

# EL DORADO COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN – WILDFIRE EVACUATION STUDY

MAY 2024



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## LIST OF ACRONYMS

CAL APG - California Adaptation Planning Guide  
CAL FIRE - California Department of Forestry and Fire Protection  
DTA - Dynamic Traffic Assignment  
ETE - Evacuation Time Estimates  
EPA – Environmental Protection Agency  
EVA – Emergency Vehicle Access  
GDP – Gross Domestic Product  
HOA – Homeowners Association  
MJHMP – Multi-Jurisdictional Hazard Mitigation Plan  
OES - Office of Emergency Services

## 1. INTRODUCTION

### 1.1 OBJECTIVES OF THE STUDY

El Dorado County's greatest risk to its population, property, and critical infrastructure is wildfire, as identified in the most recent updates of the General Plan Safety Element and Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).<sup>1,2</sup> Through the stakeholder engagement process of each respective plan, the County's residents have also agreed that wildfire continues to be the greatest risk and needs to be a primary focus for the County. In support of these efforts, this study assesses the wildfire evacuation viability of five hazard areas within the County. This study identifies major evacuation routes within the El Dorado County project area to assess the road networks' performance under specific evacuation scenarios based on different criteria, including evacuation time estimates (ETE) and potential bottlenecks based on model simulations. Evacuation strategies and project recommendations are included in this assessment to identify potential future and ongoing efforts to prepare for wildfire emergencies. However, the study is not an evacuation route plan and does not identify specific routes to be used during an actual evacuation. The El Dorado County Sheriff's Office of Emergency Services (OES) will define specific evacuation routes at the time of an evacuation order during a real emergency event. This study should be used to inform El Dorado County and other regional agencies as they plan for the next steps to address wildfire hazards and improve evacuation preparedness.

### 1.2 LEGISLATIVE REQUIREMENTS

In accordance with California state legislature, which requires the inclusion and/or review of emergency evacuation routes and plans when adopting General Plans or other emergency planning documents such as the MJHMP, this study meets the following legislative requirements for the specific hazard areas:

- California Assembly Bills 747 and 1409 [Government Code section 65302.15 (a)] – This study identifies evacuation routes and their capacity, safety, and viability. In addition, it identifies evacuation locations under a range of emergency scenarios.

This is a requirement for all Safety Elements or updates to all Local Hazard Mitigation Plans completed after January 2022.

Emergency evacuations can occur for any number of reasons. Future emergency events that will require an evacuation are often unpredictable. For El Dorado County, the most likely hazard events that would require an evacuation are those caused by wildfires. Wildfire events were identified as

<sup>1</sup> El Dorado County 2022 General Plan Safety Element Update, accessed by DKS Associates in May 2024: <https://www.eldoradocounty.ca.gov/Land-Use/Long-Range-Planning/Active-Projects/2022-General-Plan-Safety-Element-Update#:~:text=What%20is%20a%20Safety%20Element,policies%20to%20protect%20the%20community.>

<sup>2</sup> El Dorado County Multi-Jurisdictional Hazard Mitigation Plan Update, accessed by DKS Associates in May 2024: <https://www.eldoradocounty.ca.gov/Public-Safety-Justice/Safety-Justice/sheriff/operations/oes> and the County's Safety Element can be found on the County's website at: <https://www.eldoradocounty.ca.gov/Land-Use/Long-Range-Planning/Active-Projects/2022-General-Plan-Safety-Element-Update>



the highest risk scenario in the MJHMP. Due to these reasons, this evacuation study includes a range of evacuation scenarios where multiple evacuation directions are possible to account for a range of wildfire threats.

Specific wildfire scenarios are not accounted for in this study. This study does not include compounding effects from hazards beyond wildfire. This study identifies specific evacuation destination directions away from the evacuation zone which were developed in coordination with OES. Directions do not identify specific destination locations, such as shelter locations, as those facilities are assigned at the time of an evacuation order during a real wildfire emergency event. Destinations evaluated in each community evacuation scenario, called out in the figures later in this document, are demonstrative of possible directions towards final destinations which vehicles could travel. These destinations do not represent physical places which individuals will be ordered to evacuate to. OES will assign evacuation shelters at the time of an evacuation order during a real emergency.

The CAL FIRE Office of the State Fire Marshal’s Subdivision Review Program and the 2024 El Dorado County General Plan Safety Element address California Senate Bill 99 requirements to identify residential developments in hazard areas that do not have at least two emergency evacuation routes. Four of the five analysis hazard areas in this study have been identified by the Subdivision Review Program as residential developments in hazard areas that do not have at least two emergency evacuation routes.

This study will be incorporated into El Dorado County’s MJHMP update and will identify specific hazard mitigation actions, including mitigation actions related to efficient wildfire evacuation. These actions are developed to reduce or eliminate hazard risk within the County during evacuation events. The County’s Safety Element will also incorporate by reference the County MJHMP update. Therefore, the Wildfire Evacuation Study ensures that the County meets the legislative requirements of AB 747 and 1409.

### **1.3 DISCLAIMER**

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This study has been conducted by DKS Associates and the El Dorado County Sheriff’s OES to support the El Dorado County Wildfire Evacuation Study. This study is intended to provide an understanding of the County’s preparedness for wildfire evacuation of select hazard areas and provide recommendations based on the described scenarios.

This study intends to evaluate multiple wildfire evacuation scenarios of high-risk communities to assess the transportation network for points of catastrophic failure and present an account of these conditions and recommendations in a wildfire evacuation study for select hazard areas of El Dorado County. The scope of this wildfire evacuation assessment is based on the behavior and movement of motor vehicles during evacuation events.

The contents of this study are founded on precise data and likely wildfire evacuation scenarios within El Dorado County. They are not intended as a forecast or comprehensive compilation of all conceivable wildfire situations in the area. This study does not ensure that wildfires or evacuation routes will unfold precisely as depicted in this study nor does it identify any evacuation routes to be

taken by the public. Evacuation orders and evacuation route designation are the purview and responsibility of the El Dorado County Sheriff's Office of Emergency Services.

## 1.4 STUDY AREA

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The El Dorado County Sheriff's OES, in coordination with the El Dorado County Office of Wildfire Preparedness and Resilience, identified five hazard areas for wildfire evacuation assessment as part of this study as shown in Figure 1. These areas were chosen based on the Subdivision Review Program as previously mentioned to represent a variety of communities spread throughout the County based on density, vegetation, population, and topography.

Three of the wildfire hazard areas have been identified for a simulation-based model wildfire evacuation assessment given the total evacuation population and multiple evacuation routing possibilities under a potential range of wildfire scenarios. These areas include the following communities:

1. Lake Hills
2. Rancho del Sol
3. Logtown

An additional two wildfire hazard areas have been identified for a qualitative wildfire evacuation assessment due to containing a single evacuation egress route.

4. Outingdale Subdivision
5. Golden Bear Trail Subdivision

Figure 1 below displays each hazard area and its respective evacuation and warning zones. The evacuation and warning zones were developed in coordination with the El Dorado County Sheriff's OES to assess the evacuation viability under a range of possible wildfire scenarios, but not a specific wildfire scenario. Evacuation zones define the area of mandatory evacuation for all individuals through the issue of an evacuation order. Warning zones are areas near evacuation zones that are provided with an alert notification that a potential wildfire incident may require people to leave the area. It is issued as a precautionary measure to provide sufficient time for people to prepare themselves for a potential evacuation. Warning zones typically generate voluntary trips that add to the warning zone evacuation demand.

All scenarios were modeled to occur on a Saturday at 2:00 p.m. in October. This time was chosen due to the increased likeliness for individuals to be at home being a non-typical workday, while still having moderate background traffic conditions due to weekend activities, such as shopping. October was chosen since it is part of peak wildfire season for the region. The following subsections in the report detail the assessment of each study area.

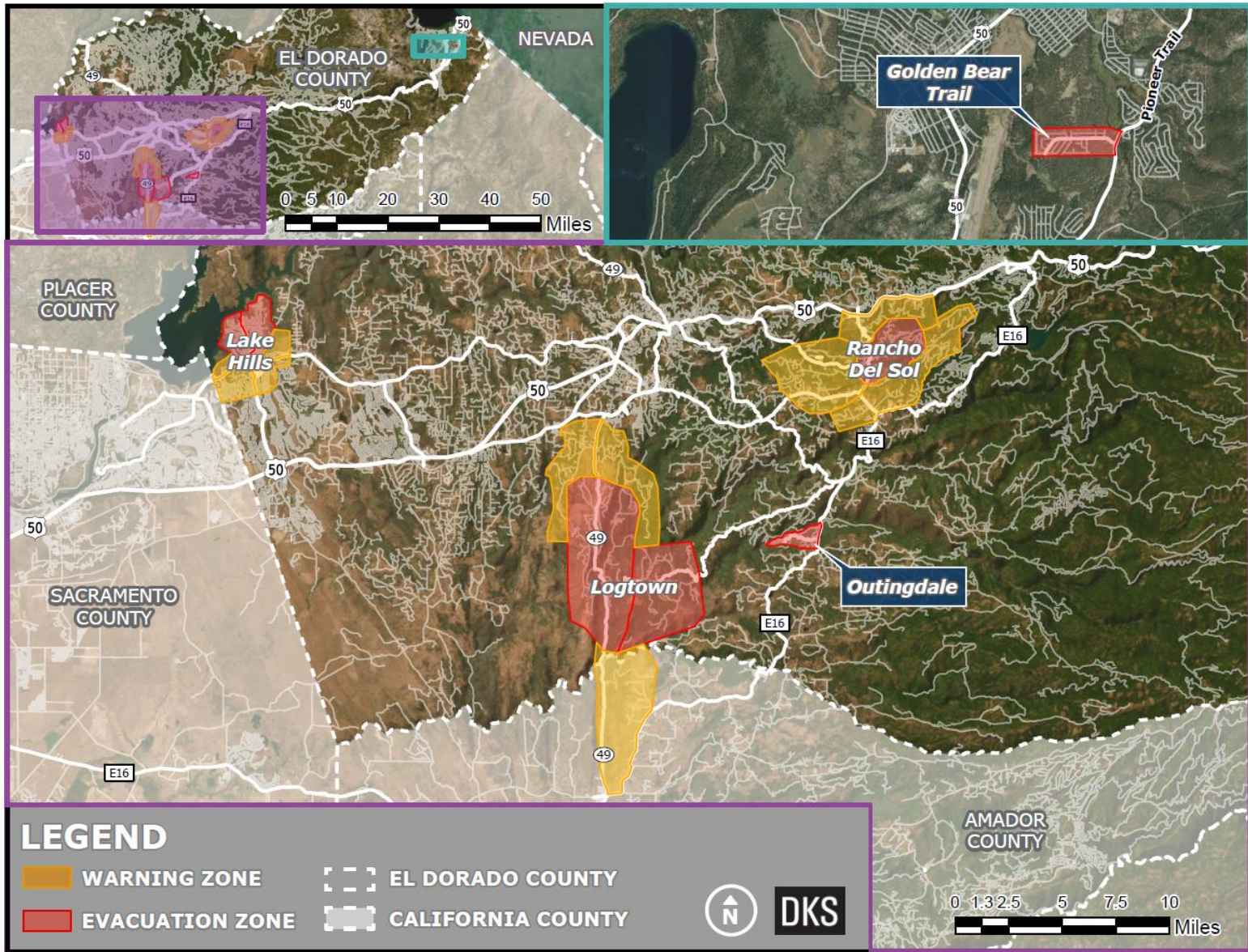


FIGURE 1: WILDFIRE EVACUATION STUDY AREA

## 2. METHODOLOGY

### 2.1 EVACUATION MODEL SOFTWARE

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The Evacuation assessment uses a Dynamic Traffic Assignment (DTA) simulation model using PTV Visum software to capture all elements of a wildfire evacuation. The roadway network in the model includes all streets within the study area with key attributes, including the number of lanes, posted speed limits, intersection control (including stop signs, signal timing, and yield signs), and facility capacity. The evacuation and background trips are then assigned to the network in 10-minute intervals over the assignment period. The assignment period includes a one-hour warm-up period to preload background traffic, a 60-minute evacuation period following the evacuation order, and a one-hour cool-down period to capture the time to clear any remaining traffic. The exception to this methodology is the Logtown scenario which models a 40-minute evacuation period as opposed to a 60-minute period. OES, selected the 40-minute evacuation time period for the Logtown scenario as a conservative estimate based on the vegetation, topography and the range of potential wildfire scenarios. The evacuation destinations for each scenario are defined in their respective sections.

### 2.2 EVACUATION TRIP DEMAND

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The evacuation demand is determined by residential household data in evacuation and warning zones. U.S. Census data on households without vehicles, those with one vehicle, and those with multiple vehicles is used to estimate demand.<sup>3</sup> Households with no vehicle access generate zero evacuation trips as those households are anticipated to evacuate with neighbors or emergency personnel. Households with 1 vehicle generate one trip per household. The value of 1.75 vehicles evacuating per household was used for all other households. The value of 1.75 is consistent with the average number of vehicles used to evacuate during the Santa Rosa, California Tubbs and Nuns fires of 2017.<sup>4</sup>

### 2.3 EVACUATION TIME

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The departure time distribution of evacuees is critical to the evacuation assessment as that determines the peaking characteristics and subsequent congestion levels during an evacuation event. This time includes the time it takes for evacuees to receive the order, gather belongings, and perform any other necessary duties before departing their household. The evacuation assessment of the three model areas includes a departure time scenario that coincides with moderate spreading wildfire scenarios. In the 60-minute scenario, all evacuation trips depart within

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<sup>3</sup> U.S. Census Bureau. "TENURE BY VEHICLES AVAILABLE." *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B25044*, 2020.

U.S. Census Bureau. "AGGREGATE NUMBER OF VEHICLES AVAILABLE BY TENURE." *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B25046*, 2020.

<sup>4</sup> Fehr & Peers. "SCOTT RANCH DEIR: WILDFIRE EVACUATION TRANSPORTATION ASSESSMENT." [https://storage.googleapis.com/proudcity/petalumaca/uploads/2020/12/Appendix\\_4.15\\_Wildfire1.pdf](https://storage.googleapis.com/proudcity/petalumaca/uploads/2020/12/Appendix_4.15_Wildfire1.pdf). page 100 of 105, 2020.

60 minutes of the evacuation order. In the 40-minute scenario, all evacuation trips depart within 40 minutes of the evacuation order.

The evacuation trip departure time distribution is assigned to the model in 10-minute intervals, with a percentage of the evacuation trips beginning to evacuate within each interval. The following departure time distributions were informed by the 2024 Greater Placerville Wildfire Evacuation Preparedness Study that developed distributions with input from the El Dorado County Fire, California Department of Forestry and Fire Protection (CAL FIRE), and El Dorado County Sheriff’s OES. The departure time distributions for these models were adapted to use ten-minute intervals, rather than 15-minute intervals to account for the shorter overall evacuation periods for these wildfire scenarios.

**TABLE 1: PERCENT OF EVACUATION TRIPS BEGINNING AFTER THE EVACUATION ORDER**

Elapsed Time (Min)	60-Minute Scenario	40-Minute Scenario
10	10%	15%
20	25%	40%
30	40%	75%
40	75%	100%
50	95%	
60	100%	

**2.4 TRAFFIC CONTROL AND BACKGROUND TRAFFIC ASSUMPTIONS**

Traffic control measures are assumed to be in place by emergency responders following an initial response lag time to assist in the evacuation process by restricting background traffic from entering the evacuation zone. Specific traffic control locations are described for each scenario in their respective sections. It is assumed that traffic control closures for background traffic are in place twenty minutes after the start of the Evacuation order unless stated otherwise. No additional traffic control measures are assumed in the evacuation model assumptions other than the ones stated below.

Replica data was used to estimate weekend afternoon background traffic that will be present at the time of the evacuation along key routes within the modeled scenarios. Replica uses mobile device data to provide complete trip tables for all modes of travel representing typical weekday and weekend days. Replica data can be aggregated by season for residents, workers, visitors, and commercial travel. It can also define trip characteristics and routing information for various specifications.

**2.5 TRANSPORTATION NETWORK**

The evacuation models include transportation networks inside the warning zones, evacuation zones, and critical junctions to evacuation destinations. The network includes all streets and junction controls, including stop signs, yield signs, traffic signals, and emergency traffic control elements.

During a wildfire evacuation, there are many factors that can influence the capacity of the system that may result in the evacuation traffic not flowing at the same rate as under ideal non-emergency conditions. These factors may include heavy smoke conditions that limit visibility, the presence of emergency response vehicles, and non-typical driver behaviors because of the emergency conditions. To capture these effects all the model scenarios were analyzed with reduced roadway capacity by approximately 40% to capture the worst case of traffic efficiency during a wildfire. This 40 percent reduction in capacity was selected based on the professional judgment of the consultant team. The capacity reduction contributes to congestion patterns that influence both the evacuation route assignment and the ETEs.

## **2.6 WILDFIRE EVACUATION ASSESSMENT**

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For each scenario, ETEs are presented by the accumulated percentage of evacuated trips by time intervals showing the progression of evacuation trips throughout the evacuation period. The ETEs are presented for the Evacuation Zones for each scenario. Note it is not possible to have 100% of the evacuation trips clear the evacuation zone by the end of the evacuation period as vehicles are modeled leaving their homes within the 50 to 60-minute interval after the start of the evacuation order or 30 to 40-minute interval after the evacuation order for the 40-minute scenario. Many of the trip lengths exceed 10 minutes to clear the zone, even in non-congested conditions which leads to this effect.

As evacuation route congestion can occur downstream of the evacuation zones, average and maximum travel times are also evaluated from the evacuation zones to the study area destination directions to estimate the time it takes to clear the evacuation vicinity. Summaries of the ETEs are detailed under the key observations sections of the three modeling scenarios.

## **2.7 VULNERABLE POPULATION ASSESSMENT**

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According to the California Adaptation Planning Guide (Cal APG), "Equitable climate adaptation planning involves identifying persons who may be most vulnerable to climate change and ensuring that planning processes, distribution of resources, and efforts to address systemic wrongs are all conducted in an equitable manner." The guide provides definitions for vulnerable populations who are most at risk due to climate change. The presence of vulnerable populations in the study areas was identified based on the U.S. Census Bureau's American Community Survey 5-year summary estimates as reported by the U.S. Environmental Protection Agency (EPA) Environmental Justice Screening and Mapping tool.<sup>5</sup> The U.S. Census Bureau's Access Broadband Dashboard was also used to capture more characteristics at the tract level. Both interactive tools provide statistics on socioeconomic indicators, including employment, small business establishments, wages and

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<sup>5</sup> Environmental Justice Screening and Mapping Tool Descriptions - <https://www.epa.gov/ejscreen/ejscreen-map-descriptions#soci>

income, poverty, home values, population change and migration, educational attainment, and real gross domestic product (GDP).

Additional vulnerable populations (i.e., geographically isolated individuals, individuals without health insurance, Native Americans, individuals without access to a vehicle, households without broadband internet, and households without a computer) not included in the Cal APG were identified and analyzed in the vulnerability analysis, as they face disproportionate risk to wildfire and evacuation challenges.

While all people in a community will experience impacts from wildfire, some may be more affected than others. Many factors can influence sensitivity to wildfires including the following:

- Health
- Age
- Ability
- Societal disadvantages
- Access to health care and basic needs
- Economic opportunity
- Education

The *most* vulnerable populations are likely to be disproportionately impacted by wildfires, face challenges in the event of an evacuation, and may have fewer resources to prepare for, adapt to, and recover from wildfires. Following guidance from the Cal APG, vulnerable population groups were identified for each study area (Cal OES 2020). Each study area has several vulnerable populations that may disproportionately experience the impacts of climate change.

A social sensitivity index of 19 indicators, shown in Table 2 below, was created to understand the presence of vulnerable population groups in each study area. Each indicator represents a characteristic that increases an individual's sensitivity to wildfire risk. These characteristics relate to a person's physiological sensitivity to wildfire and/or the ability of an individual to prepare for, evacuate from, or recover from a wildfire. These 19 indicators are similar to those used in the County's Safety Element and portions of the County's 2024 MJHMP like the Climate Vulnerability Assessment.

**TABLE 2: SOCIAL SENSITIVITY INDICATORS**

<b>Social Sensitivity Indicator</b>	<b>Indicator Description</b>
<b>Median Family Household Income</b>	Median Family Household Income
<b>Median Non-Family Household Income</b>	Median Non-Family Household Income
<b>People experiencing homelessness</b>	Individuals who currently lack fixed, regular, and adequate housing
<b>Undocumented individuals</b>	Individuals residing in the United States without legal documentation
<b>Unemployed</b>	Individuals 16 and older who are out of work and able to work but are not
<b>Seniors</b>	Individuals 65 years or older
<b>Young Children</b>	Individuals 5 years and younger
<b>People of Color</b>	All individuals that do not identify as white
<b>Renters</b>	Housing units that are renter occupied
<b>Outdoor Workers</b>	Individuals who are employed, 16 and older, and work outdoors
<b>Visitors</b>	Individuals who are not residents and are visiting the study area for a limited time
<b>Linguistically Isolated</b>	Households with individuals who are non or limited English-speaking
<b>American Native and Alaskan Native</b>	Individuals that identify as American Native or Alaskan Native
<b>Individuals with Disabilities</b>	Individuals with access and functional needs (physical and mental)
<b>Individuals with Asthma</b>	Individuals diagnosed with asthma
<b>Individuals with Coronary Artery Disease <sup>c</sup></b>	Individuals diagnosed with coronary artery disease
<b>Individuals without access to a vehicle</b>	Households without access to a vehicle
<b>Individuals without health insurance</b>	Individuals aged 18 to 64 years old currently uninsured
<b>Households without a computer</b>	Households without access to a computer.
<b>Households without broadband internet</b>	Households without access to broadband internet.



### 3. LAKE HILLS

#### Overview

The Lake Hills evacuation zone is located alongside the eastern side of Folsom Lake on a peninsula that stretches approximately 2,100 acres. Among the mix of topographic features, suburban neighborhoods are built within the valleys, mid-slopes, ridgelines, and bluffs. The vegetation primarily consists of urban types (i.e., grass and trees) with a perimeter of hardwood woodland.<sup>6</sup> Additionally, the area attracts many visitors to the Folsom Lake Marina, shown in Figure 2 on the following page. Based on the most recent 2023 Fire Hazard Severity Zones Map issued by CAL FIRE for the State Responsibility Area, the evacuation zone west of Francisco Drive is a Moderate Fire Hazard Severity Zone while the area east of Lake Hills Drive is a Very High Fire Hazard Severity Zone.<sup>7</sup>

#### Community Characteristics

There are approximately 1,940 residential households within the Lake Hills community in the evacuation zone. The community has an estimated population of 5,430 persons. Of these households, there are about 30 with zero vehicle access, around 230 with one vehicle access, and around 1,680 with two or more vehicles accessible.<sup>8</sup>

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<sup>6</sup> State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types

<sup>7</sup> California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - effective April 1, 2024

<sup>8</sup> U.S. Census Bureau. "SEX BY AGE." *American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B01001, 2020.*

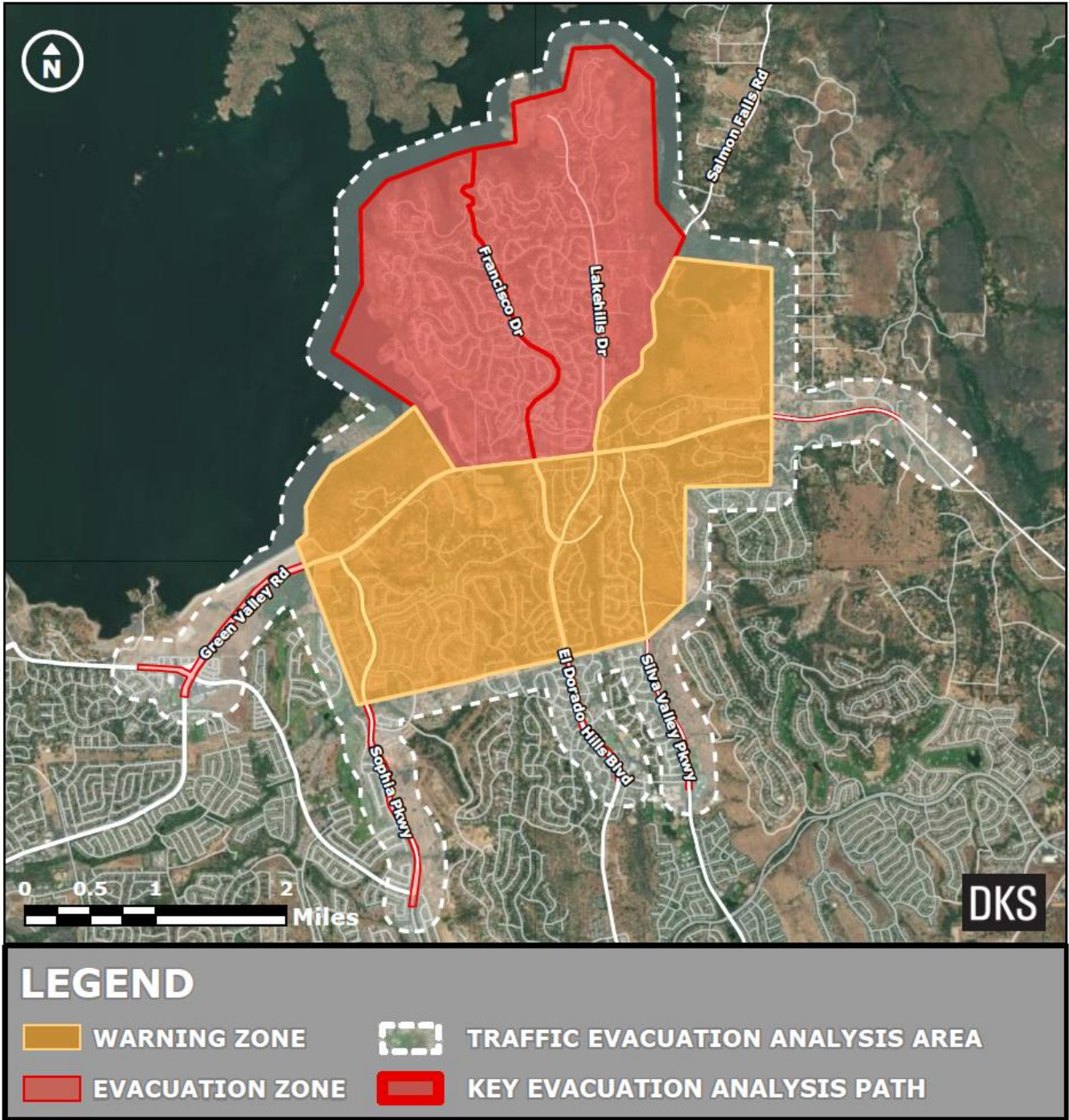


FIGURE 2: LAKE HILLS STUDY AREA

## Vulnerable Population Assessment

Table 3 summarizes the proportion of vulnerable population social sensitivity indicators in Lakehills.

**TABLE 3: SOCIAL SENSITIVITY INDICATORS IN LAKE HILLS EVACUATION AREA**

<b>Social Sensitivity Indicator</b>	<b>Percentage of Population or Households in the Lake Hills Evacuation Area*</b>
<b>Median Family Household Income</b>	\$150,478
<b>Median Non-Family Household Income</b>	\$63,938
<b>Low Income</b>	12.0%
<b>People experiencing homelessness</b>	N/A
<b>Undocumented individuals</b>	N/A
<b>Unemployed</b>	4.0%
<b>Seniors</b>	23.0%
<b>Young Children</b>	5.0%
<b>People of Color</b>	17.0%
<b>Renters</b>	12.0%
<b>Outdoor Workers</b>	N/A
<b>Visitors</b>	Not Available
<b>Linguistically Isolated</b>	2.0%
<b>American Native and Alaskan Native</b>	0%
<b>Individuals with Disabilities</b>	10.0%
<b>Individuals with Asthma</b>	9.6%
<b>Individuals with Coronary Artery Disease</b>	4.9%
<b>Individuals without access to a vehicle</b>	2.0%
<b>Individuals without health insurance</b>	1.5%
<b>Households without a computer</b>	3.4%
<b>Households without broadband internet</b>	3.0%

## Key Transportation Facilities

- *Francisco Drive*: North-south major collector through the Lake Hills area posted at 30 to 40 miles per hour (MPH). Francisco Drive provides one of two ingress/egress points to the Lake Hills community. It is mostly a two-lane roadway with left-turn lane pockets throughout the corridor. A center strip is consistent through the corridor, but the fog line strip starts south of Gordo Court where the pavement widens to include a center median. North of Gordo Court is the narrowest portion of the corridor with a 12-foot-wide travel lane in each direction. This corridor directly connects to El Dorado Hills Boulevard which leads to US-50 and Green Valley Road which provides connections east and west.
- *Lakehills Drive / Salmon Falls Road / El Dorado Hills Boulevard*: This route serves as one of two ingress/egress points to the Lake Hills community. Lakehills Drive is a north-south minor arterial that connects to Salmon Falls Drive before connecting directly to El Dorado Hills Boulevard south of Green Valley Road and provides direct access to US-50. The posted speed ranges from 25 to 40 MPH. The center line strip begins south of Guadalupe Drive while fog lines are marked south of Bonita Drive as areas become more populated.
- *Green Valley Road*: East-west minor arterial road with a posted speed of 50 MPH. It runs parallel to US-50 providing a connection between Folsom and Placerville. In the warning zone, travel lanes are 12 feet wide. The cross-section changes between Francisco Drive and El Dorado Hills Boulevard, where to the west there is a 5-lane cross-section and to the east a 3-lane cross-section. There are additional right turn lanes at the Francisco Drive and Silva Valley Parkway intersections. Green Valley Road narrows to 2-lanes east of Silva Valley Parkway.
- *Sophia Parkway*: North-south minor arterial road posted at 50 MPH with a center line strip and fog line strip. It serves as an alternate route that indirectly connects to US-50 via Empire Ranch Road and Saratoga Way.
- *Silva Valley Parkway*: North-south minor arterial road posted at 50 MPH that starts as a two-lane route within the warning zone and then becomes a four-lane road closer to US-50.

### 3.1 EVACUATION SCENARIOS

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Two evacuation scenarios were developed to assess the Lake Hills roadway network performance:

- **Scenario 1: Base Evacuation.** Uses a trip distribution to all possible evacuation destinations along main corridors and maintains existing traffic patterns, see Figure 3 on the following page for the evacuation distribution.
- **Scenario 2: Francisco Drive Dual Right & Restricted Turns.** This scenario uses emergency traffic control to restrict turning movements and operate dual southbound right turn lanes from Francisco Drive to increase evacuation flows. During this scenario, emergency personnel would allow the existing southbound through lane on Francisco Drive to turn right and southbound through. This changes evacuation zone destination distributions to evacuations through Green Valley Road or El Dorado Hills Boulevard outside of the study area as shown in Figure 4 below. To increase the southbound right throughput, this scenario models a dual right turn allowing for vehicles in the center lane to make a southbound right onto Green Valley as well as go straight onto El Dorado Hills Boulevard.

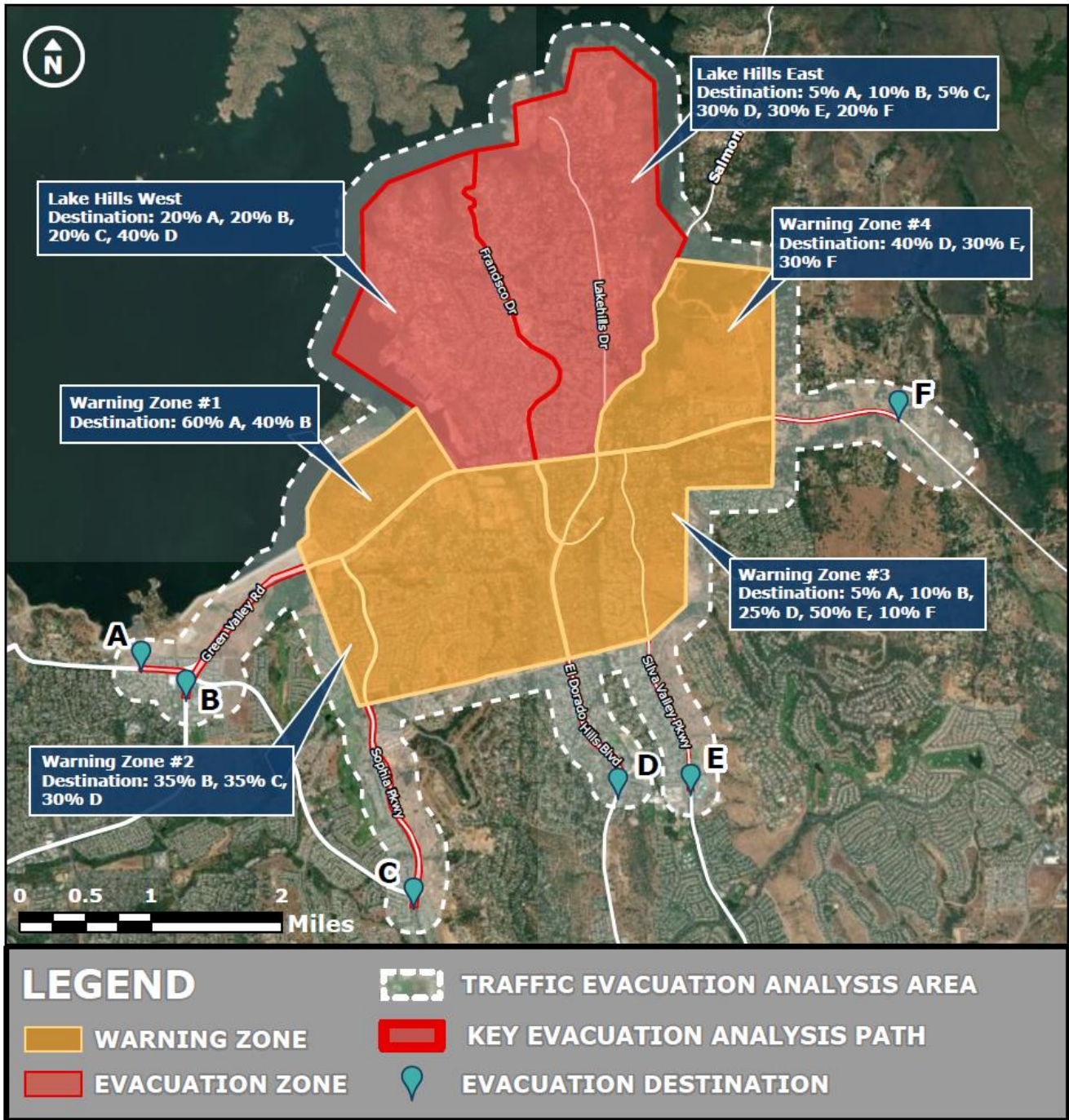


FIGURE 3: LAKE HILLS SCENARIO 1 EVACUATION DISTRIBUTION

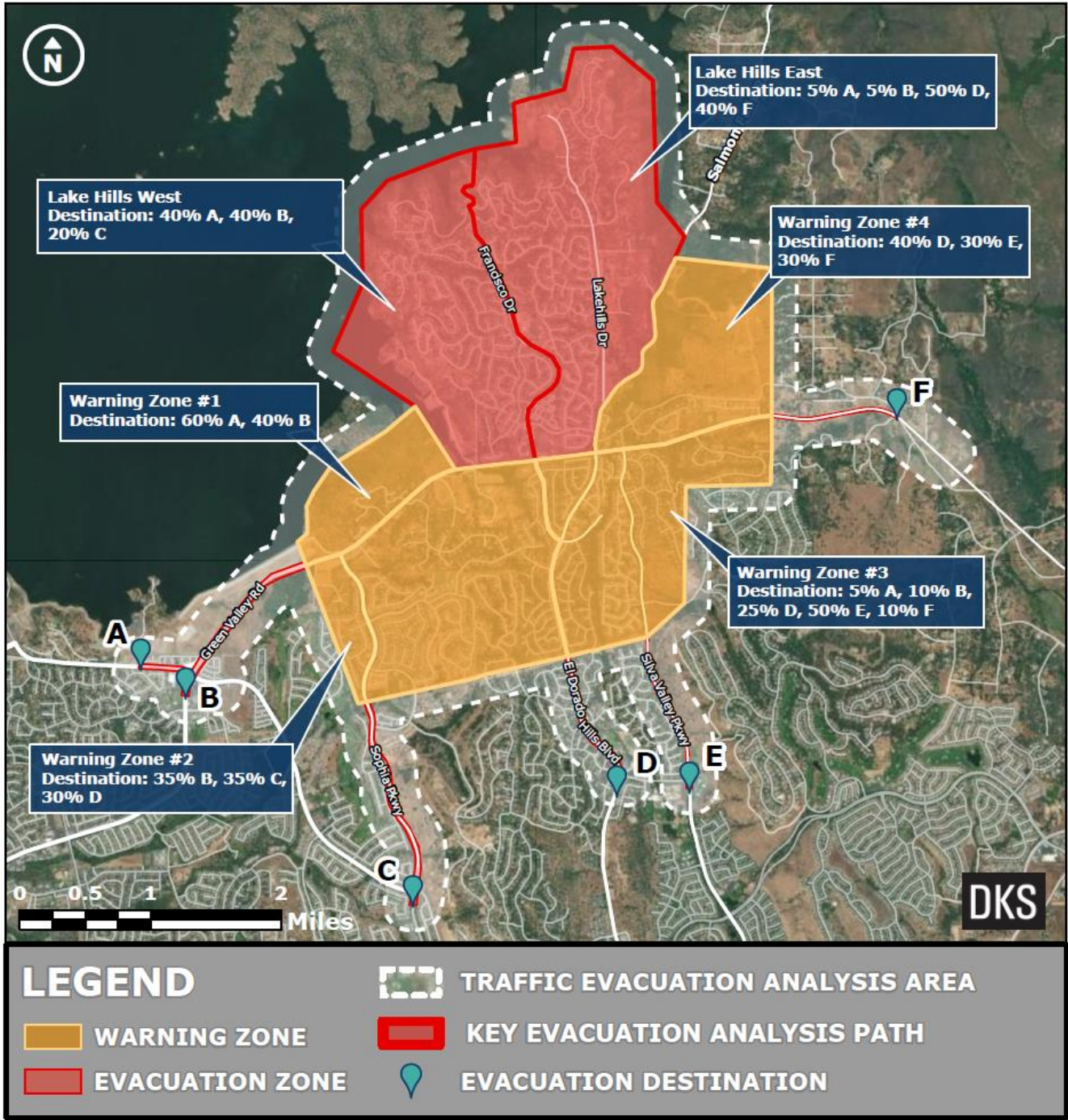


FIGURE 4: LAKE HILLS SCENARIO 2 EVACUATION DISTRIBUTION

### 3.2 EVACUATION ROUTES

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All evacuation trips are assigned evacuation destination directions along key routes. Leaving the study area represents heading in the direction of an ultimate evacuation destination downstream. The following destinations have been identified for the Lake Hills evacuation model:

- **A:** E Natoma Street west of Green Valley Road
- **B:** Blue Ravine Road south of E Natoma Street
- **C:** Sophia Parkway south of E Natoma Street
- **D:** El Dorado Hills Blvd south of Harvard Way
- **E:** Silva Valley Parkway south of Harvard Way
- **F:** Green Valley Road east of Green Springs Rd

Each evacuation and warning zone has an assigned trip distribution percentage to one or more of the above destinations as shown in the previous two figures. Key roadway facilities used for evacuation are shown in Figure 5. Two main roadways allow for egress from the Lake Hills Peninsula: Francisco Drive and Salmon Falls Road / Lake Hills Drive.

While this evacuation assessment does not include fire modeling or specific wildfire scenarios, the peninsula geography of Lake Hills in combination with the northeast area being a Very High Fire Hazard Severity Zone, results in the most likely wildfire threat occurring northeast of the community along the Salmon Falls Road corridor. Given this hazard, it was assumed that Salmon Falls Road going northeast away from Lake Hills is closed as an evacuation route. This results in a realistic stress test analysis of the transportation network for a Lake Hills community evacuation.

During the evacuation after emergency traffic control is in place, there is not east-west traffic allowed on Green Valley Road between Francisco Drive and Salmon Falls Road / El Dorado Hills Road as allowing evacuating traffic from Francisco Drive eastbound would result in additional delay for southbound evacuating traffic from Salmon Falls Road. Conversely, southbound right turn movements from Salmon Falls Road would result in conflicting demand that would impede the evacuation flow at Francisco Drive.

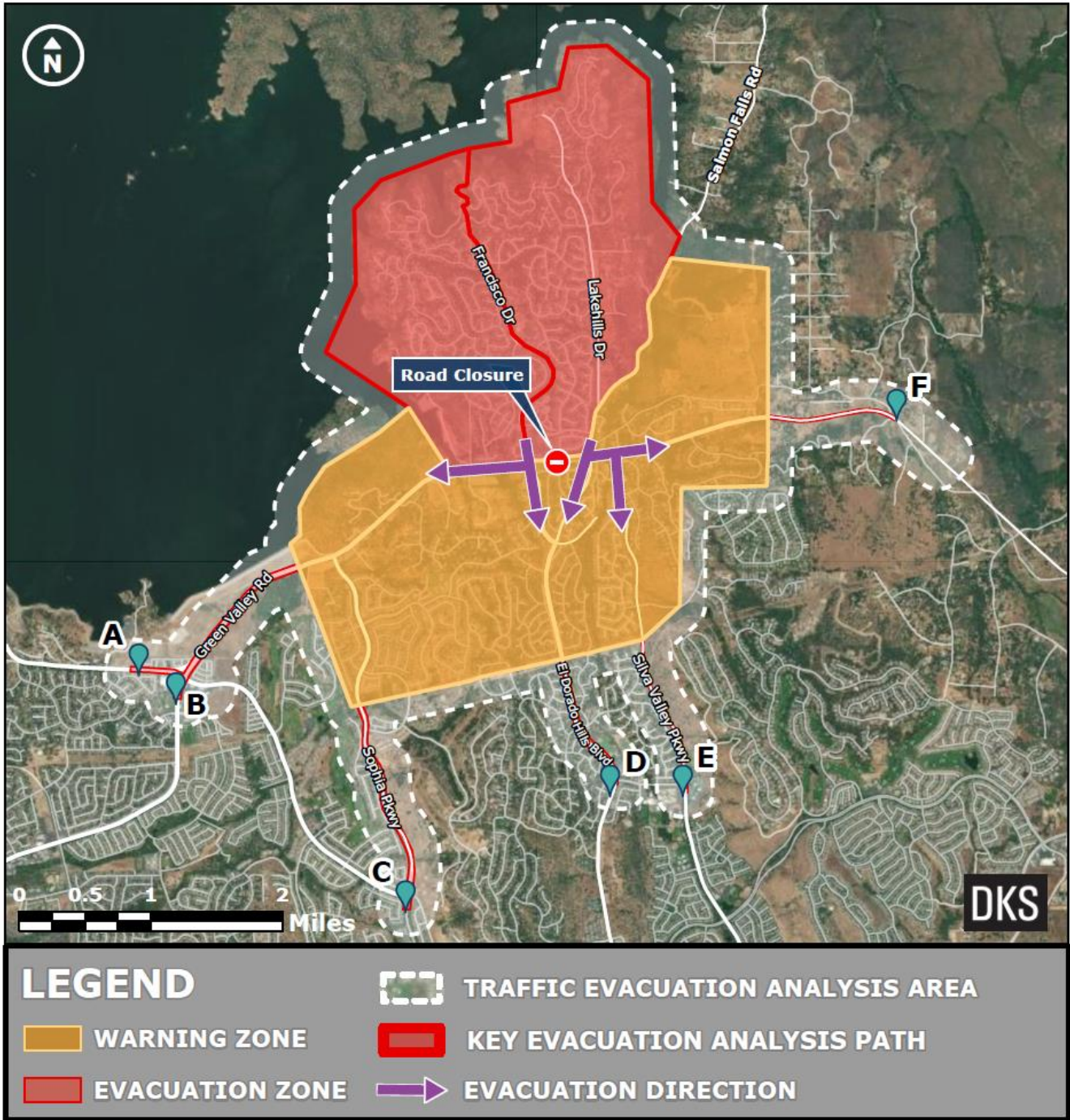


FIGURE 5: LAKE HILLS EVACUATION DIRECTIONS



### 3.3 MODEL ASSUMPTIONS

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Emergency manual traffic control is assumed to be implemented within the Lake Hills area within 20 minutes of the evacuation order. Given the evacuation population and the limited routes serving the evacuation zone, emergency manual traffic control is an essential element for a successful evacuation of this area. Five traffic signals exist within the evacuation zone that are important for efficiency within the evacuation process, mapped in Figure 6 on the following page:

- **Green Valley and Francisco Drive:** Manually flagging for southbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time that runs southbound right and through signal phases concurrently (split phase). Scenario 2 requires manual flagging to operate the southbound through lane as an optional dual right movement for increased flow.
- **Green Valley and Salmon Falls Road/ El Dorado Hills Boulevard:** Manually flagging for southbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time that runs southbound right and through signal phases concurrently (split phase).
- **Green Valley and Silva Valley Parkway:** Manually flagging for southbound and eastbound evacuation traffic or an evacuation-specific signal timing plan with increased eastbound green time.
- **Francisco Drive and Village Center Drive:** Manually flagging for southbound and westbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time that provide sufficient traffic flow that does not impede the flow to Green Valley Road.
- **Francisco Drive and the Retail Center:** Manually flagging for southbound evacuation traffic or an evacuation-specific signal timing plan with increased southbound green time.

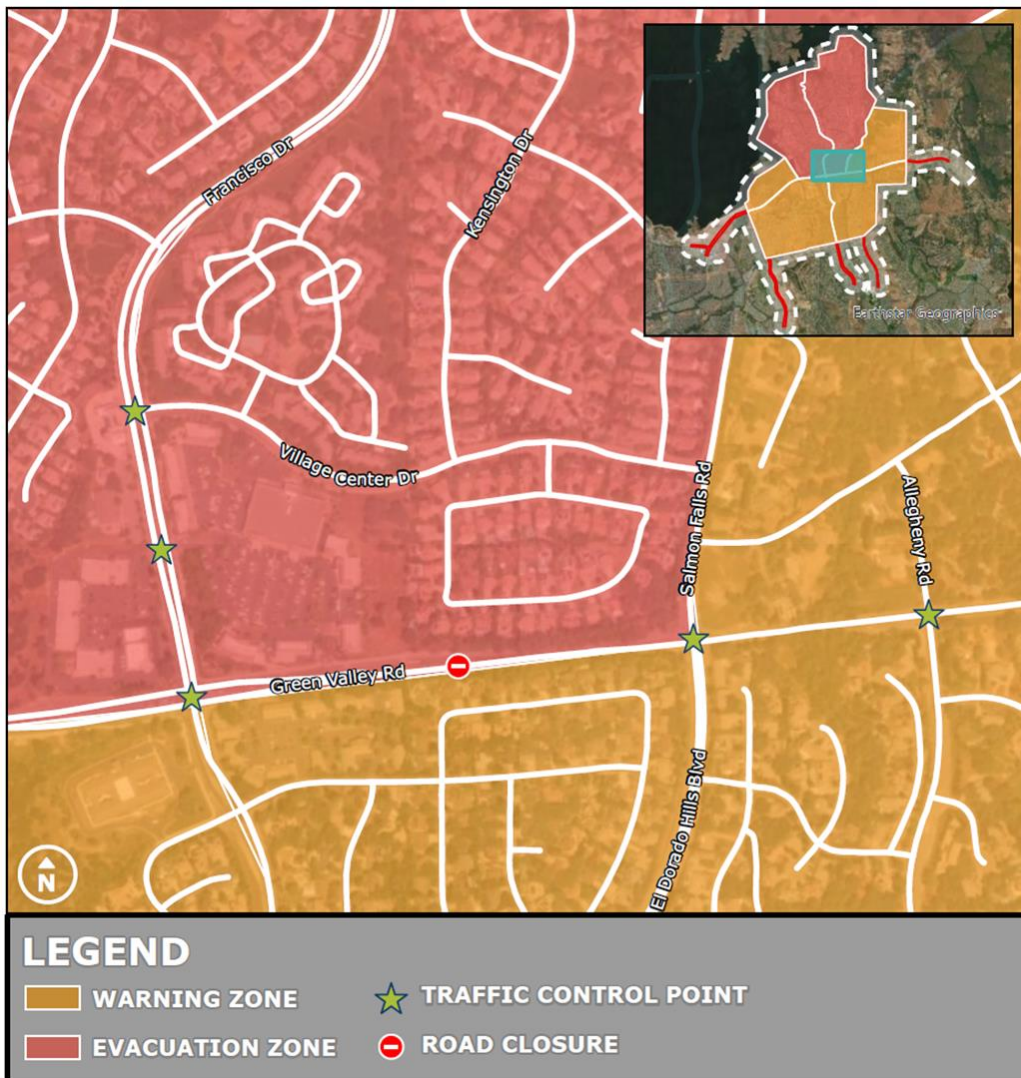
In addition to these traffic control points it is assumed southbound left turns from Francisco Drive and southbound right turns from Salmon Falls Road are prohibited. The only traffic allowed access to the portion of Green Valley Road between Francisco Drive and Salmon Falls Road are vehicles leaving the two shopping complexes with direct access. Replica data was used to estimate weekend afternoon background traffic that will be present at the time of the evacuation scenario along Green Valley Road, Francisco Drive, El Dorado Hills Blvd, Silva Valley Parkway, and Sophia Parkway.

Outside of the manual traffic control areas to assist the flow of evacuation traffic, background traffic needs to be blocked along Green Valley Road to prevent non evacuation traffic from entering the evacuation zone and impeding the evacuation process. Within the same 20-minute period following the start of the evacuation order, eastbound Green Valley Road is closed at Sophia Parkway with all traffic diverted to southbound Sophia Parkway. Westbound Green Valley Road is assumed to be closed at Silva Valley Parkway with all westbound traffic diverted with southbound Silva Valley Parkway.

The model also incorporates nonresidential employee trips exiting the shopping center north of Green Valley Road. Nonresidential trips have a shorter departure time distribution than residential trips as there is less or no need for preparations prior to evacuation.

**TABLE 4: PERCENT OF NON-RESIDENTIAL EVACUATION TRIPS BEGINNING AFTER THE EVACUATION ORDER**

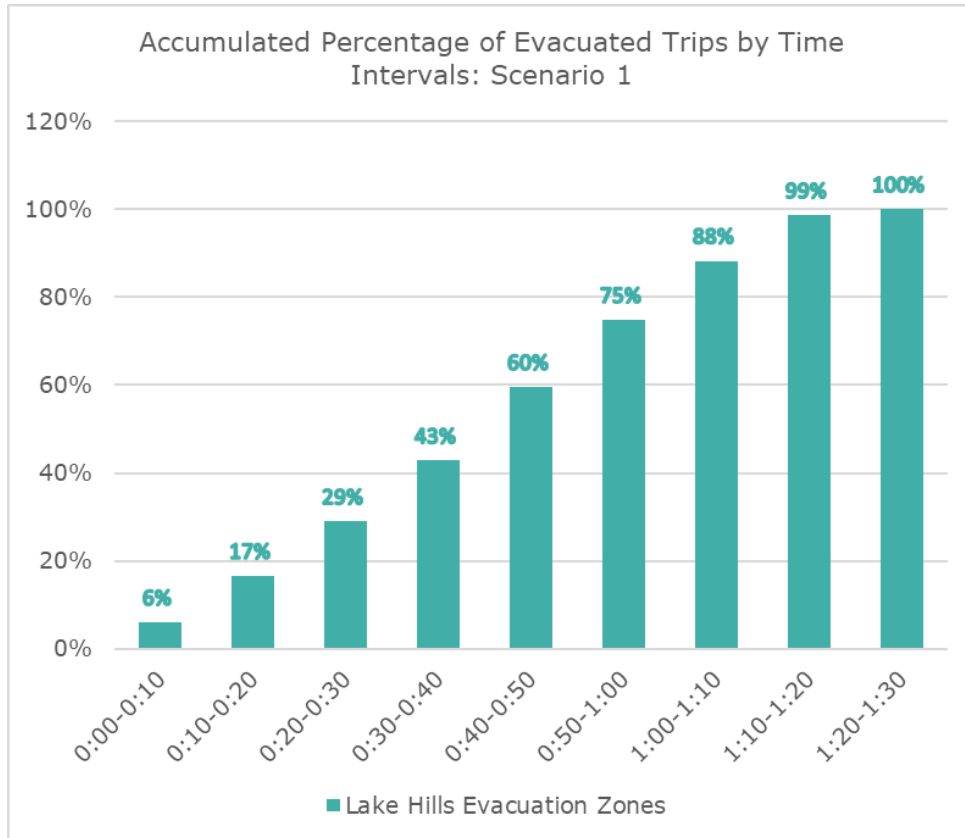
Elapsed Time (Min)	60-Minute Scenario
10	40%
20	80%
30	90%
40	100%
50	100%
60	100%



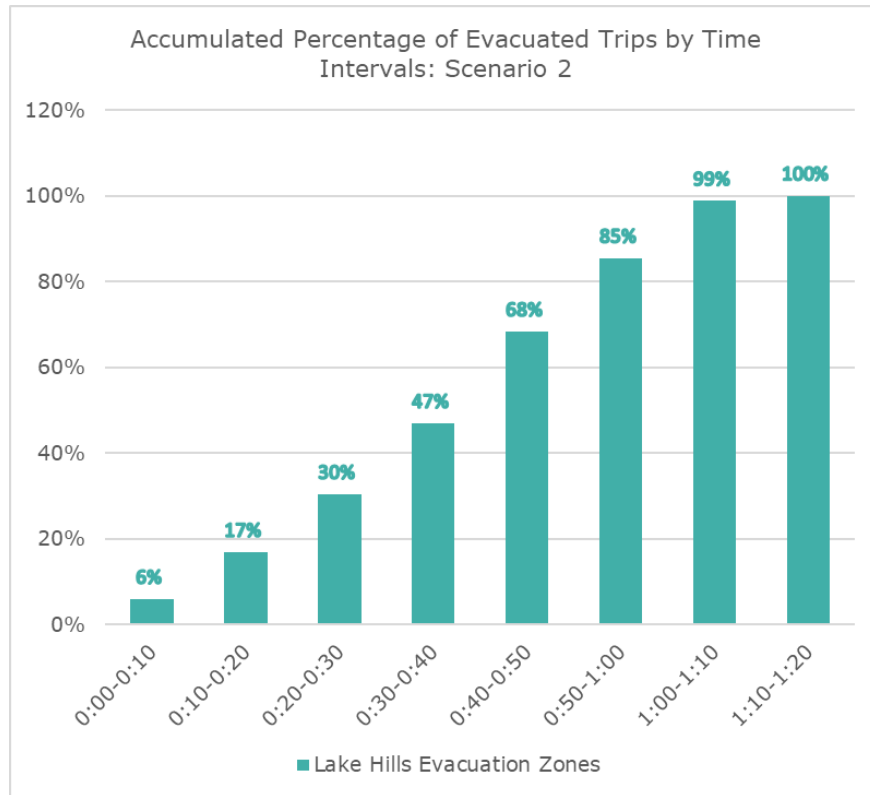
**FIGURE 6: EMERGENCY TRAFFIC CONTROL LOCATIONS FOR EVACUATION TRAFFIC**

### 3.4 EVACUATION TIME ESTIMATES

Under both scenarios, trips evacuating from the Lake Hills Peninsula are unable to evacuate fully within 70 minutes of the evacuation order. 60 minutes after the evacuation order is issued, 75% of vehicles can exit the evacuation zone in Scenario 1 (Figure 7) and 85% of vehicles can exit the evacuation zone in Scenario 2 (Figure 8). Scenario 2 conditions decrease evacuation times by one interval with 100% trips clearing the area 80 minutes after the order as opposed to 90 minutes after the order.



**FIGURE 7: ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIO 1**



**FIGURE 8: ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIO 2**

Figures 9 and 10 show average vehicle speeds along key evacuation routes over 10-minute periods throughout the evacuation. Slowdowns occur along the two main roads (Francisco Drive & Lake Hills Drive). Additionally, there are vehicle slowdowns along El Dorado Hills Boulevard and Silva Valley Parkway. In Scenario 1 congestion from Silva Valley Parkway queues up into the Silva Valley Parkway and Green Valley Road intersection slowing down vehicles' ability to evacuate through that intersection.

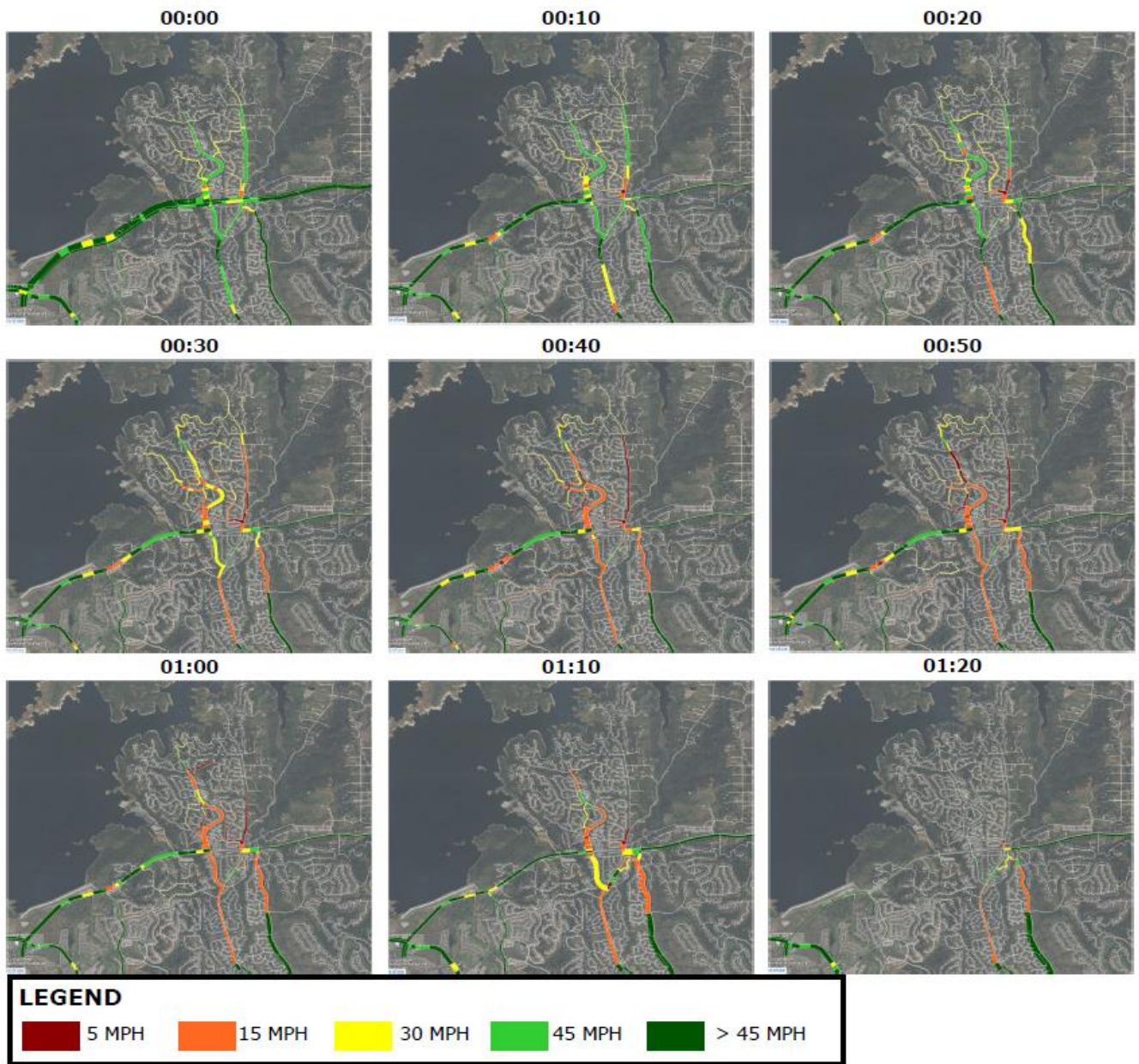
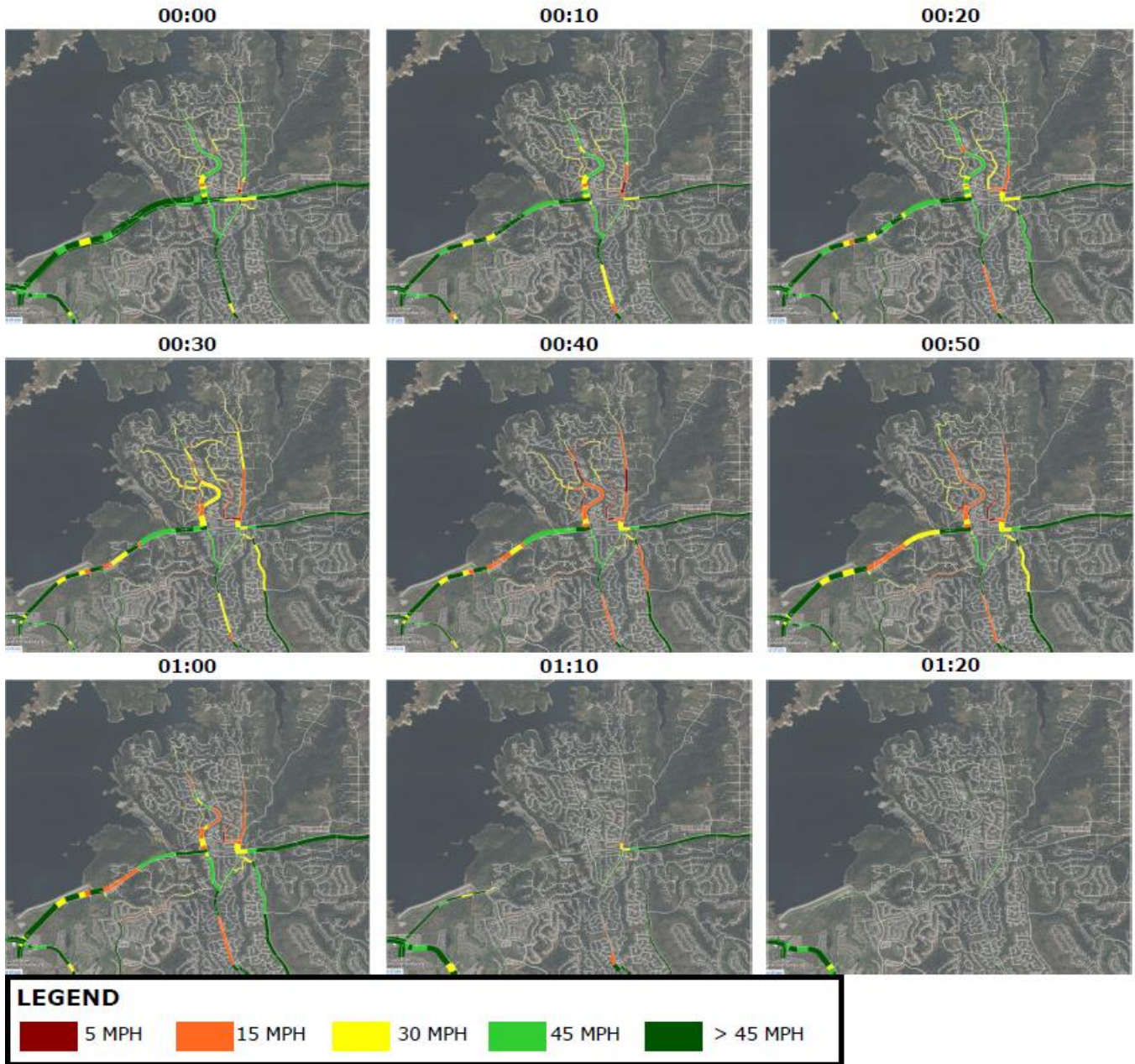


FIGURE 9: LAKE HILLS CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1

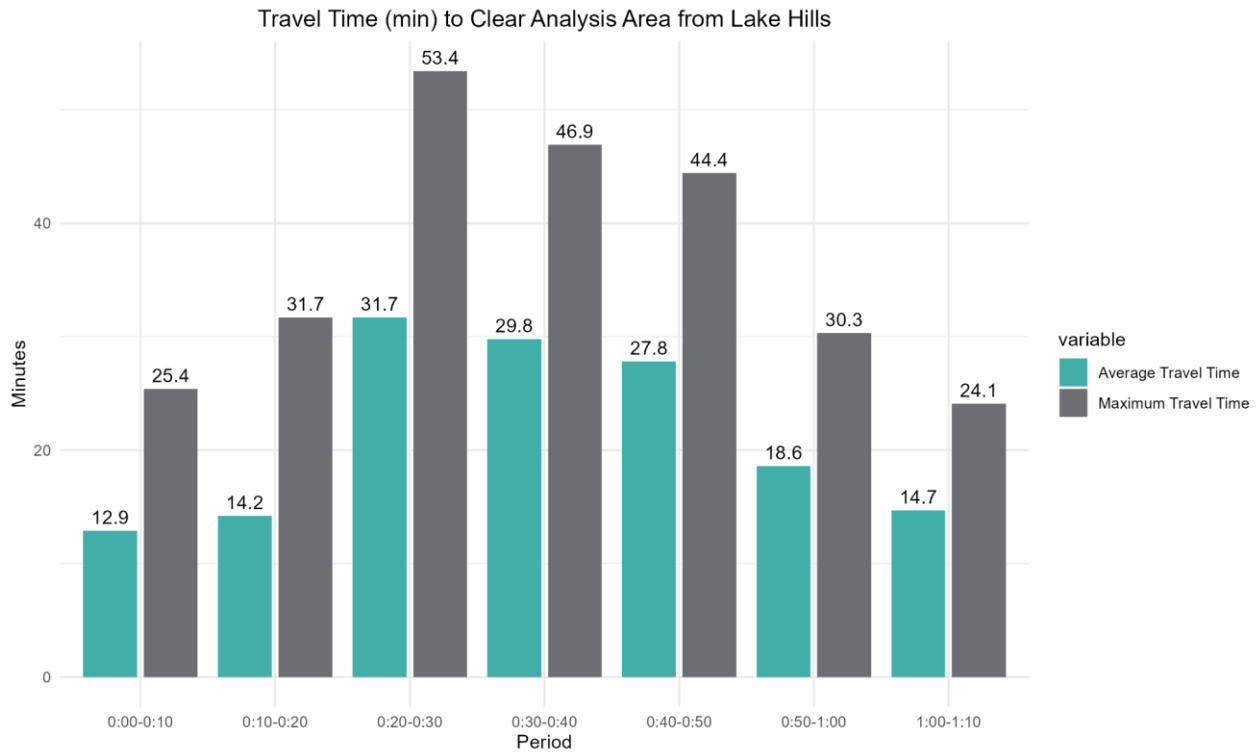


**FIGURE 10: LAKE HILLS CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 2**

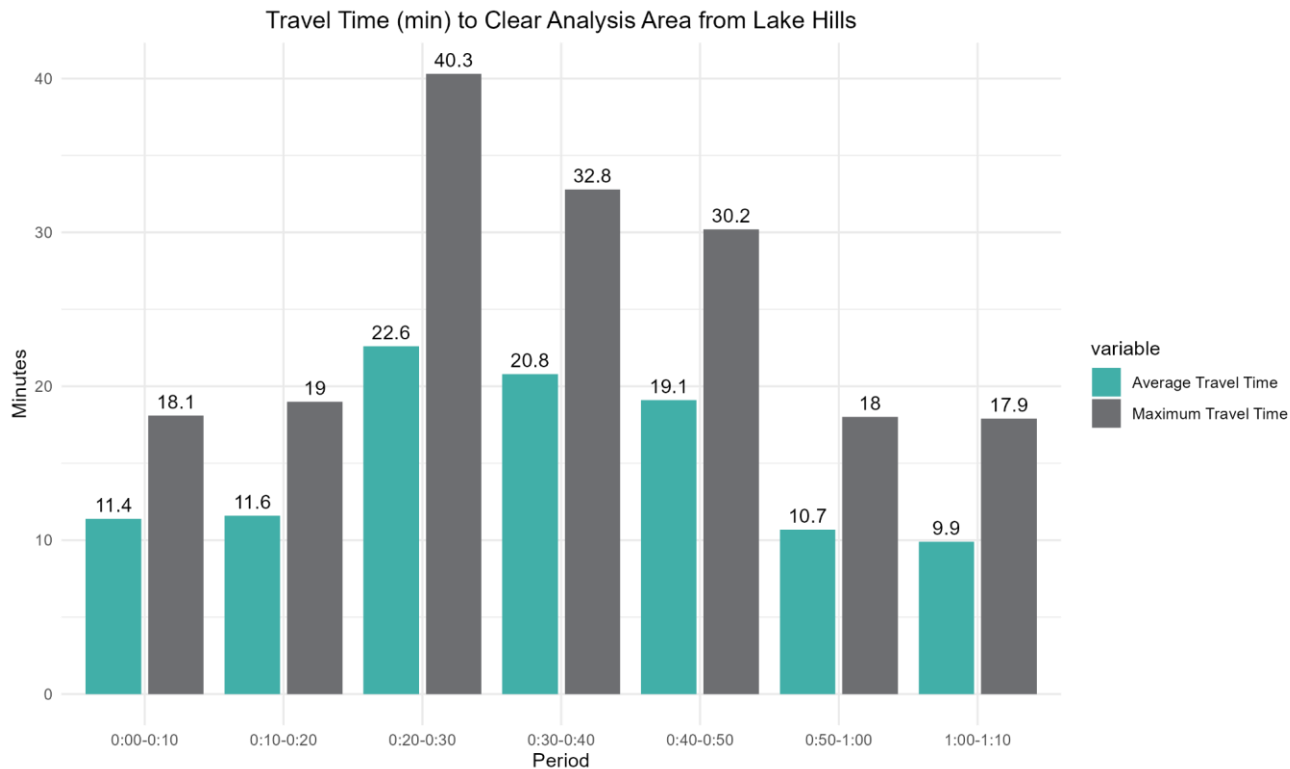
### 3.5 TRAVEL TIME ESTIMATES

After evacuation traffic clears the evacuation zone, there are still downstream bottlenecks that occur. The travel time estimates represent the travel time of all trips considering all possible paths from their origin in the evacuation zone to the destination at the edge of the study area. Note, there are likely to be further congestion bottlenecks within the region during an evacuation along routes that reach US-50, however assessment of the full routes would require a regional study that is beyond the available scope of this project. In both scenarios, average and maximum travel times

peak 30 minutes after the evacuation order. For Scenario 1, the longest average travel time is 31.7 minutes (Figure 11) and for Scenario 2, the longest is 22.6 minutes (Figure 12). Both average and maximum travel times are shorter in Scenario 2 than in Scenario 1 as a result of the dual right turn lane emergency manual traffic control operations.



**FIGURE 11: LAKE HILLS TRAVEL TIME ESTIMATES SCENARIO 1**



**FIGURE 12: LAKE HILLS TRAVEL TIME ESTIMATES SCENARIO 2**

### 3.6 KEY OBSERVATIONS

Among both scenarios, the peak evacuation trip demand occurs between 20 and 30 minutes after the start of the evacuation order. During the peak evacuation time interval in Scenario 1, it takes an average of 31.7 minutes and a maximum of 53.4 minutes to clear the analysis zone from the evacuation zone. Scenario 2 takes an average of 22.6 minutes and a maximum of 40.3 minutes to clear the analysis zone from the evacuation zone. The additional southbound right turn evacuation flow at Francisco Drive at Green Valley Road decreases the average evacuation travel time by over 9 minutes and decreases the maximum travel time by over 13 minutes.

- 60 minutes after the start of the Evacuation order, 75% of trips can clear the evacuation zone in Scenario 1.
- 60 minutes after the start of the Evacuation order, 85% of trips can clear the evacuation zone in Scenario 2.
- It takes 90 minutes to fully evacuate Lake Hills under Scenario 1 with 100% of trips leaving their origin within 60 minutes of the evacuation order.
- It takes 80 minutes to fully evacuate Lake Hills under Scenario 2 with 100% of trips leaving their origin within 60 minutes of the evacuation order.
- In Scenario 1 and 2, 50 minutes into the evacuation, the vehicle queue southbound on Lakehills Drive extends from the Salmon Falls Road intersection to Bonita Drive, nearly one mile north of the Salmon Falls Road intersection.



- In Scenario 1, 50 minutes into the evacuation order, the vehicle queue southbound on Francisco Drive reaches the Sheffield Drive intersection, approximately 1.4 miles north of Green Valley Road. The queue then lengthens approximately 0.4 miles onto Sheffield Drive. The queue clears around 70 minutes after the evacuation order at this location.
- In Scenario 2, the southbound queue along Francisco Drive also reaches the Sheffield Drive intersection and has some spill back on Sheffield Drive around 50 minutes after the evacuation order but clears out within the 10-minute period after.
- In Scenario 1 and 2, 45 minutes into the evacuation order, the vehicle queue westbound on Green Valley Road at the intersection of Sophia Parkway reaches approximately 0.3 miles.
- In Scenario 1, 45 minutes into the evacuation order, the queue along El Dorado Hills Boulevard from the signalized intersection with Governor Drive/ St Andrews Drive backs up approximately 0.2 miles onto Francisco Drive.
- In Scenario 2, 45 minutes into the evacuation order, the queue along El Dorado Hills Boulevard from the same signalized intersection backs up approximately 0.45 miles.
- In Scenario 1, 45 minutes into the evacuation order, the southbound queue along Silva Valley Parkway reaches the intersection with Green Valley due to the four way stop intersection with Appian Way/Charter Way.
- In Scenario 2, at the same point in time the southbound queue is approximately 0.3 miles.
- Queues within the Lake Hills Peninsula evacuation area remained similar in the two scenarios, but downstream queues were smaller allowing for better evacuation once cleared from the Peninsula.

### 3.7 RECOMMENDATIONS AND CONSIDERATIONS

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- The five following traffic signals restrict the flow of traffic during an evacuation impacting evacuation clearance times:
  - Green Valley and Francisco Drive
  - Green Valley and Salmon Falls Road/ El Dorado Hills Boulevard
  - Green Valley and Silva Valley Parkway
  - Francisco Drive and Village Center Drive
  - Francisco Drive and the Retail Center
  - These five traffic signals will need manual traffic control at the start of the evacuation order to increase the evacuation flow rate. Installation of connected traffic signals to a central traffic signal system would allow the County to remotely change signal phasing and optimize cycle lengths and green times to increase traffic flow until emergency manual traffic control can be in place. Operations, such as the Scenario 2 dual right turn lane operation at Francisco Drive and Green Valley Road can only be achieved with emergency manual traffic control.
- Emergency manual traffic control can be put in place along Village Center Drive to balance and direct traffic flows between Salmon Falls Road and Francisco Drive, whichever route is less burdened or threatened.

- Green Valley Road needs to be closed to background through traffic at least 20 minutes after the start of the evacuation order. Eastbound traffic is assumed to be closed at Sophia Parkway and Westbound traffic is assumed to be closed at Silva Valley Parkway. If resources are available, an additional westbound closure at Silver Springs Parkway would reduce the amount of westbound left traffic that would need to be diverted to southbound Silva Valley Parkway.
- The intersection of El Dorado Hills Boulevard and Francisco Drive is an all-way stop controlled intersection that under Scenario 1 has higher southbound evacuation demand on Francisco Drive that queues back toward Green Valley Road, directly impacting the Lake Hills evacuation. Manual traffic control may be needed at this location should the queue on Francisco Drive or El Dorado Hills Boulevard queue toward Green Valley Road and directly impact egress from Lake Hills. A connected traffic signal or a roundabout with a right turn bypass lane and downstream merge could provide improved traffic flow during an evacuation and minimize the need for manual traffic control resources.
- The intersection of Silva Valley Parkway and Appian Way/Charter Way is an all-way stop controlled intersection that results in southbound queuing that nears Green Valley Road at the peak of the evacuation period. A connected traffic signal or a roundabout could provide improved traffic flow during an evacuation and minimize the need for manual traffic control resources.
- There is a long-range El Dorado County Capital Improvement Project to widen Green Valley Road from 2 lanes to 4 lanes from Francisco Drive to 200 feet east of Silva Valley Parkway. This project was not accounted for in this analysis; however, this project has the potential to improve evacuation flows from Salmon Falls Road with an additional lane of capacity through Silva Valley Parkway. While not in the project description, an auxiliary southbound through lane from Salmon Falls Road across Green Valley Road to El Dorado Hills Boulevard would further increase evacuation flow rates.
- This analysis is limited to the study area shown in Figure 2. Ultimate evacuation destinations are likely to be west and east on US 50 or west of Folsom on routes that cross the American River. Evacuation bottlenecks may be encountered along routes that access these destinations and may warrant further traffic control support from emergency traffic control or signal timing adjustments.

## 4. RANCHO DEL SOL

### Overview

The Rancho del Sol full evacuation analysis area is located approximately eight miles east of Placerville and two miles south of Camino. The evacuation zone is approximately 2,600 acres with a predominantly rural residential community situated between North Fork Weber Creek and South Fork Weber Creek straddling Snows Ridge as shown in Figure 13. The topography consists of moderate to steep slopes along the canyons and ridge lines. The vegetation types in the area consist of a mix of coniferous and hardwood forests, and shrub lands.<sup>9</sup> The entire evacuation analysis area is classified by CAL FIRE as a Very High Fire Hazard Severity Zone.<sup>10</sup>

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<sup>9</sup> State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types

<sup>10</sup> California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - April 1, 2024

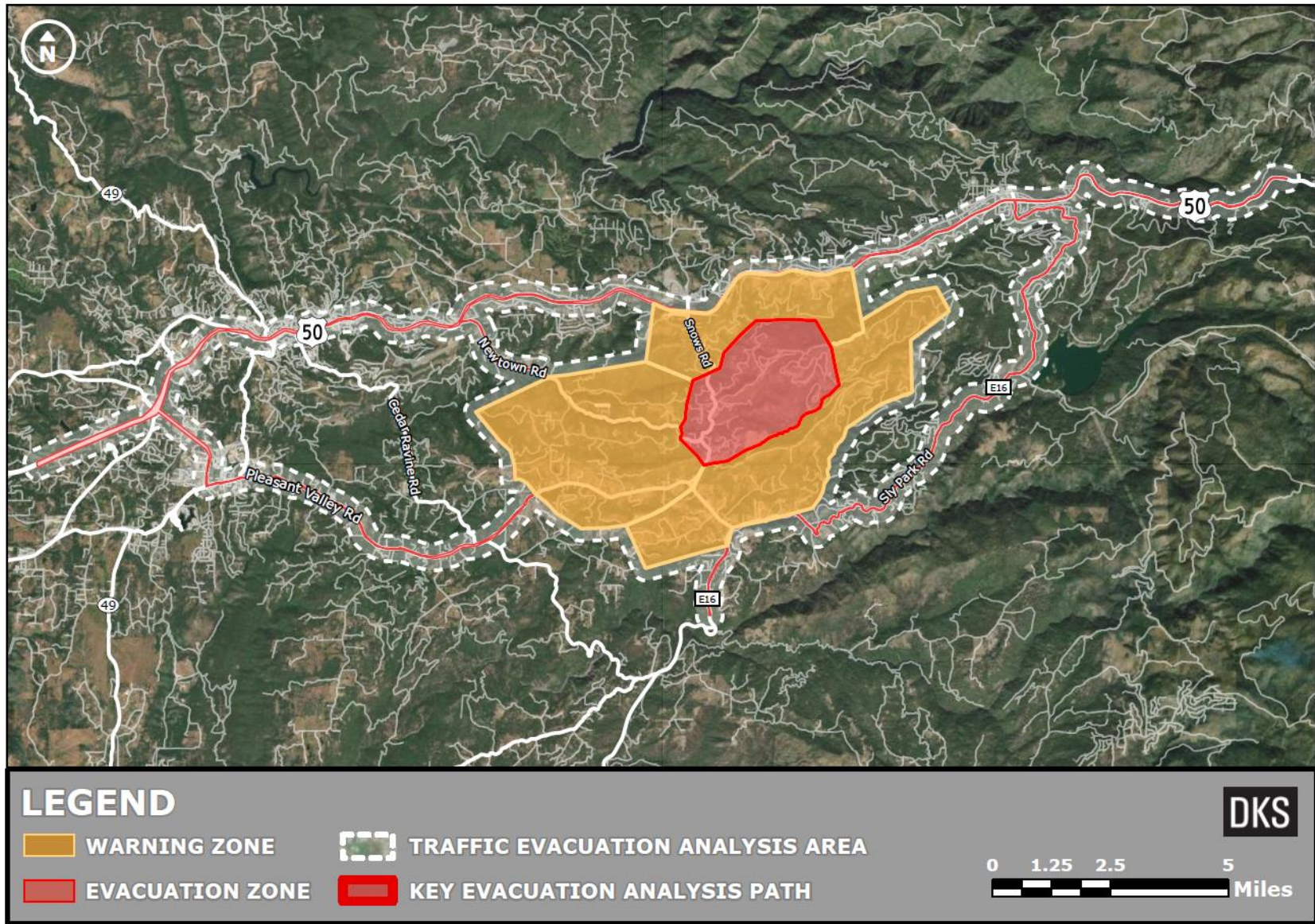


FIGURE 13: RANCHO DEL SOL STUDY AREA

## Community Characteristics

The evacuation zone includes the private gated community of Rancho del Sol, properties west of Starkes Grade Road between Snows Road and Paso Robles Road, and properties along the access Snows Road between Newtown Road and North Fork Weber Creek, including the community along Glory Hole. There are approximately 160 residential households on 1000 acres within the Rancho del Sol community with an estimated population of 535 persons which consist of a higher proportion of seniors in comparison to the latest countywide data (37 percent versus 24 percent).<sup>11</sup>Of these households, there are an estimated 5 with zero vehicle access, 25 with one vehicle access, and 130 with two or more vehicles accessible.

## Vulnerable Population Assessment

TABLE 5: SOCIAL SENSITIVITY INDICATORS IN RANCHO DEL SOL EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Rancho del Sol Evacuation Area
Median Family Household Income	\$90,357
Median Non-Family Household Income	\$84,911
Low Income	25.0%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	6.0%
Seniors	37.0%
Young Children	0%
People of Color	15.0%
Renters	8.9%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	0%
American Native and Alaskan Native	1.0%
Individuals with Disabilities	12.0%
Individuals with Asthma	9.9%
Individuals with Coronary Artery Disease	5.2%
Individuals without access to a vehicle	0%
Individuals without health insurance	3.0%
Households without a computer	3.0%

<sup>11</sup> U.S. Census Bureau. "ACS Demographic and Housing Estimates." American Community Survey, ACS 1-Year Estimates Data Profiles, Table DP05, 2022, <https://data.census.gov/table/ACSDP1Y2022.DP05?q=el+dorado+county+california&t=Populations+and+People>. Accessed by DKS Associates on May 2024.

Social Sensitivity Indicator	Percentage of Population or Households in the Rancho del Sol Evacuation Area
Households without broadband internet	8.0%

### Key Transportation Facilities

- Snows Road*: Primary route for the evacuation zone connecting north to Carson Road in Camino and south to Newtown Road. The intersections of Snows Road at Carson Road and Newtown Road are two-way stop controlled with the Snows Road approaches being stop controlled. Snows Road has a posted speed limit at 35 MPH, however narrow lanes, steep grades and sharp corners (see Figure 14) result in a much lower operational speed than posted. The road is posted for vehicles over 35 feet in length as not advised. There is also a height restriction of 15'-3" under the US-50 overcrossing, shown in Figure 15. Snows Road has a center stripe, no fog line stripe, no shoulders, and has lane widths of 9-12 feet.



**FIGURE 14: SNOWS ROAD WITH NARROW LANES, STEEP GRADE AND SWITCHBACK CURVE**



**FIGURE 15: SNOWS ROAD LENGTH AND HEIGHT RESTRICTIONS**

- *Carson Road*: East-west arterial through Camino that runs parallel to US-50. In addition to serving Camino and providing a connection between US-50 and Snows Road, Carson Road also provides access to many of the Apple Hill area Destinations. Carson Road is posted at 35 MPH and is striped with a center and fog line.
- *Newtown Road*: Arterial providing direct access to US-50 to the west or indirectly connects to Placerville and Diamond Springs via Pleasant Valley Road. Pleasant Valley Road also connects east to E16 (Mt. Aukum Road/Sly Park Road) providing connections south and east of the study area. Newtown Road is unposted with many curves that have advisory speeds below 30 MPH and is striped with a center and fog line.
- *Starkes Grade Road*: Local Road that forms the southern boundary of the evacuation zone and connects Newtown Road one the west and Sly Park Road to the east. Starkes Grade Road has segments that are gravel and single lane wide with two-way traffic, see Figure 16.



**FIGURE 16: STARKES GRADE ROAD SINGLE LANE SEGMENT WITH TWO-WAY TRAFFIC**

- *Pleasant Valley Road*: Arterial that connects Newtown Road to E16 (Sly Park Road/Mt. Aukum Road) to the east and the towns of Diamond Springs and Placerville to the west. Pleasant Valley is near the study area and is posted at 50 MPH. The roadway has a center strip and fog line strip.
- *Puerto Del Sol Road*: Private gated road that serves as the primary road within the Rancho del Sol neighborhood. The road is paved and unstriped with a width of 22 to 24 feet.



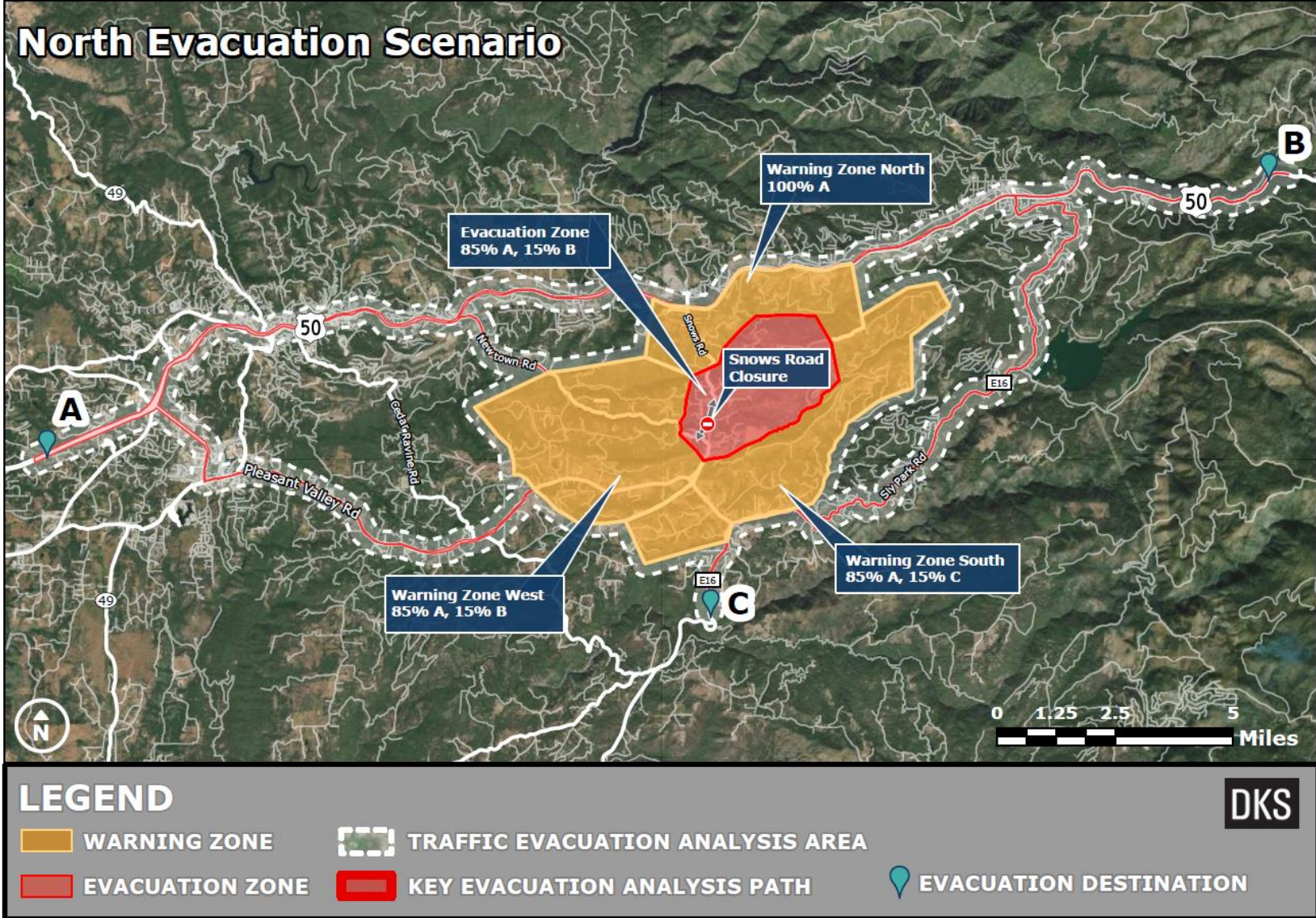
## 4.1 EVACUATION SCENARIOS

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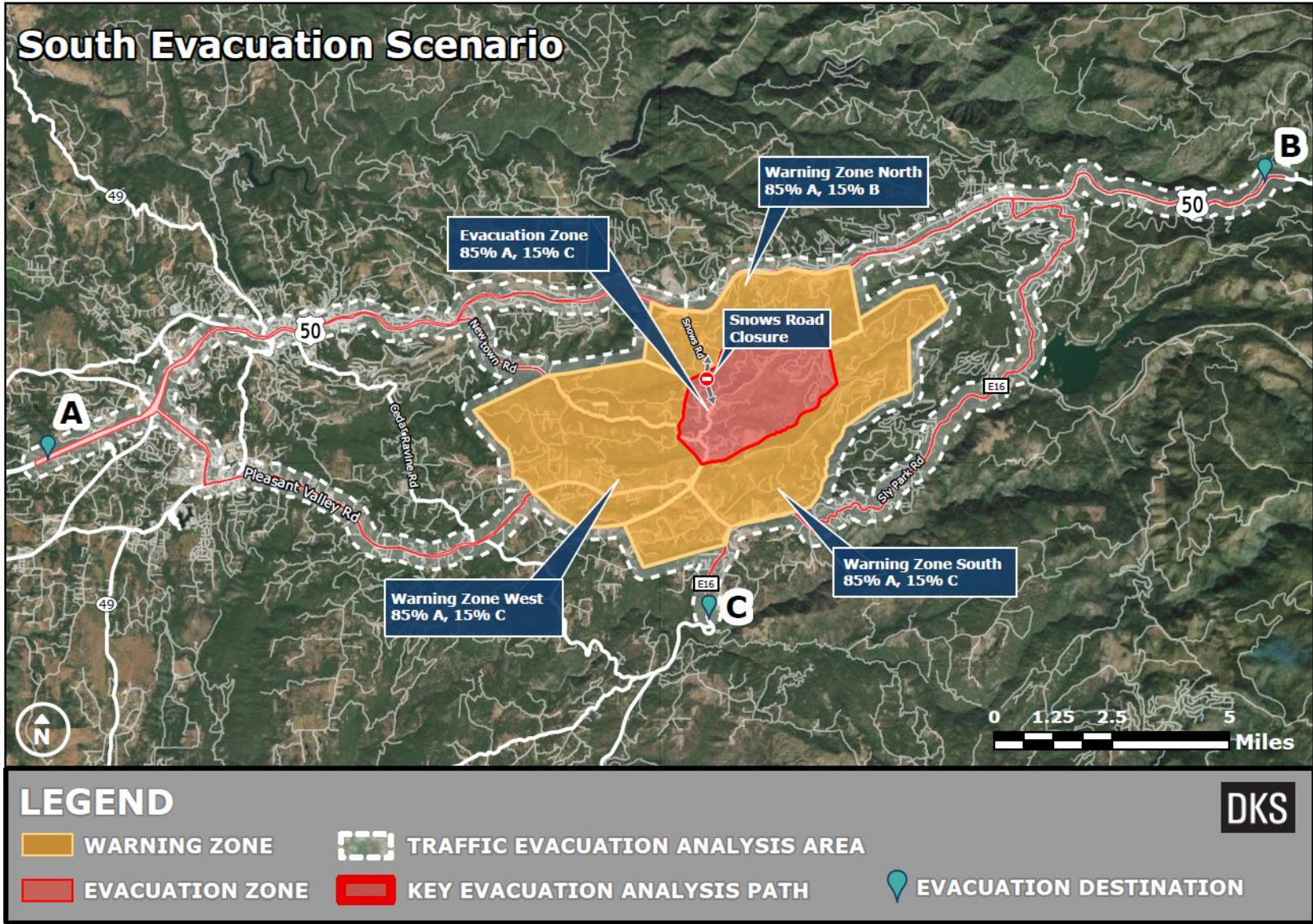
The evacuation scenarios for the Rancho del Sol area were developed in coordination with El Dorado County OES. Two scenarios were developed to evaluate a 60-minute evacuation period to cover a range of wildfire scenarios, rather than to model an evacuation in response to a specific wildfire scenario. For the Ranch del Sol area, Snows Road provides the only evacuation route out of the evacuation analysis zone. Under ideal evacuation conditions Snows Road will be open in both directions to facilitate prompt evacuation should Rancho del Sol require an evacuation. Depending on a specific wildfire threat, Snows Road may need to be restricted for safety to provide access in a single direction. This analysis evaluates two evacuation scenarios under a directional closure of Snows Road to assess the viability of a Rancho del Sol evacuation.

- **Scenario #1: North only evacuation - 60-minute evacuation period.** All evacuation trips north of Treasure Rock Lane must evacuate north along Snows Road toward Carson Road. The assigned evacuation trip distribution percentages for this scenario are displayed in Figure 17.
- **Scenario #2: South only evacuation - 60-minute evacuation period.** All evacuation trips south of North Fork Weber Creek must evacuate south along Snows Road toward Newtown Road. The assigned evacuation trip distribution percentages for this scenario are displayed in Figure 18.

These scenarios cover a range of fast-moving wildfire scenarios that could result in a restricted evacuation direction. Wildfire evacuation scenarios that would allow for an evacuation in both directions simultaneously would likely result in faster evacuation time estimates than represented by these directional closure scenarios.



**FIGURE 17: RANCHO DEL SOL SCENARIO 1 (NORTH) EVACUATION DISTRIBUTION**



**FIGURE 18: RANCHO DEL SOL SCENARIO 2 (SOUTH) EVACUATION DISTRIBUTION**

## 4.2 EVACUATION ROUTES

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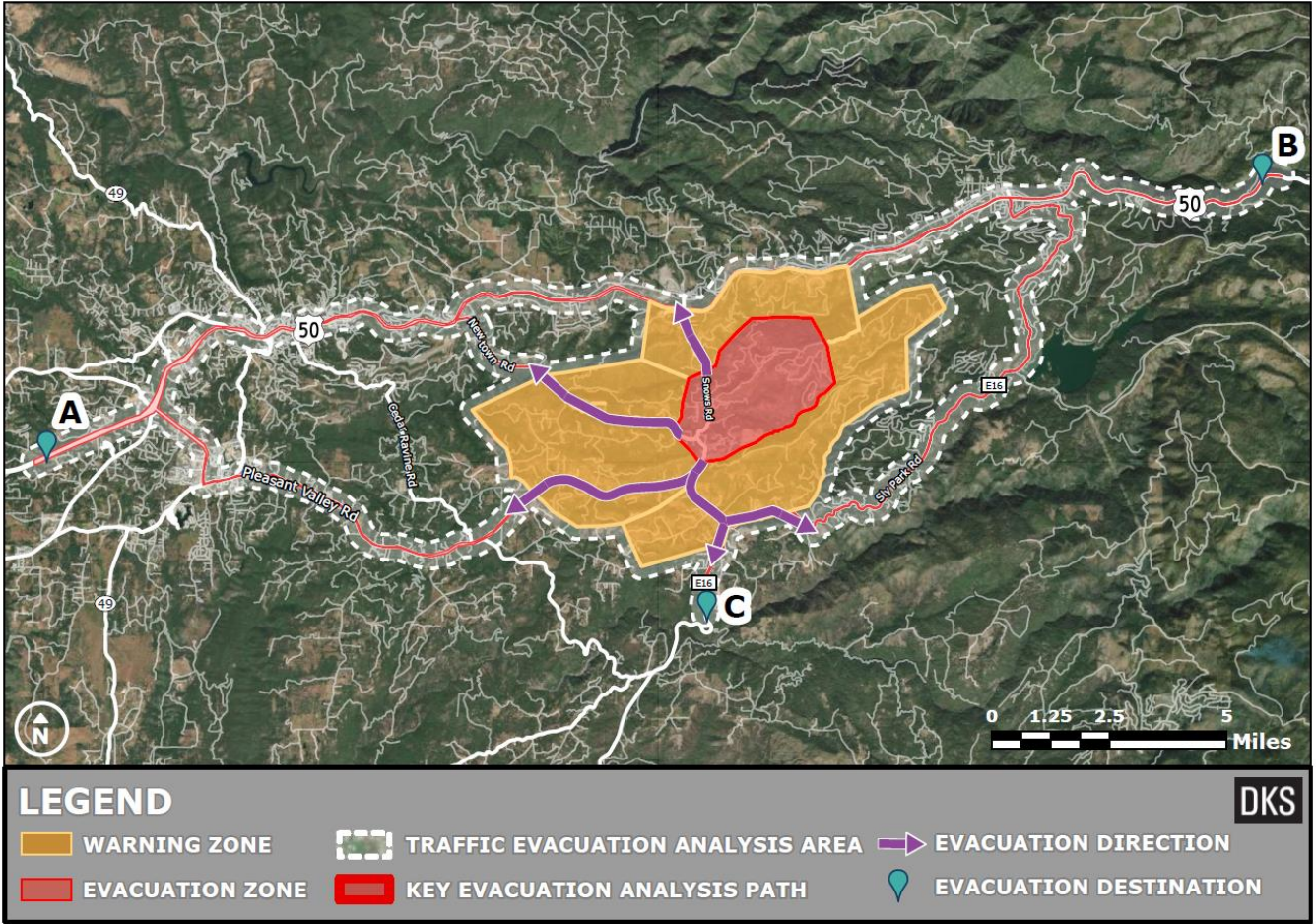
As shown in Figure 19, evacuation destinations for the Rancho del Sol model include the following:

- **A:** US-50 west of South Shingle Road
- **B:** US-50 east of Peavine Ridge Road
- **C:** Mount Aukum Road/E-16 south of Silver Ridge Lane

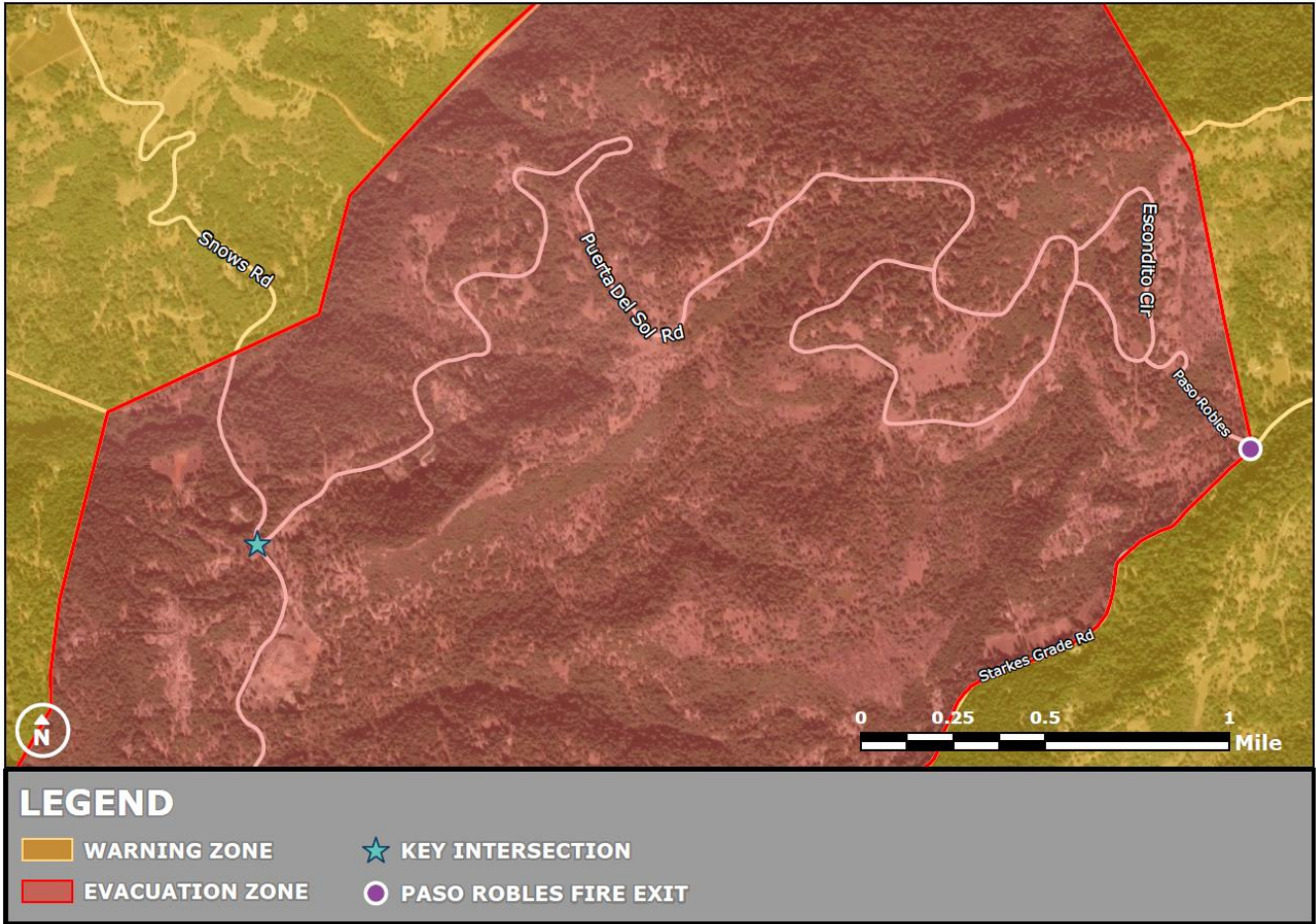
The private gated community of Rancho del Sol has a single egress with an automatic gate on Puerto Del Sol Road at Snows Road and is the only egress considered for this evacuation assessment under the direction of OES. The Ranch del Sol Homeowners Association (HOA) provides an Emergency Exit Map for the community identifying an internal unpaved route connecting Espina Loma Drive to Oro Court and two external emergency exit routes, one connecting Loma Del Norte to Lynx Trail and Paso Robles connecting Escondito Circle to Starkes Grade Road.<sup>12</sup> These are unpaved routes of unknown maintained condition with manual padlocked gates. The HOA provides the gate code, but the maintenance status of the gates and locks are unknown. As of April 2024, there was significant vegetation growth south of the Fire Exit gate of Paso Robles as shown in Figure 21. Figure 20 shows the location of the gate in Figure 21 as well as the single egress into the community.

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<sup>12</sup> Rancho del Sol Emergency Exit Map, updated May 2017:  
[https://www.rdsliving.com/\\_files/ugd/d10258\\_c908830001dc4fb99cc877320e8995db.pdf](https://www.rdsliving.com/_files/ugd/d10258_c908830001dc4fb99cc877320e8995db.pdf)



**FIGURE 19: RANCHO DEL SOL EVACUATION ROUTES**



**FIGURE 20: RANCHO DEL SOL ACCESS POINTS**



**FIGURE 21: RANCHO DEL SOL FIRE EXIT ROAD AT PASO ROBLES**

### **4.3 MODEL ASSUMPTIONS**

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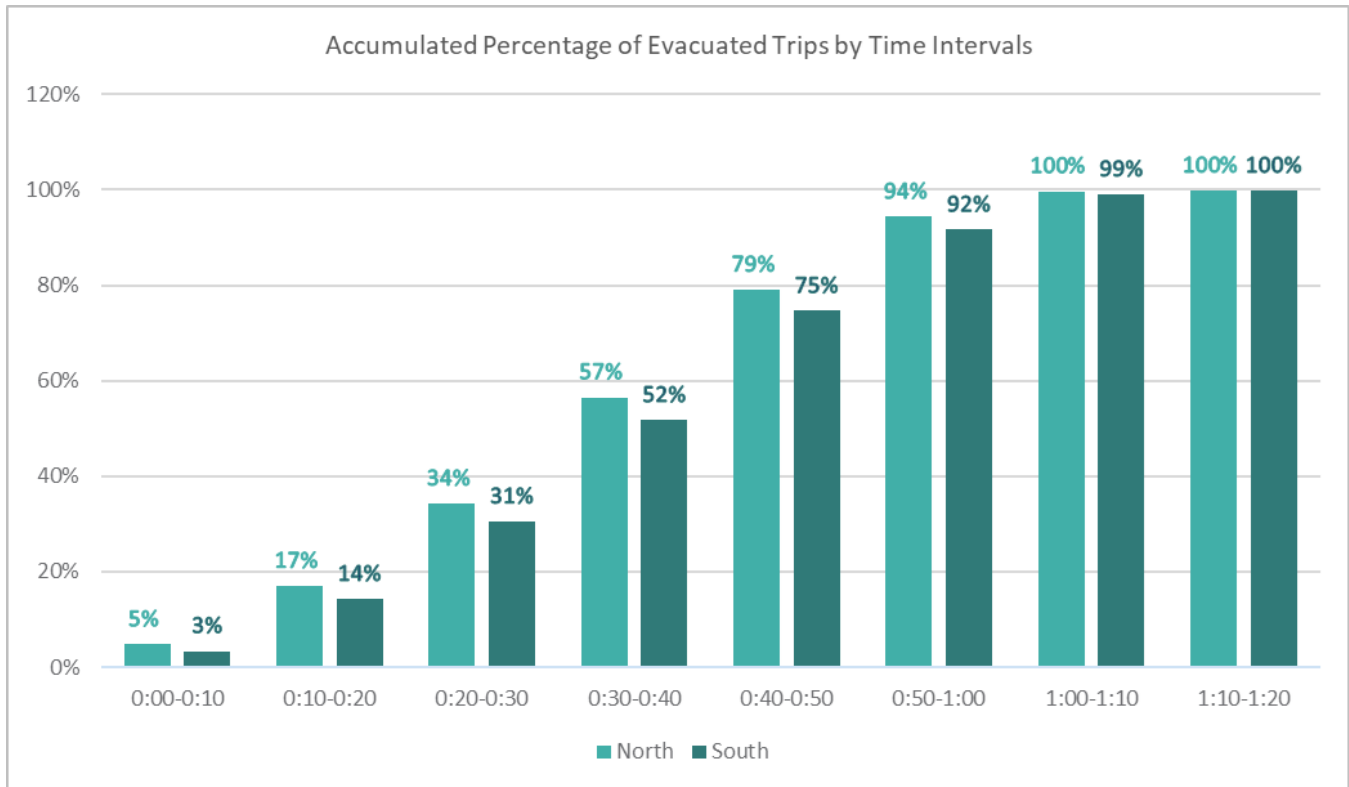
The background traffic control point is assumed to be on Snows Road south of Carson Road near the Camino School to restrict background traffic from entering the evacuation zone. No reduction factor is applied to the background traffic during the evacuation period.

In Scenario 1 (North Evacuation Only), Snows Road north of Newtown Road is closed to all traffic to restrict traffic from entering the evacuation zone from the south.

In Scenario 2 (South Evacuation Only), Snows Road south of Red Dog Drive near North Fork Weber Creek is closed to all traffic to restrict traffic from entering the evacuation zone from the north.

#### 4.4 EVACUATION TIME ESTIMATES

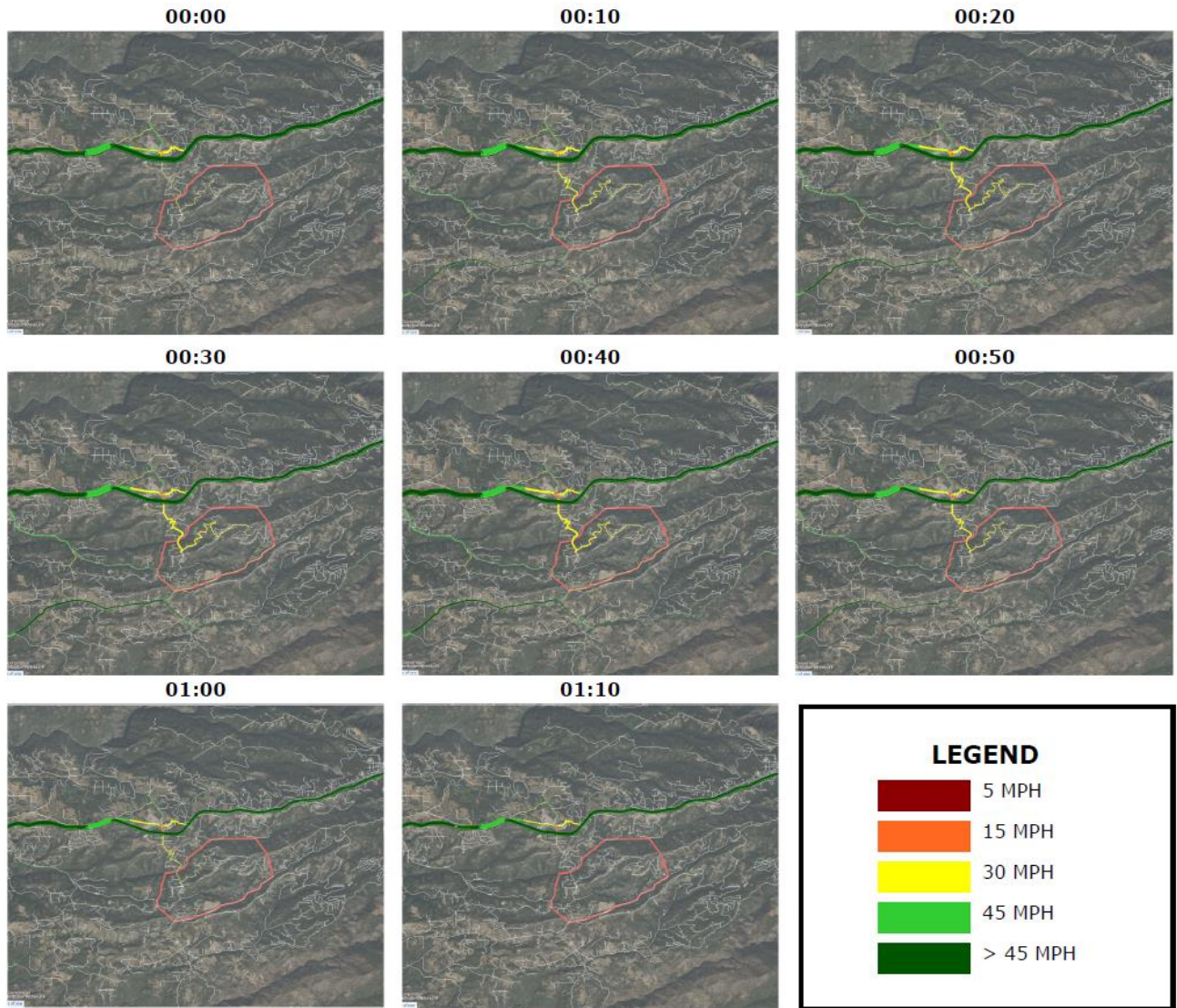
Under Scenario 1 (north), trips departing the evacuation zone can fully evacuate within 70 minutes of the evacuation order but under Scenario 2 (South), an additional 10 minutes are needed to fully evacuate the remaining 1 percent of the Rando del Sol evacuation area zone (Figure 22). The additional time needed to clear the remaining 1 percent of traffic is more a function of the length of the evacuation route to clear the evacuation zone (not the study area), and less so as a result of evacuation congestion.



**FIGURE 22: RANCHO DEL SOL ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 1 & 2**

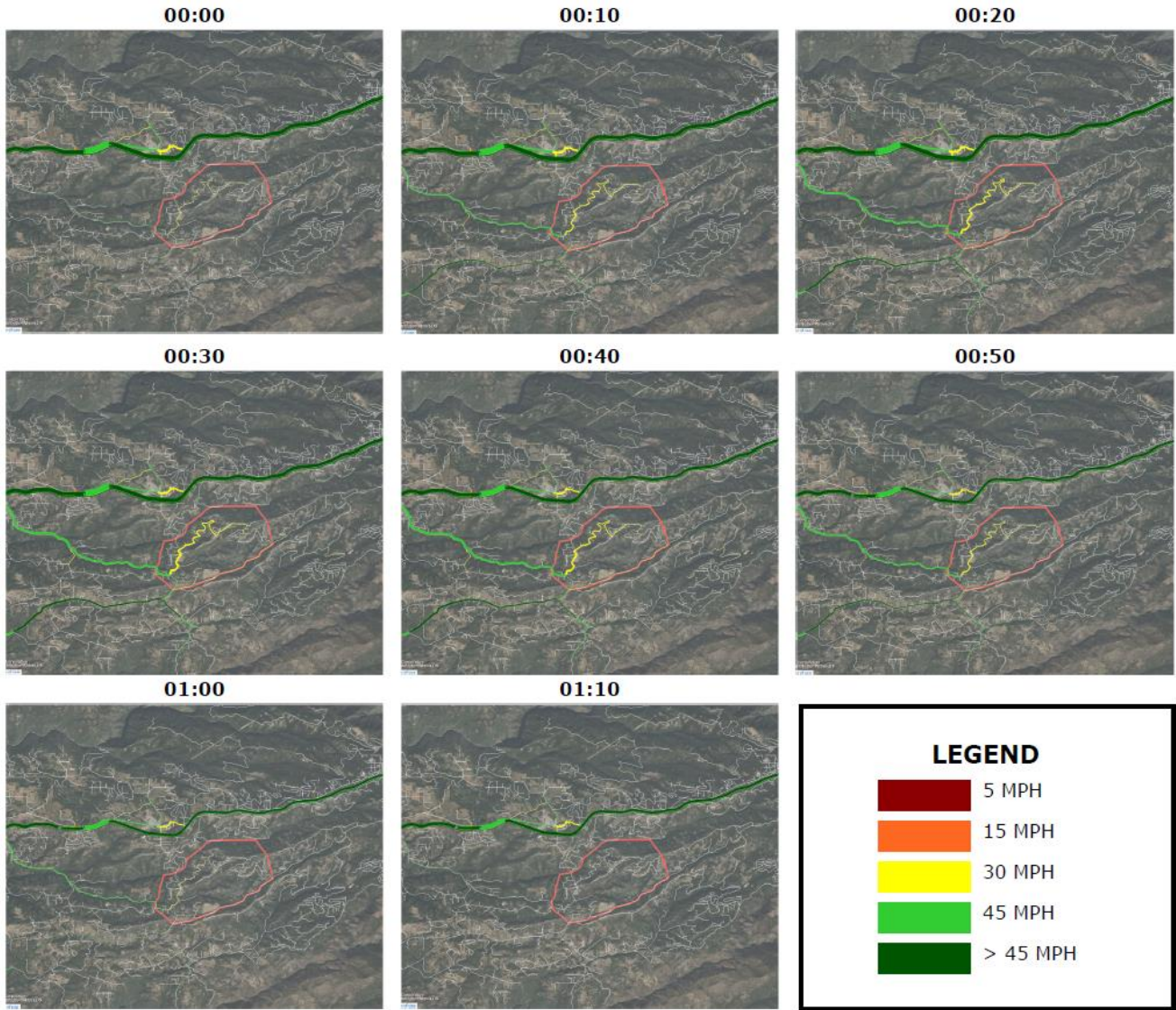
Figure 23 and Figure 24 show average vehicle speeds along key evacuation routes over 10-minute periods throughout the evacuation. With a northern only evacuation, there is some slowing of traffic occurring at The Rancho del Sol gate on Puerto Del Sol Road and on Snows Road at Carson Road from the stop sign, but there are no significant stop-and-go queuing effects due to the low evacuation demand relative to the roadway capacity. The south evacuation scenario has some slowing on Snows Road from the stop sign at Newtown Road, but there is minimal warning zone traffic on Newtown Road conflicting with the evacuation traffic turning off Snows Road.





**Scenario #1: North Only Evacuation**

**FIGURE 23: RANCHO DEL SOL CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1**



**Scenario #2: South Only Evacuation**

**FIGURE 24: RANCHO DEL SOL CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1**

## 4.5 TRAVEL TIME ESTIMATES

For both Rancho del Sol evacuation scenarios, there are no major traffic congestion events within the study that result in a peaking characteristic commonly observed during high-volume evacuation events. Under the north evacuation scenario, average evacuation times to clear the study area are approximately 28 minutes with maximum travel times for the longest routes being approximately 38 minutes. Under the south evacuation scenario, average evacuation times to clear the study area are approximately 21 minutes with maximum travel times for the longest routes being approximately 38 minutes.

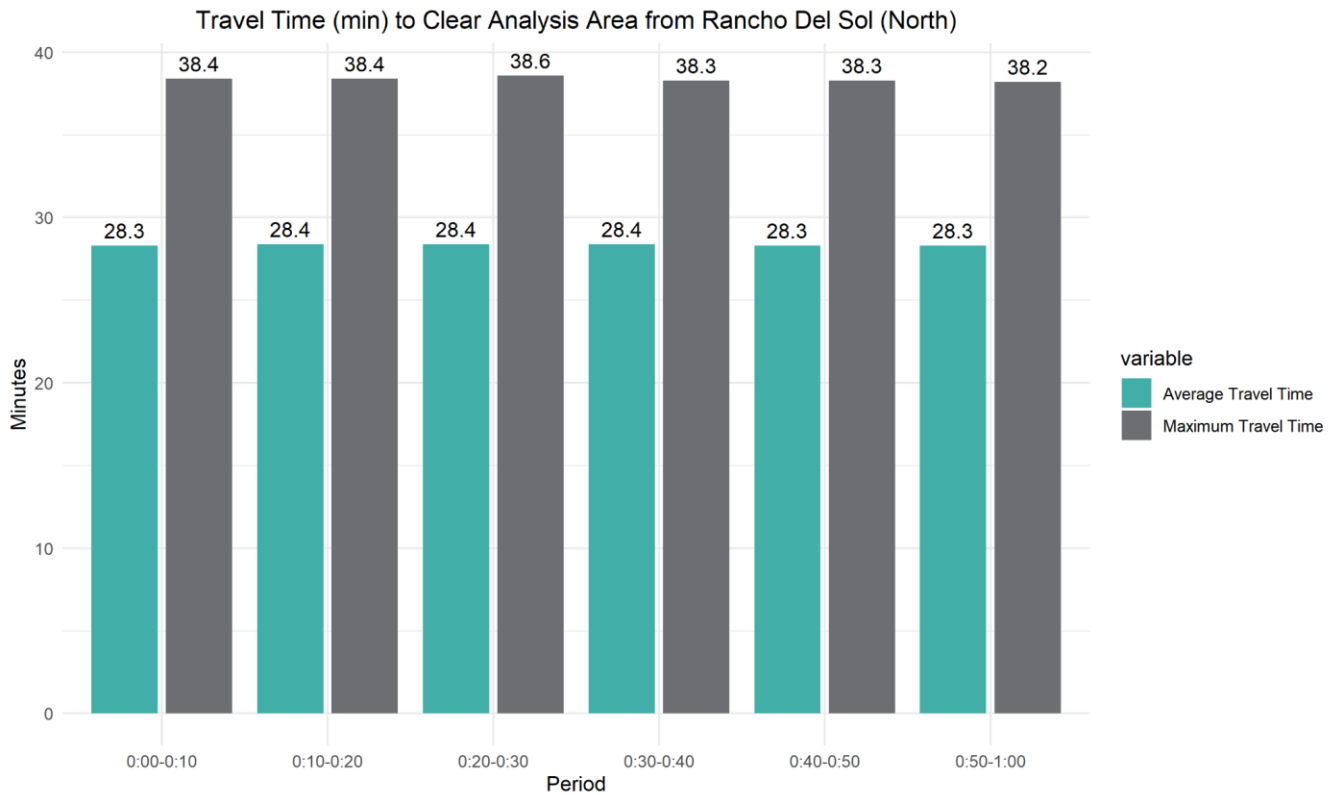


FIGURE 25: RANCHO DEL SOL TRAVEL TIME ESTIMATES SCENARIO 1

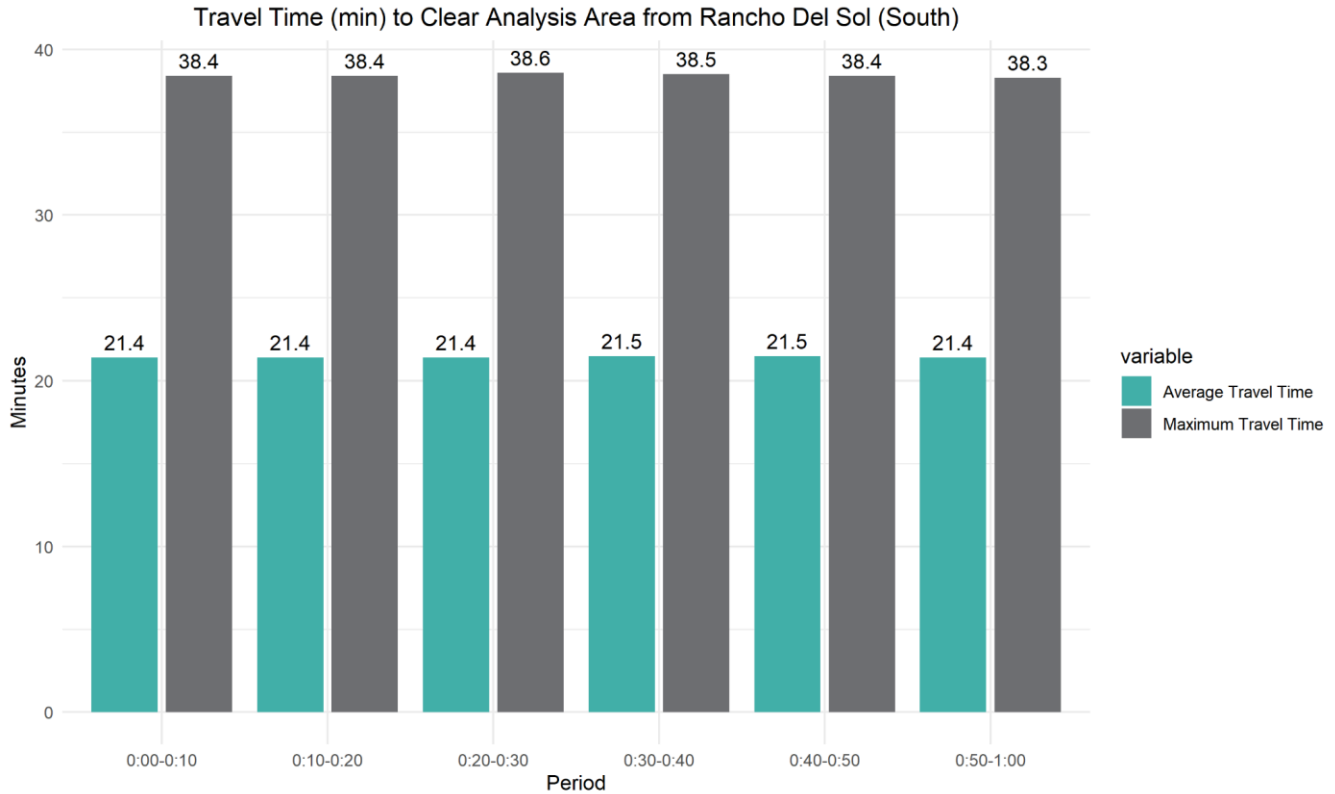


FIGURE 26: RANCHO DEL SOL TRAVEL TIME ESTIMATES SCENARIO 2

#### 4.6 KEY OBSERVATIONS

There is minimal queuing or congestion observed for either scenario, primarily due to the low evacuation trip demand (255 total trips from the evacuation zone and 340 total trips from the warning zone) relative to the roadway capacity.

Under the north evacuation scenario, after all trips leaving in a 60-minute period, the evacuation zone is 100% clear of all trips within 70 minutes. Under the south evacuation scenario, after all trips leaving in a 60-minute period, the evacuation zone is 99% clear of all trips within 70 minutes and 100% clear of all trips in 80 minutes.

#### 4.7 RECOMMENDATIONS AND CONSIDERATIONS

- Based on evacuation demand for the given Ranch del Sol evacuation zone and the background traffic conditions where Snows Road intersects Carson Road and Newtown Road, no mitigation or emergency traffic control measures are needed to facilitate evacuation flows.
- Should westbound traffic on Newtown Road at Snows Road be higher than estimated in this analysis, then there is potential for additional evacuation congestion on Snows Road at the stop sign. This could be mitigated by a single emergency manual traffic control point at Snows Road and Newtown Road that could prevent traffic from entering the evacuation area

on Snows Road and as needed stop traffic on Newtown Road to flag traffic out of Snows Road.

- For the north evacuation, the background traffic estimates were developed using weekend October data that would include demand from Apple Hill Season. Even with this additional traffic, there was sufficient capacity at the Snows Road / Carson Road intersection to prevent substantial queuing. Should traffic on Carson Road at Snows Road be higher than estimated in this analysis, then there is potential for additional evacuation congestion on Snows Road at the stop sign. This could be mitigated by a single emergency manual traffic control point at Snows Road and Carson Road that could prevent traffic from entering the evacuation area on Snows Road and as needed stop traffic on Carson Road to flag traffic out of Snows Road.
- This evacuation demand and period did not result in significant westbound queuing on US-50 through downtown Placerville that warranted changes to the signal timing. Should an evacuation in the Rancho del Sol area occur that is larger in size than assumed in this analysis, resulting in a substantially larger evacuation demand, then implementation of the Trip-to-Green Project on US-50 through Placerville may be warranted.
- Rancho del Sol area evacuation greater in size than assumed in this analysis may result in congestion bottlenecks along the identified evacuation routes.

## 5. LOGTOWN

### Overview

The Logtown evacuation zone encompasses the Logtown Ridge and SR-49 corridor where the topography consists of moderate to steep slopes along the ridge lines and canyons. The evacuation zone is approximately 8,800 acres, as shown in Figure 27. The vegetation types in the area consist mostly of hardwood woodland mixed in with hardwood forests and herbaceous lands.<sup>13</sup> The entire evacuation analysis area is classified by CAL FIRE as a Very High Fire Hazard Severity Zone.<sup>14</sup>

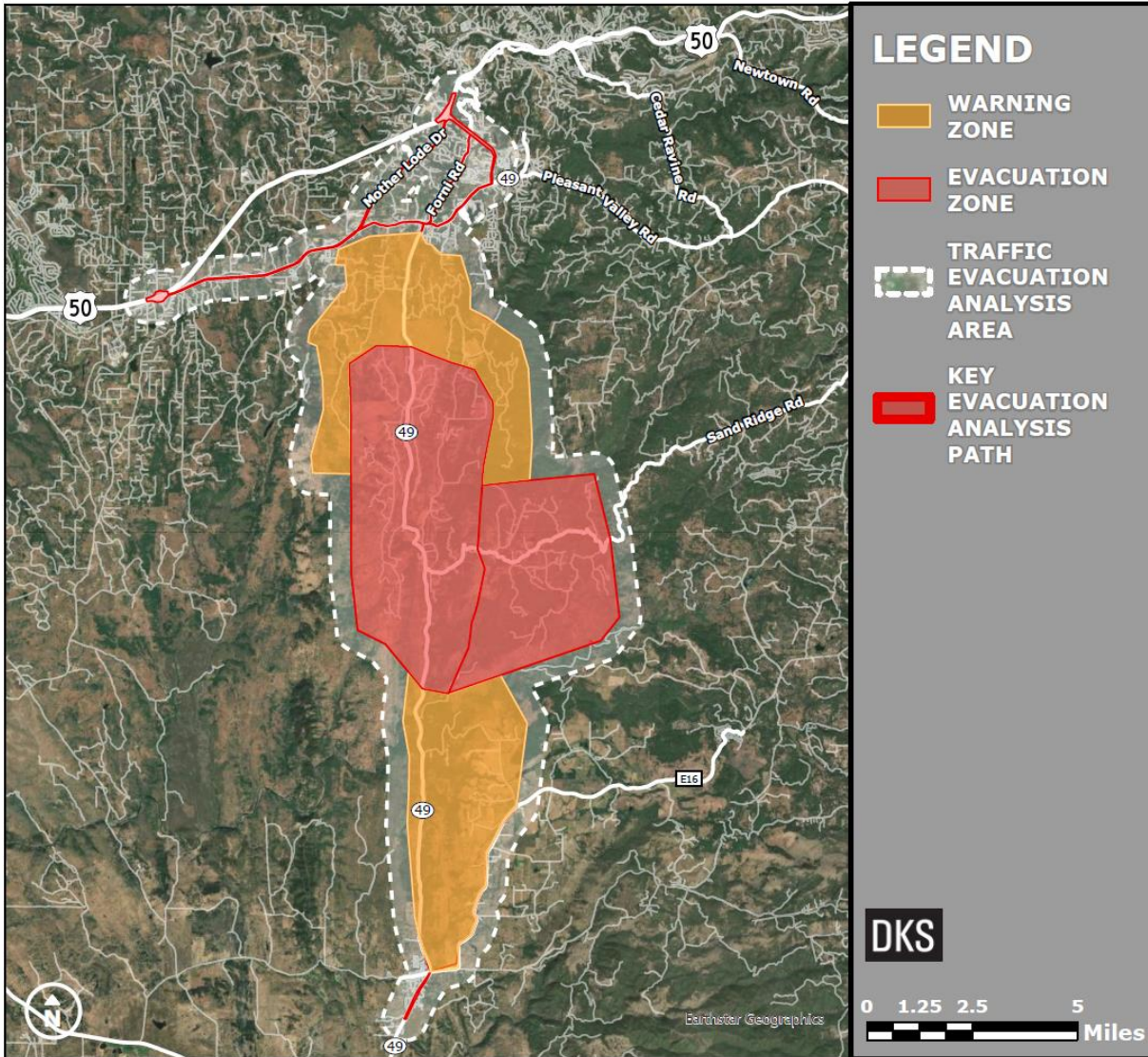


FIGURE 27: LOGTOWN STUDY AREA

<sup>13</sup> State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types

<sup>14</sup> California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - effective April 1, 2024

## **Community Characteristics**

The evacuation zone includes the rural communities near SR-49 between Dolomite Drive in the north and Morales Rancho Road in the south. This includes Crystal Boulevard on the west side and Monitor Road on the east side. There are an estimated 680 households in the evacuation zone with an estimated population of 1695 persons which consist of a higher proportion of seniors in comparison to the latest statewide data (25 percent versus 16 percent). Of these households, there are 20 with zero vehicle access, 130 with one vehicle access, and 535 with two or more vehicles accessible.

## Vulnerable Population Assessment

TABLE 6: SOCIAL SENSITIVITY INDICATORS IN LOGTOWN EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Logtown Evacuation Area
Median Family Household Income	\$114,885
Median Non-Family Household Income	\$39,445
Low Income	17.0%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	8.0%
Seniors	25.0%
Young Children	1.62%
People of Color	15.0%
Renters	10.1%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	1.0%
American Native and Alaskan Native	0.8%
Individuals with Disabilities	15.0%
Individuals with Asthma	10.0%
Individuals with Coronary Artery Disease	7.0%
Individuals without access to a vehicle	2.0%
Individuals without health insurance	1.8%
Households without a computer	3.0%
Households without broadband internet	7.0%



## Key Transportation Facilities

- *SR-49 (Golden Chain Highway)*: North-south two-lane minor arterial which provides a connection between US-50, Pleasant Valley Road in the Diamond Springs and Placerville areas, and south to Plymouth at the intersection with E16. SR-49 is posted at 55 MPH through the study area and striped with center and fog lines.
- *Pleasant Valley Road*: East-west arterial that becomes part of US-49 for a segment in Diamond Springs and connects to US-50. Within the study area, the posted speed limit ranges from 25 to 40 MPH and striped with center and fog lines.
- *Mother Lode Drive*: Two-lane east-west route running parallel to US-50 through Kingsville, located south of US-50 from Shingle Road in the west to Missouri Flat Road in the east. It connects Pleasant Valley Road to US-50 in both directions. The road is classified as minor arterial west of Pleasant Valley Road and major collector northeast of Pleasant Valley Road. The posted speed limit ranges from 25 to 50 MPH and striped with center and fog lines.
- *Forni Road*: Two-lane local road east of SR-49 that connects Pleasant Valley Road to Missouri Flat Road and can then access US-50. Forni Road has a posted speed limit of 35 MPH and is striped with a center and fog line.
- *Crystal Boulevard*: Rural residential collector road posted at 35 MPH. The road is narrow with 10-to-11-foot travel lanes, with no shoulders. There is a center stripe, with segments that have fog lines. It intersects with Monitor Road in Logtown at SR-49.
- *Monitor Road*: Rural residential local road that is unposted. The road is narrow with 10-to-11-foot travel lanes, with no shoulders. There is a center stripe, with no fog lines. Intersections with Crystal Boulevard in Logtown at SR-49.

### 5.1 EVACUATION SCENARIOS

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The evacuation assessment for the Logtown area has two scenarios with the same departure time:

- **Scenario #1: North only evacuation - 40-minute evacuation period.** All evacuation trips north of Sand Ridge Road must evacuate north along SR-49 toward Pleasant Valley Road.
- **Scenario #2: South only evacuation - 40-minute evacuation period.** All evacuation trips south of Quartz Drive and Dolomite Drive evacuate south along SR-49 toward Plymouth.

These scenarios cover a range of fast-moving wildfire scenarios that could result in a restricted evacuation direction. Wildfire evacuation scenarios that would allow for an evacuation in both directions simultaneously would likely result in faster evacuation time estimates than represented by these directional closure scenarios.

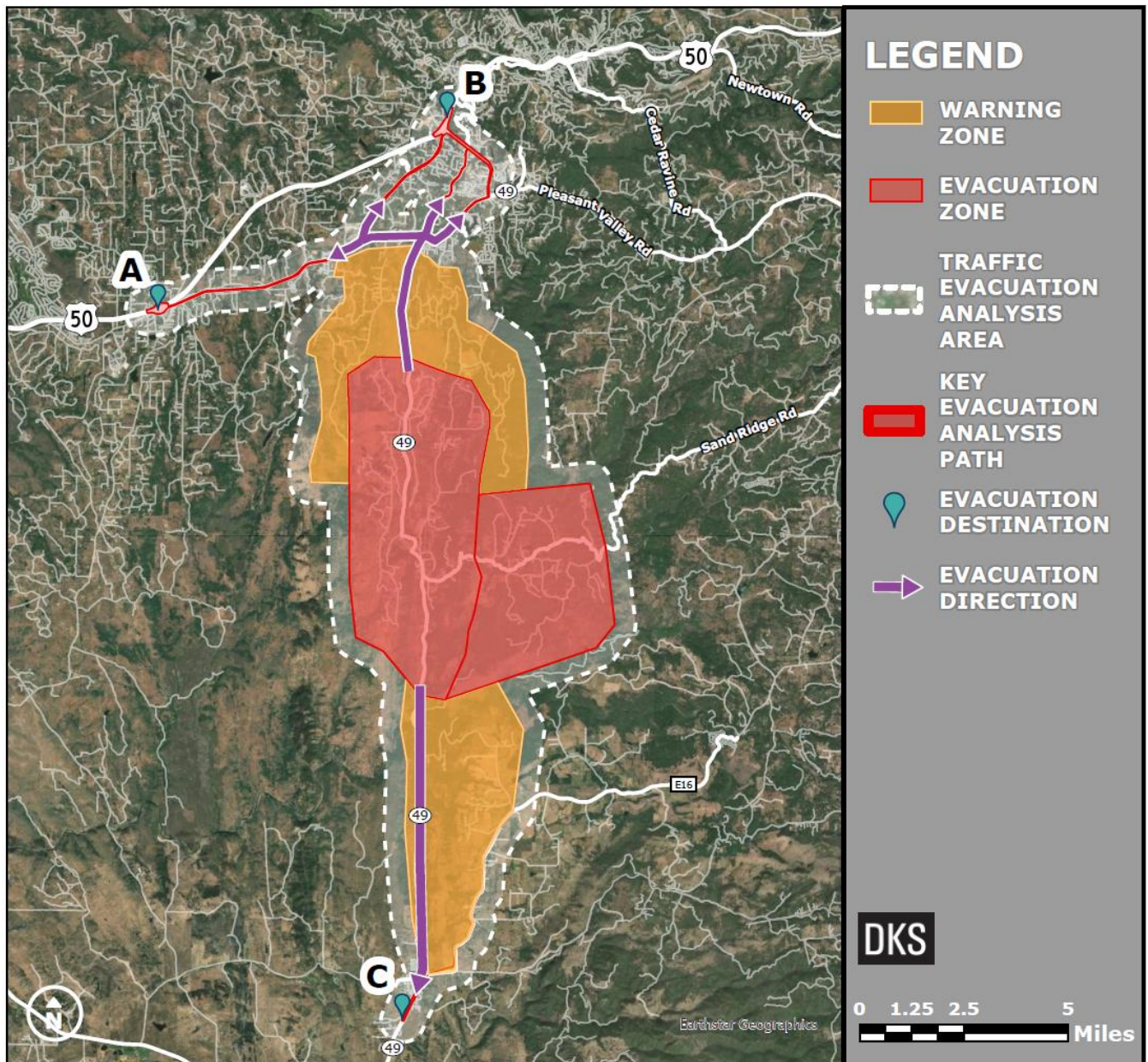
### 5.2 EVACUATION ROUTES

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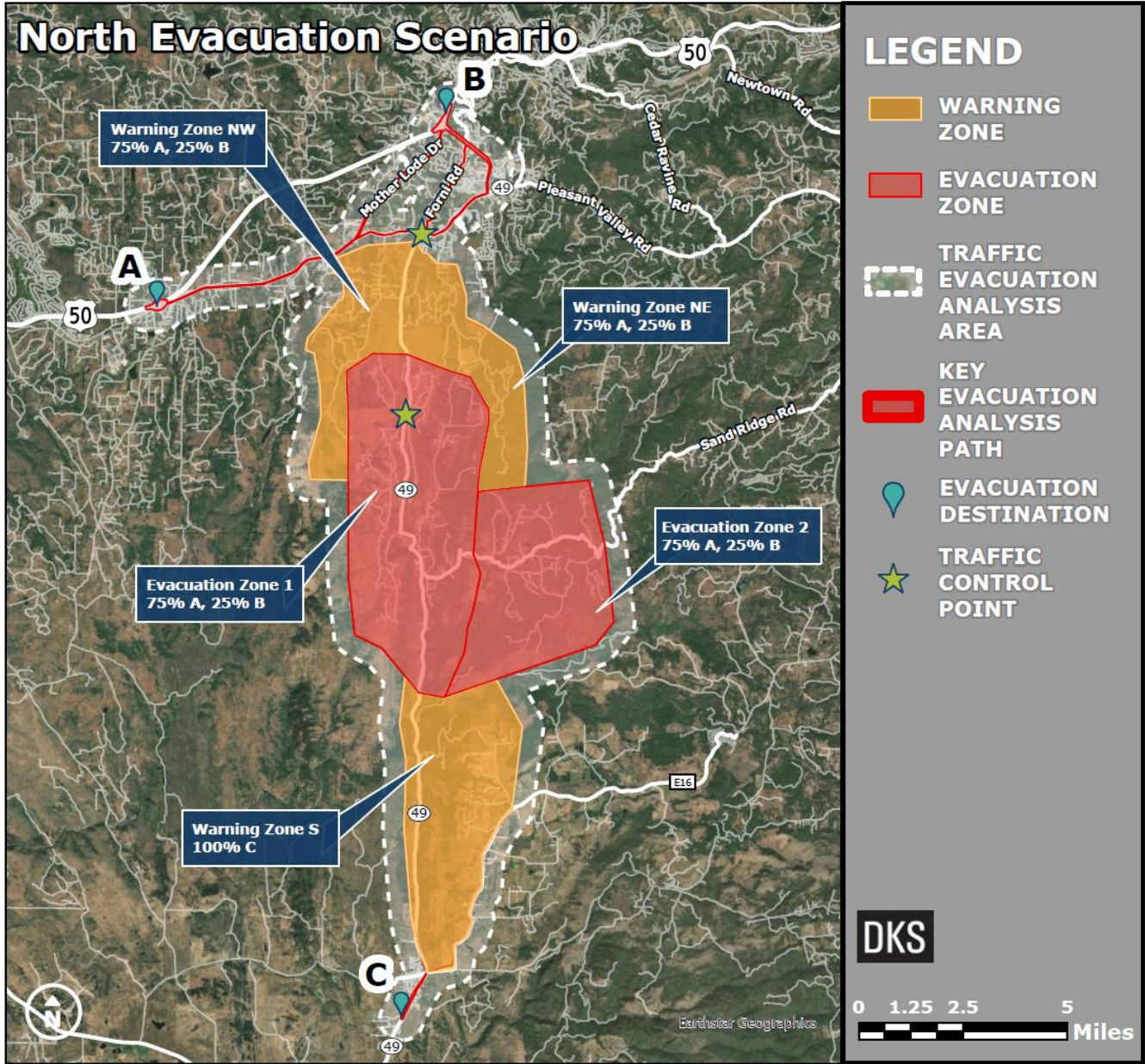
As shown in Figure 27, the following destinations have been identified for the Logtown evacuation model:

- **A:** US-50 westbound
- **B:** North Missouri Flat Commercial Zone (potential shelter) or beyond to Placerville
- **C:** SR-49 south of Main Street/E16

The assigned trip distribution percentage for each evacuation and warning zone to the above destinations in Scenario 1 and 2 is shown in Figure 29 and Figure 30, respectively. For north evacuation in Scenario 1, Pleasant Valley Road and Mother Lode Drive are two main roadways that allow for egress from the evacuation and warning zones. Forni Road also provides connection to the Missouri Flat Road interchange area accessing US-50 on the east and potential shelter areas. For south evacuation in Scenario 2, trips from evacuation and warning zones access the south destination using SR-49.



**FIGURE 28: LOGTOWN EVACUATION DIRECTIONS**



**FIGURE 29: LOGTOWN NORTH EVACUATION DISTRIBUTION**

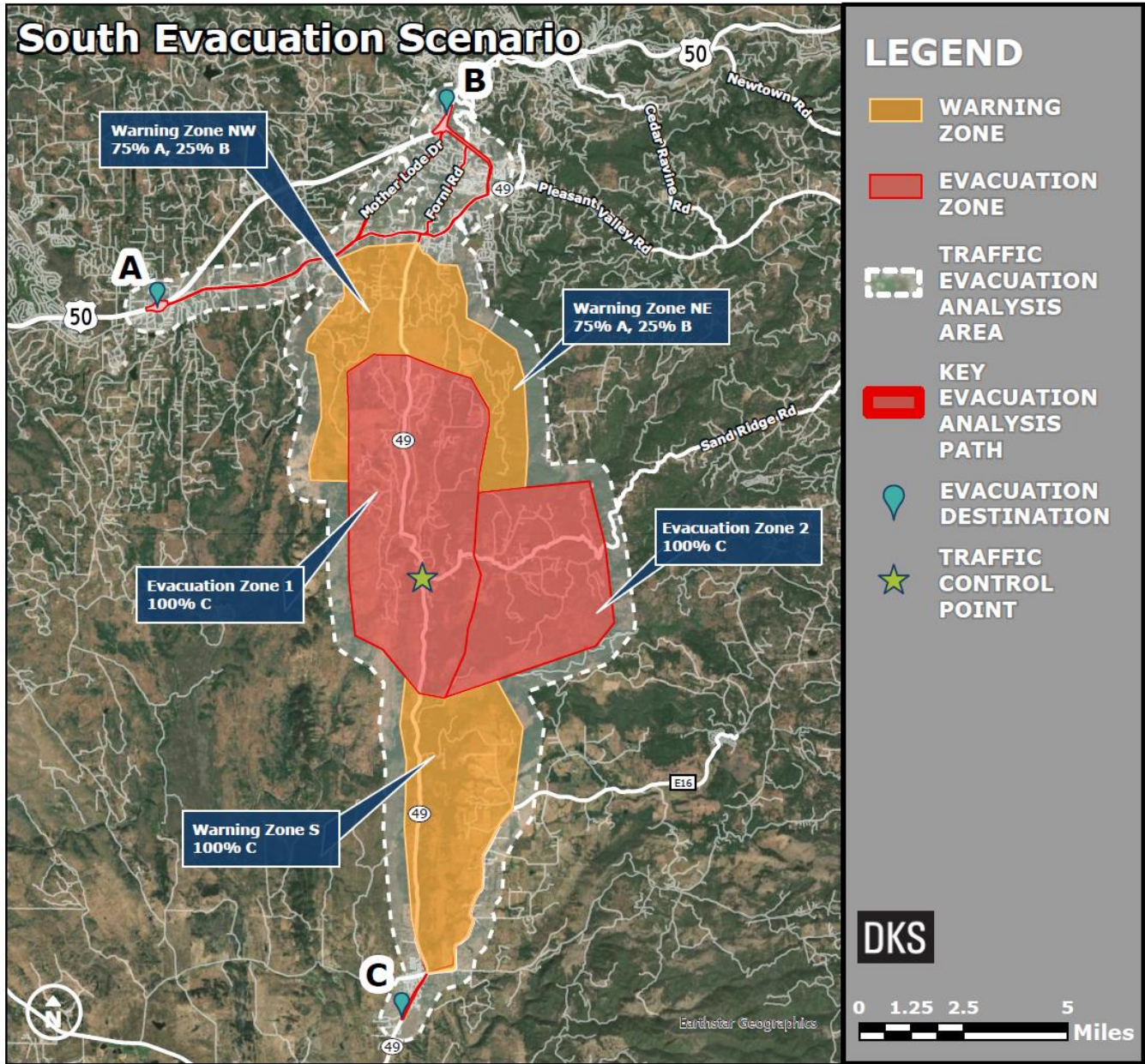


FIGURE 30: LOGTOWN SOUTH EVACUATION DISTRIBUTION

### 5.3 MODEL ASSUMPTIONS

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Background traffic control points are assumed to be in place along SR-49 to restrict background traffic from entering the evacuation zone. For the north area, traffic is proportionally redirected to other north destinations based on the background traffic distribution. For the south area, traffic is redirected to other south destinations, including west to Main Street, east to Route E 16, and south to SR-49. A 50 percent reduction factor is applied to the background traffic 20 minutes after the evacuation start time as local users in the area begin to receive alerts and avoid the area for non-essential trips.

There are several bottleneck locations that require emergency manual traffic control to minimize significant congestion. The following locations under mitigation scenarios assume emergency traffic control is in place within 20 minutes of the start of the evacuation order:

#### North Scenario

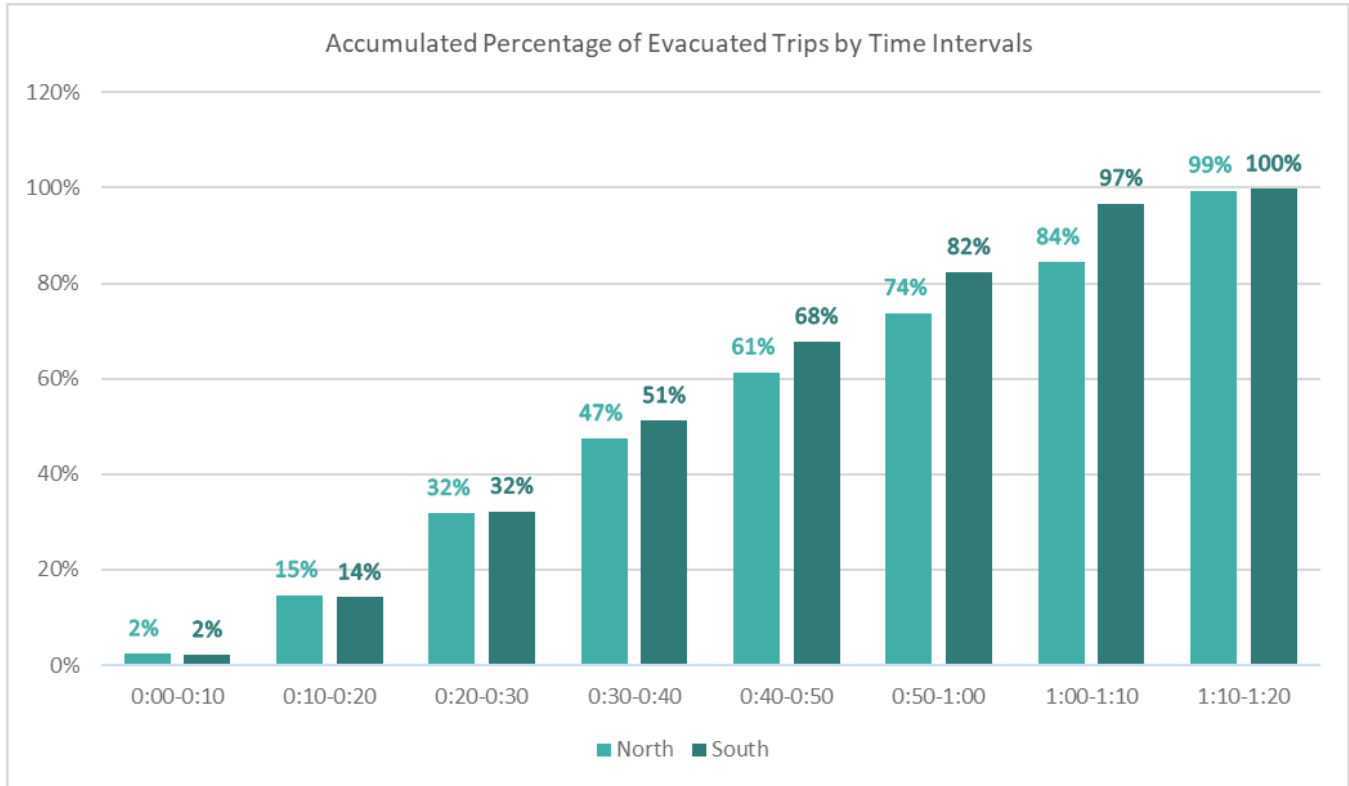
- SR-49/Pleasant Valley Road: flag northbound traffic both directions onto Pleasant Valley Road
- SR-49/Crystal Boulevard/Monitor Road: Stop northbound traffic on SR 49 to allow for significant traffic flow from Crystal Boulevard and minor traffic from Monitor Road to go north on SR-49

#### South Scenario

- SR-49/Sand Ridge Road: Stop southbound traffic on SR-49 to allow evacuating traffic from Sand Ridge Road onto southbound SR-49.

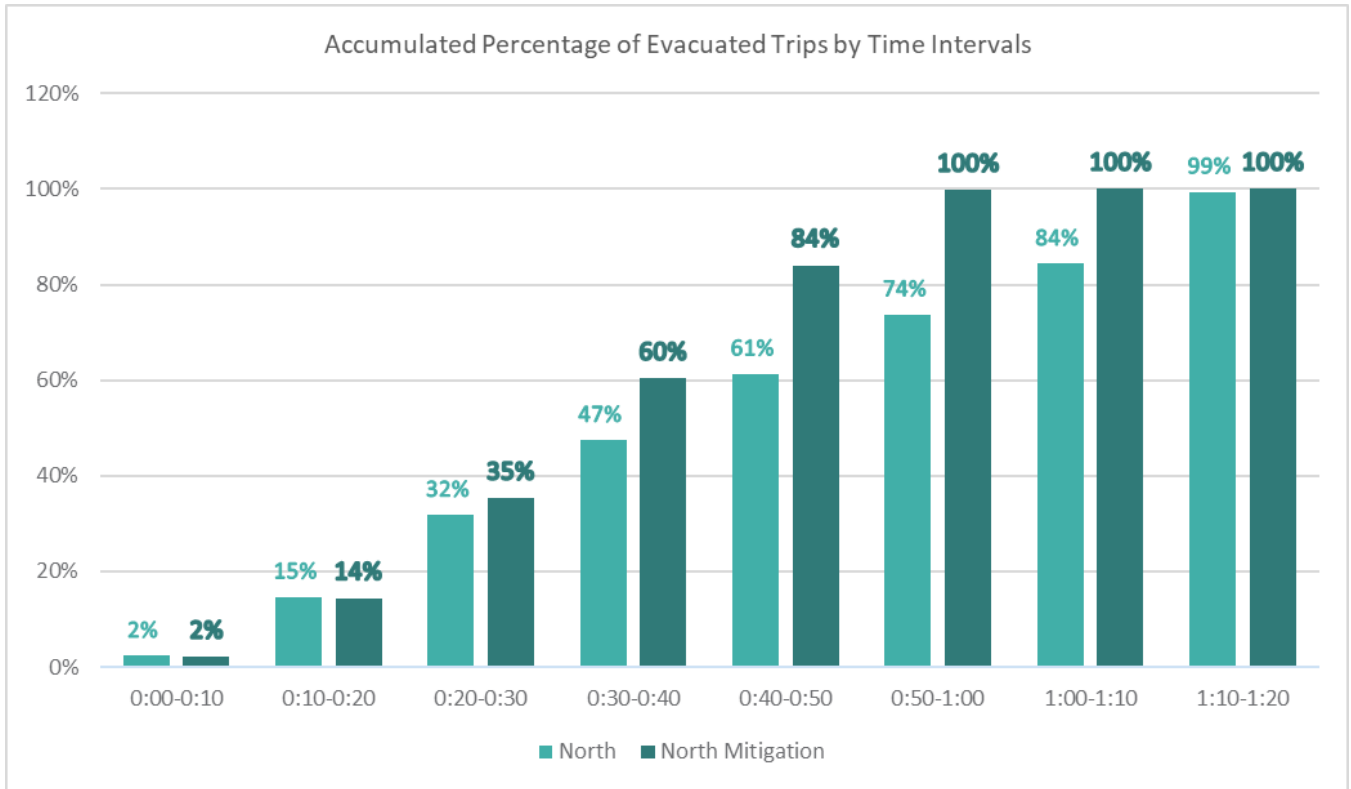
## 5.4 EVACUATION TIME ESTIMATES

With no emergency traffic control in place as shown in Figure 31, under Scenario 1 (north), trips leaving their property in the evacuation zone within 40 minutes are able to fully evacuate within 90 minutes of the evacuation order, with 99% clearing within 80 minutes. Under Scenario 2 (South), 97% of the evacuation trips have cleared the evacuation zone within 70 minutes and 100% by 80 minutes. Due to the single lane of traffic on SR-49 evacuating the entire evacuation zone, it takes up to 50 minutes after the evacuation departure period before the last trip clears the evacuation zone.



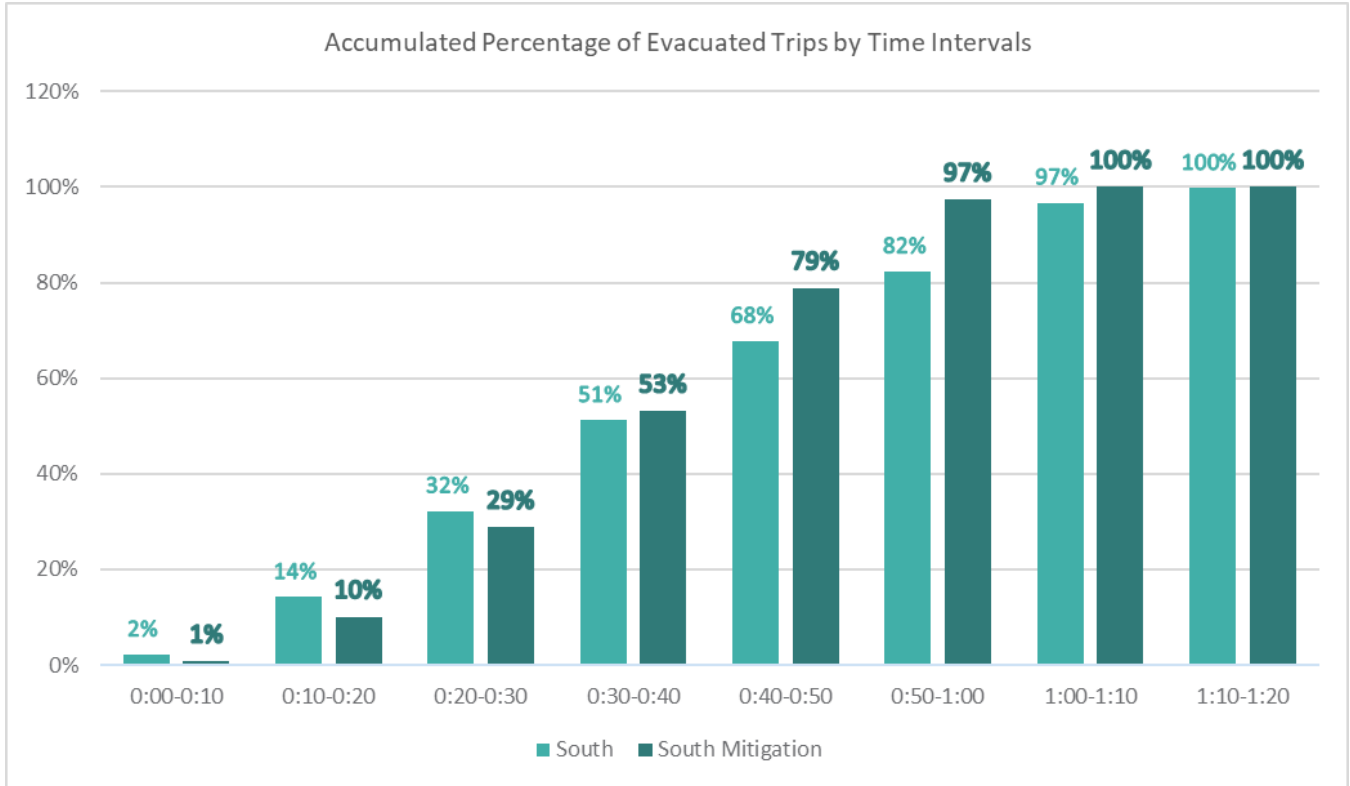
**FIGURE 31: LOGTOWN ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 1 & 2**

The Scenario 1 North Mitigation scenario adds emergency manual traffic control as described under the model assumptions section. The results show in Figure 32 that the addition of traffic control at Pleasant Valley Road and Crystal Boulevard on SR-49 reduces the time to 100% clear the evacuation zone from 90 minutes to 60 minutes, reducing the overall evacuation time estimate by 30 minutes.



**FIGURE 32: LOGTOWN ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 1 & MITIGATION**

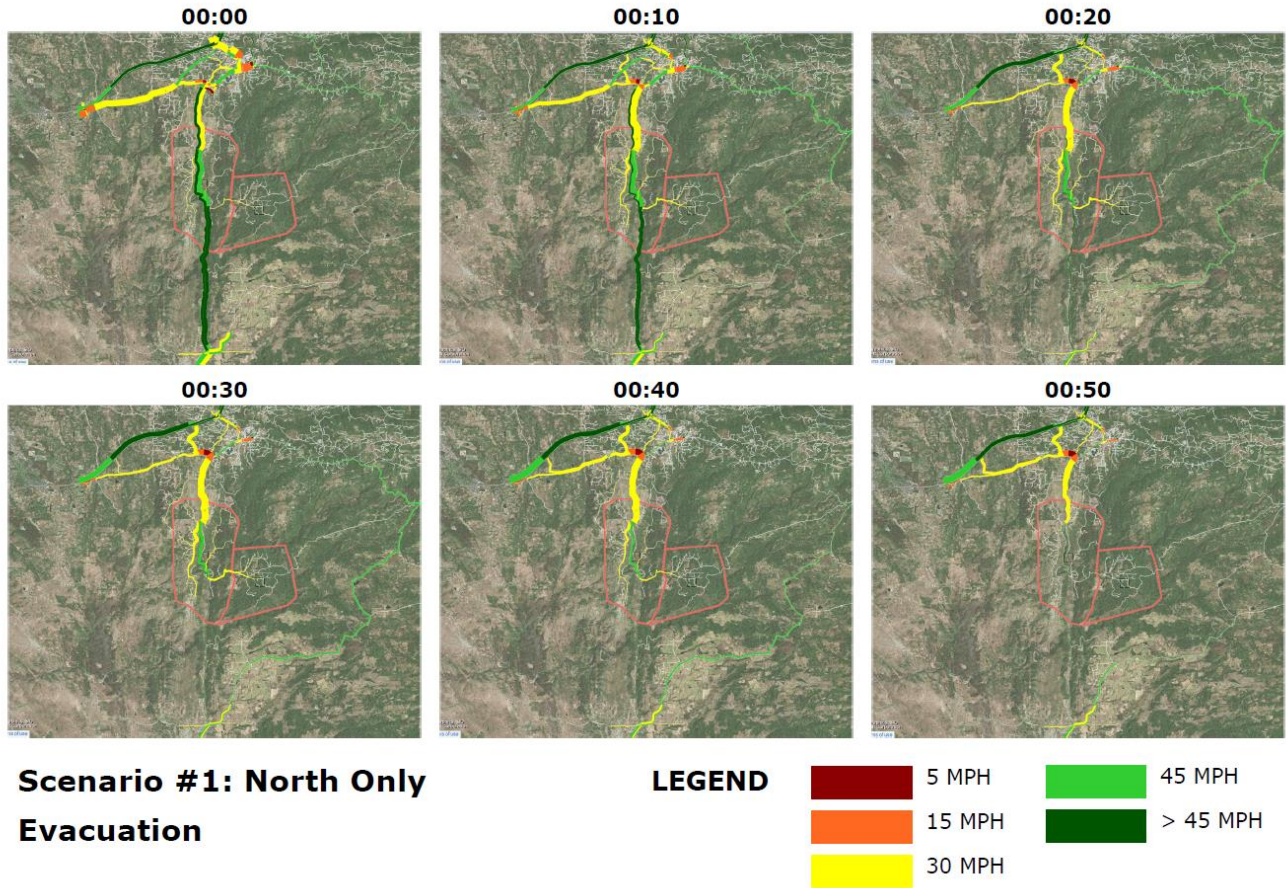
The Scenario 2 South Mitigation scenario adds emergency manual traffic control as described under the model assumptions section. The results show in Figure 33 that the addition of traffic control at Sand Ridge Road on SR-49 reduces the time to 100% clear the evacuation zone from 80 minutes to 70 minutes, reducing the overall evacuation time estimate by 10 minutes.



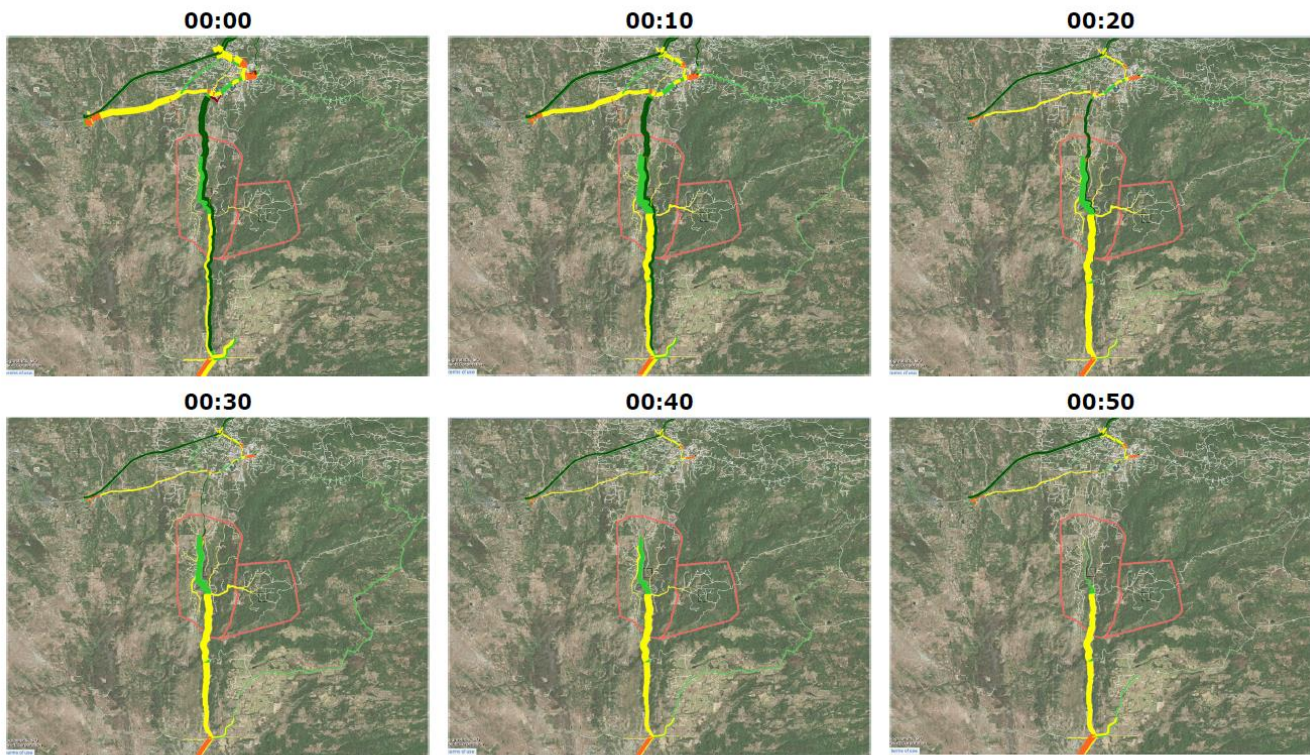
**FIGURE 33: LOGTOWN ACCUMULATED PERCENTAGE OF EVACUATED TRIPS BY INTERVAL SCENARIOS 2 & MITIGATION**



Figure 34 and Figure 35 show average vehicle speeds along key evacuation routes over 10-minute periods throughout the evacuation. Both figures depict the mitigated scenarios with the traffic control in place. The north scenario shows slow moving (rolling queues) on SR-49 back from Pleasant Valley Road, extending up Crystal Boulevard. The south scenario shows slow moving (rolling queues) on SR-49 back from Plymouth, extending up to Sand Ridge Road.



**FIGURE 34: LOGTOWN CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 1 (MITIGATED)**



**Scenario #2: South Only  
Evacuation**



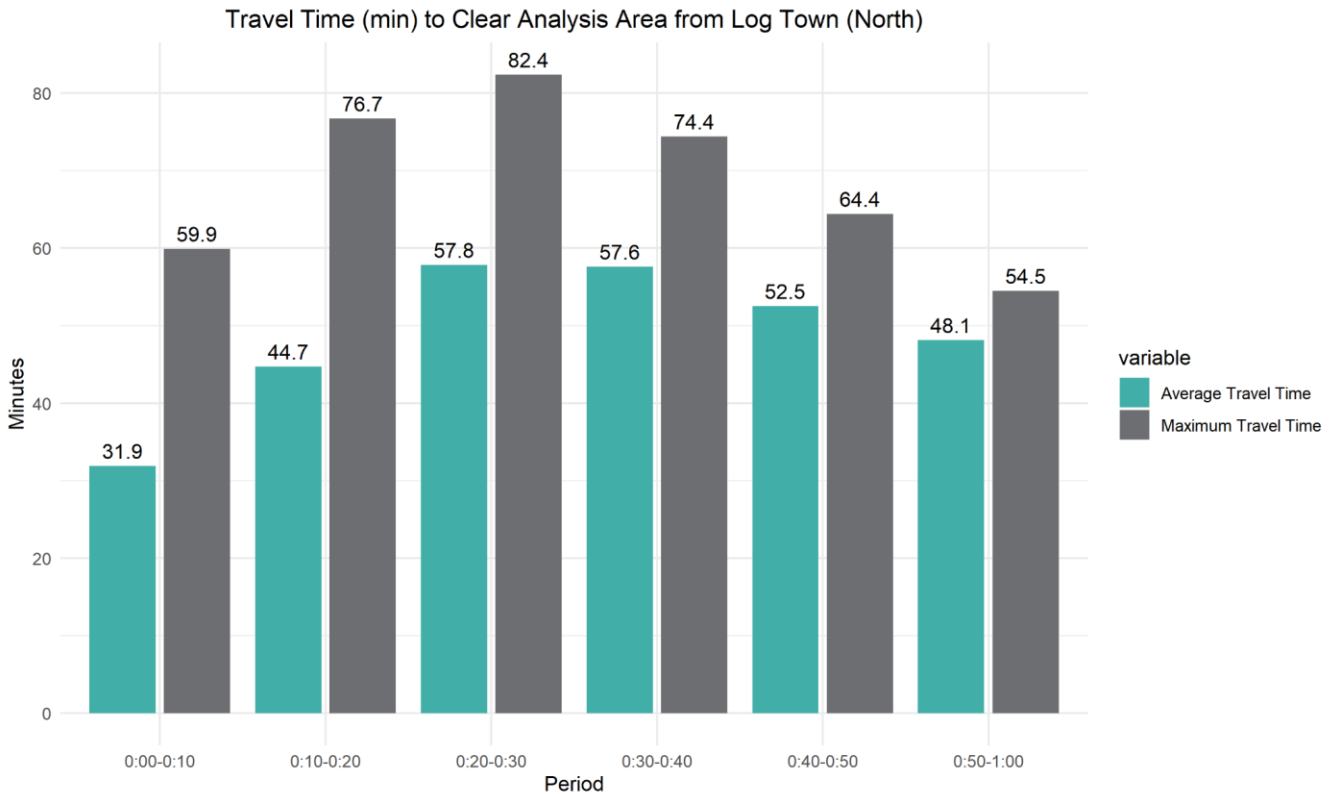
**FIGURE 35: LOGTOWN CHANGE IN VEHICLE SPEED THROUGHOUT EVACUATION PERIOD SCENARIO 2 (MITIGATED)**

## 5.5 TRAVEL TIME ESTIMATES

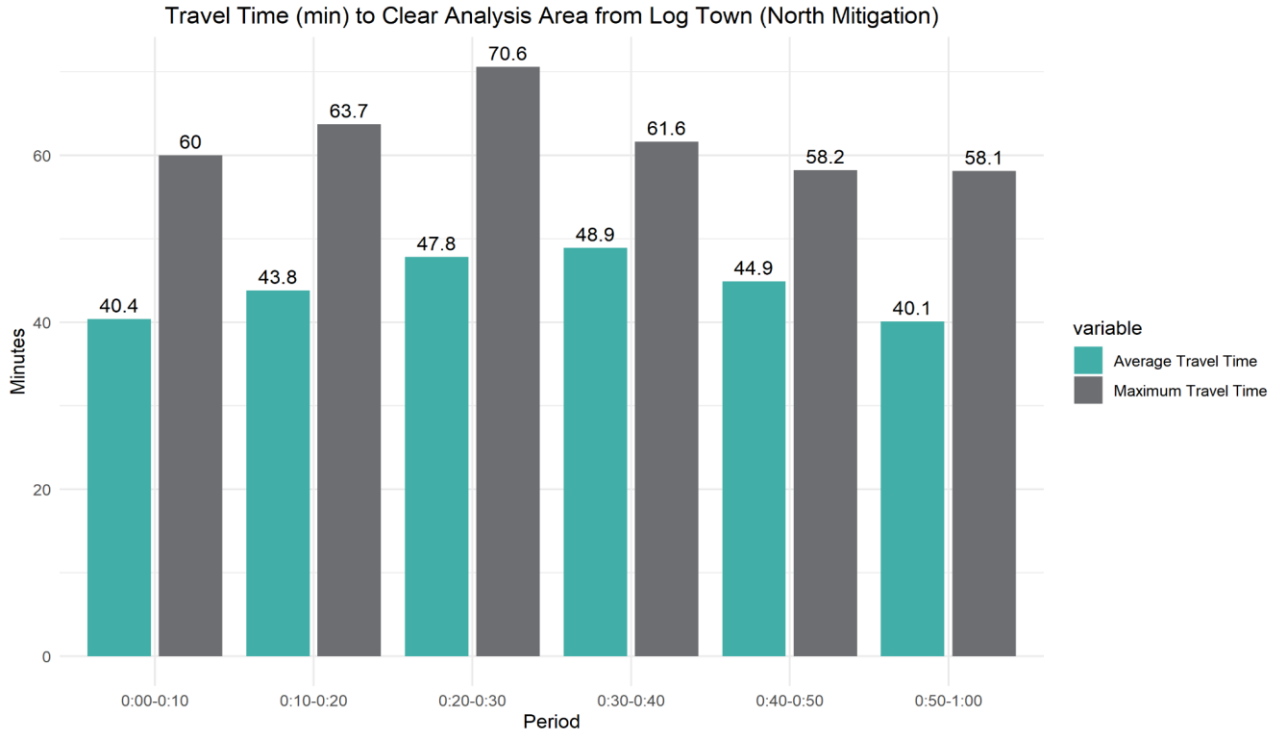
The peak travel times occur 30 minutes after the evacuation order. The travel times consider all paths from the origin within the evacuation zone to the end of the study area, capturing bottlenecks both within and downstream of the evacuation zones.

Under the north evacuation scenario (Figure 36), average evacuation times to clear the study area are approximately 58 minutes with maximum travel times for the longest routes being approximately 82 minutes. The traffic control mitigation (Figure 37) reduces these times to 49 and 71 minutes respectively.

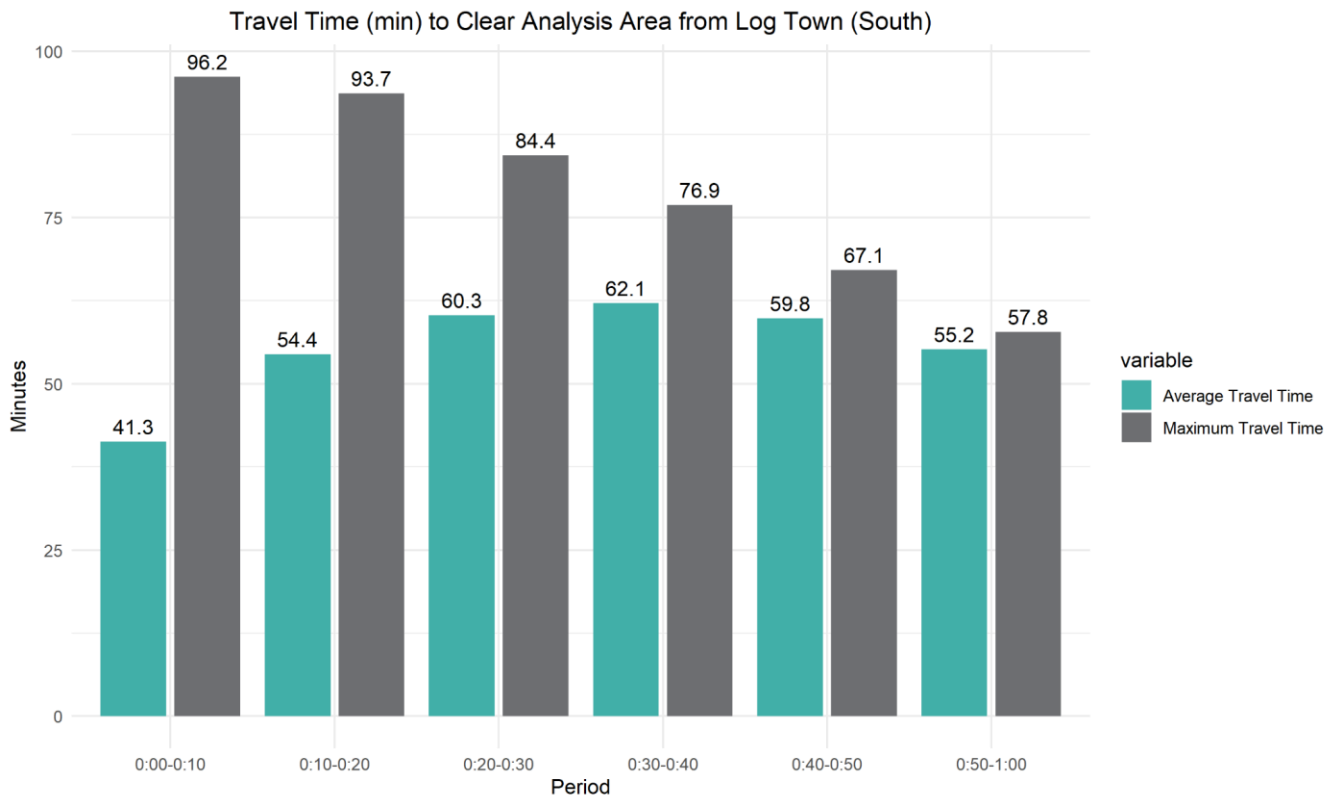
Under the south evacuation scenario (Figure 38), average evacuation times to clear the study area are approximately 62 minutes with maximum travel times for the longest routes being approximately 96 minutes. The traffic control mitigation (Figure 39) reduces the maximum travel time by only 3 minutes, but more evenly distributes the evacuation of traffic from Sand Ridge Road, which without the traffic control queues up much sooner after the start of the evacuation order.



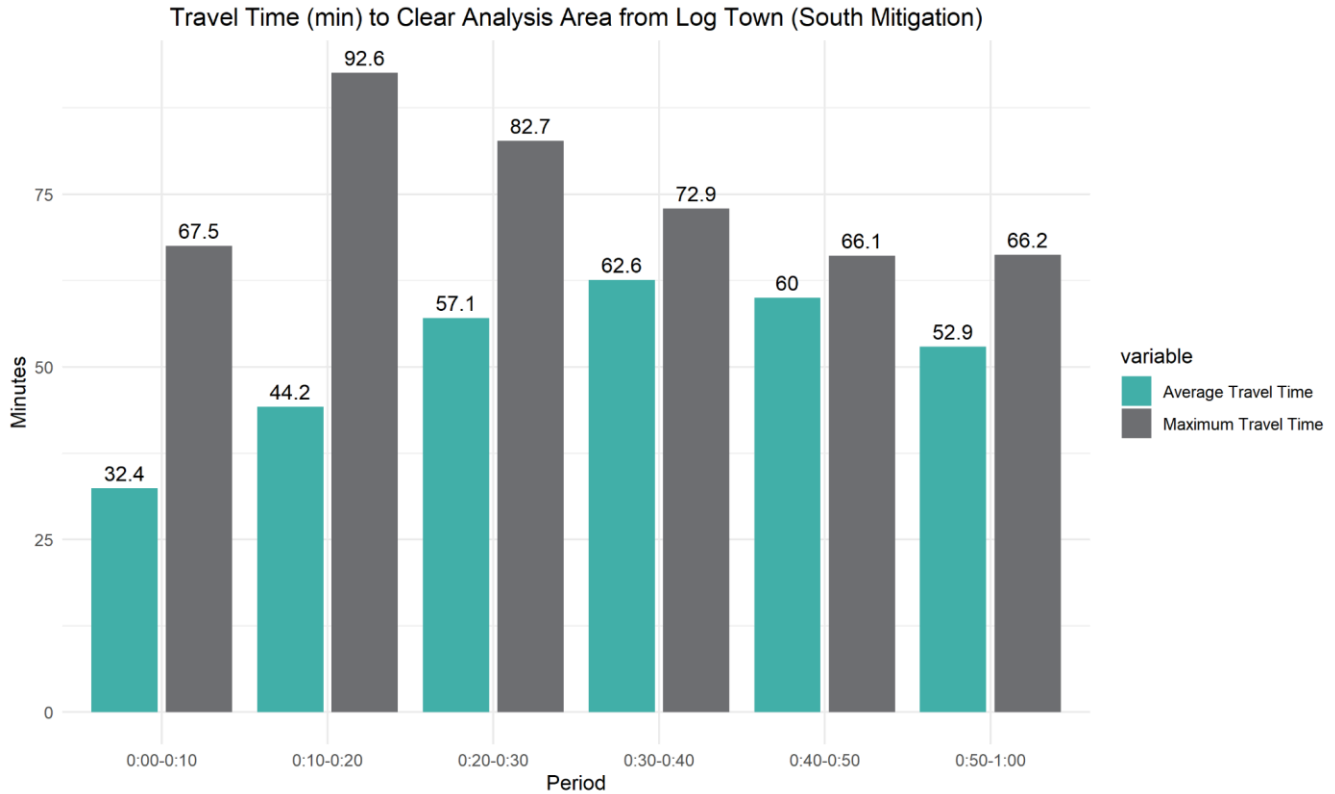
**FIGURE 36: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 1**



**FIGURE 37: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 1 MITIGATION**



**FIGURE 38: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 2**



**FIGURE 39: LOGTOWN TRAVEL TIME ESTIMATES SCENARIO 2 MITIGATION**

### 5.6 KEY OBSERVATIONS

- Approximately 1,060 evacuation trips need to evacuate along a single lane of SR-49, either northbound or southbound depending on the scenario. With reduced roadway capacity under evacuation conditions, this area begins to exceed the available capacity of a single lane resulting in the impact evacuation time estimates presented here.
- Manual traffic control on SR-49 at key junctions substantially improves the evacuation time estimates, but it still takes an additional 20 to 30 minutes to clear the evacuation zone after the last trips leave their home. This extra time is partially due to the long travel distance within the evacuation zone and partially congestion at bottleneck locations.
- Sand Ridge Road results in significant congestion trying to evacuate south onto SR-49 with Logtown traffic also evacuating south on SR-49. This analysis represents a conservative scenario with all 209 trips from the Sand Ridge Road community evacuating toward SR-49. Recent paving on Sand Ridge Road provides an opportunity for residents to evacuate east toward Bucks Bar Road and reduce the impacts of evacuating toward SR-49.

## 5.7 RECOMMENDATIONS AND CONSIDERATIONS

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- Emergency manual traffic control is essential to the success of a Logtown area evacuation and should be in place no more than 20 minutes after the start of the evacuation order to restrict background traffic from using SR-49 in the evacuation zone and to facilitate the efficient movement of evacuation traffic.
- Primary emergency manual traffic control locations for a northern evacuation on SR-49 are at Pleasant Valley Road and Crystal Boulevard
- Primary emergency manual traffic control locations for a southern evacuation on SR-49 are at Sand Ridge Road.
- The existing roundabout at SR-49/Main Street/E16 in Plymouth moves southbound traffic at a reasonable flow rate under light eastbound traffic from E16 and northbound left traffic from SR-49. If either of these movements increase traffic volumes, then this will reduce the flow rate of the primary southbound evacuation route along SR-49 and may warrant manual traffic control.
- The intersection of SR-49 and Pleasant Valley Road is a significant bottleneck for a northern evacuation scenario as a result of the stop-controlled approach. A roundabout or traffic signal at this location would provide some additional capacity during an event before emergency traffic services arrive, but even with those improvements manual traffic control would likely be necessary. Roadway widening for a northbound right turn lane of several hundred feet in length in combination with manual traffic control would provide additional capacity to reduce evacuation time estimates.
- A connected central signal system on Mother Lode Road, Pleasant Valley Road, and Missouri Flat Road may assist in evacuation flows downstream of the immediate evacuation area by providing more green time.
- If the wildfire scenario permits, evacuating Logtown in both directions along SR-49 will reduce evacuation times.

## 6. OUTINGDALE

### Overview

The Outingdale community has been identified by the CAL FIRE Subdivision Review Program as a residential development in a hazard area that does not have at least two emergency evacuation routes.<sup>15</sup> This community only has a single ingress/egress route within a mix of moderate, high, and very high Fire Hazard Severity Zones.<sup>16</sup>

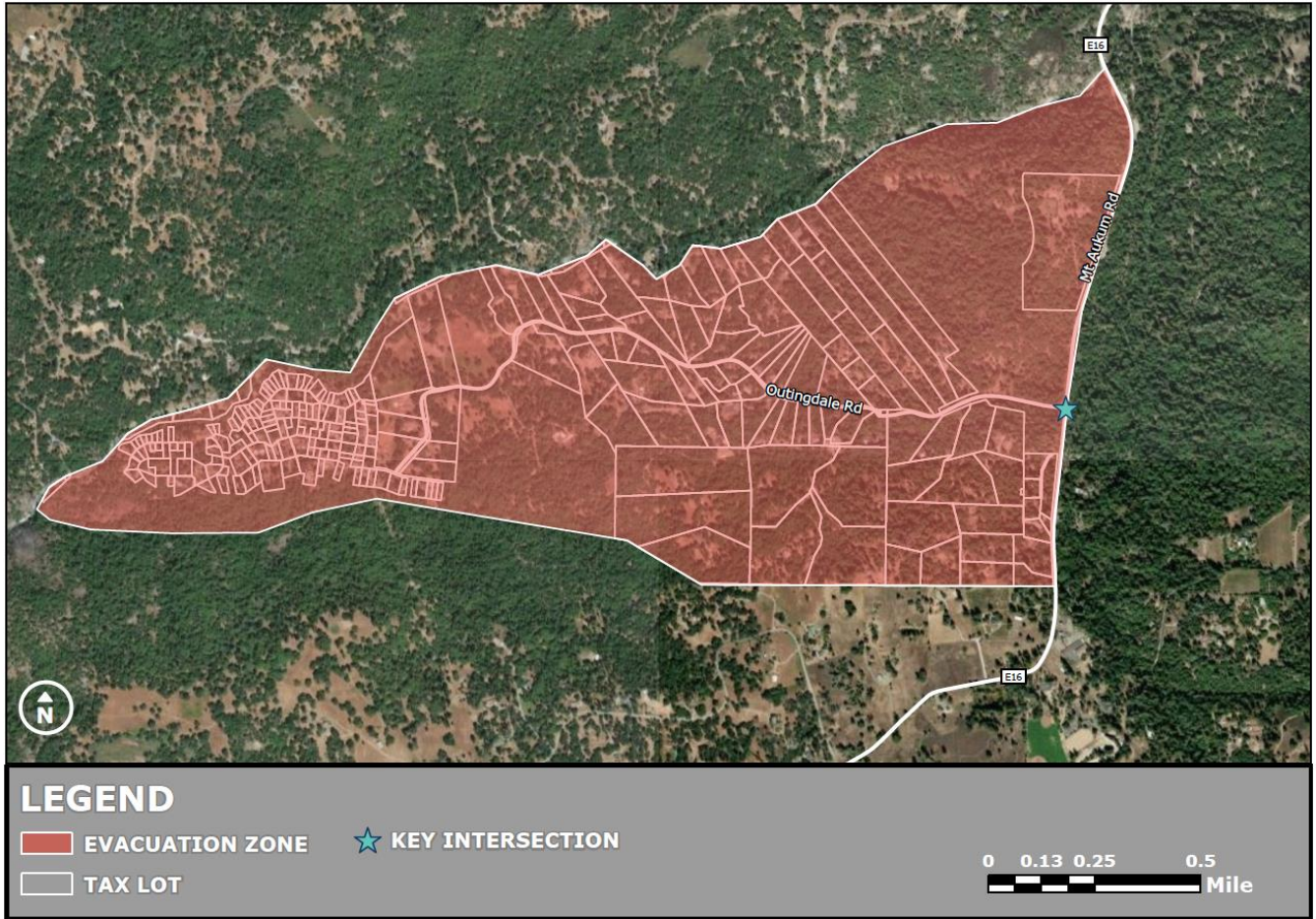
The Outingdale community is located on the Middle Fork of the Cosumnes River, where the topography consists of moderate to steep slopes along the ridge lines and canyons and the vegetation consists mostly of hardwood forests with a mix of hardwood woodlands and herbaceous vegetation types.<sup>17</sup> A qualitative wildfire evacuation assessment was conducted of the area that stretches approximately 620 acres, shown in Figure 40.

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<sup>15</sup> State of California and the Department of Forestry and Fire Protection, Subdivision Review Program - <https://bof.fire.ca.gov/projects-and-programs/subdivision-review-program/> accessed by DKS Associates in May 2024

<sup>16</sup> California Board of Forestry and Fire Protection, Fire Hazard Severity Zones in State Responsibility Area - effective April 1, 2024

<sup>17</sup> State of California and the Department of Forestry and Fire Protection, California Vegetation - WHR13 Types



**FIGURE 40: OUTINGDALE STUDY AREA**

**Community Characteristics**

There are approximately 253 residential households within the Outingdale community. There is a private community west of Outingdale Road with increased density as compared to the larger parcel residential properties in the rest of Outingdale. An entry banner is posted entering the private neighborhood as shown in Figure 41 below. Of these households, there are 10 with zero vehicle access, 50 with one vehicle access, and 190 with two or more vehicles accessible.



## Vulnerable Population Assessment

TABLE 7: SOCIAL SENSITIVITY INDICATORS IN OUTINGDALE EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Outingdale Evacuation Area
Median Family Household Income	\$119,500
Median Non-Family Household Income	\$42,500
Low Income	40%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	9.0%
Seniors	23.0%
Young Children	0%
People of Color	17.0%
Renters	10.0%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	0%
American Native and Alaskan Native	0%
Individuals with Disabilities	6.0%
Individuals with Asthma	10.5%
Individuals with Coronary Artery Disease	7.5%
Individuals without access to a vehicle	0%
Individuals without health insurance	2.0%
Households without a computer	12.0%
Households without broadband internet	5.0%



**FIGURE 41: OUTINGDALE COMMUNITY ENTRANCE PRIVATE PROPERTY SIGN**

### **Key Transportation Facilities**

- *Outingdale Road*: a two-lane local road, serves as the single egress route in the subdivision. The major road and entrance are paved terminating near the private community. The speed is unposted but limited due to narrow lanes and curvature. There is a striped center line with no fog line stripe.
- Private Community Roads: Within the Outingdale private community there is a network of gravel and partially paved roads with steep segments. Most roads are single lane wide serving two-way traffic.
- E16 (Mt. Aukum Road): County highway posted at 55 MPH with center stripe, fog lines and shoulders. Serves as the only connection for Outingdale Road. There are no turn lanes at the intersection.

## 6.1 EVACUATION ROUTES ASSESSMENT

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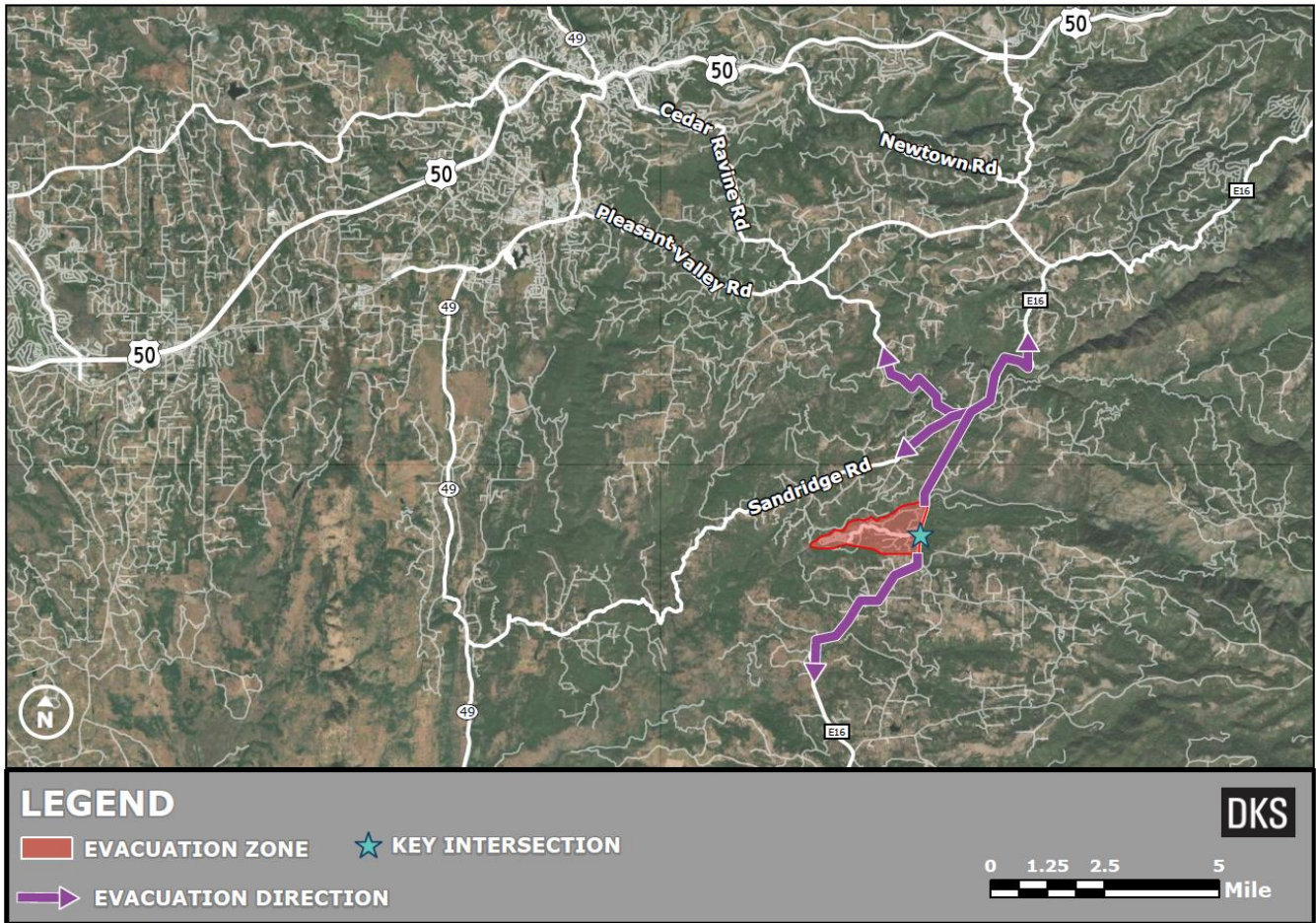
Most of the subdivision is encompassed by dense, heavy vegetation. Some of this vegetation encroaches on the primary evacuation routes, including Outingdale Road, which makes it difficult for larger vehicles, such as a fire apparatus and a horse trailer to pass each other, Figure 42.



**FIGURE 42: OUTINGDALE ROAD EXISTING CONDITIONS (APRIL 2024)**

Within the private community of Outingdale, the network of steep, single-lane, two-way, unpaved streets all converge to a single access on Vacation Boulevard.

Figure 43 shows possible evacuation routes from the Outingdale community. After exiting, vehicles can either travel north on E16 north or south. E16 connects with Pleasant Valley Road, Cedar Ravine Road, and Newtown Road which all eventually connect with US 50. Alternatively, E16 connects with US 50 heading north near Pollock Pines. Heading southbound on E16 connects with SR49 in Plymouth.



**FIGURE 43. POSSIBLE EVACUATION DIRECTIONS FROM THE OUTINGDALE COMMUNITY**

The CAL FIRE Subdivision Review Report recommends creating a secondary vehicle egress route given the existing single route and the total number of households to evacuate. The construction of an effective secondary egress is challenging given the many property and topographical constraints. Potential considerations and constraints for a secondary egress include:

- The Cosumnes River runs along the northwest edge of Outingdale. Morning Canyon Road is on the north side of the river canyon and a secondary egress connection from Outingdale would require significant property acquisition, road and bridge construction.
- Along the southern boundary steep slopes and private property prevent secondary road connections.
- Summerhill Road is a non-continuous (no existing through connection) local road on unknown property ownership that runs from the center of Outingdale along the Consumnes River to E16. The west segment is a partially paved road that serves residential parcels and connects to Outingdale Road. The east segment is a dirt road not passable to passenger vehicles that serves rural property with a connection to E16. The shoulder of E16 at Summerhill Road is signed and marked with No Parking, Fire Lane. Further assessment is recommended to determine the viability of Summerhill Road being improved and gaps constructed to provide secondary emergency egress or public access to E16.
- In the southeast corner of Outingdale, Little Spring Road and Desperado Road terminate

near the community boundary and have favorable grades to connect to E16 or Horseshoe Bend Road to the south, however, connections to these roads would require significant property acquisition and road construction. In addition, these streets connect to Outingdale Road within 1,800 feet of E16 with the majority of parcels still upstream past a single stretch of Outingdale Road.

Beyond a secondary egress for the full community, and internal secondary egress for the private Outingdale community could prove beneficial given the density of homes that access steep, single lane roads. A secondary connection between Stream Way and Outingdale Road where it turns south would greatly improve emergency access to the private community, however this connection would require significant property acquisition and/or easements and road construction.

## 6.2 RECOMMENDATIONS AND CONSIDERATIONS

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- Trim back vegetation and thin fuels along Outingdale Road to improve large vehicle passing potential, improve sight distance, and reduce fire hazards.
- During a full evacuation of Outingdale, emergency manual traffic control may be necessary to stop traffic on E16 and flag traffic from Outingdale Road to minimize congestion within Outingdale.
- An alternative to help facilitate left turns out of Outingdale is to widen E16 with a center turn lane to allow residents the opportunity to make a two-stage left out movement to avoid needing to wait for a gap in E16 traffic in both directions. This concept needs further assessment as potential significant regrading may be required that could make this concept not feasible.
- The Outingdale Road approach to E16 is approximately 40 feet wide. Restriping this approach to include a left and right turn lane would reinforce vehicle lane positioning and provide left turn and right turn vehicle capacity that could assist during an evacuation.

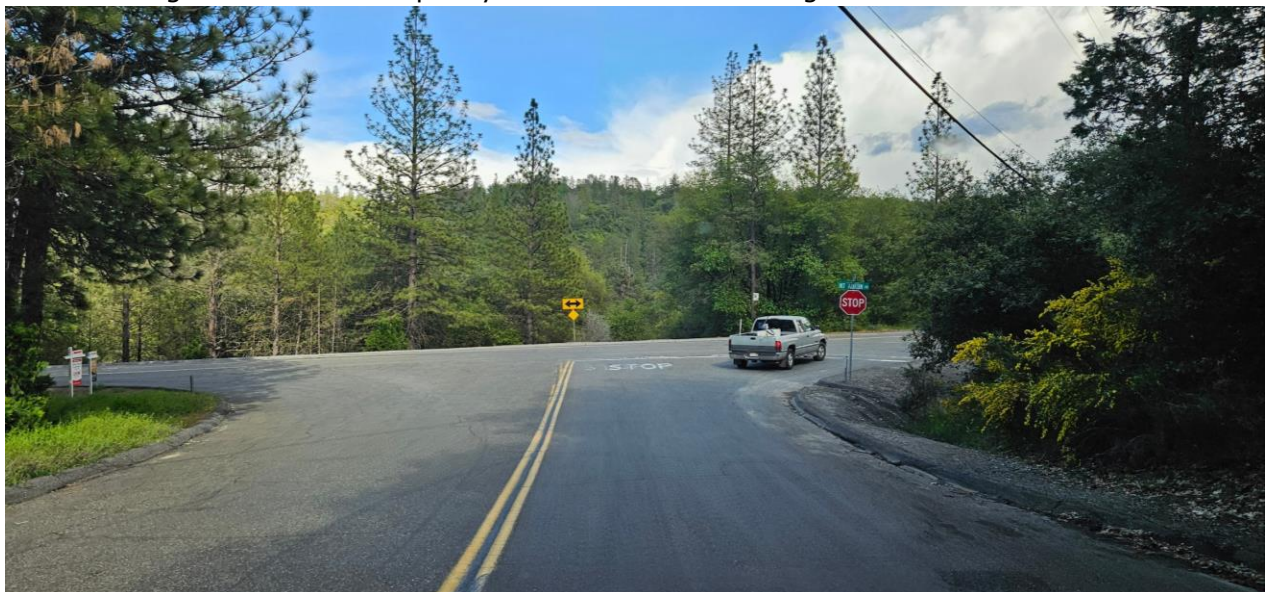


FIGURE 44: OUTINGDALE ROAD ACCESS FACING EAST

- Recommendations from the CAL FIRE Subdivision Review reports include:

- Install reflective evacuation route street signs directing residents from their local roads to the nearest collector road(s) and/or arterial highway(s) based on the standards for emergency management signing in the California Manual on Uniform Traffic Control Devices.
- Conduct community-wide evacuation drills.
- Install reflective markers to indicate road edges or other areas of danger that might not be evident during periods of low visibility.
- Further study the feasibility of secondary egress route options outlined above.

## 7. GOLDEN BEAR TRAIL

### Overview

Similar to Outingdale, the Golden Bear Trail community has been identified by the Subdivision Review Program as a residential development in a hazard area that does not have at least two emergency evacuation routes.<sup>18</sup> This community also only has a single ingress/egress route.

Within a Very High Fire Hazard Severity Zone, the Golden Bear Trail evacuation zone is located between Lake Tahoe Airport and Pioneer Trail. The area is approximately 156 acres. The types of vegetation within and around the subdivision, including grass, trees, brush, and timber contribute to the fire hazard severity. The topography of the area is primarily flat lands with gradual slopes.

The Golden Bear Trail community is actively involved with wildfire preparedness. The community's HOA website provides a list of wildfire resources<sup>19</sup> and in the past the community has held evacuation drills. A Lake Valley Fire Protection District Station is located at the entrance to the neighborhood on Golden Bear Trail, as shown in Figure 45. The station serves as a wildfire preparedness education reminder as demonstrated by the banner posing the question to residents "Is your home ignition resistant?"

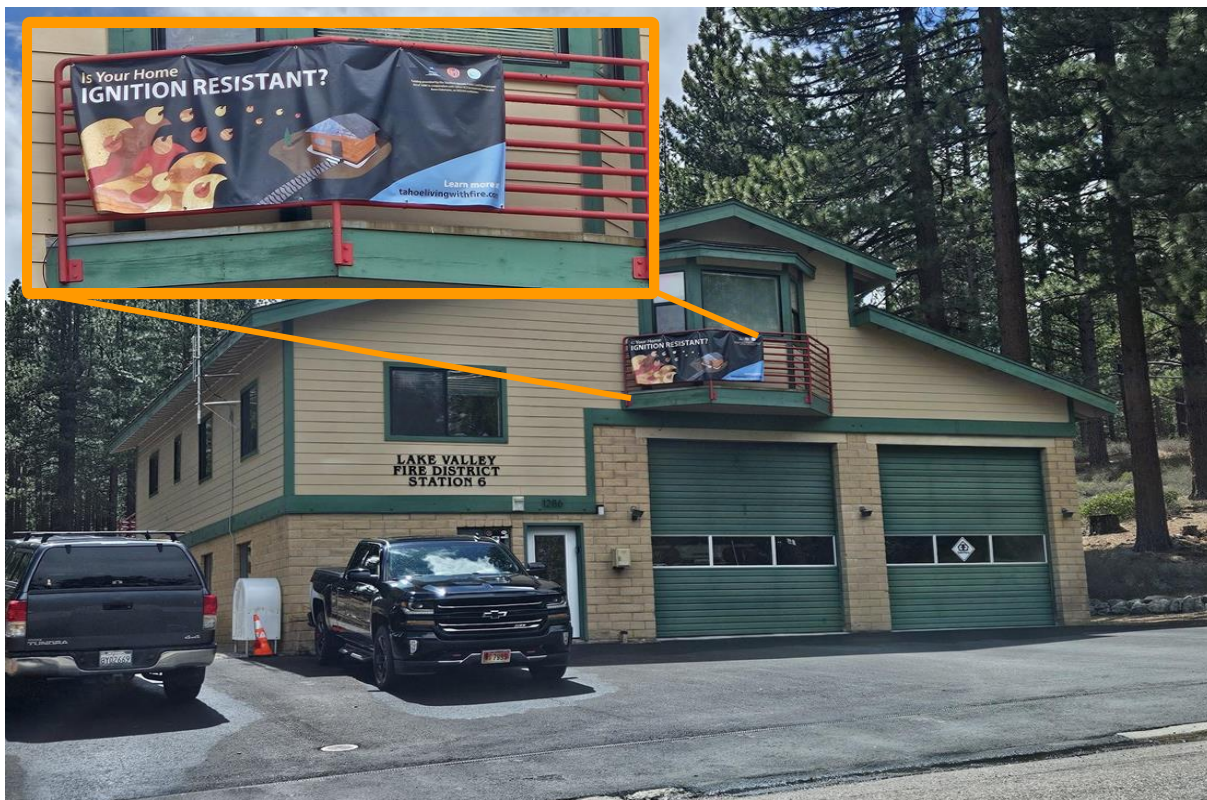


FIGURE 45: FIRE DISTRICT STATION IN GOLDEN BEAR

<sup>18</sup> State of California and the Department of Forestry and Fire Protection, Subdivision Review Program - <https://bof.fire.ca.gov/projects-and-programs/subdivision-review-program/> accessed by DKS Associates in May 2024

<sup>19</sup> Golden Bear Homeowners Association - <https://goldenbearha.org/>

## Community Characteristics

There are approximately 314 single-family households within the Golden Bear Trail neighborhood with an estimated population of 1,020 persons in the full evacuation analysis area. Of these households, there are none with zero vehicle access, 80 with one vehicle access, and 240 with two or more vehicles accessible.

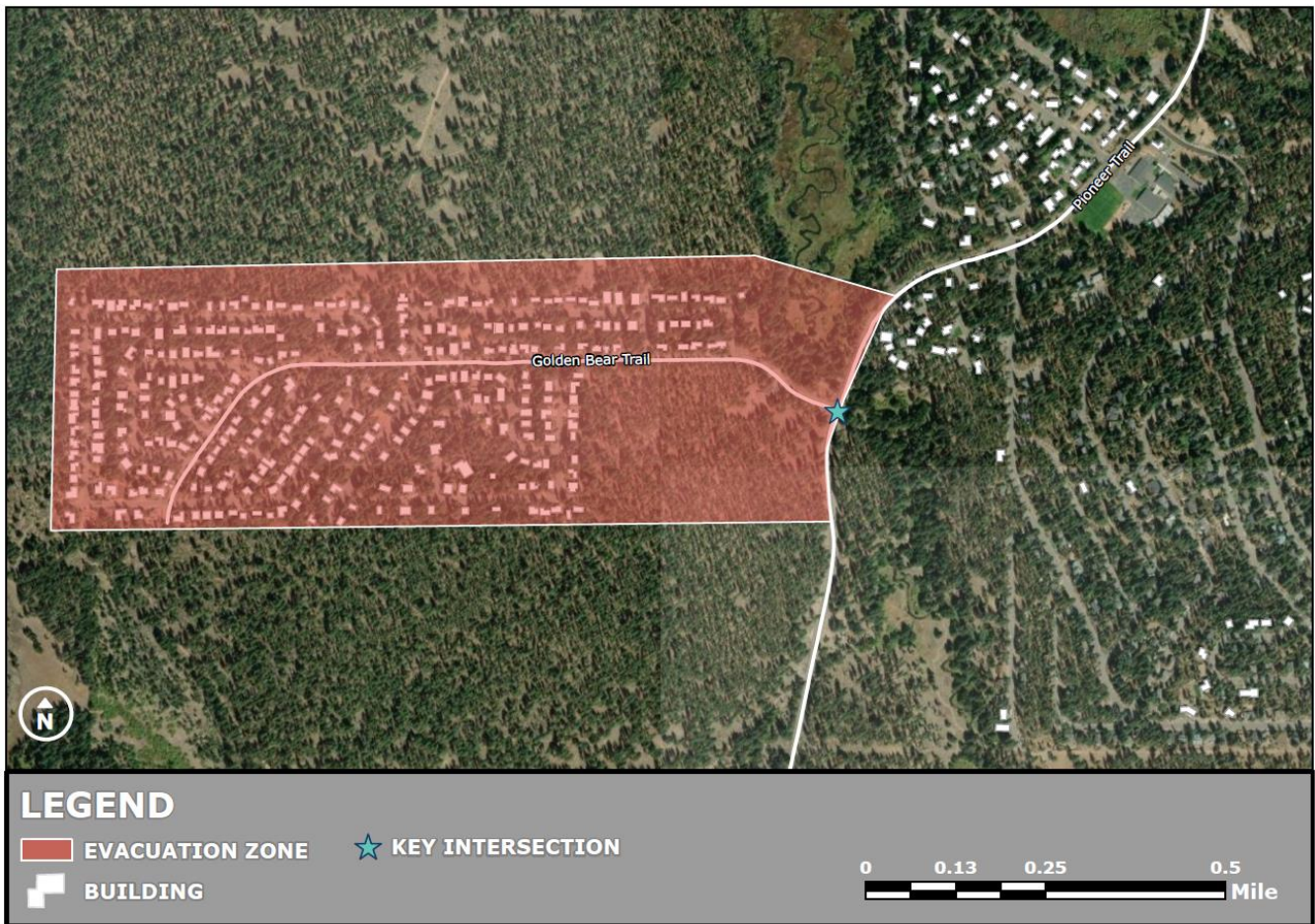


FIGURE 46: GOLDEN BEAR TRAIL STUDY AREA



## Vulnerable Population Assessment

TABLE 8: SOCIAL SENSITIVITY INDICATORS IN GOLDEN BEAR TRAIL EVACUATION AREA

Social Sensitivity Indicator	Percentage of Population or Households in the Golden Bear Trail Evacuation Area
Median Family Household Income	\$107,300
Median Non-Family Household Income	\$74,300
Low Income	10.0%
People experiencing homelessness	N/A
Undocumented individuals	N/A
Unemployed	7.0%
Seniors	22.0%
Young Children	4.0%
People of Color	15.0%
Renters	23.0%
Outdoor Workers	N/A
Visitors	Not Available
Linguistically Isolated	0%
American Native and Alaskan Native	0%
Individuals with Disabilities	9.0%
Individuals with Asthma	9.4%
Individuals with Coronary Artery Disease	4.9%
Individuals without access to a vehicle	0%
Individuals without health insurance	2.0%
Households without a computer	0%
Households without broadband internet	5.0%

## Key Transportation Facilities

- *Golden Bear Trail*: Two-lane local road posted at 35 MPH, serves as the single ingress/egress route in the subdivision. At its narrowest point along curves, the pavement width is between 34 and 42 feet. The centerline is striped, but no fog line or shoulder space is provided as shown in Figure 47.
- *Pioneer Trail*: Two-lane arterial posted at 40 MPH. Only connection for Golden Bear Trail that serves local area destinations and regional connections as a parallel route to US-50.



**FIGURE 47: GOLDEN BEAR TRAIL EXISTING CONDITIONS (APRIL 2024)**

## 7.1 EVACUATION ROUTES ASSESSMENT

Golden Bear Trail serves as the only evacuation egress road for the community and runs down the middle of the community. At the intersection with Pioneer Trail, the Golden Bear Trail is approximately 42 feet wide with a flared lane at the intersection. This flared lane can serve as a short de facto right turn lane if there are one or two left turning vehicles aligned with the centerline of the road, thereby reducing vehicular traffic for right turning traffic. There is no center turn lane on Pioneer Trail. Further into the Community, Golden Bear Trail is 34 feet wide, still allowing on-street parking on both sides of the street with room for vehicles to pass. All other neighborhood streets are 28 feet in width. When vehicles are parked on both sides of the street, especially larger vehicles and equipment, as shown in Figure 48, oncoming vehicles may not be able to pass each other. During an evacuation this constriction may impact emergency response vehicles when opposed by evacuating traffic.

There are two manual gates on the north side of the community connecting to recreation trails, but these trails are not passable by most vehicles as shown in Figure 49.

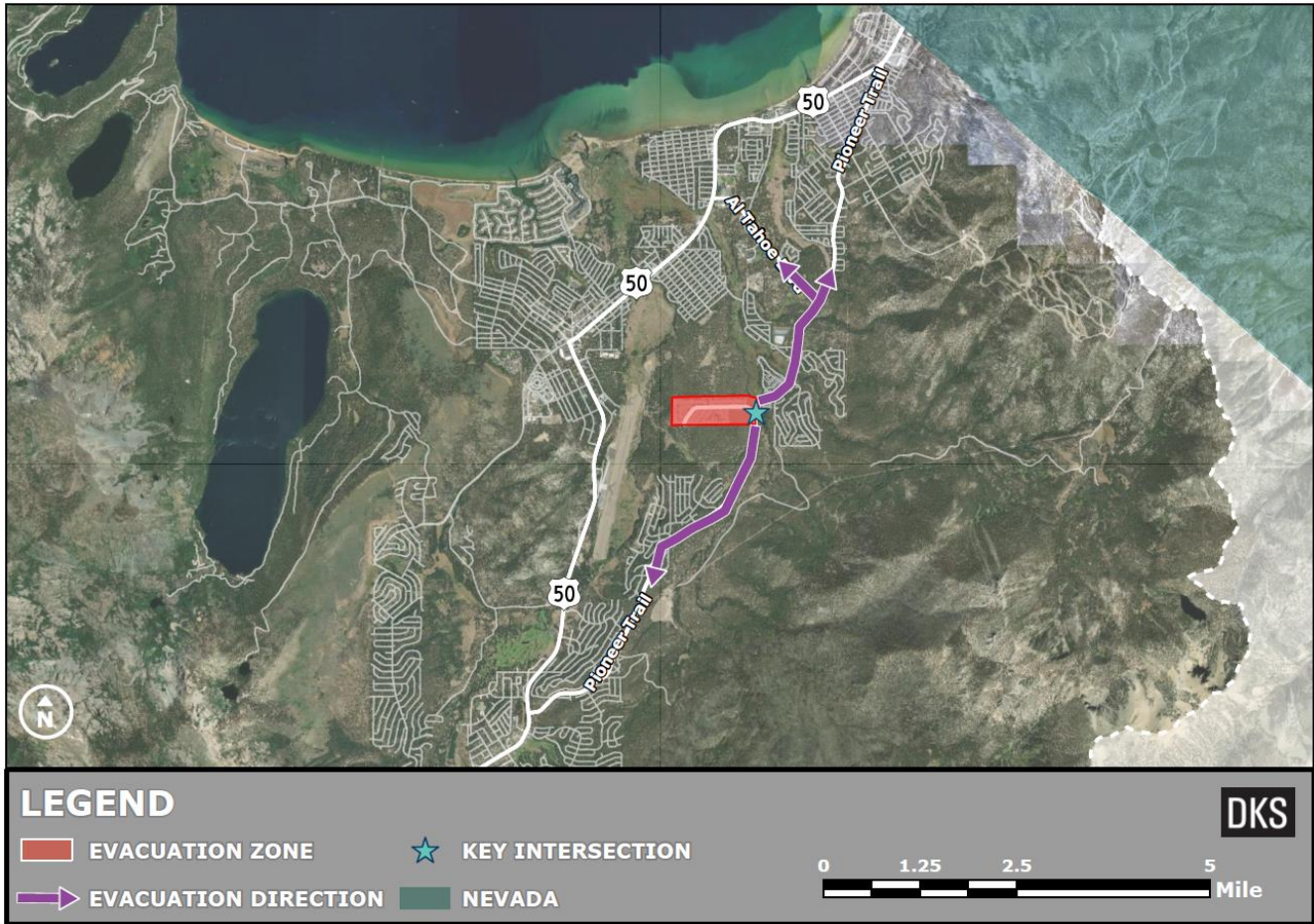


**FIGURE 48: GOLD DUST TRAIL ON-STREET PARKING RESTRICTION**



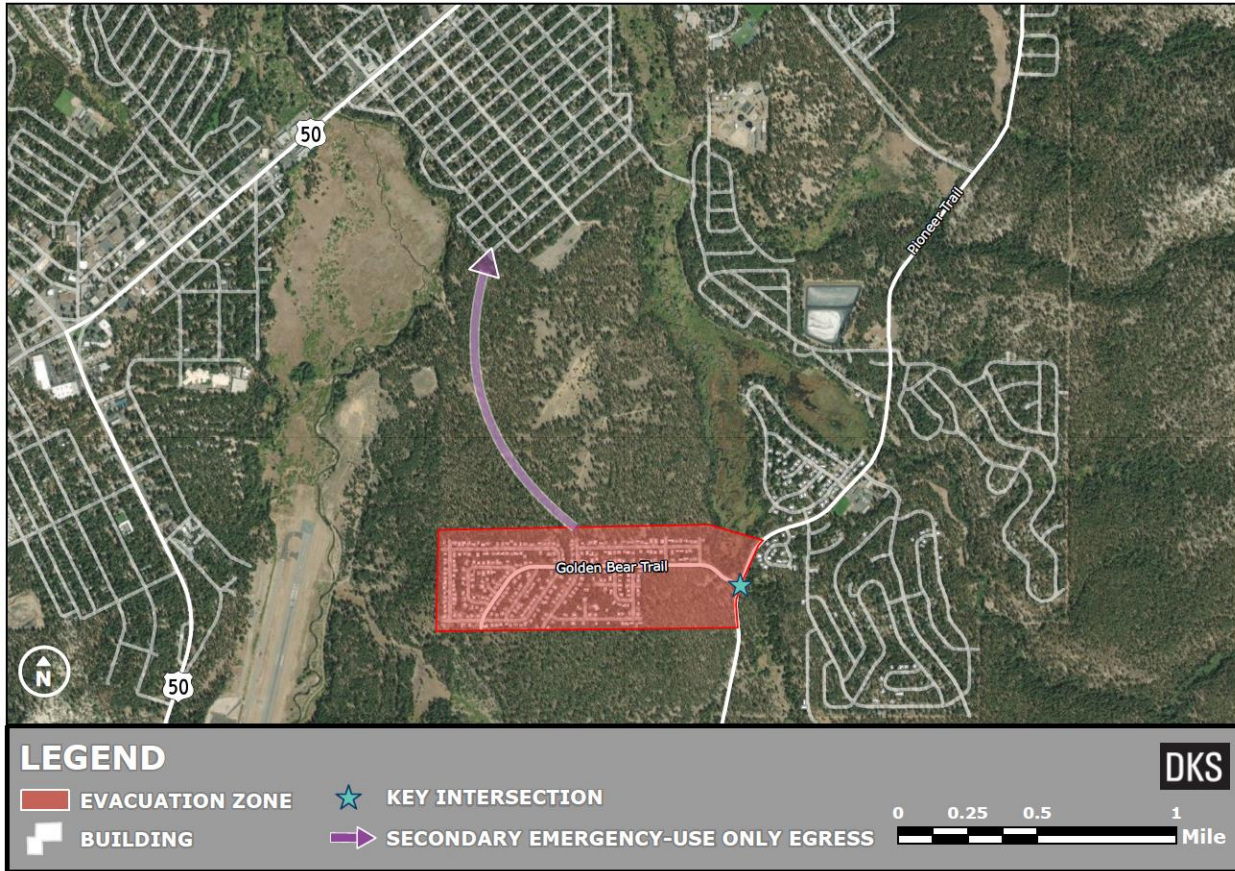
**FIGURE 49: GOLDEN BEAR TRAIL EXIT ROAD AT JACARILLO TRAIL ROAD**

Figure 50, shows possible evacuation routes from the Golden Bear Trail community. Heading northbound or southbound on Pioneer Trail Road both connect with US 50. An additional route to US 50 is to take Pioneer Trail Road to Al Tahoe Blvd which also connects to US 50.



**FIGURE 50: POSSIBLE EVACUATION ROUTES FROM GOLDEN BEAR TRAIL**

The CAL FIRE Subdivision Review Report recommends the creation of a secondary egress. Given the narrow east/west oriented development, a second access to Pioneer Trail would not provide adequate access. Environmental and topographical constraints and the regional airport limit potential connections to the south and west. To the north, there is forested land with recreation trails that connect to the existing neighborhood centered on Sierra Boulevard. A potential concept is to provide the secondary emergency egress need identified by CAL FIRE is to construct a recreation trail to El Dorado County Emergency Vehicle Access (EVA) standards. This concept as shown in Figure 51 would provide a year-round all ages and abilities recreation trail, while providing emergency evacuation egress for the Golden Bear Trail community. Further assessment is recommended to determine political and environmental feasibility, as well as design standard requirements, such as surface materials and gate technologies.



**FIGURE 51: GOLDEN BEAR TRAIL SECONDARY ACCESS RECREATION TRAIL/EMERGENCY EGRESS CONCEPT**

### 7.3 RECOMMENDATIONS AND CONSIDERATIONS

- During a wildfire evacuation implement emergency manual traffic control to flag traffic out of the neighborhood.
- Restripe Golden Bear Trail approaching Pioneer Trail to have a left and right turn pocket to avoid a left turning vehicle waiting for a gap from blocking a right turning vehicle.
- Assess the feasibility to widen Pioneer Trail to include a center turn lane to allow a two-stage left turn out to minimize left turn delay.
- Recommendations from the CAL FIRE Subdivision Review reports include:
  - Install reflective evacuation route street signs directing residents from their local roads to the nearest collector road(s) and/or arterial highway(s) based on the standards for emergency management signing in the California Manual on Uniform Traffic Control Devices.
  - Conduct community-wide evacuation drills.
  - Install reflective markers to indicate road edges or other areas of danger that might not be evident during periods of low visibility.
  - Implement on-street parking restrictions during Red-Flag days to avoid blocking access for two-way traffic.
- Further study feasibility of dual use recreation path/emergency use secondary egress.
- An evacuation plan of the Golden Bear Trail Neighborhood, especially when compounded

with a wider-area evacuation order, should consider potential traffic congestion bottlenecks that may impede the evacuation flow.

- South of Golden Bear Trail along Pioneer Trail is the intersection at US-50. This intersection is an existing traffic signal with a planned improvement for a roundabout with a southbound US-50 bypass through lane (similar to US-50 and SR 89 roundabout). This planned improvement will help minimize delay during an evacuation. Larger area evacuations may still need emergency traffic control to manage traffic even with the planned roundabout.
- North of Golden Bear Trail, there are existing traffic signals that may impede evacuation flows without manual traffic control and signal plan changes. Consider connecting the following signals on Pioneer Trail to a central traffic signal system to allow for remote signal timing changes: Black Bart Avenue, Al Tahoe Boulevard, Ski Run Boulevard, and US-50. Traffic cameras can also be added to the signals to monitor conditions remotely.

