Appendix J-2
Evacuation Travel Time Analysis

CARLSBAD
CLOVIS
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

August 20, 2025

Derek Spalding
Brookfield Residential
3090 Bristol Street, Suite 200
Costa Mesa, CA 92626

Subject: Evacuation Travel Time Analysis for Irvine Gateway Village in Irvine, California (LSA Project No. 20252294)

Dear Mr. Spalding:

LSA is pleased to submit this evacuation travel time analysis for the proposed Irvine Gateway Village (project) in Irvine. The project site is located north of Portola Parkway, east of Jeffrey Road, south of State Route (SR) 241, and west of Bee Canyon Access Road. A *Comprehensive Traffic Study* was prepared for this project (LSA 2025) in support of the Environmental Impact Report (EIR).

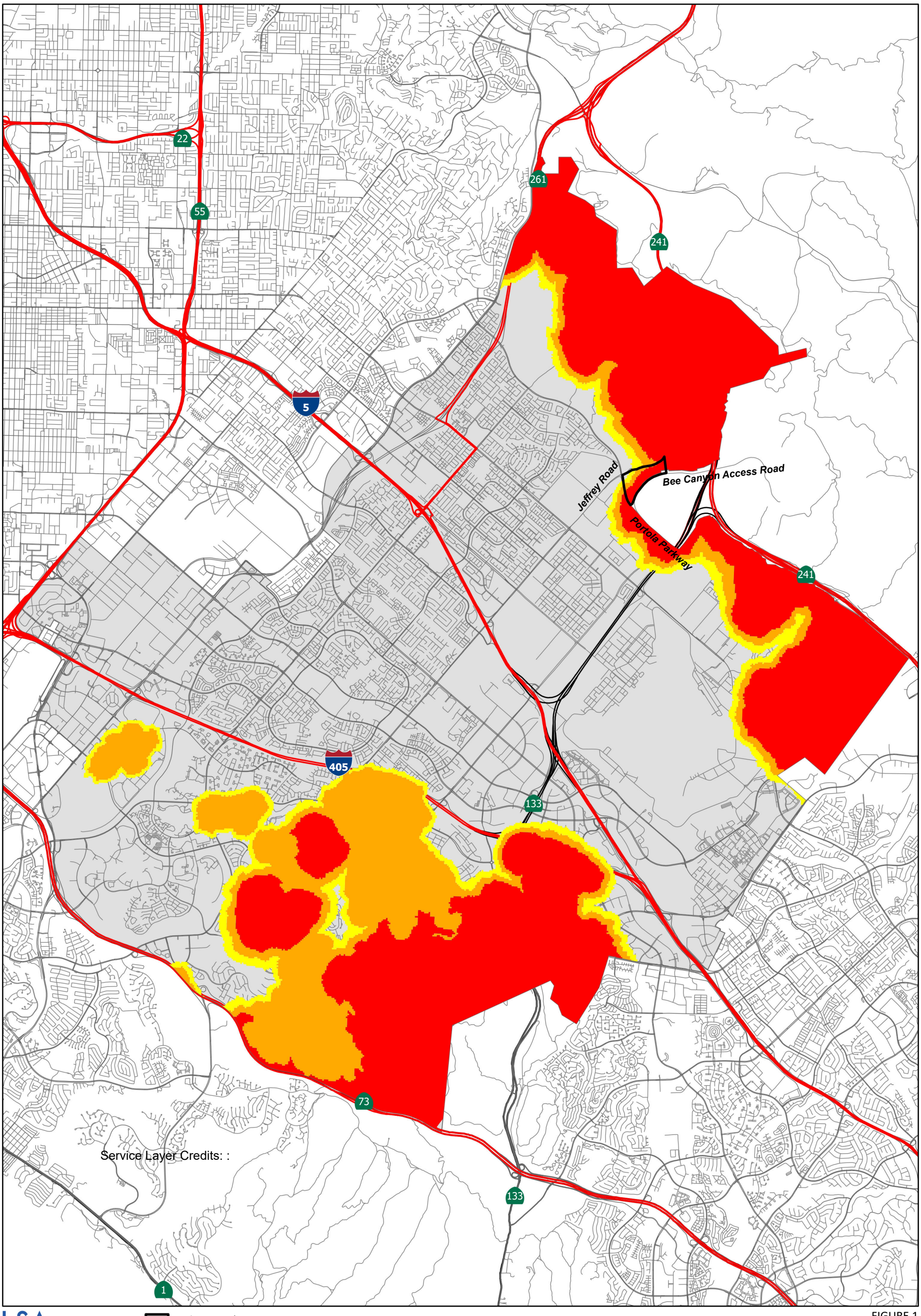
The purpose of this analysis is to document the travel conditions and to evaluate the time to safely evacuate individuals from the project site during potential fire events, considering factors such as fire behavior, traffic conditions, and evacuation routes. In coordination with the City of Irvine's (City) Transportation, Emergency Management, and Traffic Management Center (TMC) staff, LSA has prepared this analysis with the goals and objectives set forth in the City's *2045 General Plan* (General Plan) *Safety Element* (2024a). In addition, this analysis is in alignment with the guidance from *Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act (CEQA)* (Office of the Attorney General 2022) and the *Draft Technical Advisory for Evacuation Planning* (Governor's Office of Land Use and Climate Innovation [formerly Governor's Office of Planning and Research] 2023).

INTRODUCTION

Background

The city is bordered by natural, undeveloped hillsides/mountains (e.g., Santa Ana Mountains) to the northeast and open spaces (e.g., San Joaquin Hills) to the southwest. As described in the City's General Plan *Safety Element* (2024a), wildfire is identified as one of the most significant hazards that the City would face due to the topographical features of the foothills of the Santa Ana Mountains and San Joaquin Hills. In addition, a majority of these natural, undeveloped areas is classified as Very High Fire Hazard Severity Zones (FHSZs) by the California Department of Forestry and Fire Protection (CAL FIRE), as shown in Figure 1.

The City has been impacted by several past wildfires that originated in the Santa Ana Mountains and San Joaquin Hills, as listed in Table A, below:



LSA

Project Location

City Boundary

Fire Severity and Hazard Zones

High

Moderate

Very High

N

0 2800 5600

FEET

SOURCE: California Department of Forestry and Fire Protection 2025.

P:\2025\20252294 Irvine Gateway Evacuation Plan\Graphic\GIS\Irvine Gateway Village\Irvine Gateway Village.aprx (5/20/2025)

FIGURE 1

Irvine Gateway Village
Evacuation Travel Time Analysis

Fire Hazard Severity Zones in Irvine

Table A: Historic Wildfires in the City of Irvine

Fire Name	Start Date	Size (acres)
Green River	1948	53,080
Paseo Grande	1967	51,077
Gypsum Fire	October 8, 1982	20,142
Loma Ridge	1984	1,435
Laguna Fire	October 26, 1993	14,338
Baker	October 12, 1997	6,320
Shady Canyon Fire	September 8, 2001	26
Santiago Fire	October 20, 2007	28,430
Fossil Fire	September 14, 2019	16
Silverado	October 25, 2020	12,469
Bond	December 2, 2020	6,681

Source: 2045 General Plan Safety Element (City of Irvine 2024a)

Irvine Gateway Village Project Description

Project Site

The project site is located north of Portola Parkway, east of Jeffrey Road, south of SR-241, and west of Bee Canyon Access Road. The project site is currently undeveloped.

Project Use

Per the latest project site plan (shown in Figure 2), the proposed project includes 1,135 residential units in total on a 105.4-acre vacant parcel. A 4.8-acre public park (South Park), located at the northwest corner of the project site, is included as a part of the proposed project. It should be noted that the *Comprehensive Traffic Study* prepared for the Irvine Gateway Village project analyzed 1,360 residential units. However, for purposes of this evacuation analysis, the number of units identified on the latest site plan (1,135 residential units) is used.

Project Access

Access to the project site will be provided via three full-access driveways (A, B, and C Streets) on Jeffrey Road and a right-in/right-out (RIRO) driveway (E Street) on Portola Parkway. A conceptual plan for the proposed project (including all access points) is provided in Figure 2. As shown in this figure, an internal driveway (D Street) provides internal connection for all driveways intersecting with Jeffrey Road or Portola Parkway. All of these access driveways are considered evacuation points in the event of a fire.

GATEWAY VILLAGE

DA		PRODUCT	UNIT	DENSITY (DU/AC)	AREA (AC)	Coverage
		MARKET RATE				
☑	2a	SFD 6 - 3-story Duplex (Altair)	98	20	4.8	36%
☑	2b	SFD 2 - 3-story Detached (Ebb Tide)	93	16	5.8	29%
☑	1a	SFD 5 - 6-pack cluster (Poppy)	43	10	4.2	32%
☑	1b	SFD 4 - 2-story Duplex (44x71)	52	11	4.6	35%
☑	3a	SFD 1 - 3-story Duplex w/ Tandem (Candlelight) + Micro	68	19	3.5	31%
☑	3b	SFD 5 - 6-pack cluster (Poppy)	55	9	6.0	29%
☑	3d	SFD 3 - 3-story Duplex (D-South)	90	18	5.0	37%
☑	3e	SFD 4 - 2-story Duplex (44x71)	48	11	4.4	34%
☑	1c	SFD 2 - 3-story Detached (Ebb Tide)	49	16	3.1	29%
☑	1d	SFD 6 - 3-story Duplex (Altair)	82	19	4.3	34%
☑	1e	SFD 1 - 3-story Duplex w/ Tandem (Candlelight) + Micro	81	17	4.7	26%
☑	2c	SFD 3 - 3-story Duplex (D-South)	92	17	5.4	35%
			851	15	55.8	33%
		AFFORDABLE				
☑	2d	3-Story Affordable Apartments	207	37	5.5	
☑	3c	3-Story Affordable Apartments	77	27	2.9	
		SUB-TOTAL	284	34	8.4	
		GRAND TOTAL	**1,135**	**18**	**64.2**	

	UNIT
Apartments	284
SFD 1 - 3-story Duplex w/ Tandem (Candlelight) + Micro	149
SFD 2 - 3-story Detached (Ebb Tide)	142
SFD 3 - 3-story Duplex (D-South)	182
SFD 4 - 2-story Duplex (44x71)	100
SFD 5 - 6-pack cluster (Poppy)	98
SFD 6 - 3-story Duplex (Altair)	180
	1,135

Market Rate	75%	851
Apartments	25%	284
		1,135

Total Unit	1,135	du
Gross Area	80.22	ac
Gross Density	14.15	du/ac

DA	USES	AREA (AC)
1g	Rec. Area	1.4
1f	Linear Park	0.4
	TOTAL	1.8

	CITRUS	OVERALL %	MICRO	OVERALL %
		927		851
P1	24	2.6%	20	2.4%
P2	24	2.6%	22	2.6%
P3	24	2.6%	23	2.7%
	72		65	

LSA

FIGURE 2

N

0 160 320

FEET

SOURCE: ktgy (May 30, 2025)

Irvine Gateway Village
Evacuation Travel Time Analysis
Conceptual Site Plan

P:\2025\20252294 Irvine Gateway Evacuation Plan\Site Plan\Site_Plan.ai (07/28/2025)

Existing Roadway

Two key existing roadways adjacent to the proposed project site are:

- **Jeffrey Road:** Jeffrey Road is a north-south roadway west of the project site. Direct project access via three full-access driveways (A, B, and C Streets) is provided on Jeffrey Road. Jeffrey Road south of Portola Parkway is a six-lane Major Highway with a posted speed limit of 55 miles per hour (mph) between Encore and Portola Parkway. Jeffrey Road north of Portola Parkway, as recently constructed, is a four-lane Primary roadway that terminates near C Street (approximately 3,100 feet north of Portola Parkway). On-street parking is prohibited on both sides of this roadway.

- **Portola Parkway:** Portola Parkway is an east-west roadway south of the project site. Direct project access via a RIRO driveway (E Street) is provided on Portola Parkway. It is a six-lane Major Highway west of Jeffrey Road and a four-lane Primary Highway east of Jeffrey Road. The posted speed limit is 55 mph. On-street parking is prohibited on both sides of this roadway.

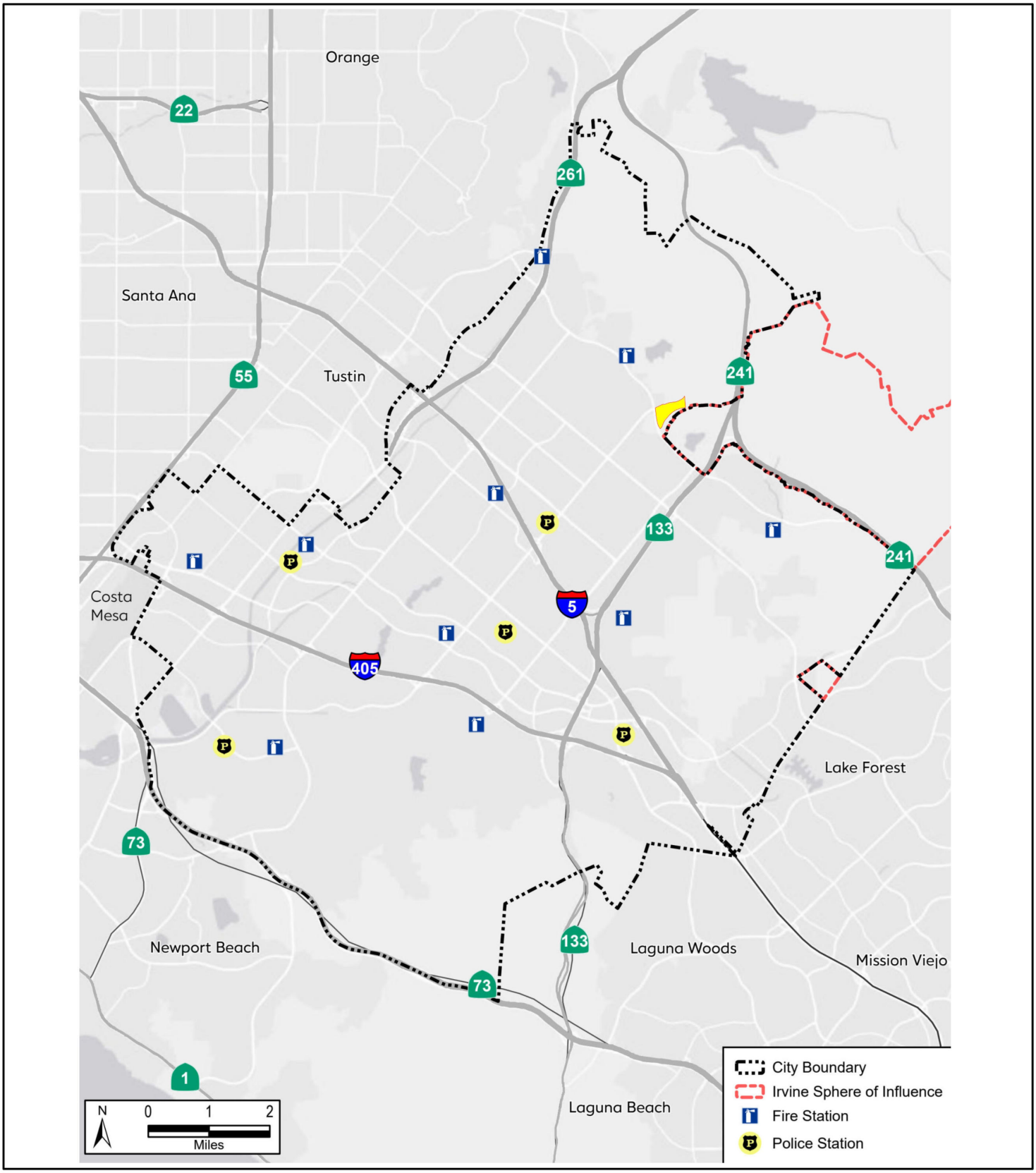
Existing Police and Fire Stations

According to the City's *Program Environmental Impact Report* for the General Plan (2024b), the Irvine Police Department and the Orange County Fire Authority (OCFA) are the two main civic agencies responding to safety hazards. However, OCFA is the primary agency for fire prevention and response services within Irvine. OCFA has established a target response time of 8 minutes 30 seconds from phone pickup to arrival for 90 percent of calls for first-in engines to arrive on-scene to medical aids and/or fires, and first-in truck companies should arrive on-scene to fires within 11 minutes 30 seconds, 90 percent of the time.

Figure 3 illustrates the existing police and fire stations throughout Irvine. As shown in this figure, the closest fire station to the project site is OCFA Fire Station 55, which is approximately 1 mile west of the project site on Portola Parkway. The second closest fire station to the project site is OCFA Fire Station 27, which is approximately 3 miles east of the project site on Portola Springs. Based on the proximity of the fire stations and the speed limits on the connecting roads, fire dispatch teams should be able to reach the project site within the 5-minute target travel time. In addition, the closest police station/patrol team to the project site is in the northwest corner of Jeffrey Road/ Roosevelt, approximately 2.5 miles south of the project site.

Existing Shelter Locations

As confirmed with the Irvine Police Department, 14 community centers and 6 high schools within Irvine would be open to the public and serve as emergency shelters in the event of an evacuation. Figure 4 shows the location of the temporary shelters within the city.



LSA

LEGEND

Project Site

FIGURE 3

0 1 2

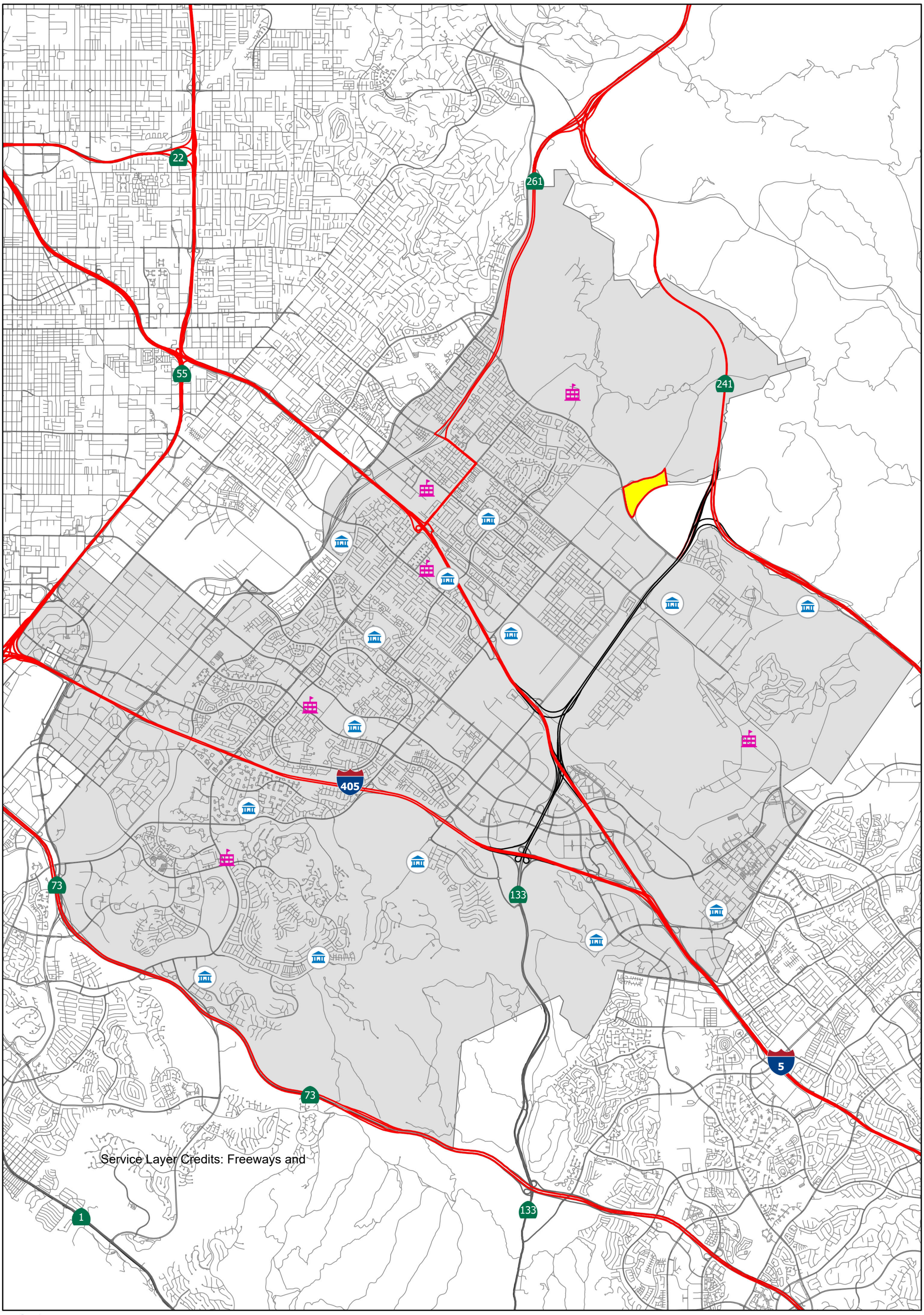
MILES

SOURCE: 2045 Irvine General Plan (2024)

P:\2025\20252294 Irvine Gateway Evacuation Plan\Graphic\Figure 4 - Police and Fire Stations.ai (4/30/25)

Irvine Gateway Village
Evacuation Travel Time Analysis

Police and Fire Stations in Irvine



LSA

LEGEND

- Community Center
- High School
- Project Location
- City Boundary

0 2800 5600
FEET

SOURCE: TIGER Road Map (2021)

FIGURE 4

Irvine Gateway Village
Evacuation Travel Time Analysis
Temporary Shelters in Irvine

P:\2025\20252294 Irvine Gateway Evacuation Plan\Graphic\GIS\Irvine Gateway Village\Irvine Gateway Village.aprx (5/14/2025)

EVACUATION ANALYSIS

Fire Study Scenario

Firesafe Planning Solution has conducted the fire modeling for the proposed project. Multiple potential fire scenarios were analyzed, which considered different fire source locations and weather conditions (e.g., wind direction and speed). The fire modeling results are provided in Attachment B (Gateway Fire Behavior/Egress Analysis). The key fire modeling results are summarized below:

- All potential fire scenarios indicate that a fire is not expected to spread directly through the project site or the adjacent roadways (i.e., Jeffrey Road and Portola Parkway).
- None of the access points would be impacted by direct flame impingement, radiant heat, or converted heat to a degree that would make evacuation points unusable at the time of the fire.
- Embers and smoke would be present at the evacuation points during the fire progression but would not impede the evacuation.

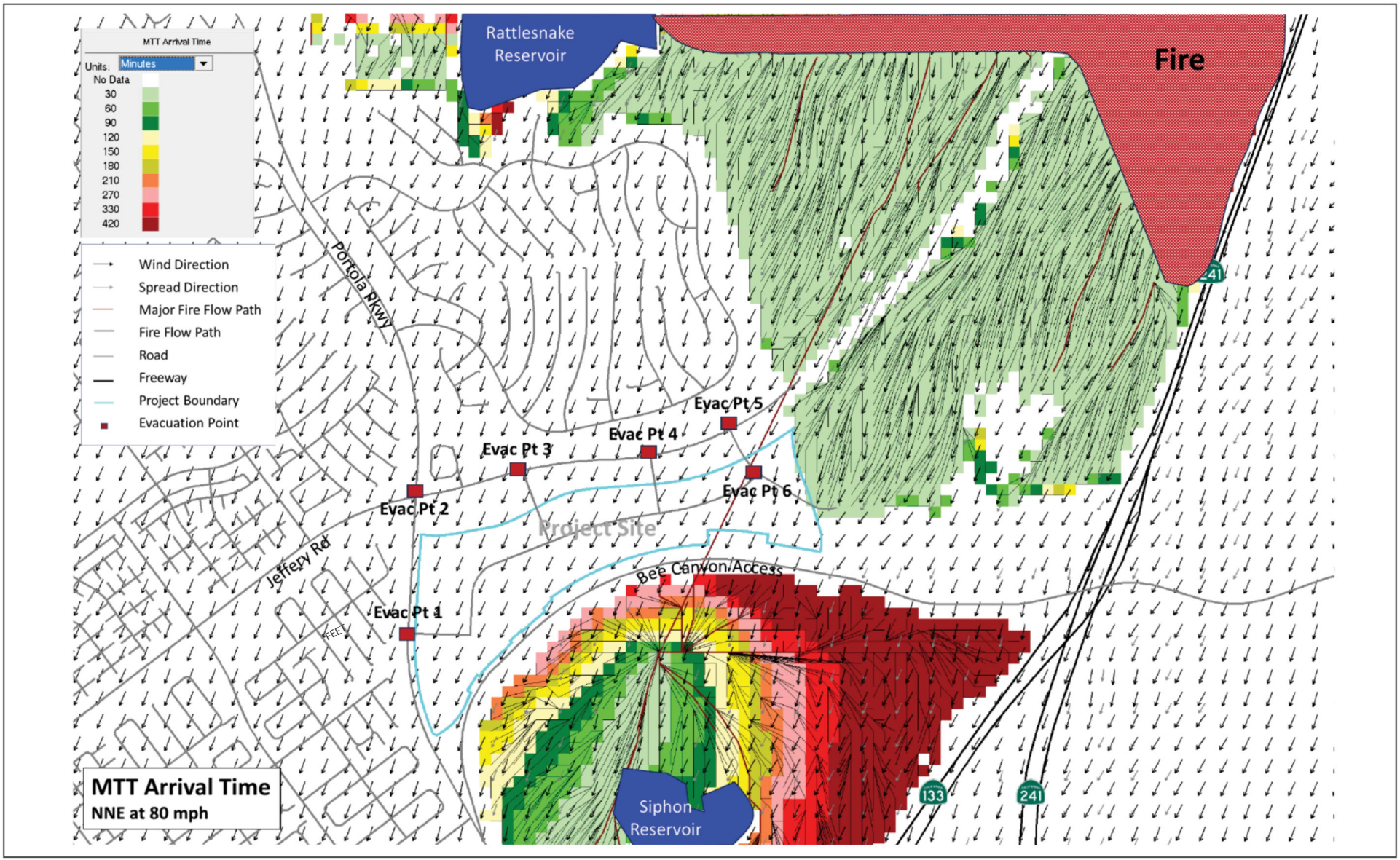
The worst-case fire scenario that would require an evacuation of the project site, as shown in Figure 5, was determined based on the minimum travel time (MTT) fire spread arrival time to the project site boundary. In the worst-case fire scenario, the fire origin with an 80 mph north-northeast (NNE) wind is located northwest of the project site within the open space. Figure 5 indicates that the MMT arrival time to the project site boundary in the worst-case fire scenario is approximately 30 minutes. As mentioned before, fire is not expected to "burn through" the project site, and all the access points (A, B, C, and E Streets and the intersection of Jeffrey Road/Portola Parkway) of the project site would remain accessible during the fire progression. An evacuation would only be required due to the impact of embers and smoke. In addition, Figure 5 shows that the fire flame/heat is anticipated to be spread to the north side of Portola Parkway (east of Bee Canyon Access Road) in the worst-case fire scenario.

Evacuation Plan

Evacuation Area

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), and available evacuation roadways, in proximity to Evacuation Zone 6A, are Jeffrey Road, Portola Parkway, Sand Canyon Avenue, SR-241, and SR-133.

A potential evacuation area under the worst-case fire scenario was identified for the purpose of this analysis. In this potential evacuation area, the existing uses and the proposed project share similar potential evacuation routes. Figure 6 illustrates the potential evacuation area and routes and emergency egress points.



LSA

FIGURE 5

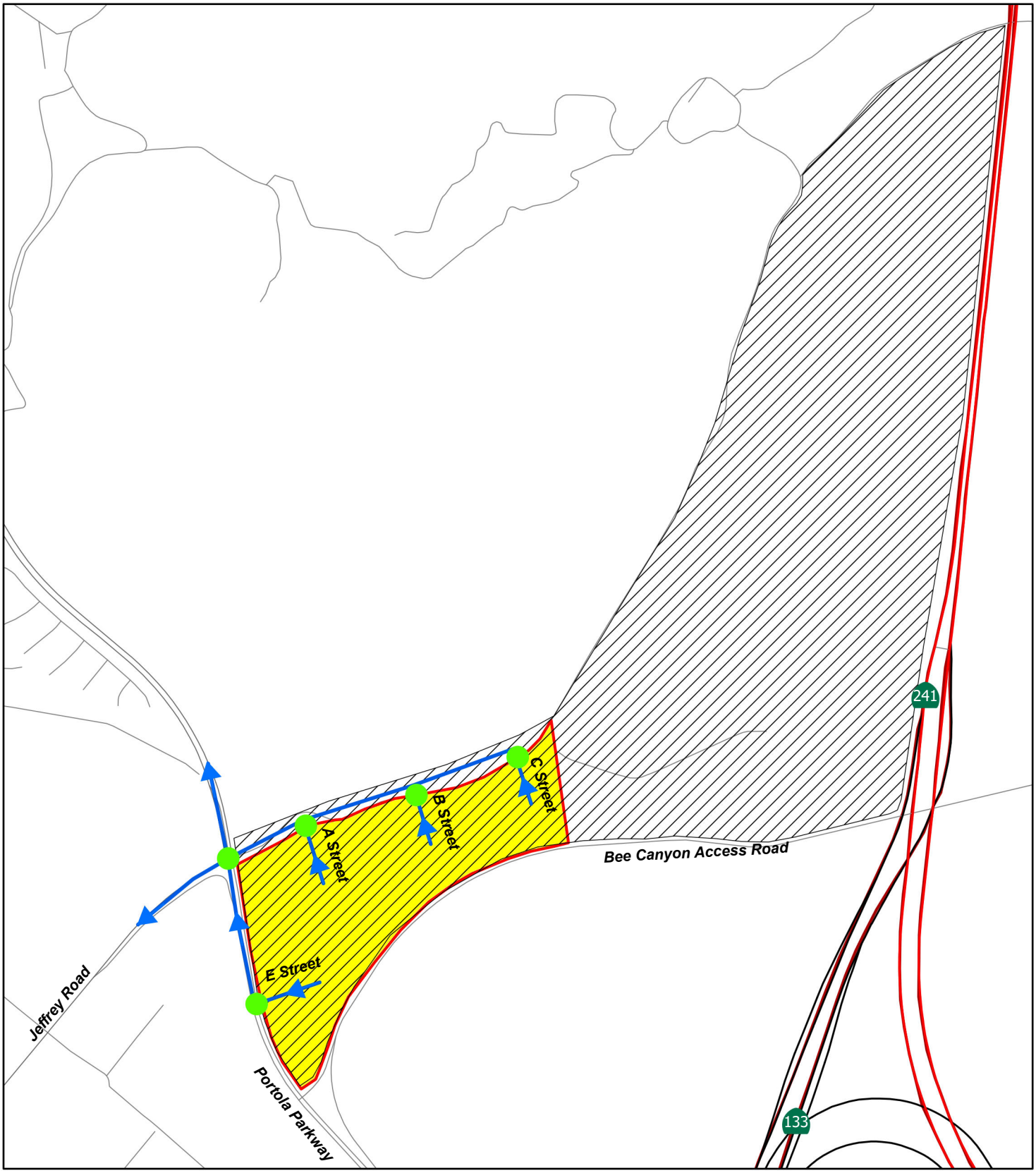
N

0 0.25 0.5
MILES

SOURCE: Firesafe Planning Solution (2025)

Irvine Gateway Village
Evacuation Travel Time Analysis
Worst-case Fire Scenario

P:\2025\20252294 Irvine Gateway Evacuation Plan\Graphic\Figure 5 - Worst-case Fire Scenario.ai (05/14/2025)



LSA

FIGURE 6

LEGEND

- Evacuation Area
- Project Location
- Evacuation Route
- Evacuation Egress Point

N

0 583.33 1166.67
FEET

Irvine Gateway Village
Evacuation Travel Time Analysis
Potential Evacuation Area and Routes

SOURCE: TIGER Road Map (2021)

P:\2025\20252294 Irvine Gateway Evacuation Plan\Graphic\GIS\Irvine Gateway Village\Irvine Gateway Village.aprx (5/14/2025)

The land uses within the potential evacuation area are summarized below:

- **Existing Uses:**
  - Irvine Ranch Conservancy Native Seed Farm
  - Nakae & Associates, Inc.
  - Jimni Systems, Inc.; Stice Co, Inc.
  - SCE Las Lomas Substation

- **Planned Uses (the proposed project):**
  - 1,135 residential units
  - 4.8-acre South Park

Evacuation Egress Points

The existing uses identified above are accessed via C Street. These uses and the proposed park use (South Park) would primarily utilize C Street as the emergency egress point to Jeffrey Road. For the proposed residential use (1,135 dwelling units), three full-access driveways (A, B, and C Streets) on Jeffrey Road and a RIRO driveway (E Street) on Portola Parkway would serve as the emergency egress points. The locations of all the evacuation egress points have been highlighted in Figure 6.

Evacuation Route

As shown in Figure 6, two direct evacuation routes (Jeffrey Road and Portola Parkway) are available for the potential evacuation area. In the event of a fire, all of 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 (SB [through or right-turn]) flow at Jeffrey Road/Portola Parkway; the evacuation traffic that leaves the area via RIRO E Street on Portola Parkway would contribute to the westbound (WB [left-turn or through]) 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 direction 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.

In addition, certain turning movements at Jeffrey Road/Portola Parkway, listed below, would likely be temporally prohibited for traffic, except for emergency vehicles. This could prevent vehicles from accidentally traveling to unsafe and impacted areas.

- Northbound (NB) left, through, and right turn on Jeffrey Road
- SB left turn on Jeffrey Road
- WB right turn on Portola Parkway
- Eastbound (EB) left turn and through on Portola Parkway

Evacuation Traffic Control

In the fire event, the City's TMC could adjust the traffic signals (including the signal at Jeffrey Road/Portola Parkway) in real time based on the actual traffic flow. The TMC receives direction from the Irvine Police Department to adjust the signal timing in these emergency conditions. This dynamic response can assist evacuees in moving away from the fire area efficiently and safely. In addition, the City's emergency personnel could be placed at intersections to manually control and facilitate the evacuating traffic flow, if needed. Furthermore, ambient traffic could be temporarily prohibited to approach Jeffrey Road/Portola Parkway from the west and east directions on Portola Parkway and from the south direction on Jeffrey Road in the event of a fire.

Adjacent Communities

In a fire event, other residential communities, adjacent to the Gateway project and evacuation area, could also be at significant risk and would likely to be under a warning or evacuation order. Those communities include Orchard Hills Summit, Northwood Pointe, Eastwood Village, and Stonegate. However, the simultaneous evacuation of these adjacent communities is less likely to add significant delay to the overall evacuation efficiency of the Gateway evacuation area as described below:

- **Orchard Hills Summit**. This residential neighborhood has two egress points (Wonderview and Golden Sky) on Portola Parkway west of Jeffrey Road. In the event of a fire, the residents would be evacuated via those two egress points and then travel east or west on Portola Parkway. In the worst-case fire scenario, Orchard Hills Summit evacuees are more likely to travel to the west on Portola Parkway, toward Culver Drive because: 1) traveling west on Portola Parkway is the most logical and safest direction as it takes evacuees away from the fire danger, and 2) it is also easier and faster to make a right turn and travel west on Portola Parkway, as compared to making a left turn, crossing three lanes, and traveling east on Portola Parkway toward Jeffrey Road, especially in a high-stress emergency. Therefore, only a small portion of Orchard Hills Summit residents would be expected to travel east on Portola Parkway toward Jeffrey Road and would not add a significant delay to the Gateway evacuation efficiency/time.
- **Northwood Pointe**. This residential neighborhood has three egress points, namely Yale Avenue on Portola Parkway, Meadowood on Culver Drive, and Yale Avenue connecting to Irvine Boulevard. In the event of a fire, the residents would likely be evacuated via those three egress points. Evacuees who leave the community via Meadowood on Culver Drive and Yale Avenue connecting to Irvine Boulevard would not contribute any delays to the Gateway evacuation area. Evacuees who leave the community via Yale Avenue on Portola Parkway would likely travel west on Portola Parkway because; 1) Yale Avenue on Portola Parkway is located close to Culver Drive, and 2) traveling west on Portola Parkway is the most logical and safest direction as it takes evacuees away from the fire danger. Therefore, Northwood Pointe is not expected to add any delays to the Gateway evacuation efficiency/time.
- **Eastwood Village**. This residential neighborhood has three egress points (Alpine, Encore, and Trailhead) on Jeffrey Road (south of Portola Parkway) and one egress point (Parkwood) on Irvine Boulevard. In the event of a fire, Eastwood Village evacuees would likely travel on Irvine Boulevard or south on Jeffrey Road to stay away from the fire danger. Therefore, Eastwood Village is not expected to add any delays to the Gateway evacuation efficiency/time.

- **Stonegate**. This residential neighborhood has three egress points, namely Encore on Jeffrey Road, Groveland on Irvine Boulevard, and Spring Meadow on San Canyon Avenue. It should be noted that, in the worst-case fire scenario, the egress point (Paragon) on Portola Parkway might be closed since the fire flame/heat is expected to extend to the north side of Portola Parkway (east of Bee Canyon Access Road). In the event of a fire, Stonegate evacuees would likely travel on Irvine Boulevard or south on Jeffrey Road/San Canyon Avenue to stay away from the fire danger. Therefore, Stonegate is not expected to add any delays to the Gateway evacuation efficiency/time.

Evacuation Area Traffic Volumes

The first step in the calculation of the evacuation travel time was to estimate the potential traffic volume requiring evacuation. As previously described, a seed farm and other small businesses exist in the potential evacuation area. The Irvine Gateway Village project (1,135 residential units and a 4.8-acre public park) is proposed to be built in the potential evacuation area. In order to estimate evacuating vehicles generated by both existing uses and the proposed project, the following methodology and assumptions were applied:

- **Existing Uses.** Per the project's *Comprehensive Traffic Study* (LSA 2025), the existing uses (including a seed farm and other small businesses) have 29 a.m. and 55 p.m. peak-hour outbound vehicles. For the purpose of this analysis, it was conservatively assumed that the existing uses would result in approximately 55 evacuating vehicles.

- **Proposed Residential Use.** A residential-unit-to-vehicle conversion factor was developed to estimate evacuating vehicles. The Orange County Traffic Analysis Model (OCTAM) was reviewed, which has 2.35 vehicle ownership per household and 3.40 population per household for the evacuation area. It should be noted that the evacuation area does not have any existing residential uses. 2.35 vehicle ownership per household and 3.40 population per household represent the average values of existing residential uses surrounding the evacuation area, which are provided in Attachment C. To be conservative, a conversion factor of 2.50 vehicles per residential unit was used for the proposed project, with no occupancy adjustments. Therefore, the 1,135 proposed residential units would result in approximately 2,838 evacuating vehicles from Irvine Gateway Village.

- **Proposed Park Use.** The most conservative way to estimate evacuating vehicles for public parks is based on the daily volumes per trip generation. Per the project's *Comprehensive Traffic Study*, a 4.8-acre public park (South Park) would generate four daily trips. Therefore, there would be approximately four evacuating vehicles from South Park.

In total, there would be approximately 2,897 evacuating vehicles from the potential evacuation area. As previously described, evacuees could leave the evacuation area via A, B, and C Streets on Jeffrey Road and RIRO E Street on Portola Parkway and then head either south on Jeffrey Road or west on Portola Parkway during the worst-case fire scenario. In the event of a fire, it is assumed that the project residents will choose the closest egress driveway to leave the site. Based on the latest site plan (shown in Figure 2), approximately 39 percent of the residents would evacuate via E Street on Portola Parkway and approximately 61 percent of the residents would evacuate via A, B, and C

Streets on Jeffrey Road. In addition, based on the select zone outputs in the project's *Comprehensive Traffic Study*, the majority (approximately 80 percent) of the outbound trips would travel south on Jeffrey Road and the rest (approximately 20 percent) of the outbound trips would travel west on Portola Parkway, considering the segment of Portola Parkway (east of Bee Canyon Access Road) would be unsafe in the worst-case fire scenario. The estimated number of cars for each evacuation turning movement at Jeffrey Road/Portola Parkway is described below:

- SB right turn on Jeffrey Road: 357 evacuation cars
- SB through on Jeffrey Road: 1,430 evacuation cars
- WB left turn on Portola Parkway: 888 evacuation cars
- WB through on Portola Parkway: 222 evacuation cars

Evacuation Travel Time Analysis

In order 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* (March 21, 2023), a roadway lane in the City has a saturation flow rate of 1,700 vehicles per hour per lane (veh/h/ln). According to the *Highway Capacity Manual* (HCM), 7th Edition, the saturation flow rate is defined as the flow rate per lane at which vehicles can 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 available.

As previously stated, in the event of a fire, NB (left, through, and right turn) on Jeffrey Road, SB left turn on Jeffrey Road, WB right turn on Portola Parkway, and EB left turn and through on Portola Parkway would be restricted due to safety concerns. Only SB through and right turn on Jeffrey Road and WB left turn and through on Portola Parkway is allowed for the potential evacuation area and EB right turn is 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 is overridden and a two-phase operation is expected to provide:

1. SB through and right turns on Jeffrey Road
2. WB left turn and through movements and EB 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 percent for each phase). Table B is a summary of the evacuation travel time calculations for each evacuation turning movement at Jeffrey Road/Portola Parkway that is available for the evacuation area. As this table indicates, the three SB through lanes at Jeffrey Road/Portola Parkway would have a capacity of 2,550 veh/h and it is estimated to take approximately 0.56 hours or 34 minutes to evacuate 1,430 vehicles; the one SB de-facto right-turn lane at Jeffrey Road/Portola Parkway would have a capacity of 850 veh/h and it is estimated to take approximately 0.42 hours or 26 minutes to evacuate 357 vehicles; the three WB through lanes at Jeffrey Road/Portola Parkway would have a capacity of 2,550 veh/h and it is estimated to take approximately 0.09 hours or 6

minutes to evacuate 222 vehicles; the two WB left-turn lanes at Jeffrey Road/Portola Parkway would have a capacity of 1,700 veh/h and it is estimated to take approximately 0.52 hours or 32 minutes to evacuate 888 vehicles. Therefore, this analysis conservatively concludes that the evacuation time for the potential evacuation area (including both existing uses and the proposed project) is 0.56 hours or 34 minutes in the worst-case fire scenario under No Jeffrey Road Extension conditions.

Table B: Evacuation Travel Time Analysis at Jeffrey Road/Portola Parkway

	SB Through	SB Right Turn	WB Through	WB Left Turn
Green Time Percentage	50%	50%	50%	50%
Saturation Flow Rate (veh/h/ln)[1]	1,700	1,700	1,700	1,700
Number of Through Lanes	3	1	3	2
Roadway Capacity (veh/h)[2]	2,550	850	2,550	1,700
Evacuation Vehicles	1,430	357	222	888
Evacuation Travel Time	0.56 hours 34 minutes	0.42 hours 26 minutes	0.09 hours 6 minutes	0.52 hours 32 minutes

Source: Compiled by LSA (2025).
[1] Per the City of Irvine Traffic Study Guidelines (March 21, 2023).
[2] Capacity = Green Time Percentage * Saturation Flow Rate * Number of Lanes.
V/C = volume-to-capacity
veh/h = vehicles per hour
veh/h/ln = vehicles per hour per lane
SB = southbound
WB = westbound

Based on this conservative 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 or 34 minutes because of the following reasonable considerations:

- The number of evacuation cars and travel time were estimated based on the conservative conversion factor of 2.50 vehicles per residential unit. However, OCTAM shows an average of 2.35 vehicle ownership per household for existing residential communities surrounding the evacuation area.
- No occupancy adjustments were applied in this analysis and the evacuation travel time was calculated assuming all residents are 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 TMC would adjust the traffic signals in real-time and emergency personnel could be placed at intersections to manually guide traffic during an evacuation, which helps traffic flow at Jeffrey Road/Portola Parkway and could potentially reduce evacuation time.

CONCLUSIONS

Based on the fire modeling outputs, the fire origin located northwest of the project site within the open space, with an 80 mph NNE 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.

Based on this evacuation travel time analysis, the most conservative evacuation time for the potential evacuation area (including both existing uses and the proposed project) is approximately 0.56 hours or 34 minutes in a worst-case fire scenario. However, the actual evacuation time is anticipated to be less, as the evacuation time calculation is based on the conservative vehicle ownership per household, 100 percent occupancy of all residential units, and the simultaneous departure of all evacuees. In addition, the City's TMC 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.

Attachments: A: References
B: Gateway Fire Behavior/Egress Analysis
C: OCTAM Vehicle Ownership

ATTACHMENT A

REFERENCES

City of Irvine. 2021. Citywide Evacuation Zone Map.

_____. 2023. *Traffic Study Guidelines.*

_____. 2024a. *2045 General Plan*.

_____. 2024b. *Program Environmental Impact Report* for the *2045 General Plan.* March.

Governor's Office of Land Use and Climate Innovation (formerly Governor's Office of Planning and Research). 2023. *Draft Technical Advisory for Evacuation Planning.*

Institute of Transportation Engineers (ITE). 2022. *Highway Capacity Manual, 7th Edition.*

LSA Associates, Inc. (LSA). 2025. *Comprehensive Traffic Study*.

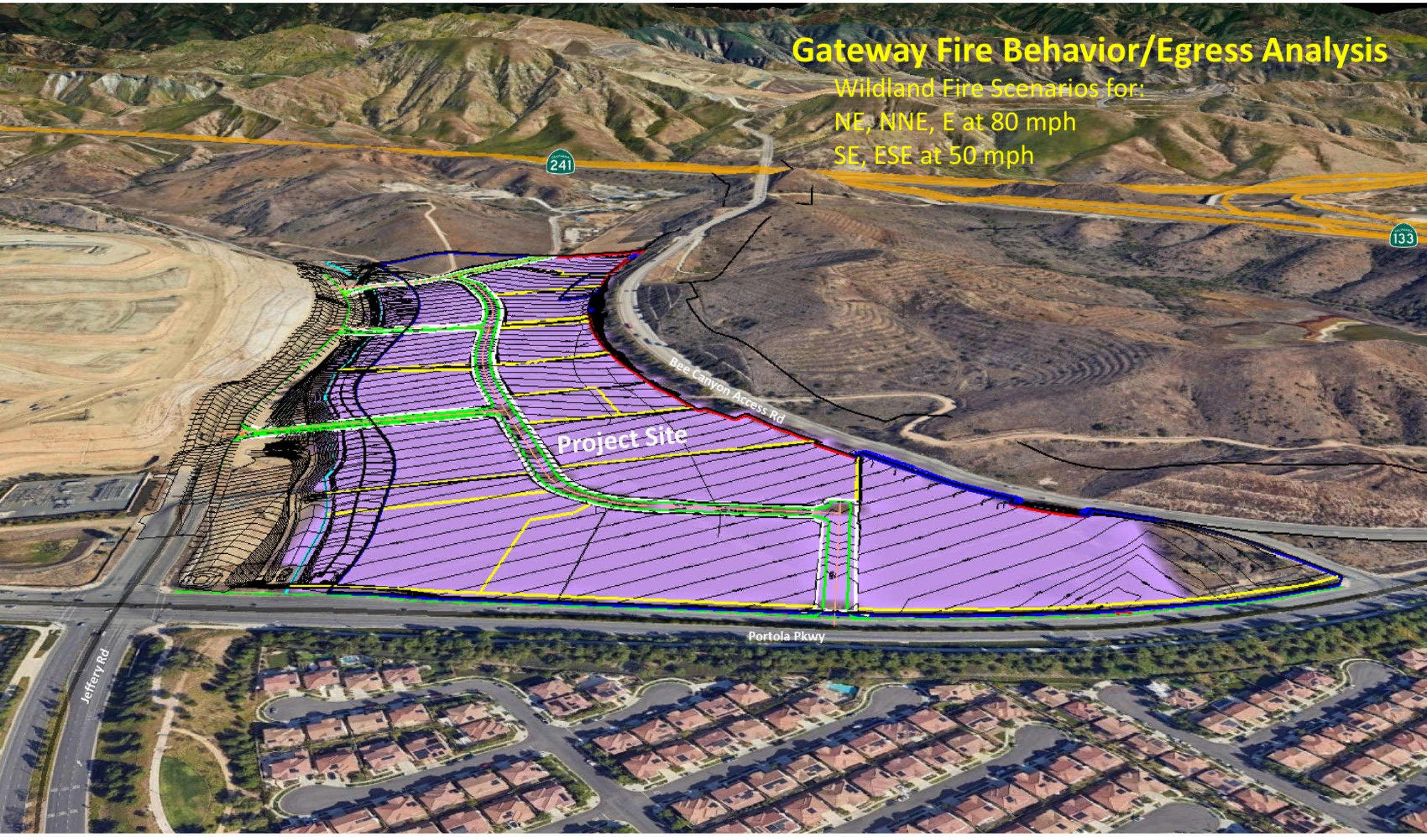
Office of the Attorney General. 2022. *Best Practices for Analyzing and Mitigating Wildfire Impacts of Development Projects Under the California Environmental Quality Act (CEQA).*

ATTACHMENT B

GATEWAY FIRE BEHAVIOR/EGRESS ANALYSIS

Gateway Fire Behavior/Egress Analysis

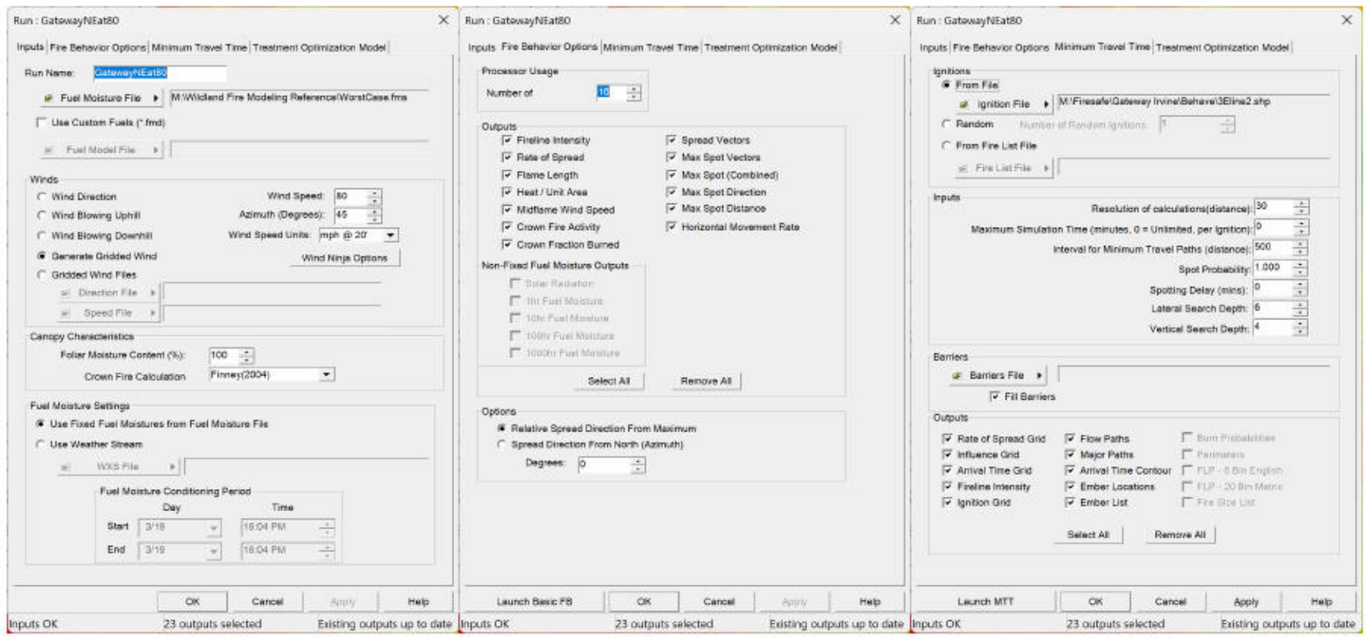
Wildland Fire Scenarios for:
NE, NNE, E at 80 mph
SE, ESE at 50 mph

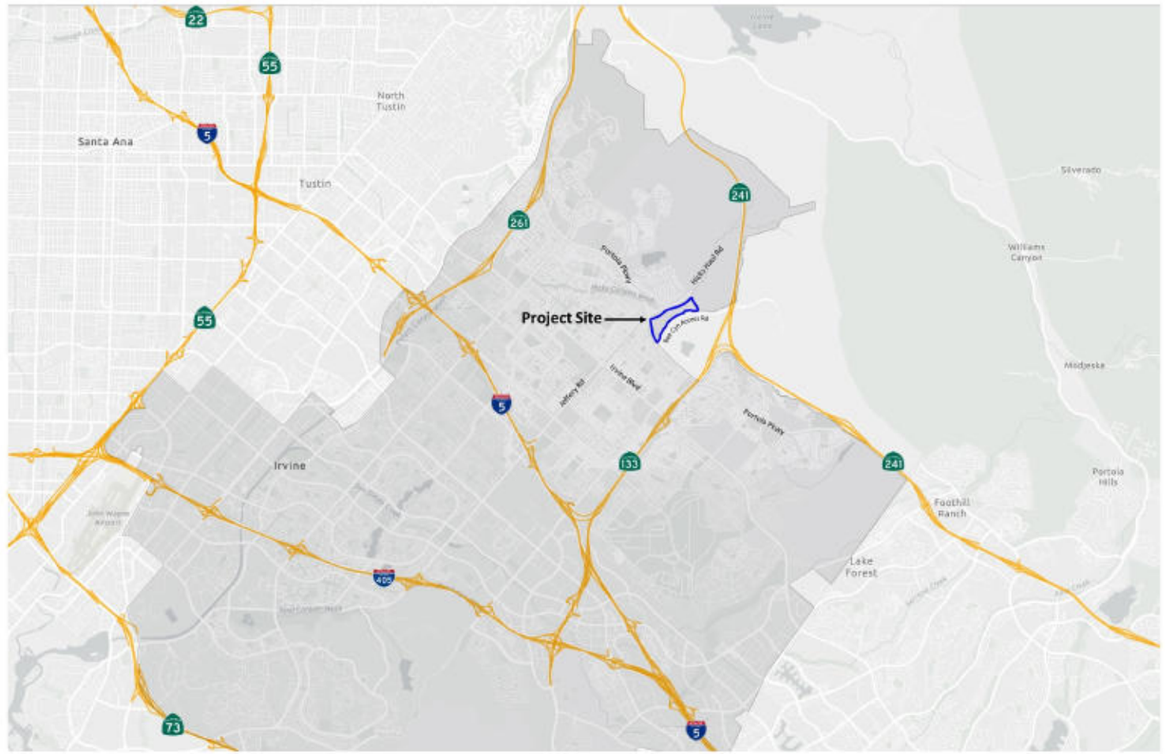


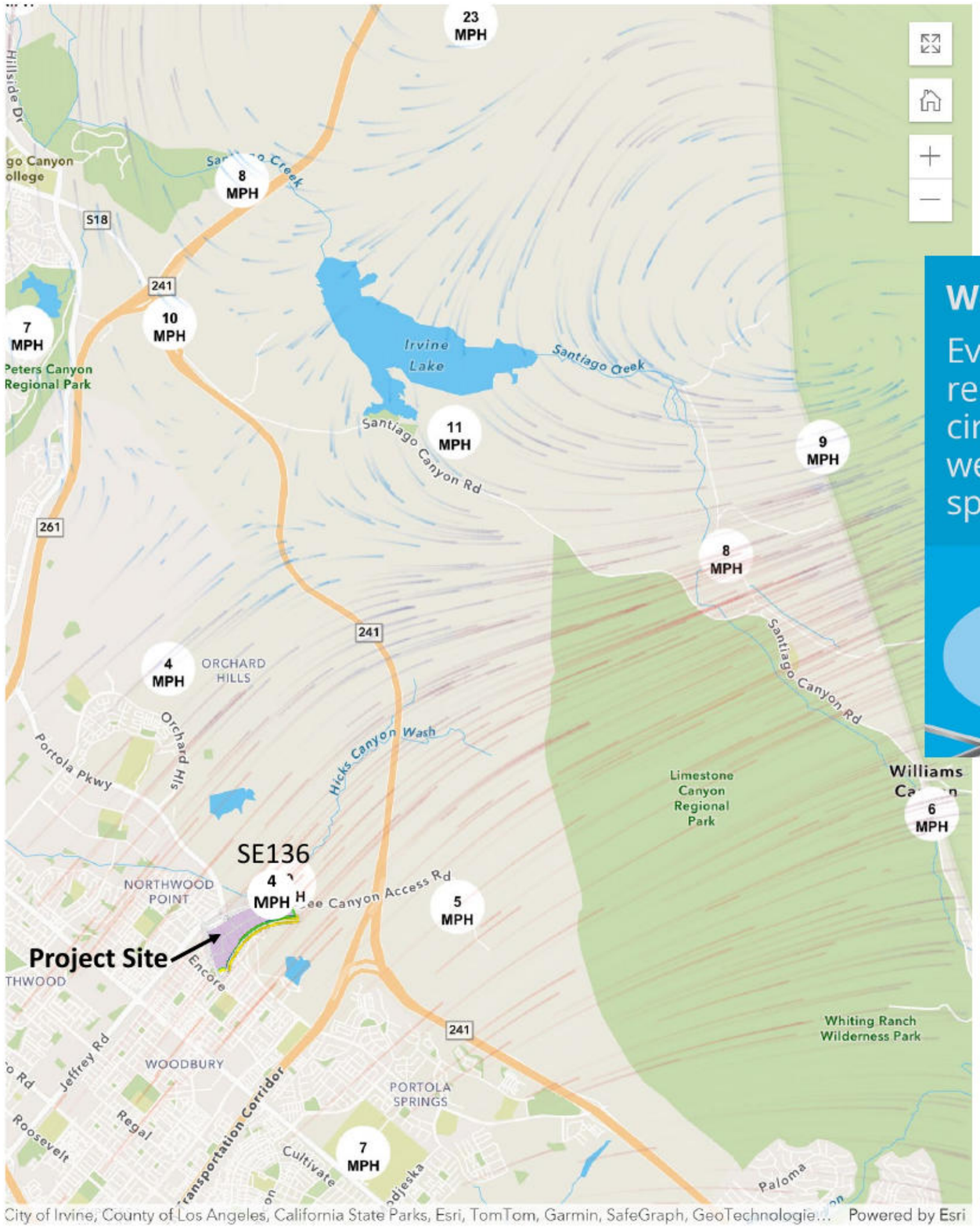
Gateway Village Modeling Assumptions

Modeling Assumptions:

1. Moisture Scenario will be 3, 4, 5, 30, 50 (extreme)
2. Wind will be assumed to be from:
   a) a. NE, NNE, E at 80 mph
   b) b. SE, ESE at 50 mph
3. 3. Fuel models to be used
   1. a. Landscape_LF2023_FBFM40_240_CONUS
   2. b. Only modifications is the to the development areas of the fuel layer
4. Within the Development area Community burn through is not expected.
5. Fire scenario will be with sustained winds (no diurnal effect)
6. No fuel conditioning is used with worst-case moisture scenario
7. Foliar Moistures are assumed to be 100
8. Crown Fire Calculation Method is set to Finney (2004)
9. Spotting Probability is set to 100%
10. Spotting Delay is set to 0
11. Fuels have not been adjusted to any disease or drought impacts
12. Slopes and Aspects have not been adjusted in the development areas.



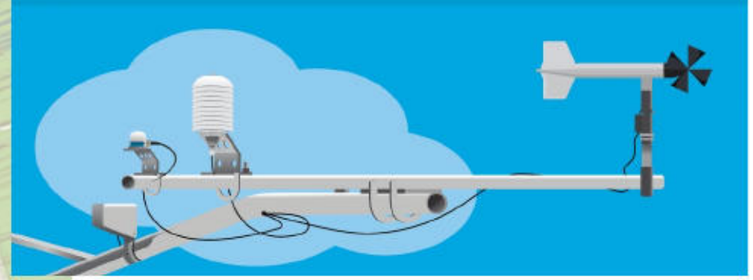




SCE has over 1,700 permanent weather station which are placed on power poles and other SCE structures over the service area in the wildland areas to monitor and assist in the modeling of future weather behavior in order to make informed decisions regarding the portions of the electrical distribution system under SCE control.

Weather:

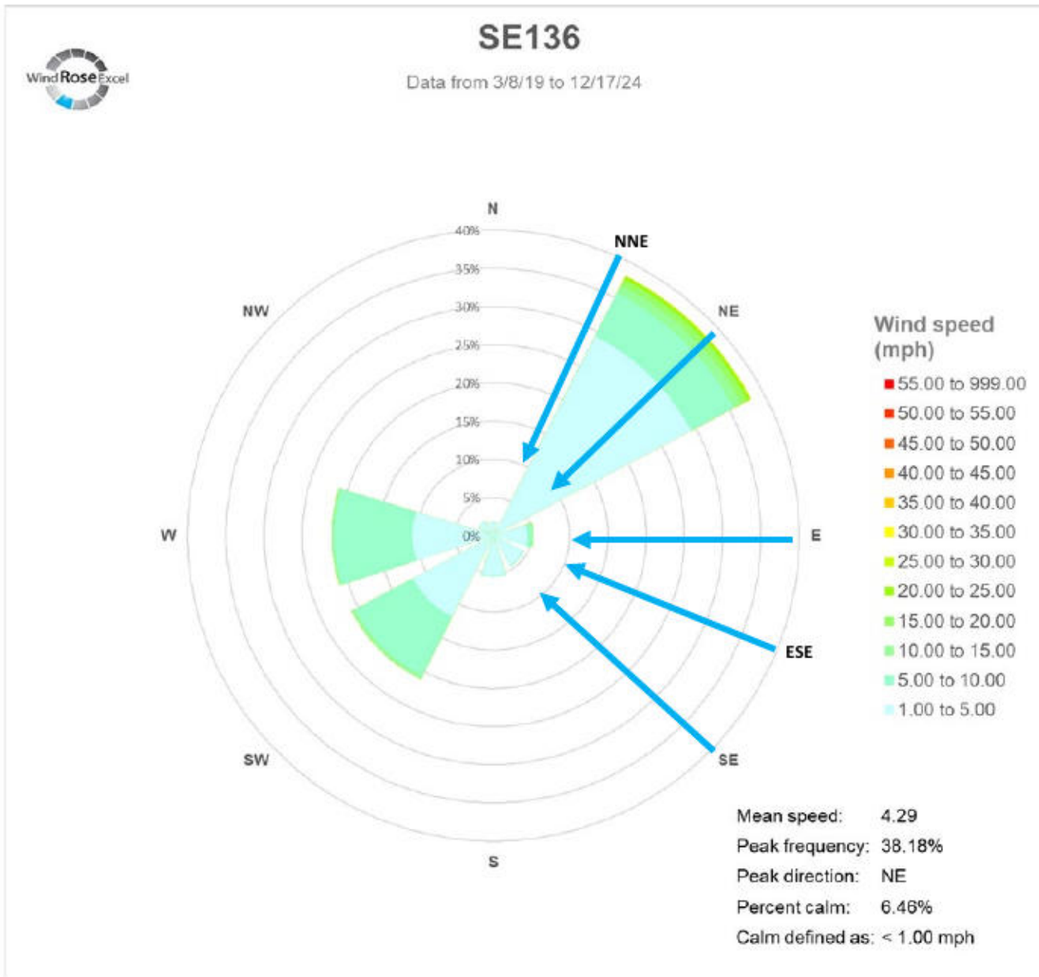
Every 10 minutes, weather station readings are updated for each circuit. Meteorologists identify weather trends that could slow or speed up decision-making.



Data from these site is available for a historical analysis of temperature, wind (direction, speed and gusts), relative humidity and cardinal direction. Many of these sites have now been in service for over 5 years and provide good data on specific locations which did not have data previously.

The example to the left shows the complexity of winds around the Irvine Lake area during a period when the onshore flow and offshore flow are pushing against one another. Wind at the project site is not subject to these influences to the same degree.

Project Site Weather Data



Onshore and Offshore flow are obvious in the data and as indicated by the wind rose above.

Maximum Sustained Wind is 37 mph
Maximum Wind Gust is 59 mph

SE136	Temp	RH	Wind	Direction	Gust
Min	35	4	0	0	0
Max	108	100	37	360	59
Average	63	68	4	154	7
99th	88	99	17		27
1st	44	10	0		1

SE136 Greater than	Wind		Gust	
60	-	0%	-	0%
55	-	0%	4	0.001%
50	-	0%	11	0.004%
45	-	0%	72	0.02%
40	-	0%	249	0.1%
35	1	0.0003%	747	0.2%
30	31	0.01%	1,793	1%
25	323	0.1%	3,832	1%
20	1,342	0.4%	7,256	2%
15	4,104	1%	15,545	5%
10	10,405	3%	63,781	21%
5	90,240	30%	202,662	67%
0	302,730	99.7%	303,093	99.9%
Blank	260	0.1%	-	0%
zero	524	0.2%	421	0.1%
Total	303,514		303,514	

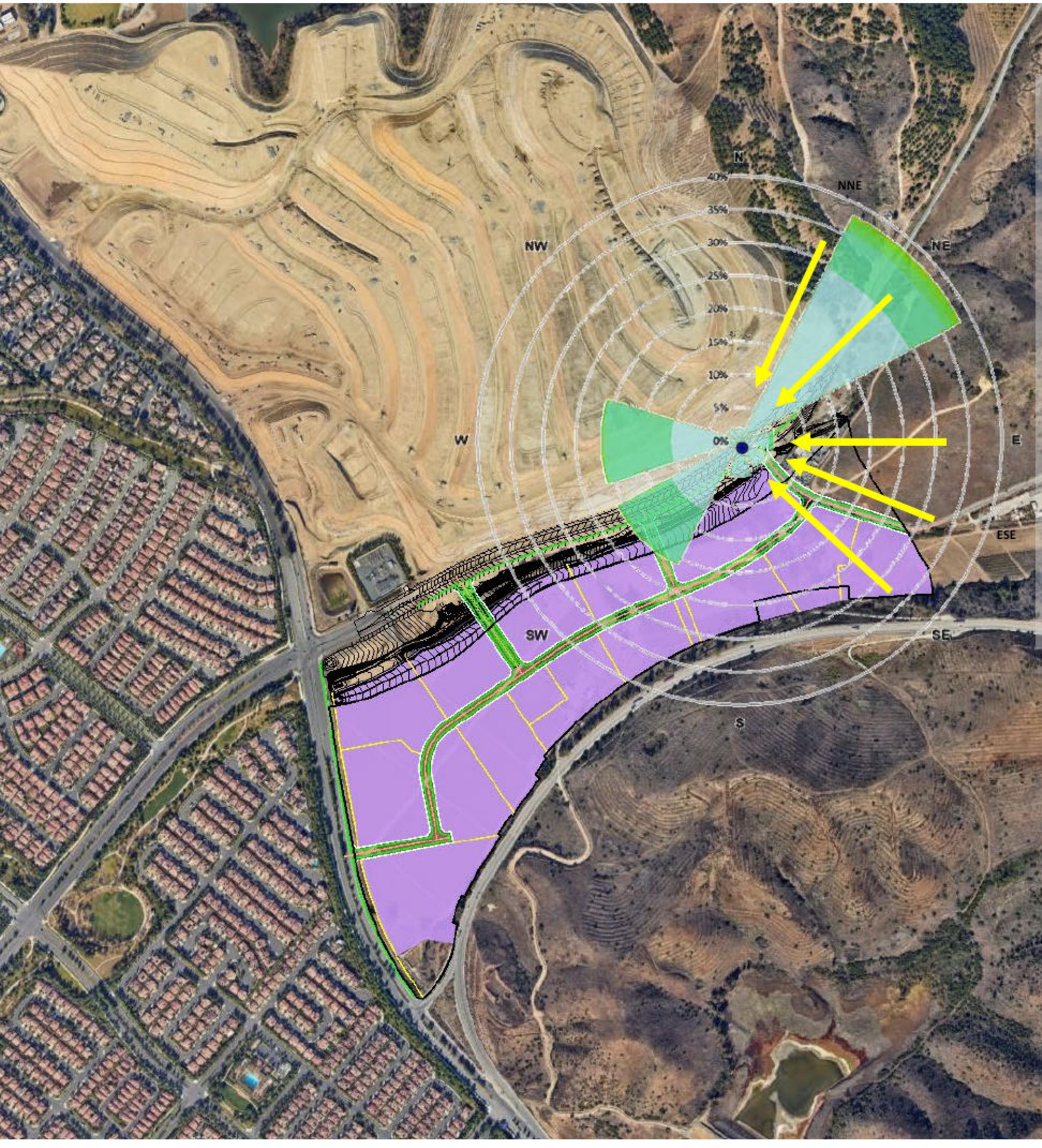
Wind Gusts over 55 mph only four times out of 303,514 observation points.

12/17/2024 End
3/8/2019 Begin

2,111 days
5.8 years

Data for 5.8 years

SE136		Wind Gust (mph)								
Cardinal	Count	Percent	<5	>5	>10	>20	>30	>40	>50	>60
N	2,243	0.7%	1,662	581	152	7	-	0	0	0
NNE	7,530	2.5%	5,030	2,500	560	126	10	0	0	0
NE	89,599	29.5%	37,286	52,313	4,018	2,181	599	100	9	0
ENE	25,249	8.3%	10,288	14,961	6,415	3,959	1,147	148	2	0
E	7,139	2.4%	3,683	3,456	751	95	14	1	0	0
ESE	8,155	2.7%	3,411	4,744	1,237	72	-	0	0	0
SE	7,996	2.6%	3,646	4,350	819	59	1	0	0	0
SSE	6,817	2.2%	3,588	3,229	479	14	-	0	0	0
S	7,574	2.5%	3,944	3,630	611	4	-	0	0	0
SSW	13,809	4.5%	5,126	8,683	2,539	27	1	0	0	0
SW	26,582	8.8%	5,879	20,703	7,743	139	-	0	0	0
WSW	52,677	17.4%	5,645	47,032	23,933	423	16	0	0	0
W	34,906	11.5%	4,616	30,290	13,234	122	3	0	0	0
WNW	7,923	2.6%	3,267	4,656	1,053	25	2	0	0	0
NW	3,011	1.0%	1,975	1,036	132	1	-	0	0	0
NNW	1,780	0.6%	1,282	498	105	2	-	0	0	0
Blank	524	0.2%	-							
	303,514	100.0%	100,328	202,662	63,781	7,256	1,793	249	11	-
			33.1%	66.8%	21.0%	2.4%	0.6%	0.1%	0.004%	



Winds from the SSW, SW, WSW do not travel across wildland fuels to reach the project site and as such poise no wildland risk. Winds from the NNE and NE are the predominant offshore flow both for the diurnal wind and the Santa Ana winds.

Modeling from the E, ESE and SE have been completed to show the impacts from the open space onto the project. The occurrence of strong winds from these directions is not supported by the site weather data.

Wildland Fuels

No Data	
91	Noncombustible
93	
98	
99	Grasses
101	
102	Grass/Shrub
121	
122	Shrub
142	Timber Understory
161	
164	
181	Timber Litter
182	
183	
185	
186	

- Wind Direction
- Spread Direction
- Major Fire Flow Path
- Fire Flow Path
- Road
- Freeway
- Project Boundary
- Evacuation Point

Rattlesnake Reservoir

Portola Pkwy

Evac Pt 5

Evac Pt 4

Evac Pt 3

Evac Pt 6

Evac Pt 2

Project Site

Jeffery Rd

Bee Canyon Access

Evac Pt 1

Siphon Reservoir

241

133

241

Wildland Fuels Map

Source: Landscape_LF2023_FBFM40_240_CONUS

Slope

Units: Percent

No Data
0
7
18
25
34
53
73
93
120
150

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Portola Pkwy

Evac Pt 5
Evac Pt 4
Evac Pt 3
Evac Pt 2
Evac Pt 6
Evac Pt 1

Project Site

Jeffery Rd

Bee Canyon Access

241

133

241

Siphon Reservoir

Slope Map

Source: Landscape_LF2023_FBFM40_240_CONUS

Elevation

Units: Feet

No Data
290
324
358
392
427
461
495
529
563
597
631
665
699
734
768
802
836
870
904
938

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Portola Pkwy

Jeffery Rd

Evac Pt 1
Evac Pt 2
Evac Pt 3
Evac Pt 4
Evac Pt 5
Evac Pt 6

Project Site

Bee Canyon Access

Siphon Reservoir

241
133
241

Elevation Map

Source: Landscape_LF2023_FBFM40_240_CONUS

Aspect

Units: Degrees

No Data	
0	N
45	NE
90	E
135	SE
180	S
225	SW
270	W
315	NW

- Wind Direction
- Spread Direction
- Major Fire Flow Path
- Fire Flow Path
- Road
- Freeway
- Project Boundary
- Evacuation Point

Rattlesnake Reservoir

Portola Pkwy

Evac Pt 1

Evac Pt 2

Evac Pt 3

Evac Pt 4

Evac Pt 5

Evac Pt 6

Project Site

Jeffery Rd

Bee Canyon Access

Siphon Reservoir

241

133

241

Aspect Map

Source: Landscape_LF2023_FBFM40_240_CONUS

Rattlesnake Reservoir

Fire

241

Portola Pkwy

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Evac Pt 5
Evac Pt 4
Evac Pt 3
Evac Pt 6
Evac Pt 2
Evac Pt 1

Project Site

Jeffery Rd

Bee Canyon Access

Fire Source (ignition grid)
NE and NNE at 80 mph

Siphon Reservoir

133

241

Flame Length

Units: Feet

No Data
0
10
20
30
40
50
60
70

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Fire

Portola Pkwy

Evac Pt 5
Evac Pt 4
Evac Pt 3
Evac Pt 2
Evac Pt 6
Evac Pt 1

Project Site

Jeffery Rd

Bee Canyon Access

Siphon Reservoir

241
133
241

Flame Length
NE at 80 mph

Fireline Intensity

Units: kW/m

No Data	
1000	
2500	
5000	
10000	
15000	
20000	
40000	
60000	
90000	

- Wind Direction
- Spread Direction
- Major Fire Flow Path
- Fire Flow Path
- Road
- Freeway
- Project Boundary
- Evacuation Point

Rattlesnake Reservoir

Fire

Portola Pkwy

Evac Pt 5

Evac Pt 4

Evac Pt 3

Evac Pt 6

Evac Pt 2

Project Site

Jeffery Rd

Bee Canyon Access

Evac Pt 1

Siphon Reservoir

133

241

241

Fireline Intensity

NE at 80 mph

MTT Arrival Time

Units: Minutes

No Data
30
60
90
120
150
180
210
270
330
420

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Fire

Portola Pkwy

Evac Pt 5

Evac Pt 4

Evac Pt 3

Evac Pt 2

Evac Pt 6

Project Site

Jeffery Rd

Bee Canyon Access

Evac Pt 1

Siphon Reservoir

241

133

241

MTT Arrival Time
NE at 80 mph

Flame Length

Units: Feet

No Data
0
10
20
30
40
50
60
70

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Fire

Portola Pkwy

Evac Pt 5
Evac Pt 4
Evac Pt 3
Evac Pt 2
Evac Pt 1
Evac Pt 6

Project Site

Jeffery Rd

Bee Canyon Access

Siphon Reservoir

241
133
241

Flame Length
NNE at 80 mph

Fireline Intensity

Units: kW/m

No Data
1000
2500
5000
10000
15000
20000
40000
60000
90000

- Wind Direction
- Spread Direction
- Major Fire Flow Path
- Fire Flow Path
- Road
- Freeway
- Project Boundary
- Evacuation Point

Rattlesnake Reservoir

Fire

Portola Pkwy

Evac Pt 5

Evac Pt 4

Evac Pt 3

Evac Pt 6

Evac Pt 2

Evac Pt 1

Project Site

Jeffery Rd

Bee Canyon Access

Siphon Reservoir

241

133

241

Fireline Intensity

NNE at 80 mph

MTT Arrival Time

Units: Minutes

No Data
30
60
90
120
150
180
210
270
330
420

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Fire

Portola Pkwy

Evac Pt 5
Evac Pt 4
Evac Pt 3
Evac Pt 6
Evac Pt 2
Evac Pt 1

Project Site

Jeffery Rd

Bee Canyon Access

Siphon Reservoir

133

241

MTT Arrival Time
NNE at 80 mph

Rattlesnake Reservoir

Portola Pkwy

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Evac Pt 5
Evac Pt 4
Evac Pt 3
Evac Pt 2
Evac Pt 6
Evac Pt 1

Project Site

Jeffery Rd

Bee Canyon Access

Fire

241

133

241

Siphon Reservoir

Fire Source (ignition grid)
E at 80 mph

Flame Length

Units: Feet

No Data
0
10
20
30
40
50
60
70

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Portola Pkwy

Jeffery Rd

Evac Pt 1
Evac Pt 2
Evac Pt 3
Evac Pt 4
Evac Pt 5
Evac Pt 6

Project Site

Bee Canyon Access

Siphon Reservoir

241
133
241

Fire

Flame Length
E at 80 mph

Fireline Intensity

Units: kW/m

No Data	
1000	
2500	
5000	
10000	
15000	
20000	
40000	
60000	
90000	

- Wind Direction
- Spread Direction
- Major Fire Flow Path
- Fire Flow Path
- Road
- Freeway
- Project Boundary
- Evacuation Point

Rattlesnake Reservoir

Portola Pkwy

Evac Pt 5

Evac Pt 4

Evac Pt 3

Evac Pt 6

Evac Pt 2

Project Site

Jeffery Rd

Bee Canyon Access

Evac Pt 1

Fire

241

133

241

Siphon Reservoir

Fireline Intensity

E at 80 mph

MTT Arrival Time

Units: Minutes

No Data
30
60
90
120
150
180
210
270
330
420

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Rattlesnake Reservoir

Portola Pkwy

Evac Pt 1
Evac Pt 2
Evac Pt 3
Evac Pt 4
Evac Pt 5
Evac Pt 6

Project Site

Jeffery Rd

Bee Canyon Access

Fire

241

133

241

Siphon Reservoir

MTT Arrival Time
E at 80 mph

Flame Length

Units: Feet

No Data
0
10
20
30
40
50
60
70

Fire Flow Path

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Portola Pkwy

Jeffery Rd

Evac Pt 1

Evac Pt 2

Evac Pt 3

Evac Pt 4

Evac Pt 5

Evac Pt 6

Project Site

Bee Canyon Access

Siphon Reservoir

Fire

241

133

241

Flame Length
ESE and SE at 50 mph

ion grid)

Flame Length

Units: Feet

No Data
0
10
20
30
40
50
60
70

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Portola Pkwy
Jeffery Rd
Bee Canyon Access
Project Site
Fire
Siphon Reservoir

Evac Pt 1
Evac Pt 2
Evac Pt 3
Evac Pt 4
Evac Pt 5
Evac Pt 6

241
241
133

Flame Length
SE at 50 mph

Fireline Intensity

Units: kW/m

No Data
1000
2500
5000
10000
15000
20000
40000
60000
90000

- Wind Direction
- Spread Direction
- Major Fire Flow Path
- Fire Flow Path
- Road
- Freeway
- Project Boundary
- Evacuation Point

Portola Pkwy

Jeffery Rd

Evac Pt 1

Evac Pt 2

Evac Pt 3

Evac Pt 4

Evac Pt 5

Evac Pt 6

Project Site

Bee Canyon Access

Fire

Siphon Reservoir

241

133

Fireline Intensity
SE at 50 mph

MTT Arrival Time

Units: Minutes

No Data
30
60
90
120
150
180
210
270
330
420

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Portola Pkwy

Evac Pt 1
Evac Pt 2
Evac Pt 3
Evac Pt 4
Evac Pt 5
Evac Pt 6

Project Site

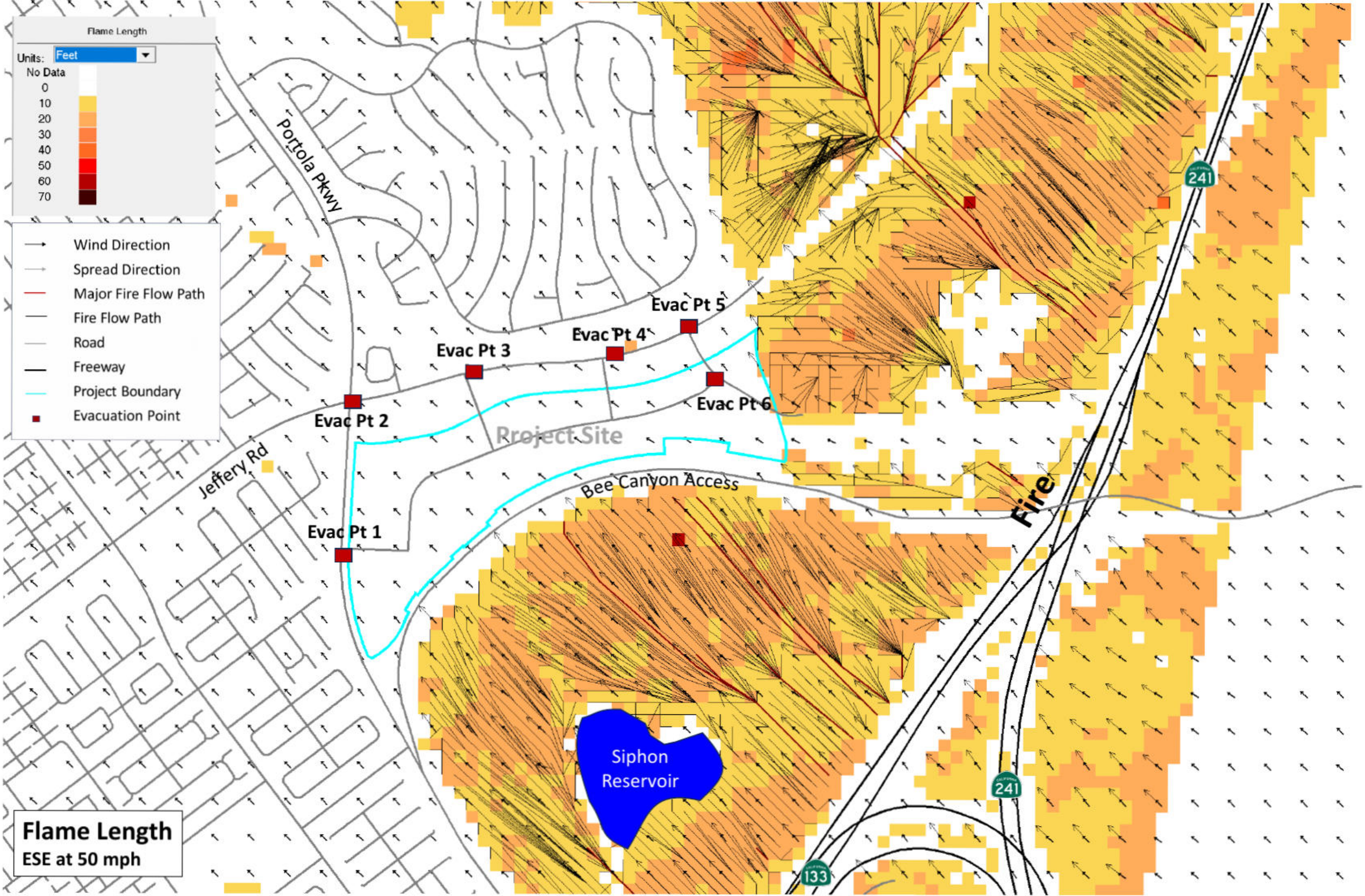
Bee Canyon Access

Siphon Reservoir

Fire

241
241
133

MTT Arrival Time
SE at 50 mph


Flame Length
Units: Feet
No Data
0
10
20
30
40
50
60
70
Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point
Portola Pkwy
Jeffery Rd
Evac Pt 1
Evac Pt 2
Evac Pt 3
Evac Pt 4
Evac Pt 5
Evac Pt 6
Project Site
Bee Canyon Access
Siphon Reservoir
241
133
Flame Length
ESE at 50 mph

Fireline Intensity

Units: kW/m

No Data
1000
2500
5000
10000
15000
20000
40000
60000
90000

- Wind Direction
- Spread Direction
- Major Fire Flow Path
- Fire Flow Path
- Road
- Freeway
- Project Boundary
- Evacuation Point

Portola Pkwy

Jeffery Rd

Evac Pt 1

Evac Pt 2

Evac Pt 3

Evac Pt 4

Evac Pt 5

Evac Pt 6

Project Site

Bee Canyon Access

Siphon Reservoir

Fire

241

133

Fireline Intensity
ESE at 50 mph

MTT Arrival Time

Units: Minutes

No Data
30
60
90
120
150
180
210
270
330
420

Wind Direction
Spread Direction
Major Fire Flow Path
Fire Flow Path
Road
Freeway
Project Boundary
Evacuation Point

Portola Pkwy

Evac Pt 1
Evac Pt 2
Evac Pt 3
Evac Pt 4
Evac Pt 5
Evac Pt 6

Project Site

Bee Canyon Access

Siphon Reservoir

Fire

241
241
133

MTT Arrival Time
ESE at 50 mph

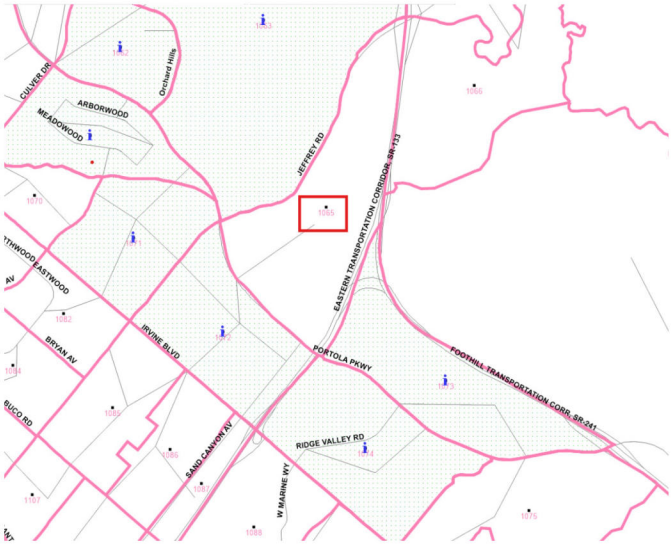
<u>Conclusion:</u> Wildland Fire modeling provides expected fire conditions for a worst-case fire scenario at the boundaries of the project site that indicate that none of the six evacuation points are impacted by direct flame impingement, radiant heat or convected heat for a degree that that would make the access point unusable at the time of the fire. Embers and smoke will be present at each of the evacuation points during the fire progression but will not impede the evacuation under the fire scenarios that have been projected in this analysis.

Factors affecting this conclusion:

1. Wildland fuels near the project site do not contain continuous fuelbeds of chaparral fuels which are greater than six feet in depth.
2. Wildland fuels only impact the south and east interfaces (west and north are developed with housing)
3. Developments which comply with the current requirement for Wildland Urban Interface construction, defensible space and development standards are not expected to have fire “burn through "within the neighborhood. Urban conflagration is not expected due to the preventative features of the development.
4. Winds from the west and southwest approach the project site from areas which are developed and do not contain wildland fuels.
5. The 241 freeway provides a natural fire break along the entire east interface in the upwind area of the project site during Santa Ana wind events. Fire must spot over the freeway and reestablish itself on the west side of the freeway before continuing to the project site.
6. Worst-case scenarios use weather conditions which have not been recorded at the project site in the past 5.8 years. Worst-case scenarios used winds far in excess of wind speeds recorded at the project site.
7. The areas around the project site are easily accessed by paved roads, making quick access to fires in the interface and providing fire breaks on all sides with the exceptions of the seed farm interface.

ATTACHMENT C

OCTAM VEHICLE OWNERSHIP



OCTAM Data

Zone	HH_POP	TOT_HH	HH_SIZE	TOT-AUTO	AUTO/HH
1062	2,440	777	3.14	1760.11	2.27
1063	1,222	253	4.83	654.85	2.59
1069	5,995	1,875	3.20	4615.38	2.46
1071	6,877	2,195	3.13	4360.28	1.99
1072	9,281	3,090	3.00	7119.24	2.30
1073	4,407	1,227	3.59	3035.13	2.47
1074	6,617	2,287	2.89	5429.97	2.37
		Average:	**3.40**		**2.35**