4.19 Wildfire

This section describes the existing wildlife conditions of the project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project.

This discussion and analysis provided in the section are based on a review of digital information, including California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zone (FHSZ) mapping data, as well as the following project-specific technical reports:

- **Appendix J-1:** Fire Behavior Analysis and Report (Fire Behavior Analysis) – Gateway Village, Irvine, California; prepared by FireSafe Planning Inc.; dated December 30, 2024
- **Appendix J-2**: Evacuation Travel Time Analysis for Irvine Gateway Village in Irvine, California (Evacuation Travel Time Analysis); prepared by LSA; dated July 29, 2025
- **Appendix J-3**: Irvine Gateway Village Conceptual Fuel Modification Plan (Conceptual Fuel Modification Plan), Irvine, California; prepared by FireSafe Planning Inc.; dated April 3, 2025
- **Appendix J-4**: Alternative Means and Methods for Fuel Modification (Alternative Fuel Modification Methods), Irvine, California; prepared by FireSafe Planning Inc.; dated April 3, 2025
- **Appendix E-1:** Preliminary Geotechnical Subsurface Evaluation (Preliminary Geotechnical Evaluation), Residential Development, Gateway Village, Irvine, California; prepared by LGC Geotechnical Inc.; dated November 22, 2024

4.19.1 Existing Conditions

A wildfire is a nonstructural fire that occurs in vegetative fuels, excluding prescribed fire. Wildfires can occur in undeveloped areas and spread to developed areas. A wildland–urban interface is an area where urban development is close to open space or "wildland" areas. The potential for wildland fires represents a hazard where development is adjacent to open space or close to wildland fuels or designated FHSZs. Steep hillsides and varied topography also contribute to the risk of wildland fires. Fires that occur in wildland–urban interface areas may affect natural resources as well as life and property. It is important to note that wildland fire may transition to urban fire if structures are receptive to ignition. Structure ignition depends on a variety of factors and can be prevented through a layered system of protective features, including fire-resistive landscapes directly adjacent to the structures, application of known ignition-resistive materials and methods, and suitable infrastructure for firefighting purposes.

CAL FIRE has mapped areas of significant fire hazards in the state through its Fire and Resources Assessment Program (FRAP). These maps place areas of the state into different FHSZs, ranging from Moderate to Very High, based on a hazard scoring system using subjective criteria for fuels, fire history, terrain influences, housing density, and occurrence of severe fire weather where urban conflagration could result in catastrophic losses. As part of this mapping system, land for which CAL FIRE is responsible for wildland fire protection and that is generally located in unincorporated areas is classified as a State Responsibility Area (SRA) (CAL FIRE 2025a). Where local fire protection agencies, such as the Orange County Fire Authority (OCFA), are responsible for wildfire protection, the land is classified as a Local Responsibility Area (LRA). The northern half of the project site lies within a Very High FHSZ (VHFHSZ) within an LRA, and the entire eastern boundary of the project site borders a VHFHSZ within an SRA (Figure 4.19-1, Fire Hazard Severity Zones).

Topography, Climate, and Vegetation

Fire environments are dynamic systems and include many types of environmental factors and project site characteristics. Fires can occur in any environment where conditions are conducive to ignition and fire movement. Areas of naturally vegetated open space typically exhibit conditions that may be favorable to wildfire spread. The three major components of the fire environment are topography, climate, and vegetation (i.e., fuels). The state of each of these components and their interactions with each other determine the potential characteristics and behavior of a fire at any given moment. The topography, climate, and vegetation of the project site and surrounding vicinity are discussed in further detail below.

Topography

Topography influences fire risk by affecting fire spread rates. Typically, steep terrain results in faster fire spread upslope and slower fire spread downslope (in the absence of wind). Terrain that forms a funneling effect, such as chimneys, chutes, and saddles on the landscape, can result in especially intense fire behavior. Conversely, flat terrain tends to have little effect on fire spread, resulting in fires that are driven by wind. The project site is relatively flat, having been previously used for row crops. The general topography in the project area is flat to the west, rising to the east in the transition from valley floor to foothills. The project area is a series of smaller drainages that generally run northeast–southwest.

Locally, the project site is within the relatively narrow Hicks Canyon at the base of the foothills that support the Santa Ana Mountains to the northeast of the project site. The general nature of the topography on the project site is flat in the western portion of the site, rising in the east toward the foothills. The area includes a series of smaller drainages, generally running northeast–southwest. To the west, east, and north are ridgelines that run parallel with the project site, which generally rise to the northeast to a larger ridgeline that runs southeast–northwest, perpendicular to the project site. Slopes directly adjacent to the project site on the western, northern, and eastern boundary beyond the surrounding roadways range from 5% to 30%, with an average slope of 25%. The majority of the project site is generally flat (less than 2% slope). The edges of the project site are manufactured slopes (2:1 or less), which have revegetated under natural conditions on the northern and eastern interfaces. To the north, the project site has been mass graded (Appendix J-1, Fire Behavior Analysis).

Climate

The climate of Orange County (County) is typical of a Mediterranean area, with warm, dry summers and wet winters. The prevailing wind pattern is from the west (onshore), but the presence of the Pacific Ocean causes a diurnal (i.e., daytime) wind pattern that is caused by temperature differences between the land mass and the adjacent ocean. During the day, winds are from the southwest (sea) and at night winds are from the northeast (land), averaging approximately 4 miles per hour (mph). Surface winds can also be influenced locally by topography and slope variations. The highest wind velocities are associated with Santa Ana winds. Santa Ana winds are caused by high-pressure cells inland seeking equilibrium with the air over the ocean, but with greater intensity than the normal diurnal flow (Appendix J-1). The average high temperature for the project area is approximately 73°F, with average daily highs in the summer and early fall months (June through October) exceeding 80°F. Precipitation typically occurs between December and March, with average annual rainfall of 14.38 inches (U.S. Climate Data 2025).

Typically, the highest fire danger in Southern California coincides with Santa Ana winds. The Santa Ana wind conditions are a reversal of the prevailing winds from the southwest that usually occur on a regionwide basis near the end of fire season during late summer and early fall. Santa Ana winds are dry, warm winds that flow from the

higher desert elevations in the east through the mountain passes and canyons. As they converge through the canyons, their velocities increase. Consequently, peak velocities are highest at the mouths of canyons and dissipate as they spread across valley floors. Localized wind patterns on the project site are strongly affected by both regional and local topography (Appendix J-1).

Vegetation (Fuels)

Vegetation acts as the primary fuel for wildfires, and different vegetation types influence fire behavior and severity. Some vegetation, such as brush and grassland habitats, are highly flammable, while other vegetation, such as riparian communities or forest understory, are less flammable due to their higher plant moisture content, compact structure, and available shading from overstory tree canopies. As discussed previously, areas of naturally vegetated open space typically exhibit conditions that may be favorable to wildfire spread. The majority of the project site is composed of undeveloped open space. The predominant fuels of the project site are grasses, grass/shrub mixtures, and tree understory (Appendix J-1).

The majority of the project site is exposed to natural vegetated areas predominantly composed of grass vegetation. Grass/shrub arrangements cover the majority of the project site and contain both California buckwheat (*Eriogonum fasciculatum*) and California sagebrush (*Artemisia californica*). California buckwheat and California sagebrush burn with a relatively high intensity. Furthermore, the open space directly to the north and east of the project site consists of natural vegetation, predominantly grasses and grass/shrub (Figure 4.19-2, Wildland Fuels). Additionally, the Irvine Ranch Conservancy Native Seed Farm (Seed Farm) is adjacent to the project site. Due to the nature of the Seed Farm, it is expected that whatever plants are raised there would be allowed to seed (Appendix J-1).

Much of the project site is surrounded by 100 feet or less of native vegetation adjacent to the project site boundary. In all cases, the native vegetation is bounded by roads that are 85 feet wide to the south, 80 feet wide to the east, 65 feet wide to the north, and 60 feet wide to the west. Beyond the roads, the project site is surrounded by native vegetation to the north of the project site and to the east of Bee Canyon Access Road, including annual grasslands, shrubs, and trees. Specific plant species in the area include California buckwheat, California sagebrush, toyon (*Heteromeles arbutifolia*), and black mustard (*Brassica nigra*) (Appendix J-1).

Fire History

A review of CAL FIRE's FRAP, which maintains a statewide spatial database of fire perimeters from Bureau of Land Management, National Park Service, and U.S. Forest Service fires 10 acres and greater in size and CAL FIRE fires 300 acres and greater in size, since 1980, was conducted for the Fire Behavior Analysis (Appendix J-1). Collection criteria for CAL FIRE fires changed in 2002 to include timber fires greater than 10 acres, brush fires greater than 50 acres, grass fires greater than 300 acres, fires destroying three or more structures, and fires causing $300,000 or more of damage. In 2008, the collection criteria for CAL FIRE fires eliminated the monetary criterion and redefined "structures."

As shown on Figure 4.19-3, Fire History, five large fires and one small fire have burned onto the project site since records have been kept (105 years). The areas to the north, south, and east of the project site have significant large fire history and are considered to be historic fire corridors." Fires are likely to continue to burn within the areas to the north and east, because these areas are designated as open space and are intended to remain so in perpetuity.

All the fires near the project site, with the exception of the Jeffrey Fire in 2017, have been large fires (greater than 7,000 acres) that have burned into the area from origins in other areas of the County. All the large fires have stopped, or have been stopped, at what is now Portola Parkway. In 1931, 1948, and 1967 (No Name Fire, Green River Fire, and Paseo Grande Fire, respectively), this area would have been strictly agricultural groves. The fires likely stopped due to the change in, or lack of, wildland fuels coupled with the changes in topography (to flat, as opposed to hillside), which no longer channeled or accelerated the winds from the north-northeast (traditional direction of strong winds during fires in the region). The 2017 fire (Jeffrey Fire) was held to a single hillside alongside Jeffrey Road (Figure 4.19-4, Fire History Without Large Fires).

Fire Prevention/Protection, Emergency Services, and Disaster Response

California Department of Forestry and Fire Protection

CAL FIRE is responsible for response to wildfires in areas that are classified as SRAs. CAL FIRE protects the people of California from fires; responds to emergencies; and protects and enhances forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens. CAL FIRE's Fire Prevention Program consists of multiple activities, including wildland pre-fire engineering, vegetation management, fire planning, education, and law enforcement. Typical fire prevention projects include brush clearance, prescribed fire, defensible space inspections, emergency evacuation planning, fire prevention education, fire hazard severity mapping, and fire-related law enforcement activities. The Office of the State Fire Marshal supports CAL FIRE's mission through fire prevention engineering programs, law and code enforcement, and education. It provides support through a wide variety of fire safety responsibilities, including by enforcing fire-related laws in state-owned or -operated buildings, investigating arson fires in California, licensing those who inspect and service fire protection systems, approving fireworks as safe and sane for use in California, regulating the use of chemical flame retardants, evaluating building materials against fire safety standards, regulating hazardous liquid pipelines, and tracking incident statistics for local and state government emergency response agencies (CAL FIRE 2025b).

Emergency Response

The project site is located within OCFA's jurisdictional response area. OCFA is the primary response agency for fires and provides a full range of fire prevention services. OCFA has established a target response time of 8 minutes and 30 seconds from call pick up to arrival for 90% of calls for first-in engines to arrive on scene to medical aids and/or fires; first-in truck companies should arrive on scene to fires within 11 minutes and 30 seconds 90% of the time (Schneider, pers. comm., 2025). Existing fire stations are described and mapped in Section 4.14, Public Services, of this Draft EIR.

4.19.2 Relevant Plans, Policies, and Ordinances

Federal

National Fire Protection Association Codes, Standards, Practices, and Guides

National Fire Protection Association codes, standards, recommended practices, and guides are developed through a consensus standards development process approved by the American National Standards Institute. This process brings together professionals representing varied viewpoints and interests to achieve consensus on fire and other safety issues. National Fire Protection Association standards are recommended guidelines and nationally accepted good practices in fire protection but are not laws or codes unless adopted as such or referenced as such by the California Fire Code (CFC) or the local fire agency.

International Fire Code

Created by the International Code Council, the International Fire Code (IFC) is not a federal regulation but provides important guidance regarding a wide array of conditions hazardous to life and property, including fire, explosions, and hazardous materials handling or usage. The IFC places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the IFC uses a hazards classification system to determine the appropriate measures to incorporate into the building and design of new structures or improvement of existing structures to protect life and property (often these measures include construction standards, specialized equipment, and performance requirements). The IFC uses a permit system (based on hazard classification) to ensure that required measures are instituted.

International Wildland–Urban Interface Code

The International Wildland–Urban Interface Code is published by the International Code Council and is a model code addressing wildfire issues. The model code is intended to be adopted and used as a supplemental code to the building and fire codes of a jurisdiction. The goal of the International Wildland–Urban Interface Code is to establish minimum standards and regulations for protecting life and property from the intrusion of fire, wildland fire exposure, and fire exposures from adjacent structures and to prevent structure fires from spreading to wildland fuels.

State

California Health and Safety Code

Fire regulations for California are established in Section 13000 et seq. of the California Health and Safety Code and include regulations for structural standards (similar to those identified in the California Building Code [CBC]); fire protection and public notification systems; fire protection devices, such as extinguishers and smoke alarms; standards for high-rise structures and childcare facilities; and fire suppression training. The state fire marshal is responsible for enforcement of these established regulations and building standards for all state-owned buildings, state-occupied buildings, and state institutions within California.

California Public Resources Code

California Public Resources Code (PRC) Sections 4201–4204 and California Government Code Sections 51175–51189 (discussed in further detail below) direct CAL FIRE to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as FHSZs, determine the application of various mitigation strategies to reduce the risk associated with wildland fires.

PRC Section 4290 requires minimum fire safety standards related to defensible space that apply to residential, commercial, and industrial building construction in SRA lands and lands classified and designated as VHFHSZs. These regulations include road standards for fire apparatus access, standards for signs identifying roads and buildings, requirements for fuel breaks and green belts, and minimum water supply requirements. It should be noted that these regulations do not supersede local regulations that equal or exceed minimum regulations required by the state.

PRC Section 4291 requires a reduction of fire hazards around buildings located adjacent to a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material. This section of the PRC requires maintaining a minimum of 100 feet of vegetation management around all buildings

and is the primary mechanism for conducting fire prevention activities on private property within CAL FIRE's jurisdiction. Further, PRC 4291 requires the removal of dead or dying vegetative materials from the roof of a structure and specifies that trees and shrubs must be trimmed from within 10 feet of the outlet of a chimney or stovepipe. Exemptions may apply for buildings with an exterior constructed entirely of nonflammable materials.

In September of 2020, Assembly Bill 3074 amended PRC Section 4291 to require stricter standards for fuel reduction. The amendment stipulates that within 100 feet of structures, more intense fuel reduction is to occur between 5 and 30 feet around the structure, and within 5 feet of the structure is to be the ember-resistant zone.

California Code of Regulations

Title 14: Natural Resources

California Code of Regulations (CCR) Title 14, Division 1.5, Chapter 7, Subchapter 3, Fire Hazard sets forth requirements for defensible space if the distances specified above from PRC Section 4291 cannot be met. For example, options that have similar practical effects include using non-combustible block walls or fences, establishing 5 feet of noncombustible material horizontally around the structure, installing hardscape landscaping or reducing exposed windows on the side of the structure with less than a 30-foot setback, or implementing additional structure hardening, such as those required in the CBC (24 CCR, Part 2, Chapter 7A).

Title 19: Public Safety

CCR Title 19 addresses public safety and includes state fire marshal requirements (19 CCR, Division 1), which incorporate general fire and safety standards regarding fire department access and egress, fire alarms, emergency planning, and evacuation procedures.

The Standardized Emergency Management System (SEMS) regulations are described in Title 19, Division 2, Chapter 1 of the CCR. The SEMS is required by the California Emergency Services Act for managing multi-agency and multi-jurisdictional responses to emergencies in California and coordinating among all levels of government and affected agencies. The SEMS unifies all elements of California's emergency management community into a single, integrated system and standardizes key elements.

As required by state law, the City of Irvine (City) has adopted the SEMS. The SEMS establishes organizational levels for managing emergencies, standardized emergency management methods, and standardized training for responders and managers. When fully activated, SEMS activities occur at five levels: field response, local government, operational areas (County-wide), Mutual Aid Regions, and state.

Title 24: California Building Standards Code

The California Building Standards Code (24 CCR) contains provisions for building and safety standards, including fire safety standards for new buildings that are provided in the CBC (24 CCR, Part 2) and the CFC (24 CCR, Part 9). These standards apply to all occupancies in California, except where state agencies and local governing bodies adopt more stringent standards.

The California Building Standards Code includes several chapters relevant to fire safety and protection that address types of construction, fire- and smoke-protection features, construction materials and methods, and rooftop construction.

Title 24, Part 2: California Building Code

Part 2 of Title 24 contains the CBC. Chapter 7A of the CBC regulates building materials, systems, and/or assemblies used in the exterior design and construction of new buildings located within a wildland–urban interface fire area. The purpose of Chapter 7A is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any FHSZ within an SRA or a wildland–urban interface fire area to resist the intrusion of flames or burning embers projected by a vegetation fire and to contribute to a systematic reduction in conflagration losses. New buildings located in such areas must comply with the ignition-resistant construction standards outlined in CBC Chapter 7A.

Title 24, Part 9: California Fire Code

The CFC is a set of regulations that govern fire safety and practices within the state of California. It is part of the California Building Standards Code (Title 24 of the California Code of Regulations) and is enforced by local building authorities across the state.

Part 9 of Title 24 of the CCR contains the CFC, which incorporates by adoption the IFC with necessary California amendments. The CFC establishes regulations to safeguard against the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The CFC also establishes requirements intended to provide safety for and assistance to firefighters and emergency responders during emergency operations. The provisions of the CFC apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout California. The CFC includes regulations regarding fire-resistance-rated construction, fire-protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, and wildland–urban interface areas. Additionally, CFC safety requirements include fire sprinklers in all high-rise buildings; fire-resistance standards for fire doors, building materials, and particular types of construction; debris and vegetation clearance within a prescribed distance from occupied structures in wildfire hazard areas; and fire-flow requirements, fire hydrant spacing, and access road specifications.

The CFC is updated and published every 3 years by the California Building Standards Commission. The 2022 CFC took effect on January 1, 2023. Both the City and the County have adopted the 2022 CFC with local amendments.

California Fire Code, Chapter 33. Chapter 33 of the CFC outlines general fire safety precautions for all structures and all occupancies during construction and demolition operations. In general, these requirements seek to maintain required levels of fire protection, limit fire spread, establish the appropriate operation equipment and promote prompt response to fire emergencies. Features regulated include fire protection systems, firefighter access to the site and building, means of egress, hazardous materials storage and use, and temporary heating equipment and other ignition sources.

California Government Code

California Government Code Sections 51175 through 51189, included in Title 5, Part 1, Chapter 6.8, Moderate, High and Very High FHSZ, provides guidance for classifying lands in California as fire hazard areas and requirements for management of property within those lands. CAL FIRE is responsible for classifying FHSZs, based on statewide criteria, and making the information available for public review. Further, local agencies must designate, by ordinance, VHFHSZs within their jurisdiction based on CAL FIRE recommendations.

California Government Code Section 51182 sets forth requirements for maintaining property within fire hazard areas, such as defensible space, vegetative fuels management, and building materials and standards. According to the California Government Code, defensible space around structures in fire hazard areas must consist of 100 feet of fuel modification on each side of a structure, but not beyond the property line unless findings conclude that the clearing is necessary to significantly reduce the risk of structure ignition in the event of a wildfire. Clearance on adjacent property is only conducted following written consent by the adjacent owner. Further, trees must be trimmed from within 10 feet of the outlet of a chimney or stovepipe, vegetation near buildings must be maintained, and roofs of structures must be cleared of vegetative materials. Exemptions may apply for buildings with an exterior constructed entirely of nonflammable materials.

Senate Bill 1241

In 2012, Senate Bill 1241 added Section 66474.02 to Title 7, Division 2 of the California Government Code, commonly known as the Subdivision Map Act. The statute prohibits subdivision of parcels designated as VHFHSZs or that are in an SRA unless certain findings are made prior to the approval of the tentative map. The statute requires that a city or county planning commission make three new findings regarding fire hazard safety before approving a subdivision proposal. The three findings are, in brief: (1) the design and location of the subdivision and its lots are consistent with defensible space regulations found in PRC Section 4290-91, (2) structural fire protection services will be available for the subdivision through a publicly funded entity, and (3) ingress and egress road standards for fire equipment are met per any applicable local ordinance and PRC Section 4290.

State Hazard Mitigation Plan

Approved by the Federal Emergency Management Agency (FEMA) in September 2018 as an Enhanced State Mitigation Plan, the 2018 State Hazard Mitigation Plan Update continues to build on California's commitment to reduce or eliminate the impacts of disasters caused by natural, technological, accidental, and adversarial/human-caused hazards, and further identifies and documents progress made in hazard mitigation efforts, new or revised state and federal statutes and regulations, and emerging hazard conditions and risks that affect the state.

California Strategic Fire Plan

The 2018 Strategic Fire Plan for California reflects CAL FIRE's focus on fire prevention and suppression activities to protect lives, property, and ecosystem services, and natural resource management to maintain the state's forests as a resilient carbon sink to meet California's climate change goals and to serve as important habitat for adaptation and mitigation. The Strategic Fire Plan provides a vision for a natural environment that is more fire resilient, buildings and infrastructure that are more fire resistant, and a society that is more aware of and responsive to the benefits and threats of wildland fire, all achieved through federal, tribal, state, local, and private partnerships (CAL FIRE 2018).

Mutual Aid Agreements

The California Disaster and Civil Defense Master Mutual Aid Agreement, as provided by the California Emergency Services Act, provides for statewide mutual aid between and among local jurisdictions and the state. The statewide mutual aid system exists to ensure that adequate resources, facilities, and other supports are provided to jurisdictions whenever resources prove to be inadequate for a given situation. Each jurisdiction controls its own personnel and facilities but can give and receive help whenever needed. The OCFA, Fountain Valley Fire Department, Laguna Beach Fire Department, and Anaheim Fire & Rescue participate in these mutual aid, automatic aid, and other agreements with surrounding fire departments. In some instances, the closest available resource may come from another fire department.

Local

Irvine 2045 General Plan Safety Element

Goal 4: Safeguard the community from the threat of urban and wildfire hazards.

Objective S-4: Wildfire Hazards

Policy (a): Coordinate with regional partners to explore and deploy fire detection cameras as part of a wildfire monitoring network.

Policy (b): Coordinate with surrounding municipalities and Orange County to enhance evacuation and emergency management protocols, agreements, and processes.

Policy (f): Encourage public and private landowners to minimize the risk of wildfire moving from wildland areas to developed properties or from property-to-property by increasing structural hardening measures (e.g., fire-rated roofing and fire-resistant construction materials and techniques), maintaining and improving defensible space on site, and supporting vegetation management in adjacent undeveloped areas.

Policy (h): Encourage removal of highly flammable vegetation with little to no biological value in Very High, High, and Moderate Fire Hazard Severity Zones and replant with fire-adapted specimens.

Policy (i): Promote the proper maintenance and separation of power lines and efficient response to fallen power lines in accordance with Title 14 CCR Division 1.5 Chapter 7 Article 4 (Fire Prevention Standards for Electric Utilities).

Policy (j): Encourage the use of underground power lines for replacement power lines, where feasible.

Policy (k): Ensure that all new development and redevelopment in the Very High Fire Hazard Severity Zone is developed in compliance with minimum structural fire protection standards in the adopted edition of the California Fire and Building Codes, applicable state or local fire safety and defensible space regulations or standards, and any applicable fire protection or risk reduction measures identified in locally adopted plans.

Policy (l): Ensure future neighborhoods are designed with adequate fire access and evacuation egress in the event of an emergency.

Policy (m): Avoid expanding new residential development, essential public facilities, and critical infrastructure in areas subject to extreme threat or high risk, such as Very High Fire Hazard Severity Zones, or areas classified by the California Department of Forestry and Fire Protection as having an Extreme Threat classification on Fire Threat Maps, unless all feasible risk reduction measures have been incorporated into project designs or conditions of approval. Example risk reduction measures include, but are not limited to, fuel modification zones or defensible space, structure hardening, enclosed foundations, and highly visible street signs and property addresses.

Policy (n): Ensure adequate water supply for fire suppression and ensure that the water supply is protected from wildfire impacts, including providing back-up power, with priority for solar and battery storage back-up supplies.

Policy (o): Ensure future neighborhoods are designed with sufficient water pressure to maintain fire flow.

Policy (p): Encourage the use of underground power lines for new developments.

Policy (q): Ensure that private development subject to the California Environmental Quality Act evaluate hazard impacts to ensure adequate evacuation in the event of an emergency, and if required, develop standards for the protection of the community.

Policy (r): Review development proposals and coordinate with regional transportation agencies to ensure that multiple evacuation routes are available under a range of scenarios and identify alternative routes that are accessible to people without life-supporting resources.

Policy (t): Coordinate evaluations for redevelopment of areas that have been burned after a large fire.

Policy (u): Continue the long-term maintenance of fire reduction projects; including but not limited to, a roadside fuel reduction plan, defensible space clearances (including fuel breaks) around structures, subdivisions, and other developments in the Very High Fire Hazard Severity Zone.

Policy (v): Maintain established response time standards for fire and life safety services.

Municipal Code

Title 5 (Planning), Division 9 (Building Regulations)

The City's Building Code Regulations are included in Division 9 of the City's Municipal Code, as adopted under Section 5-9-101 (Adoption of Building Code). Division 9 adopted by reference the most recent version of the CBC.

Zoning Ordinance

City Standard Condition 2.19: Open Space Fuel Modification. Prior to issuance of precise grading permits for any lots adjacent to open space, the applicant shall submit a fuel modification plan prepared to the satisfaction of the Director of Community Development for review and approval, in consultation with the Director of Community Services. The fuel modification plan shall be approved by OCFA. The requirements set forth in this condition do not apply to developed, irrigated parkland.

City Standard Condition 3.14: HOA/Fuel Modification. Prior to the issuance of building permits for any dwelling units on lots located adjacent to or within fuel modification zones, the applicant shall provide evidence that there is a requirement included in the CC&Rs that any changes to plant materials located within fuel modification zones must be approved by the Director of Community Development and be consistent with applicable OCFA requirements. For fuel modification zones adjacent to lands designated as Open Space, changes in plant materials shall also be reviewed by the Director of Community Services.

City of Irvine Local Hazard Mitigation Plan (2020)

The 2020 Local Hazard Mitigation Plan included mitigation actions to decrease risks associated with wildfires, including the following:

- Promote the proper maintenance and separation of power lines and efficient response to fallen power lines.
- Remove highly flammable vegetation in Very High, High, and Moderate Fire Hazard Severity Zones and replant with fire-adapted specimens.
- Create a hillside weed abatement pilot program using goats or other livestock to reduce fuel loads in fire-prone areas.
- Routinely participate in the update of the Orange County Community Wildfire Preparedness Plan for areas within the Very High, High, and Moderate Fire Hazard Severity Zones.
- Create a rapid response plan from among Irvine's and Orange County's first responders to secure hospital, nursing, and assisted living facilities, especially those located within fire hazard severity zones.
- Reinforce and regularly inspect fire retardant infrastructure such as sprinklers, fire hose terminals, and fire suppression systems in City facilities.
- Coordinate with partners to clear dead vegetation in flood control facility footprints, railroad rights-of-way, parks, and open spaces, especially during and after a drought episode.
- Expand the fire hazard prevention awareness campaign to residents in the High and Very High Fire Hazard Severity Zones.
- Work with OCFA on home preparedness assessments to assist more residents in understanding and addressing their wildfire risk.
- Require all new development in Very High, High, and Moderate Fire Hazard Severity Zones to use noncombustible building materials such as masonry, brick, stucco, concrete, steel, or others as appropriate. Establish zones of defensible space around homes in Very High, High, and Moderate Fire Hazard Severity Zones.

Emergency Operations Plan

The City's Emergency Operations Plan provides a resiliency framework for the City to prepare for, respond to, recover from, and mitigate against all hazards including natural, human-caused, and technological disasters, and national security emergencies. It includes an overview of operational concepts, identifies components of the City's emergency management organization consistent with the SEMS and the National Incident Management System, and describes the overall responsibilities of federal, state, and county entities and the City for protecting life and property and assuring the overall well-being of the population. The Emergency Operations Plan identifies wildfire as a potential risk to life and property and identifies areas of concern. It provides a threat assessment and develops an approach to combatting wildfire, alerting and warning, shelter and mass care, donation management, volunteer management, evacuation, damage assessment, and preventive measures.

Orange County Fire Authority 2023 Unit Strategic Fire Plan

The OCFA 2023 Unit Strategic Plan addresses such topics as firefighter and public safety, wildland–urban interface challenges, impactful cost-effective solutions, community preparedness, prioritization, collaborative partnerships, program, project and policy evaluation, and adaptability.

Orange County Fire Authority – Ready, Set, Go Program

The City of Irvine participates in the CAL FIRE/OCFA "Ready, Set, Go!" program to help property owners prepare well in advance of a wildfire to increase safety and protect property. This program provides comprehensive information on how to improve structure resistance to wildfires and prepare people to be ready to leave early in a safe manner.

4.19.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to wildfire are based on Appendix G of the CEQA Guidelines. According to Appendix G, a significant impact related to wildfire would occur if the project would:

1. Substantially impair an adopted emergency response plan or emergency evacuation plan.
2. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.
3. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
4. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

4.19.4 Impacts Analysis

1. Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

Less-Than-Significant Impact. An Evacuation Travel Time Analysis (Appendix J-2) was prepared for the proposed project. Off-site improvements causing temporary lane closures would be completed in the first phase of construction. Lane closures would be completed prior to construction of the residential units, because that infrastructure must be in place to obtain a certificate of occupancy. Therefore, construction activities are not anticipated to impede evacuations during this period. However, long-term operation of the project would introduce a permanent resident population on the project site that could require evacuation in the event of a wildfire emergency. Additional traffic generated by the proposed project in an emergency evacuation could contribute to congestion on the existing roadway system, which has the potential to substantially impair emergency response plans or emergency evacuation plans. The following discussion addresses the potential impact and consists of (1) a description of applicable evacuation routes, (2) a discussion of firefighting services that would be available for the project and the project's potential effects on associated service levels, and (3) a summary of results from detailed evacuation modeling of the project.

Evacuation Plans and Evacuation Routes

The Office of Emergency Management is responsible for coordinating the training, planning, and management of major emergencies of natural and man-made disasters.

The Citywide Evacuation Zone Map (City of Irvine 2021) was reviewed to help determine the key roadways and directionality of travel during an evacuation event. The Citywide Evacuation Zone Map shows that the project site is within Evacuation Zone 6A (Portola Springs). Available evacuation roadways in proximity to Evacuation Zone 6A are Jeffrey Road, Portola Parkway, Sand Canyon Avenue, State Route 241, and State Route 133.

Fire Stations and Response Times

As discussed in Section 4.14, Public Services, of this Draft EIR, fire protection in the City is provided by OCFA. Most of the City is served by Division 2 of OCFA, but other portions of the City are served by Divisions 4 and 5. OCFA serves the unincorporated portions of Orange County (County) and some cities within the County with which they have service agreements. OCFA Fire Station No. 55 is located at 4955 Portola Parkway, approximately 0.7 miles west of the project site. OCFA's goals for responding to incidents is within 8 minutes and 30 seconds, 90% of the time (Schneider, pers. comm., 2025). It is important to note that the City is currently negotiating with OCFA regarding an amended contract for fire services or a potential cessation of the current contract to allow the City to operate its own fire services. Details regarding this negotiation are ongoing and have not yet been finalized (City of Irvine 2024a). Should fire services be transferred over to the City, there would be no change to impacts to fire services.

Per City Municipal Code Section 2-9-604, the project would be required to pay a Systems Development Charge that would be used for future facility improvements necessary to ensure contribution of its fair share of the cost of facilities and equipment. Additionally, impacts to fire services are anticipated to be adequately funded by an increase in tax revenue over an extended time, relative to the increase in development intensity. Additional fire personnel and associated facilities and equipment would be provided through the annual Operating Budget and Capital Improvement Program review process (OCFA 2022). Additional fire stations in the City are available to assist Fire Station No. 55 with supplemental resources in an event of great need. Fire Station No. 26 (4691 Walnut Avenue) and Fire Station No. 20 (7050 Corsair) are located 2.5 miles and 2.7 miles away, respectively, from the project site.

According to the OCFA Statistical Annual Report, the City has a population of 303,051 as of 2023 (OCFA 2024). Within the City in 2023 there were 26,635 OCFA unit responses, resulting in a total of 20,195 incidents, 225 of which were fire incidents, 13,781 of which were Emergency Medical Service incidents, and 6,189 of which were other types of incidents. This equates to 0.9 calls for every 10 residents in the City. The proposed project involves the development of 1,360 two- to three-story homes, which could support an estimated 3,604 residents. Assuming an approximate generation of 0.9 calls per 10 residents, the proposed project would generate approximately 324 calls per year.

Evacuation Modeling and Analysis

As discussed previously, two direct evacuation routes (Jeffrey Road and Portola Parkway) are available for the potential evacuation area. In the event of a fire, all the outbound evacuating traffic would exit the evacuation area via "A," "B," "C," and "E" Streets and then proceed through the signalized intersection of Jeffrey Road/Portola Parkway to reach safety. The evacuation traffic that leaves the area via "A," "B," and "C" Streets on Jeffrey Road would contribute to the southbound flow at Jeffrey Road/Portola Parkway; the evacuation traffic that leaves the area via right-in/right-out "E" Street on Portola Parkway would contribute to the westbound flows at Jeffrey Road/Portola Parkway. It should be noted that, in the worst-case fire scenario, evacuees are less likely to travel to the east on Portola Parkway for safety reasons. As mentioned before, the fire flame/heat is expected to extend to the north side of Portola Parkway (east of Bee Canyon Access Road). Although no direct fire was forecast to occur on Portola Parkway, the impact of embers and smoke would make the segment of Portola Parkway east of Bee Canyon Access Road unsafe for traffic.

To calculate the evacuation travel time, the capacity for each evacuation turning movement at Jeffrey Road/ Portola Parkway was determined. Based on the City's Traffic Study Guidelines (City of Irvine 2023), a roadway lane in the City has a saturation flow rate of 1,700 vehicles per hour (veh/h) per lane. According to the Highway Capacity Manual (NASEM and TRB 2022, as cited in Appendix J-2), the "saturation flow rate" is defined as the flow rate per lane at which vehicles could pass through a signalized intersection if a green signal was displayed for the full hour and flow of vehicles never stopped. The capacity for each turning movement at Jeffrey Road/Portola Parkway was determined based on the saturation flow rate and the proportion of green time (when a green signal is displayed) available.

As previously stated, in the event of a fire, northbound (left, through, and right turn) on Jeffrey Road, southbound left turn on Jeffrey Road, westbound right turn on Portola Parkway, and eastbound left turn and through on Portola Parkway would be restricted due to safety concerns. Only southbound through and right turn on Jeffrey Road and westbound left turn and through on Portola Parkway would be allowed for the potential evacuation area, and eastbound right turn would be allowed for evacuees from adjacent communities (e.g., Orchard Hills) along Portola Parkway west of Jeffrey Road. Therefore, during the fire event, the normal multi-phase signal operation at Jeffrey Road/Portola Parkway would be overridden and the resulting two-phase operation is expected to provide the following:

1. Southbound through and right turns on Jeffrey Road
2. Westbound left turn and through movements and eastbound right turns on Portola Parkway

For the purpose of this evacuation analysis, it is assumed that the green time will be evenly split by the two phases (50% for each phase). Table 4.19-1 provides a summary of the evacuation travel time calculations for each evacuation turning movement at Jeffrey Road/Portola Parkway that would be available for the evacuation area. As this table indicates, the three southbound through lanes at Jeffrey Road/Portola Parkway would have a capacity of 2,550 veh/h, and it would take approximately 0.56 hours (or 34 minutes) to evacuate 1,430 vehicles; the one southbound de facto right-turn lane at Jeffrey Road/Portola Parkway would have a capacity of 850 veh/h, and it would take approximately 0.42 hours (or 26 minutes) to evacuate 357 vehicles; the three westbound through lanes at Jeffrey Road/Portola Parkway would have a capacity of 2,550 veh/h, and it would take approximately 0.09 hours (or 6 minutes) to evacuate 222 vehicles; and the two westbound left-turn lanes at Jeffrey Road/Portola Parkway would have a capacity of 1,700 veh/h and it would take approximately 0.52 hours (or 32 minutes) to evacuate 888 vehicles. Therefore, the analysis conservatively concludes that the evacuation time for the potential evacuation area (including both existing uses and the proposed project) would be 0.56 hours (or 34 minutes) in the worst-case fire scenario under no Jeffrey Road extension to State Route 241 conditions. There are no established thresholds for determining whether evacuation times are safe; however, FEMA has provided a general guideline for reasonable community evacuations of 1 hour and 30 minutes (i.e., total of 90 minutes) (Rhode and Associates 2020).

Table 4.19-1. Evacuation Travel Time Analysis at Jeffrey Road/Portola Parkway

Travel Direction	Green Time (Percentage)	Saturation Flow Rate (veh/h/ln)[a]	Through Lanes (No.)	Roadway capacity (veh/h)[b]	Evacuation Vehicles	Evacuation Travel Time	
						Hrs	Mins
SB through	50%	1,700	3	2,550	1,430	0.56	34
SB right turn	50%	1,700	1	850	357	0.42	26

Table 4.19-1. Evacuation Travel Time Analysis at Jeffrey Road/Portola Parkway

Travel Direction	Green Time (Percentage)	Saturation Flow Rate (veh/h/ln)[a]	Through Lanes (No.)	Roadway capacity (veh/h)[b]	Evacuation Vehicles	Evacuation Travel Time	
						Hrs	Mins
WB through	50%	1,700	3	2,550	222	0.09	6
WB left turn	50%	1,700	2	1,700	888	0.52	32

Source: Appendix J-2.
Notes: veh/h/ln = vehicles per hour per lane; veh/h = vehicles per hour; SB = southbound; WB = westbound.
[a] Per the City of Irvine Traffic Study Guidelines (2023).
[b] Capacity = green time percentage * saturation flow rate * number of lanes.

Based on the analysis, the calculated evacuation travel time for the evacuation area is 0.56 hours (or 34 minutes) in the worst-case fire scenario. However, the actual evacuation travel time is anticipated to be less than the calculated 0.56 hours (34 minutes) because of the following reasonable considerations:

- The number of evacuation cars and the travel time were estimated based on the conservative conversion factor of 2.50 vehicles per residential unit. However, the Orange County Transportation Analysis Model (OCTAM) shows an average of 2.35 vehicles owned per household for existing residential communities surrounding the evacuation area (see Attachment C of Appendix J-2).
- No occupancy adjustments were applied in this analysis and the evacuation travel time was calculated assuming that all residents would be at home during an evacuation event. In addition, it is also assumed that all evacuees would leave the evacuation area at the same time.
- The City's Traffic Management Center would adjust the traffic signals in real time and emergency personnel could be placed at intersections to manually guide traffic during an evacuation, which would help traffic flow at Jeffrey Road/Portola Parkway and would potentially reduce evacuation time.

Conclusion

Based on the fire modeling outputs (provided in Appendix J-1), the fire origin located northwest of the project site within the open space, with an 80 mph north-northeast wind, was identified as the worst-case fire scenario. However, a fire is not expected to spread directly through the project site or the adjacent roadways (i.e., Jeffrey Road and Portola Parkway). All emergency access points ("A," "B," "C," and "E" Streets and Jeffrey Road/Portola Parkway) would remain accessible and would not be impacted directly by fire flame/heat. An evacuation would only be required due to the impact of embers and smoke.

The most conservative evacuation time for the potential evacuation area (including both existing uses and the proposed project) is approximately 34 minutes in a worst-case fire scenario. However, the actual evacuation time is anticipated to be less, because the evacuation time calculation is based on the conservative vehicle ownership per household number, 100% occupancy of all residential units, and the simultaneous departure of all evacuees. In addition, the City's Traffic Management Center would adjust the traffic signals in real time and emergency personnel could be placed at intersections to guide traffic at Jeffrey Road/Portola Parkway and potentially reduce the evacuation time. As such, emergency evacuation plan impacts would be less than significant.

2. Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less-Than-Significant Impact with Mitigation Incorporated. As noted in Section 4.19.1, Existing Conditions, the project site is located in a VHFHSZ in an LRA. Additionally, the closest VHFHSZ in an SRA is adjacent to the east of the project site (Figure 4.19-1). The project could exacerbate wildfire risk and expose project occupants to pollutant concentrations from wildfire or the uncontrolled spread of wildfire if the project, combined with climatic, topographic, vegetation, and weather conditions and other factors, would increase the risk of a wildfire occurring and increase the severity of such an occurrence.

Much of the project site is surrounded by 100 feet or less of native vegetation adjacent to the project site boundary. In all cases, the native vegetation is bounded by roads between 60 and 85 feet in width beyond the project site boundary. Beyond the roads, the project site is surrounded by native vegetation to the north and to the east of Bee Canyon Access Road, consisting of annual grasslands, shrubs, and trees. Specific plant species in the area include California buckwheat, California sagebrush, toyon, and black mustard (Appendix J-1). According to the Fire Behavior Analysis (Appendix J-1), none of the adjacent fuels connect directly to a wildland area. This means that fire cannot burn into the project site as a "line of fire" but rather must "spot over" the roadways by embers or brands in most locations; however, direct flame contact over the Hicks Canyon Wash access is possible without the fuel modification zones [FMZs] discussed below. All fires in this area must start as a point source fire and grow into an equilibrium (sustained maximum rate of spread for the conditions) if there is enough fuel to do so. If a fire were to occur in the vegetation immediately adjacent to the project site, there would be limited fuel in this area to facilitate wildfire spread.

Short-Term Construction Impacts

Construction of the project would introduce potential ignition sources to the project site, including the use of heavy machinery and the potential for sparks during welding activities or other hot work. However, the project would be required to comply with City and state requirements for fire safety practices, including CFC Chapter 33 regulations, to reduce the possibility of fires during construction activities. Implementation of Mitigation Measure (MM) WF-1 (Pre-Construction Requirements) would ensure that before combustible materials are brought onto the site, all utilities and site improvements, fire hydrants, all-weather roadway, and FMZs would be in place and vegetation clearing would be maintained. Adherence to City and state regulatory standards during project construction would reduce the risk of wildfire ignition and spread during construction activities. Therefore, short-term construction-related impacts associated with exacerbating wildfire risk would be less than significant with mitigation incorporated.

Long-Term Operational Impacts

Slope

As outlined in Section 4.19-1, the majority of the project site is relatively flat (less than 2% slope); however, the maximum slope on the eastern and northern boundary of the project site is 25%. Elevations range from 420 to 570 feet above mean sea level. Upon project implementation, the portions of the site that would be developed would be graded to a level surface. Once developed, the project site would be graded with infill and therefore would not result in steep slopes that could exacerbate wildfire risk.

Prevailing Winds

Prevailing winds are winds that blow from a single direction over a specific area. As mentioned in Section 4.19.1, the prevailing wind pattern is from the southwest-west during the day, and at night winds are from the northeast. The average wind speed is 4 mph. High wind velocities that could exacerbate wildfire risk are generally associated with downslope, canyon, and Santa Ana winds that can occur in the winter in this area. Further, as shown on Figure 4.19-3 and mentioned above, wildfires have occurred immediately to the north, east, and west of the project site.

Other Factors

Other factors, such as FMZs, vegetation, building materials and setbacks, and proposed on-site activities, can also contribute to wildfire risk. These factors are further discussed below.

Fuel Modification Zones

The project site would have three FMZs that would extend across the project site, as depicted in Appendix J- 3 (Conceptual Fuel Modification Plan) and further described in Appendix J-4 (Alternative Fuel Modification Methods). This defensible space would consist of 20 feet of noncombustible construction (Zone A), a minimum of a 50-foot-wide wet zone that would include the full removal of undesirable shrubs (Zone B), and a 100-foot-wide thinning zone (Zone C) along the southwestern edge of the project site. Along the southern edge adjoining Bee Canyon Access Road, a minimum 10-foot-wide noncombustible construction zone (Zone A) and a minimum 39- to 129-foot-wide irrigated wet zone (Zone B) to the Bee Canyon Access Roadway would be provided. The total fuel modification distances along the edge include the Bee Canyon Access Roadway, as indicated in the Conceptual Fuel Modification Plan (Appendix J-3). Along the northeastern border of the project site, a 20-foot-wide Zone A and 100-foot-wide Zone B would be provided, and along the northern interface, a 20-foot-wide Zone A, followed by a minimum 85-foot-wide Zone B (which would provide a 50-foot-wide Zone B Roadside Protection Zone for the northern side of "C" Street) and a 100-foot-wide Zone C. Radiant heat walls, a radiant heat construction zone, and alternative tree spacing requirements would also be incorporated into the project site design as part of the fuel modification plan (per Appendix J-4, Alternative Fuel Modification Methods). The proposed FMZs would follow the requirements outlined in Appendices J-3 and J-4.

Zone A would consist of non-combustible construction. Zone B consists of a wet zone, which would be permanently irrigated and fully landscaped with approved drought-tolerant, deep-rooted, moisture-retentive material. Any new plant material that is added would be required to be planted using container shrub material. Avocado orchard trees (*Persea americana*) would be required to be a minimum of 15 feet from any eucalyptus trees (*Eucalyptus* spp.). Zone C consists of a thinning zone, which would require 50% thinning of native shrubs. Zone C would be a maximum of 100 feet out from Zone B. Zone C would be required to be non-irrigated and have horizontal and vertical spacing of plant groups in accordance with Attachment 6 of Appendix J-3 and removal of all dead and dying vegetation and undesirable species as specified in Attachment 7 of Appendix J-3. The minimum thinning percentage of plant removal in Zone C is 50%. Zones A, B, and C would be maintained by the homeowners' association (HOA). Alternative tree spacing requirements cover areas in Zone B and Zone C between the project site and Bee Canyon Access Road and would require no more than three trees in a group and spacing of each group of trees a minimum of 30 feet from any adjacent group, as measured from the mature canopy. Additionally, the understory directly under the tree canopies would be required to be composed of fire-resistant plant material in

accordance with OCFA's Fuel Modification Zone Plant List (OCFA 2020) and/or groundcover that naturally grows to no more than 1 foot in height. In addition, groundcover within 15 feet of groups of trees would be required to naturally grow to no more than 1 foot in height. Any shrub material that naturally grows to more than 2 feet in height would be required to be spaced a minimum of 30 feet from groups of trees.

Vegetation

As discussed previously, the vegetation on the project site is characterized by native species. Most of the vegetation on the project site consists of grass/shrub. The project would result in conversion of mostly undeveloped land with scattered vegetation cover into development consisting of residential homes, paved roads, and maintained landscape areas. The proposed landscaping would be implemented according to Chapter 3-15 of the City's Municipal Code and the Fuel Modification Plan and would include maintained landscaped areas that would have specific requirements (Appendices J-3 and J-4). Implementation of MM-WF-2 (Fire-Resistant Landscape Plan) would ensure that the proposed fuel modification plan would be implemented in accordance with defensible space principles discussed in the project-specific fuel modification plan, and that highly flammable vegetation would not be used in project landscaping, as referenced in Appendix J-3. Implementation of MM-WF-2 would ensure consistency with the City's General Plan Goal 4, Objective S-3, Policy k.

Building Materials and Setbacks

Project buildings would be required to comply with the City's Municipal Code Division 9, Chapter 1, which adopts both the 2022 CFC and the 2022 CBC and includes provisions for fire safety and fire-resistive construction. Further, compliance with required setbacks would allow for space between residential buildings and off-site vegetation. Studies indicate that given certain assumptions (e.g., 10 meters [33 feet] of low-fuel landscape, no open windows), wildfire is unlikely to spread to buildings unless the fuel and heat requirements of the building are sufficient for ignition and continued combustion (Alexander et al. 1998; USFS 1995). Construction materials and methods can prevent or minimize ignitions. The distance between a wildfire that is consuming wildland fuel and a building is the primary factor for structure ignition (not including burning embers) (Cohen 2000). Low-ignitability buildings provide the option of reducing the wildland fire threat to structures without extensive wildland fuel reduction. The project would be required to comply with construction methods outlined in the City's Municipal Code, the CFC, and the CBC, including Chapter 7A of the CBC, which regulates exterior design and construction of new buildings located within a wildland–urban interface fire area. These regulations specify requirements for materials and construction methods for fire safety. The proposed building materials for the project structures would be in accordance with the CBC, CFC, and Municipal Code. The proposed building materials for project structures include stucco, clay tile roofing, and other fire-resistant materials in compliance with Chapter 7A of the CBC. If structures have a sufficiently low ignitability, such as the project's structures, buildings can survive exposure to wildfire without major fire destruction.

Proposed Activities

Project activities would introduce new potential sources of ignition to the project site, including the introduction of a new population on site, vehicles traveling to and from the project site, and activities within a residential area. In Southern California, humans play a major role in wildfire ignitions by influencing the timing and spatial pattern of fires. As a result, humans account for more than 95% of ignitions in the region (Keeley and Syphard 2018). New residential development in a fire-prone area has the potential to exacerbate

wildfire risks and expose project occupants to pollutant concentrations from a wildfire, the uncontrolled spread of a wildfire, or direct or indirect risks associated with wildfire; therefore, impacts would be potentially significant.

As discussed in Section 4.13, Population and Housing, the population generated by the project, based on 1,360 residential dwelling units, would result in approximately 3,604 new residents at the project site. Development of the project would introduce new potential sources of ignition on the project site, including increased human activity (e.g., barbeque, smoking, outdoor mechanical equipment, and vehicles traveling on internal and external roads). The project also includes an extension of Jeffrey Road, development of parks, and an extension of the Jeffrey Open Space Trail east from Portola Parkway to the entrance of the new Gateway Preserve, which would facilitate expanded use of trails in the project area. In summary, the proposed project would increase human occupation in the project area, which has the potential to increase on-site ignitions and expose future project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

Equipment-caused ignitions frequently result from exhaust or sparks from power saws or equipment with gas or electric motors, such as lawnmowers, trimmers, or tractors. Ignitions are also more likely to occur close to roads and structures and in areas of intermediate structure densities. These sources of potential fire hazard would be introduced by the proposed project and have the potential to exacerbate wildfire risks and thereby potentially expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

However, as discussed previously, the project would include a layered approach to wildfire mitigation. Given that the proposed use would consist of ignition-resistant construction and vegetation on site would consist of fire-resistant and irrigated landscaping, the likelihood of a fire starting on site and spreading to off-site areas would be reduced. Additionally, the project would include Zone 0 landscaping requirements and would implement Chapter 7A on site to reduce ember and ignition sources, while also reducing fuel load and fire intensity by the FMZ along the project site's northern and eastern ridges. Further, existing development and roads surround the project site that present existing ignition sources near the currently vacant project site, which currently contains ignitable vegetation. The project would convert all available fuels to developed and maintained structures and landscaping.

Summary

Although CAL FIRE has designated the majority of the project site as a VHFHSZ, the risk of home ignition would likely be very low due to actions that reduce the risk of ignition. Projects within fire hazard zones are required to provide for a level of planning, ignition-resistant construction, access, water availability, fuel modification, and construction materials and methods that have been developed specifically to allow safe development within these areas.

The extent of VHFHSZs across Southern California is substantial; however, there is no evidence that modern, code-compliant residential communities are at high risk from wildfire if located within a designated VHFHSZ. Residential communities built to modern ignition-resistant standards provide passive fire protection that is highly successful at minimizing damage and loss of structures (CBIA, pers. comm., 2022). The state fire marshal's statistics demonstrate that building homes to CBC Chapter 7A standards effectively reduce fire risks to homes built in the wildland–urban interface and FHSZs (CBIA, pers. comm., 2022).

For example, the 2007 Witch Creek Fire was one of the most destructive fires in California's history and destroyed thousands of homes in San Diego County. However, after the 1990 Paint Fire in Santa Barbara and the 1991 Oakland Hills Tunnel Fire, five communities in San Diego County implemented measures to adapt to a VHFHSZ environment, such as implementing home fire-hardening measures, similar to Chapter 7A requirements, and vegetation restrictions, all of which were maintained and enforced by the HOA (Mutch et al. 2011). As a result, when the Witch Creek Fire spread to Rancho Santa Fe, no homes were lost in the five communities that had adopted this fire-hardening approach, while older communities that had not implemented fire-hardening measures were heavily impacted (Mutch et al. 2011).

Similarly, the 2008 Freeway Complex Fire near Yorba Linda tested the effects of enhanced building construction. In 1996, the City of Yorba Linda adopted construction requirements similar to those currently reflected in Chapter 7A of the CBC. Notably, even though structures were exposed to severe fire behavior and airborne ember storms, no homes built after 1996 were lost during the fire. The Casino Ridge community, which was built with fire-resistant materials and methods and maintained FMZs, was able to withstand the impacts of the wildfire and experienced no structure losses. In fact, firefighters were able to focus protection efforts on other, more at-risk communities, knowing that Casino Ridge was built to withstand wildfire with little to no fire protection efforts. Additionally, the 2020 Silverado Fire did not damage or destroy any homes in the City, including homes in the neighboring residential complex, Orchard Hills.

The proposed project would provide a wide, managed FMZ separating homes from unmaintained fuel. New development is also required to adhere to stricter code requirements for building materials and landscape plan implementation. The landscapes would be managed and maintained to remove non-native fuels that may become established over time. The Fire-Resistant Landscape Plan plant palette restrictions (MM-WF-2), combined with HOA maintenance, would minimize the establishment and expansion of non-native plants, including grasses. The proposed project would provide roadside fuel modification throughout the project site, and electrical lines would be subterranean.

Based on the fire behavior modeling in Appendix J-1, the onshore flow would take fire away from the project site at the Seed Farm interface. All the wildland safety features provided to protect against scenarios in which winds are from the northeast are present and would provide more than adequate levels of protection for winds from any direction, including the onshore flow from the southwest that is predominant at the project site. With adherence to the City's Municipal Code, the low ignitability of the proposed structures in accordance with Chapter 7A of the CBC, and implementation of fire-resistant, irrigated landscaping (MM-WF-2), the project would not facilitate wildfire spread or exacerbate wildfire risk or expose people or structures, indirectly or directly, to significant wildfire risk. It is not anticipated that the project, due to slope, prevailing winds, and other factors, would exacerbate wildfire risks or expose project occupants to pollutant concentrations from a wildfire, the uncontrolled spread of a wildfire, or significant risks associated with wildfires; therefore, impacts would be less than significant with mitigation incorporated.

3. ***Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?***

Less-Than-Significant Impact with Mitigation Incorporated. As mentioned in Chapter 3, Project Description, of this Draft EIR, the project would involve the development of a previously undeveloped site to construct a new residential development. As discussed in Section 4.18, Utilities and Service Systems,

the project would include extension of and upgrades to existing service utilities (e.g., water, wastewater, stormwater drainage, electric power, natural gas, and telecommunication services). This also includes some additions, including a new sewer connection through the project site, a stormwater detention basin, and an underground storage tank.

The activity of connecting utilities from their current locations to the project site and the new off-site improvements would require ground disturbance, and the use of heavy machinery associated with trenching would potentially result in temporary or ongoing impacts to the environment. Therefore, implementation of the proposed project could exacerbate wildfire risk by introducing new potential sources of ignition, such as the use of heavy machinery, welding, or other hot work. However, as previously discussed, vegetation would be removed from the site prior to the start of construction and the site would be graded to a flat, level surface and other improvements made prior to bringing combustibles on site (MM-WF-1, Pre-Construction Requirements), which would reduce the likelihood of fire ignition during installation and connection of utilities. The majority of the associated infrastructure and utility connections would occur on the project site or adjacent to the site and would not result in off-site environmental impacts or exacerbate wildfire risk.

The project would also include the installation and maintenance of FMZs in accordance with an approved fuel modification plan. The FMZs would result in the introduction of equipment to areas with existing fuel that would have the potential to ignite during installation and maintenance activities for fuel modification. Increased fire risk would be temporary and would be reduced after the FMZs are completed. These FMZs would decrease overall fire risk to the project site and surrounding areas (MM-WF-2, Fire-Resistant Landscape Plan). All maintenance activities would be conducted according to regulatory requirements and would occur adjacent to the project's FMZs, which would be installed prior to the start of construction and maintained throughout the life of the project.

The installation and maintenance of roads, service utilities, and drainage and water quality improvements and vegetation removal are part of the project analyzed herein. As such, any potential temporary or ongoing environmental impacts related to these components of the project have been accounted for and analyzed in this Draft EIR as part of the impact assessment conducted for the entirety of the project. Additionally, the project would be required to comply with all regulatory requirements and mitigation measures outlined in this Draft EIR for the purposes of mitigating impacts associated with trenching, grading, site work, and the use of heavy machinery. No adverse physical effects specifically related to wildfire or beyond those already disclosed throughout this Draft EIR would occur as a result of implementation of the project's associated infrastructure. Therefore, the installation and maintenance of associated infrastructure would not exacerbate wildfire risk or result in impacts to the environment beyond those already disclosed in this Draft EIR; therefore, impacts would be less than significant with mitigation incorporated.

4. Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less-Than-Significant Impact. Vegetation plays a vital role in maintaining existing drainage patterns and the stability of soils. Plant roots stabilize the soil and leaves, stems, and branches intercept and slow water, allowing it to more effectively percolate into the soil. Removal of surface vegetation reduces the ability of the soil surface to absorb rainwater and can allow increased runoff that may include large amounts of debris or mud flows. If hydrophobic conditions exist post-fire, the rate of surface water runoff is increased as water percolation into the soil is reduced (Moench and Fusaro 2012). The potential for surface runoff

and debris flows therefore increases for areas recently burned by large wildfires (Moench and Fusaro 2012). Given the project site's location in fire-prone Southern California, the on-site and surrounding topography, and the recent wildfires that have burned in the project area, project occupants and structures could be exposed to downslope or downstream flooding or landslides as a result of post-fire conditions. As previously discussed and as shown on Figure 4.19-3, multiple wildfires have burned within a 5-mile radius of the project site.

In addition, vegetation removal as a result of vegetation management, such as that proposed for the project, could result in changes to drainage patterns and slope stabilization. Caution must be used to avoid causing erosion, ground (including slope) instability, or water runoff due to vegetation removal, vegetation management, maintenance, landscaping, or irrigation.

The project would be required to be constructed in accordance with the CBC, the City's Municipal Code, and the Preliminary Geotechnical Evaluation (Appendix E-1) that has been prepared by a California licensed geotechnical engineer or engineering geologist. As discussed in Section 4.7, Geology and Soils, a small portion of the project site along the northern, western, and eastern boundary consists of areas of deep-seated landslide susceptibility. However, these areas are designated as having a moderately low risk of landslides due to seismic conditions and low likelihood of landslide under other conditions (City of Irvine 2024b). In addition, the proposed improvements would include drainage-control features in accordance with local drainage-control requirements, which would also reduce the potential for adverse effects related to debris flows.

Further, as discussed in Section 4.10, Hydrology and Water Quality, the project would not substantially alter the drainage patterns at the site compared to existing conditions. However, development associated with the project would introduce new impervious surfaces over much of the project site, which in turn would result in increased stormwater runoff. If not managed appropriately, stormwater runoff from these hardscapes could potentially result in erosion or siltation on or off site. Development of the site would include development of underground stormwater detention tanks, which would enhance water quality and reduce stormwater runoff flow rates and volumes. On-site proposed landscaping would also serve to reduce the potential for erosion or siltation transport off site. On-site drainage would be designed in accordance with regulatory requirements from the City, which are consistent with the County Stormwater Standards Manual developed to meet National Pollutant Discharge Elimination System municipal separate storm sewer system requirements.

The project would be developed as a fire-hardened, modern residential community and would comply with current state-of-the-art ignition-resistant construction standards for all new residential buildings meeting Chapter 7A of the CBC, Chapter 33 of the CFC, and OCFA requirements. These standards require, among many other measures, fire-resistant roofing to resist ignition from embers or building-to-building fires, vent covering and opening limitations to avoid ember intrusion, noncombustible or ignition-resistant exterior walls, ignition-resistant eaves and porch ceilings, insulated windows and exterior doors, fire-resistant exterior decks and walkways, and ignition-resistant underflooring and appendages. These standards have proven to substantially reduce the risk of buildings catching fire or spreading fires during a wildfire event. The project would incorporate FMZs ranging from 120 to 205 feet, which modeling demonstrates would protect the project site from off-site wildfires, limit the spread of on-site fires to off-site locations, and provide access for firefighters and fire-fighting equipment to suppress both on-site and off-site fires. Project buildings would be constructed of fire-retardant materials and would include indoor fire sprinkler systems, thereby reducing ember generation in the event of a structure fire that could threaten on-site and off-site

resources. The project would have a sufficient water supply to serve fire suppression needs and would be constructed with code-compliant fire hydrant systems with adequate water flows to fight fire. The project's code-compliant internal circulation system and parking restrictions would ensure that firefighting apparatus would have appropriate access to, in, and around the project site as necessary to provide fire suppression services, and the project would provide sufficient access points to ensure safe and timely ingress and egress to and from the project site to serve the needs of both first responders and potential evacuees.

Therefore, adherence to the project-specific geotechnical recommendations (Appendix E-1), implementation of the proposed drainage-control measures, implementation of a project-specific fuel modification plan, and annual fuel modification maintenance and inspection, combined with regulatory restrictions limiting development in floodplains and steep terrain and ridgelines, would ensure that the proposed project would not expose people or structures to significant risks related to downslope or downstream flooding, debris flows, or landslides as a result of runoff, post-fire slope instability, or drainage changes and impacts would be less than significant.

Impact Summary

Construction of the project and installation of associated infrastructure would introduce potential ignition sources to the project site, including the use of heavy machinery and the potential for sparks during welding activities or other hot work. Impacts relating to exacerbation of wildfire risks and exposing project occupants to pollutants from a wildfire or uncontrolled spread of a wildfire would be potentially significant absent mitigation.

Construction of the project would introduce new residential structures and human activities in a fire-prone area. The northern portion of the proposed project site is in a VHFHSZ. Grass/shrub arrangements cover the majority of the project site and surrounding areas to the north and east of the project site that contain both California buckwheat and California sagebrush, both of which burn with a relatively high intensity. Impacts related to installation or maintenance of infrastructure that may exacerbate fire risk or impact the environment would be potentially significant absent mitigation.

All other impacts related to wildlife would be less than significant.

4.19.5 Mitigation Measures

The following mitigation measures would address impacts relating to exacerbation of wildfire risks and exposing project occupants to pollutants from a wildfire or uncontrolled spread of a wildfire and installation or maintenance of infrastructure that may exacerbate fire risk or impact the environment:

MM-WF-1 Pre-Construction Requirements. Prior to the commencement of construction activities, the project applicant/developer shall ensure the following requirements are met in accordance with Orange County Fire Authority (OCFA) Guideline B-01, Fire Master Plans for Commercial & Residential Development, Appendix A, Access During Construction. Access and water supply during construction shall comply with California Fire Code Chapter 33 and the provisions listed below. Construction activities that do not comply with these requirements may be suspended at the discretion of the fire code official until a reasonable level of compliance is achieved.

At no time shall construction impair/obstruct existing fire lanes or access to the operation of an existing fire hydrant (or hydrants) serving other structures.

The developer shall provide alternative access routes, fire lanes, and other mitigation features when existing roadways or fire hydrants may need to be moved or altered during construction to ensure adequate fire and life-safety protection. Such alternatives and features shall be submitted to OCFA for review and approval prior to alteration of existing conditions

Lumber Drop Inspection: An inspection shall be scheduled with an OCFA inspector to verify that access roadways, fire lanes, and operable fire hydrants have been provided for buildings under construction and prior to bringing combustible materials on site. The inspection shall verify the following:

- The street address of the site shall be posted at each entrance. Projects on streets without names or street signs posted at the time of construction shall include the project name, tract number, or lot number for identification.
- Gates through construction fencing shall be equipped with a Knox padlock or breakaway lock/chain.
- When required by the OCFA inspector, fire lanes shall be posted with "Fire Lane – No Parking" signs, or "No Parking Areas" will be identified to maintain obstruction-free areas during construction.
- Provisions shall be made to ensure that fire hydrants are not blocked by vehicles or obstructed by construction material or debris. A 3-foot-wide clear space shall be provided around the perimeter of each hydrant and no parking or similar obstructions shall be allowed along the adjacent road within 15 feet of a hydrant. Inoperable fire hydrants shall be bagged.

Temporary Fire Access Roads: Temporary access roads (construction roads that do not match the final location and configuration of permanent roads as approved on a Fire Master Plan) and temporary hydrants may be permitted for single-family residential model construction or a single detached custom home less than 5,500 square feet in area with the conditions listed below. They may be allowed on a case-by-case basis for other structures with additional requirements, as determined by the fire code official. Conditions allowing the construction of these temporary access roads and hydrants include the following:

- Plans for temporary access shall be submitted to the OCFA Planning and Development Services Section. Plans will show proposed temporary roadway locations, location of models, space dedicated to storage of construction materials, and parking for work crews and construction vehicles. The plans shall clearly state that they have been submitted for temporary access and hydrants.
- Plans shall be stamped and signed by a licensed civil engineer stating that the temporary access road can support 94,000 pounds of vehicle weight in all weather conditions. Plans shall also provide manufacturer's documentation that demonstrates suitability of the material, specifically as a road stabilizer.
- Parking plans shall include details on how the construction site will enforce fire lanes and no-parking zones.
- Aboveground invasion lines are acceptable for water supply, as follows:
  - Drawings shall show details of how the line will be secured in place (e.g., size, depth, and interval of rebar tie-downs) and protected from vehicular damage (e.g., K-rails or bollards).

  - An invasion line may be run underground if the depth of bury can support the 94,000-pound weight of a fire apparatus.
  - The temporary water line must provide the required fire flow; calculations may be required.
  - The pipe shall be listed for fire service.
  - Fire hydrants shall consist of a minimum 6-inch-diameter barrel with one 2.2-inch outlet and one 4-inch outlet. This shall be noted on the plan.
- All other access and water requirements shall apply (e.g., width, approach clearance, premises identification, locks, gates, barriers).
- The approved plan for temporary access and water supply shall be available at the construction site prior to bringing combustible building materials on site.
- An inspection by OCFA personnel is required to verify adherence to the approved plan prior to bringing combustible materials on site.

Phased Access: Incremental installation of permanent access roadways as shown on a Fire Master Plan may be permissible for commercial and residential developments. If phased installation is anticipated, the site superintendent or designee shall review the installation process with an OCFA inspector during the lumber drop inspection or pre-construction meeting. Depending on the complexity of the installation, size of the project, and other project-specific factors, the inspector may allow phased installation to proceed immediately or may first require that all or some of the following items are satisfied:

- The extent of building construction
- Location of operable hydrants serving all buildings under construction
- The location of construction fencing, barriers, and vehicle access gates
- The location of all temporary or permanent "fire lane—no parking" signs
- Equipment/materiel staging locations
- Worker parking areas

In addition, the following requirements for phased access shall be met:

- Phasing plans shall be stamped and signed by a licensed civil engineer stating that the access road can support 94,000 pounds of vehicle weight in all weather conditions. The final road section less the final lift of asphalt topping may be acceptable if certified by the engineer.
- The phasing plan shall identify any anticipated areas where fire department access roadways may be temporarily inaccessible due to trenching, slurry coating, striping, or other construction activities after they have been installed and inspected. The plan shall indicate the anticipated period of impairment and include provisions for providing plating over trenches and alternative access routes, notification to the fire department, and/or other forms of mitigation when such roadways are impaired.
- A parking plan shall be provided for the construction site detailing how the fire lane no-parking regulations will be enforced. The plan shall include a clause stating that "the job-site superintendent is responsible for informing the work crews of parking requirements and that the entire job site is subject to shutdown by the OCFA inspector if parking is in violation of fire lane posting."

- The approved phasing plan shall be available at the construction site prior to bringing combustible building materials on site. A lumber drop inspection by an OCFA inspector will be required prior to the commencement of each phase; additional inspection fees will be due for each phase.
- All other access and water requirements shall apply (e.g., width, approach clearance, premises identification, locks, gates, barriers).

MM-WF-2 Fire-Resistant Landscape Plan. The proposed landscape plan shall be implemented in accordance with defensible space principles discussed in the project-specific Fire Behavior Analysis and Fuel Modification Plan (Appendices J-1 and J-3 to the Draft EIR) and using fire-resistant plant material in accordance with the Orange County Fire Authority (OCFA) Fuel Modification Zone Plant List. Some plant communities and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (bark thickness, leaf size, branching patterns), and overall fuel loading. Given the project site's proximity to High and Very High Fire Hazard Severity Areas, the project landscape plan shall not include plants that are highly flammable. The landscape plan shall be submitted to OCFA for review and approval prior to issuance of building permits. No plant that is listed as undesirable (according to OCFA's 2014 Orange County Undesirable Plants List) shall be included within the proposed project without prior approval by OCFA.

4.19.6 Level of Significance After Mitigation

Impacts relating to construction-related potential ignition sources would be reduced to a less-than-significant level through implementation of MM-WF-1, and impacts relating to development of a residential land use in a VHFHSZ would be reduced to less than significant by implementation of MM-WF-2. Other impacts do not require mitigation and would remain less than significant.

4.19.7 Cumulative Impacts

The project, combined with other projects and planned development in the region, would increase population and/or activities and potential ignition sources in a VHFHSZ, which may increase the potential of a wildfire and/or the need for evacuations during a wildfire event. Many of the cumulative projects are residential projects that would introduce new populations into the area. Additional new residents would create additional demands for evacuations during wildfire emergencies. However, individual projects located in the area would be required to comply with applicable fire and building codes, which include mandatory fire prevention and protection features that reduce the likelihood of a fire igniting and spreading to off-site vegetated areas. Further, for the cumulative projects that are located in FHSZs, each would be required to comply with vegetation clearance and fuel modification requirements, as mandated by the City's Municipal Code and the CFC. These codes also protect projects from wildfires that may occur in the area through the implementation of FMZs, ensuring adequate water supply, preparation of fire prevention plans, and other measures.

As discussed in the Evacuation Travel Time Analysis (Appendix J-2), the evacuation routes in the project site's vicinity are Jeffrey Road, Portola Parkway, Sand Canyon Avenue, State Route 241, and State Route 133. No permanent impacts would occur to these roadways that would impede evacuation routes as a result of the project. As discussed in Appendix J-2, it was determined that it would require 34 minutes in a worst-case fire scenario to evacuate the project site. However, the actual evacuation time is anticipated to be less, because this evacuation calculation is

based on a conservative estimate of the number of vehicles owned per household, 100% occupancy of all residential units, and the simultaneous departure of all evacuees. In addition, the City's Traffic Management Center would adjust the traffic signals in real time and emergency personnel could be placed at intersections to guide traffic at Jeffrey Road/Portola Parkway and potentially reduce the evacuation time.

The CFC, CBC, and OCFA requirements, along with project-specific needs assessments and fire prevention plan requirements, would ensure that all the cumulative projects approved for construction include adequate emergency access. Roads for the project and all cumulative projects are required to meet minimum widths, have an all-weather surface, and be capable of supporting the imposed loads of responding emergency apparatus. The proposed project would include fire access and circulation throughout the project site, including emergency access and on-site shelter-in-place areas in an area where access was previously limited.

The project's contribution to the potential to impair emergency evacuation, in combination with cumulative projects, would not be cumulatively considerable because the Evacuation Travel Time Analysis determined that the project and cumulative projects in the area would evacuate within the FEMA timeframe (total of 90 minutes), the project would include improved road conditions and on-site locations to safely shelter in place, and the project and cumulative projects would be required to adhere to all state building codes to minimize the spread of a wildfire. Therefore, the cumulative impact would be less than significant.

The majority of the project site is designated as a VHFHSZ within an LRA. The project site is in Southern California, where Santa Ana winds are prevalent. Factors that could increase wildfire risk include the electrical components associated with the project (e.g., cables, inverters, transformer). To reduce potential impacts related to the exposure of occupants to pollutant concentrations from a wildfire, the project would implement MM-WF-1 (Pre-Construction Requirements) and MM-WF-2 (Fire-Resistant Landscape Plan). With implementation of these measures, the project would result in less-than-significant impacts with mitigation incorporated.

Cumulative projects in the project's vicinity are residential developments and commercial projects in a similar environmental setting to the project (e.g., relatively flat topography, Santa Ana winds). As discussed above, the overall wildfire risk for the area is relatively low; however, the addition of multiple projects does increase wildfire risk and impacts could be significant. Similar to the project, all cumulative projects would be required to comply with all applicable codes for the installation of electrical components, which would limit the wildfire risk associated with these features. Therefore, the project's less-than-significant impacts with mitigation incorporated combined with the potential impacts of nearby projects would not result in a cumulatively significant impact with respect to exacerbating impacts related to exposing the population to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

The project would involve the development of a previously undeveloped site to construct a new residential development. The project would include extension of and upgrades to existing service utilities (e.g., water, wastewater, stormwater drainage, electric power, natural gas, and telecommunication services). This also includes some additions, including a new sewer connection through the project site, a stormwater detention basin, and an underground storage tank. Given that the activity of connecting utilities from their current locations to the project site and the new off-site improvements would require ground disturbance, and the use of heavy machinery associated with trenching would potentially result in temporary or ongoing impacts to the environment, implementation of the proposed project could exacerbate wildfire risk by introducing new potential sources of ignition, such as the use of heavy machinery, welding, or other hot work. The project would implement MM-WF-1 to reduce impacts related to installation or maintenance of infrastructure (e.g., utilities, power lines). Additionally, the project would include the installation and maintenance of FMZs in accordance with an approved fuel modification

plan. The FMZs would result in the introduction of equipment to areas with existing fuel that would have the potential to ignite during installation and maintenance activities for fuel modification. Increased fire risk would be temporary and would be reduced after the FMZs are completed. These FMZs would decrease overall fire risk to the project site and surrounding areas (MM-WF-2). All maintenance activities would be conducted according to regulatory requirements and would occur adjacent to the project's FMZs, which would be installed prior to the start of construction and maintained throughout the life of the project. With the incorporation of MM-WF-1 and MM-WF-2, the project's impacts would be less than significant with mitigation incorporated.

Cumulative projects in the project's vicinity are residential developments and commercial projects in a similar environmental setting to the project (e.g., relatively flat topography, Santa Ana winds). As discussed above, the overall wildfire risk for the area is relatively low; however, the addition of multiple projects does increase wildfire risk and impact could be significant. Similar to the project, all cumulative projects would be required to comply with all applicable codes and regulations related to construction and operation, which would reduce fire risk associated with cumulative projects. Therefore, the project's less-than-significant impacts with mitigation incorporated, combined with the potential impacts of nearby projects, would not result in a cumulatively significant impact with respect to impacts related to the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

The project site is relatively flat. A small portion of the project site along the northern, western, and eastern boundary consists of areas of deep-seated landslide susceptibility. However, these areas are designated as having a moderately low risk of landslides due to seismic conditions and low likelihood of landslide under other conditions (City of Irvine 2024b). In addition, the proposed improvements would include drainage-control features in accordance with local drainage-control requirements, which would also reduce the potential for adverse effects related to debris flows, reducing any potential impacts to less than significant.

Cumulative projects in the project's vicinity are other residential developments and commercial projects, many of which are in a similar environmental setting to the project (e.g., relatively flat topography, Santa Ana winds). Similar to the project, all cumulative projects would be required to comply with all applicable codes and regulations. Therefore, the project's less-than-significant impacts, combined with the potential impacts of nearby projects, would not result in a cumulatively significant impact with respect to exacerbating impacts related exposing the population to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes post-fire slope instability.

4.19.8 References

Alexander, M.E., B.J. Stocks, B.M. Wotton, M.D. Flannigan, J.B. Todd, B.W. Butler, and R.A. Lanoville. 1998. "The International Crown Fire Modeling Experiment: An Overview and Progress Report." In *Proceedings of the Second Symposium on Fire and Forest Meteorology, January 12–14, 1998, Phoenix, Arizona*, 20–23. Boston: American Meteorological Society.

CAL FIRE (California Department of Forestry and Fire Protection). 2018. *2018 Strategic Fire Plan for California*. State of California Board of Forestry and Fire Protection and CAL FIRE. August 22, 2018. https://bof.fire.ca.gov/media/hu2al23d/2018-strategic-fire-plan-approved-08_22_18.pdf.

CAL FIRE. 2025a. Fire Hazard Severity Zones. Accessed February 12, 2025. https://osfm.fire.ca.gov/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones.

CAL FIRE. 2025b. "Our Organization." Accessed February 12, 2025. https://www.fire.ca.gov/about/our-organization.

CBIA (California Building Industry Association). 2022. "Analysis of State Fire Marshal Property Loss Data." Memorandum from B. Raymer (California Licensed Professional Engineer) to D. Dunmoyer (President/CEO of CBIA). January 18, 2022.

City of Irvine. 2021. "Citywide Evacuation Zone Map." July 16, 2021. https://cityofirvine.org/news-media/news-article/citywide-evacuation-zone-map-now-available.

City of Irvine. 2023. *Traffic Study Guidelines*. Adopted June 23, 2020; technical update approved March 21, 2024. City Council Resolution No. 20-59. Prepared by City of Irvine, Department of Public Works and Transportation. https://cityofirvine.org/transportation-department/transportation-development-review.

City of Irvine. 2024a. "Public Services and Recreation." Section 4.12 in *City of Irvine 2045 General Plan Update Program EIR*. Accessed August 2025. https://cityofirvine.org/community-development/current-general-plan.

City of Irvine. 2024b. "Safety Element." In *Irvine 2045 General Plan*. August 2024. Accessed January 14, 2025. https://cityofirvine.org/community-development/current-general-plan.

Cohen, J.D. 2000. "Preventing Disaster: Home Ignitability in the Wildland–Urban Interface." *Journal of Forestry* 98(3): 15–21.

Keeley, J.E., and A.D. Syphard. 2018. "Historical Patterns of Wildfire Ignition Sources in California Ecosystems." *International Journal of Wildland Fire* 27(12): 781–799. https://doi.org/10.1071/WF18026.

Moench, R., and J. Fusaro. 2012. "Soil Erosion Control After Wildfire." Natural Resources Series: Forestry; Fact Sheet 6.308. Colorado State University Extension. Published April 2002; revised January 2012. https://extension.colostate.edu/wp-content/uploads/2023/05/Soil-Erosion-Control-After-Wildfire-FINAL.pdf.

Mutch, R.W., M.J. Rogers, S.L. Stephens, and A.M. Gill. 2011. "Protecting Lives and Property in the Wildland Urban Interface: Communities in Montana and Southern California Adopt Australian Paradigm." *Fire Technology* 47:357–377. https://doi.org/10.0007/s10694-010-0171-z.

OCFA (Orange County Fire Authority). 2014. "Undesirable Plant Species." Attachment 7 of *Vegetation Management Guideline Technical Design for New Construction Fuel Modification Plans and Maintenance Program. Guideline C-05. Guideline C-05.* January 1, 2014. Accessed August 12, 2025. https://ocfa.org/Uploads/SafetyPrograms/OCFA%20RSG%20-%20Vegetation%20Management%20Technical%20Design.pdf

OCFA. 2020. "Fuel Modification Zone Plant List." Attachment 8 of *Fuel Modification Plans Design: C-05*. January 1, 2020. Accessed February 25, 2025. https://ocfa.org/Uploads/SafetyPrograms/OCFA%20RSG%20-%20Planting%20Guide.pdf.

OCFA. 2022. "Orange County Fire Authority Fiscal Year 2022/23 Adopted Budget." Accessed February 20, 2025. https://www.ocfa.org/Uploads/Transparency/OCFA 2022-2023 Adopted Budget.pdf.

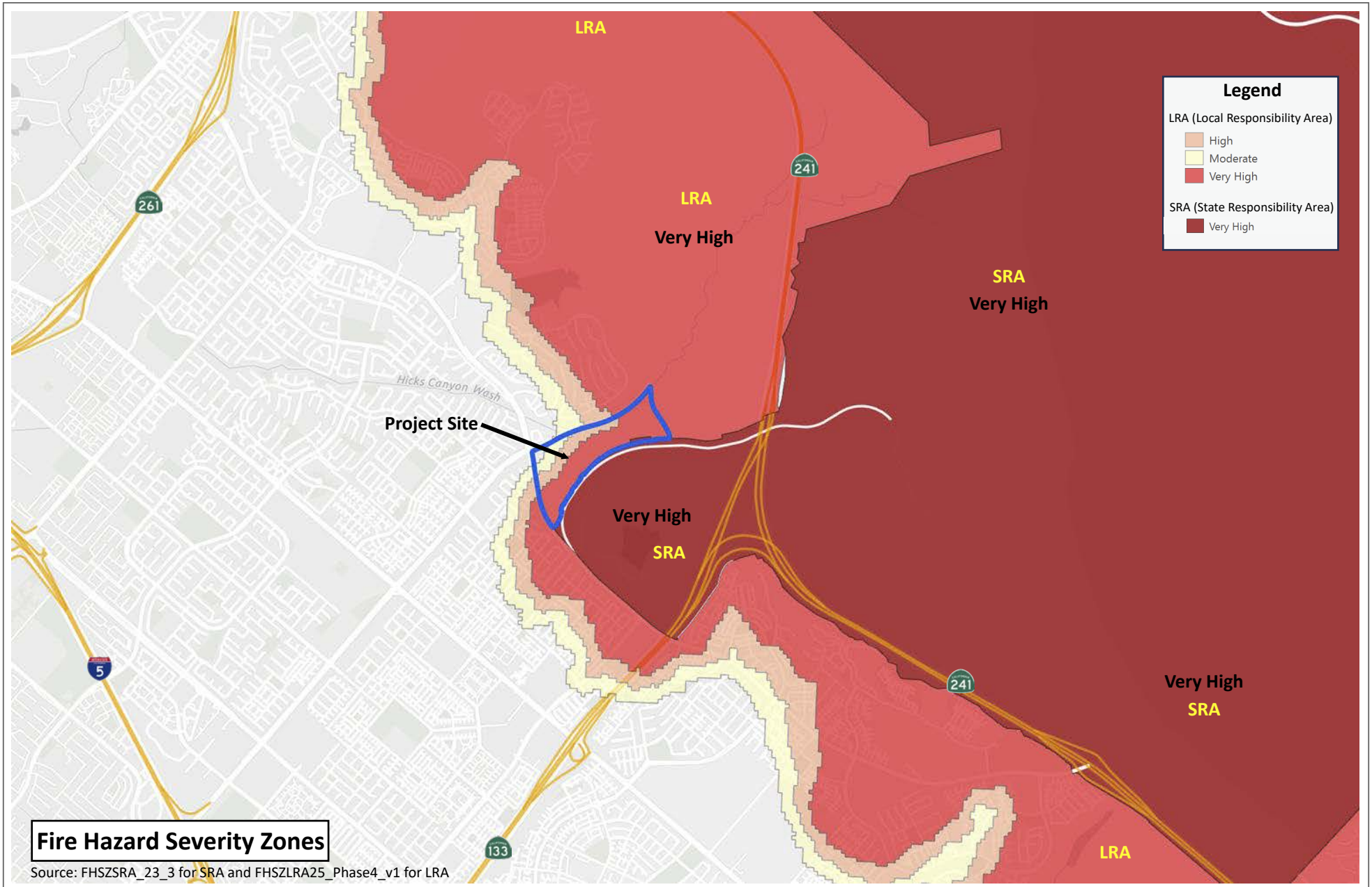
OCFA. 2024. *2023 Statistical Annual Report*. 2024. Accessed February 19, 2025. https://ocfa.org/Uploads/Transparency/OCFA%20Annual%20Report%202023.pdf.

Rohde and Associates, 2020. Otay Ranch Village 14 and Planning Areas 16/19 Fire Services Operation Assessment.

Schneider, M. 2025. "OCFA Guidance." Email from M. Schneider (Orange County Fire Authority Management Analyst) to R. Struglia (Dudek). August 26, 2025.

U.S. Climate Data. 2025. "Climate Irvine – California." Accessed February 12, 2025. https://www.usclimatedata.com/climate/irvine/california/united-states/usca2494.

USFS (U.S. Forest Service). 1995. "Structure Ignition Assessment Model (SIAM)." In *Proceedings of the Biswell Symposium: Fire Issues and Solutions in Urban Interface and Wildland Ecosystems, Walnut Creek, California: February 15–17, 1994*, technical coordinators D.R. Weise and R.E. Martin, 85–92. General Technical Report PSW-GTR-158. Prepared by J.D. Cohen. Albany, California: USFS, Pacific Southwest Research Station.

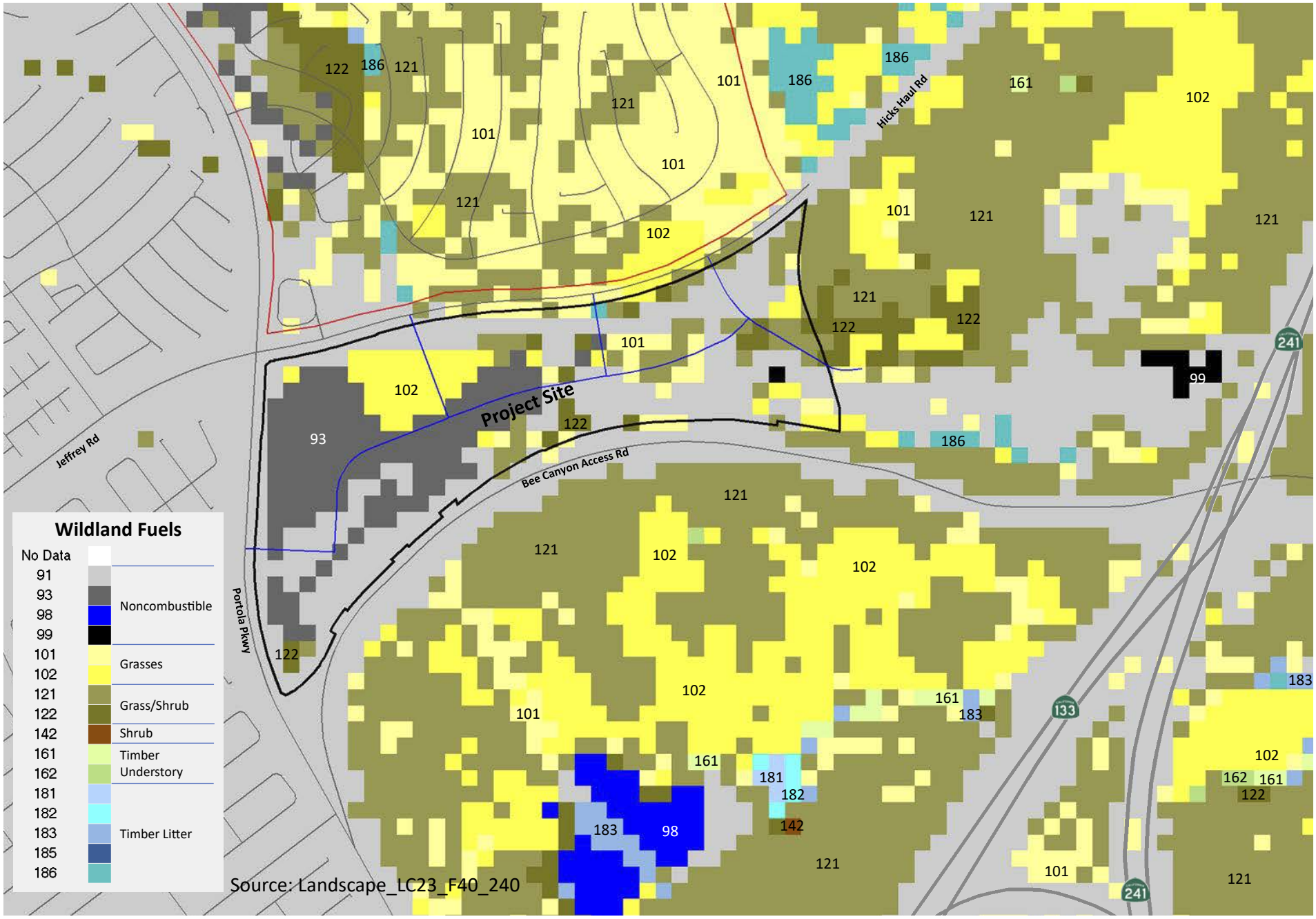


SOURCE: FireSafe Planning, Inc. 2025

DUDEK

FIGURE 4.19-1
Fire Hazard Severity Zones
Irvine Gateway Village Project EIR

INTENTIONALLY LEFT BLANK

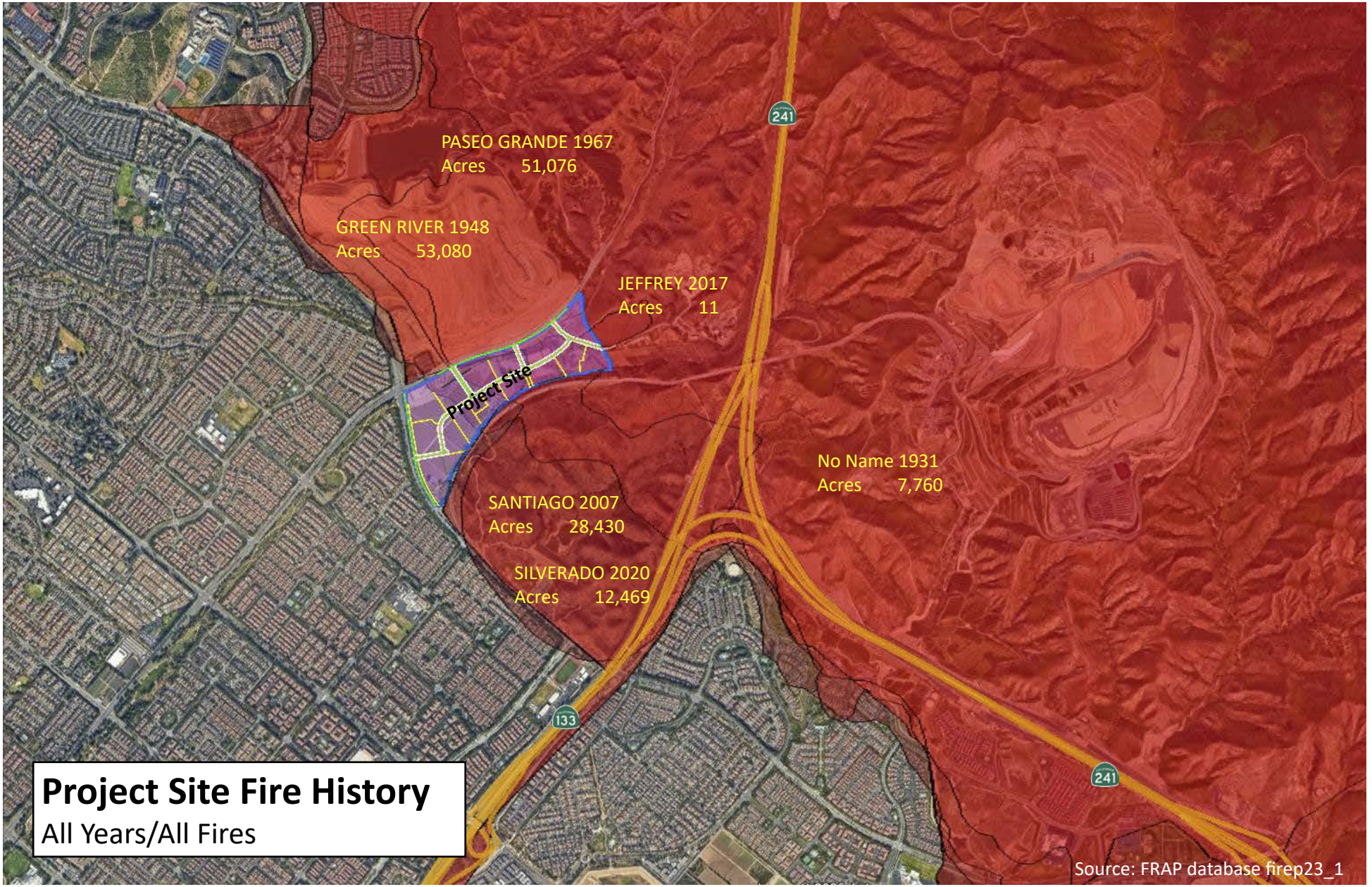


SOURCE: FireSafe Planning, Inc. 2025

DUDEK

FIGURE 4.19-2
Wildland Fuels
Irvine Gateway Village Project EIR

INTENTIONALLY LEFT BLANK

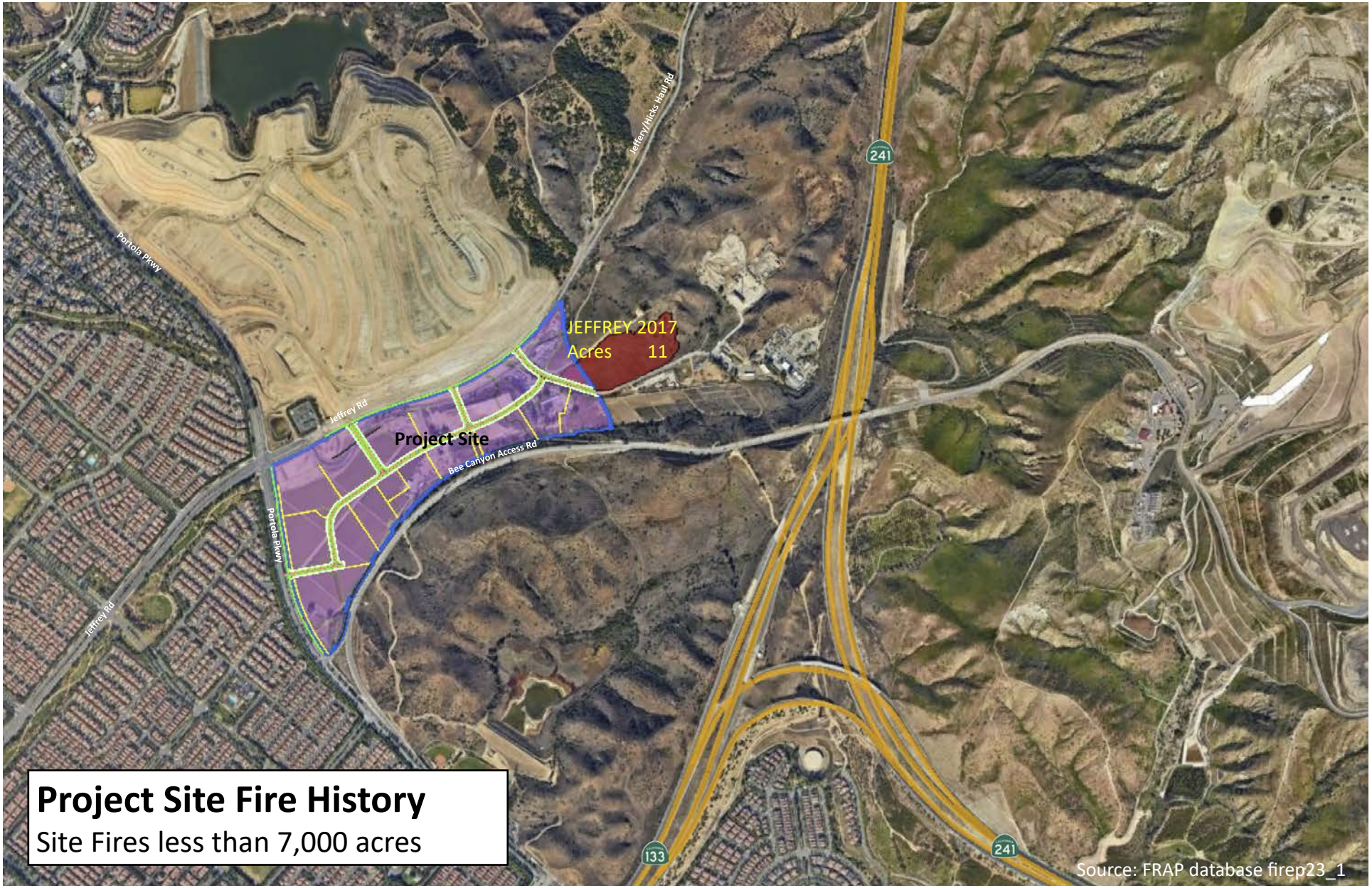


SOURCE: FireSafe Planning, Inc. 2025

DUDEK

FIGURE 4.19-3
Fire History
Irvine Gateway Village Project EIR

INTENTIONALLY LEFT BLANK



SOURCE: FireSafe Planning, Inc. 2025

DUDEK

FIGURE 4.19-4

Fire History Without Large Fires

Irvine Gateway Village Project EIR

INTENTIONALLY LEFT BLANK