



Civil and Transportation Engineering

TRAFFIC IMPACT ANALYSIS

**4057 JEFFERSON AVENUE
EMERALD LAKE HILLS UNINCORPORATED AREA
SAN MATEO COUNTY, CALIFORNIA**

**September 19, 2011
Updated May 8, 2018**

Prepared for -
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Table of Contents

Section	Page
1. Executive Summary	1
2. Proposed Development	2
3. Area Conditions	6
4. Projected Traffic	11
5. Site Specific Traffic Analysis	14
6. Improvement Analysis	17
7. Conclusions and Recommendations	18
 Appendices	
A. Traffic Count Data	
B. Levels of Service Calculation Worksheets	
C. Traffic Analysis Worksheets	

List of Figures

Figure	Page
1. Site Plan	3
2. Location Map	4
3. Zoning Map	5
4. Study Area	7
5. Existing Traffic Volumes	13
6. Intersection Sight Distance	14
7. Corner Sight Distance	16

List of Tables

Table	Page
A. Levels of Service Definitions.....	8
B. Jefferson Avenue West of Fallen Leaf Way	9
C. Project Vehicle Trip Generation	11

I. EXECUTIVE SUMMARY

STUDY PURPOSE

The purpose of this study is to quantify and analyze the traffic impacts of a proposed 10-lot single family residential development.

SITE LOCATION AND STUDY AREA

The project is located at 4057 Jefferson Avenue in the Emerald Lake Hills unincorporated area of San Mateo County, California. The study area includes Jefferson Avenue between Emerald Hill Road and California Way.

DEVELOPMENT DESCRIPTION

The project consists of the subdivision of a parcel into 10 single family, detached residential dwelling units on separate lots served by a new cul-de-sac street off of Jefferson Avenue between Fallen Leaf Way and Revere Way. The existing residence will remain on one of the newly created lots.

PRINCIPAL FINDINGS

The proposed subdivision is estimated to generate 11 net new vehicle trips during the morning street peak hour, 10 net new vehicle trips during the afternoon street peak traffic hour and 116 daily vehicle trips during an average weekday . The project will not create a significant impact on the streets or at the intersections within the project study area.

Site Accessibility. Access to the site is off of Jefferson Avenue with four of the lots having direct access to the street while the remaining six lots will be served by a new cul-de-sac street off of Jefferson Avenue.

Roadway Improvements. No off-site improvements are needed to accommodate project generated traffic.

RECOMMENDATIONS

Off-site:

1. Provide advance warning to motorists on Jefferson Avenue of the activation of a new street intersection.
2. Place W2-2L and W16-2a (150 FT) intersection warning signs facing westbound traffic in advance of the intersection.

On-site:

3. Within the street and driveway corner sight triangles there should be no fencing or signs that would obstruct visibility. Trees should be planted so as to not create a “wall” effect when viewed at a shallow angle. The type of shrubbery planted within the triangles should be such that it will grow no higher than three feet above the adjacent roadway surface. Trees planted within the sight triangle areas should be large enough that the lowest limbs are at least seven feet above the surface of the adjacent roadway.
4. Control the approach of the new street at Jefferson Avenue with a STOP sign .
5. Provide roadway lighting in accordance with RP-8-00.

II. PROPOSED DEVELOPMENT

PROJECT DESCRIPTION

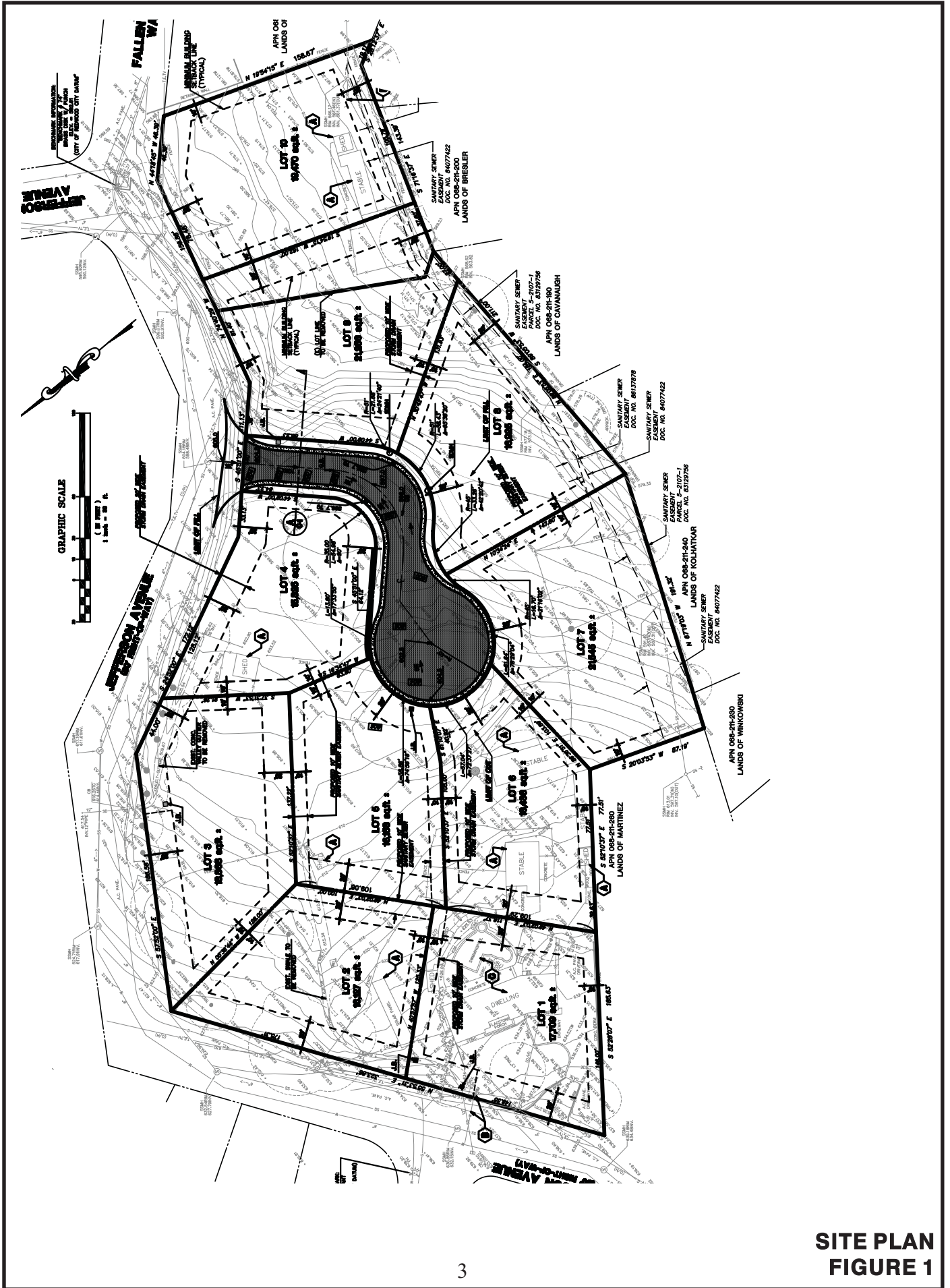
The project is located at 4057 Jefferson Avenue in the unincorporated area of Emerald Hills and consists of the subdivision of two parcels into 10 lots for single family, detached housing units. The existing residence will be on one of the newly created lots.

The proposed project is shown on Figure 1, Site Plan, page 3 and on Figure 2, Location Map, page 4.

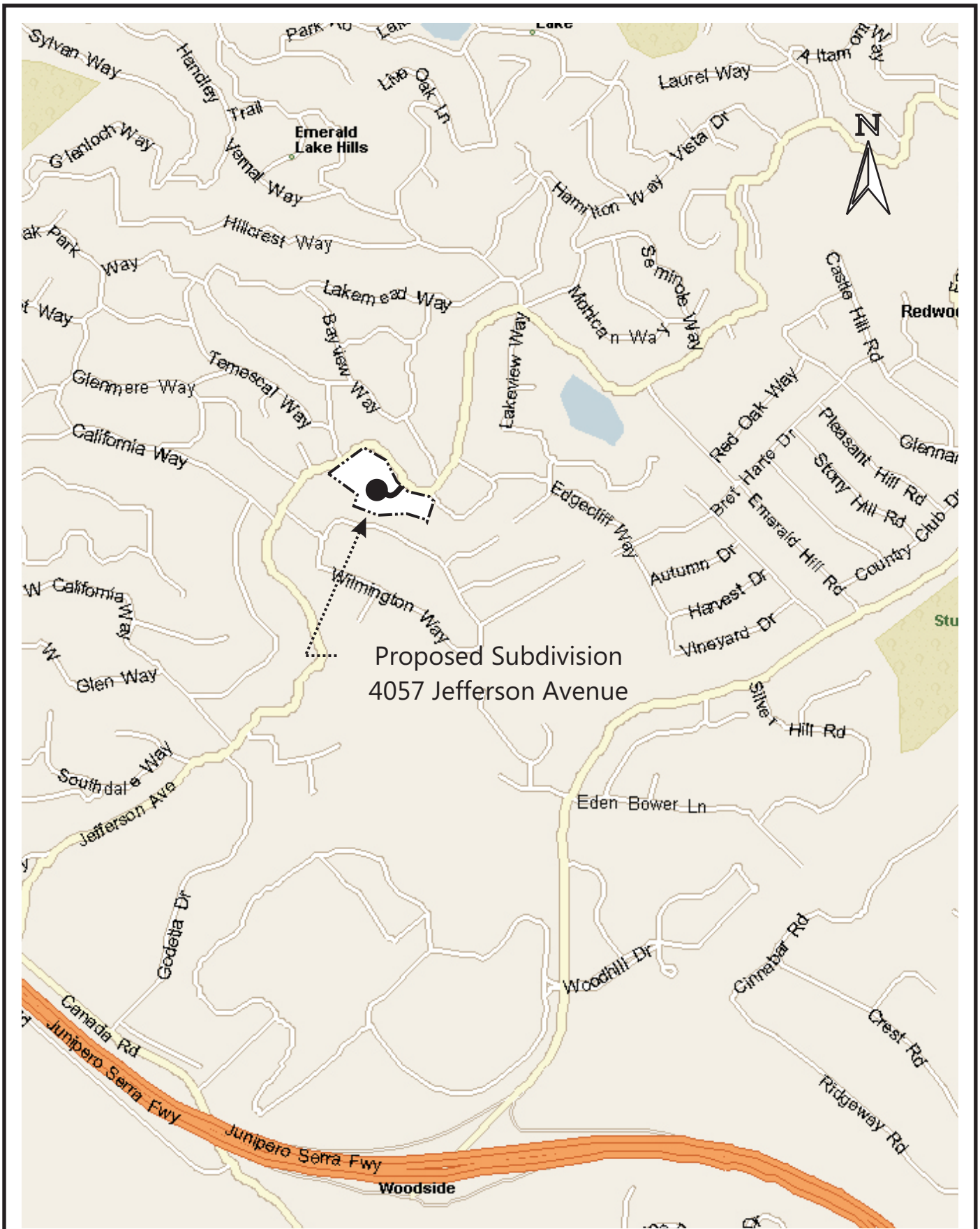
The zoning is RH/DR (Residential Hillside/Design Review). The zoning map is shown on Figure 3, page 5.

No off-site development is proposed for the project.

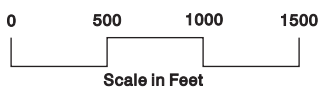
It is anticipated that the project will be completed in 2020.



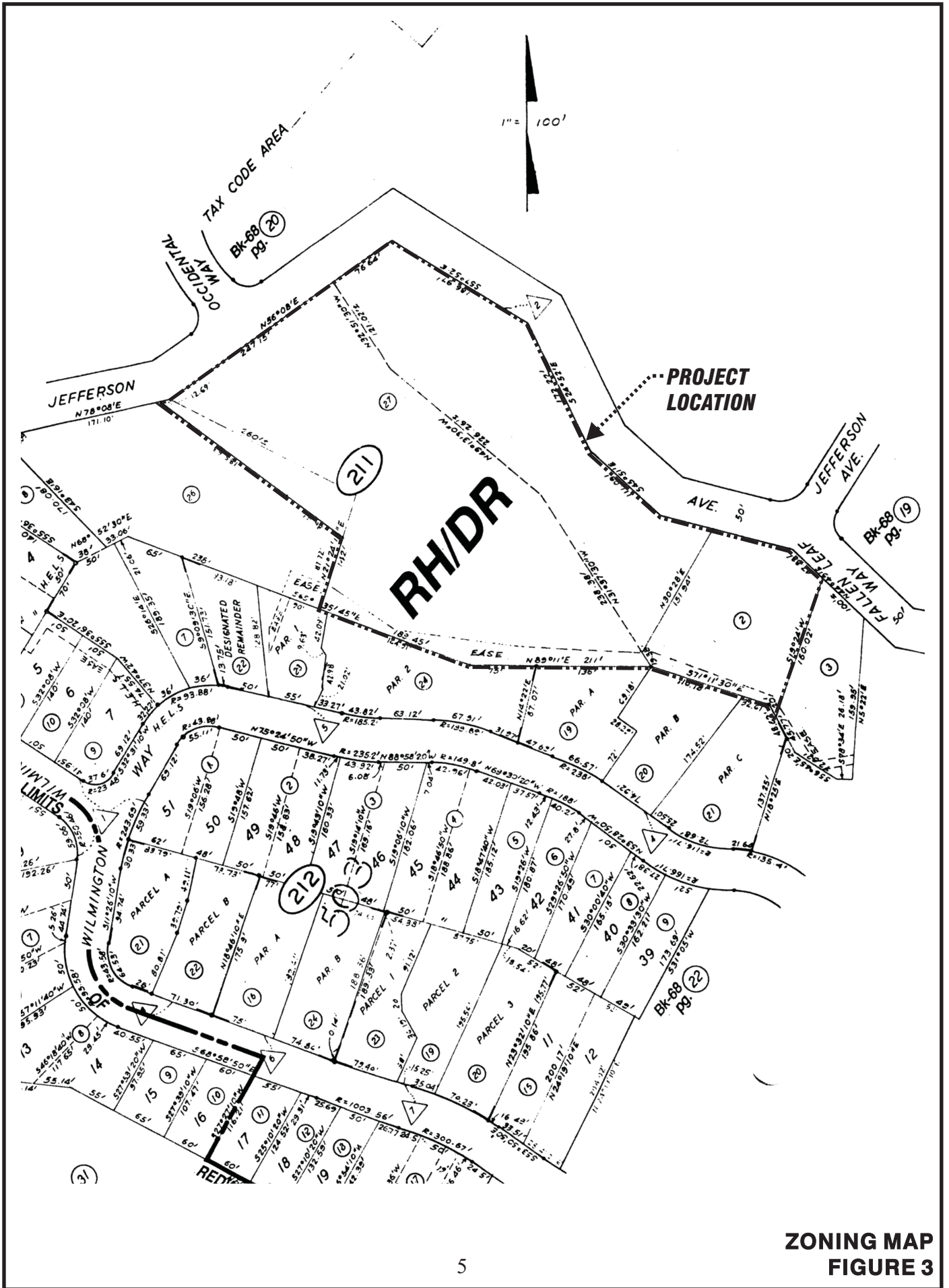
SITE PLAN
FIGURE 1



Map courtesy Microsoft © Streets & Trips © 2008



**LOCATION MAP
FIGURE 2**



III. AREA CONDITIONS

STUDY AREA

The study area includes Jefferson Avenue between Emerald Hill Road and California Way including observations made in 2011 of traffic flow and possible congestion at five intersections along Jefferson Avenue: Emerald Hill Road, Lakeview Way, Fallen Leaf Way, Revere Way and California Way. The Study Area is shown on Figure 4, page 7.

STUDY AREA LAND USE

The study area is typified by single family detached housing units.

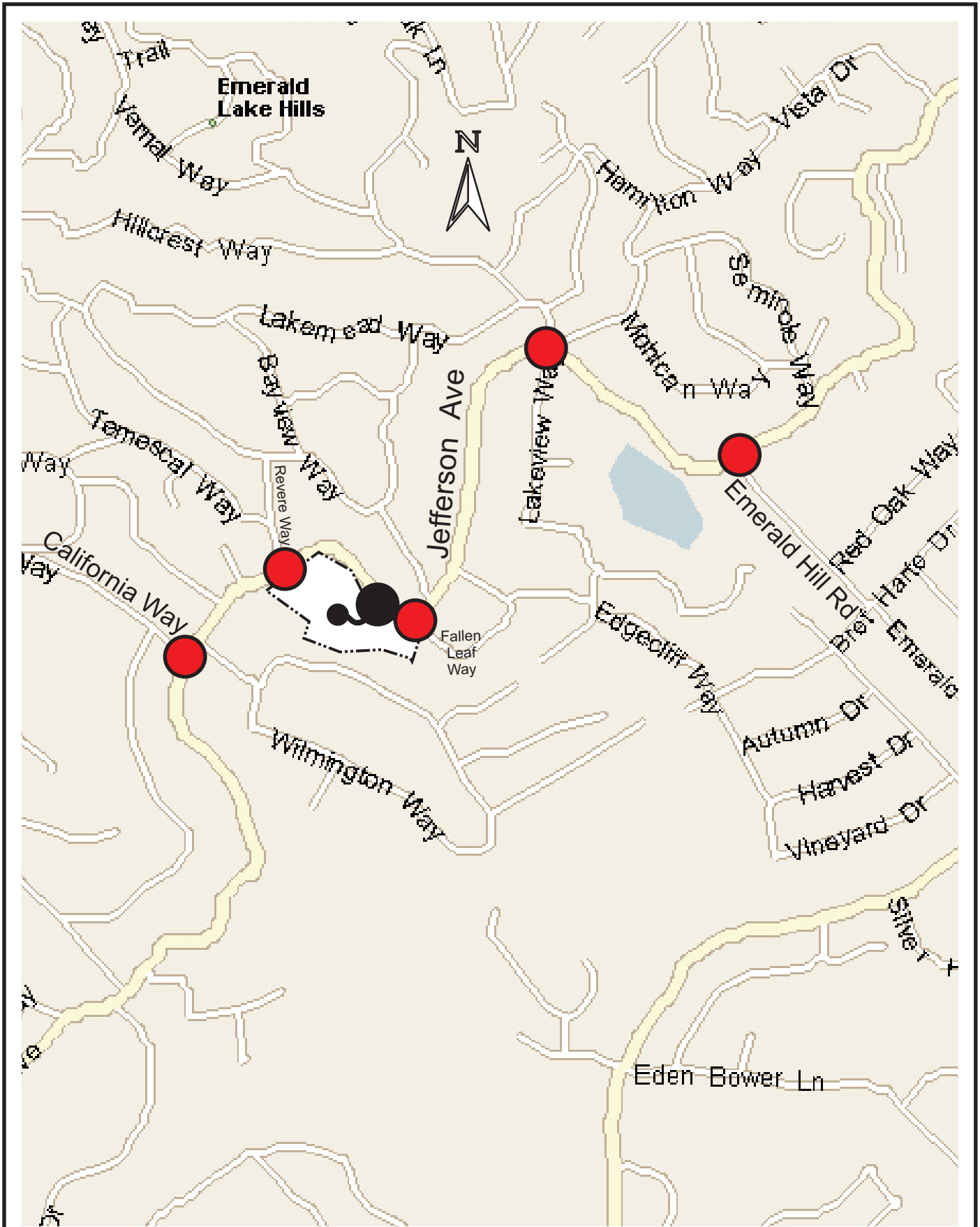
The existing zoning is RH/DR, Residential Hillside/Design Review and is shown on Figure 3, Zoning Map, page 5. No changes in existing zoning are proposed.

Future development within the study is not well defined.

SITE ACCESSIBILITY

Area Roadway System. The proposed project is situated on Jefferson Avenue between Fallen Leaf Way and Revere Way. All of the public streets in the study area are 2-lane, 2-way streets and are classified as local streets. The posted speed limit on Jefferson Avenue is 25 mph. Traffic conditions were observed in 2011 at the five existing intersections along Jefferson Avenue shown on Figure 4, Study Area, during the weekday morning and afternoon peak traffic periods. Because the traffic counts done in 2018 compare closely with those done in 2011 (see Table B, page 9), traffic conditions at these five intersections currently are quite likely comparable to those observed in 2011 as described below.

Jefferson Avenue & Emerald Hill Road. This tee intersection is within the City of Redwood City and is controlled by a STOP sign on the Emerald Hill Road approach. The Jefferson Avenue approaches are uncontrolled. The predominant traffic movement in the morning is from Jefferson Avenue eastbound to Emerald Hill Road southbound. During the afternoon peak traffic period the reverse movement is the predominant movement. During the periods of observation there were few, if any, queues of vehicles on the northbound controlled approach. There were no pedestrians crossing the intersection and there were a few adult bicyclists on Jefferson Avenue. Based on the observations the intersection appears to be operating at a Level of Service in the A to B range. Levels of Service (LOS) define how well or how poorly a traffic facility (a street or an intersection) is operating. There are by definition six Levels of Service. These definitions are presented in Table A on the following page. The LOS standards as set forth in the County's General Plan call for a planning standard LOS of C.



Map courtesy Microsoft © Streets & Trips © 2008

- Intersection observed
- Intersection LOS calculated

**STUDY AREA
FIGURE 4**



TABLE A: Levels of Service Definitions for 2-Way and All-Way STOP Controlled Intersections	
Level of Service	Traffic Conditions
A	Very low delay, 0-10 seconds of average control delay per vehicle.
B	Average control delay in the range of >10 to 15 seconds per vehicle
C	Average control delay in the range of >15 to 25 seconds per vehicle
D	Average control delay in the range of >25 to 35 seconds per vehicle
E	Average control delay in the range of >35 to 50 seconds per vehicle
F	Average control delay in excess of 50 seconds per vehicle.

Reference: *Highway Capacity Manual 2010*, Chapter 19, Exhibit 19-1.

Jefferson Avenue & Lakeview Way/East Lake Way. This 5-legged intersection is within the city limits of the City of Redwood City and is controlled by an All-Way STOP. The intersection is somewhat on the crest of a hill for the south leg of Lakeview Way and the east leg of East Lake Way. The predominant movement is on Jefferson Avenue. Queues were no more than two vehicles on any one approach during the morning peak traffic period. Some adult cyclists were observed on Jefferson Avenue and there were a few pedestrians walking across one or more legs of the intersection.

During the afternoon peak traffic period the dominant traffic movement was on Jefferson Avenue. There were some adult cyclists on Jefferson Avenue but few pedestrians. The maximum observed queues were no more than 2-3 vehicles on any approach. The queuing was not because of conflicting traffic but merely because of the STOP control on the approaches.

The intersection appeared to be operating at good LOS during the periods of observation, probably in the LOS A range.

Jefferson Avenue & Fallen Leaf Way. This intersection is a tee intersection with Jefferson Avenue and is situated quite closely to the tee intersection of Jefferson Avenue & Bay View Way. The intersection is at the easterly end of the proposed subdivision. The Fallen Leaf Way approach to the intersection is uncontrolled. During the times of observation during the morning and afternoon peak traffic periods no vehicles turned into Fallen Leaf Way. There is a private nursery school on the easterly corner of this intersection that when in operation will likely generate traffic on the Fallen Leaf Way leg of the intersection.

Jefferson Avenue & Revere Way. This tee intersection is situated near the westerly end of the proposed subdivision on Jefferson Avenue. The Revere Way approach is uncontrolled, although vehicles approaching Jefferson Avenue on Revere Way stop as though there was a STOP sign controlling the approach. During the morning peak traffic period no bicyclists or pedestrians were observed at the intersection. During the afternoon peak traffic period there were a few adult cyclists observed on Jefferson Avenue. The intersection appeared to be operating at LOS A/B during the times of observation.

Jefferson Avenue & California Way. This tee intersection is controlled by a STOP sign on the California Way approach. During the morning peak traffic period no bicyclists or pedestrians were observed at the intersection. During the afternoon peak traffic period there were a few adult cyclists observed on Jefferson Avenue. There were no queues of vehicles on the California Way approach and the intersection appeared to be operating at LOS A during the times of observation.

A chart for 2-way STOP controlled tee intersections is provided in Appendix C which shows an order of magnitude LOS for the tee intersections described above. Fifteen minute counts taken during the times of observation were extrapolated to one hour volumes.

Traffic Volumes and Conditions. A 2-day, directional, speed and classification count was done on Jefferson Avenue between Fallen Leaf Way and Revere Way on September 14-15, 2011 and again on April 18-19, 2018. The count data is summarized in Table B below.

TABLE B: Jefferson Avenue, West of Fallen Leaf Way 2-Day Average						
	8-9 AM Peak Hour		5-6 PM Peak Hour		Daily	
	9/14-15/11	4/18-19/18	9/14-15/11	4/18-19/18	9/14-15/11	4/18-19/18
Eastbound						
Vehicle Volume	164	164	131	142	1612	1642
Bicycle Volume	6	2	7	1	54	7
Westbound						
Vehicle Volume	157	150	156	139	1697	1813
Bicycle Volume	4	1	4	2	21	13
Total						
Vehicle Volume	321	314	287	281	3309	3455
Bicycle Volume	10	3	11	3	75	20
% Trucks & Buses	4%	9%	7%	6%	7%	7%

Speed Data	Eastbound				Westbound			
Direction	9/14/11	9/15/11	4/18/18	4/19/18	9/14/11	9/15/11	4/18/18	4/19/18
Average Speed, mph	29	29	29	29	28	28	28	28
85 th Percentile Speed, mph	32	33	32	32	32	32	31	31
10 mph Pace Speed	25-34	25-34	25-34	25-34	23-32	23-32	25-34	24-33
% in Pace	88%	86%	81%	82%	84%	82%	82%	82%

Within a residential district such as the Emerald Lake Hills area the prima facie speed limit is 25 mph (CVC §22352(a)(2)(A)). The posted speed limit on Jefferson Avenue is 25 mph. While the average and 85th percentile speeds are higher than the posted speed limit, the percentage of vehicles within the 10 mph pace is quite high, 82%. This means that 82% of all vehicles travel within the 10 mph pace which ranges between 25 and 34 mph.

While the County General Plan does not classify the streets within the Emerald Lake Hills area, the volume of traffic on Jefferson Avenue indicates that the street functions as a residential collector or minor arterial street.

Transit Service. The closest public transit service to the project site is SamTrans at the intersection of Farmhill Boulevard & Cambridge Road, some 0.8 miles from the project site. SamTrans operates three routes on Farm Hill Boulevard, Routes 74, 274 and 278. Route 74 is a school day route only between Canada College and Woodside High School. Route 274 is weekday service between Canada College and the Redwood City Transit Center. Route 278 provides Saturday service between Canada College and the Redwood City Transit Center.

IV. PROJECTED TRAFFIC

SITE TRAFFIC

Trip Generation. The project is a 10 lot subdivision for single family detached residential units of which one unit is existing. Vehicle trip generation is estimated using the data in *Trip Generation*.¹ The vehicle trip generation projections are shown in Table C below. A detailed trip generation table is provided in Appendix C.

Land Use		LU Code	Size	Units	AM Peak Hour			PM Peak Hour			AWDT
					In	Out	Total	In	Out	Total	
SFD	Proposed*	210	10	DU	3	9	12	7	4	11	125
	Existing**		1		0	1	1	0	1	9	
	Net Change		9		3	8	11	6	4	10	116

* Using fitted curve equations.

** Using average rates as data is outside of data range

Numbers may not add due to rounding.

AWDT = Average Weekday Traffic (24 hr.)

SFD = Single-Family Detached Housing

Trip Distribution. The distribution of vehicle trips to and from the site is based on an analysis of the distribution of peak hour trips at the Jefferson Avenue & Revere Way intersection. It appears that the peak hour trips in the study area are pretty much evenly distributed 50% to the east and 50% to the west.

Modal Split. Given that the project site is remote from any transit facilities or bus routes, there would be virtually no mode split to transit. There is the possibility of modal split between private vehicle and bicycling during the peak traffic periods, but that is unlikely given the location and elevation of the project site for work trips which comprise the majority of weekday peak hour trips. For purposes of this project it is assumed that there will be no mode split.

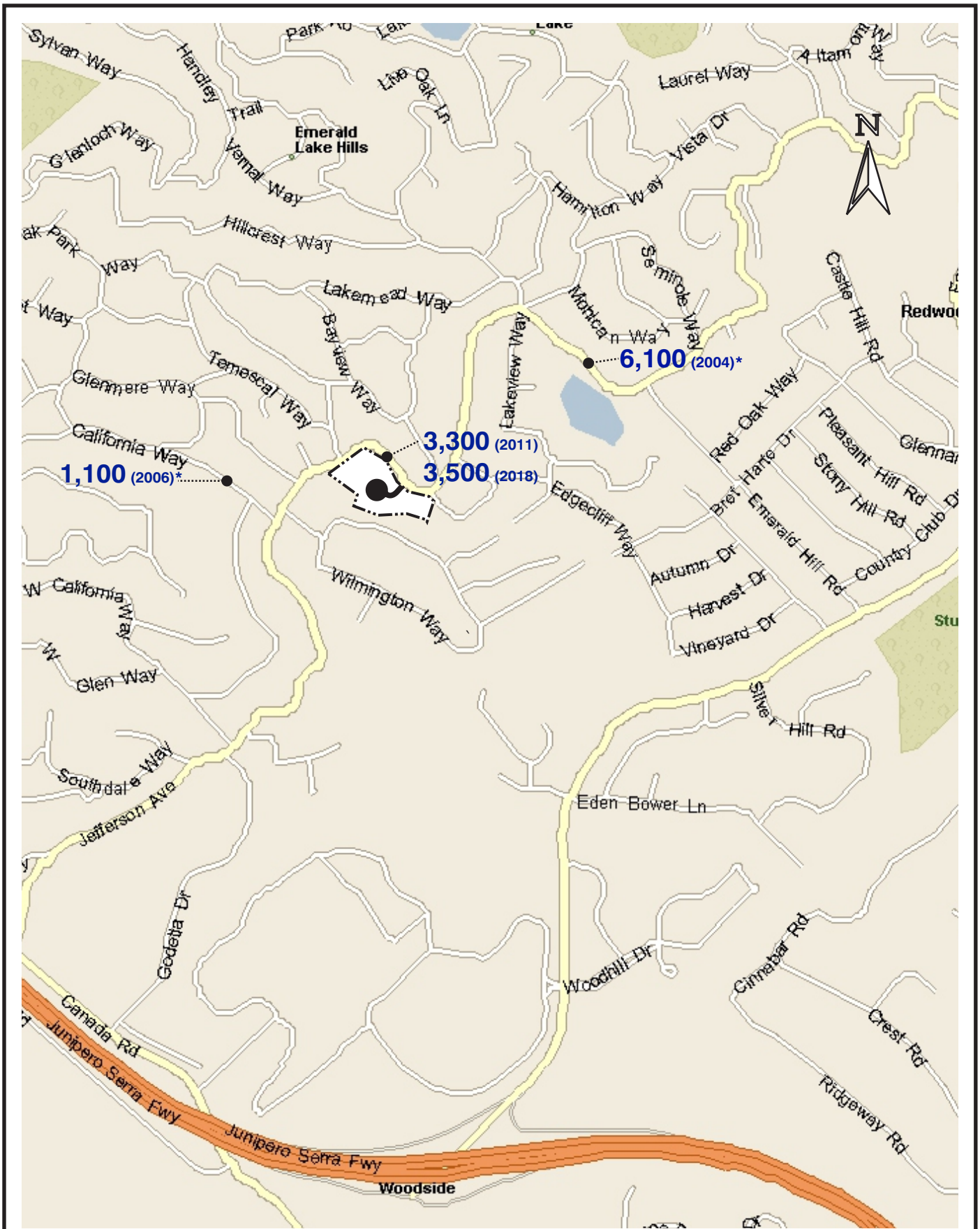
Trip Assignment. Project generated vehicle trips have been assigned to Jefferson Avenue east and west of the project site.

¹ Institute of Transportation Engineers, 10th Edition, © 2018

THROUGH TRAFFIC

The Emerald Lake Hills area is a mature, developed residential district with few opportunities for further significant development. Traffic volumes on Jefferson Avenue in the project study area will likely remain much as they are today. Traffic volume data is shown on Figure 5, Existing Traffic Volumes, page 13.

A check with the neighboring communities of Redwood City and Woodside found no developments currently under way or in the planning process that would add traffic to Jefferson Avenue in the project study area.



Map courtesy Microsoft © Streets & Trips © 2008

Traffic volumes are 24-hr. volumes with the year of the count. * indicates data from San Mateo County records.

**EXISTING TRAFFIC VOLUMES
FIGURE 5**

V. SITE-SPECIFIC TRAFFIC ANALYSIS

SITE ACCESS

Of the ten lots to be created by the subdivision four will have direct access off of Jefferson Avenue and six will have access from Jefferson Avenue via the new cul-de-sac street.

Intersection Levels of Service. The LOS calculations reflect traffic conditions upon creation of the new intersection of the cul-de-sac street and Jefferson Avenue. The calculations have been made using the procedures for 2-way STOP controlled intersections using the *Highway Capacity Software, Version 7.4*². The results of the LOS calculations are summarized in Table B below. The calculation worksheets are provided in Appendix B.

STOP Controlled Intersection	Controlled Approach	Peak Hour	Delay	LOS
Jefferson Avenue & New Street	New Street	AM	9.7	A
		PM	9.4	A

Delay is average control delay in seconds per vehicle.
LOS is Level of Service. See Tables A for definitions.

Intersection Corner Sight Distance. Vehicles exiting the site onto Jefferson Avenue should have adequate sight distance to approaching vehicles from either direction on the street. For the 25 mph speed limit on the street the corner sight distance for the intersection should be as shown in Figure 6 below. The minimum sight distance is the stopping sight distance for a vehicle traveling at 25 mph approaching the intersection. The desired corner sight distance is 275 feet. That is based on the “7.5 second rule” which is the sight distance visibility time for a driver entering the major street from a STOP or YIELD controlled side street or driveway to enter the traffic stream without causing delay to traffic approaching on the major street.³ Within the sight triangles there should be no fencing, signs, posts, shrubs or trees that would obstruct the vision of the driver exiting the site.

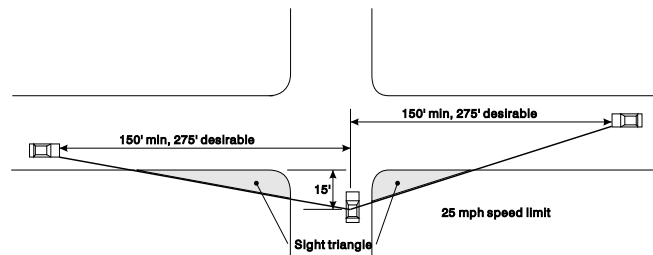


Figure 6

² University of Florida, HCS7, © 2018.

³ Institute of Transportation Engineers, Neighborhood Street Design Guidelines, RP-033A, © 2010

The intersection corner sight distance for the proposed intersection is shown on Figure 7, Corner Sight Distance, page 16. Because of the curve to the right on Jefferson Avenue approaching the new intersection from the east only the minimum stopping sight distance (SSD) can be provided. For vehicles approaching the intersection from the west the desirable corner sight distance (CSD) can be provided, assuming that there are no obstructions to driver visibility within the sight triangle described in Figure 6. Based on field observations at the location of the proposed intersection, the eucalyptus trees along the south side of Jefferson Avenue will need to be pruned to improve the visibility of traffic approaching the new intersection from the west.

The CSD is not only desirable from a vehicle-to-vehicle perspective but from a vehicle-to-cyclist perspective as well. Cyclists on Jefferson Avenue must be able to see vehicles approaching Jefferson Avenue from the new street and the drivers of the vehicles approaching Jefferson Avenue must be able to see approaching cyclists.

Intersection Control. The traffic volumes entering and exiting the new cul-de-sac street are not sufficient to warrant anything other than a STOP control on the approach to Jefferson Avenue. A separate left turn lane for westbound vehicles on Jefferson Avenue turning into the new street would also not be warranted. However, as a matter of traffic safety, a warning notice to drivers on Jefferson Avenue that a new intersection has been created should be considered when the subdivision is completed and occupied. The notice could be in the form of a changeable message sign (CMS) in advance of the intersection for seven days following completion and occupancy. Also, on a permanent basis, an intersection warning sign (W2-2) together with a supplemental warning sign (W16-2a) “150 FT” should be placed on Jefferson Avenue facing westbound traffic in advance of the new intersection.

Driveway CSD. Four of the lots of the proposed subdivision will have direct access to and from Jefferson Avenue with one of the four lots being the one existing residence within the subdivision. Two of the proposed lots are situated on a curve of Jefferson Avenue to the east of Revere Way. The driveways for these two lots should be located on the straight portion of the street away from the curve itself to maximize CSD for the driveways. The fourth lot is situated at the corner of Jefferson Avenue & Fallen Leaf Way. It would be advisable to have the driveway of that lot situated on Fallen Leaf Way rather than on Jefferson Avenue away from the intersection as far as possible.



Base map © 2011 Google



**CORNER SIGHT DISTANCE
FIGURE 7**

VI. IMPROVEMENT ANALYSIS

STREET DESIGN

Roadway. The cul-de-sac street has a minimum travel width of 22 feet with a 3-ft. concrete valley gutter on each side of the street. The centerline radius of the one curve on the street is 55 feet and the turnaround bulb at the end of the street has a radius of 45 feet sufficient to accommodate fire vehicles, refuse trucks and common delivery trucks. The street return radius is 40 feet at the intersection with Jefferson Avenue providing sufficient road surface for vehicles to easily turn into or out of the new street.

There is no sidewalk on the street as there are no sidewalks on Jefferson Avenue to connect to.

The street design is appropriate for the volume and mix of traffic expected to use it.

Lighting. The cul-de-sac street should be lighted according to the standards promulgated in RP-8-00, American National Standard Practice for Roadway Lighting for a Local Road⁴. At a minimum a street light should be placed at the end of the cul-de-sac and one at the new intersection on Jefferson Avenue.

⁴ ANSI/IESNA RP-8-00 © 1999.

VII. CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Findings. The proposed 10-lot subdivision is estimated to generate 11 net new vehicle trips during the morning street peak hour, 10 net new vehicle trips during the afternoon street peak traffic hour and 116 daily vehicle trips during an average weekday . The project will not create a significant impact on the streets or at the intersections within the project study area.

Site Accessibility. Access to the site is off of Jefferson Avenue with four of the lots having direct access to the street while the remaining six lots will be served by a new cul-de-sac street off of Jefferson Avenue.

Roadway Improvements. No off-site improvements are needed to accommodate project generated traffic.

RECOMMENDATIONS

Off-site:

1. Provide advance warning to motorists on Jefferson Avenue of the activation of a new street intersection.
2. Place W2-2L and W16-2a (150 FT) intersection warning signs facing westbound traffic in advance of the intersection.

On-site:

3. Within the street and driveway corner sight triangles there should be no fencing or signs that would obstruct visibility. Trees should be planted so as to not create a “wall” effect when viewed at a shallow angle. The type of shrubbery planted within the triangles should such that it will grow no higher than three feet above the adjacent roadway surface. Trees planted within the sight triangle areas should be large enough that the lowest limbs are at least seven feet above the surface of the adjacent roadway.
4. Control the approach of the new street at Jefferson Avenue with a STOP sign .
5. Provide roadway lighting in accordance with RP-8-00.

Richard K Hopper

Richard K. Hopper, P.E.
Principal



APPENDICES
A. Traffic Count Data
B. Levels of Service Calculation Worksheets
C. Traffic Analysis Worksheets

A. Traffic Count Worksheets

MARKS TRAFFIC DATA

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CITY OF REDWOOD CITY
JEFFERSON AV. - FALLEN LEAF to REVERE

Site Code: 1
c-jefferson2

WESTBOUND

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/14/11	0	7	0	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00	0	4	5	0	0	0	0	0	0	0	0	0	0	0	9
06:00	0	18	3	0	1	0	0	0	0	0	0	0	0	1	23
07:00	0	55	25	0	4	0	0	0	0	0	0	0	0	1	85
08:00	5	99	32	0	12	1	0	0	0	0	0	0	0	1	150
09:00	0	46	29	0	3	1	0	0	1	0	0	0	0	1	81
10:00	0	54	20	0	4	0	0	1	0	0	0	0	0	0	79
11:00	0	70	25	0	4	0	0	3	0	0	0	0	0	4	106
12 PM	4	51	21	0	7	1	0	1	0	0	0	0	0	4	89
13:00	1	68	27	0	10	1	0	0	0	0	0	0	0	0	107
14:00	4	49	22	0	3	2	0	1	0	0	0	0	0	3	84
15:00	1	106	41	0	9	2	0	1	0	0	0	0	0	1	161
16:00	0	90	38	0	4	0	0	0	0	0	0	0	0	0	132
17:00	4	119	37	0	5	2	0	2	0	0	0	0	0	1	170
18:00	2	103	26	0	2	1	0	0	0	0	0	0	0	2	136
19:00	1	94	24	0	1	0	0	0	0	0	0	0	0	0	120
20:00	0	52	12	0	3	0	0	0	0	0	0	0	0	0	67
21:00	0	36	13	0	1	0	0	0	0	0	0	0	0	0	50
22:00	0	21	9	0	2	0	0	0	0	0	0	0	0	0	32
23:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
Total	22	1149	411	0	75	11	0	9	1	0	0	0	0	19	1697
Percent	1.3%	67.7%	24.2%	0.0%	4.4%	0.6%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	1.1%	
AM Peak	08:00	08:00	08:00		08:00	08:00		11:00	09:00					11:00	
Vol.	5	99	32		12	1		3	1					4	
PM Peak	12:00	17:00	15:00		13:00	14:00		17:00						12:00	
Vol.	4	119	41		10	2		2						4	

MARKS TRAFFIC DATA

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CITY OF REDWOOD CITY
JEFFERSON AV. - FALLEN LEAF to REVERE

Site Code: 1
c-jefferson2

EASTBOUND

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
9/14/11	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	4	2	0	0	0	0	0	0	0	0	0	0	0	6
05:00	0	5	4	0	0	0	0	0	0	0	0	0	0	0	9
06:00	0	26	5	0	2	0	0	0	0	0	0	0	0	0	33
07:00	1	82	28	0	5	0	0	1	0	0	0	0	0	1	118
08:00	7	113	29	0	5	0	0	1	0	0	0	0	0	3	158
09:00	2	58	24	0	8	0	1	1	1	0	0	0	0	1	96
10:00	3	50	23	0	3	1	0	0	0	0	0	0	0	0	80
11:00	1	52	22	0	7	2	0	0	0	0	0	0	0	3	87
12 PM	6	61	21	0	2	0	0	1	0	0	0	0	0	2	93
13:00	2	54	24	0	4	1	0	0	0	0	0	0	0	3	88
14:00	6	78	26	0	7	2	0	0	0	0	0	0	0	4	123
15:00	1	84	25	0	8	1	0	0	0	0	0	0	0	3	122
16:00	3	81	31	0	6	0	0	0	0	0	0	0	0	0	121
17:00	7	97	28	0	3	0	0	0	0	0	0	0	0	1	136
18:00	6	80	28	0	5	0	0	0	0	0	0	0	0	4	123
19:00	4	70	22	0	2	0	0	0	0	0	0	0	0	0	98
20:00	0	51	12	0	2	0	0	0	0	0	0	0	0	0	65
21:00	0	42	11	0	2	0	0	0	0	0	0	0	0	0	55
22:00	0	14	5	0	0	0	0	0	0	0	0	0	0	0	19
23:00	0	7	3	0	1	0	0	0	0	0	0	0	0	0	11
Total	49	1116	373	0	72	7	1	4	1	0	0	0	0	25	1648
Percent	3.0%	67.7%	22.6%	0.0%	4.4%	0.4%	0.1%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	1.5%	
AM Peak	08:00	08:00	08:00		09:00	11:00	09:00	07:00	09:00					08:00	
Vol.	7	113	29		8	2	1	1	1					3	
PM Peak	17:00	17:00	16:00		15:00	14:00		12:00						14:00	
Vol.	7	97	31		8	2		1						4	

TRAFFIC COUNTS PLUS

mietekm@comcast.net
925.305.4358

CITY OF REDWOOD CITY
JEFFERSON AV. btwn FALLEN LEAF WY. & REVERE WY.

C-jefferson1
Site Code: 1 WB

WESTBOUND

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
04/18/18	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	4	5	0	0	0	0	0	0	0	0	0	0	0	9
06:00	0	27	5	0	0	0	0	0	0	0	0	0	0	0	32
07:00	1	95	29	0	10	0	0	0	0	0	0	0	0	0	135
08:00	2	95	30	1	6	1	0	2	0	0	0	0	0	1	138
09:00	1	69	23	0	9	0	0	0	0	0	0	0	0	2	104
10:00	0	47	28	0	5	0	0	0	0	0	0	0	0	1	81
11:00	2	62	23	0	2	0	0	0	0	0	0	0	0	2	91
12 PM	1	56	29	0	5	0	0	0	0	0	0	0	0	2	93
13:00	1	71	24	2	6	0	0	2	0	0	0	0	0	2	108
14:00	2	88	33	0	6	0	0	0	0	0	0	0	0	2	131
15:00	0	110	28	0	4	0	0	1	0	0	0	0	0	3	146
16:00	0	108	33	1	4	0	0	0	0	0	0	0	0	3	149
17:00	2	104	24	0	6	0	0	0	0	0	0	0	0	2	138
18:00	0	116	19	0	2	0	0	0	0	0	0	0	0	1	138
19:00	0	90	8	0	4	0	0	0	0	0	0	0	0	1	103
20:00	1	67	8	0	0	0	0	0	0	0	0	0	0	0	76
21:00	0	53	9	0	0	0	0	0	0	0	0	0	0	0	62
22:00	0	24	2	0	2	0	0	0	0	0	0	0	0	0	28
23:00	0	14	2	0	0	0	0	0	0	0	0	0	0	0	16
Total	13	1310	364	4	71	1	0	5	0	0	0	0	0	22	1790
Percent	0.7%	73.2%	20.3%	0.2%	4.0%	0.1%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	
AM Peak	08:00	07:00	08:00	08:00	07:00	08:00		08:00						09:00	
Vol.	2	95	30	1	10	1		2						2	
PM Peak	14:00	18:00	14:00	13:00	13:00			13:00						15:00	
Vol.	2	116	33	2	6			2						3	

TRAFFIC COUNTS PLUS

mietekm@comcast.net

925.305.4358

CITY OF REDWOOD CITY

JEFFERSON AV. btwn FALLEN LEAF WY. & REVERE WY.

C-jefferson1
Site Code: 1 WB

EASTBOUND

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
04/18/18	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4
05:00	0	8	1	0	0	0	0	0	0	0	0	0	0	0	9
06:00	0	27	2	0	1	0	0	0	0	0	0	0	0	0	30
07:00	0	78	16	0	5	0	0	0	0	0	0	0	0	0	99
08:00	2	119	30	1	12	0	0	0	0	0	0	0	0	5	169
09:00	1	65	20	1	6	0	0	1	0	0	0	0	0	1	95
10:00	0	48	20	0	5	0	0	0	0	0	0	0	0	2	75
11:00	1	57	18	0	9	0	0	0	0	0	0	0	0	1	86
12 PM	0	53	23	0	8	1	0	0	0	0	0	0	0	1	86
13:00	0	50	24	0	3	1	0	0	1	0	0	0	0	0	79
14:00	1	94	30	0	9	2	0	0	0	0	0	0	0	3	139
15:00	0	73	36	0	10	0	0	1	0	0	0	0	0	3	123
16:00	0	85	25	1	10	0	1	0	0	0	0	0	0	6	128
17:00	1	97	22	0	4	0	0	0	0	0	0	1	0	4	129
18:00	0	83	21	0	3	0	0	0	0	0	0	0	0	0	107
19:00	0	79	13	0	5	0	0	0	0	0	0	0	0	1	98
20:00	1	43	11	0	4	0	0	0	0	0	0	0	0	1	60
21:00	0	19	8	0	1	0	0	0	0	0	0	0	0	0	28
22:00	0	17	0	0	0	0	0	0	0	0	0	0	0	0	17
23:00	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
Total	7	1110	322	3	95	4	1	2	1	0	0	1	0	28	1574
Percent	0.4%	70.5%	20.5%	0.2%	6.0%	0.3%	0.1%	0.1%	0.1%	0.0%	0.0%	0.1%	0.0%	1.8%	
AM Peak	08:00	08:00	08:00	08:00	08:00			09:00						08:00	
Vol.	2	119	30	1	12			1						5	
PM Peak	14:00	17:00	15:00	16:00	15:00	14:00	16:00	15:00	13:00			17:00		16:00	
Vol.	1	97	36	1	10	2	1	1	1			1		6	

TRAFFIC COUNTS PLUS

mietekm@comcast.net
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CITY OF REDWOOD CITY
JEFFERSON AV. btwn FALLEN LEAF WY. & REVERE WY.

C-jefferson1
Site Code: 1 WB

EASTBOUND

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Not Classed	Total
04/19/18	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
05:00	0	10	1	0	0	0	0	0	0	0	0	0	0	0	11
06:00	1	29	2	0	2	0	0	0	0	0	0	0	0	0	34
07:00	0	83	19	0	9	0	0	1	0	0	0	0	0	2	114
08:00	1	121	30	0	8	0	0	0	0	0	0	0	0	2	162
09:00	1	67	16	0	7	0	0	1	0	0	0	0	0	2	94
10:00	0	62	25	0	7	1	0	0	0	0	0	0	0	3	98
11:00	0	74	26	0	11	1	0	1	0	0	0	0	0	1	114
12 PM	1	74	20	0	3	0	0	0	0	0	0	0	0	1	99
13:00	1	68	29	0	9	0	0	0	0	0	0	0	0	3	110
14:00	0	83	35	0	5	0	0	0	1	0	0	0	0	0	124
15:00	1	83	29	0	4	2	0	0	0	0	0	0	0	8	127
16:00	0	93	27	1	8	1	0	0	0	0	0	0	0	2	132
17:00	0	124	21	0	3	1	0	0	0	0	0	0	0	7	156
18:00	0	98	25	0	4	0	0	1	0	0	0	0	0	1	129
19:00	0	75	15	0	2	0	0	0	0	0	0	0	0	0	92
20:00	0	53	5	0	3	0	0	0	0	0	0	0	0	1	62
21:00	0	26	3	0	0	0	0	0	0	0	0	0	0	1	30
22:00	0	20	0	0	0	0	0	0	0	0	0	0	0	0	20
23:00	0	5	2	0	0	0	0	0	0	0	0	0	0	0	7
Total	6	1256	330	1	85	6	0	4	1	0	0	0	0	34	1723
Percent	0.3%	72.9%	19.2%	0.1%	4.9%	0.3%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	2.0%	
AM Peak	06:00	08:00	08:00		11:00	10:00		07:00						10:00	
Vol.	1	121	30		11	1		1						3	
PM Peak	12:00	17:00	14:00	16:00	13:00	15:00		18:00	14:00					15:00	
Vol.	1	124	35	1	9	2		1	1					8	
Grand Total	13	2366	652	4	180	10	1	6	2	0	0	1	0	62	3297
Percent	0.4%	71.8%	19.8%	0.1%	5.5%	0.3%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	1.9%	

B. Levels of Service Calculation Worksheets

HCS7 Two-Way Stop-Control Report

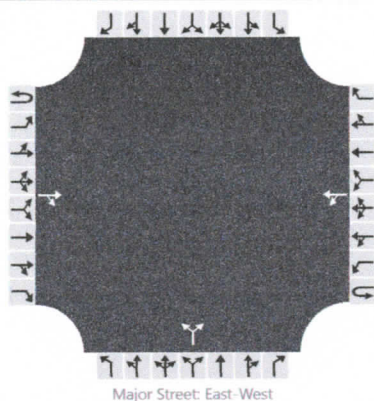
General Information

Analyst	RKH
Agency/Co.	
Date Performed	5/8/2018
Analysis Year	2018
Time Analyzed	AMPH
Intersection Orientation	East-West
Project Description	4057 Jefferson Avenue

Site Information

Intersection	Jefferson Ave & New St.
Jurisdiction	San Mateo County
East/West Street	Jefferson Avenue
North/South Street	New Street
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0	0	1	0		0	0	0	
Configuration				TR		LT					LR					
Volume, V (veh/h)			164	1		1	150			2		3				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No			No				No				No		
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1					7.1		6.2		
Critical Headway (sec)						4.10					6.40		6.20		
Base Follow-Up Headway (sec)						2.2					3.5		3.3		
Follow-Up Headway (sec)						2.20					3.50		3.30		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						1					5				
Capacity, c (veh/h)						1409					769				
v/c Ratio						0.00					0.01				
95% Queue Length, Q ₉₅ (veh)						0.0					0.0				
Control Delay (s/veh)						7.6					9.7				
Level of Service, LOS						A					A				
Approach Delay (s/veh)						0.1				9.7					
Approach LOS						A				A					

HCS7 Two-Way Stop-Control Report

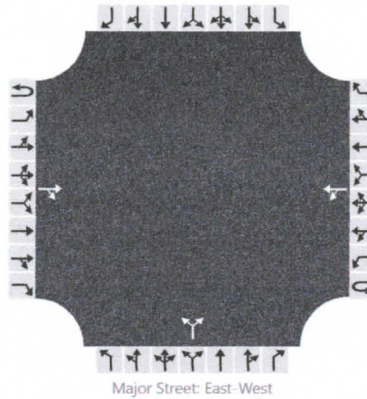
General Information

Analyst	RKH
Agency/Co.	
Date Performed	5/8/2018
Analysis Year	2018
Time Analyzed	PMPH
Intersection Orientation	East-West
Project Description	4057 Jefferson Avenue

Site Information

Intersection	Jefferson Ave & New St.
Jurisdiction	San Mateo County
East/West Street	Jefferson Avenue
North/South Street	New Street
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume, V (veh/h)			142	2		2	139			1		2				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No			No				No				No		
Median Type/Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)					4.1					7.1		6.2				
Critical Headway (sec)					4.10					6.40		6.20				
Base Follow-Up Headway (sec)					2.2					3.5		3.3				
Follow-Up Headway (sec)					2.20					3.50		3.30				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)					2					3						
Capacity, c (veh/h)					1435					813						
v/c Ratio					0.00					0.00						
95% Queue Length, Q ₉₅ (veh)					0.0					0.0						
Control Delay (s/veh)					7.5					9.4						
Level of Service, LOS					A					A						
Approach Delay (s/veh)							0.1					9.4				
Approach LOS												A				

C. Traffic Analysis Worksheets

4057 Jefferson Avenue
 Emerald Lake Hills
 Vehicle Trip Generation
 May 7, 2018

LAND USE	LU CODE	SIZE	UNITS	TRIP GENERATION RATE						TRIP GENERATION VOLUME							
				A.M. PEAK HOUR			P.M. PEAK HOUR			A.M. PEAK HOUR			P.M. PEAK HOUR			AWDT	
				IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL		
SF Detached	Proposed*	210	DU	0.30	0.89	1.19	0.70	0.41	1.11	12.50	3	9	12	7	4	11	125
SF Detached	Existing**	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44	0	1	1	1	0	1	9
									Net Change:		3	8	11	6	4	10	116

Source: ITE, Trip Generation, 10th Edition © 2018

Numbers may not add correctly due to rounding up or down

* Fitted curve rates

** Average rates

2-Way STOP Controlled Tee Intersection Peak Hour LOS - Order of Magnitude

