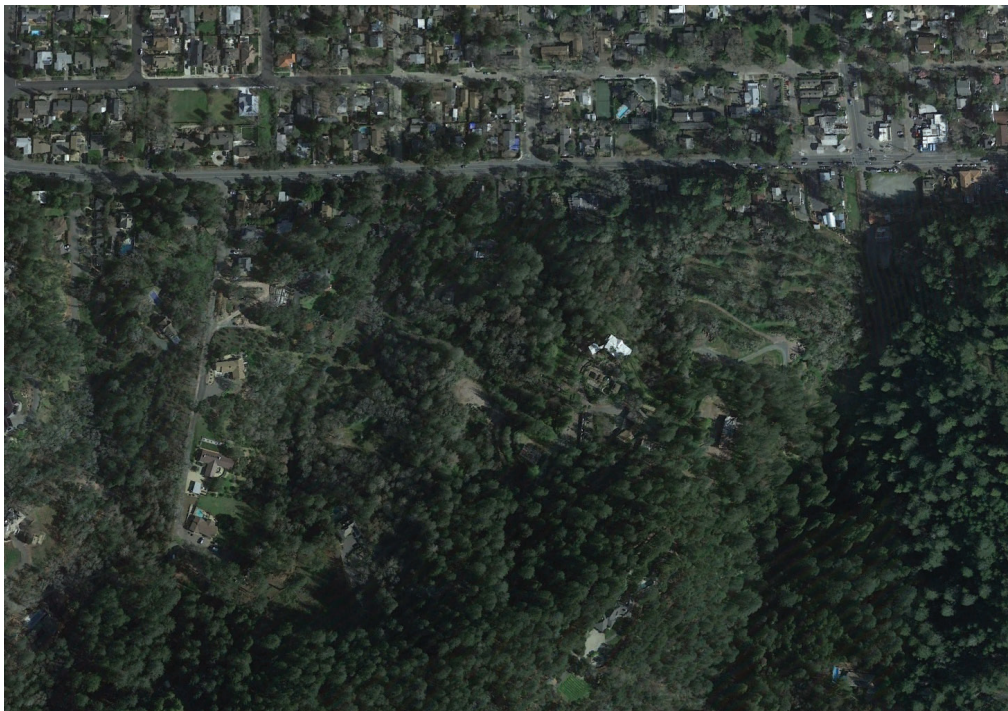


APPENDIX 4.2-A
TRANSPORTATION IMPACT STUDY



Final Report
Transportation Impact Study for the
Kortum Ranch Subdivision



Prepared for the City of Calistoga

Submitted by
W-Trans

October 23, 2024



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Executive Summary

The proposed project would result in a subdivision with 20 lots for single family homes. The project site is located west of Kortum Canyon Road and east of Lerner Drive. Access as proposed would be provided by a private street connecting to Kortum Canyon Road, which then connects to Foothill Boulevard. The proposed project street would also connect to Terrace Drive via an emergency vehicle access drive.

Based on the application of standard trip generation rates the proposed project would be expected to generate an average of 189 new daily trips, with 14 of these trips occurring during the a.m. peak hour and 19 during the p.m. peak hour.

The project would not provide any pedestrian facilities, which is consistent with the City of Calistoga's plans and the rural nature of the area, resulting in a less-than-significant impact on pedestrian facilities. The project would provide adequate bicycle parking. The project's impact on bicycle facilities would therefore be less than significant. VINE Transit and Lake Transit have routes with stops within a half-mile of the project site, but the project as proposed would likely create little to no additional demand for transit and as such would have a less-than-significant impact on transit.

The proposed private street would have two 10-foot-wide lanes; City policy requires each lane to be at least 12 feet wide unless approved by the City Engineer. The street must also be dedicated as a public street unless approved by the Planning Commission or Council. The project as proposed conflicts with section 16.16.030 of the City of Calistoga's *Municipal Code* and would have a potentially significant impact. To mitigate this impact the proposed street should be dedicated as a public street and either widened to include 12-foot lanes or have the narrower width approved by the City Engineer to have a less-than-significant impact.

The project is located in a TAZ with a VMT that is 15 percent below the countywide average so the project would have a less-than-significant impact on VMT.

Adequate sight distances are available at the proposed intersection on Kortum Canyon Road with the proposed new street. A left-turn lane is not warranted on Kortum Canyon Road. As the project would not result in any new hazards or incompatible uses, it would have a less-than-significant impact on safety. With fewer than ten left-turning vehicles per hour from SR 29-128 (Foothill Boulevard) onto Kortum Canyon Road, no history of correctible crashes, and limited benefit in terms of operation of the all-way stop-controlled intersection, a left-turn lane is neither warranted nor recommended.

The project site design is expected to function acceptably for emergency response vehicles as there is secondary access via an emergency vehicle access lane. The project's impact on emergency response would be less than significant.

Introduction

This report presents an analysis of the potential traffic impacts and adverse operational effects that would be associated with development of a proposed subdivision of 20 lots for single-family homes along Kortum Canyon Road in the City of Calistoga. The traffic study was completed in accordance with the criteria established by the City and is consistent with standard traffic engineering techniques.

Prelude

The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential transportation impacts of a proposed project, and any associated improvements that would be required to mitigate these impacts to an acceptable level under CEQA, the City's General Plan, or other policies. This report provides an analysis of those items that are identified as areas of environmental concern under the California Environmental Quality Act (CEQA) and that, if significant, require an EIR. Impacts associated with access for pedestrians, bicyclists, and to transit; the vehicle miles traveled (VMT) generated by the project; potential safety concerns such as increased queuing in dedicated turn lanes, adequacy of sight distance, need for turn lanes, and need for additional right-of-way controls; and emergency access are addressed in the context of the CEQA criteria.

Applied Standards and Criteria

The report is organized to provide background data that supports the various aspects of the analysis, followed by the assessment of CEQA issues and then evaluation of policy-related issues. The CEQA criteria evaluated are as follows.

Would the project:

- a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?
- b. Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?
- c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- d. Result in inadequate emergency access?

Project Profile

The proposed project is a subdivision to provide building lots for 20 single family homes. The project site is bisected by Kortum Canyon Road, which intersects SR 29 (Foothill Boulevard) opposite its extension along Lincoln Avenue.



Transportation Setting

Study Area and Periods

The study area varies depending on the topic. For pedestrian trips it consists of all streets within a half-mile of the project site that would lie along primary routes of pedestrian travel, or those leading to nearby attractors. For bicycle trips it consists of all streets within one mile of the project site that would lie along primary routes of bicycle travel. For the safety analysis it consists of the project frontage.

The a.m. and p.m. peak periods were evaluated where time periods are relevant. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Intersection

Foothill Boulevard (SR-128)/Lincoln Avenue (SR-29)-Kortum Canyon Road is an all-way stop-controlled intersection with four legs. There are marked crosswalks across the north (Lincoln Avenue) and west (Foothill Boulevard) legs of the intersection and an overhead red flashing beacon to emphasize the stop controls.

Consideration was given to the need to evaluate operation at the intersection of Foothill Boulevard/Lincoln Avenue-Kortum Canyon Road as this intersection would be affected by all project-generated traffic. However, as noted in the *Transportation Impact Study for the Gateway Plaza Project, W-Trans*, February 2023, this intersection is currently operating at LOS F during the p.m. peak hour, which is considered acceptable per the City's policies despite being the worst service level possible. The City has long-range plans to improve operation at this intersection by installing a traffic signal, and funding for this future project is included in the City's Traffic Impact Fee, which would be paid at such time as the subdivision is developed. The installation of this signal has not been programmed yet though so when it would be installed is unknown. Because there would be no adverse effect due to the project and the mechanism for funding the planned improvements is already in place, no further analysis was performed.

Study Roadways

Kortum Canyon Road is a two-lane street that is approximately 19 feet wide and terminates as the south leg of the Foothill Boulevard/Lincoln Avenue-Kortum Canyon Road intersection. The study street has a measured 85th percentile speed of 25 miles per hour (mph). Based on count data collected on March 16, 2023, the roadway has an average daily traffic (ADT) volume of approximately 200 vehicles.

Foothill Boulevard (SR-128) is a state highway with one lane in each direction and a posted speed limit of 35 mph through the City of Calistoga.

Lincoln Avenue (SR 29) is a state highway with a posted speed limit of 25 mph and one lane in each direction through the City of Calistoga.

Project Data

The project consists of a 20-lot subdivision intended for development with single family homes. Access to the 20 lots as proposed would be via a 20-foot-wide private street connecting to Kortum Canyon Road, which then connects to Foothill Boulevard. The site is currently vacant.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021, for “Single Family Detached Housing” (ITE LU 210). The expected trip generation potential for the proposed project is indicated in Table 1 and includes an average of 189 trips per day, with 14 trips during the a.m. peak hour and 19 during the p.m. peak hour.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
SF Detached Housing	20 du	9.43	189	0.70	14	4	10	0.94	19	12	7

Note: SF = Single Family; du = dwelling unit

Trip Distribution

Given the project site’s location and limited access options, it is assumed that all project trips would be to/from SR 128.

Circulation System

This section addresses the first transportation bullet point on the CEQA checklist, which relates to the potential for a project to conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Pedestrian Facilities

Existing and Planned Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a connected pedestrian network is lacking in the project vicinity and there are no sidewalks along the project frontage on Kortum Canyon Road. Sidewalks are present on the north side of Foothill Boulevard, 1,000 feet north of the project site, between Elm Street and Lincoln Avenue and between Hazel Street and Pine Street. Sidewalks are present on both sides of Lincoln Avenue from Foothill Boulevard to Wappo Avenue. The City of Calistoga's *Active Transportation Plan, 2014 (ATP)* does not include any planned pedestrian facilities on Kortum Canyon Road. Sidewalks are planned along the south side of Foothill Boulevard from Elm Street to Pine Street. Pedestrian pathways are planned on both sides of Foothill Boulevard from Cedar Street to about 2,000 feet east of Pine Street.

Pedestrian Safety

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue for pedestrians. Collision records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports were reviewed for the most current five-year period available, which was June 1, 2017, through May 31, 2022, at the time of the analysis. During the five-year study period there were no reported collisions involving pedestrians on the study segment.

Project Impacts on Pedestrian Facilities

Though the project is on the edge of the City, it is reasonable to assume that some residents or their visitors would want to walk, bicycle, and/or use transit to reach the project site. Policy 1.2 from the ATP requires that new developments implement the planned bicycle and pedestrian network. Policy P1.3-2 of the City of Calistoga's *Circulation Element, 2014*, requires that new developments provide sidewalks to close gaps in the City's active transportation network.

The project as proposed would not result in the construction of any pedestrian facilities. The City of Calistoga has adopted the City of Santa Rosa's *Street Design and Construction Standards, 2004* as its street design standards. The project proposes to construct a "rural/hillside street" street type which does not include sidewalks. The lack of sidewalks is consistent with the expected pedestrian and vehicle volumes and the low-speed context of the proposed street.

Finding – Pedestrian facilities serving the project site are adequate and consistent with applicable policies.

Bicycle Facilities

Existing and Planned Bicycle Facilities

The *Highway Design Manual, Caltrans, 2020*, classifies bikeways into four categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.
- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.
- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.
- **Class IV Bikeway** – also known as a separated bikeway, a Class IV Bikeway is for the exclusive use of bicycles and includes a separation between the bikeway and the motor vehicle traffic lane. The separation may include, but is not limited to, grade separation, flexible posts, inflexible physical barriers, or on-street parking.

According to the City of Calistoga’s ATP, in the project area a Class III bike route exists on Cedar Street from Willow Street to Hazel Street. Planned future bicycle facilities include extending the existing bike route on Cedar Street to Pine Street. A Class III bike route is planned on Lincoln Avenue from Foothill Boulevard to Fair Way and Class II bike lanes are planned on Foothill Boulevard along its entire length in the City of Calistoga as contained in the ATP.

Bicyclist Safety

Collision records for the study area were reviewed to determine if there had been any bicyclist-involved crashes that may indicate a safety issue for bicycles. During the five-year study period between June 1, 2017, through May 31, 2022, there were no reported collisions involving cyclists on the study segment.

Project Impacts on Bicycle Facilities

Policy 1.2 of the *Active Transportation Plan* requires that new developments implement planned bicycle facilities. Since no bicycle facilities are planned along the project frontage no improvements for bicycle facilities are required.

Bicycle Storage

The project site plan does not identify the provision of bicycle parking or storage facilities and is not required to provide them. Bicycles could be stored in garages, resulting in adequate storage facilities.

Finding – Bicycle facilities serving the project site are adequate and consistent with applicable policies.

Transit Facilities

Existing Transit Facilities

VINE Transit provides regional fixed route bus service in Napa County and Lake Transit provides regional service in Lake County with stops in Calistoga. Route 3 from Lake Transit, which has stops in Clearlake, Calistoga, and Deer Park, and Route 10 from VINE Transit, which has stops in the cities of Napa, Saint Helena, and Calistoga, both have stops within a half mile of the project site on the Lincoln Avenue bridge in Calistoga. Route 10 operates every day with headways of one hour from 5:30 a.m. to 9:00 p.m. during weekdays and 6:00 a.m. to 7:30 p.m. on weekends. Route 3 operates Monday through Friday from 6:00 a.m. to 6:00 p.m., makes eight stops in Calistoga with varying headways.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. VineGo Paratransit is designed to serve the needs of individuals with disabilities within Calistoga and the greater Napa-Solano area.

Impact on Transit Facilities

The project as proposed is likely to create little to no additional demand for transit and as such is expected to have a less-than-significant impact on transit.

Finding – Transit facilities serving the project site are adequate.

Vehicle Facilities

The project as proposed would result in the construction of a private street with two 10-foot travel lanes to provide access to the project site as well as an emergency vehicle access lane that would connect the proposed private street to Terrace Drive. This emergency access lane would not be a public street and would only be used by emergency vehicles or in case of evacuation. The proposed street would be a “rural/hillside street” as shown in the City of Santa Rosa’s *Street Design and Construction Standards, 2004*. This street type requires 12-foot-wide travel lanes, except when the street is restricted by topography over “short distances” and has been approved by the City Engineer. Section 16.16.030 of the City of Calistoga’s *Municipal Code* requires that the proposed street be a public street unless the Planning Commission or Council approves it as a private street. This approval must be justified based on topography or other natural features and the subdivider must provide a reasonable method for maintenance that has been approved by both the Director of Public Works and the City Attorney.

Finding – The proposed private street is not consistent with section 16.16.030 of the City of Calistoga’s *Municipal Code*.

Significance Finding – The proposed project would not conflict with any plans or policies for transportation facilities except section 16.16.030 of the City of Calistoga’s *Municipal Code*, which requires that it be a public street with a width of 24 feet. The project would therefore have a potentially significant impact.

Mitigation – The proposed street serving the project site should be a dedicated public street and widened to 24 feet unless the narrower width is approved by the City Engineer. With this change to the plan the project would be expected to have a less-than-significant impact on transportation facilities.

Vehicle Miles Traveled (VMT)

The potential for the project to conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b) was evaluated based on the project's anticipated Vehicle Miles Traveled (VMT).

Senate Bill (SB) 743 established the change in Vehicle Miles Traveled (VMT) as a result of a project as the basis for determining impacts with respect to transportation and traffic under CEQA. As of the date of this analysis, the City of Calistoga has not adopted thresholds of significance related to VMT. As a result, project-related VMT impacts were assessed based on guidance published by the California Governor's Office of Planning and Research (OPR) in the publication *Transportation Impacts (SB 743) CEQA Guidelines Update and Technical Advisory, 2018*. Under this guidance, residential developments that have a VMT per capita that is 15 percent or more below the existing average countywide VMT per capita would have a less-than-significant transportation impact.

The Solano Napa Activity-Based Model (SNABM) is used to analyze travel patterns and estimate VMT based on geographic areas known as transportation analysis zones (TAZs). The project parcels are located within TAZ 185, which was determined to have a per capita VMT of 10.87 while the countywide VMT per capita per the model is 14.18. Applying OPR guidance, the significance threshold is 15 percent below this level, or 12.05. Since the VMT per capita of the project TAZ is below this level, it is reasonable to conclude that the project would have a less-than-significant VMT impact.

The *Napa Valley Travel Behavior Study, 2020*, analyzed trip lengths based on trips tracked by mobile device apps. Trips with at least one end in Napa County were evaluated, and a comparison of trip lengths across all Napa County jurisdictions indicated that 48 percent of trips originating or ending in Calistoga were less than two miles in length and that the average length of trips beginning or ending in Calistoga was 10.1 miles, which was lower than all Napa County jurisdictions except the City of Napa. It is expected that future residents of the project would exhibit a similar pattern given the proximity of the project site to a wide range of destinations in Calistoga.

Finding – Since the estimated VMT per capita for the project TAZ is more than 15 percent less than the countywide average, the project can be presumed to have a less-than-significant transportation impact on VMT.

Safety Issues

The potential for the project to impact safety was evaluated in terms of the adequacy of sight distance and need for turn lanes at the project access. This section addresses the third transportation bullet on the CEQA checklist which is whether or not the project would substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Very Low Volume Roadways

A Policy on Geometric Design of Highways and Streets by AASHTO provides the following guidance on the need to adhere strictly to design criterion on roadways carrying 400 or fewer trips per day.

This publication provides guidance and is intended to form a comprehensive reference manual for assistance in administrative, planning, and educational efforts pertaining to design formulation. As indicated in the forward of the document,

The fact that new design values are presented herein does not imply that existing streets and highways are unsafe, nor does it mandate the initiation of improvement projects. . . The intent of this policy is to provide guidance to the designer by referencing a recommended range of values for critical dimensions. Sufficient flexibility is permitted to encourage independent designs tailored to particular situations. The larger values within the ranges will normally be used where the social, economic, and environmental impacts are not critical.

Roadways with volumes of 400 vehicles per day or less are considered “Very Low Volume Roadways” under criteria published by the American Association of State Highway and Transportation Officials (AASHTO). With a daily volume of about 200 vehicles, Kortum Canyon Road would be considered a “very low volume” roadway.

In the AASHTO *Guidelines for Geometric Design of Very Low-Volume Local Roads* published in 2001, design criteria are presented that are less restrictive than those applied on higher volume streets. These standards do not compromise safety, but discourage widening of lanes and shoulders, changes in horizontal and vertical alignment, and other roadside improvements except where such changes are likely to provide *substantial* safety benefits. Under these guidelines, an 18-foot width would be desirable, however, lacking any specific safety concerns, any widening or other improvements to achieve a consistent 18-foot width would not be recommended.

While Kortum Canyon Road currently qualifies as a very low volume street, upon adding project-generated trips the volume would slightly exceed 400 daily trips so it would no longer be a very low-volume street. It was evaluated using the standard criteria, though consideration was given to the low-volume nature of the street.

Site Access

The project site would be accessed by a proposed private street connecting to Kortum Canyon Road about 1,000 feet south of the intersection of Foothill Boulevard. The project as proposed would also have an emergency vehicle access street that would connect to Terrance Drive, though this connection would not be used other than by emergency vehicles except in the case of an evacuation.

Sight Distance

Sight distance along Kortum Canyon Road at the new project street was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance at intersections of public streets is based on corner sight distances, with more sight distance needed for making a left turn versus

a right turn, while recommended sight distances for minor street approaches that are either a private street or a driveway are based on stopping sight distance. Both use the approach travel speeds as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street.

Field measurements were obtained at the location where the new street would intersect Kortum Canyon Road. While the street is proposed as a private street, it was evaluated as a public street based on the City policy that new streets be public streets. Based on a field measured 85th percentile speed of 25 mph the recommended corner sight distance from the proposed street is 275 feet for left-turning vehicles and 240 feet for right-turning vehicles. A review of the proposed sight distance conditions indicates that sight lines are only approximately 230 feet and 150 feet for left turns and right turns respectively. While this is less than the recommended minimum corner sight distance for a public street intersection, it meets the minimum sight distance of 150 feet required for the intersection to operate acceptably under stopping sight distance criteria, which is the applicable criterion for a private street. Therefore, sight lines would be considered adequate to achieve minimum safety requirements and would be adequate for a private street. It is recommended that vegetation adjacent to the proposed intersection be trimmed such that bushes and shrubs be kept under three feet in height, and trees and hanging branches should be trimmed to a minimum height of seven feet.

Finding – Proposed sight distances at the intersection of Kortum Canyon Road and the proposed project street are adequate to meet minimum safety criteria. Overgrown vegetation could hinder sight lines, so routine maintenance of vegetation to maximize sight lines would be needed.

Recommendation – To maintain adequate sight lines, vegetation adjacent to the proposed project street should be maintained to ensure that bushes and shrubs are kept under three feet in height, and that trees and hanging branches are trimmed to a minimum height of seven feet.

Access Analysis

Left-Turn Lane

Since it is assumed all trips to the project site would come from SR 128 there would be no vehicles turning left from Kortum Canyon Road onto the proposed project street, there is no need for a left-turn lane on Kortum Canyon Road.

The collision history for the study intersection was reviewed to determine if the addition of a left-turn lane would address any safety issues. The collision history based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports was reviewed. The most current five-year period available is December 1, 2016, through November 30, 2021. Since the study intersection is currently an all-way stop-controlled intersection a left-turn lane on the westbound approach may address collisions between vehicles turning left from Foothill Boulevard onto Kortum Canyon Road and vehicles traveling eastbound on Foothill Boulevard. Since no such collisions were reported at the study intersection a left-turn lane is not needed since it is unlikely that it would improve safety at the study intersection. It is further noted that with fewer than ten left turns during the peak hour, a left-turn lane would provide a limited benefit in terms of operation.

Finding – A left-turn lane from Foothill Boulevard to Kortum Canyon Road is not needed to address a safety issue and would provide limited operational benefit. No traffic would be expected to turn left from Kortum Canyon Road onto the project street. Left-turn lanes are therefore not recommended on either Kortum Canyon Road or Foothill Boulevard.

The proposed project would not create any new hazards or introduce incompatible uses to the roadway system, so its impact on safety would be less than significant.

Emergency Access

The final transportation bullet on the CEQA checklist requires an evaluation as to whether the project would result in inadequate emergency access or not.

Adequacy of Site Access

Adequacy of Narrow Streets for Fire Apparatus

An emergency evacuation route is required to have a minimum width of 20 feet or, if it is under the 20-foot minimum, be approved by the Calistoga Fire Chief. The proposed evacuation route would be at least 16 feet wide and would connect to Terrace Drive, which is under 20 feet wide for most of its length. It is understood that the proposed street width and connection to Terrace Drive have been approved as emergency vehicle access only. An emergency vehicle access gate would be constructed to limit access to the evacuation route to only emergency vehicles. An emergency vehicle turnaround would be provided on the project site near the emergency vehicle access gate.

Off-Site Impacts

While the project would be expected to result in slight increases in delay for traffic in the surrounding vicinity, emergency response vehicles can claim the right-of-way by using their lights and sirens; therefore, the project would be expected to have a nominal effect on emergency response times.

Finding – Emergency access and circulation are anticipated to function acceptably with incorporation of applicable design standards into the site layout and traffic from the proposed development would be expected to have a less-than-significant impact on emergency response times.

Conclusions and Recommendations

Conclusions

- The proposed project would be expected to generate an average of 189 daily trips, with 14 occurring during the a.m. peak hour and 19 occurring during the p.m. peak hour.
- Pedestrian, bicycle, and transit facilities are adequate to serve the project site given the location and are consistent with applicable plans and policies.
- The proposed private street serving the project site would not be consistent with the City's policies.
- The project's VMT impact would be less than significant since the three project TAZs that apply to the project location all have VMTs per capita that are more than 15 percent below the countywide average.
- Sight lines are adequate to meet the stopping sight distance criteria applicable to a private street, which is the minimum safety standard.
- A left-turn lane is not warranted on Kortum Canyon Road at the proposed street location or on Foothill Boulevard at Kortum Canyon Road.
- The proposed project would have a less-than-significant impact on emergency response times and access for emergency responders is anticipated to be acceptable assuming implementation of appropriate design standards.

Recommendations

- The proposed project street should be made a public street.
- Vegetation adjacent to the proposed new project street should be maintained such that bushes and shrubs are kept under three feet in height and that trees and hanging branches are trimmed to a minimum height of seven feet.

Study Participants and References

Study Participants

Principal in Charge	Dalene J. Whitlock, PE, PTOE
Assistant Engineer	William Andrews, EIT
Editing/Formatting	Jessica Bender, Rebecca Mansour
Quality Control	Dalene J. Whitlock, PE, PTOE

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