miles
0 0.5 1 Kilometers

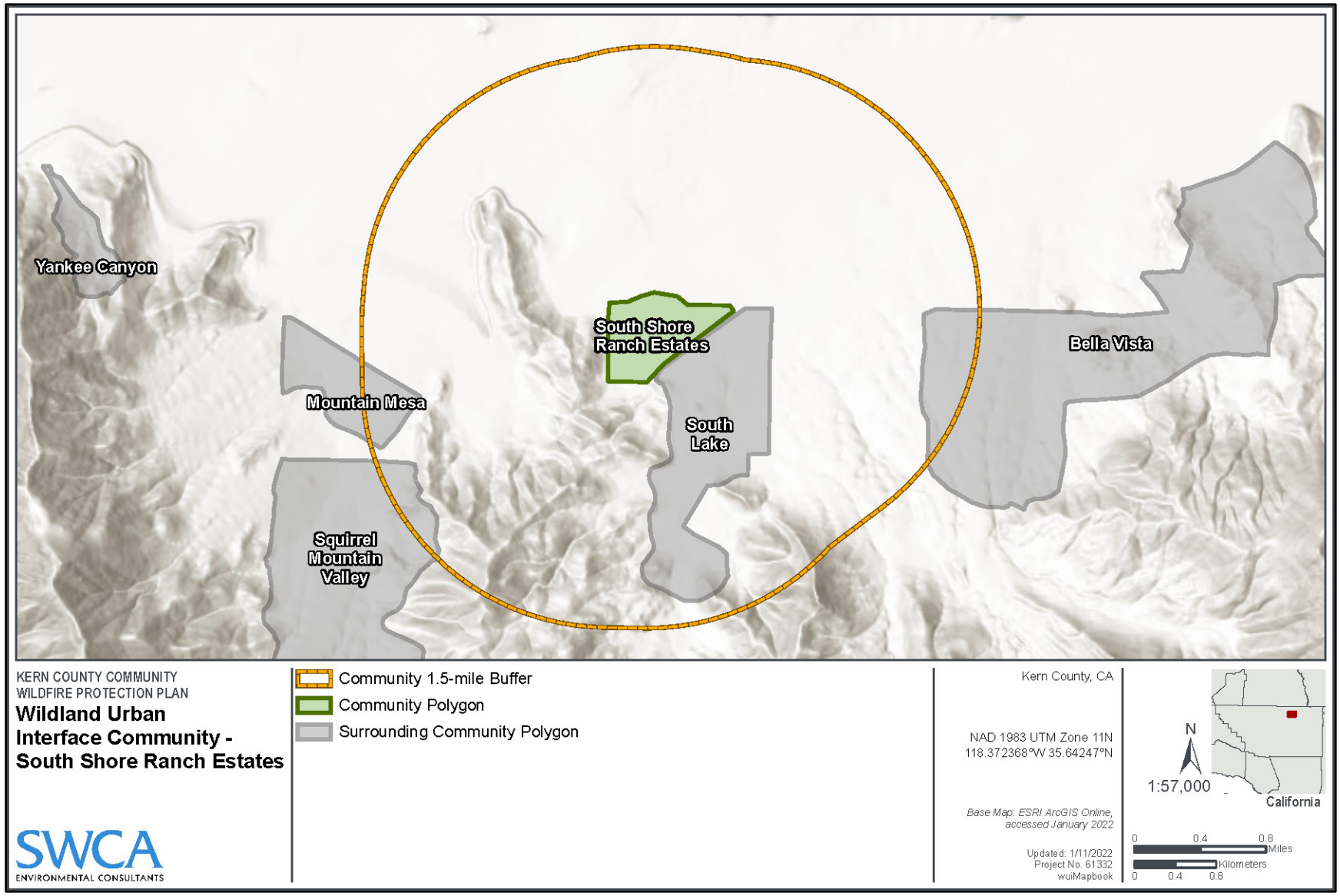

Woodford Heights
Robinson Cove
Yankee Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Robinson Cove
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.391962°W 35.679099°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:55,000
California
0 0.4 0.8 Miles
0 0.4 0.8 Kilometers

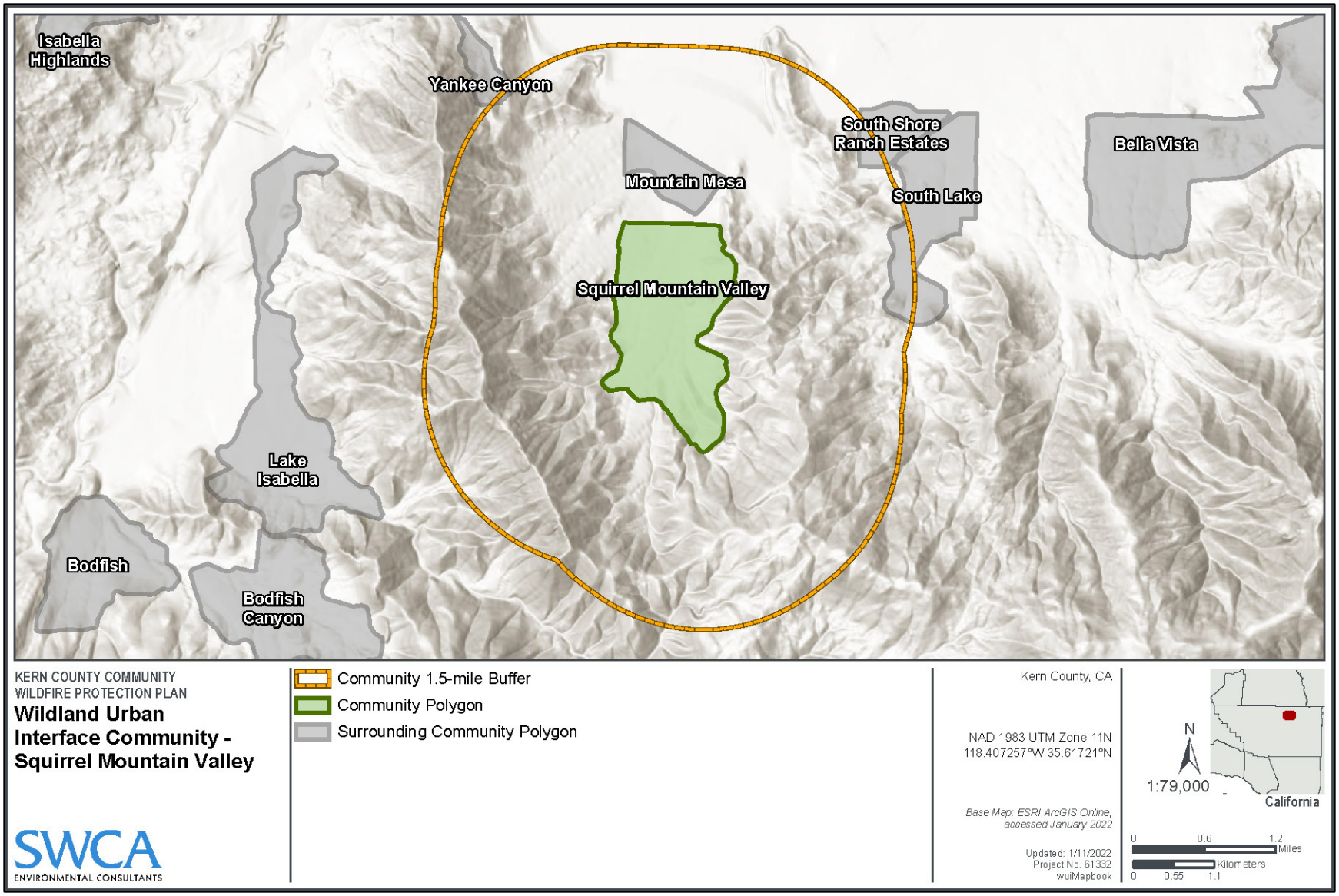

Keene/ Marcel
Golden Hills
Country Club
Sand Canyon/ Cache Creek
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Sand Canyon/ Cache Creek
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.340303°W 35.177874°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:138,000
California
0 1 2 Miles
0 1 2 Kilometers

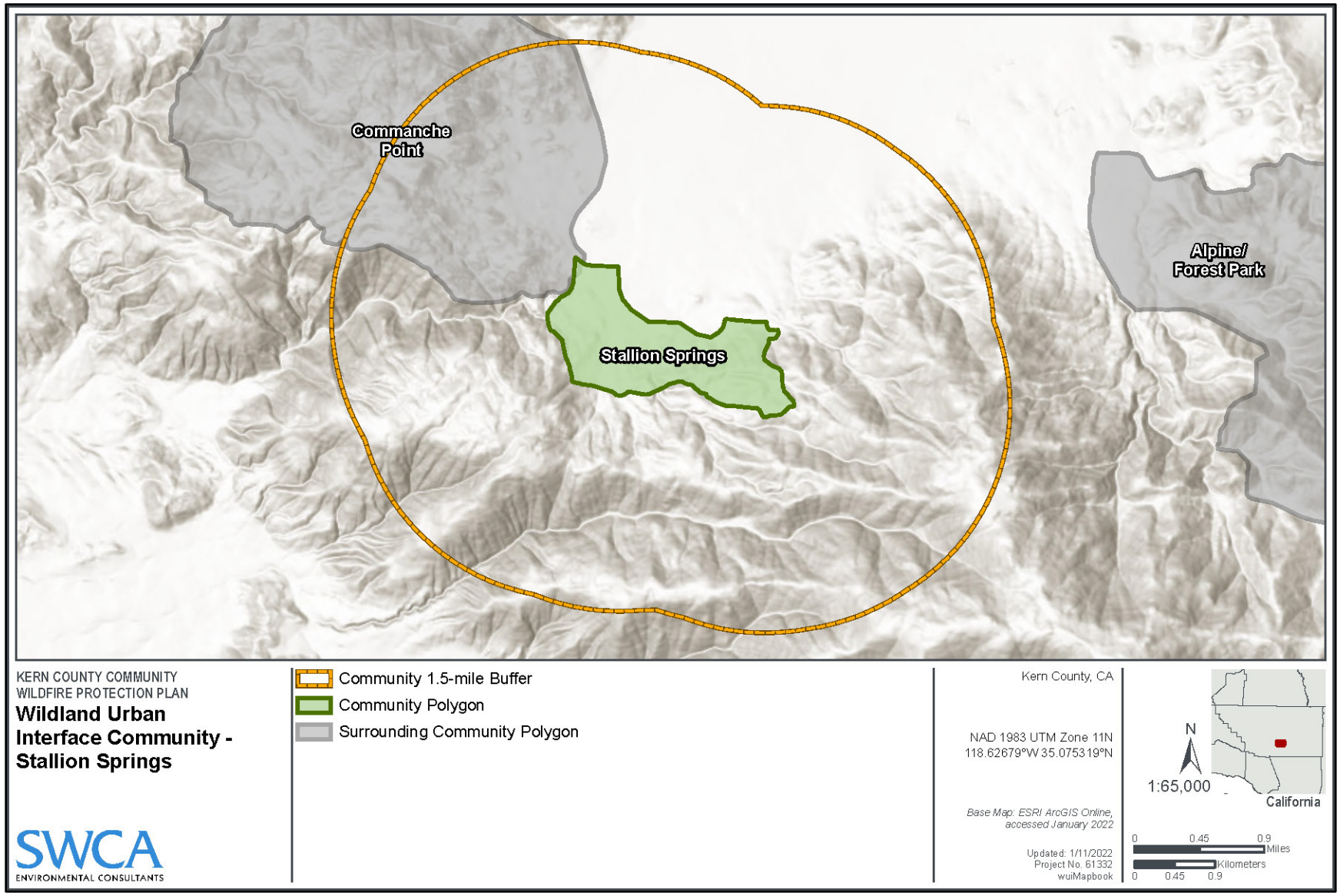

Basin Creek
Thompson Canyon
Shadow Mountain Ranch
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Shadow Mountain Ranch
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.494442°W 35.395238°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:71,000
California
0 0.5 1 Miles
0 0.5 1 Kilometers

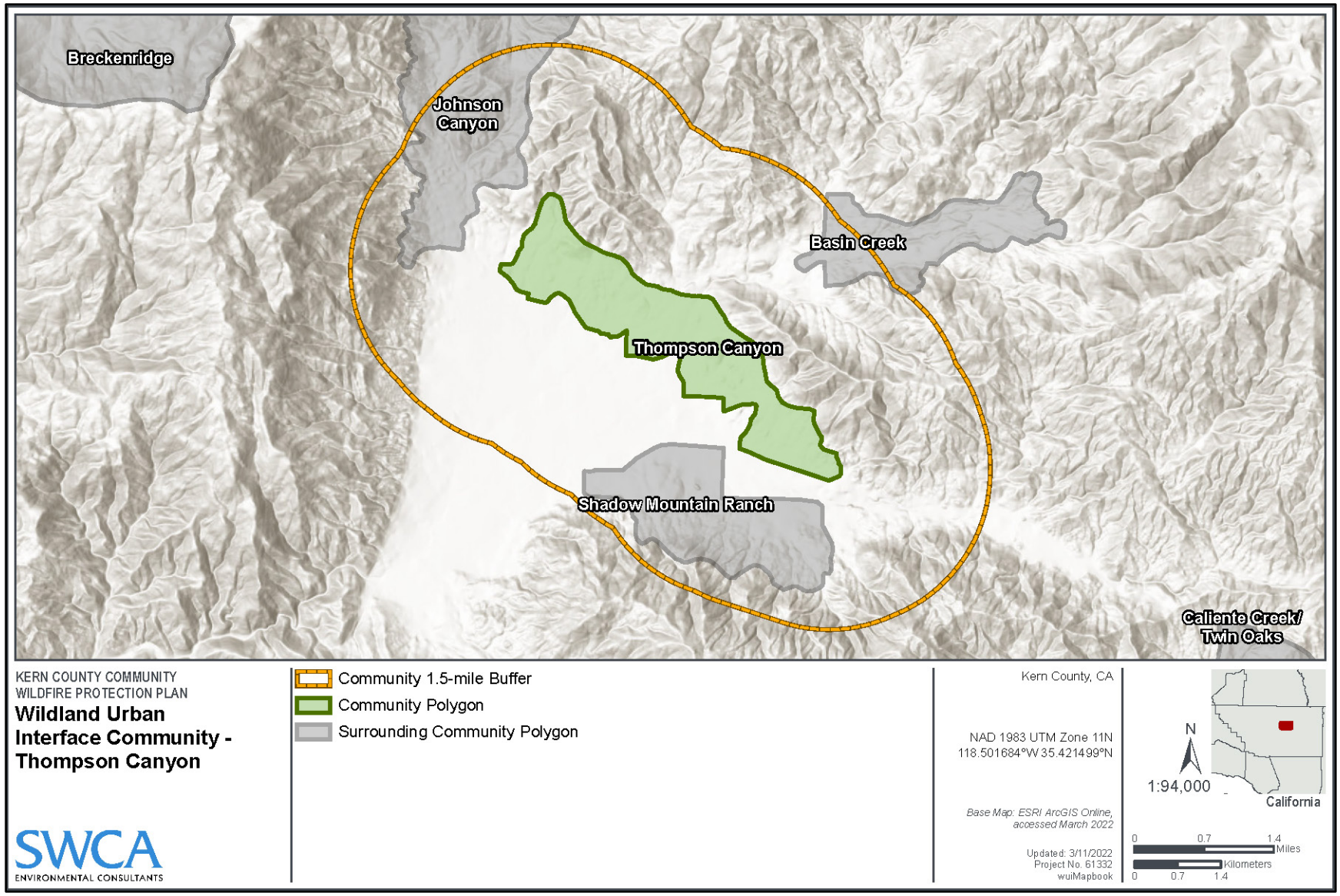

Bella Vista
Short Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Short Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.247721°W 35.638036°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:64,000
California
0 0.45 0.9 Miles
0 0.45 0.9 Kilometers

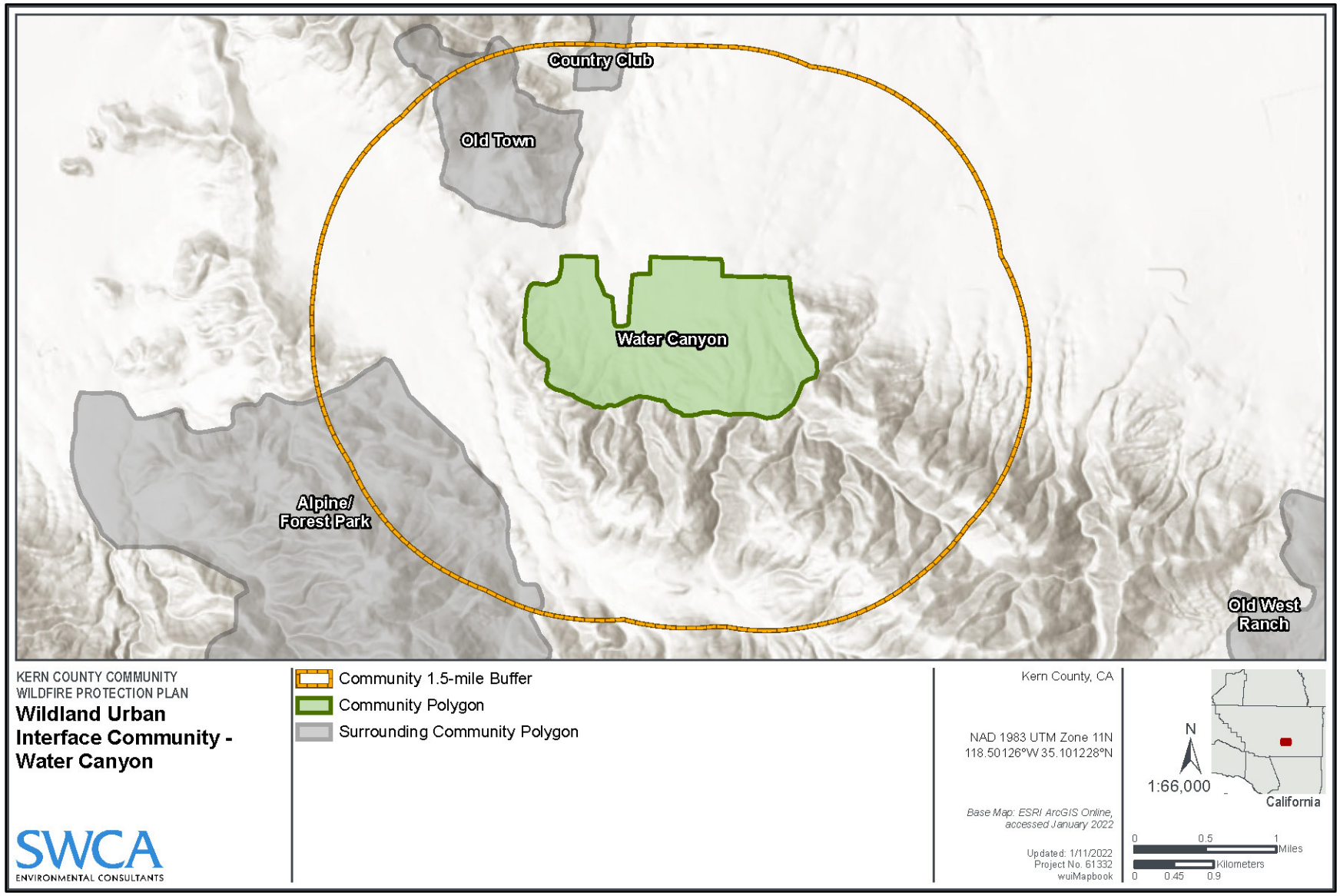

Yankee Canyon
South Shore Ranch Estates
Bella Vista
Mountain Mesa
South Lake
Squirrel Mountain Valley
Lake Isabella
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - South Lake
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.368283°W 35.632138°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:76,000
California
0 0.55 1.1 Miles
0 0.55 1.1 Kilometers

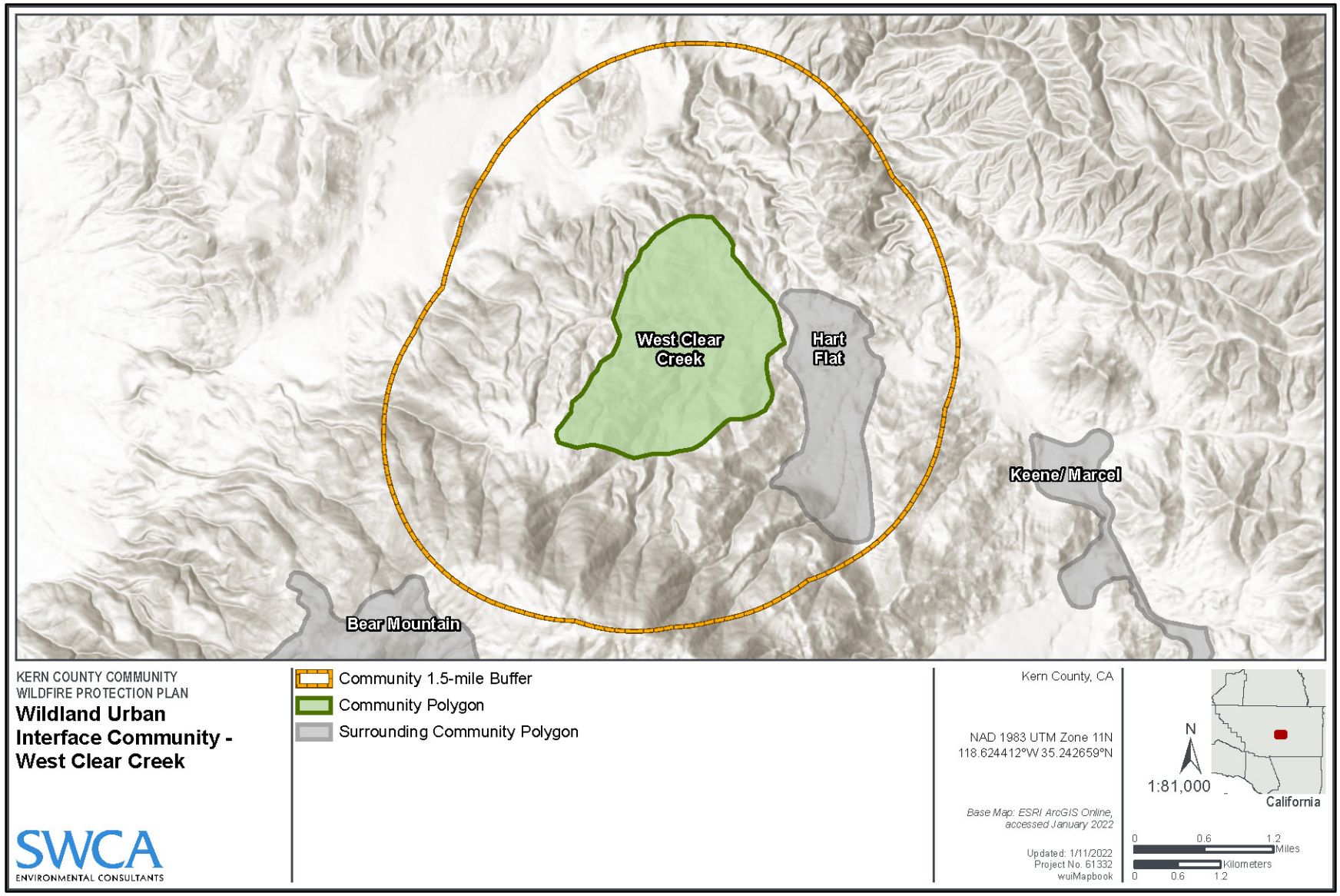

Yankee Canyon
South Shore Ranch Estates
Bella Vista
Mountain Mesa
South Lake
Squirrel Mountain Valley
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - South Shore Ranch Estates
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.372368°W 35.64247°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:57,000
California
0 0.4 0.8 Miles
0 0.4 0.8 Kilometers

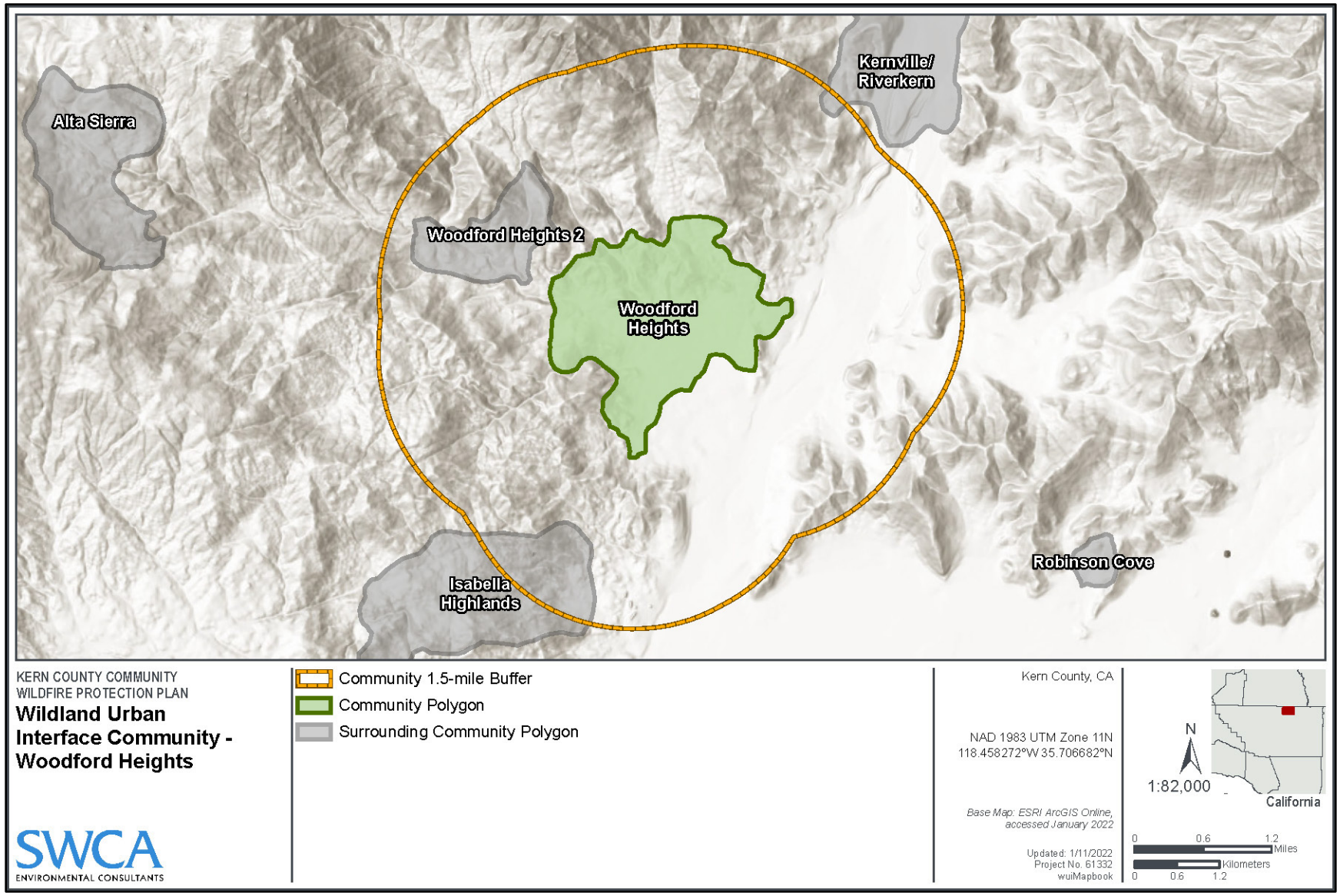

Isabella Highlands
Yankee Canyon
South Shore Ranch Estates
Bella Vista
Mountain Mesa
South Lake
Squirrel Mountain Valley
Lake Isabella
Bodfish
Bodfish Canyon
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Squirrel Mountain Valley
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.407257°W 35.617217°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:79,000
California
0 0.6 1.2 Miles
0 0.55 1.1 Kilometers


Commanche Point
Stallion Springs
Alpine/ Forest Park
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Stallion Springs
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.62679°W 35.075319°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:65,000
California
0 0.45 0.9 Miles
0 0.45 0.9 Kilometers


Breckenridge
Johnson Canyon
Basin Creek
Thompson Canyon
Shadow Mountain Ranch
Caliente Creek/ Twin Oaks
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Thompson Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.501684°W 35.421499°N
Base Map: ESRI ArcGIS Online, accessed March 2022
Updated: 3/11/2022
Project No. 61332
wuiMapbook
N
1:94,000
California
0 0.7 1.4 Miles
0 0.7 1.4 Kilometers


Country Club
Old Town
Water Canyon
Alpine/
Forest Park
Old West
Ranch
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban
Interface Community -
Water Canyon
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.50126°W 35.101228°N
Base Map: ESRI ArcGIS Online,
accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:66,000
California
0 0.5 1 Miles
0 0.45 0.9 Kilometers


West Clear Creek
Hart Flat
Keene/ Marcel
Bear Mountain
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - West Clear Creek
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.624412°W 35.242659°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:81,000
California
0 0.6 1.2 Miles
0 0.6 1.2 Kilometers


Alta Sierra
Kernville/
Riverkern
Woodford Heights 2
Woodford
Heights
Isabella
Highlands
Robinson Cove
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban
Interface Community -
Woodford Heights
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
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Base Map: ESRI ArcGIS Online,
accessed January 2022
Updated: 1/11/2022
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Miles
Kilometers
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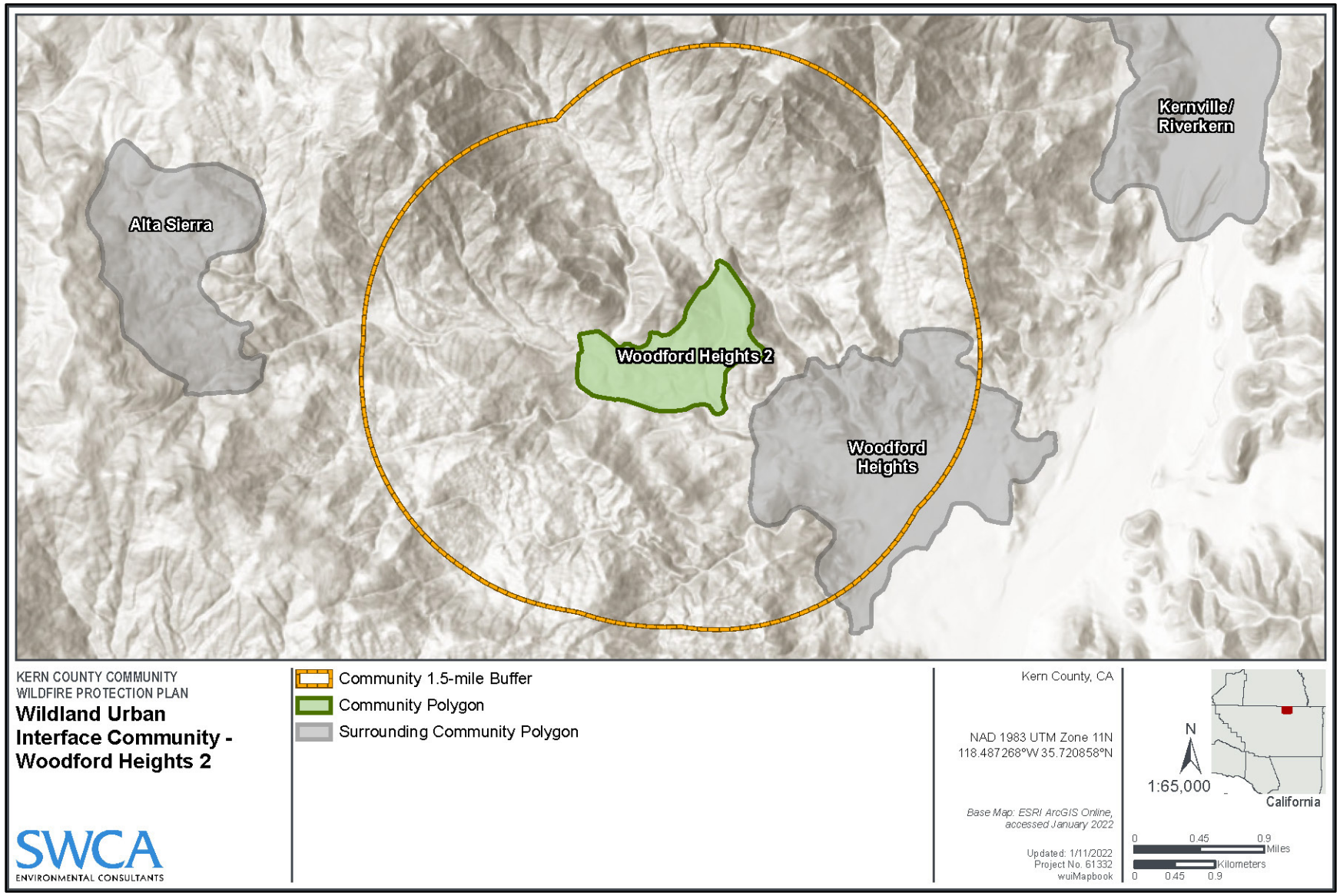
Alta Sierra
Kernville/
Riverkern
Woodford Heights 2
Woodford
Heights
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban
Interface Community -
Woodford Heights 2
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.487268°W 35.720858°N
Base Map: ESRI ArcGIS Online,
accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
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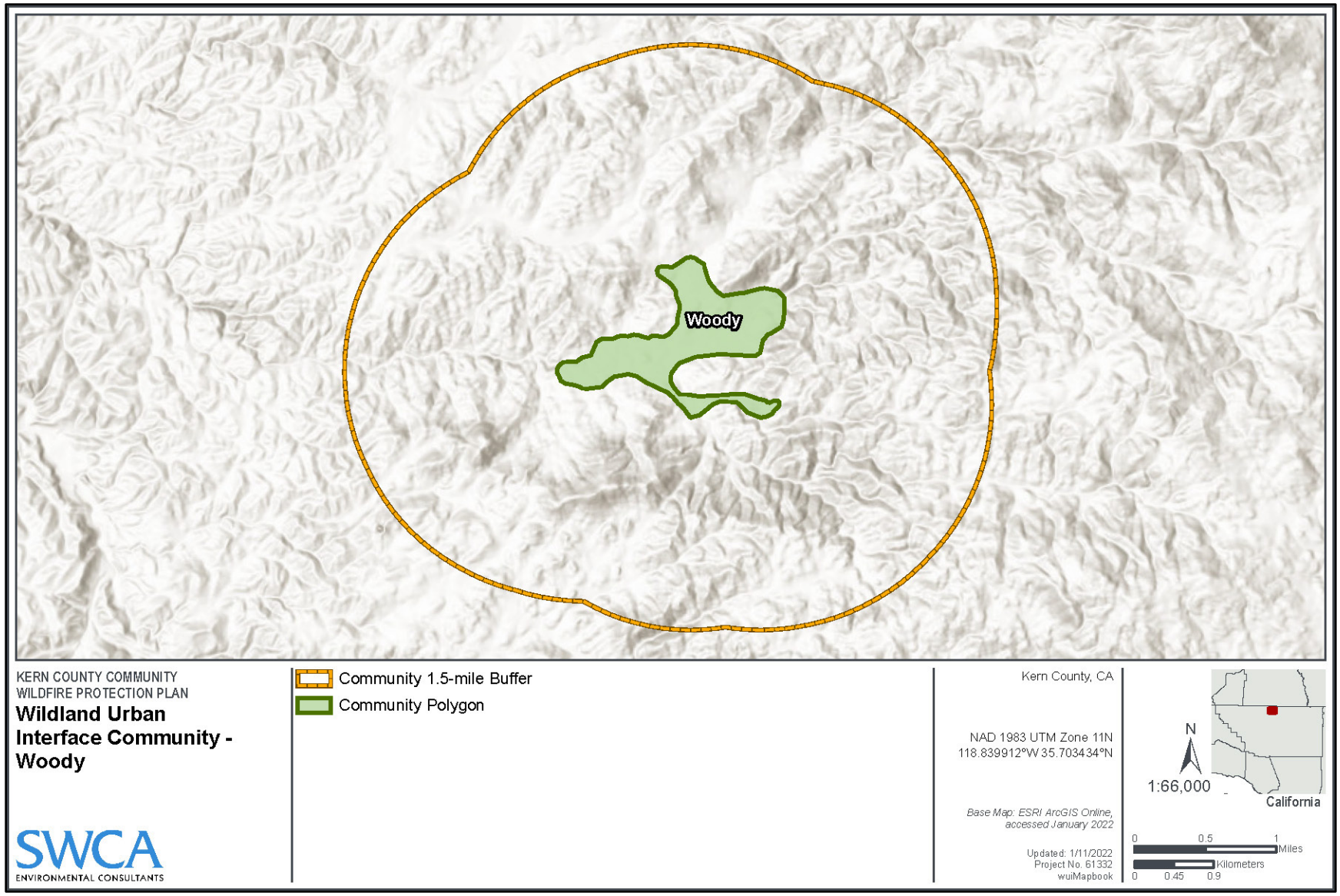
California
0 0.45 0.9
Miles
Kilometers
0 0.45 0.9


Woody
KERN COUNTY COMMUNITY
WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Woody
SWCA
ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.839912°W 35.703434°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
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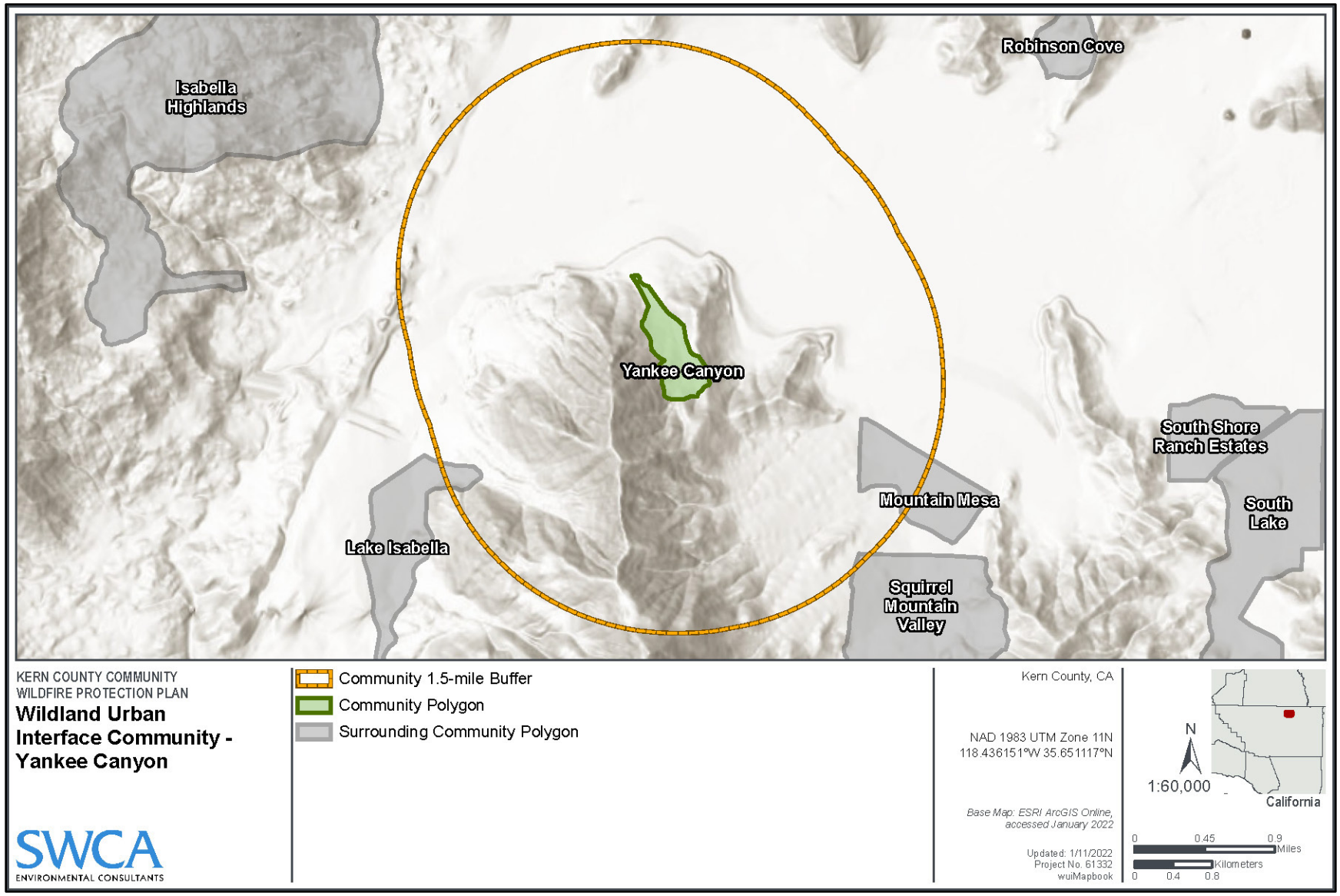
California
0 0.5 1 Miles
0 0.45 0.9 Kilometers


Isabella Highlands
Robinson Cove
Yankee Canyon
South Shore Ranch Estates
South Lake
Mountain Mesa
Lake Isabella
Squirrel Mountain Valley
KERN COUNTY COMMUNITY WILDFIRE PROTECTION PLAN
Wildland Urban Interface Community - Yankee Canyon
SWCA ENVIRONMENTAL CONSULTANTS
Community 1.5-mile Buffer
Community Polygon
Surrounding Community Polygon
Kern County, CA
NAD 1983 UTM Zone 11N
118.436151°W 35.651117°N
Base Map: ESRI ArcGIS Online, accessed January 2022
Updated: 1/11/2022
Project No. 61332
wuiMapbook
N
1:60,000
California
0 0.45 0.9 Miles
0 0.4 0.8 Kilometers

APPENDIX E:

Inspection Forms

1144 NATIONAL FIRE PROTECTION ASSOCIATION INSPECTION FORM

SWCA Wildfire Risk Assessment		
Community		**Notes:**
Surveyor		
Survey Date/Time		
Means of Access		
Ingress and Egress		
2 or more roads in and out score | 0		
1 road in and out | 7		
Road Width		
> 24 ft | 0		
> 20 ft < 24 ft | 2		
< 20 ft | 4		
Road Conditions		
Surfaced road, grade < 5% | 0		
Surfaced road, grade > 5% | 2		
Non-surfaced road, grade < 5% | 2		
Non-surfaced road, grade > 5% | 5		
Other than all season | 7		
Fire Access		
< 300 ft with turnaround | 0		
> 300 ft with turnaround | 2		
< 300 ft with no turnaround | 4		
> 300 ft with no turnaround | 5		
Street Signs		
Present – reflective | 0		
Present – non-reflective | 2		
Not present | 5		
Notes:		
Vegetation (Fuel Models)		
Predominant Vegetation		
Primary Predominant Vegetation		
Non-Burnable (NB) Score | 2		
Grass (GR) Score | 5		
Grass-Shrub (GS) Score | 10		
Shrub (SH) Score | 15		
Timber-Understory (TU) Score | 20		

Timber-Litter (TL) Score | 25	
Slash-Blow (TU) Score | 30	
Notes:	
Defensible Space	
> 100 ft around structure | 1	
> 70 ft < 100 ft around structure | 3	
> 30 ft < 70 ft around structure | 10	
< 30 ft around structure | 25	
Topography Within 300 ft of Structures	
Slope	
< 9% | 1	
10% to 20% | 4	
21% to 30% | 7	
31% to 40% | 8	
>41% | 10	
Additional Rating Factors (rate all that apply)	
Topographic features | 1-5	
History of high fire occurrence | 1-5	
Severe fire weather potential | 1-5	
Separation of adjacent structures | 1-5	
Notes:	
Roofing Assembly	
Roofing	
Class A - metal roof, clay/concrete tiles, slate, asphalt shingles | 0	
Class B - pressure treated composite shakes and shingles | 3	
Class C - untreated wood shingle, plywood, particle board | 15	
Unrated - Extremely poor roofing conditions | 25	
Notes:	
Building Construction	
Siding Materials (predominant)	
Non-combustible (brick/concrete) | 5	
Fire Resistive (stucco/adobe) | 10	
Combustible (wood or vinyl) | 12	
Deck and fencing (predominant)	
No deck or fence/non-combustible | 0	
Combustible deck and fence | 5	

Building Set-Back	
> 30 ft to slope | 1	
< 30 ft to slope | 5	
Notes:	
Available Fire Protection	
Water Sources	
Water Source? | yes/no	
Water Source Type | hydrant, water tank, other	
Other Water Source	
Water Source Score | Hydrant = 1 Water Tank = 3	
Organized Response	
Station < 5 mi from community | 1	
Station > 5 mi from community | 3	
Notes:	
Placement of Gas and Electric Utilities	
Both underground | 0	
One above, one below | 3	
Both above ground | 5	
Values at Risk Observations	
Forest Health Observations	
Land Use Observations	
Misc Observations	

Total				
Hazard Rating Scale	**<40 Low**	**>40 Moderate**	**>70 High**	**>112 Extreme**

KCFD HAZARD REDUCTION PROGRAM FORMS

ATTACHMENT A
Notification Letter

David Witt
Interim Fire Chief & Director of Emergency Services
Kern County Fire Department - Hazard Reduction
20569 Eumatilla Street
Tehachapi, CA 93561
Email: hazardreduction@kerncountyfire.org
Phone: 661-823-1001

FIRE HAZARD REDUCTION PROGRAM
Annual Courtesy Reminder

To all Kern County Property Owners,

You are receiving this notice as a courtesy reminder being sent to all property owners within the County of the upcoming clearance deadline and requirements for fire hazard reduction. **This is not a citation and does not require any response**. Please read the information carefully and adhere to all expectations to avoid incurring costly fines.

In accordance with Kern County Ordinance Codes within Chapter 8.46, **all Kern County property owners whose properties are located within State Responsibility Area's (SRA) are required to perform fire hazard reduction clearance on all property they own by June 1 of every year**. If you are unsure whether your property falls within this area, you can locate it using the lookup tool on the Cal Fire website at http://www.fire.ca.gov/firepreventionfee/sraviewer_launch. Failure to meet these requirements can result in a minimum $500 Administrative Citation. Inspection of these properties will begin June 2 of each year and can continue throughout the year as necessary. If a citation is issued, the owner of the property will be given 15 days from the mailing date of the citation to either dispute the citation or show proof the violation was corrected. After the 15 day period, the $500 fee will be assessed and the property owner may be subject to an additional $1000 fine for continued noncompliance.

The goal of the Kern County Fire Department's Fire Hazard Reduction Program is to protect life and property by providing an effective public education and regulation program that reduces hazards resulting from improper and/or inadequate defensible spacing. This reduction of hazards increases firefighter and public safety, as well as improves our ability to protect your property in the event of a fire.

For more information, please visit our website at www.kerncountyfire.org and click on the Hazard Info tab to view the Hazard Reduction guidelines, Frequently Asked Questions (FAQ), a list of Fire Hazard Reduction service providers for your area and helpful links for valuable information on how you can ensure your property passes inspection.

Proudly Serving the cities of Arvin, Bakersfield, Delano, Maricopa, McFarland, Ridgecrest, Shafter, Taft, Tehachapi, Wasco, and all Unincorporated Areas of Kern County

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(rev.5/20/2019)

ATTACHMENT B
Clearance Guidelines Handout

KERN COUNTY FIRE HAZARD REDUCTION PROGRAM

MUST BE COMPLETED BY JUNE 1st

REQUIRED CLEARANCE GUIDELINES

- **100' total clearance around ALL structures. Two zones make up the required 100' of defensible space**
- **Zone 1 - extending 30' from the structure, remove ALL non-ornamental combustible fuels in this area**
  - **Store firewood outside of this zone.**
  - **Remove any dead/dry material such as grass, leaves, needles, limbs, etc.**
  - **Maintain spacing between ornamental vegetation.**
  - **Remove all dead limbs that are overhanging any structures**
  - **10' clearance around stovepipe/chimney outlets**
  - **Clear roof of all combustible vegetation and debris**
  - **10' clearance around LPG tanks**
- **Zone 2 - 30' to 100' from the structure, reduce ALL combustible fuels in this area**
  - **Limb trees and bushes to avoid contact with ground and ladder fuels**
  - **Remove lower limbs of all non-ornamental trees to a height of 6' off the ground**
  - **Create spacing between trees and bushes to reduce contact with each other**
- **10' clearance around ALL property lines of vacant lots that encroach on the 100' defensible space of neighboring structures**
- **Remove accumulation of combustible fuels that can be deemed a fire hazard**

If you have any questions about how you can ensure your property will pass inspection, please visit www.kerncountyfire.org and click on the Hazard Reduction tab. Our website contains helpful information and informative links regarding defensible space.

For further questions or information please call 661-823-1001 or email hazardreduction@kerncountyfire.org

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(rev.5/20/2019)

ATTACHMENT C
Administrative Citation

David Witt
Interim Fire Chief & Director of Emergency Services
Kern County Fire Department - Hazard Reduction
20569 Eumatilla Street
Tehachapi, CA 93561
Email: hazardreduction@kerncountyfire.org
Telephone 661-823-1001 • FAX 661-823-1101

«PropOwner»
«STNUMDIRNAMESUF_BILL»
«CITY_BILL» «STATE_BILL» «ZIPCD_BILL»

COUNTY ORDINANCE VIOLATION
ADMINISTRATIVE CITATION

A violation(s) exists upon your property located at «AddressSite».
ATN # «ATN» on «InspectionDate» as indicated below.

«Box1»	1	Provide a 100 ft. reduction of all non-ornamental combustibles and vegetation around all structures. (KCOC 8.46.020, 8.46.040)
	2.	Provide a 30 ft. clearance of all non-ornamental combustibles around all structures. (KCOC 8.46.040)
«Box2»	3.	Remove trees and limbs within 10 ft. of stovepipe and chimney outlets. (KCOC 8.46.040)
«Box3»	4.	Remove any dead limbs that overhang structures. (KCOC 8.46.040)
«Box4»	5.	Clear roof of all combustible vegetation, including leaves and pine needles. (KCOC 8.46.040)
«Box5»	6.	Provide a 10 ft. clearance of all combustibles around LPG tanks. (KCOC 8.46.040)
«Box6»	7.	Provide a 10 ft. clearance around ALL property lines of lots that encroach on the 100' defensible space of adjacent structures. (KCOC 8.46.010 and 8.46.040)
«Box7»	8.	Provide a reduction of excessive accumulation of fuels declared a fire hazard. (KCOC 8.46.040)
«Box8»	9.	Limb-up all non-ornamental trees approximately 6 ft. from the ground; remove dead limbs. (KCOC 8.46.040)

You have been issued an **Administrative Citation** at the above listed address in the amount of **$500.00**

Please take one of the following actions:

Option1. ***Correct all violations listed above and notify our office when completed. If done within 15 days of the mailing date of the citation (found on front of envelope), your citation and any applicable fines will be removed.*** You must provide pictures showing that *all hazards listed above have been abated within 15 days of the mailing of this citation.* All pictures must include the property address and show views pertinent to this citation. The official reviewing the citation has discretion to determine whether the violation has been appropriately corrected within the 15-day period. If the violation is not corrected within the 15-day period, the administrative penalty shall become effective and due immediately.
Option 2. If you feel that you have received this citation in error and/or wish to dispute the citation, you must fill out a Request for Review form and submit it to our office via email or standard mail within 15 days of the mailing date of the citation (found on the front of the envelope). This form can be found at www.kerncountyfire.org under the Hazard Reduction tab. Please fill out the form completely and be sure to include any applicable pictures to support your claim.
Option 3. To pay the **Administrative Citation**, please write a check for $500 and mail it to: ***Kern County Fire Department, 5642 Victor Street, Bakersfield, CA 93308***. Be sure to include your ATN number on your check. If you choose this option, your citation will be closed and listed as paid in full. You will not be entitled to Request a Review once your citation is paid in full.
If **you choose to do nothing**, the $500 Administrative Penalty Fee will be applied to your property taxes, and you will be subject to an additional fine of $1000 for continued non-compliance.

ONE OF THESE OPTIONS MUST BE COMPLETED WITHIN 15 DAYS of the mailing date of this notice! If you do not file a Request for Review or contact the Fire Department Hazard Reduction office, the property owner will be responsible for the citation, and the **$500 fine will be applied to the property taxes.**

<<InspectedBy>> <<Station>> <<Shift>> David Witt, Interim Fire Chief

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(rev.5/20/2019)

ATTACHMENT D
Clearance Checklist

HAZARD REDUCTION CLEARANCE REQUIREMENTS CHECKLIST

- ✓ Provided a 30 ft. clearance of all non-ornamental combustibles and vegetation around all structures. (This includes wood piles)
- ✓ Provided a total 100 ft. *reduction* of all non-ornamental combustibles and vegetation around all structures.
- ✓ Remove trees and limbs within 10 ft. of stovepipe and chimney outlets.
- ✓ Remove any dead limbs that overhang or are adjacent to structures.
- ✓ Cleared roof of all combustible vegetation, including leaves and pine needles.
- ✓ Provide a 10 ft. clearance of all combustible material around LPG and fuel tanks.
- ✓ Provide a minimum 10 ft. clearance around all property lines that encroach on the 100 foot defensible space of adjacent structures.
- ✓ All non-ornamental trees should be limbed within 6 ft. from the ground and dead limbs removed. (Although we can advise it, they are not currently required to completely remove dead trees!)
- ✓ Provide reduction of excessive accumulations of fuel that can be deemed a fire hazard.

If issues on the property do not fall within one of the above categories, the property *cannot* be cited.

Take multiple pictures of the property showing each specific violation and reference to the properties correct identification (i.e. street signs, addresses, neighboring properties, etc.). We must be able to prove from your pictures that this is the correct property.

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(rev.5/20/2019)

ATTACHMENT E
Notice of Violation (NOV)

David Witt
Interim Fire Chief & Director of Emergency Services
Kern County Fire Department – Hazard Reduction
20569 Eumatilla Street
Tehachapi, CA 93561 Phone: 661-823-1001 Fax: 661-823-1101
Email: hazardreduction@kerncountyfire.org

«PropOwner»
«STNUMDIRNAMESUF_BILL»
«CITY_BILL» «STATE_BILL» «ZIPCD_BILL»

COUNTY ORDINANCE VIOLATION
NOTICE OF VIOLATION

ATN #: _____

A violation(s) exists upon your property located at «AddressSite»,
on «InspectionDate» as indicated below.

«Box1»	1.	Provide a 100 ft. clearance of all non-ornamental combustibles and vegetation around all structures. (KCOC 8.46.020, 8.46.040)
«Box2»	2.	Remove trees and limbs within 10 ft. of stovepipe and chimney outlets. (KCOC 8.46.040)
«Box3»	3.	Remove any dead limbs that overhang structures. (KCOC 8.46.040)
«Box4»	4.	Clear roof of all combustible vegetation, including leaves and pine needles. (KCOC 8.46.0404)
«Box5»	5.	Provide a 10-ft. clearance of all combustibles around LPG tanks. (KCOC 8.46.0404)
«Box6»	6.	Provide a 10 ft. clearance around ALL property lines of lots that encroach on the 100' defensible space of adjacent structures. (KCOC 8.46.020, 8.46.040)
«Box7»	7.	Provide a reduction of excessive accumulation of fuels declared a fire hazard. (KCOC 8.46.040)
«Box8»	8.	Limb-up all non-ornamental trees approximately 6 ft. from the ground; remove dead limbs. (KCOC 8.46.040)

Notes: <<Notes>>

COUNTY ORDINANCE VIOLATION: Your property, located at the above address, has been issued a **Notice of Violation** for noncompliance with Fire Hazard Reduction Program guidelines. Please refer to the box/boxes that are checked in order to correct the violation on your property. You have **30 days from the mailing date** of this Notice to correct the Violation/Violations and submit proof of corrections to our office. If you fail to do so, your property will be issued a **$500** Administrative Citation. Continued non-compliance will result in further penalties.

APPEAL PROCESS: Any person disputing the issuance of a County Ordinance Notice of Violation, must call the Hazard Reduction Office at 661-823-1001 or email them at hazardreduction@kerncooountyfire.org to discuss the Violation within the allotted 30 days.

<<InspectedBy>> <<Station>> <<Shift>> David Witt, Interim Fire Chief

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(rev.5/20/2019)

APPENDIX F:

Funding Sources

FUNDING RESOURCES

The following section provides information on federal, state, and private funding opportunities for conducting wildfire mitigation projects.

FEDERAL FUNDING INFORMATION

Source: Access to Ancestral Lands Grant Opportunity (AALG)

Agency: First Nations Development Institute

Website: https://www.firstnations.org/

Description: For more than 41 years, First Nations Development Institute (First Nations), a Native-led 501(c)(3) nonprofit organization, has worked to strengthen American Indian economies to support healthy Native communities by investing in and creating innovative institutions and models that strengthen asset control and support economic development for American Indian people and their communities. First Nations began its national grantmaking program in 1993. Through mid-year 2021, First Nations has successfully managed 2,276 grants totaling more than $46 million to tribal and community institutions across Indian Country. The California Tribal Fund was created to support California-based, California-Native-led nonprofits and tribal programs in controlling and protecting their food systems, water, languages, traditional ecological knowledge, and land. Currently, the fund is operated as a project of First Nations Development Institute. You can find more information on the AALG here: https://www.firstnations.org/rfps/california-tribal-fund-access-to-ancestral-lands-grant-opportunity/

Source: Building Resilient Infrastructure and Communities (BRIC) Grant Program

Agency: Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA)

Website: https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

Description:

BRIC will supports states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. You can find more information on the BRIC program here: https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

Source: Hazard Mitigation Grant Program (HMGP)

Agency: FEMA

Website: https://www.fema.gov/grants/mitigation/hazard-mitigation

Description: The HMGP provides funding to state, local, tribal, or territorial governments (and individuals or businesses if the community applies on their behalf) to rebuild with the intentions to mitigate future losses due to potential disasters. This grant program is available after a presidentially declared disaster.

Source: Hazard Mitigation Grant Program (HMGP) – Post Fire

Agency: FEMA

Website: https://www.fema.gov/grants/mitigation/post-fire

Description: The HMGP Post Fire grant program provides assistance to communities for the purpose of implementing hazard mitigation measures following a wildfire. Mitigation measures may include:

- Soil stabilization
- Flood diversion
- Reforestation

Source: Flood Mitigation Assistance (FMA) Grant

Agency: FEMA

Website: https://www.fema.gov/grants/mitigation/floods

Description: The Flood Mitigation Assistance Program is a competitive grant program that provides funding to states, local communities, federally recognized tribes, and territories. Funds can be used for projects that reduce or eliminate the risk of repetitive flood damage to buildings insured by the National Flood Insurance Program. FEMA chooses recipients based on the applicant's ranking of the project and the eligibility and cost-effectiveness of the project.

Source: Emergency Management Performance Grant (EMPG)

Agency: FEMA

Website: https://www.fema.gov/grants/preparedness/emergency-management-performance

Description: The EMPG program provides funding to state, local, tribal, and territorial emergency management agencies with the overall goal of creating a safe and resilient nation. The two main objectives of the program are 1) closing capability gaps that are identified in the state or territory's most recent Stakeholder Preparedness Review (SPR); and 2) building or sustaining those capabilities that are identified as high priority through the Threat and Hazard Identification and Risk Assessment (THIRA)/SPR process and other relevant information sources. The grant recipient and Regional Administrator must come to an agreement on program priorities, which are crafted based on National, State, and regional priorities.

Source: Fire Management Assistance Grant (FMAG)

Agency: FEMA

Website: https://www.fema.gov/assistance/public/fire-management-assistance

Description: Fire Management Assistance is available to state, local, and tribal governments for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster. The Fire Management Assistance declaration process is initiated when a state submits a request for assistance to the FEMA Regional Director at the time a "threat of major disaster" exists. The entire process is accomplished on an expedited basis and a FEMA decision is rendered in a matter of hours. Before a grant can be awarded, a state must demonstrate that total eligible costs for the declared fire meet or exceed either the individual fire cost threshold, which applies to single fires, or the cumulative fire cost threshold, which recognizes numerous smaller fires burning throughout a state.

Source: Regional Catastrophic Preparedness (RCP) Grants

Agency: FEMA

Website: https://www.fema.gov/grants/preparedness/regional-catastrophic

Description: The Regional Catastrophic Preparedness Grant program provides funding to increase collaboration and capacity in regard to catastrophic incident response and preparation.

Source: Emergency Forest Restoration Program (EFRP)

Agency: USDA Farm Service Agency (FSA)

Website: https://www.fsa.usda.gov/programs-and-services/disaster-assistance-program/emergency-forest-restoration/index

Description: The Emergency Forest Restoration Program (EFRP) helps the owners of non-industrial private forests restore forest health damaged by natural disasters. The EFRP does this by authorizing payments to owners of private forests to restore disaster damaged forests. The local FSA County Committee implements EFRP for all disasters with the exceptions of drought and insect infestations. Eligible practices may include debris removal, such as down or damaged trees; site preparation, planting materials, and labor to replant forest stand; restoration of forestland roads, fire lanes, fuel breaks, or erosion-control structures; fencing, tree shelters; wildlife enhancement.

To be eligible for EFRP, the land must have existing tree cover; and be owned by any nonindustrial private individual, group, association, corporation, or other private legal entity.

Source: Emergency Conservation Program (ECP)

Agency: USDA Farm Service Agency (FSA)

Website: https://www.fsa.usda.gov/programs-and-services/conservation-programs/emergency-conservation/index

Description: The Emergency Conservation Program (ECP) helps farmers and ranchers to repair damage to farmlands caused by natural disasters and to help put in place methods for water conservation during severe drought. The ECP does this by giving ranchers and farmers funding and assistance to repair the damaged farmland or to install methods for water conservation. The grant could be used for restoring conservation structures (waterways, diversion ditches, buried irrigation mainlines, and permanently installed ditching system).

Source: Environmental Quality Incentives Program (EQIP)

Agency: National Resource Conservation Service (NRCS)

Website: https://www.nrcs.usda.gov/wps/portal/nrcs/main/co/programs/financial/eqip/

Description: The Environmental Quality Incentives Program (EQIP) is a voluntary program authorized under the Agricultural Act of 2014 (2014 Farm Bill) that helps producers install measures to protect soil, water, plant, wildlife, and other natural resources while ensuring sustainable production on their farms, ranches, and working forest lands.

Source: Emergency Watershed Protection (EWP) Program

Agency: National Resource Conservation Service (NRCS)

Website: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/

Description: The program offers technical and financial assistance to help local communities relieve imminent threats to life and property caused by floods, fires, windstorms, and other natural disasters that impair a watershed.

Eligible sponsors include cities, counties, towns, conservation districts, or any federally recognized Native American tribe or tribal organization. Interested public and private landowners can apply for EWP Program recovery assistance through one of those sponsors.

EWP Program covers the following activities.

- Debris removal from stream channels, road culverts, and bridges
- Reshape and protect eroded streambanks
- Correct damaged drainage facilities
- Establish vegetative cover on critically eroded lands
- Repair levees and structures
- Repair conservation practices

Source: Funding for Fire Departments and First Responders

Agency: DHS, U.S. Fire Administration

Website: https://www.usfa.fema.gov/grants/

Description: Includes grants and general information on financial assistance for fire departments and first responders. Programs include the Assistance to Firefighters Grant Program, Reimbursement for Firefighting on Federal Property, State Fire Training Systems Grants, and National Fire Academy Training Assistance.

Source: Tribal Environmental General Assistance Program (GAP)

Agency: Environmental Protection Agency (EPA)

Website: https://www.epa.gov/tribal-pacific-sw/epa-region-9-tribal-environmental-gap-funding

Description: Funding under this program is used to aid Native American tribes in establishing and implementing their own reservation-specific environmental protection programs. To find out more about this funding opportunity please contact Tribal Branch Manager, Jeremy Bauer, at bauer.jeremy@epa.gov.

Source: Specific EPA Grant Programs

Agency: Environmental Protection Agency (EPA)

Website: https://www.epa.gov/tribal-pacific-sw/epa-region-9-tribal-environmental-gap-funding

Description: Various grant programs are listed under this site. Listed below are examples of grants offered:

- Multipurpose Grants to States and Tribes: https://www.epa.gov/grants/multipurpose-grants-states-and-tribes
- Environmental Education Grants: https://www.epa.gov/education/grants
- Environmental Justice Grants: https://www.epa.gov/environmentaljustice/environmental-justice-grants-funding-and-technical-assistance

Source: Conservation Innovation Grants (CIG)

Agency: National Resource Conservation Service

Website: https://www.nrcs.usda.gov/wps/portal/nrcs/site/ca/home/

Description: CIG State Component. CIG is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, Environmental Quality Incentives Program (EQIP) funds are used to award competitive grants to non-federal governmental or nongovernmental organizations, tribes, or individuals. CIG enables the Natural Resources Conservation Service (NRCS) to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the nation's most pressing natural resource concerns. CIG will benefit agricultural producers by providing more options for environmental enhancement and compliance with federal, state, and local regulations. The NRCS administers the CIG program. The CIG requires a 50/50 match between the agency and the applicant. The CIG has two funding components: national and state. Funding sources are available for water resources, soil resources, atmospheric resources, and grazing land and forest health.

Source: Urban and Community Forestry Program, National Urban and Community Forestry Challenge Cost Share Grant Program

Agency: U.S. Forest Service

Website: https://www.fs.usda.gov/managing-land/urban-forests/ucf

Description: U.S. Forest Service funding will provide for Urban and Community Forestry Programs that work with local communities to establish climate-resilient tree species to promote long-term forest health. The other initiative behind this program is to promote and carry out disaster risk mitigation activities, with priority given to environmental justice communities. For more information, contact a Forest Service Regional Program Manager.

Source: Catalog of Federal Funding Sources; Land Resources

Agency: Multiple

Website: https://ofmpub.epa.gov/apex/wfc/f?p=165:512:6483383318137:::512::

Description: The Land Finance Clearing House is a catalogue of Federal funding sources for all things land related.

Examples of the types of grants found at this site are:

- Forest and Woodlands Resource Management Grant: https://sam.gov/fal/a798ad78cac749639b48270db3e86fdc/view?index=cfda&page=2&organization_id=100011100
- Environmental Education Grant: https://www.epa.gov/education/grants
- Public Assistance Grant Program: https://www.fema.gov/assistance/public
- Hazard Mitigation Grant: https://www.fema.gov/grants/mitigation/hazard-mitigation

Source: Catalog of Federal Funding Sources; Water Resources

Agency: Multiple

Website: https://ofmpub.epa.gov/apex/wfc/f?p=165:12:6483383318137:::12::

Description: The Water Finance Clearing House is a catalogue of Federal funding sources for all things water related.

Examples of the types of grants found at this site are:

- Water Conservation Field Services Program: https://www.usbr.gov/waterconservation/
- California Community Development Block Grant: https://www.hcd.ca.gov/grants-funding/active-funding/cdbg.shtml
- California Clean Water State Revolving Fund Program (CWSRF): https://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/index.html

Source: Firewise Communities

Agency: Multiple

Website: http://www.firewise.org

Description: Many different Firewise Communities activities are available to help homes and whole neighborhoods become safer from wildfire without significant expense. Community cleanup days, awareness events, and other cooperative activities can often be successfully accomplished through partnerships among neighbors, local businesses, and local fire departments at little or no cost.

The kind of help you need will depend on who you are, where you are, and what you want to do. Among the different activities that individuals and neighborhoods can undertake, the following often benefit from seed funding or additional assistance from an outside source:

- Thinning/pruning/tree removal/clearing on private property—particularly on very large, densely wooded properties
- Retrofit of home roofing or siding to non-combustible materials
- Managing private forest
- Community slash pickup or chipping
- Creation or improvement of access/egress roads
- Improvement of water supply for firefighting
- Public education activities throughout the community or region

Source: The National Fire Plan (NFP)

Agency: DOI & USDA

Website: http://www.forestsandrangelands.gov/

Description: Many states are using funds from the NFP to provide funds through a cost-share with residents to help them reduce the wildfire risk to their private property. These actions are usually in the form of thinning or pruning trees, shrubs, and other vegetation and/or clearing the slash and debris from this kind of work. Opportunities are available for rural, state, and volunteer fire assistance.

Source: Staffing for Adequate Fire and Emergency Response (SAFER)

Agency: FEMA

Website: https://www.fema.gov/grants/preparedness/firefighters/safer

Description: The purpose of SAFER grants is to help fire departments increase the number of frontline firefighters. The goal is for fire departments to increase their staffing and deployment capabilities and ultimately attain 24-hour staffing, thus ensuring that their communities have

adequate protection from fire and fire-related hazards. The SAFER grants support two specific activities: (1) hiring of firefighters and (2) recruitment and retention of volunteer firefighters. The hiring of firefighters activity provides grants to pay for part of the salaries of newly hired firefighters over the five-year program.

Source: The Fire Prevention and Safety Grants (FP&S)

Agency: FEMA

Website: https://www.fema.gov/grants/preparedness/firefighters/safety-awards#:~:text=Awards%20%20%20%20Organization%20%20%20,%20%20%241%2C499%2C957%20%2016%20more%20rows%20

Description: FP&S offers support to projects that enhance the safety of the public and firefighters who may be exposed to fire and related hazards. The primary goal is to target high risk populations and mitigate high incidences of death and injury. Examples of the types of projects supported by FP&S include fire-prevention and public-safety education campaigns, juvenile fire-setter interventions, media campaigns, and arson prevention and awareness programs. In fiscal year 2005, Congress reauthorized funding for FP&S and expanded the eligible uses of funds to include firefighter safety research and development.

Source: GSA-Federal Excess Personal Property

Agency: USFS

Website: https://gsaxcess.gov/

Description: The Federal Excess Personal Property (FEPP) program refers to Forest Service-owned property that is on loan to State Foresters for the purpose of wildland and rural firefighting. Most of the property originally belonged to the Department of Defense (DoD). Once acquired by the Forest Service, it is loaned to State Cooperators for firefighting purposes. The property is then loaned to the State Forester, who may then place it with local departments to improve local fire programs. State Foresters and the USDA Forest Service have mutually participated in the FEPP program since 1956.

Source: Assistance to Firefighters Grants (AFG)

Agency: FEMA

Website: https://www.fema.gov/grants/preparedness/firefighters.

Description: The AFG program provides resources to assist fire departments in attaining critical resources such as training and equipment.

STATE FUNDING INFORMATION

Source: CALFIRE Grant Programs

Agency: CALFIRE

Website: https://www.fire.ca.gov/grants/

Description: The CALFIRE Grant Program offers a range of forest-related grants with differing scopes and funding details. Some of the Grants include:

- Forest Health Grants: https://www.fire.ca.gov/grants/forest-health-grants/

- California Forest Improvement Program: https://www.fire.ca.gov/grants/california-forest-improvement-program-cfip/
- Fire Prevention Grants Program: https://www.fire.ca.gov/grants/fire-prevention-grants/
    - This grant program offers funding for hazardous fuels reduction, wildfire prevention planning, and wildfire prevention education
- Urban & Community Forestry Grant Programs: https://www.fire.ca.gov/grants/urban-and-community-forestry-grant-programs/
- Wildfire Resilience and Forestry Assistance Grant- Prop 68: https://www.fire.ca.gov/programs/resource-management/resource-protection-improvement/landowner-assistance/forest-stewardship/

Source: California Fire Safe Council Grant Programs

Agency: California Fire Safe Council

Website: https://cafiresafecouncil.org/grants-and-funding/apply-for-a-grant/

Description: The California Fire Safe Council provides a range of Federal, State, and Private funding sources in addition to administering the USFS State Fire Assistance (SFA) Grant Programs.

Source: California Environmental Protection Agency (EPA) Loans and Grants

Agency: Multiple

Website: https://calepa.ca.gov/loansgrants/

Description: The California EPA Loans and Grants hosts a wide variety of EPA grants specifically for California. While these funding sources may not tie directly to fuel management or fire recovery, there is a wide array of funding opportunities for water and air resources which are directly impacted by wildfire.

Source: Northern California Forests and Watersheds Program

Agency: Multiple

Website: https://www.nfwf.org/programs/northern-california-forests-and-watersheds

Description: The National Fish and Wildlife Foundations and the U.S. Forest Service have partnered to restore and enhance National Forests and watersheds affected by wildfires in northern California. This program will administer an initial $6 million in grants to projects that increase wildfire resiliency for northern California National Forests and watersheds.

Source: Adaptation Clearinghouse

Agency: Multiple

Website: https://resilientca.org/

Description: This resource has numerous wildfire-related resources such as funding opportunities, assessments, case studies, educational materials, data and tools, example plans and strategies, and additional policy guidance.

Source: State of California's Grants Portal

Agency: Multiple

Website: https://www.grants.ca.gov/

Description: The California Grants Portal helps users identify the latest grants that could support fire hazard planning or related implementation efforts that support wildfire risk mitigation, fuels management, and other related projects.

Source: California Air Resources Board Funding Wizard

Agency: Multiple

Website: https://fundingwizard.arb.ca.gov/web/

Description: The Funding Wizard aggregates current federal, state, regional, private, and other funding opportunities for environmental and sustainability projects.

PRIVATE FUNDING INFORMATION

Source: State Farm Good Neighbor Citizenship (GNC) Grants

Agency: State Farm

Website: https://www.statefarm.com/about-us/corporate-responsibility/community-grants/good-neighbor-citizenship-grants

Description: State Farm funding is directed at:

- Auto and roadway safety
- Teen Driver Education
- Home safety and fire prevention
- Disaster preparedness
- Disaster recovery

Source: The Urban Land Institute (ULI)

Website: http://www.uli.org

Description: ULI is a 501(c)(3) nonprofit research and education organization supported by its members. The institute has more than 22,000 members worldwide, representing the entire spectrum of land use and real estate development disciplines, working in private enterprise and public service. The mission of the ULI is to provide responsible leadership in the use of land to enhance the total environment. ULI and the ULI Foundation have instituted Community Action Grants that could be used for Firewise Communities activities. Applicants must be ULI members or part of a ULI District Council. Contact actiongrants@uli.org or review the web page to find your District Council and the application information.

Source: Environmental Systems Research Institute (ESRI)

Website: http://www.esri.com/grants

Description: ESRI is a privately held firm and the world's largest research and development organization dedicated to geographic information systems. ESRI provides free software, hardware,

and training bundles under ESRI-sponsored Grants that include such activities as conservation, education, and sustainable development, and posts related non-ESRI grant opportunities under such categories as agriculture, education, environment, fire, public safety, and more. You can register on the website to receive updates on grant opportunities.

Source: National Forest Foundation; Innovative Finance for National Forests Grant Program

Website: https://www.nationalforests.org/grant-programs/innovative-finance-for-national-forests-grant-program

Description: The Innovative Finance for National Forests Grant Program aims to bring in non-USFS funds to increase forest resilience. There are three main topics for funding: Wildfire Resilience and Recovery, Sustainable Recreation Access and Infrastructure, and Watershed Health. In addition, three types of projects are funded. Pilot Programs with on-the-ground implementation, Scaling Projects to deliver backlogs of unfunded work, and Research and Development to provide to new forest information.

Source: StEPP Foundation

Website: https://steppfoundation.org/

Description: StEPP is a 501(c)(3) organization dedicated to helping organizations realize their vision of a clean and safe environment by matching projects with funders nationwide. The StEPP Foundation provides project oversight to enhance the success of projects, increasing the number of energy efficiency, clean energy, and pollution prevention projects implemented at the local, state, and national levels for the benefit of the public. The website includes an online project submittal system and a Request for Proposals page.

Source: Matching Awards Program

Agency: National Forest Foundation (NFF)

Website: https://www.nationalforests.org/grant-programs/map

Description: The NFF is soliciting proposals for its Matching Awards Program (MAP) to provide funds for direct on-the-ground projects benefitting America's National Forests and Grasslands. By pairing federal funds provided through a cooperative agreement with the U.S. Forest Service with non-federal dollars raised by award recipients, MAP measurably multiplies the resources available to implement stewardship projects that benefit the National Forest System.

Source: Patagonia Environmental Grants and Support

Agency: Patagonia

Website: https://www.patagonia.com/how-we-fund/

Description: Patagonia supports innovative work that addresses the root causes of the environmental crisis and seeks to protect both the environment and affected communities. Patagonia focuses on places where they have built connections through outdoor recreation and through their network of retail stores, nationally and internationally.

Source: Leonardo DiCaprio Foundation Grants

Agency: Leonardo DiCaprio Foundation

Website: https://www.rewild.org/

Description: The foundation supports projects around the world that build climate resiliency, protect vulnerable wildlife, and restore balance to threatened ecosystems and communities.

Source: U.S. Endowment for Forestry and Communities

Agency: U.S. Environmental Protection Agency, Natural Resources Conservation Service (NRCS), U.S. Forest Service, U.S. Department of Defense, U.S. Economic Development Agency

Website: https://www.usendowment.org/

Description: As the nation's largest public charity dedicated to keeping our working forests working and ensuring their bounty for current and future generations, the Endowment deploys the creativity and power of markets to advance their mission: The Endowment works collaboratively with partners in the public and private sectors to advance systemic, transformative and sustainable change for the health and vitality of the nation's working forests and forest-reliant communities.

OTHER FUNDING INFORMATION

The following resources may also provide helpful information for funding opportunities:

- Western Forestry Leadership Coalition: https://www.thewflc.org/
- USDA Information Center: https://www.nal.usda.gov/main/information-centers
- Forest Service Fire Management website: http://www.fs.fed.us/fire/
- Insurance Services Office Mitigation Online (town fire ratings): http://www.isomitigation.com/
- National Fire Protection Association: http://www.nfpa.org
- National Interagency Fire Center, Wildland Fire Prevention/Education: https://www.nifc.gov/fire-information/fire-prevention-education-mitigation
- Department of Homeland Security U.S. Fire Administration: https://www.usfa.fema.gov/index.html

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APPENDIX G:

Homeowner Resources

KERN COUNTY CWPP HOMEOWNERS GUIDE

This guide has been developed to address site-specific information on wildfire for the Kern County communities. This guide 1) suggests specific measures that can be taken by homeowners to reduce structure ignitability and 2) enhances overall preparedness in the planning area by consolidating preparedness information from several local agencies and departments.

BEFORE THE FIRE—PROTECTION AND PREVENTION

REDUCING STRUCTURE IGNITABILITY

Structural Materials

Roofing—The more fire-resistant the roofing material, the better. The roof is the portion of the house that is most vulnerable to ignition by falling embers, known as firebrands. Metal roofs afford the best protection against ignition from falling embers. Slate or tile roofs are also non-combustible, and Class-A asphalt shingles are recommended as well. The most dangerous type of roofing material is wood shingles. Removing debris from roof gutters and downspouts at least twice a year will help to prevent fire, along with keeping them functioning properly.

Siding—Non-combustible materials are ideal for the home exterior. Preferred materials include stucco, cement, block, brick, and masonry.

Windows—Double-pane windows are most resistant to heat and flames. Smaller windows tend to hold up better within their frames than larger windows. Tempered glass is best, particularly for skylights, because it will not melt as plastic will.

Fencing and trellises—Any structure attached to the house should be considered part of the house. A wood fence or trellis can carry fire to your home siding or roof. Consider using nonflammable materials or use a protective barrier such as metal or masonry between the fence and the house.

If you are designing a new home or remodeling your existing one, do it with fire safety as a primary concern. Use nonflammable or fire-resistant materials and have the exterior wood treated with UL-approved fire-retardant chemicals. More information on fire-resistant construction can be found at http://www.firewise.org.

SCREEN OFF THE AREA BENEATH DECKS AND PORCHES

The area below an aboveground deck or porch can become a trap for burning embers or debris, increasing the chances of the fire transferring to your home. Screen off the area using screening with openings no larger than one-half inch. Keep the area behind the screen free of all leaves and debris.

FIREWOOD, KINDLING, AND OTHER FLAMMABLES

Although convenient, stacked firewood on or below a wooden deck adds fuel that can feed a fire close to your home. Be sure to move all wood away from the home during fire season. Stack all firewood uphill, at least 30 feet and preferably 100 feet from your home.

When storing flammable materials such as paint, solvents, or gasoline, always store them in approved safety containers away from any sources of ignition such as hot water tanks or furnaces. The fumes from highly volatile liquids can travel a great distance after they turn into a gas. If possible, store the containers in a safe, separate location away from the main house.

CHIMNEYS AND FIREPLACE FLUES

Inspect your chimney and damper at least twice a year and have the chimney cleaned every year before first use. Have the spark arrestor inspected and confirm that it meets the latest safety code. Your local fire department will have the latest edition of National Fire Prevention Code 211 covering spark arrestors. Make sure to clear away dead limbs from within 15 feet of chimneys and stovepipes

FIREPLACE AND WOODSTOVE ASHES

Never take ashes from the fireplace and put them into the garbage or dump them on the ground. Even in winter, one hot ember can quickly start a grass fire. Instead, place ashes in a metal container, and as an extra precaution, soak them with water. Cover the container with its metal cover and place it in a safe location for a couple of days. Then either dispose of the cold ash with other garbage or bury the ash residue in the earth and cover it with at least 6 inches of mineral soil.

PROPANE TANKS

Your propane tank has many hundreds of gallons of highly flammable liquid that could become an explosive incendiary source in the event of a fire. It should be located at least 30 feet from any structure. Keep all flammables at least 10 feet from your tank. Learn how to turn the tank off and on. In the event of a fire, you should turn the gas off at the tank before evacuating, if safety and time allow.

SMOKE ALARMS

A functioning smoke alarm can help warn you of a fire in or around your home. Install smoke alarms on every level of your residence. Test and clean smoke alarms once a month and replace batteries at least once a year. Replace smoke alarms once every 10 years.

FIRE-SAFE BEHAVIOR

- If you smoke, always use an ashtray in your car and at home.
- Store and use flammable liquids properly.
- Keep doors and windows clear as escape routes in each room.

DEFENSIBLE SPACE

The removal of dense, flammable foliage from the area immediately surrounding the house reduces the risk of structure ignition and allows firefighters access to protect the home. Pruning and limbing trees along with the selective removal of trees and shrubs is recommended to create a minimum defensible space area of 30 feet. Steep slopes require increased defensible space because fire can travel quickly uphill.

Within the minimum 30-foot safety zone, plants should be limited to fire-resistant trees and shrubs. Focus on fuel breaks such as concrete patios, walkways, rock gardens, and irrigated garden or grass areas within this zone. Use mulch sparingly within the safety zone, and focus use in areas that will be watered regularly. In areas such as turnarounds and driveways, nonflammable materials such as gravel are much better than wood chips or pine needles.

Vegetative debris such as dead grasses or leaves provide important erosion protection for soil but also may carry a surface fire. It is simply not feasible to remove all the vegetative debris from around your property. However, it is a good idea to remove any accumulations within the safety zone and extending out as far as possible. This is particularly important if leaves tend to build up alongside your house or outbuildings. Removing dead vegetation and leaves and exposing bare mineral soil are recommended in a 2-foot-wide perimeter along the foundation of the house. Also, be sure to regularly remove all dead vegetative matter including grasses, flowers, and leaf litter surrounding your home and any debris from gutters, especially during summer months. Mow the lawn regularly and promptly dispose of the cuttings properly. If possible, maintain a green lawn for 30 feet around your home.

All trees within the safety zone should have lower limbs removed to a height of 6–10 feet. Remove any branches within 15 feet of your chimney or overhanging any part of your roof. Ladder fuels are short shrubs or trees growing under the eaves of the house or under larger trees. Ladder fuels carry fire from the ground level onto the house or into the tree canopy. Be sure to remove all ladder fuels within the safety zone first. The removal of ladder fuels within about 100 feet of the house will help to limit the risk of crown fire around your home. More information about defensible space is provided at http://www.firewise.org.

FIRE RETARDANTS

For homeowners who would like home protection beyond defensible space and fire-resistant structural materials, fire-retardant gels and foams are available. These materials are sold with various types of equipment for applying the material to the home. They are like the substances applied by firefighters in advance of wildfire to prevent ignition of homes. Different products have different timelines for application and effectiveness. The amount of product needed is based on the size of the home, and prices may vary based on the application tools. Prices range from a few hundred to a few thousand dollars. An online search for "fire blocking gel" or "home firefighting" will provide a list of product vendors. Residents should research and consider environmental impacts of chemicals.

ADDRESS POSTING

Locating individual homes is one of the most difficult tasks facing emergency responders. Every home should have the address clearly posted with numbers at least three inches high. The colors of the address posting should be contrasting or reflective. The address should be posted so that it is visible to cars approaching from either direction.

ACCESS

Unfortunately, limited access may prevent firefighters from reaching many homes in the planning area. Many of the access problems occur at the property line and can be improved by homeowners. First, make sure that emergency responders can get in your gate. This may be important not only during a fire but also to allow access during any other type of emergency response. If you will be gone for long periods during fire season, make sure a neighbor has access, and ask them to leave your gate open in the event of a wildfire in the area.

Ideally, gates should swing inward. A chain or padlock can be easily cut with large bolt cutters, but large automatic gates can prevent entry. Special emergency access red boxes with keys are sold by many gate companies but are not recommended by emergency services. The keys are difficult to keep track of and may not be available to the specific personnel that arrive at your home. An alternative offered by some manufacturers is a device that opens the gate in response to sirens. This option is preferred by firefighters but may be difficult or expensive to obtain.

Beyond your gate, make sure your driveway is uncluttered and at least 12 feet wide. The slope should be less than 10%. Trim any overhanging branches to allow at least 13.5 feet of overhead clearance. Also make sure that any overhead lines are at least 14 feet above the ground. If any lines are hanging too low, contact the appropriate phone, cable, or power company to find out how to address the situation.

If possible, consider a turnaround within your property at least 45 feet wide. This is especially important if your driveway is more than 300 feet in length. Even small fire engines have a hard time turning around and cannot safely enter areas where the only means of escape is by backing out. Any bridges must be designed with the capacity to hold the weight of a fire engine.

NEIGHBORHOOD COMMUNICATION

It is important to talk to your neighbors about the possibility of wildfire in your community. Assume that you will not be able to return home when a fire breaks out and may have to rely on your neighbors for information and assistance. Unfortunately, it sometimes takes tragedy to get people talking to each other. Don't wait for disaster to strike. Strong communication can improve the response and safety of every member of the community.

PHONE TREES

Many neighborhoods use phone trees to keep each other informed of emergencies within and around the community. The primary criticism is that the failure to reach one person high on the tree can cause a breakdown of the system. However, if you have willing and able neighbors, particularly those that are at home during the day, the creation of a well-planned phone tree can often alert residents to the occurrence of a wildfire more quickly than media channels. Talk to your neighborhood association about the possibility of designing an effective phone tree.

NEIGHBORS IN NEED OF ASSISTANCE

Ask mobility-impaired neighbors if they have notified emergency responders of their specific needs. It is also a good idea for willing neighbors to commit to evacuating a mobility-impaired resident in the event of an emergency. Make sure that a line of communication is in place to verify the evacuation.

ABSENTEE OWNERS

Absentee owners are often not in communication with their neighbors. If a home near you is unoccupied for large portions of the year, try to get contact information for the owners from other neighbors or your neighborhood association. Your neighbors would probably appreciate notification in the event of an emergency. Also, you may want to contact them to suggest that they move their woodpile or make sure that the propane line to the house is turned off.

HOUSEHOLD EMERGENCY PLAN

A household emergency plan does not take much time to develop and will be invaluable in helping your family deal with an emergency safely and calmly. One of the fundamental issues in the event of any type of emergency is communication. Be sure to keep the phone numbers of neighbors with you rather than at home.

It is a good idea to have an out of state contact, such as a family member. When disaster strikes locally, it is often easier to make outgoing calls to a different area code than local calls. Make sure everyone in the family has the contact phone number and understands why they need to check in with that person in the event of an emergency. Also, designate a meeting place for your family. Having an established meeting site helps to ensure that family members know where to go, even if they can't communicate by phone.

CHILDREN

Local schools have policies for evacuation of students during school hours. Contact the school to get information on how the process would take place and where the children would likely go.

The time between when the children arrive home from school and when you return home from work is the most important time frame that you must address. Fire officials must clear residential areas of occupants to protect lives and to allow access for fire engines and water drops from airplanes or helicopters. If your area is evacuated, blockades may prevent you from returning home to collect your children. It is crucial to have a plan with a neighbor for them to pick up your children if evacuation is necessary.

PETS AND LIVESTOCK

Some basic questions about pets and livestock involve whether you can evacuate the animals yourself and where you would take them. Planning for the worst-case scenario may save your animals.
An estimated 90% of pets left behind in an emergency do not survive. Don't expect emergency service personnel to prioritize your pets in an emergency. Put plans in place to protect your furry family members.

Pets

Assemble a pet disaster supply kit and keep it handy. The kit should contain a three-day supply of food and water, bowls, a litter box for cats, and a manual can opener if necessary. It is also important to have extra medication and medical records for each pet. The kit should contain a leash for each dog and a carrier for each cat. Carriers of some kind should be ready for birds and exotic pets. In case your pet must be left at a kennel or with a friend, also include an information packet that describes medical conditions, feeding instructions, and behavioral problems. A photo of each pet will help to put the right instructions with the right pet.

In the event of a wildfire you may be prevented from returning home for your animals. Talk to your neighbors and develop a buddy system in case you or your neighbors are not home when fire threatens. Make sure your neighbor has a key and understands what to do with your pets should they need to be evacuated.

If you and your pets were evacuated, where would you go? Contact friends and family in advance to ask whether they would be willing to care for your pets. Contact hotels and motels in the area to find out which ones accept pets. Boarding kennels may also be an option. Make sure your pets' vaccinations are up to date if you plan to board them.

Once you have evacuated your pets, continue to provide for their safety by keeping them cool and hydrated. Try to get your pets to an indoor location rather than leaving them in the car. Do not leave your pets in your vehicle without providing shade and water. It is not necessary to give your pets water while you are driving but be sure to offer water as soon as you reach your destination.

Livestock

Getting livestock out of harm's way during a wildfire is not easy. You may not be able or allowed to return home to rescue your stock during a wildfire evacuation. Talk to your neighbors about how you intend to deal with an evacuation. If livestock are encountered by emergency responders, they will be released and allowed to escape the fire on their own. Make sure your livestock have some sort of identification. Ideally, your contact information should be included on a halter tag or ear tag so that you could be reached if your animal is encountered.

If you plan to evacuate your livestock, have a plan in place for a destination. Talk to other livestock owners in the area to find out whether they would be willing to board your stock in the event of an emergency. Often in large-scale emergencies, special accommodations can be made at fair and rodeo grounds, but personal arrangements may allow you to respond more quickly and efficiently.

If you do not own a trailer for your horses or other livestock, talk to a neighbor who does. Find out whether they would be willing to assist in the evacuation of your animals. If you do own a trailer, make sure it is in working condition with good, inflated tires and functioning signal lights. Keep in mind that even horses that are accustomed to a trailer may be difficult to load during an emergency. Practicing may be a good idea to make sure your animals are as comfortable as possible when being loaded into the trailer.

HOUSE AND PROPERTY

Insurance companies suggest that you make a video that scans each room of your house to help document and recall all items within your home. This video can make replacement of your property much easier in the unfortunate event of a large insurance claim. See more information on insurance claims in the "After the Fire" section below.

PERSONAL ITEMS

During fire season, items you would want to take with you during an evacuation should be kept in one readily accessible location. As an extra precaution, it may be a good idea to store irreplaceable mementos or heirlooms away from your home during fire season.

It is important to make copies of all of your important household paperwork, such as birth certificates, titles, and so forth. Store them away from your home, such as in a safe deposit box. Important documents can also be protected in a designated firesafe storage box within your home.

IN THE EVENT OF A FIRE

NOTIFICATION

Residences with cellphone or landline service, radio, internet, cable, or satellite services can receive emergency notifications. In the event of a wildfire, announcements from the local Emergency

Management office will be broadcast over local radio and television stations. Media notification may be in the form of news reports or the Emergency Alert System (EAS). On television, the emergency management message will scroll across the top of the screen on local channels. The notice is not broadcast on non-local satellite and cable channels.

One good way to stay informed about wildfire is to use a National Oceanic and Atmospheric Administration weather alert radio. The radios can be purchased at most stores that carry small appliances, such as Target, Walmart, or Amazon. The radio comes with instructions for the required programming to tune the radio to your local frequency. The programming also determines the types of events for which you want to be alerted. The weather alert radio can be used for any type of large incident (weather, wildfire, hazardous materials, etc.), depending on how it is programmed. Local fire personnel can assist with programming if needed.

WHEN FIRE THREATENS

Before an evacuation order is given for your community, there are several steps you can take to make your escape easier and to provide for protection of your home. When evaluating what to do as fire threatens, the most important guideline is: **DO NOT JEOPARDIZE YOUR LIFE.**

Back your car into the garage or park it in an open space facing the direction of escape. Shut the car doors and roll up the windows. Place all valuables that you want to take with you in the vehicle. Leave the keys in the ignition or in another easily accessible location. Open your gate.

Close all windows, doors, and vents, interior doors, and i your garage door. Disconnect automatic garage openers. Leave exterior doors unlocked. Move furniture away from windows and sliding glass doors. If you have lightweight curtains, remove them. Heavy curtains, drapes, and blinds should be closed. Leave a light on in each room.

Turn off the propane tank or shut off gas at the meter. Turn off pilot lights on appliances and furnaces.

Move firewood and flammable patio furniture away from the house or into the garage.

Connect garden hoses to all available outdoor faucets and make sure they are in a conspicuous place. Turn the water on to "charge," or fill your hoses and then shut off the water.

Place a ladder up against the side of the home, opposite the direction of the approaching fire, to allow firefighters easy access to your roof.

EVACUATION

When evacuation is ordered, you need to **evacuate immediately and assemble at a predesignated evacuation point (if specified) and follow instructions by the managing agency, i.e., KCFD, or a designated representative.** Evacuation not only protects lives; it also helps to protect property. Some roads are too narrow for two-way traffic, especially with fire engines. Fire trucks often can't get into an area until the residents are out. Also, arguably the most important tool in the WUI toolbox is aerial attack. Airplanes and helicopters can be used to drop water or retardant to help limit the spread of the fire, but these resources cannot be used until the area has been cleared of civilians.

Expect the managing agency, such as the KCFD or the Kern County Sheriff's Office, to designate a check-out location for evacuees. This process helps to ensure that everyone is accounted for and informs emergency personnel as to who may be remaining in the community. Every resident should check out at the designated location before proceeding to any established family meeting spot.

A light-colored sheet closed in the front door serves as a signal to emergency responders that your family has safely left. This signal saves firefighters precious time, as it takes 12–15 minutes per house to knock on each door and inform residents of the evacuation.

AFTER THE FIRE

RETURNING HOME

First and foremost, follow the advice and recommendations of emergency management agencies, fire departments, utility companies, and local aid organizations regarding activities following the wildfire. Do not attempt to return to your home until fire personnel have deemed it safe to do so.

Even if the fire did not damage your house, do not expect to return to business as usual immediately. Expect that utility infrastructure may have been damaged and repairs may be necessary. When you return to your home, check for hazards, such as gas or water leaks and electrical shorts. Turn off damaged utilities if you did not do so previously. Have the fire department or utility companies turn the utilities back on once the area is secured.

INSURANCE CLAIMS

Your insurance agent is your best source of information as to the actions you must take in order to submit a claim. Here are some things to keep in mind. Your insurance claim process will be much easier if you photographed your home and valuable possessions before the fire and kept the photographs in a safe place away from your home. Most if not all of the expenses incurred during the time you are forced to live outside your home could be reimbursable. These could include, for instance, mileage driven, lodging, and meals. Keep all records and receipts. Don't start any repairs or rebuilding without the approval of your claims adjuster. Beware of predatory contractors looking to take advantage of anxious homeowners wanting to rebuild as quickly as possible. Consider all contracts very carefully, take your time to decide, and contact your insurance agent with any questions. If it appears to be a large loss, consider whether you should hire a public adjuster that is licensed by the state department of insurance who will represent and advocate for you as the policyholder in appraising and negotiating the claimant's insurance claim to ensure you get the best outcome and recovery from your insurance company. Most public adjusters charge a small percentage of the settlement that is set by the state and primarily they appraise the damage, prepare an estimate and other claim documentation, read the policy of insurance to determine coverages, and negotiate with the insurance company's claims handler.

POST-FIRE REHABILITATION

Homes that may have been saved in the fire may still be at risk from flooding and debris flows. Burned Area Emergency Rehabilitation (BAER) teams are professionals who work to mitigate the effects of post-fire flooding and erosion. These teams often work with limited budgets and manpower. Homeowners can assist the process by implementing treatments on their own properties as well as volunteering on burned public lands to help reduce the threat to valuable resources. Volunteers can assist BAER team members by planting seeds or trees, hand mulching, or helping to construct straw-bale check dams in small drainages.

Volunteers can help protect roads and culverts by conducting storm patrols during storm events. These efforts dramatically reduce the costs of such work as installing trash racks, removing culverts, and re-routing roads.

Community volunteers can also help scientists to better understand the dynamics of the burned area by monitoring rain gauges and monitoring the efficacy of the installed BAER treatments.

ADDITIONAL LINKS AND RESOURCES

KERN COUNTY FIRE DEPARTMENT (KCFD)

- Hazard Reduction Clearance Requirements Checklist: https://kerncountyfire.org/wp-content/uploads/HAZARD-REDUCTION-CLEARANCE-REQUIREMENTS-CHECKLIST.pdf
- Defensible Space Guidelines: https://kerncountyfire.org/wp-content/uploads/2021-Defensible-Space-Guidelines.pdf

CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION (CAL FIRE)

Home and Fuels Management

- Homeowners Checklist; How to Make Your Home Fire Safe: https://www.lakeshastina.com/Docs_PDFs/Checklist.pdf
- Hardening Your Home: https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/hardening-your-home/
- Home Hardening Toolkit: https://www.readyforwildfire.org/campaign-toolkits/home-hardening-toolkit/
- Defensible Space: https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/defensible-space/
- Defensible Space Toolkit: https://www.readyforwildfire.org/campaign-toolkits/defensible-space-toolkit/
- Fire-Resistant Landscaping: https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/fire-resistant-landscaping/
- What Property Owners Need to Know to Reduce Wildfire Risk Each Season: https://www.readyforwildfire.org/forest-health/seasonal-actions/
- Prescribed Fire Toolkit: https://www.readyforwildfire.org/campaign-toolkits/prescribed-fires-toolkit/

Preparing for Wildfire

- Wildfire Action Plan: https://www.readyforwildfire.org/prepare-for-wildfire/get-set/wildfire-action-plan/
- How to Prepare to Evacuate From a Wildfire: https://www.readyforwildfire.org/prepare-for-wildfire/get-set/prepare-your-family/
- Pre-Evacuation Preparation Steps: https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/pre-evacuation-preparation-steps/

- Evacuation Steps: https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/evacuation-steps/
- Animal Evacuation: https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/animal-evacuation/
- GO! Evacuation Guide: https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/
- GO! Evacuation Toolkit: https://www.readyforwildfire.org/campaign-toolkits/go-evacuation-toolkit/
- Emergency Supply Kit: https://www.readyforwildfire.org/prepare-for-wildfire/get-set/emergency-supply-kit/
- Insurance Preparedness: https://www.readyforwildfire.org/prepare-for-wildfire/get-set/insurance-preparedness/
- Power Outage Information: https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/power-outage-information/
- What To Do If Trapped: https://www.readyforwildfire.org/prepare-for-wildfire/go-evacuation-guide/what-to-do-if-trapped/

Preventing Wildfire

- Equipment Use: https://www.readyforwildfire.org/prevent-wildfire/equipment-use/
- Debris Burning: https://www.readyforwildfire.org/prevent-wildfire/debris-burning/
- Vehicle Use: https://www.readyforwildfire.org/prevent-wildfire/vehicle-use/
- Campfire Safety: https://www.readyforwildfire.org/prevent-wildfire/campfire-safety/
- Target Shooting Safety: https://www.readyforwildfire.org/prevent-wildfire/target-shooting-safety/
- One Less Spark, One Less Wildfire Toolkit: https://www.readyforwildfire.org/prevent-wildfire/one-less-spark-campaign/
- Forest Health: https://www.readyforwildfire.org/forest-health/
- Forest Health Toolkit: https://www.readyforwildfire.org/campaign-toolkits/forest-health-toolkit/

After the Fire

- Returning Home After a Wildfire: https://www.readyforwildfire.org/post-wildfire/
- What to Expect After a Wildfire: https://www.readyforwildfire.org/post-wildfire/after-a-wildfire/
- Immediate Safety: https://www.readyforwildfire.org/post-wildfire/returning-home/
- Rebuilding, Mobilizing Your Community: https://www.readyforwildfire.org/post-wildfire/rebuilding/
- Who Can Help? https://www.readyforwildfire.org/post-wildfire/who-can-help/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA):

Protecting Your Home

- Understanding the Wildfire Threat to Homes: https://www.nfpa.org/News-and-Research/Publications-and-media/Blogs-Landing-Page/Fire-Break/Blog-Posts/2020/12/08/Interactive-online-resource-helps-build-understanding-of-wildfire-risks
- Preparing Homes for Wildfire: https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Preparing-homes-for-wildfire
- If your Home Doesn't Ignite, It Can't Burn: https://www.youtube.com/watch?v=RqKFDDBGd5o
- How do Homes Burn in a Wildfire? https://www.youtube.com/watch?v=3QthynXympI
- 5 Key Areas Around the Home You Must Examine When Assessing Wildfire Risk: https://www.youtube.com/watch?v=MIUQVL3BvVg
- Your Home and Wildfire, Choices That Make a Difference: https://www.youtube.com/watch?v=pfbEcMeYFFA
- Home Hardening Fact Sheets: https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Firewise-USA/Firewise-USA-Resources/Research-Fact-Sheet-Series

Preparation and Evacuation

- Wildfire Preparedness Tips: https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Wildfire-safety-tips
- Wildfire Preparedness for Household Pets: https://www.nfpa.org//-/media/Files/Public-Education/Campaigns/TakeAction/TakeActionPetsChecklist.pdf
- Wildfire Preparedness for Horses and Livestock: https://www.nfpa.org/-/media/Files/Public-Education/Campaigns/TakeAction/TakeActionHorseChecklist.ashx
- Backpack Emergency GO! Kit: https://www.nfpa.org/-/media/Files/Public-Education/Campaigns/TakeAction/TakeActionBackPackGoKit.ashx
- Instructor Guide; The ability to identifying, analyzing, and using relevant situational information about topographic features can help predict wildland fire behavior is the responsibility of everyone on the fireline: https://www.nwcg.gov/sites/default/files/training/docs/s-190-ig04.pdf
- Outthink a Wildfire; Wildfire Action Policies: https://www.nfpa.org/wildfirepolicy

MISC.

- Non-Renewals for California Homeowners: https://strongerca.com/wp-content/uploads/2021/06/Non-renewals-for-CA-Homeowners.pdf
- Mass Tree Mortality, Fuels, and Fire: A Guide for Sierra Nevada Forest Landowners: https://anrcatalog.ucanr.edu/pdf/8683.pdf
- WiRē – Wildfire Research, an interdisciplinary collaboration on community adaptability to wildland fire: https://wildfireresearchcenter.org/

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APPENDIX H:

Community Outreach

SWCA

PUBLIC OUTREACH

Table H.1 presents examples of the public outreach completed as part of the CWPP development. Online resources were used to provide information to the public and solicit feedback. Figures H.1 through H.4 show examples of various outreach efforts.

Table H.1. Public Outreach Resources

Resource Description	Location	URL	Date Published
Social media post	Facebook	n/a	H.1
CWPP announcement video	YouTube	https://www.youtube.com/watch?v=GF43UvppH2A	H.2
CWPP flyer	With client	n/a	H.3
CWPP press release	With client	n/a	H.4

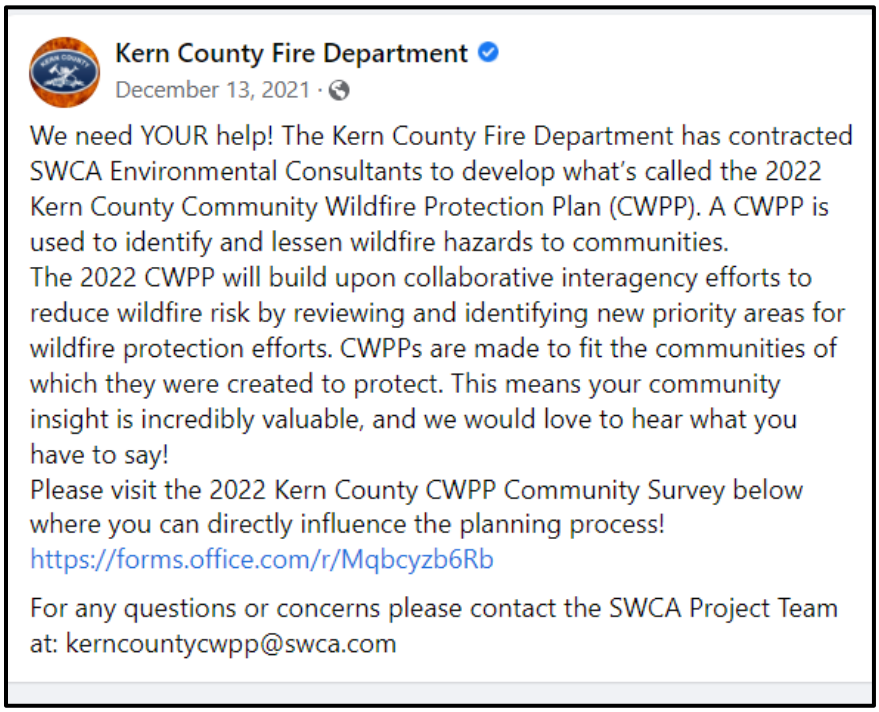

Figure H.1. KCFD CWPP social media post.

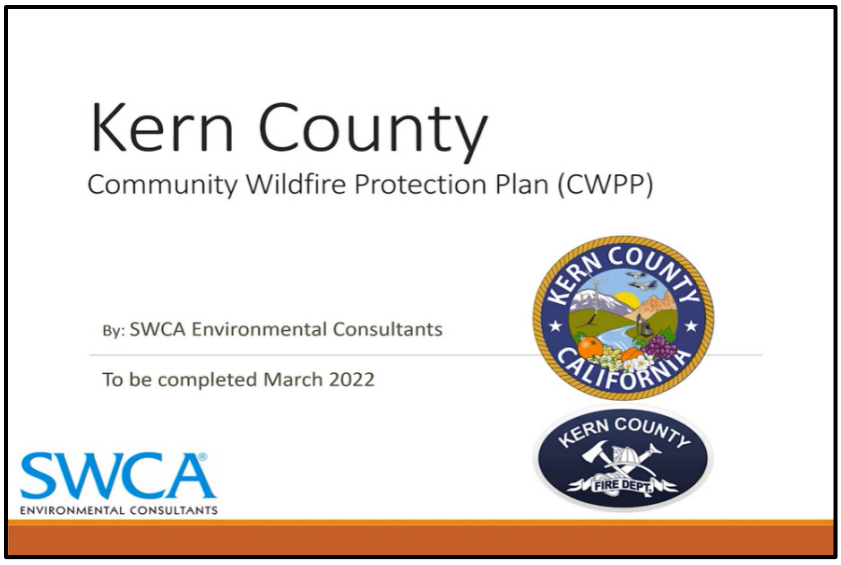

Figure H.2. CWPP announcement video.

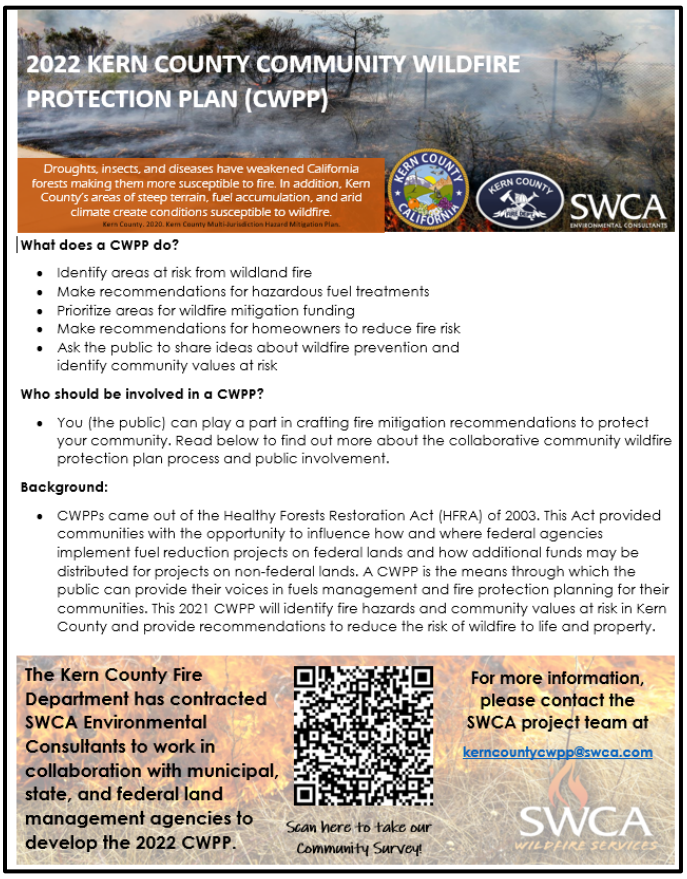

Figure H.3. CWPP flyer.

Press Release

Kern County Community Wildfire Protection Plan

[Date]

For Immediate Release

The Kern County Fire Department has contracted SWCA Environmental Consultants to develop the 2022 Kern County Community Wildfire Protection Plan (CWPP). A CWPP is a plan designed to identify and mitigate wildfire hazards to communities and infrastructure located in the wildland-urban interface (WUI), which is an area located between wildland and human development. The CWPP makes recommendations for hazardous fuels reduction, public outreach and education, structural ignitability reduction, and fire response capabilities.

The development of the Kern County CWPP is founded in facilitated collaboration among local, state, and federal officials, as well as non-governmental stakeholders. The 2022 CWPP reviews, verifies, and/or identifies potential new priority areas where mitigation measures are needed to protect irreplaceable life, property, and critical infrastructure in the County, from wildfire.

A CWPP is designed to assist the County and landowners in ensuring that a future catastrophic wildfire is avoided or mitigated by assessing areas at risk and recommending measures to decrease those risks.

The Core Team is continuing to work together to develop the CWPP to ensure the plan is applicable to the communities it is designed to serve. The goal is that all recommended projects are designed to greatly reduce wildfire risk to residents and ensure that communities can live safely in this fire-prone environment.

The CWPP will be a guiding document for fire and emergency managers, as well as agencies who manage land within the County. The CWPP is designed to serve County residents, and we encourage your interest and engagement in the process. For more information, please contact the SWCA project team, at kerncountycwpp@swca.com.

In February, the public will be invited to provide feedback on the Draft Plan. Until then, all are invited to share your input with the planning team via our Community Survey located here via URL: https://forms.office.com/r/MqbcyzB6Rb, or you can scan the QR code below:

Figure H.4. CWPP press release.

COMMUNITY SURVEY

Community Wildfire Protection Plan Community Survey - Kern County

Fire, forestry, and emergency management agencies within the County are currently working together to develop this Community Wildfire Protection Plan in order to identify communities within the County that are at risk from wildfire. We want to hear from you in order to understand how the County can better plan and prepare for potential wildfire in your community.

Estimated time to complete: 7 minutes

Location

Please enter as much or as little information about your home location (if you wish to remain anonymous, please provide general location information)

1. Street Address

2. Zip Code

3. General Location

3/7/2022

Housing and Community

4. How would you rate your house in terms of risk from wildfire? (Consider the proximity of your house to tracts of undeveloped land, vegetated land, emergency response and access.)

- ○ Low
- ○ Medium
- ○ High

5. My home is vulnerable to wildfire because of..... (Select top 2 choices)

- ☐ Surrounding fuels on your property - (i.e., live and dead trees, shrubs, grass, wood piles).
- ☐ Surrounding fuels on neighboring property - (i.e., dense vegetation, wood piles, dead and downed trees.
- ☐ Building materials - (i.e., wood shingles, clap board siding, wooden decks, wood fences).
- ☐ Lack of water supply - (i.e., dependence on well water, far from hydrant).
- ☐ Inaccessible area - (i.e., long narrow driveway, dead end road, can a fire truck easily access your property?)
- ☐ Ignition sources from neighboring areas - (i.e., disposal of cigarette butts from trails or roads).

6. How prepared is your community for a large wildfire? (Select one)

- ○ Poorly Prepared
- ○ Moderately Prepared
- ○ Well Prepared

3/7/2022

7. Rate the following actions in their importance to making the community better prepared for wildfire (Please RANK 1-5; 1 is most important).

Clean up live and dead vegetation and yard debris around homes by individual property owners.

Better firefighting equipment.

Improved water supply – (i.e., expansion of public water systems, increased number of hydrants, and installation of wells).

Fuel treatments on public lands to reduce the amount of live and dead vegetation available to burn in a fire.

Community education on wildfire prevention and awareness.

8. My biggest challenge to making my home fire safe is.... (Please RANK 1-4; 1 is most important).

Time.

Financial burden of carrying out mitigation measures and maintaining clearance.

Not knowing what to do.

There is no challenge, I think my home is already safe.

3/7/2022

9. I would be most interested in funding to help me and my community with.... (Please RANK from 1- 7; 1 is most important)

Green waste disposal - (i.e., removal of leaves, branches, wood from cleared areas).

Home wildfire hazard assessments.

Wildfire prevention education.

Timber/fuel treatments on private land.

Timber/fuel treatments on public land.

Water supply development - (i.e., extend public water systems, add additional hydrants, install fire wells, and acquire portable water supplies).

Funding for fire departments - (i.e., to secure additional apparatus/equipment, fund training, fund additional staff).

10. Are you currently using prescribed fire to treat your property?

- ◯ Yes
- ◯ No
- ◯ No, but I am interested in learning more.

11. Name any community resources you would most like to see prioritized for protection from wildfire (e.g., natural areas, cultural sites, municipal infrastructure, and recreation sites).

3/7/2022

12. If you have any other comments, please add them here. Thank you.

3/7/2022

COMMUNITY SURVEY FINDINGS

A total of 34 responses were tallied for the community survey. Survey highlights are summarized below (percentages have been rounded to the nearest whole number):

Survey Question: "*I would be most interested in funding to help me and my community with…*"

- 50% of respondents listed "Timber/fuel treatments on public land" as their first choice
- 21% voted for "Green waste disposal" as the first choice
- 15% selected "Funding for fire departments" as the first choice
- 9% selected "Home wildfire hazard assessments"
- 6% selected "Water supply development"

Survey Question: "*How would you rate your house in terms of risk from wildfire?*"

- 53% of respondents said "High"
- 29% of respondents said "Medium"
- 15% of respondents said "Low"

Survey Question: "*My home is vulnerable to wildfire because of…*"

- 71% of respondents said "Surrounding fuels on neighboring property"
- 12% said "Lack of water supply"
- 9% said "Building materials"
- 3% said "Inaccessible area"

Survey Question: "*How prepared is your community for a large wildfire?*"

- 9% of respondents said "Well prepared"
- 32% said "Moderately prepared"
- 53% said "Poorly prepared"

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APPENDIX I:

Project Recommendations

Table I.1. Recommendations for Creating Resilient Landscapes (Fuel Treatment Recommendations)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
1	Ongoing	H		Identify needed road maintenance and strategic road buffers (aligns with 6006 Mount Pinos and 2005 Meyers Canyon CWPPs)	Highest risk roadways as identified in the risk assessment.	County, State, Interstate	<u>Roadway improvements:</u> • Although increasing roadway width may not be feasible in many locations, prioritize creation of passing areas where possible. • Grade and maintain roads to reduce hazards to emergency apparatus (potholes and poor surfacing). • Advocate for a County-wide street width ordinance (aligns with 2004 Alta Sierra CWPP). • Implement roadside brushing where appropriate. <u>Road ROW vegetation improvements:</u> • Frequently maintain ROW. • Treat surface fuels for a minimum 10-foot buffer and up to 30 feet where possible. • Reduce ladder fuels along the road to prevent transmission of fire from the surface into the crowns. • Reduce tree density along the road to increase crown spacing to prevent active crown fire spread through the tree canopies. • Trim fuels (limbing-up timber) to allow safe passage of emergency vehicles. • Control for invasive species that may contribute to rapid fire spread (i.e., weeds and grasses). • Install roadside disc beaks (aligns with 2020 MJHMP). • Work with HOAs and communities to increase road width within/install cul-de-sacs within communities to provide sufficient space for response vehicles to maneuver (aligns with 2005 Meyers Canyon CWPP). • Implement a fire break around the perimeter of extreme risk communities (aligns with 2005 Greater Tehachapi Area (GTA) CWPP).	Provide for safe and effective wildfire response capabilities. Create a strategic fuel break along roadways to create potential firebreak	Regular maintenance needed to ensure the roads are drivable for emergency response vehicles	• Hazard Mitigation Grant Program (HMGP)/HMGP – Post Fire • Pre-Disaster Mitigation (PDM)/Building Resilient Infrastructure and Communities (BRIC) • Firewise Grants • National Fire Plan (NFP) Grants • California Department of Forestry and Fire Protection (CAL FIRE) Grant Programs • Emergency Forest Restoration Program (EFRP)
2	Ongoing	H		Protect rare species habitats	County and adjacent state and federal lands (public and private)	County, State, Federal	• Work with land management agencies to ensure all fuels treatments are aligned with environmental regulations relating to protection of sensitive species. • Incorporate prescribed burns and/or cultural burns where appropriate to restore habitat.	Balance the reduction of hazardous fuels with the protection of highly sensitive resources.	Monitor accomplishments in addressing species protections while reducing wildfire risk.	• Environmental Quality Incentives Program (EQIP) • BLM Forest and Woodlands Resource Management (Catalog of federal funding sources) • CAL FIRE Grant Programs • Leonardo DiCaprio Foundation Grants
3	Ongoing	H	Fall/winter 2022	Collaborate with local HOAs or community associations to develop fuel break measures and associated access improvements for increased community protection.	Kern County (all lands) Prioritize highest risk areas as identified in the risk assessment.	Private, County	• To ensure defensible space in WUI will be maintained, require property owners and HOAs to establish sufficient structure clearance around all structures. • Work with HOAs to identify needed access improvements.	Create resilient landscapes and address potential for extreme wildfire behavior in and around communities. Create and maintain accountability with local landowners.	Carry out a 2-year review of accomplishments in improving defensible space. Repeat NFPA1144 assessments every 5 years to document improvements in defensible space.	• PDM/BRIC • National Urban and Community Forestry Challenge Cost Share Grant Program • Firewise grants • State Farm Good Neighbor Citizenship (GNC) Grants • NFP • Fire Management Assistance Grant (FMAG)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
4	Ongoing	H	Fall/winter 2022	Identify mitigation projects within areas of high exposure potential	Kern County (all lands) Prioritize highest risk areas as identified in the risk assessment.	County, State	Utilize the fire behavior modeling to identify areas that would burn with uncharacteristically high flame lengths and rapid rates of spread, to mitigate fire behavior and provide for areas where fire fighters could more safely suppress future wildfire. Focus on the following treatments: • Remove ladder fuels to reduce the potential for surface to canopy continuity and extreme fire behavior. • Reduce tree density to increase crown spacing to prevent active crown fire spread through the tree canopies. • Carry out understory vegetation management to minimize horizontal continuity. • Treat small patches of land tucked into residential areas. • Create mosaics of vegetation types and stand ages to reduce horizontal and vertical continuity of vegetation to limit fire spread. • Prepare to treat fine fuels that establish in fuel treatment areas. • Preferentially treat hazardous fuel types first- e.g., chapparal. • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I).	Assess hazard mitigation opportunities to protect values at risk within areas of highest exposure potential. Consider a full tool kit of mitigation measures.	Carry out a 2-year review of accomplishments in reducing hazardous fuels. Calibrate fuel model based on treatment effectiveness at altering fuel loading. Re-run fire behavior modeling after 5 years to quantify impacts of treatment on fire behavior potential.	• PDM/BRIC • HMGP/HMGP – Post Fire • FMAG • Regional Catastrophic Preparedness Grants (RCP) • National Urban and Community Forestry Challenge Cost Share Grant Program
5	Ongoing	H		Integrate wildfire management with meeting other resource management objectives	State and Public Lands	County, Federal Agencies	• Leverage the information from the development of the CWPP and the HMP to combine fuel reduction and habitat restoration projects. • Maximize funding sources through integrating fuel projects with other land management goals, including ecological restoration, habitat improvements and recreation. • Utilize the Good Neighbor Authority, as appropriate, to facilitate cross-boundary actions.	Restore degraded landscapes to build a more resilient fire environment.	Periodically review accomplishments in reducing hazardous fuels and success at meeting other resource management objectives.	• EQIP • BLM Forest and Woodlands Resource Management • CAL FIRE Grant Programs • Northern California Forests and Watersheds Program • Leonardo DiCaprio Foundation Grants
6		H		Implement CEQA and CalVTP training for select Kern County staff	Kern County (all lands)	Fire Department, partnering agencies	• Require select personnel (those working on project implementation and permitting) to complete CEQA and/or CalVTP training • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I). • https://bof.fire.ca.gov/projects-and-programs/calvtp/	Increase the level of project preparation/ permitting that can be completed in-house.	Designate specific roles that will need to complete the training. Update qualifications annually or as needed to maintain the certification.	• CAL FIRE Grant Programs • California Fire Safe Council Grant Programs • EQIP • EFRP
7		H		Remove standing dead trees (and other biomass) on public and private property (aligns with 2004 Alta Sierra CWPP and 2020 MJHMP).	Kern County (all lands) Priority areas: WUI communities	County, Federal Agencies	• Preferentially remove beetle (or other insect or disease) killed trees that pose a hazard adjacent to homes or structures. • Work from structure outwards to edge of property line. • Remove slash and dispose of appropriately, following beetle slash protocols. • Consult with tree removal specialists • Remove hazard trees along trails and other public ROW. Especially focus on hazard tree removal along community ingress and egress routes to prevent roadways from becoming blocked during a fire. • Utilize references for insect and disease management as outlined by the CA Forest Insect and Disease Training Manual: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_046410.pdf • Identify incentives to promote private operators to remove trees with removed trees as payment. • Utilize the bark beetle forecasting tool for strategic planning and maintenance: https://www.usda.gov/media/blog/2018/02/05/new-tool-helps-california-land-managers-predict-tree-mortality Promote homeowner/landowner education regarding insect and disease (see Appendix G)	Reduce wildfire risk by reducing fuels. Reduce/manage insect/disease infestations by removing damaged vegetation. Create resilient landscapes and address potential for extreme wildfire behavior in and around the WUI.	Convene agency representatives annually to determine progress.	• PDM • HMGP/HMGP – Post Fire • EFRP • U.S. Endowment for Forestry and Communities • NFP

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
8		H		Implement fuel reduction projects within/around the WUI and high-risk communities (aligns with 2004 Alta Sierra, 2005 Meyers Canyon. and 2009 KRV CWPPs)	Kern County (all lands)	All agencies	• Utilize multi-agency coordination to develop a long-term fuel reduction/vegetation management strategic plan, including monitoring and maintenance (aligns with 2009 KRV CWPP) • Break down plans into focus areas/high risk communities • Utilize thinning and prescribed burns (where appropriate)to reduce fuel load in high-risk areas • Implement and maintain shaded fuel breaks and reduce ladder fuels (aligns with 2009 KRV and 2005 Meyers Canyon CWPP) • Aim for 300 ft shaded fuel breaks around communities (aligns with 2006 Mount Pinos CWPP) • Reduce tree density to increase crown spacing to prevent active crown fire spread through the tree canopies. • Remove brush piles prior to fire season (aligns with 2006 Mount Pinos CWPP) • Target vacant lots with accumulating vegetation (aligns with 2005 Meyers Canyon CWPP). • Reduce fuel continuity where appropriate, focusing on high-risk areas and the WUI (aligns with 2005 Meyers Canyon CWPP). • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I). • Utilize the Good Neighbor Authority, as appropriate, to facilitate cross-boundary actions.	Reduce the risk of wildfire within the built environment. Reduce the risk of home and structure ignitions. Reduce the potential for crown fires.	Long-term multi-agency coordination and planning. Regular vegetation maintenance.	• National Urban and Community Forestry Challenge Cost Share Grant Program • CAL FIRE Grant Programs • California Fire Safe Council Grant Programs • Firewise grants • U.S. Endowment for Forestry and Communities • NFP
9	Ongoing	M		Improve and maintain existing fuel breaks and potential fire containment features (aligns with 2006 Mount Pinos and 2005 GTA CWPP)	Kern County (all lands) Highest risk areas as identified in the risk assessment:	County, State, Federal	Strategic placement of fuel breaks will help to limit the spread of wildland fire and increase access to difficult areas. Fuel break prescriptions should be site specific depending on the fuel type, topography, soils, adjacent land management practices and environmental regulations (NEPA/CEQA). The prescriptions will incorporate the use of best management practices for habitat protection (i.e., protection of vulnerable species and habitat and prevention of invasive species). • Look for opportunities to develop and/or increase fire breaks to double as access within the WUI or difficult to access areas and look for opportunities to widen some public trails, especially those running along ridgelines, to better serve as fuel breaks/fire access roads on lands adjacent to WUI. • Maintain fuel breaks under high tension power lines (aligns with 2004 Alta Sierra CWPP). Work must only be carried out in full coordination and conjunction with utility providers and must be within parameters established under agency ROW agreements. • Encourage clearance of an additional width when possible. • Create additional buffer zones between existing development and the forest, ensuring fire suppression access. Maintain existing fire breaks and buffers (Figures 4.1–4.3) • Work with adjacent landowners to develop internal capacity to help enhance fire access-through road and trail improvements on those lands • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I).	Protect life and property by mitigating fuels, providing defensible space for firefighters protecting structures. Create a fuel arrangement unlikely to support crown fire. Ensure the protection of vulnerable ecosystems and values at risk.	Regular maintenance needed to ensure the fuel break remains clear of vegetation. Monitor for invasive species. Continued management of fire breaks maintained by grazing, brush breaking, controlled burns.	• CAL FIRE Grant Programs • Emergency Watershed Protection (EWP) Program • National Forest Foundation (NFF); Innovative Finance for National Forests Grant Program • HMGP/HMGP – Post Fire • (PDM)/(BRIC) • Firewise Grants • NFP

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
10		M	Winter 2022	Increase capacity to complete and maintain needed hazardous fuels projects across multiple jurisdictions	County and adjacent state and federal lands (public and private)	County, State, Federal	• Collaboratively identify vegetation and fuels management needs based on the risk/hazard assessment. • Develop equipment needs to accomplish work (including maintenance) and seek funding for purchase. • Create an educational tool/resource for land /property owners re: various methods, techniques, and cost for various fuel treatments. Utilize Appendix G, homeowner resources. • Cultivate and support partnerships with NGOs and volunteer groups to support implementation of projects. • Collaborate with federal agencies to create long-term implementation and monitoring plans. • Utilize CalVTP to navigate the CEQA compliance process to expedite treatments (Figure 4.4; Appendix I). • Utilize the Good Neighbor Authority, as appropriate, to facilitate cross-boundary actions.	Create resilient landscapes and address potential for extreme wildfire behavior in and around the WUI. Create and maintain accountability with local landowners.	Set up a standing multi-agency meeting every fall to review accomplishments and address future needs.	• GSA Federal Excess Personal Property (FEPP) • Firewise Grants • PDM/BRIC • HMGP/HMGP – Post Fire • CAL FIRE Grant Programs • RCP
11	Ongoing	M		Consider use of prescribed burning and/or cultural burning where appropriate	Los Padres and Sequoia National Forests State Responsibility Area	Fire Department, Federal Agencies	• Utilize prescribed burn planning that follows agency and regulator protocols. • Closely follow plan prescriptions. • Utilize prescribed burn program to provide training for local fire department personnel and volunteers. • Implement prescribed fire within the WUI where possible (aligns with 2004 Alta Sierra CWPP).	Protect communities and infrastructure by reducing fuel loads. Increase capacity and training for fire departments. Restore/maintain habitat.	Carry out inventory each year of number and acreage of prescribed fire completed. Collaboratively set goals for upcoming year. Establish training needs and funding.	• Access to Ancestral Lands Grant (AALG) • CAL FIRE Grant Programs • BLM Forest and Woodlands Resource Management • RCP

Table I.2. Recommendations for Creating Fire-Adapted Communities (Public Education and Reducing Structural Ignitability)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
1	Ongoing	H	Fall/winter 2022	Identify vulnerable populations located in the WUI	Kern County (all lands) Prioritize high risk areas	Fire Department, HOA's, community leaders	• The County needs to identify vulnerable populations (elderly, disabled, low income) who may need additional help to mitigate home hazards and to evacuate during a wildfire. • Seek grant opportunities to support assistance for vulnerable populations.	Protect life and property of the most vulnerable members of the community.	Annual review of number of actions taken to address vulnerable populations	• Pre-Disaster Mitigation (PDM)/Building Resilient Infrastructure and Communities (BRIC) • Firewise grants • California Department of Forestry and Fire Protection (CAL FIRE) Grant Programs • California Climate Investments Fire Prevention Grant Program (CAL FIRE) • California Fire Safe Council Grant Programs • National Urban and Community Forestry Challenge Cost Share Grant Program
2		H	Fall/Winter 2022	Develop a Story Map version of the 2022 CWPP	N/A	County, Fire Department	• Develop a Hub site and Story Map for use by civilians/residents (aligns with 2009 KRV CWPP): • Create "tabs" for each major section of the CWPP such as fire environment and homeowner resources • Condense the CWPP text into easily digestible Story Map text blurbs to maximize readership • Utilize the public facing side of the Hub as a one-stop-shop for up-to-date wildfire information and resources, such as a homeowner's guide, emergency notifications, and preparedness plans • Include community risk information such as hazard ratings and assessment findings/themes. • Utilize the internal side of the Hub for multi-agency collaboration, project tracking, and planning	Maximize CWPP readership and therefore public engagement in wildfire planning. Provide a platform for multi-agency collaboration and coordination.	Update Hub and Story Map resources as planning documents and links are edited/updated.	• The Urban Land Institute (ULI) • Urban & Community Forestry Grant Programs (CAL FIRE) • Firewise Communities • National Urban and Community Forestry Challenge Cost Share Grant Program • The National Fire Plan (NFP)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
3	Ongoing	H	Fall/winter 2022	Educate the public on how to mitigate risk and damage from wildfire (aligns with 2005 GTA CWPP and 2009 General Plan and 2020 MJHMP)	Kern County (all lands) Prioritize highest threat areas as identified in the risk assessment	Fire Department, HOA, Private Landowners	• Increase education through community training classes as well as YouTube videos on defensible space, fire safe landscaping, structural hardening components, and WUI building construction requirements. • Create/distribute wildfire education documents to distribute, including topics such as home hardening, defensible space (including information on above ground utilities and firewood), how wildfire spreads, etc. (aligns with 2004 Alta Sierra CWPP). • Distribute a list of mitigation actions broken down by cost. • Utilize Appendix G of the CWPP: Homeowner Resources • Create/distribute education material on evacuations. Promote the KCFD emergency preparedness webpage. • Implement youth fire prevention programs (can work with camps, schools, clubs, etc.) (aligns with 2005 GTA CWPP) • Use existing signage • Spread seasonally adjusted fire prevention messages along highways and in public open space areas to reduce human ignitions and promote defensible space. • Promote the use of existing electronic signs at firehouses and other locales to display fire prevention information, safety messages, and fire danger ratings linked to safety actions. • Increase Firewise/Ready, Set, GO! Workshops • Offer hands-on workshops to highlight individual home vulnerabilities and how-to techniques to reduce ignitability of common structural elements. • Home assessments conducted in a neighborhood often include groups of neighbors participating with the assessor to learn from each other's homes. Homeowners get a better understanding by viewing a home other than their own and feel more comfortable asking questions as a group. • Assessments and workshops can be requested by an HOA. • Utilize a train-the-trainer model. Develop a team of trained citizens that could perform hazard assessments within their community. Seek funding to pay volunteer fire departments to assist. • Provide educational resources during assessments.	Reduce wildfire risk through greater adoption of Firewise and structure hardening measures. Protect communities and infrastructure by raising awareness of local citizens and those traveling in the area about actions that can prevent fires.	Yearly updates to materials. Annual review of number of events implemented. Set goals for the following year.	• PDM/BRIC • Firewise grants • The Fire Prevention and Safety Grants (FP&S) • CAL FIRE Grant Programs • Environmental Protection Agency (EPA) Environmental Education Grants
4	Ongoing	H	Fall/winter 2022	Implement Community events	Kern County (all lands) Focus on highest threat areas as identified in the risk assessment and populations at risk	Fire Department, Community Service Groups.	• Host County chipper program or chipper days (aligns with 2006 Mt. Pinos and 2005 GTA CWPPs) • A community-led day of yard cleanup with fire mitigation in mind may encourage large numbers within the community to carry out mitigation measures and implement defensible space. • Residents should assist elderly, disabled, or vulnerable residents. • Hold a community gardening event with volunteers – construct a firesafe demonstration garden or home landscaping for the public to view (aligns with 2006 Mt Pinos CWPP) • Aim to draw all populations, especially those at risk. Ensure that all interactions result in follow up engagement by collecting contact information for residents interested in action.	Reduce wildfire risk through greater adoption of Firewise and structure hardening measures.	Annual review of number of events implemented. Set goals for next year.	• PDM/BRIC • Firewise grants • CAL FIRE Grant Programs • FP&S • National Urban and Community Forestry Challenge Cost Share Grant Program • State Farm Good Neighbor Citizenship (GNC) Grants
5	Ongoing	H	Fall/winter 2022	Create robust program/dashboard to track, maintain, and prioritize wildfire mitigation projects.	N/A	Fire department, GIS, IT	• Create a program for tracking the completion of wildfire mitigation projects. • Redesign website to make wildfire education more prominent. • Utilize Survey 123 technology for tracking accomplishments.	Reduce wildfire risk through wildfire mitigation projects in the County.	Annual assessment of program success.	• Conservation Innovation Grants (CIG) • Firewise grants • National Interagency Fire Center (NIFC) • CAL FIRE Grant Programs

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
6	Ongoing	H	Fall/winter 2022	Improve/increase enforcement of Defensible Space Standards (aligns with 2006 Mt. Pinos and 2005 GTA CWPPs) and Kern County and California WUI code (Fire/Building Code) (aligns with 2009 Kern River Valley (KRV) CWPP)	Kern County (all lands) Prioritize high risk areas:	Fire Department, County, HOAs, Private landowners	• Defensible Space • A professional assessment would help identify the most critical actions that an individual could take. • Assessments could also include marking trees and shrubs suggested for removal. • Continue to enforce the Fire Hazard Reduction Program. • Implement annual vegetation and defensible space inspections within LRAs (focusing on VHFSZs), rather than relying on civilian complaints. • Increase inspections to twice a year. Include pre-determined inspection schedule. • Develop staffing plan to support enforcement and seek funding to implement the plan. • Provide tax incentives for defensible space actions. • Work with insurance companies to determine the potential to provide incentives for defensible space associated with reduced insurance premiums. • Increase green waste pickup/disposal options. • Fire/WUI Code • The Fire Code applies to new and existing construction and requires that structures meet the parameters of the Code in order to secure building permits. Develop a process to better identify when permits come into the County to flag them for special home hardening requirements. • Use education campaign to encourage WUI code actions even for those properties that are not required to adhere to it.	Reduce loss of life and structures through defensible space. Reduce wildfire risk through greater adoption of Firewise and structure hardening measures. Reduce risk of home ignitions. Empower homeowners to take the most effective actions.	Conduct on-site inspections with owners; identify and mark trees or shrubs for removal within the 100-foot safety zone. Develop a community task force to carry out assessments of properties. Annual program evaluation and updates as necessary.	• Firewise grants • CAL FIRE Grant Programs • GNC Grants • FP&S • EPA Environmental Education Grants
7	Ongoing	H		Improve agency coordination of outreach both private and public	Kern County (all lands)	All Agencies, Insurance Brokers	• Agency coordinated meeting to ensure a consistent message. • Implement a platform for raising cross-boundary issues. • Engaging insurance agency in dialogue. • Provide incentives for mitigation actions.	Provides a consistent message regarding wildfire activity, fire prevention goals, actions for homeowners. Reduce redundancy and improve efficiency. Align insurance company requirements with County codes and ordinances. Possible incentives of homes that have completed wildfire mitigation (AB 38).	Annual agency coordination meeting to assess priorities and action items.	• Firewise grants • California Fire Safe Council Grant Programs CAL FIRE Grant Programs • Regional Catastrophic Preparedness (RCP) Grants • Emergency Management Performance Grant (EMPG)
8		H	Spring of 2023	Implement strategically placed safety zones or temporary refuge areas	Communities with difficult egress, either due to large population funneling or poor road conditions	All agencies	• Develop fire-proof zones for emergency refuge/shelter. • Utilize areas such as parking lots or school yards. • Implement extreme defensible space, potentially including fire breaks around the safe zone. • May utilize his area as a living example of fire-resistant landscaping.	Protect lives when egress routes have become blocked. Provide safe zones for firefighters.	Regular maintenance of safe zones.	• PDM/BRIC • Hazard Mitigation Grant Program (HMGP) • HMGP – Post Fire • Fire Management Assistance Grants (FMAG) • RCP Grants
9		M		Implement Fire Safe Campground/ Tourist hubs (aligns with 2004 Alta Sierra CWPP)	Kern County		• Provide firesafe structures at campgrounds/recreational areas • Host/distribute wildfire educational resources at all major campgrounds/recreational areas • Provide real-life examples of defensible space around campground/recreational structures • Install signage identifying firesafe landscaping, construction materials, and defensible space zones	Reduce wildfire risk within recreation areas. Promote wildfire awareness and education, Provide tangible examples of risk reduction work.	Vegetation and sign maintenance, Yearly updates to educational materials.	• Firewise grants • CAL FIRE Grant Programs • FP&S • California Climate Investments Fire Prevention Grant Program (CAL FIRE)

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
10	Ongoing	M		Identify priority ignition concerns, including location and cause (aligns with 2009 KRV CWPP)	Kern County Extreme threat areas:	Public agencies, Fire Department, Department of Emergency Management	Utilize fire history data to identify areas with frequent fire starts and develop strategy to reduce incidence of ignitions. Utilize multi-agency collaboration and convene a working group to develop strategies to reduce human starts: • Education campaign • Signage • Fire response plans • Law enforcement	Reduce unnecessary ignition through unlawful or irresponsible behavior.	Annual evaluation of priority ignition concerns. 5-year re-run of risk assessment to determine success in mitigating hazards. Review fire history data on a 2-year frequency to monitor trends.	• FP&S • PDM/BRIC • EMPG • Firewise grants • EPA Grant Programs
11		M	Winter 2022	Increase staffing to address wildfire mitigation workload.	Prioritize understaffed programs that provide the most impact.	Fire Department, County Administration and Finance	• Establish fuels mitigation crew • Pursue continuous and repeat interactions with residents.	Reduce wildfire risk through greater capacity in the County for wildfire projects.	Annual assessment of capacity needs.	• Funding for Fire Departments and First Responders • RCP • EMPG • PDM
12	Ongoing	M		Improve engagement and sustainability of mitigation actions by residents (aligned with 2009 General Plan).	Focus on highest threat areas as identified in the risk assessment	All Agencies	To encourage engagement in mitigation actions and sustain engagement, entities should: • Provide recognition and incentives • Assist and facilitate actions by providing services for treating and removing slash • Identify barriers to engagement and address • Track progress and identify areas requiring support	Increase sustainability for mitigation actions and combat fatigue amongst residents.	Annual evaluation of program effectiveness and updates as necessary. Accomplishment tracking through an interactive online tracking system. Regularly update content to keep messaging fresh and relevant.	• PDM/BRIC • Firewise grants • CAL FIRE Grant Programs • EPA Environmental Education Grants • National Urban and Community Forestry Challenge Cost Share Grant Program
13		M	2023	Integrate CWPP components/findings into existing plans (LHMP, EOP, structure protection plan, etc.)	Kern County (all lands)	Fire Department, Emergency Management Department	Review relevant existing planning documents and, where applicable, incorporate CWPP findings and components during planning document updates.	Incorporate wildfire planning into broader-scale emergency management planning for the County.	Yearly updates to materials	• Firewise grants • FP&S • California Climate Investments Fire Prevention Grant Program (CAL FIRE) • PDM • HMGP • Agency Budgets
14	Ongoing	M	Fall/winter 2022	Improve wildfire preparedness through safe and effective emergency response.	Kern County (all lands) Prioritize high risk areas.	Fire Department, Emergency Management Department	• Develop a plan to effectively utilize the CERT program. Use the risk assessment to focus efforts on evacuation strategies for vulnerable populations in the County.	Protect life through emergency response education.	Annual updates to education materials.	• ULI • Urban & Community Forestry Grant Programs (CAL FIRE) • Firewise Communities • National Urban and Community Forestry Challenge Cost Share Grant Program • NFP • EPA Environmental Education Grants

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
15	Ongoing	M		Increase Structural Hardening – Although newer construction is built to current standards, there is a large percentage of construction prior to 2008 and the WUI code that exists within the County.	Kern County (all lands) Prioritize high risk areas:	Fire Department, Prevention and Community Development, HOAs	• Develop and distribute educational materials and resources on the importance of home hardening and how wildfires may ignite homes. • Develop and distribute information regarding topography, slope, vegetation, and how it all impacts a home's risk level and defensible space needs. • Continue to develop and adopt the latest building standards and codes. • Retrofit existing structures, both public and private (aligns with 2020 MJHMP). • Research and utilize new law to help with retrofits. • Develop a home inspection program which includes information on risk reduction. • Opportunities for tax breaks to harden your home. • Surveys sent to homeowners to inform the Fire Department and other groups about public perceptions of risk, as well as priority areas in which to focus efforts. • Open up a line of dialogue between the fire department and residents regarding actions they can take to reduce their wildfire risk. Remove dilapidated or condemned structures (aligns with 2004 Alta Sierra CWPP).	Reduce wildfire risk and loss of structures through home hardening and community education.	Annual updates to standards as necessary.	• PDM/BRIC • Firewise grants • FP&S • CAL FIRE Grant Programs • EPA Environmental Education Grants

Table I.3. Recommendations for Safe and Effective Wildfire Response

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
1		H	End of 2022	Enhance emergency notification and information dissemination capabilities	Kern County	Fire Department, Emergency Management, State	Build on current emergency notification and information dissemination capabilities to ensure redundant and alternate means of alerting the public. • Improve "ReadyKern ("Reverse 911" system). • Leverage emerging County wide system • Ensure ability to notify all mobile devices (aligns with 2004 Alta Sierra, 2006 Mount Pinos, 2005 GTA, and 2005 Meyers Canyon CWPPs) Install a County-wide siren system (similar to a tornado siren) to notify those the electronic system may not reach (aligns with 2004 Alta Sierra, 2005 Meyers Canyon, 2005 GTA, and 2006 Mount Pinos CWPPs).	Alert the public to emergencies, spread information about ongoing incidents. Improve situational awareness and community safety.	Annual review of effectiveness Post-incident lessons learned	• Pre-Disaster Mitigation (PDM)/Building Resilient Infrastructure and Communities (BRIC) • Emergency Management Performance Grant (EMPG) • Regional Catastrophic Preparedness Grant (RCP) • Funding for Fire Departments and First Responders • California Department of Forestry and Fire Protection (CAL FIRE) Grant Programs or California Fire Safe Council Grant Programs
2		H		Increase/improve water supply for fire suppression	Kern County Initially focus on areas of highest wildfire hazard as determined in the risk assessment and areas with limited water pressure or no existing water supply	Fire Department, All Agencies	• Install helicopter dip tanks where appropriate (aligns with 2006 Mount Pinos and 2005 GTA CWPPs). • Initiate a detailed study of feasible locations for water development improvements. Fire Hydrant with solid fill • Install hand pumps or other methods independent of the grid for accessing private well water Install additional tanks and standpipes (aligns with 2005 Meyers Canyon CWPP)	Improve fire-fighting response if water is more readily available or closest locations could be identified on a GIS map on a tablet/computer. Alleviates public and agency concern for limited water supply in some WUI areas.	Convene annually Document number of meetings held Document number of actions taken	• Firewise grants • PDM/BRIC • CAL FIRE Grant Programs • RCP • Northern California Forests and Watersheds Program • State of CA Grants Portal
3		H		Set up a unified messaging system and direct people to the County Fire Department for the most up to date information	Kern County	County, Fire Department	• Notify the public of the messaging system via online and in person (door hangers, mailers, etc.). • Provide sign-up incentives (i.e., raffles for those subscribed to the notification system) • Coordinate messaging/develop a plan with other organizations, such as the County and/or Fire Department before emergency events occur. Select a webpage for the County and create a one-stop-shop for all emergency/evacuation notifications.	Keep the public informed in a clear and concise manner.	• Ensure someone is responsible for continuously updating the webpage with up-to-date information during an emergency, Maintain webpage functionality.	• PDM/BRIC • EMPG • RCP • Funding for Fire Departments and First Responders • CAL FIRE or California Fire Safe Council Grant Programs
4		H	Second half of 2022	Identify evacuation Routes	All communities where appropriate. Prioritize high risk areas based on risk assessment. Mountain communities.	Fire Department, GIS, Maintenance Services	• Identify parcel owners along primary evacuation routes. • Map call communities with limited ingress/egress. • Install reflective signage along evacuation routes. • Adopt/distribute official evacuation protocols and resources (aligns with 2005 Meyers Canyon CWPP) • Encourage residents and vacationers to sign up for the emergency notification system before fire season. • Create County-wide regulation for address markers and signage – ensure they are visible and reflective and that the ordinance is enforced (aligns with 2004 Alta Sierra, 2006 Mount Pinos, 2005 GTA, and 2005 Meyers Canyon CWPPs and 2009 General Plan) • Require all roads within areas of elevated wildfire risk are marked , identifying the risk (aligns with 2009 General Plan). • Provide reflective address markers to all WUI residents for use (aligns with 2020 MJHMP) Seek grant opportunities to support priority project implementation.	Protect life and lessen high-risk fire behavior along important roads. Fuel treatments adjacent to roads can reduce fire behavior along important travel routes used for ingress by emergency vehicles and egress by residents.	Annual Maintenance	• PDM/BRIC • Fire Management Assistance Grant (FMAG) • NFP • State Farm Good Neighbor Citizenship (GNC) Grants • National Forest Foundation (NFF); Innovative Finance for National Forests Grant Program • Emergency Forest Restoration Program (EFRP) • CAL FIRE Grant Programs

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
5	Ongoing	H		Develop strategies to enhance safe wildfire response in areas with poor ingress and egress.	Priority areas:	Fire Department	• Address narrow access concerns for wildfire apparatus through road improvements, new egress points, or development of response plans. • Identify alternative apparatus for access into narrow areas. • Identify potential areas that threaten entrapment of response crews and develop response plans and/or safety zones. • Map all weak bridges and develop alternative ingress/egress or response plan. • Reduce fuel loading along ingress/egress routes. Remove fuel overhanging road and reduce fuel on both sides of road to an extent depending on potential fire behavior • Identify and remove hazard trees that have potential to fall and block ingress/egress routes during a fire. • Identify areas with limited all-weather access and develop response plan. • Work with HOAs and Community Associations to address locked gates and access concerns	Improve fire-fighting response if smaller more agile vehicles are available to navigate narrow unimproved roads	NA	• The Fire Prevention and Safety Grants (FP&S) • PDM/BRIC • Firewise grants • Hazard Mitigation Grant Program (HMGP)/HMGP – Post Fire • RCP
6		H		Solidify a coordination plan for all fire response agencies (County, State, and Federal)	Kern County	All Agencies	• Example- Initiate an annual pre-fire coordinated training/wildland fire drills to improve communication between departments. • Develop Unified Command and communication plans. • Coordinate with municipalities and fire departments to develop cohesive fire safety plans with overlapping coverage • Coordinate with federal agencies regarding the implementation of community defense zone plans. • Pre-season coordination and pre-fire planning for multi-jurisdictional areas and known areas of concern.	Facilitates communication and collaboration between jurisdictions	Initiate a standing annual review and annual meetings of departments.	• PDM/BRIC • CAL FIRE Grant Programs • FP&S • Firewise grants • RCP
7		H	Spring 2022	Develop and coordinate an online comprehensive emergency preparedness, response, and recovery plan for wildfire.	Kern County	Fire Department, Emergency Management	Create an online dashboard for use by **emergency management** agency decision support. Dashboard could be created in a Story Map or “Hub” format and would include: • Break dashboard into sections of the emergency management cycle: preparedness, response, recovery • Identify roles and responsibilities for each agency/partner under each section of the cycle • Include BMPs for each section of the cycle • Include coordination plan for interagency communications before, during and after an event • Include a tracking module to track actions needed and status • include a funding matrix to support implementation of actions • align actions as closely as possible with the County and State HMP	Improve fire response and readiness.	Would be an active and live platform, updated in real time and reviewed on an annual basis	• FP&S • PDM/BRIC • Firewise grants • HMGP/HMGP – Post Fire • RCP • PDM • EMPG

Project ID	Status	Priority (H,M,L)	Timeline for Action	Project Description	Location	Land Ownership/ Lead Agency	Methodology/Approach	Serves To:	Monitoring/Maintenance Requirements	Funding Sources
8	Ongoing	M		Proactive in addressing future wildfire challenges with climate change.	Kern County and adjacent jurisdictions	County, State, Federal	Convene a working group tasked with the following: • Assess impact of climate change on wildfire potential through modeling of fire behavior under various climate scenarios. • Establish fuel treatment plans to mitigate climate related influences on wildfire risk in existing vegetation communities. • Establish plans and build infrastructure for water supply needs to alleviate future drought emergencies.	Enhance wildfire response as conditions change.	Meet annually to review plans and assess status of wildfire risk. Re-run the fire behavior analysis to determine change in wildfire risk.	• PDM/BRIC • National Urban and Community Forestry Challenge • CAL FIRE Grant Programs • Leonardo DiCaprio Foundation Grants • EQIP • Emergency Watershed Protection (EWP) Program • Conservation Innovation Grants (CIG)
9	Ongoing	M		Reduce incidence of frequent ignitions	Priority areas:	County, Private	Utilize fire history data to identify areas with frequent fire starts and develop strategy to reduce incidence of ignitions. Convene a working group to develop strategies to reduce human starts: - Education campaign - Signage - Fire response plans - Law enforcement	Reduce ignition frequency	Review fire history data on a 2-year frequency to monitor trends.	• PDM/BRIC • EMPG • Firewise grants • FP&S • EPA Grant Programs
10		M	2023	Develop a coordinated approach between the fire department and water districts to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard as determined in the risk assessment and areas with limited water pressure or no existing water supply.	Priority areas:	County	Initiate a detailed study of feasible locations for water development improvements. Install hand pumps or other methods independent of the grid for accessing private well water. Evaluate and consider heli hydrants through the interface	Improve fire-fighting response if water is more readily available or closest locations could be identified on a GIS map on a tablet/computer. Alleviates public and agency concern for limited water supply in some WUI areas	Convene annually Document number of meetings held Document number of actions taken	• Firewise grants • PDM/BRIC • CAL FIRE Grant Programs • RCP • Northern California Forests and Watersheds Program • State of CA Grants Portal

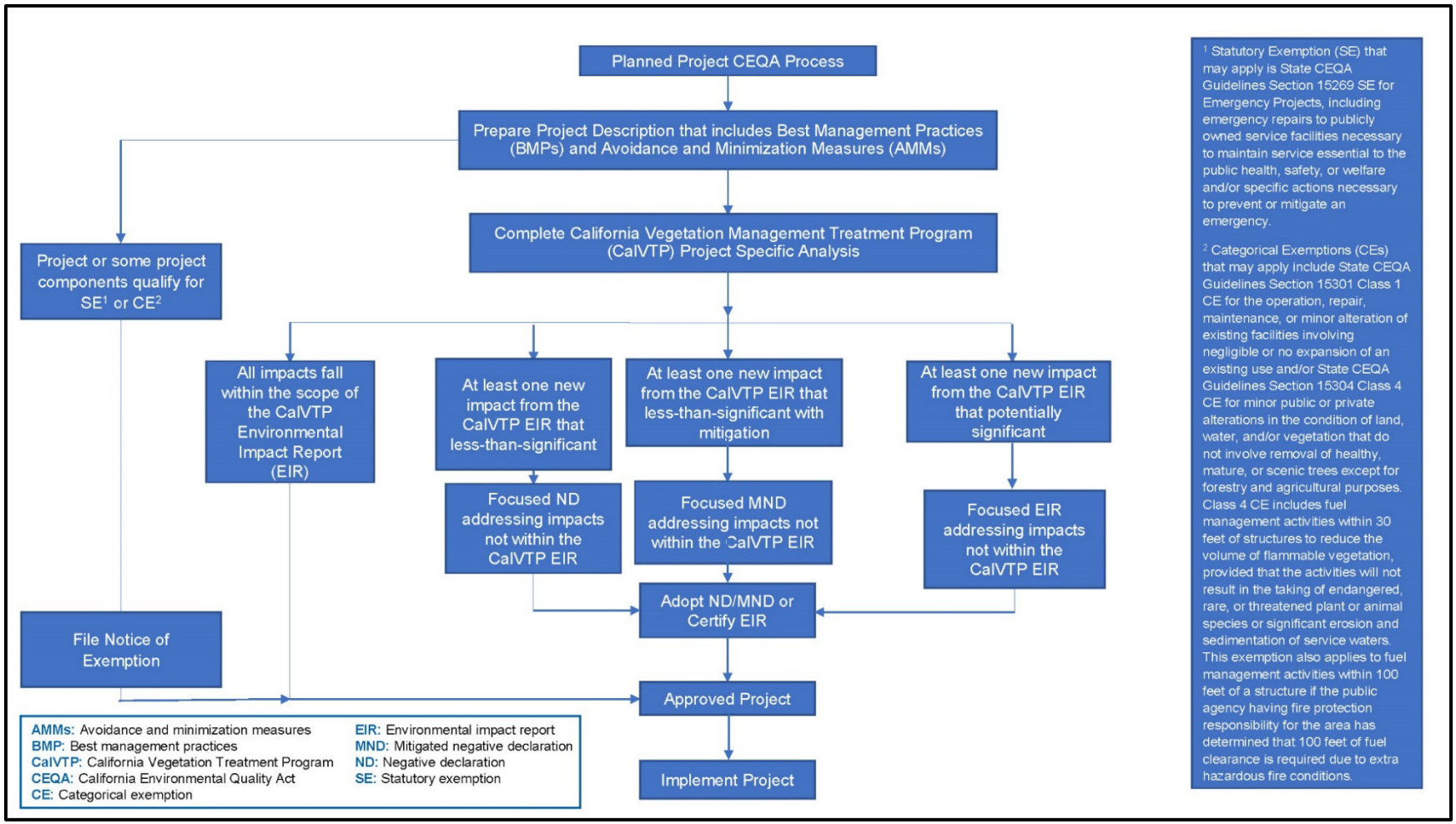

Figure I.1. CEQA process for CalVTP implementation.