

# **Appendix 4.5-1**

---

## Emergency Evacuation Evaluation



## MEMORANDUM

**TO:** Kent Tsujii  
Los Angeles County Public Works

**FROM:** Richard Gibson

**DATE:** June 28, 2023

**RE:** Evacuation Evaluation for the  
Hope Gardens Expansion Project  
County of Los Angeles, California

**Ref:** J2053

---

Gibson Transportation Consulting, Inc. (GTC) prepared an evacuation evaluation for the expansion of Hope Gardens (Project) at 12249 Lopez Canyon Road (Assessor's Parcel Numbers 2846-001-017, 2846-001-018, 2846-001-019, and 2846-001-020), generally located near the intersections of Lopez Canyon Road & Bailey Road and Lopez Canyon Road & Paxton Street in the County of Los Angeles (County), California. The methodology and assumptions used in this analysis were established in conjunction with the County. This memorandum summarizes our analysis.

## PROJECT DESCRIPTION

Hope Gardens is a transitional housing facility that assists in transitioning families and seniors experiencing homelessness to independence over a 12-to-36-month period. The existing facility provides a total of 121 rooms, including 96 family rooms and 25 rooms for seniors. The Project proposes to build 117 new rooms and demolish 25 existing rooms, for a total of 92 net new rooms and a total of 213 rooms upon completion of the Project. The Project is expected to be completed by 2026. A site plan for the proposed new building is shown in Figure 1.

## TRIP GENERATION

Figure 2 depicts the boundaries of the Project's evacuation shed (the vicinity of the Project that would utilize that same evacuation route as the Project) analyzed in this study. The trip generation for this evacuation analysis was based on the total number of residents and employees in the evacuation shed, as provided in multiple sets of demographic data.<sup>1</sup>

---

<sup>1</sup> Data obtained from replicahq.com in June 2023.

Due to the structure of the data sets, the analyzed area includes some portions of the County that would not add trips to the evacuation route on Lopez Canyon Road and, therefore, the analysis of 382 employees/students and 425 residents in the evacuation shed presented below is conservative. In addition, the analysis assumed that both the daytime and evening populations would be present in the area when the evacuation order is given. This is a very conservative assumption as many residents would be away from the area at work or school during the day and most people who work or attend school in the area during the day would not be in the area during the evening/night.

## **EVACUATION EVALUATION**

As part of this analysis of consistency with *Los Angeles County General Plan 2035* (County Department of Regional Planning, Adopted October 6, 2015) (General Plan), the evacuation evaluation focused primarily on residential evacuations from the foothill neighborhoods to provide insight, based on the Project's proposed residential land uses and its location in Lopez Canyon, on the potential roadway operation of a mass evacuation event. The evaluation included the determination of the approximate vehicular delays that would be experienced during an evacuation if all evacuating traffic from Lopez and Kagel Canyons were forced to travel south on Lopez Canyon Road toward Paxton Street. The analysis focused on the intersections of Lopez Canyon Road & Bailey Road and Lopez Canyon Road & Paxton Street under Future with Project Conditions (2026). The nearest fire department facilities were also identified as part of this evaluation.

### **Methodology**

The evacuation analysis was based on the following:

- The designated route evacuates traffic in a southbound direction on Lopez Canyon Road from the Project site toward I-210. This is the most direct evacuation route for Project traffic to get out of Lopez Canyon. While a more direct route exists for residents of Kagel Canyon, to provide for a conservative analysis, this study assumed that more direct route would be blocked by fire or fire-fighting activity and the Kagel Canyon traffic was included in this study.
- In the event of an emergency in the study area, it was assumed that traffic would be prohibited from entering the area and would be diverted away from the area at Foothill Boulevard on the south and west and Gladstone Avenue on the east. There are no routes to the north out of Lopez Canyon.
- Additional trip generation from adjacent parcels was estimated based on Traffic Analysis Zone (TAZ) information developed for the General Plan and distributed through the evacuation route.
- While a lane of traffic along an arterial street can accommodate up to 1,900 vehicles per lane per hour of green time, a reduced vehicular flow rate of 1,280 vehicles per lane per hour was assumed to be the capacity of the evacuation routes in order to account for confusion and emergency vehicles.

- The roadway lane configurations were assumed to be the lane configurations that exist today.

The evaluation considered the total time needed to evacuate the Project site and adjacent parcels through Lopez Canyon Road. The total time for evacuation was calculated by dividing the total number of vehicles by the flow rate of 1,700 vehicles per lane per hour. The critical point of congestion was presumed to be the movement that would take the longest for traffic to clear.

Under true evacuation conditions (and as noted in the General Plan), there are many variables the City may utilize that would change the assumptions in this evaluation. These include, but are not limited to, traffic control officers stationed at intersections, signal timing changes, turning movement restrictions, and strategically rerouting traffic away from the area. The time of day, whether school is in session, and the location of the evacuation areas may also affect this analysis. To account for the nature of an evacuation scenario, this analysis assumed that the key intersections along evacuation routes would be closed to all non-evacuation traffic to allow the canyon to clear as efficiently as possible.

**Evacuation Trip Generation**

Trip generation estimates were developed from the population and employment projections. Both the population and employment projections were expressed as number of persons, which requires conversion into vehicle trips for the purposes of this analysis.

- The population projections were understood to represent residents; to convert into vehicle trips, an Average Vehicle Ridership (AVR) of two persons per vehicle was conservatively assumed for evacuation purposes.
- The employment projections were understood to represent employees; to convert into vehicle trips, an AVR of one person per vehicle was conservatively assumed for evacuation purposes.

The table below summarizes the assumptions by specific TAZ and the trip generation development.

TAZ	Location / Description	Persons [a]		Trips [b]		
		Resident	Employee	Resident	Employee	Total TAZ [c]
Study Area	Kagel Canyon e/o I-210	425	382	213	382	595
<u>Notes:</u>						
[a] Resident and employee/student populations identified by data sets						
[b] Resident trips assumed at 2.0 AVR and employee/student trips assumed at 1.0 AVR						
[c] Trips as estimated for purposes of evacuation evaluation						

In total, approximately 595 resident and employee trips were distributed through the analyzed intersections along the evacuation routes for Future without Project Conditions.

To obtain Future with Project Conditions, the expected increase in residents of the Project was added to the total shown above. With the addition of 212 residents, the total trips generated by the

area surrounding the Project increases by 106 to 701 (assuming two people per car). This is a very conservative assumption as a majority of Project residents will not have access to their own personal vehicles and will utilize the Project's shuttle system for emergency evacuations.

### **Future with Full Project Conditions (2027)**

The evacuation delay evaluation was based on the intersection approach volumes that would be generated by the evacuating neighborhood. The adjacent TAZ trips were distributed through the network and added to the selected intersections to estimate the volume of evacuating traffic through the designated routes. The time to clear the intersection (congestion) was calculated by dividing the total volume by the evacuation flow rate (flow rate multiplied by number of lanes).

Table 1 presents the estimated evacuation volume through the selected intersections, along with the estimated time to clear the intersection for future conditions without the Project. As shown, evacuation along southbound Lopez Canyon Road is estimated to experience 28 minutes of congestion to clear the Bailey Road intersection and an additional 28 minutes to clear congestion at Paxton Street, for a total evacuation time of 56 minutes.

Table 2 presents the estimated evacuation volume through the selected intersections, along with the estimated time to clear the intersection for Future conditions with the Project. As shown, evacuation along southbound Lopez Canyon Road is estimated to experience 33 minutes of congestion to clear the Bailey Road intersection and an additional 33 minutes to clear congestion at Paxton Street, for a total evacuation time of 66 minutes. The Project could cause an increase of, at most, 10 minutes to total evacuation times from Lopez and Kagel Canyons utilizing the most conservative assumptions available. Given that a majority of Project residents will utilize the Project's existing shuttle system for emergency evacuation, the actual difference between with Project and without Project evacuation times is likely negligible.

These evacuation times represent highly conservative, worst-case conditions assuming that no alternate evacuation routes would be available, lane capacity would be reduced by approximately 50%, all area residents, employees, and students would be present at the same time, and Project residents would utilize personal vehicles to evacuate the Project.

### **Emergency Services Access**

The ability of emergency services to access the evacuation area is a corresponding component of this evaluation. This evaluation reasonably assumed that law enforcement or other emergency services will institute access restrictions into the emergency area and traffic diversions within the evacuation area itself, effectively creating a reduced traffic volume condition along the evacuation routes. This operating condition will allow emergency service vehicles to more freely travel to the emergency evacuation site because they will effectively be going against the flow of evacuating traffic for at least the final portion of their trips.

For informational purposes, the Fire Department facilities within the County, along with nearby facilities from adjacent agencies, the approximate distances,<sup>2</sup> and the estimated travel times<sup>3</sup> to the Project site are summarized below.

As shown, one County Fire Department facility, one Wildland Fire Explorer Post, and one United States Forest Service (USFS) station are located in the vicinity of the Project site. The estimated travel time to reach the Project site from the nearest facility, County Station #74 located to the east approximately 1.3 miles away from the Project site, is 6.0 minutes. The furthest facility, USFS Little Tujunga Fire Station, is located to the southeast approximately 2.3 miles away from the Project site and the estimated travel time to the Project site is approximately 13.0 minutes.

In the event assistance is requested from outside agencies, the nearest facility is Los Angeles Fire Department Station #98, located 3.0 miles southwest of the Project site. Travel time to the Project site is estimated to be approximately 8.0 minutes.

At intersections outside of the evacuation area or along congested segments, the emergency service vehicles are reasonably anticipated to utilize lights, sirens, public address systems, and signal pre-emption equipment to inform traffic to pull over and may also use opposite lanes or other means to bypass traffic where necessary.

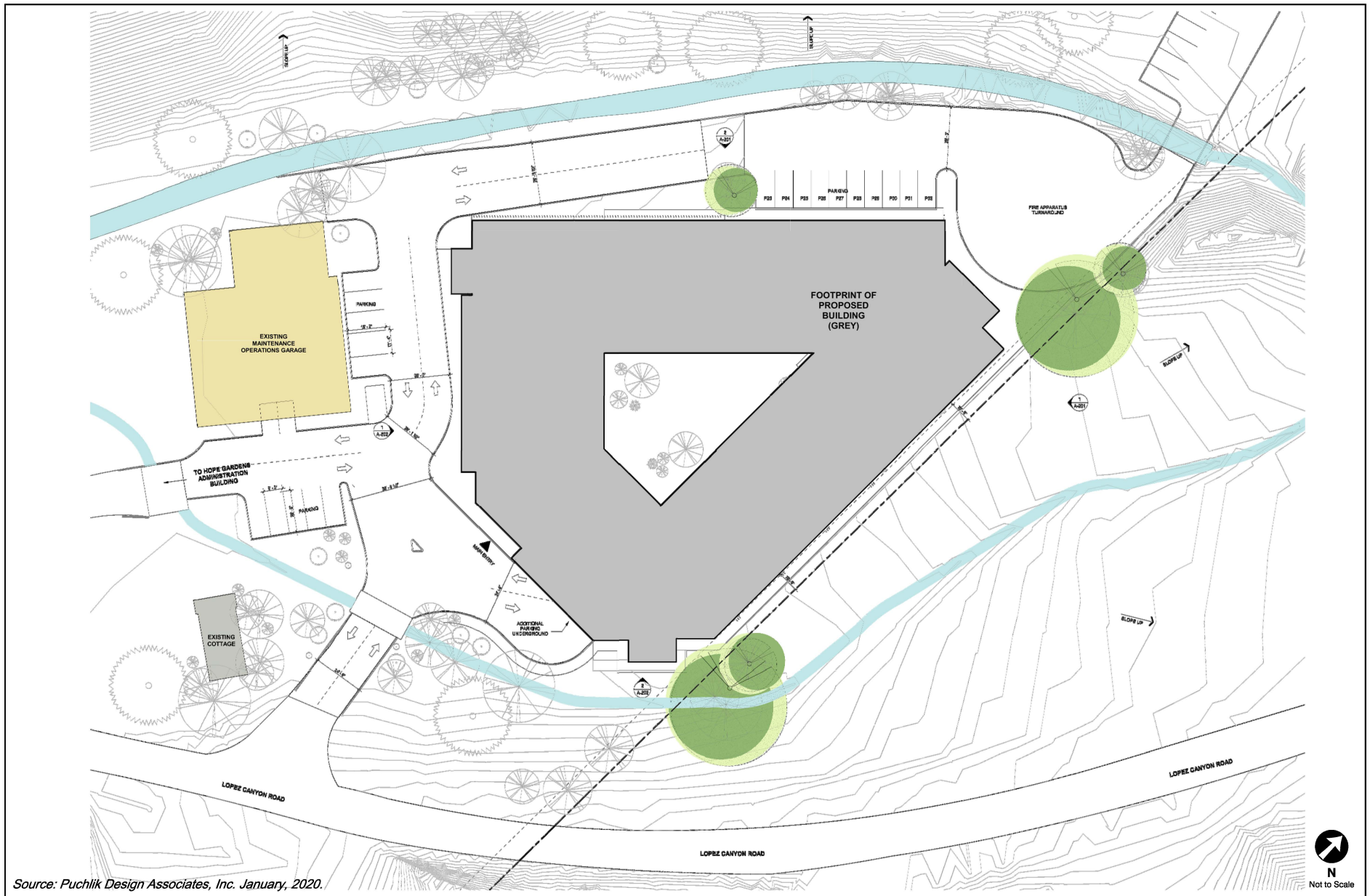
## **SUMMARY**

An evaluation of evacuation conditions and emergency services access was conducted. Using extremely conservative assumptions including no alternate evacuation routes would be available, lane capacity was reduced by approximately 50%, all area residents, employees, and students are present at the same time, and Project residents are utilizing personal vehicles to evacuate the Project, the Project would add at most 10 minutes to the total evacuation time out of Lopez and Kagel Canyons. Given that a majority of Project residents will utilize the Project's existing shuttle system for emergency evacuation, the actual difference between with Project and without Project evacuation times is likely negligible.

---

<sup>2</sup> Approximate distances estimated from the facility to the evacuation cordon and from the cordon to the Project site, based on routing from Google Maps.

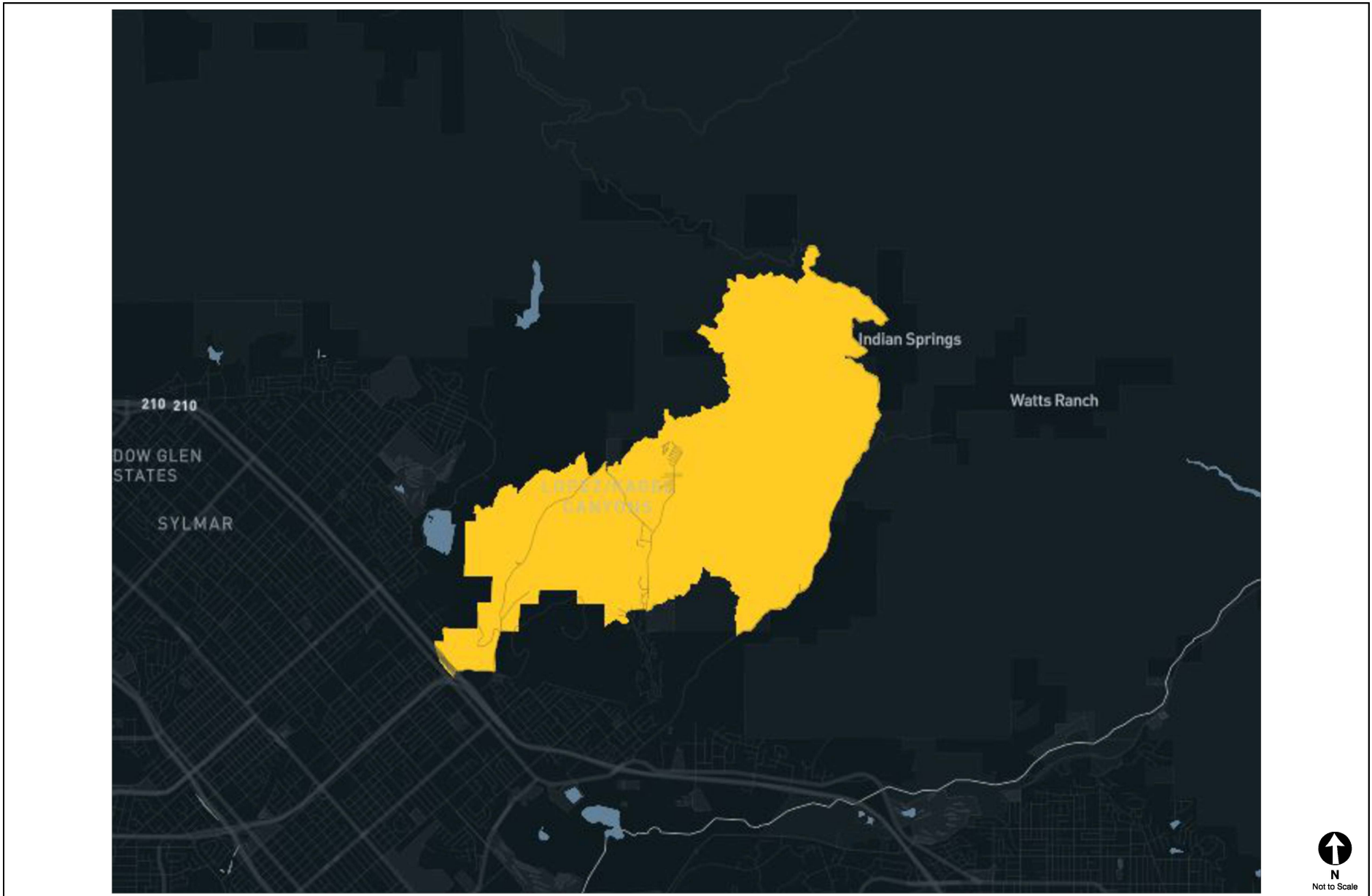
<sup>3</sup> Approximate travel times based on an assumed speed of 20 miles per hour outside the evacuation cordon and 40 miles per hour inside the evacuation cordon.



Source: Puchlik Design Associates, Inc. January, 2020.

PROJECT SITE PLAN

FIGURE  
1



EVACUATION SHED

FIGURE  
2

**TABLE 1  
SUMMARY OF EVACUATION DELAY  
FUTURE WITHOUT PROJECT CONDITIONS**

Future without Project Conditions					
Intersection	Approach	Approach Lanes	Volume [a]	Capacity [b]	Minutes to Clear [c]
Lopez Canyon Road & Bailey Road	Southbound	1	595	1,280	28
Lopez Canyon Road & Paxton Street	Southbound	1	595	1,280	28
<b>CONGESTION = 56 MINUTES (0.9 HOURS)</b>					

Notes:

[a] Volume assumes the Future 2027 without Project Conditions with trip generation assumptions from adjacent developments.

[b] Capacity based on total approach lanes and 1,280 vehicles per hour per lane

[c] Minutes to Clear Indicates highest congestion for exiting Canyon traffic

**Indicates highest congestion for evacuating traffic.**

**TABLE 2  
SUMMARY OF EVACUATION DELAY  
FUTURE WITH PROJECT CONDITIONS**

Future with Project Conditions					
Intersection	Approach	Approach Lanes	Volume [a]	Capacity [b]	Minutes to Clear [c]
Lopez Canyon Road & Bailey Road	Southbound	1	701	1,280	33
Lopez Canyon Road & Paxton Street	Southbound	1	701	1,280	33
<b>CONGESTION = 66 MINUTES (1.1 HOURS)</b>					

Notes:

[a] Volume conservatively assumes the Future 2027 Project Full Buildout Conditions

[b] Capacity based on total approach lanes and 1,280 vehicles per hour per lane

[c] Minutes to Clear Indicates highest congestion for exiting Canyon traffic

**Indicates highest congestion for evacuating traffic.**