

4.7 TRAFFIC AND CIRCULATION

This EIR section provides a description of the existing transportation conditions of the Specific Plan and its vicinity. Included are descriptions of the existing roadway network and transportation facilities as well as current circulation elements including automobiles, pedestrians, bicycles, transit, and parking conditions. Traffic operations at 13 study intersections in the Specific Plan area are analyzed. This section also discusses the transportation impacts of development under the Specific Plan, cumulative impacts, and recommended mitigation measures to address these impacts. Exhibit 2-1 illustrates the Specific Plan area location in a regional context.

The Specific Plan area is bordered on the south by East Ward Street, on the north by Doherty Drive, and on the west by Magnolia Avenue, and extends east along Doherty Drive opposite the Piper Park access road. The Specific Plan area includes the 16.8-acre Niven property, the Nazari property, and the Larkspur Plaza shopping center, as well as the entire Doherty Drive right-of-way, from Magnolia Avenue east to the city limit (5.58 acres). The Niven property has frontage on Doherty Drive and is occupied by a commercial nursery and abandoned greenhouses. The Nazari property is occupied by retail and commercial uses and has frontage on Magnolia Avenue. The Larkspur Plaza shopping center is anchored by an Albertsons market and also contains other small retail, personal service, and food sales establishments.

4.7.1 EXISTING SETTING

BACKGROUND

The existing condition of vehicle traffic on a roadway is described by two different methods: Existing Roadway Network and Traffic Operating Condition.

An Existing Roadway Network is described in terms of Average Daily Traffic (ADT). ADT is a description of the number of vehicles on that road section for the 24-hour period measured (i.e., the number of cars seen passing by during a 24-hour period).

Traffic Operating Condition is described in terms of the ability of an intersection on the roadway to accommodate the vehicles moving through it, whether they be turning left, going straight, or turning right. This ability of the intersection is described in terms of the amount of delay that the average vehicle must experience at the intersection before it is able to move in its desired direction. The Level of Service (LOS) of an intersection is a measure of the ability of the intersection to accommodate traffic volumes; it is also a measurement of delay.

Intersection LOS ranges from LOS A, which indicates free-flow conditions with little overall delay, to LOS F, which indicates congested conditions with extremely long delays.

EXISTING ROADWAY NETWORK

Regional access to Larkspur is provided primarily by U.S. Highway 101 (U.S. 101), Interstate 580 (I-580), and Sir Francis Drake Boulevard. Three major arterial roads serve Larkspur: Sir Francis Drake Boulevard, Magnolia Avenue, and Doherty Drive. Exhibit 4.7-1 illustrates the

Exhibit 4.7-1 Local Roadway Network Study Intersection Locations

area roadway network. A detailed description of these facilities and other key Specific Plan area roads is provided below.

Regional Access

U.S. 101

U.S. 101 is the major north-south freeway serving Marin County. U.S. 101 connects Marin County to San Francisco, the Peninsula, and points south. In a northerly direction, U.S. 101 accesses the Petaluma and Santa Rosa areas and points north. In the vicinity of the Specific Plan area, the highway is an eight-lane facility (four lanes in each direction), including two high-occupancy vehicle (HOV) lanes; north of Lucky Drive, the highway becomes a six-lane facility. Highway interchanges in the general vicinity of the study area are provided at Tamalpais Drive, Madera Boulevard, Lucky Drive, and Sir Francis Drake Boulevard. Estimates of ADT on U.S. 101 in Larkspur range from 176,000 vehicles south of Sir Francis Drake Boulevard to 143,000 vehicles north of Sir Francis Drake Boulevard (California Department of Transportation [Caltrans] 2002a).

I-580

North of the Specific Plan area, U.S. 101 intersects with I-580, a four-lane freeway extending east to the Richmond-San Rafael Bridge, and beyond to Contra Costa County. I-580 carries an estimated 62,000 daily vehicles at the U.S.101 junction.

Local Access

Local access to and from the Specific Plan area is typically carried on the city's three arterial roads: Sir Francis Drake Boulevard, Magnolia Avenue, and Doherty Drive. Circulation within Larkspur is constrained by Corte Madera Creek, located immediately north of the study area. Roads located in the vicinity of the Specific Plan area that cross the creek include U.S. 101 and Bon Air Road (which connects Sir Francis Drake Boulevard to Magnolia Avenue). Access across the creek is also provided at College Avenue at its location south of the College of Marin, near the western edge of Larkspur. ADT information was collected on Sir Francis Drake Boulevard, Magnolia Avenue, Doherty Drive, and Bon Air Road in May 1999 and 2003.

Sir Francis Drake Boulevard

Sir Francis Drake Boulevard is the major east-west corridor serving central Marin County and is identified as a major arterial street in the City's General Plan. Sir Francis Drake Boulevard provides a full interchange at U.S. 101, and is a primary route for vehicles traveling westbound to San Rafael and west Marin County. West of U.S. 101, the roadway provides four travel lanes (two in each direction) and carries a weekday ADT volume of 47,700 vehicles (May 2002). On Saturdays, the estimated ADT volume is 38,300 vehicles (May 2002). This roadway drops to two lanes west of College Avenue (one in each direction) into the town of San Anselmo. The Specific Plan area is linked to Sir Francis Drake Boulevard via Bon Air Road at Magnolia Avenue and from Magnolia Avenue north to College Avenue. The bottleneck created west of

College Avenue, combined with heavy traffic flows, results in significantly congested conditions during peak periods.

Magnolia Avenue

Magnolia Avenue is identified as a secondary arterial in the General Plan. It is a north-south roadway with one travel lane in each direction. To the south, the arterial street connection of Magnolia Avenue to U.S. 101 uses these city streets in Corte Madera: Corte Madera Avenue, Redwood Avenue, and Tamalpais Drive to the north. Magnolia Avenue connects to Sir Francis Drake Boulevard where it becomes College Avenue north of the Specific Plan area. Magnolia Avenue serves the downtown business district between William Avenue to the south and Doherty Drive to the north. This segment provides sidewalks and on-street parking on both sides of the street. Daily counts taken on Magnolia Avenue between East Ward Street and Doherty Drive recorded a weekday ADT volume of 12,900 vehicles and a Saturday ADT volume of 10,700 vehicles (May 2003). ADT volumes north of Bon Air Road on Magnolia Avenue during weekdays were recorded at 14,100 vehicles and at 11,600 vehicles on Saturday (May 2002).

Doherty Drive

Doherty Drive is identified as a secondary arterial in the General Plan. It is an east-west roadway between Magnolia Avenue and Lucky Drive providing one travel lane in each direction. The roadway is 40 feet wide (from curb to curb) and provides 31 parking spaces on the south side of the street. Doherty Drive provides direct access to Hall Middle School and Redwood High School and access to U.S. 101 via Lucky Drive. The segment between Magnolia Avenue and Redwood High School provides sidewalks on both sides, and carries a weekday ADT volume of 11,900 vehicles (May 2003). On Saturdays, the estimated ADT volume is 8,200 vehicles (May 2003).

Bon Air Road

Bon Air Road crosses Corte Madera Creek and links Sir Francis Drake Boulevard and Magnolia Avenue. It is a two-way facility (with generally one travel lane in each direction with added lanes south of Corte Madera Creek) that provides direct access to Marin General Hospital. Weekday ADT volumes are 13,100 vehicles west of South Eliseo Drive and 9,900 vehicles on Saturdays (May 2002).

Other Roads

Other roads in the vicinity of the study area are described below.

Larkspur Plaza

Larkspur Plaza runs northward from Doherty Drive and serves primarily as a collector street for residential uses. It is a two-way road with one travel lane in each direction, ending in a cul-de-sac. The intersection with Doherty Drive is stop sign controlled. Within the vicinity of the

Specific Plan area, there are sidewalks approximately 10 feet wide and on-street parking on the east side of the street.

Larkspur Boardwalk

Larkspur Boardwalk is a north/south, two-way road with one travel lane in each direction located off of Doherty Drive, west of and adjacent to Piper Park. At Doherty Drive this road is in close proximity to the Hall Middle School driveway and to Larkspur Plaza. Larkspur Boardwalk provides access to homes along Corte Madera Creek and a boardwalk.

Riviera Circle

Riviera Circle makes a northward loop beginning and ending on Doherty Drive. The west end of the loop road forms a leg of the unsignalized intersection at Doherty Drive and the access driveway for Redwood High School. This road serves as a neighborhood collector street and provides a crosswalk at Doherty Drive to the high school.

East Ward Street

East Ward Street is an east-west street that crosses Magnolia Avenue at a signalized intersection south of Doherty Drive. It is a two-way road with one travel lane in each direction, extending for approximately three blocks and connecting to neighborhoods east and west of Magnolia Avenue. East of Magnolia Avenue, East Ward Street becomes Meadowood Drive.

King Street

King Street is an east-west street that crosses Magnolia Avenue at an unsignalized four-way stop intersection south of East Ward Street. It is a two-way road with one travel lane in each direction, extending for approximately three blocks and connecting to neighborhoods east and west of Magnolia Avenue. East of Magnolia Avenue, King Street eventually becomes Monte Vista Avenue.

AVERAGE DAILY TRAFFIC DATA

ADT volumes for study roadways were based on separate traffic counts conducted in 1999 and 2003. Differences between the data for these two years are described below to show the change in traffic volumes over the years.

In May 2003, 24-hour machine counts were taken at two primary locations in the study area. The locations of the machine counters were:

- < Magnolia Avenue—Downtown (between East Ward Street and King Street)
- < Doherty Drive—vicinity of Hall Middle School

ADT volumes were recorded at Magnolia Avenue Downtown and Doherty Drive over seven consecutive days. Weekday counts from Tuesday through Thursday were averaged; the

volumes are shown in Table 4.7-1. On an average weekday, Magnolia Avenue Downtown carried approximately 12,880 vehicles while Doherty Drive had an average of 11,860 vehicles.

Saturday ADT volumes were lower than weekday volumes. Magnolia Avenue Downtown had 17% fewer vehicles on Saturday while Doherty Drive had almost 30% lower volumes. Overall, ADT volumes have decreased by just over 20% on Magnolia Avenue compared to 1999 ADT data. ADT volumes on Doherty Drive have shown a modest 4% increase during weekdays and a decrease of 9% on weekends compared to 1999 ADT volumes. The overall decrease in daily vehicle traffic is most likely attributed to overall economic conditions, which have slowed over the past few years.

Location	Weekday ADT (vehicles)	Saturday ADT (vehicles)
1999—Magnolia Downtown	15,680	12,940
2003—Magnolia Downtown	12,880	10,716
Percent Change	-22	-21
1999—Doherty Drive	11,410	8,990
2003—Doherty Drive	11,860	8,240
Percent Change	4	-9

Source: Marks Traffic Data Service 2003

TRAFFIC OPERATING CONDITIONS

Existing intersection operating conditions were evaluated for the weekday a.m. peak hour (generally 7:30 to 8:30 a.m.) and for the p.m. peak hour (generally 5:00 to 6:00 p.m.). Intersection turning movement volumes were counted in March 2003. Thirteen intersections in the vicinity were analyzed as part of this study. The location of the study intersections and existing lane configurations are illustrated in Exhibit 4.7-2. The study intersections are as follows.

Signalized study intersections:

- < Bon Air Road/Magnolia Avenue
- < Doherty Drive/Magnolia Avenue
- < East Ward Street/Magnolia Avenue
- < Fifer Avenue/Tamal Vista Boulevard
- < Wornum Drive/Tamal Vista Boulevard
- < Wornum Drive/Redwood Highway
- < U.S. 101 northbound on-ramp/Industrial & Redwood Highway

Exhibit 4.7-2 Existing Lane Geometrics

Unsignalized study intersections:

- < King Street/Magnolia Avenue
- < Doherty Drive/Larkspur Plaza
- < Doherty Drive/Piper Park Access
- < Doherty Drive/Riviera Circle
- < Lucky Drive/Doherty Drive
- < Lucky Drive/Fifer Avenue

INTERSECTION ANALYSIS METHODOLOGY

At signalized intersections, the City sets LOS D as the minimum acceptable condition. For unsignalized intersections, LOS C is the minimum acceptable condition as noted in General Plan Circulation Policy d and §18.14.10 (J) of the City Municipal Code.

Signalized intersections were evaluated using the 1994 Highway Capacity Manual (HCM) (Transportation Research Board 1994) operations methodology for intersection delay, outlined in Chapter 9 of the HCM. This method determines the capacity for each lane group approaching an intersection. The average delay is first calculated for each intersection approach. Next, the weighted average of the delays for each approach is calculated to determine the average delay for the intersection, which is used to determine the overall LOS for the intersection.

Unsignalized intersections were evaluated using the methodology outlined in Chapter 10 of the 1994 HCM (Transportation Research Board 1994). This method determines average total delay per vehicle, which is used to determine the LOS. Adjustments were made to the saturation flow at particular intersections to accurately reflect the traffic conditions observed in the field in 2002 and in 2003. In other words, strict application of HCM methodology would make conditions appear better than what was observed in the field and the adjustments discussed above were made to reflect observed conditions. For example, field observations of conditions at the intersection of Magnolia Avenue and King Street during the p.m. peak hour indicated that vehicles on the northbound approach of the intersection experienced an average delay of 90 seconds per vehicle. Because the HCM methodology for unsignalized intersections does not allow for adjustments to capacity for on-street parking, high pedestrian volumes, and other factors, adjustments to the intersection analysis were required to reflect actual observed field conditions at Magnolia Avenue/King Street.

These adjustments (reduction of the peak-hour factor) were applied to the northbound approach of Magnolia Avenue/King Street during p.m. peak hour for all scenarios. The peak hour factor is related to the distribution of vehicle volumes within a 15-minute period during the course of a peak hour. The default peak hour factor value for unsignalized intersections is 0.90. Reducing the northbound approach peak hour factor to 0.75 has the effect of increasing the traffic volume at this approach. Increased traffic volumes reduce the available capacity of a lane and result in an analysis that better reflects the observed p.m. peak hour congested

conditions on the northbound approach. Appendix F-1 provides tables and figures that show the LOS descriptions for signalized and unsignalized intersections.

Table 4.7-2 shows the results of the intersection analysis for existing weekday a.m. and p.m. peak hour conditions. The table indicates that all study intersections are currently operating at acceptable levels during the a.m. peak hour, with the exception of the unsignalized intersections at Doherty Drive/Riviera Circle (LOS D).

Table 4.7-2 Existing Peak Hour Intersection Level Of Service						
Intersections	A.M. Peak Hour		P.M. Peak Hour		Weekend Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
1. Bon Air Road/Magnolia Avenue	B	8.8	B	10.5	B	8.2
2. Doherty Drive/Magnolia Avenue	B	8.8	B	10.4	B	7.9
3. East Ward Street/Magnolia Avenue	C	15.7	D	29.9	B	9.0
4. King Street/Magnolia Avenue	C	19.5	F	46.2	C	15.5
5. Doherty Drive/Larkspur Plaza	C	17.8	C	15.8	C	1.3
6. Doherty Drive/Piper Park	C	0.3	C	0.4	C	*
7. Doherty Drive/Riviera Circle	D	23.9	D	29.6	C	16.6
8. Lucky Drive/Doherty Drive	B	8.7	B	6.6	B	7.0
9. Lucky Drive/Fifer Avenue	B	0.5	C	1.1	B	0.3
10. Fifer Avenue /Tamal Vista Boulevard	B	13.3	C	16.3	C	16.4
11. Wornum Drive /Tamal Vista Boulevard	B	13.1	C	20.4	B	8.4
12. Wornum Drive /Redwood Highway	B	7.3	B	9.6	B	9.0
13. 101 Northbound On-Ramp /Industrial	B	5.5	B	11.2	B	5.5
Notes: Delay is in average seconds per vehicle LOS = Level of Service Bold = unacceptable conditions * weekend park counts not available; LOS C estimated based on existing through traffic volumes						
Source: Wilbur Smith Associates (May 2003); based on traffic counts conducted in May 2003.						

During the p.m. peak hour, Magnolia Avenue/King Street (LOS F) and Doherty Drive/Riviera Circle (LOS D) are currently operating at unacceptable levels. Appendix F-2 contains the detailed calculations of the intersection LOS analysis.

During the weekday a.m. peak hour, eight of the 13 intersections operate at LOS B, four intersections operate at LOS C, and one intersection operates at LOS D. Average delay per vehicle at the intersections ranges from 5.5 seconds per vehicle at the intersection of Industrial Way and the northbound U.S. 101 on-ramp to 23.9 seconds per vehicle at the Doherty Drive/Riviera Circle/Redwood High School intersection.

The intersection at Doherty Drive/Riviera Circle/Redwood High School experiences significant congestion in the morning peak hour because of high school related vehicle activity. Between 7:20 and 7:35 a.m. the intersection was observed to operate closer to the LOS E/F range because of students driving to school or being dropped off. The congested conditions were observed to dissipate quickly after approximately 15 minutes and the intersection was found to resume operations closer to the LOS D conditions reflected in the peak hour calculation.

During the weekday p.m. peak hour (generally 5:00 to 6:00 p.m.), five of the 13 intersections operate at LOS B and five intersections operate at LOS C. One signalized intersection operates at LOS D. In addition, one unsignalized intersection operate at LOS D and one intersection operates at LOS F; the LOS of these two intersections currently exceed the City's acceptable standards. Average delay per vehicle at the intersections ranges from 2.2 seconds per vehicle at the Doherty Drive/Larkspur Plaza intersection to 46.2 seconds per vehicle at the Magnolia Avenue/King Street intersection. Intersection peak hour turning movement volumes are shown in Exhibit 4.7-3.

There are two distinct afternoon peak periods in the Doherty Drive corridor, primarily because of activity at Hall Middle School and Redwood High School. Overall traffic volumes peak on Doherty Drive from Magnolia Avenue to Lucky Drive between 3:15 and 3:45 p.m.

This half-hour spike in traffic is the result of students departing the schools and to the start of the afternoon commute traffic traveling west on Doherty Drive from U.S. 101. The second traffic peak occurs between 5:00 and 6:00 p.m. and represents the traditional commute peak hour. Although traffic volumes at study intersections on Doherty Drive are highest during the first peak period (3:15-3:45 p.m.), this peak traffic volume is not sustained for the entire hour of 3:00 and 4:00 p.m.; as such, the LOS, which is averaged over the one-hour period, is lower than that of the traditional commute peak hour. In contrast, the late commute peak period traffic sustains high volumes consistently for the hour; for this reason, it is this traffic peak period that is analyzed for the p.m. peak hour LOS shown in Table 4.7-2.

The unsignalized four-way stop intersection of Magnolia Avenue/King Street was analyzed at LOS F during the p.m. peak hour. Vehicles on the northbound approach experienced substantial delays. During field observations, the average delay for northbound vehicles on Magnolia Boulevard was found to be up to 2 minutes per vehicle. Northbound traffic typically queues back to William Avenue and then requires between 90 seconds and 120 seconds to reach the stop sign at King Street. These conditions lasted for much of the peak hour.

Exhibit 4.7-3 Existing A.M. (P.M.) Peak-Hour Volumes

The peak hour for traffic at the Magnolia Avenue/King Street intersection was determined to occur generally between 5:00 and 6:00 p.m. However, northbound approach traffic can begin to back up on Magnolia Avenue as early as 4:00 p.m. and can continue as late as 7:00 p.m.

During the weekend peak hour (generally 1:00 to 2:00 p.m.), all study area intersections were found to operate at LOS C or better. Intersection traffic volumes during the Saturday peak hours were found to be overall 25% lower than weekday p.m. peak hour volumes.

Analysis of Saturday traffic conditions is not included in the EIR beyond existing conditions. The reason for this is the generally lower peak hour intersection volumes recorded on Saturday. The lower Saturday traffic volumes indicate that any potential need for improvements would be addressed sufficiently by the proposed weekday mitigation measures described in this chapter.

EXISTING TRANSIT NETWORK

Scheduled transit service in Larkspur is provided by Golden Gate Transit and includes local and regional bus service between the North Bay and San Francisco, and ferry service to San Francisco. Ferries depart from the Larkspur Ferry Terminal, and are serviced by ferry shuttle buses (free for ferry passengers). Ferry and other bus service in the vicinity of the Specific Plan area provided by Golden Gate Transit are as follows:

- < Ferry Shuttle Bus Route: Weekday commute period service, providing direct connections to ferry arrivals/departures at the Larkspur, Sausalito, Tiburon, and San Francisco ferry terminals;
- < Basic Bus Route: Daily service between San Francisco, Marin, Sonoma, and Contra Costa counties;
- < Commute Bus Route: Weekday express commute period service between Sonoma, Marin, and San Francisco counties (morning routes operate southbound, evening routes operate northbound); and
- < Local Bus Route: Weekday and limited weekend service within Marin County.

Bus routes within the study area are representative of each of these types of services (see Exhibit 4.7-4). In addition, the study area is served by freeway express commuter routes stopping at the U.S. 101 bus pads at Tamalpais Drive and Lucky Drive. Routes serving the Specific Plan area and the vicinity are as follows:

- < Route 1, Novato-San Rafael-College of Marin Route: Provides local service in a loop west of the study area, including service on Sir Francis Drake Boulevard, Magnolia/College Avenue, and Bon Air Road, and continues east along Sir Francis Drake Boulevard to San Rafael (past U.S. 101).

Exhibit 4.7-4 Golden Gate Transit Bus Routes in Study Area

- < Route 17, Neil Cummins School-Hall Middle School Route: Local bus route (service supplement) that operates along Doherty Drive and Magnolia Avenue Monday through Friday on school days only.
- < Route 18, San Anselmo-College of Marin-Corte Madera-San Francisco Route: Provides commute service on Magnolia Avenue along the west side of the Specific Plan area, connecting to Sir Francis Drake Boulevard to the north and Tamalpais Drive to the south.
- < Route 19, Manor-San Anselmo-Greenbrae-Larkspur Ferry Terminal Route: Provides free weekday, commute period ferry shuttle service on Sir Francis Drake Boulevard, which is to the north of the Specific Plan area.
- < Route 20, Canal-San Anselmo-Corte Madera-San Francisco Route: Provides basic service on Magnolia Avenue along the west side of the Specific Plan area, connecting to Sir Francis Drake Boulevard to the north and Tamalpais Drive to the south.
- < Route 21, - C.O.M.-Mill Valley Route: Also provides local service in a loop west of the Specific Plan area, including service on Sir Francis Drake Boulevard, Magnolia/College Avenue, and Bon Air Road, and continues east along Doherty Drive (passing Redwood High School), then south on Tamal Vista Boulevard.
- < Route 24, Lagunitas-Manor-San Anselmo-Greenbrae-San Francisco Route: Provides commute service on Sir Francis Drake Boulevard, which is to the north of the Specific Plan area, and along U.S. 101 (bus pad).

In November 2002, Golden Gate Transit declared a fiscal emergency and approved transit service reductions targeting underutilized and inefficient routes, including Route 13 and 15 that had served riders in the vicinity of the Specific Plan area. The service reductions became effective on March 9, 2003.

PEDESTRIAN CONDITIONS

On typical weekdays and weekends, pedestrian activity in the Specific Plan area is generally moderate throughout the day. Pedestrians are able to easily walk along the adjacent sidewalks and crosswalks. During weekdays pedestrian activity is concentrated along Magnolia Avenue downtown, at the Larkspur Plaza shopping center, and on Doherty Drive at the schools during relatively brief periods in the mornings and afternoons. Weekend pedestrian activity increases somewhat along Doherty Drive in the vicinity of Piper Park and at the high school when there is a scheduled event. Weekend pedestrian flows on Magnolia Avenue between noon and 7:00 p.m. represent the highest concentration of pedestrian activity in the study area.

The sidewalks along both sides of Magnolia Avenue are typically 10 feet wide between King Street and Doherty Drive. There are a number of driveway curb cuts in this corridor

(particularly along the west face) that serve commercial operations, parking areas, and municipal uses.

Crosswalks are located at the stop sign controlled intersection of Magnolia Avenue/King Street and the signalized intersections at East Ward Street and Doherty Drive. The two signalized crosswalks provide pedestrian activated buttons. Pedestrian crossings during morning and afternoon weekday peak periods were observed to be light and crossings at the Magnolia Avenue/King Street intersection operated in a controlled and safe manner.

Sidewalk widths on Doherty Drive range from 5 feet to 10 feet wide. Sidewalks currently extend on both sides of Doherty Drive east from Magnolia Avenue to Riviera Circle. The sidewalk on the south side of Doherty Drive ends approximately 500 feet west of the Redwood High School entrance. This sidewalk connects to an access path to the parking lot at the front of Redwood High School. The south sidewalk is continued at the high school curve and extends to the rear high school parking lot. On the north side of the street the sidewalk ends at Riviera Circle. Sidewalks continue beyond the Doherty Drive curve at the rear high school parking lot driveway on both sides of Lucky Drive.

Crosswalks are located on Doherty Drive at Magnolia Avenue and mid-block near Larkspur Boardwalk; these crosswalks serve Hall Middle School. Crosswalks are also located on Doherty Drive at Riviera Circle and Lucky Drive; these crosswalks serve Redwood High School. The signalized intersection at Magnolia Avenue and Doherty Drive provides pedestrian activated buttons at all crosswalk segments; all other crosswalks in this corridor are unsignalized.

Surveys of crosswalk activity at Hall Middle School and Redwood High School were conducted during the weekday morning and afternoon peak periods in May 2003. Results of the pedestrian counts are shown in Table 4.7-3. Hall Middle School typically is in session between 8:40 a.m. and 3:10 p.m. Monday through Friday with the exception of Wednesdays when classes are held from 9:00 a.m. to 3:10 p.m. Redwood High School starts at 8:00 a.m. and typically finishes at 3:10 p.m. Table 4.7-3 shows volumes for 20-minute time periods. The volumes for the two high school crosswalks are combined. The crosswalk located at Lucky Drive and the back parking lot carries approximately 70% of the high school crosswalk activity.

Table 4.7-3 Summary of School Crosswalk Counts		
Location	Morning	Afternoon
Hall Middle School	111	160
Redwood High School	150	85
Source: Wilbur Smith Associates Survey (May 2003)		

The crosswalk survey did not capture students who walk to school along Doherty Drive and enter the school grounds through the parking lot, nor do the volumes indicate the students who use the paths on the south side of the school. The survey focused only on those persons crossing Doherty Drive and Lucky Drive to enter and exit the school.

The mid-block crosswalk serving Hall Middle School is controlled by an adult crossing guard in the morning before the start of school and in the afternoon for a period of approximately 20 minutes at the close of school. The survey at this crosswalk indicated that approximately 18% to 22% of the children were using bicycles. The survey also indicates that a number of the students who are dropped off in vehicles in the morning leave Hall Middle School on foot. This assumption is based on the approximately 51% increase in pedestrian student crossings in the afternoon. The afternoon count of 160 student crossings at Hall Middle School was conducted over a 20-minute period.

The high school pedestrian crossings show a significant reduction in afternoon activity. This reduction is attributed to the numerous after-school activities that would keep students on site until well after the end of the school day. It also suggests that some students who walk in the morning may leave in the afternoon with students who drive.

BICYCLE CONDITIONS

Bicycle use in the Specific Plan area was observed to be generally moderate during the weekday commute peak hour. The area is served by an existing paved multiuse path that parallels Magnolia Avenue north of Doherty Drive. The path provides connections to existing residential areas east of Magnolia Avenue and to points north of Downtown Larkspur. This path segment was observed to be lightly but consistently used throughout the weekday peak commute periods. Weekend recreational bicycle activity is higher with larger numbers of individuals and groups bicycling through the area throughout the day.

An existing signed bike route located along the west boundary of the Niven property (Subarea 3) connects to another multiuse path that travels south from the Specific Plan area parallel to and east of Magnolia Avenue to William Avenue. This path provides access to residential areas within Larkspur and links to Corte Madera and Mill Valley. This multiuse facility was observed to carry light yet consistent bicycle and pedestrian traffic during the weekday peak periods.

Doherty Drive provides two wide parking lanes on both sides of the street from near Magnolia Avenue to Redwood High School. These lanes are not signed for bicycle use but do serve as de facto bike lanes. Class 2 bicycle lanes have been created on either side of Doherty Drive at the high school curve. These lanes are narrow (4 feet) by Class 2 standards, but are delineated from the vehicle travel way by striping, markings, and signage as required for Class 2 facilities. Bicycle activity along Doherty Drive can be characterized as generally light to moderate with the exception of after-school activity, particularly at Hall Middle School. Weekend bicycle activity at Piper Park was found to be higher than observed weekday activity.

PARKING CONDITIONS

Parking use in the study area was surveyed during a weekday and a Saturday (May 2002). Wilbur Smith Associates performed a field check survey of downtown parking conditions on a weekday and Saturday in May 2003. The field survey indicated that parking utilization rates had remained generally consistent for both on-street and off-street facilities. Parking conditions for both on-street and off-street were observed and parking occupancy rates were calculated for the following locations and areas:

- < On-Street Parking
 - Magnolia Avenue between Doherty Drive and East Ward Street
 - Doherty Drive between Magnolia Avenue and West of Bridge
 - Doherty Drive East of Bridge
 - Larkspur Plaza Drive between Doherty Drive to the back of the tennis club

- < Off-Street Facilities
 - Municipal City Lot
 - Nazari Property Lot
 - Rail Right-of-Way (at the rear of Nazari Lot)
 - Larkspur Plaza Lot
 - Piper Park Lot

Parking occupancy surveys were conducted between 11:00 a.m. and 1:00 p.m. and 4:00 p.m. and 6 p.m. during a weekday, and between 11:00 a.m. and 2:00 p.m. and 6:00 p.m. and 8:00 p.m. on a Saturday. Table 4.7-4 summarizes the findings of the Specific Plan area parking survey.

Table 4.7-4 Summary of Specific Plan Area Parking Occupancy					
Location	Number of Spaces	Average Weekday Occupancy		Average Saturday Occupancy	
		Midday	Evening	Midday	Evening
Off-Street					
Municipal City Lot	28	96%	45%	68%	100%
Larkspur Plaza Lot	170	47%	42%	47%	39%
Nazari Property Lot	21	60%	29%	33%	47%
Rail Right-of-Way	10	100%	90%	80%	67%
Piper Park	110	29%	21%	82%	27%
On-Street					
Magnolia – east side	5	100%	80%	100%	100%
Magnolia – west	18	78%	67%	89%	100%
Doherty – south	6	67%	42%	100%	33%
Doherty – north	1	0%	0%	0%	0%
Larkspur Plaza Drive	29	17%	79%	72%	62%
Doherty South – East of Bridge	25	84%	12%	12%	0%
Source: Wilbur Smith Associates Survey (May 2003)					

The 2003 parking survey findings are generally consistent with those observed in May 2002. The 2003 inventory includes approximately 500 feet of curb located on the south side of Doherty Drive, east of the bridge, which can accommodate up to 25 vehicles. This section of parking was 84% occupied during school hours. It was assumed that these parked vehicles indicated an overflow of students unable to park at the Redwood High School lot (e.g., high school sophomores who may not be eligible for parking permits for the Redwood High School parking lot). Weekday evening and Saturday observations of this area found a low utilization rate.

4.7.2 ENVIRONMENTAL IMPACTS

ANALYSIS SCENARIOS

The same LOS criteria described in Existing Setting above have been applied to the following analysis scenarios.

The “Existing” scenario represents current conditions at the study intersections based on traffic volumes obtained in March 2003.

The “Existing Plus Specific Plan” scenario includes the potential traffic impacts that would occur with existing traffic volumes plus maximum buildout of the Specific Plan area.

The “Existing Plus Cumulative (No Specific Plan)” scenario includes the potential traffic impacts that would occur with existing traffic volumes plus buildout of the Larkspur General Plan in the Downtown area including Subarea 1 and Subarea 2. This scenario does not include traffic from additional development that would be permitted under the Specific Plan (e.g., residential development in Subarea 3). Instead, this scenario assumes no new development would occur in Subarea 3.

The “Existing Plus Cumulative Plus Specific Plan” scenario includes the potential traffic impacts that would occur with existing traffic volumes plus maximum buildout of the Specific Plan area and buildout of the Larkspur General Plan in the Downtown area.

SPECIFIC PLAN TRIP GENERATION

Table 4.7-5 shows a summary of vehicle trip generation rates used in the assessment of the Specific Plan. The rates used are based on the ITE *Trip Generation*, 6th Edition (ITE 1997), and field surveys (June 2002) of large (4,000-plus square feet) single-family homes. The ITE publication does not differentiate between large lot and standard lot single-family uses, nor does it provide trip generation rates for cottage and mixed-use residential land uses.

In order to gauge the potential traffic impact of the large lot single-family homes (greater than 3,000 square feet) that are likely to be built where permitted due to market conditions, Wilbur Smith Associates conducted a 2-day field study of trip generation associated with single-family residential units that are 3,000 square feet or more (e.g., large homes in Corte Madera that are 4,000-plus square feet in size). The 7 study homes are located on a cul-de-sac, Verona Place,

off Paradise Road east of U.S. 101. Vehicle trips traveling to and from the cul-de-sac were recorded on two consecutive weekdays during the 7:00 a.m. to 9:00 a.m. morning peak period and the 4:00 p.m. to 6:00 p.m. evening peak period.

Land Use	Vehicle Trip Generation Rates		
	A.M. Peak Hour	P.M. Peak Hour	Daily
Large Lot Single-Family (unit)	1.10	1.52	14.3
Single-Family Homes (unit)	0.75	1.01	9.57
Multifamily Homes (unit)	0.56	0.76	7.18
Cottage Homes (unit)	0.56	0.76	7.18
Specialty Retail (1,000 SF)	1.03	2.59	40.67
Office (1,000 SF)	1.56	1.49	11.01
Hotel/Inn (room)	0.56	0.61	8.23
Community Center (1,000 SF)	1.32	1.75	22.88
Source: Institute of Transportation Engineers 1997, Wilbur Smith Associates Surveys (June 2002); Wilbur Smith Associates 2003.			

The trip generation survey findings showed that the larger homes generated a significantly higher number of vehicle trips compared to the standard ITE trip generation rate for single-family homes. Peak hour vehicle trip activity for the larger homes was 46% higher in the morning and 50% higher in the evening. The documented increase in a.m. and p.m. peak hour activity was calculated into peak hour and daily trip rates and applied to the Specific Plan where appropriate (e.g., single-family detached units greater than 3,000 square feet).

In addition to the higher rates for large homes, the cottage units were assessed at 75% of the standard single-family unit rate. There are no published rates for the land use cottage residential, the development density and square footage of which are in between those of typical single-family units and multi-family units. The rate developed for this use was the approximate midpoint between the standard single-family dwelling unit and the next highest residential rate, which was the residential condominium/townhouse rate.

ITE provides a trip rate for standard condominiums and townhouses. These unit types would be essentially the same size as the affordable multi-family residential units proposed in the specific Plan, and ITE's condominium/townhouse trip rate is typically used for apartment housing. However, because of the expectation that work-force households with more than one commuter would occupy much of the multi-family housing in the Specific Plan area, the rate developed for cottage homes was also applied to the affordable multi-family residential units.

Table 4.7-6 provides a summary of potential land use by subarea. The combination of land uses shown is the most intensive land use combination and is estimated to yield the highest daily and peak hour vehicle trip generation for development within the Specific Plan area.

The Specific Plan area consists of three separate subareas (Exhibit 2-4). Each of these subareas contains properties that were analyzed according to their maximum development potential in terms of trip generation. The office, hotel, and community center are all potential land uses under the Specific Plan, but would not generate as many vehicle trips as retail uses.

Principal Uses	Subarea 1	Subarea 2	Subarea 3	Net
Single Family Units < 3,000 feet	0	0	7	7
Single Family Units > 3,000 feet	0	0	28	28
Multifamily Residential Units	0	19	27	46
Cottage Units	0	0	23	23
Hotel Rooms	36	0	0	36
Retail (square feet)	46,565	4,500	0	51,065

Source: 2003 Central Larkspur Specific Plan, EDAW 2003

Subarea 1 consists of four properties: the Nazari property, the City parking lot, the American Legion hall, and Doherty Park. These properties are proposed to be designated Storefront Downtown and the maximum permitted new development would consist of a 36-room hotel and approximately 46,565 square feet of new retail space. Subarea 2 includes a gas station property and Larkspur Plaza. This subarea is designated Transitional Downtown and the maximum permitted development would consist of a 19-units of multifamily housing units and 4,500 square feet of retail space. Subarea 3 is designated Mixed Density Residential and the maximum permitted development would consists of 85 proposed residential units.

Adoption of the Specific Plan would result in the designation of commercial and residential uses, as well as new access into the Specific Plan area. Key access to Subarea 1 and Subarea 2 would be from East Ward Street and the Larkspur Plaza driveway. Subarea 3 would be developed with a mix of housing types, including large (3,000-plus square feet) single-family residential units, standard (less than 3,000 square feet) single-family residential units, as well as smaller cottage units and multi-family units. Access for this subarea would be from Doherty Drive at two locations. A new signalized intersection at Doherty Drive/Larkspur Plaza would provide primary access to Subarea 3 with a secondary stop sign controlled driveway located at Doherty Drive/Piper Park driveway.

The new signalized intersection at Doherty Drive/Larkspur Plaza and the driveway at Doherty Drive/Piper Park would be designed with the following standards specified in the Specific Plan.

Specific Plan Roadway and Intersection Policies and Standard

Policy 3. Doherty Drive/Larkspur Plaza Drive Intersection Improvement Standards. The new intersection at Larkspur Plaza Drive and Doherty Drive shall be consistent with the following standards:

Standard 2. Traffic Lights. The intersection shall be fully signalized. Signal timing shall be set to give precedence to and provide adequate crossing time for pedestrians and bicyclists during times of anticipated heavy pedestrian and bicycle movement. The signal shall be designed to allow manual override by pedestrians and bicyclists at other times. Consider installing a detector in the roadbed that is sensitive to bicyclists.

Standard 3. Changes In Roadway Paving Materials. Changes in roadway paving materials (both color and texture) should be designed and applied to increase motorist awareness of the crosswalk and decrease the speed of vehicles within the intersection (See Figure 5.3 of the Specific Plan).

Standard 4. Advance Intersection Warning. Bands of coarse-textured paving should be installed approximately 100 feet in each direction from the intersection to warn motorists of the approaching major crosswalk.

Policy 4. Doherty Drive/Piper Park Entrance Intersection. The new intersection at the entrance to Piper Park shall incorporate the same features listed in Policy 2 and Standards 2, 3, and 4, with the exception of traffic signals. The final design of traffic controls at this intersection shall be based on a warrants study.

Full buildout of the Specific Plan, at its most intensive type of land use in terms of traffic generation, would result in a total of 104 residential units, 51,065 square feet of new retail uses, and a 36 room hotel. As shown in Table 4.7-7, the full buildout of the Specific Plan area would be expected to generate 3,338 new daily vehicle trips, with 148 of these occurring during the a.m. peak hour and 256 occurring during the p.m. peak hour.

With 46,565 square feet of retail space and a 36 room hotel, Subarea 1 would generate an estimated new 2,192 daily vehicle trips. Subarea 1 accounts for 66% of the Specific Plan’s new daily trip generation.

Subarea 2 would generate approximately 320 new daily trips. With 19 multifamily residential units and 4,500 square feet of new retail, Subarea 2 would create about 9% of the Specific Plan’s net new daily trips.

Based on peak hour estimates, Subarea 3 would generate 64 a.m. peak hour trips and 87 p.m. peak hour trips. Subarea 3 would generate 826 new daily trips. These trips account for 25% of the total new daily trips generated by the Specific Plan.

Table 4.7-7
Summary of Daily and Peak Hour Specific Plan New Vehicle Trips at Maximum Land Use Intensity

Land Use	Units	Trip Rate			Trips			
		In	Out	Total	In	Out	Total	
Subarea 1								
Hotel: (Dwelling Units)	A.M. Peak Hour	36	0.34	0.22	0.56	12	8	20
	P.M. Peak Hour	36	0.32	0.29	0.61	12	10	22
	Daily	36	4.12	4.12	8.23	148	148	296

Land Use		Units	Trip Rate			Trips		
			In	Out	Total	In	Out	Total
Retail Sales (per 1,000 square feet)	A.M. Peak Hour	46.6	0.63	0.40	1.03	29	19	48
	P.M. Peak Hour	46.6	1.11	1.48	2.59	52	69	121
	Daily	46.6	20.34	20.34	40.67	948	948	1,896
Subtotals				A.M. Peak Hour		41	27	68
				P.M. Peak Hour		64	79	143
				Daily		1,096	1,096	2,192
Subarea 2								
Multifamily Residential: (Dwelling Units)	A.M. Peak Hour	19	0.14	0.42	0.56	3	8	11
	P.M. Peak Hour	19	0.48	0.27	0.76	9	5	14
	Daily	19	3.59	3.59	7.18	68	68	136
Retail Sales (per 1,000 square feet)	A.M. Peak Hour	4.5	0.63	0.40	1.03	3	2	5
	P.M. Peak Hour	4.5	1.11	1.48	2.59	5	7	12
	Daily	4.5	20.34	20.34	40.67	92	92	184
Subtotals				A.M. Peak Hour		6	10	16
				P.M. Peak Hour		14	12	26
				Daily		160	160	320
Subarea 3								
Single-Family Home—More than 3,000 square feet: (Dwelling Units)	A.M. Peak Hour	28	0.28	0.83	1.10	8	23	31
	P.M. Peak Hour	28	0.97	0.55	1.52	27	15	42
	Daily	28	7.15	7.15	14.30	200	200	400
Single Family Home—Less than 3,000 square feet: (Dwelling Units)	A.M. Peak Hour	7	0.19	0.56	0.75	1	4	5
	P.M. Peak Hour	7	0.65	0.36	1.01	5	3	8
	Daily	7	4.79	4.79	9.57	33	33	66
Multifamily Residential: (Dwelling Units)	A.M. Peak Hour	27	0.14	0.42	0.56	4	11	15
	P.M. Peak Hour	27	0.48	0.27	0.76	13	7	20
	Daily	27	3.59	3.59	7.18	97	97	194
Cottage Homes: (Dwelling Units)	A.M. Peak Hour	23	0.14	0.42	0.56	3	10	13
	P.M. Peak Hour	23	0.48	0.27	0.76	11	6	17
	Daily	23	3.59	3.59	7.18	83	83	166
Subtotals				A.M. Peak Hour		16	48	64
				P.M. Peak Hour		56	31	87
				Daily		413	413	826
Net New Trips (Central Larkspur Specific Plan)				A.M. Peak Hour		63	85	148
				P.M. Peak Hour		134	122	256
				Daily		1,669	1,669	3,338

Source: Institute of Transportation Engineers 1997, Wilbur Smith Associates calculations (May 2003)

VEHICLE TRIP DISTRIBUTION AND ASSIGNMENT

The estimated vehicle trip distribution reflects peak hour activity and is based on existing locally observed traffic patterns and on characteristics associated with specific land uses. Specific Plan generated traffic was distributed to the local street network according to the directional percentage estimates shown in Table 4.7-8.

Table 4.7-8 Vehicle Trip Distribution Summary		
Location/Direction	A.M. Peak Hour	P.M. Peak Hour
	Percentage	Percentage
Residential		
East	73	72
South	13	17
North	14	11
Commercial/Retail		
East	40	40
South	33	27
North	27	33
Source: Wilbur Smith Associates calculations (May 2002)		

Trip distribution for retail and other commercial uses are expected to be similar during the a.m. and p.m. peak hours as shown in Table 4.7-8. Travel patterns associated with residential uses reflect a dominant movement to (a.m. peak hour) and from (p.m. peak hour) the east and U.S. 101. All new traffic associated with the mixed use parcels on the western portion of the Specific Plan area were assigned to Magnolia Avenue via the signalized intersection on East Ward Street. Exhibit 4.7-5 illustrates the distribution of Specific Plan generated trips on the area roadway network at study intersections.

THRESHOLDS OF SIGNIFICANCE

Implementation of the Specific Plan would have a significant impact if it were to result in:

- < an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- < exceedance, either individually or cumulatively, of the LOS standard of LOS D established by the City for signalized intersections within Larkspur;
- < exceedance, either individually or cumulatively, of the LOS standard of LOS C established by the City for unsignalized intersections within Larkspur;
- < inadequate emergency access;
- < inadequate parking capacity; or

Exhibit 4.7-5 A.M (P.M.) Peak-Hour Volumes with Specific Plan Development

- < a conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

These criteria are derived from Appendix G of the State CEQA Guidelines and from City Council Policy that established the minimum acceptable LOS to be at the LOS D threshold for signalized intersections and at the LOS C threshold for unsignalized intersections. The minimum LOS D operating standard is also consistent with prior traffic analyses conducted within Larkspur.

PROJECT-LEVEL IMPACTS

Share of Intersection Volumes

Table 4.7-9 identifies the percentage of traffic volume increases associated with the Specific Plan. The intersections shown are anticipated to experience unacceptable LOS under Existing Plus Specific Plan Conditions, Existing Plus Cumulative Plus Specific Plan conditions, or both, until the traffic mitigation measures identified below are completed.

Table 4.7-9 Specific Plan Share of Existing and Future Peak Hour Intersection Volumes					
Intersections	Existing Plus Specific Plan	Specific Plan Volume	Specific Plan Percent	Existing Plus Cumulative Plus Specific Plan	Specific Plan Percent
a.m. Peak Hour					
3. East Ward Street/Magnolia Avenue	1,412	105	7.4	1,707	6.2
4. King Street/Magnolia Avenue	1,445	53	3.7	1,369	3.9
7. Doherty Drive/Riviera Circle	1,347	59	4.4	1,677	3.5
10. Fifer Avenue /Tamal Vista Boulevard	1,679	59	3.5	2,150	2.7
11. Wornum Drive /Tamal Vista Boulevard	1,206	21	1.7	1,623	1.3
5. Doherty Drive/Larkspur Plaza	1,217	79	6.5	1,561	5.1
6. Doherty Drive/Piper Park	1,128	63	5.6	1,450	4.3
p.m. Peak Hour					
3. East Ward Street/Magnolia Avenue	1,714	223	13.0	1,995	11.2
4. King Street/Magnolia Avenue	1,181	79	6.7	1,397	5.7
7. Doherty Drive/Riviera Circle	1,584	99	6.3	1,822	5.4
10. Fifer Avenue /Tamal Vista Boulevard	1,745	99	5.7	2,115	4.7
11. Wornum Drive /Tamal Vista Boulevard	1,650	55	3.3	2,057	2.7
5. Doherty Drive/Larkspur Plaza	1,295	125	9.7	1,551	8.1
6. Doherty Drive/Piper Park	1,153	111	9.6	1,433	7.7
Source: Wilbur Smith Associates (2003)					

Impact
4.7-1

Unacceptable Level of Service at Doherty Drive/Riviera Circle/Redwood High School Intersection. *Development under the Specific Plan would increase average vehicle delay at this unsignalized intersection where a.m. peak hour LOS is already unacceptable (LOS D) and would result in a worsening of p.m. peak hour LOS from D to E. This impact is considered **significant**.*

The turning movement volumes for this unsignalized intersection during a.m. and p.m. peak hours under Existing Plus Specific Plan conditions are illustrated in Exhibit 4.7-6. Table 4.7-10 shows a comparison of peak hour intersection operations under existing conditions to those under the Existing Plus Specific Plan scenario. Operations under the Existing Plus Specific Plan scenario would continue to be unacceptable (LOS D) during the a.m. peak hour at the unsignalized intersection of Doherty Drive/Riviera Circle/Redwood High School. During the p.m. peak hour, traffic generated by future development in the Specific Plan area would reduce existing unacceptable LOS D to LOS E operating conditions. The unacceptable LOS during the a.m. and p.m. peak hours is an existing condition and would be expected to occur at this intersection with or without the implementation of the Specific Plan development. The permitted development, however, would add traffic at this intersection, resulting in increases in average vehicle delay of up to 2.8 seconds and, in the p.m. peak hour, a worsening of LOS from D to E. This impact is considered significant.

**Table 4.7-10
Existing Plus Specific Plan Peak-Hour Intersection Level of Service**

Intersections	Existing				Existing Plus Specific Plan			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Signalized Intersection (LOS A-D are acceptable)								
1. Bon Air Road/Magnolia Avenue	B	8.8	B	10.5	B	8.7	B	10.5
2. Doherty Drive/Magnolia Avenue	B	8.8	B	10.4	B	9.3	B	12.6
3. East Ward Street/Magnolia Avenue	C	15.7	D	29.9	E	41.1	F	**
10. Fifer Ave/Tamal Vista Blvd.	B	13.3	C	16.3	B	13.6	C	17.9
11. Wornum Drive/Tamal Vista Blvd	B	13.1	C	20.4	B	13.5	D	25.1
12. Wornum Drive/Redwood Hwy.	B	7.3	B	9.6	B	7.4	B	9.8
13. 101 NB On-Ramp/Industrial	B	5.5	B	11.2	B	5.5	B	11.5
Unsignalized Intersection (LOS A-C are acceptable)								
4. King Street/Magnolia Avenue	C	19.5	F	46.2	D	22.7	F	66.5
5. Doherty Drive/Larkspur Plaza*	C	17.8	C	15.8	D	20.4	C	19.3
6. Doherty Drive/Piper Park	C	0.3	C	0.4	C	0.5	C	0.5
7. Doherty Drive/Riviera Circle	D	23.9	D	29.6	D	26.7	E	32.2
8. Lucky Drive/Doherty Drive	B	8.7	B	6.6	C	10.1	B	7.5
9. Lucky Drive/Fifer Avenue	B	0.5	C	1.1	B	0.5	C	1.1
Notes: Delay is in average seconds per vehicle Bold = unacceptable conditions LOS = Level of Service * Intersection would be signalized under the Specific Plan. ** = Exceeds 120 seconds delay Source: Wilbur Smith Associates (May 2003)								

Exhibit 4.7-6 Existing Plus Specific Plan A.M. (P.M.) Peak-Hour Volumes

Impact
4.7-2

Unacceptable Level of Service at East Ward Street/Magnolia Avenue Intersection. *With Specific Plan implementation this signalized intersection is projected to operate at LOS E and LOS F during the a.m. and p.m. peak hours, respectively. This impact is considered **significant**.*

During the weekday a.m. and p.m. peak hours, the signalized intersection at East Ward Street/Magnolia Avenue is projected to operate at an unacceptable LOS E and LOS F, respectively, upon the addition of traffic generated by future development in the Specific Plan area (Table 4.7-10). The Specific Plan would result in increases in average vehicle delay of more than 90 seconds at this intersection. This impact is considered significant.

Impact
4.7-3

Unacceptable Level of Service at King Street/Magnolia Avenue Intersection. *With Specific Plan implementation, this unsignalized intersection is projected to worsen from LOS C to unacceptable LOS D in the A.M. peak hour, and traffic would be added during the p.m. peak hour, when the intersection already operates at unacceptable LOS F. This impact is considered **significant**.*

During the weekday a.m. peak hour, traffic generated by future development in the Specific Plan area would cause this unsignalized intersection to worsen from LOS C to unacceptable LOS D (Table 4.7-10), with increases in average vehicle delay of up to 20.3 seconds. During the p.m. peak hour, this intersection would continue to operate at unacceptable LOS F. Development under the Specific Plan would add traffic to this intersection during the p.m. peak hour and would further increase average vehicle delay. This impact is considered significant.

Impact
4.7-4

Access and Circulation. *The Specific Plan contains several access and circulation elements designed to allow smooth flow of traffic through the Specific Plan area and provide for public safety. Impacts associated with access and circulation elements would be **less than significant**.*

The Specific Plan contains several access and circulation components, such as internal roadways and new connections to existing streets (see Figure 5-1, Transportation Policy Diagram, in the Specific Plan). Vehicle access to the west side of the Specific Plan area would continue to be primarily at East Ward Street and the Magnolia Avenue driveway serving Larkspur Plaza. East Ward Street would provide access to the existing corner public parking lot and other planned public parking areas. The Specific Plan includes policies and standards to close the Magnolia Avenue driveway currently serving the public parking lot and to narrow the existing Larkspur Plaza driveway. Table 4.7-9 shows the Existing Plus Specific Plan and future peak hour intersection volumes in the study area.

According to the Specific Plan, the vehicle access serving Subarea 3 would have the following standard requirements:

Policies and Standards for Vehicular Ingress and Egress to Specific Subareas

Policy 16. Loop Road in Subarea 3. The two access roads from Doherty Drive to Subarea 3 shall be internally connected to provide two means of ingress and egress for public safety vehicles. The precise alignment of the connecting road section(s) shall be determined when the tentative map for the property is prepared.

Policy 17. Standards For The Western Access Road From Doherty Drive to Subarea 3. The western entry road from Doherty Drive to Subarea 3 shall be consistent with the following standards:

Standard 8. Alignment Standard For Western Access Road to Subarea 3. The access road shall be aligned along the west property line of Subarea 3. The entry road shall be aligned to allow for the following:

8.A. Sufficient space within or adjoining the right-of-way for a landscape buffer at the rear of the Larkspur Plaza commercial buildings.

8.B. Construction of a Class 1 bikeway physically separate from the roadway.

8.C. Truck access to the east end of the Albertsons building. This is needed to allow a complete relocation of the building's service docks to this location.

Policy 18. Vehicular Ingress and Egress From Ward Street to Subarea 3. The road system should be designed to discourage through-traffic between Ward Street and Doherty Drive. The following five options shall be studied by any application for development in Subarea 3, and the Planning Commission shall make the final decision of a selected option in its approval of the development application.

1. No access from Subarea 3 to Ward Street.
2. An exit-only connection from Subarea 3 to Ward Street to minimize left-turn movements at the Larkspur Plaza Drive and Magnolia/Doherty intersections.
3. A two-way connection from Subarea 3 to Ward Street with no direct connection to Doherty Drive.
4. A one-way through-connection from Ward Street to Doherty Drive.
5. A two-way through connection from Ward Street to Doherty Drive with traffic calming measures applied to allow entry and exit at Ward Street while discouraging through traffic

Roadway and Intersection Policies and Standards

Policy 5. Traffic-Calming. Residential streets in the Plan area may incorporate traffic-calming devices that discourage high-speed travel and use of the streets by unrelated through-traffic. Section 6 of the Specific Plan identifies various acceptable traffic-calming devices.

Policy 6. Street Standards for Subarea 3. The following standards shall be followed in the design of streets in Subarea 3:

Standard 5. Standard Right-of-Way Width. The standard right-of-way width of residential streets within Subarea 3 shall be limited to 45 feet, except where a Class 1 bikeway is incorporated into the right-of-way, in which case a minimum right-of-way of 57 feet shall be required.

Standard 6. Maximum Pavement Width. The maximum pavement width, measured from face-of-curb to face-of-curb shall be 26 feet.

Standard 7. Sidewalks and Landscape Strips. Each right-of-way shall also include a 5-foot wide landscape strip and a 4.5-foot wide sidewalk on each side of the roadway. Exceptions may be made to the sidewalk requirement where adjoining open areas allow space for a parallel pedestrian path. Related landscape standards and guidelines are contained in Section 7 of the Specific Plan.

Vehicle access from Doherty Drive would serve the residential uses in the Specific Plan area at two locations: immediately opposite Larkspur Plaza Drive and immediately opposite the entrance to Piper Park. Both access roads would form new four-leg intersections. The new intersection at Piper Park would be stop sign controlled at the north and southbound approaches only.

The new intersection at Larkspur Plaza Drive would be signalized and coordinated with the Doherty Drive/Magnolia Avenue intersection signal to the west. The north leg of this intersection would be redesigned to consolidate exiting traffic from the Hall Middle School and two-way traffic from Larkspur Boardwalk onto Larkspur Plaza Drive. This Specific Plan access road would allow truck access to the east end of the Albertsons building.

The Specific Plan includes the reconstruction of approximately 900 feet of Doherty Drive to three lanes with one travel lane in each direction and a center turning lane serving the Specific Plan access driveways, Hall Middle School and Piper Park. The existing Doherty Drive Bridge east of the Specific Plan area is programmed for reconstruction. This improvement is not part of the Specific Plan, however, reconstruction of the bridge would improve sight distance lines for vehicles at the Doherty Drive/Piper Park entrance intersection.

The Specific Plan internal roadway system would not provide a vehicle connection between Doherty Drive and East Ward Street. This is primarily to discourage through traffic and to maintain a safe environment for pedestrians and bicyclists. A secondary purpose is to control

traffic levels on East Ward Street. As indicated in the LOS analysis of Specific Plan-generated traffic, East Ward Street would require additional capacity on three approaches under buildout conditions. A through connection between East Ward Street and Doherty Drive could attract increased passer-by vehicle activity between Doherty Drive and Magnolia Avenue through the Specific Plan area and result in operations deteriorating to unacceptable service levels at the East Ward Street/Magnolia Avenue intersection.

There would be no significant impacts associated with the Vehicle Access and Circulation Plan. The implementation of the proposed vehicle access and circulation plan would result in improvements to current conditions. Signalization of the Larkspur Plaza Drive/Doherty Drive intersection would provide a safer crossing for pedestrians, bicyclists and students. The new intersection would accommodate planned changes to improve vehicle ingress and egress patterns at Hall Middle School and for Larkspur Boardwalk. The reconstruction of the existing Larkspur Plaza and Magnolia Avenue driveway and the elimination of the public parking lot driveway on Magnolia Avenue would enhance pedestrian safety in this area.

The proposed design standards for the internal roadway network promote pedestrian safety by limiting on-street widths and avoiding through traffic routes. Internal street curb-to-curb widths are planned for 26 feet including parking lanes on one side. Other traffic calming measures such as traffic circles, and elbows and use of alternate side-to-side parking lanes have been proposed for the Specific Plan roadway network.

No mitigation measures are proposed, nor would any be needed with construction of the vehicle access and circulation plan called for in the Specific Plan policies.

Impact
4.7-5

Pedestrian and Bicycle Circulation. *The Specific Plan includes a proposed system of integrated pedestrian and bicycle routes and paths within the Specific Plan area. Because these routes and paths would enhance rather than interfere with existing bikeways and pedestrian paths, **no significant impacts** would result.*

The Specific Plan proposes a system of integrated pedestrian and bicycle routes within the Specific Plan area that would provide safe circulation and connections to existing area facilities. The proposed pedestrian and bicycle circulation system would create links between the Specific Plan area and Downtown, Larkspur Plaza, schools, parks and transit areas.

The proposed system of bikeways and footpaths includes the following elements (see Figure 5.1 in the Specific Plan):

Larkspur Creek Pathway - A combined bikeway and footpath is proposed along the south and east sides of the Specific Plan area. On the south, the path would run along the south side of the creek. The east side path would be located on the east side of the creek. This path would link to the existing pathway serving the Heather Gardens neighborhood. A combined bikeway and footpath would also be located on the western side of the north/south reach of the creek.

Magnolia Avenue to Larkspur Plaza - A pedestrian path linking the Larkspur Plaza to the Downtown area via the railroad plaza area is proposed. The intent of this link is to encourage people parked at Larkspur Plaza to walk rather than drive to other downtown destinations.

Central Pathway - The Specific Plan includes a continuous pedestrian route extending from Magnolia Avenue to the bikeway along the west side of Larkspur Creek. This path would serve the planned residential community with a direct route to the railroad plaza area and the Downtown area.

North-South Regional Bikeway - The Specific Plan includes upgrades to the existing segment of the bikeway north of East Ward Street, which connects to the Class I bikeway along Magnolia Avenue in the vicinity of the Creekside development, for the purpose of improving safety for bicyclists and pedestrians. In addition, the Specific Plan includes a new Class I bikeway to be developed in Subarea 3; the alignment of this bikeway, which would connect the bikeway segment on the former Northwest Railroad right-of-way north of East Ward Street with the existing Class I bikeway along Magnolia Avenue at a point north of the Specific Plan area, would run through the northwest corner of Subarea 3 and connect with the Class II bikeway along Larkspur Plaza Drive and through the Creekside development.

Doherty Drive Bikeway - A Class I bikeway is proposed along the south side of Doherty Drive extending from the bikeway at Larkspur Plaza Drive to Redwood High School (approximately 2,100 feet).

There would be no significant impacts associated with pedestrian/bicycle access and circulation plans. Implementation of the proposed pedestrian and bicycle routes would result in an improvement of existing conditions. The development of foot and bicycle paths within the Specific Plan area and along Doherty Drive that make north-south and east-west connections to existing non-motorized facilities and activity centers is essential. The Specific Plan area, due to location and topography, will play a key role in the integration of existing pedestrian and bicycle facilities and in the upgrading of non-motorized circulation and access safety in the vicinity.

Section 4.1, Land Use and Planning, of this EIR document includes analysis of the consistency of the proposed bikeway alignment with the Bicycle/Pedestrian Circulation Plan in the General Plan. Section 4.5, Biological Resources, includes analysis of the effects of the pathways on biological resources in and adjacent to Larkspur Creek. Because the proposed bikeways and pedestrian paths would increase connectivity between existing paths, enhance bicycle and pedestrian safety, not interfere with existing pedestrian and bicycle traffic, no traffic and circulation impacts would result from the pedestrian and bicycle access and circulation plan.

Impact
4.7-6

Increase in Parking Demand. *New development in Subarea 1 and Subarea 2 would increase the demand for parking spaces in the Downtown area. Given the Specific Plan policies that require the provision of adequate number of parking spaces for new developments, this impact would be less than significant.*

Table 4.7-11 shows the proposed Specific Plan area parking standards based on land use type. Residential parking would be provided as shown on a per unit basis. Additional parking in the Subarea 3 residential development would be supplied on-street. With the implementation of the standards, the residential parking supply for Subarea 3 would meet or exceed expected demand.

Land Use	Supply Rate
Retail, Personal, Business Service	2.6 spaces/1,000 sq. ft.
Hotel	1 space per room (1)
Restaurant	4.4 spaces per/1,000 sq. ft.
Office	2.5 spaces per/1,000 sq. ft.
Multi-family Residential	1 space per unit
Cottage Home	1.2 space per unit (2)
Single-Family Detached	3 spaces per unit (3)
Notes: (1) Tandem spaces permitted. (2) 0.20 spaces provided in separate common lot (3) 1 tandem space per unit including driveway with minimum length of 18 feet. Source: Central Larkspur Specific Plan Area Parking Standards (2003a)	

Table 4.7-12 shows the potential new parking supply that would be developed for Subarea 1 and Subarea 2, based on the parking standards shown in Table 4.7-11. The total of 218 spaces represents an unadjusted maximum figure. The parking supply that would eventually be developed in the Specific Plan area would be adjusted to account for shared parking opportunities and the mix of land uses.

Land Use	Size	Supply Rate	Number of Spaces
Subarea 1			
Hotel Rooms	36 rooms	1 per room	36
Retail	58,100 sq. ft.	2.6 spaces per 1,000 sq. ft.	151
Subtotal			179
Subarea 2			
Residential	19 units	1 per unit	19
Retail	4,500 sq. ft.	2.6 spaces per 1,000 sq. ft.	12
Subtotal			31
Total			218
Source: Central Larkspur Specific Plan Area Parking Standards (2003a)			

Based on parking surveys conducted by WSA in downtown Larkspur in May of 2002 and June of 2003, the estimated peak parking demand for future development in Subarea 1 and 2 is

approximately 120 spaces. This estimate is based on current demand at the Nazari site, Larkspur Plaza and the Municipal Lot.

The survey of existing study area parking conditions (see Setting section) indicates that parking utilization at the public lot (28 spaces) is near or at capacity during the weekend evening and during midday weekdays. Overall parking utilization for Subarea 1 and for Subarea 2 during the same time periods however, is underutilized averaging 50% occupancy. On-street parking utilization along both sides of Magnolia Avenue is high, with 100% occupancy Saturday midday and evenings and 70% during weekday midday and evenings.

Chapter 5 of The Central Larkspur Specific Plan identifies a number of potential parking facilities that would serve the development in the Specific Plan area, including the following:

- < Expansion of the existing municipal lot from the current 28 spaces to 40 spaces (Policy 27. Existing City Lot)
- < Additional surface parking in former railroad right-of-way in Subarea 1 (Policy 28. Former Railroad Right-of-Way)
- < Private parking under a building(s) fronting on Magnolia Avenue (Policy 29. Magnolia Avenue Frontage)
- < A 50-space public lot in Subarea 3 (Policy 30. New Downtown Parking Lot)
- < Potential additional surface parking in Albertsons site (Policy 31. Albertsons Site)

The potential loss of on-street parking on East Ward Street and Magnolia Avenue as a result of traffic impact mitigation measures must be factored into the ultimate supply requirements.

Given the Specific Plan policies on parking requirements and the adequacy of the identified potential parking facilities, no impacts would be expected and no mitigation measures are proposed.

Impact 4.7-7 **Construction-Related Traffic.** *During the construction phase of future development projects, roadway closure and construction vehicle trips would potentially cause traffic interruption and may result in unsafe conditions for drivers, passengers, bikers, and pedestrians. While the City Code requires traffic control during construction activities, it does not define the specific measures that would ensure human safety and convenience. This is a **potentially significant** impact.*

Specific information on construction activities that may occur within the Specific Plan area is currently not available. Construction-related activities would typically occur Monday through Friday from 7:00 a.m. to 5:00 p.m. Specifications would include restrictions on noise and dust, and construction activities would be strictly monitored due to the proximity of schools and businesses in the area. Construction staging and storage of equipment and materials would likely occur on the construction sites. It is not anticipated that any traffic lanes or sidewalks on either Magnolia Avenue or Doherty Drive would need to be closed during the construction duration. However, if construction activities were to result in the extended, temporary closure

of sidewalks and/or vehicle travel lanes, contractors in the Specific Plan area would be required to notify the City Department of Public Works (DPW) Director. A sidewalk or roadway lane closure plan would need to be coordinated through and approved by the City prior to the closure in order to ensure safe and uninterrupted circulation in the vicinity of the construction site.

During the construction period, there would be a flow of construction-related trucks into and out of the construction site. The impact of construction truck traffic would be a temporary lessening of the capacities of streets due to the slower movement and larger turning radii of trucks. This would affect both traffic and Golden Gate Transit operations. The majority of construction-related deliveries are anticipated to be from the north or south of the Specific Plan area, traveling on U.S. 101. For access to and from the construction site from U.S. 101, trucks would likely be routed to Doherty Drive from Lucky Drive via Fifer Avenue or Tamal Vista Boulevard via Wornum Drive. While this route provides the shortest travel time to and from the Specific Plan area, it requires trucks to negotiate sharp turns at the intersection of Wornum Drive/Tamal Vista Boulevard and Fifer Avenue/Lucky Drive. This route would take construction trucks directly by Redwood High School and Hall Middle School.

The peak number of construction workers in the Specific Plan area is currently unknown, and trip distribution and mode split data are not available. In terms of traffic conditions, the worst-case scenario would be if all workers drove alone to the Specific Plan area. In addition, these workers could cause a temporary parking demand. During most phases of construction, it is anticipated that construction-related parking could be accommodated within the Specific Plan area. In addition, a portion of the construction workers may take transit or carpool to access the Specific Plan area. The City's Grading Ordinance requires provision of traffic control on affected streets to minimize public inconvenience and traffic disruption (City Code §15.20.170 Traffic Control). However, the Grading Ordinance does not define the specific measures that would ensure human safety and convenience. Without effective traffic control measures designed to ensure both human safety and traffic convenience, this impact would be potentially significant.

CUMULATIVE IMPACTS

No significant cumulative impacts related to access and circulation, pedestrians and bicycle circulation, and parking are expected. As discussed above, the Specific Plan would not result in significant impacts related to these issues, and the General Plan and the Larkspur Municipal Code require all projects to provide adequate parking and site access that preclude significant impacts related to these issues.

Potentially significant cumulative impact related to construction-related traffic interruptions may result because traffic control measures designed to ensure human safety and traffic convenience may not be implemented. As such, construction activities throughout the City may occur during the same time periods and cause traffic interruptions.

Potentially significant cumulative impacts related to LOS of roadway intersections may result. Future traffic volumes at the study intersections were determined by evaluating output from the *1998 Larkspur Citywide Traffic Study*. This study developed future p.m. peak hour intersection turning movement volumes based on the General Plan buildout estimates for the Downtown area. Existing volumes at the study intersections were compared to volumes projected by the citywide traffic study, and were adjusted as necessary within the study area to ensure consistency with existing trends. Peak hour trips associated with the Downtown Area Specific Plan parcels were identified in the citywide study and adjusted in order to avoid a double count of Specific Plan-generated trips.

The adjusted *Citywide Traffic Study* cumulative intersection volumes served as the basis for the Existing Plus Cumulative (No Build) scenario. This scenario includes the potential traffic impacts that would occur with existing traffic volumes plus build-out of the Larkspur General Plan in the downtown area. The Existing Plus Cumulative (No Build) scenario includes traffic that would be generated from the Specific Plan Area (Sub area's 1 and 2) with development of uses identified in the General Plan. This development includes up to 28 units of multi-family residential and 24,961 square feet of retail use in Subarea 1. Subarea 2 includes 4,500 square feet of retail use. Specific Plan trip estimates developed for the EIR were distributed to the network as described and overlaid onto the Existing Plus Cumulative (No Build) trip volumes to develop trip volumes for Existing Plus Cumulative Plus Specific Plan scenarios.

The citywide study developed only p.m. peak hour cumulative traffic volumes. The a.m. peak hour cumulative volumes analyzed in the EIR were developed based on existing traffic patterns at study intersections and on comparative ratios between a.m. and p.m. peak hour volumes at individual study intersection approaches. Study intersection volumes for a.m. and p.m. peak hour Existing Plus Cumulative (No Build) and Existing Plus Cumulative Plus Specific Plan conditions are illustrated on Exhibits 4.7-7 and 4.7-8, respectively.

Existing Plus Cumulative Plus Specific Plan Conditions

Under Existing Plus Cumulative Plus Specific Plan conditions, the three intersections identified as operating unacceptably under Existing Plus Specific Plan conditions would continue to operate unacceptably but with increases in average vehicle delay. The three intersections include:

- < East Ward Street/Magnolia Avenue
- < King Street/Magnolia Avenue
- < Doherty Drive/Riviera Circle

In addition to these intersections, the Specific Plan would contribute to unacceptable operating conditions at Fifer Avenue/Tamal Vista Boulevard and Wornum Drive/Tamal Vista Boulevard during the p.m. peak hour. The unsignalized intersection of Doherty Drive/Piper Park would operate at unacceptable LOS D and during the a.m. and p.m. peak hours. Under Existing Plus Cumulative (No Build) conditions, the unsignalized intersection at Doherty Drive/Larkspur Plaza would be expected to operate at unacceptable LOS F and during the

Exhibit 4.7-7 Existing Plus Cumulative A.M. (P.M.) No Project Peak-Hour Volumes

Exhibit 4.7-8 Existing Plus Cumulative Plus Specific Plan A.M. (P.M.) Peak-Hour Volumes

a.m. peak hour and LOS E during the p.m. peak hour; with Specific Plan implementation, this intersection would be improved, including signalization, and would operate at acceptable LOS B. Table 4.7-13 shows a comparison of cumulative peak hour intersection operations with and without Specific Plan traffic.

Table 4.7-13									
Existing Plus Cumulative (No Specific Plan) and Existing Plus Cumulative Plus Specific Plan Conditions Intersection Level of Service									
Intersections	Existing Plus Cumulative (No Specific Plan)				Existing Plus Cumulative Plus Specific Plan				
	a.m. Peak Hour		p.m. Peak Hour		a.m. Peak Hour		p.m. Peak Hour		
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	Delay
Signalized Intersection (LOS A-D are acceptable)									
1. Bon Air Road/Magnolia Avenue	B	9.3	B	11.4	B	9.3	B	11.6	
2. Doherty Drive/Magnolia Avenue	B	12.1	B	14.4	B	12.7	C	18.0	
3. East Ward Street/Magnolia Avenue	F	**	F	**	F	**	F	**	
10. Fifer Avenue /Tamal Vista Boulevard	C	23.5	E	57.1	B	6.4	B	10.3	
11. Wornum Drive /Tamal Vista Boulevard***	C	25.1	F	70.5	D	26.3	F	81.2	
12. Wornum Drive/Redwood Highway	B	8.4	B	12.6	B	8.5	B	12.8	
13. 101 NB On-Ramp/Industrial	B	5.6	C	17.8	B	5.6	C	18.1	
Unsignalized Intersection (LOS A-C are acceptable)									
4. King Street/Magnolia Avenue	E	30.9	F	**	E	34.5	F	**	
5. Doherty Drive/Larkspur Plaza*	F	52.2	E	43.2	B*	6.9	B*	9.1	
6. Doherty Drive/Piper Park****	D	24.1	C	19.6	D	25.8	D	21.8	
7. Doherty Drive/Riviera Circle	E	36.6	E	41.1	E	40.0	E	44.9	
8. Lucky Drive/Doherty Drive	C	12.8	B	9.2	C	14.6	B	9.5	
9. Lucky Drive/Fifer Avenue	C	12.1	C	14.1	C	12.2	C	15.5	
Notes: Delay is in average seconds per vehicle LOS = Level of Service * Assumes intersection would be signalized with implementation of Specific Plan. ** Exceeds 120 seconds delay *** The improvement of the intersection of Wornum Drive/Tamal Vista Boulevard has been under construction and may be completed by the end of 2003. **** Assumes no signalization improvements under either scenario. Bold = unacceptable operations NA = Not available Source: Wilbur Smith Associates (May 2003)									

Impact
4.7-8

Unacceptable Cumulative Level of Service at Doherty Drive/Riviera Circle/Redwood High School Intersection. Traffic generated by the Specific Plan would contribute to unacceptable operating conditions (LOS E) at this unsignalized intersection during the a.m. and p.m. peak hour. The intersection would operate at LOS E with or without the project, but would be exacerbated by Specific Plan development. This impact is considered **significant**.

During the a.m. peak hour, the Doherty Drive/Riviera Circle/Redwood High School unsignalized intersection is projected to worsen and operate at unacceptable LOS E under cumulative conditions with increases in average vehicle delay of more than 3.8 seconds at this intersection. This condition would be expected to occur with or without traffic generated by development that may occur within the Specific Plan area. Traffic generated by development in the Specific Plan area, however, would add additional traffic at this intersection, resulting in increases in average vehicle delay. During both the a.m. and p.m. peak hour, cumulative traffic would result in unacceptable LOS E conditions. This unacceptable level would remain with or without the Specific Plan. This impact is considered significant.

Impact
4.7-9

Unacceptable Cumulative Level of Service at East Ward Street/Magnolia Avenue Intersection. *Development in the Specific Plan area would contribute additional traffic volume to an intersection that would operate at unacceptable LOS F with or without the Specific Plan. This impact is considered **significant**.*

During both the weekday a.m. and p.m. peak hours, this signalized intersection is projected to operate at an unacceptable LOS F under conditions with or without Specific Plan-generated traffic, with increases in average vehicle delay. This impact is considered significant.

Impact
4.7-10

Unacceptable Cumulative Level of Service at King Street/Magnolia Avenue Intersection. *Development in the Specific Plan area would contribute additional traffic volume to an intersection that would operate at unacceptable LOS with or without the Specific Plan. This impact is considered **significant**.*

During the weekday a.m. peak hour this unsignalized intersection would worsen from unacceptable LOS D to LOS E under Existing Plus Cumulative Plus Specific Plan conditions, with increases in average vehicle delay of more than 3.6 seconds. During the p.m. peak hour, this intersection would continue to operate at unacceptable LOS F. This impact is considered significant.

Impact
4.7-11

Unacceptable Cumulative Level of Service at Wornum Drive/Tamal Vista Boulevard Intersection. *With or without the development that may occur in the Specific Plan area, this intersection is projected to operate at unacceptable LOS F during the p.m. peak hour. This impact is considered **significant**.*

During the p.m. peak hour this signalized intersection would operate at unacceptable LOS F with and without traffic generated by the development that may occur in the Specific Plan. The Specific Plan would result in increases in average vehicle delay of up to 10.7 seconds at this intersection. This impact is considered significant.

Impact
4.7-12

Unacceptable Cumulative Level of Service at the Fifer Avenue/Tamal Vista Boulevard Intersection. *Development in the Specific Plan area would contribute additional traffic volume to an intersection that would operate at unacceptable LOS E without the Specific Plan and at unacceptable LOS F with the Specific Plan. This impact is considered **significant**.*

This signalized intersection is projected to operate at unacceptable LOS E without the Specific Plan and LOS F with the Specific Plan during the p.m. peak hour. The Specific Plan would result in increases in average vehicle delay of up to 17.3 seconds at this intersection. This impact is considered significant.

Impact
4.7-13

Unacceptable Cumulative Level of Service at Doherty Drive/Piper Park Intersection. *With development that may occur in the Specific Plan area, this unsignalized intersection would operate at unacceptable LOS during the a.m. and p.m. peak hours. This impact is considered **significant**.*

During the weekday a.m. peak hour, this unsignalized intersection is projected to operate at an unacceptable LOS D with or without Specific Plan-generated traffic. The Specific Plan would result in increases in average vehicle delay of up to 2.2 seconds at this intersection. The p.m. peak hour would worsen from LOS C to unacceptable LOS D with the Specific Plan. This impact is considered significant.

4.7.3 MITIGATION MEASURES

PROJECT-LEVEL MITIGATION MEASURES

No mitigation measures are required for the following less-than-significant impacts.

- 4.7-4: Access and Circulation
- 4.7-5: Pedestrian and Bicycle Circulation
- 4.7-6: Increase in Parking Demand

The following mitigation measures are recommended for significant impacts.

Impact
4.7-1
mitigation

Unacceptable Level of Service at Doherty Drive/Riviera Circle/Redwood High School Intersection.

Install Traffic Signal at Doherty Drive/Riviera Circle/Redwood High School.

Installation of a traffic signal will establish an acceptable LOS to the Doherty Drive/Riviera Circle/Redwood High School intersection. A traffic signal shall be installed at this intersection. The City has a Traffic Impact Fee (TIF), §18.15 of the City Municipal Code. Installation of a traffic signal at the Doherty Drive/Riviera Circle/Redwood High School intersection is a project presently included within the City's TIF. Payment of the fee is required of all new development and is assessed by the City upon the issuance of a building permit. With implementation of this measure, the intersection would be expected to operate at acceptable LOS B during the a.m. and p.m. peak hour.

Impact
4.7-2
mitigation

Unacceptable Level of Service at East Ward Street/Magnolia Avenue Intersection.

Remove Parking and Add Southbound and Westbound Left Turn Lanes at East Ward Street/Magnolia Avenue.

Additional capacity shall be created at the East Ward Street/Magnolia Avenue intersection by removing approximately four parking spaces from the west curb face of Magnolia Avenue directly north of East Ward Street. Removal of these spaces would allow for the striping of a southbound left turn bay. In addition, approximately four parking spaces shall be removed from the south curb face of East Ward Street east of Magnolia Avenue to create space for a westbound left turn bay. Removal of parking and addition of the left turn lanes is a project presently included within the TIF. Payment of the fee is required of all new development and is assessed upon the issuance of a building permit. There can be a delay between the payment of required fees and the construction and completion of an identified improvement. The City shall monitor new construction to assure that traffic improvements are installed in a timely manner to mitigate impacts.

Under Existing Plus Specific Plan conditions and upon completion of the proposed mitigation measure, the intersection would operate acceptably at LOS C during the a.m. and p.m. peak hours.

Impact
4.7-3
mitigation

Unacceptable Level of Service at King Street/Magnolia Avenue Intersection.

Install Traffic Signal at King Street/Magnolia Avenue.

A traffic signal shall be installed at the King Street/Magnolia Avenue intersection. Installation of this traffic signal is a project presently included within the TIF. Payment of the fee is required of all new development and is assessed by the City upon the issuance of a building permit. Upon installation of the traffic signal, the King Street/Magnolia Avenue intersection is projected to operate acceptably at LOS B during the a.m. peak hour and LOS C during the p.m. peak hour. The City shall monitor new construction to assure that the traffic signal is installed in a timely manner to mitigate the impact.

Impact
4.7-7
mitigation

Construction-Related Traffic.

Prepare and Implement Detailed Construction Traffic Control Plan.

The City shall include the following new policy in the Specific Plan:

New Policy: Construction contractor(s) in the Specific Plan area shall be required to prepare a detailed construction management plan(s) prior to beginning work within the Specific Plan area. The plans shall provide information related to duration of the construction, size of work force, average

daily truck deliveries, proposed truck routes to and from the construction site, and hours/days of operation. The plans shall include traffic control measures specific to each construction site and vicinity; such measures may include the following:

- < Preparation and filing of a detailed construction management plan by the contractor.
- < Provision of on-site staging area for all equipment and material deliveries
- < Provision of on-site parking for construction work force.
- < To the extent possible, control of delivery truck activity to off-peak periods.
- < Use of a flag person as needed during the heaviest construction periods.

CUMULATIVE MITIGATION MEASURES

Impact
4.7-8
mitigation

Unacceptable Cumulative Level of Service at Doherty drive/Riviera Circle/Redwood High School Intersection.

Implement Mitigation Measure 4.7-1, Install Traffic Signal at Doherty Drive/Riviera Circle/Redwood High School.

Mitigation Measure 4.7-1 shall be implemented at Doherty Drive/Riviera Circle/Redwood High School intersection as described above under Project-level Mitigation Measures. Under the Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measures, the intersection would operate at LOS C and B, respectively, during the A.M. and P.M. peak hours. This mitigation measure would reduce the impact to a level that is less than significant.

Impact
4.7-9
mitigation

Unacceptable Cumulative Level of Service at East Ward Street/Magnolia Avenue Intersection.

Expand Mitigation Measure 4.7-2 to Add an Additional Northbound Left Turn Lane at King Street/Magnolia Avenue.

A northbound left turn lane shall be created at this intersection with the removal of approximately two to three parking spaces from the east curb face of Magnolia Avenue located directly south of East Ward Street. Under Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measure the intersection would operate acceptably at LOS C during the a.m. and p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.

Impact
4.7-10
mitigation

Unacceptable Cumulative Level of Service at King Street/Magnolia Avenue Intersection.

Implement Mitigation Measure 4.7-3, Install Traffic Signal at King Street/Magnolia Avenue.

Mitigation Measure 4.7-3, which is applicable to the intersection of King Street/Magnolia Avenue, shall be implemented as described above under Project-level Mitigation Measures. Under the Existing Plus Cumulative Plus Specific Plan conditions and upon completion of the proposed mitigation measures, the intersection would operate at LOS B and C, respectively, during the A.M. and P.M. peak hours. This mitigation measure would reduce the impact to a level that is less than significant.

Impact
4.7-11
mitigation

Unacceptable Cumulative Level of Service at Wornum Drive/Tamal Vista Boulevard Intersection.

Reconfigure Northbound Approach to Provide Dedicated Right Turn and Through Lane at Wornum Drive/Tamal Vista Boulevard.

The City shall coordinate with the City of Corte Madera to ensure the completion of a dedicated northbound right turn lane by widening the northbound approach on Tamal Vista Boulevard. Implementation of this mitigation measure may make it necessary to restrict left turn movements in and out of the North Sandpiper Circle/Tamal Vista Boulevard intersection. Upon implementation of this mitigation measure, the intersection is projected to operate acceptably at LOS C during the a.m. and p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.

Impact
4.7-12
mitigation

Unacceptable Cumulative Level of Service at Fifer Avenue/Tamal Vista Boulevard Intersection.

Optimize and Coordinate Signals at Fifer Avenue/Tamal Vista Boulevard.

This T-intersection fully utilizes the existing right-of-way, and therefore the opportunity for widening and other physical changes is constrained. The City shall coordinate with the City of Corte Madera to ensure a change in the current traffic signal phasing and timing at this intersection in order to provide more green light time to the heaviest projected traffic movements. Currently, the northbound and southbound traffic travel concurrently after the northbound left turns are completed. In the proposed phasing plan the northbound and southbound traffic would travel exclusively of each other (split-phase) giving additional time to eastbound right turns (320 plus a.m. and p.m. peak hour vehicles). Implementation of this measure will require coordination with the signalized intersection to the south at Wornum Drive/Tamal Vista Boulevard. Upon implementation of this mitigation measure, the intersection is projected to operate acceptably at LOS C during the a.m. peak hour and LOS D during the

p.m. peak hours. This mitigation would reduce the impacts to levels that are less than significant.

Impact
4.7-13
mitigation

Unacceptable Cumulative Level of Service at Doherty Drive/Piper Park Intersection.

Install Traffic Signal at Doherty Drive/Piper Park.

Installation of a traffic signal at this intersection would result in an acceptable level of service operations following development in the Specific Plan area. With implementation of this measure, the intersection would be expected to operate at acceptable LOS B during the a.m. and p.m. peak hour. This mitigation would reduce the impacts to levels that are less than significant.

However, Mitigation Measure 4.7-13 would not likely be implemented at this location based on a number of objective criteria and engineering best practice measures. The intersection fails to meet the City threshold of LOS C or better for unsignalized intersections, based solely on the delay that would be experienced by the southbound approach vehicles. This is less than 20 vehicles per peak hour under all analysis scenarios.

Many unsignalized intersections in both urban and suburban settings operate with failing minor approach streets. The criteria used to decide the appropriateness of a traffic signal covers a wide range of safety and quantitative data. One measure is found in the Caltrans publication, Traffic Manual–Traffic Signals & Lighting, Chapter 9, July 1996. The manual provides 11 Traffic Signal Warrants based on minimum vehicle volumes, pedestrian volumes, location (school area) and intersection accident history among others.

A review of the Caltrans warrants indicates that the intersection at Doherty Drive/Piper Park would not meet the peak hour volume warrant (Warrant 1) and would not likely meet any of the other 10 warrants.

4.7.3 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Following implementation of the above mitigation measures, no significant impacts on traffic and circulation would remain (see Table 4.7-14). If, for the reason cited above, the City chooses not to implement mitigation at the Doherty Drive/Piper Park Intersection, this impact would be significant and unavoidable.

**Table 4.7-14
Level of Service After Mitigation**

Intersections	Existing Plus Specific Plan (no mitigation)				Existing Plus Specific Plan (with mitigation)			
	a.m. Peak Hour		p.m. Peak Hour		a.m. Peak Hour		p.m. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
3. East Ward Street/Magnolia Avenue	E	41.1	F	**	B	13.2	C	15.8
4. King Street/Magnolia Avenue	D	22.7	F	66.5	B	8.2	C	17.2
7. Doherty Drive/Riviera Circle	D	26.7	E	32.2	B	7.0	A	4.6
Intersections	Existing Plus Cumulative Plus Specific Plan (no mitigation)				Existing Plus Cumulative Plus Specific Plan (with mitigation)			
	a.m. Peak Hour		p.m. Peak Hour		a.m. Peak Hour		p.m. Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
3. East Ward Street/Magnolia Avenue	F	**	F	**	C	24.3	C	22.1
4. King Street/Magnolia Avenue	E	30.9	F	**	B	10.1	C	24.7
6. Doherty Drive/Piper Park	D	24.1	C	19.6	A	0.3	A	1.7
7. Doherty Drive/Riviera Circle	E	36.6	E	41.1	C	22.9	B	6.1
10. Fifer Avenue /Tamal Vista Boulevard	C	23.5	E	57.1	C	16.4	C	21.2
11. Wornum Drive /Tamal Vista Boulevard	D	26.3	F	81.2	B	6.4	B	10.3
Notes: Delay is in average seconds per vehicle LOS = Level of Service ** = Exceeds 120 seconds delay Bold = unacceptable operations Source: Wilbur Smith Associates (May 2003)								