
4.15 TRANSPORTATION AND TRAFFIC

The purpose of the Transportation and Traffic section is to describe existing and future traffic circulation and parking patterns, and to evaluate the impact of the proposed project with regard to these conditions. The analysis evaluates conditions in the project vicinity that are likely to be affected by the changes in transportation and traffic attributed to the project.

Project implementation would result in increased traffic congestion at intersections and along roadways in the local area, with impact significance thresholds being exceeded at two locations: the Gas Point Road/northbound (NB) Interstate 5 (I-5) ramps intersection and the Riverside Avenue/NB I-5 ramps intersection. In addition, ingress/egress to the project site would be inadequate, as would emergency access at the affected on- and off-site locations. Further, project implementation could cause conflicts between automobile, pedestrian, and bicycle traffic.

Measures to reduce these impacts include signaling the Gas Point Road/NB I-5 ramp intersection, providing a northbound left-turn lane on Balls Ferry Road at the Jim Dandy Drive site entrance, providing southbound left-turn lanes at two of the site entrances along Locust Road, either realigning the northern site access road to intersect Locust Road at Vantage Drive or providing a two-way left-turn lane on Locust Road between the northern site entrance and Vantage Drive, and extending Class II/III bikeways along Locust Road to Fourth Street.

Project implementation would also result in a significant Level of Service impact at the Riverside Avenue/NB I-5 ramps intersection. However, this location is not subject to Shasta County jurisdiction and no improvement plans and fee mechanisms are in place to provide for intersection improvements. Therefore, traffic impacts at this location are considered to be significant and unavoidable.

4.15.1 ENVIRONMENTAL SETTING

KD Anderson & Associates, Inc., prepared the *Traffic Impact Analysis for the Panorama Planned Development (2008)* to describe the impacts of the project and address mitigation requirements for roadways and intersections in the vicinity of the project. Impacts of the project have been considered within the context of existing traffic conditions, as well as under future traffic conditions that assume development of other approved projects and long-term traffic conditions occurring in the year 2030.

This analysis is in accordance with Shasta County instruction/input and Caltrans traffic study guidelines. Toward this end, existing traffic conditions have been evaluated through observation of current weekday daily and a.m./p.m. peak-hour traffic volumes, and current operating Levels of Service have been calculated at key intersections on the roads that would be used to access the site (Figure 4.15.1: Project Vicinity and Study Intersections). To assess project impacts, project trip generation has been estimated by applying appropriate trip generation rates to the project's land use inventory. Utilizing an

expected trip distribution derived from the Shasta County regional travel demand forecasting model, project-generated traffic was assigned to the study area street system based on recognizable least-time travel paths. Resulting “Existing Plus Project” traffic volumes were employed to calculate Levels of Service to determine the anticipated impacts of proposed development on existing traffic conditions.

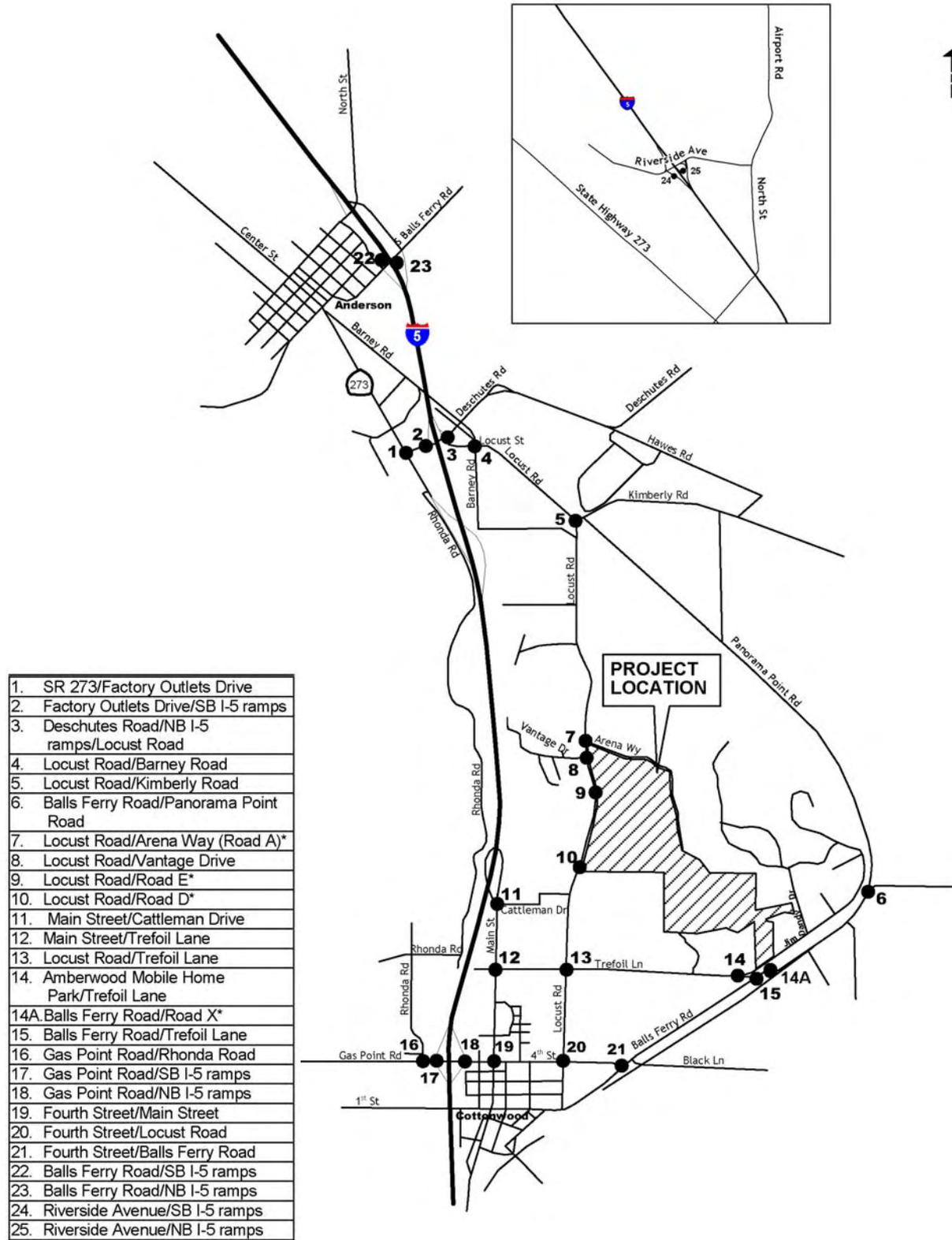
Two future cumulative traffic conditions were assessed: the first assuming development of “approved” projects, and the second based on Year 2030 traffic volume forecasts from the regional traffic model. Future traffic conditions with and without the proposed project were investigated. In each case, operating Levels of Service (LOS) were compared to adopted minimum standards and measures of significance used by applicable jurisdictions. Shasta County identifies an LOS C for new roads and requires mitigation when new projects reduce the LOS below E on existing transportation facilities. Caltrans’ *Guide for the Preparation of Traffic Impact Studies* (State of California Department of Transportation, 2002), identifies a target service level of between LOS C and LOS D on State highway facilities, and the City of Anderson uses LOS D.

At the direction of Shasta County Department of Public Works and Caltrans staff, this analysis considers six scenarios (the latter four scenarios are addressed in Section 5.1: Cumulative Impacts):

1. Existing traffic conditions;
2. Existing traffic conditions plus trips generated by the Panorama Planned Development;
3. Short-term future conditions assuming build-out of approved off-site projects, without the proposed project;
4. Short-term future conditions with the Panorama Planned Development;
5. Future (Year 2030) cumulative traffic conditions without Panorama Planned Development (i.e., with existing designations), and
6. Future Year 2030 conditions with the Panorama Planned Development.

EXISTING ROADS

Traffic conditions on the street and highway system in southern Shasta County are influenced by local and regional commuter travel patterns, access to adjacent businesses and agricultural/commercial traffic. Regional access to the site is provided by Interstate 5 and its interchanges at Gas Point Road and at Deschutes Road. Local access is via Locust Road, Balls Ferry Road, and Panorama Point Road. Physical features of roadways providing circulation through the area are described below.



* New road proposed within subdivision boundary, as shown in the *Panorama Planned Development Tentative Site Plans* (Appendices Compact Disc).

The map inset shows the Riverside Avenue/I-5 ramps intersection, which is located to the north of Anderson, outside of the range of this map.

Figure 4.15.1
Project Vicinity and Study Intersections
 (Source: KD Anderson & Associates, Inc., 2008)

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Interstate 5 (I-5)

Interstate 5 is the main north-south facility through Shasta County. The route traverses the State of California and enters Shasta County south of the Gas Point Road interchange and continues north through Anderson and Redding before leaving the county at Dunsmuir. Interstate 5 is a controlled access freeway with four mainline travel lanes. The speed limit on Interstate 5 is 70 mph. The most recent traffic counts available from Caltrans (in 2007) reveal that the freeway carries an average annual daily traffic (AADT) volume of 42,500 vehicles per day at the Tehama County line, 45,500 AADT north of the Gas Point Road interchange, and 61,000 AADT north of Deschutes Road. Trucks comprise roughly 14 percent of the daily traffic on Interstate 5 in southern Shasta County.

State Route 273 (SR 273)

State Route 273 is a major north-south arterial road that runs roughly parallel to I-5 for approximately 20 miles from Anderson through Redding. The highway originates at an interchange on I-5 just south of Anderson and continues northerly through both communities before returning to I-5 north of Lake Boulevard in Redding. State Route 273 carries 10,700 AADT at its southern connection to I-5; at that point, trucks comprise 8 percent of the daily traffic volume.

Balls Ferry Road

Balls Ferry Road is a two-lane arterial road that extends from the Cottonwood area near Interstate 5 northeasterly into the rural area east of the project before turning to the west and returning to Interstate 5 near Anderson. Balls Ferry Road carries approximately 1,500 vehicles per day in the vicinity of the proposed project.

Deschutes Road

Deschutes Road links SR 273 with I-5 in Anderson and continues northeasterly across the Sacramento River to an intersection with SR 299 east of Redding. Deschutes Road is constructed as a four-lane minor arterial in Anderson west of Interstate 5. While today the road is two lanes wide east of I-5, Deschutes Road is designated as a four-lane arterial in the *Shasta County General Plan*.

Panorama Point Road

Panorama Point Road is a two-lane collector street that links Ball Ferry Road on the south with Locust Road near the I-5/Deschutes Road interchange. Panorama Point Road is generally 24 feet wide with limited shoulders.

Main Street

Main Street is a four-lane arterial street that links the downtown area of Cottonwood with Interstate 5 east of the project site. Main Street carries approximately 6,400 vehicles per day in the area between downtown Cottonwood and I-5.

Locust Road

Locust Road is a two-lane collector street that runs parallel to and east of I-5 from Cottonwood to the I-5/Deschutes Road interchange. Locust Road is roughly 24 feet in width with limited shoulders, and the road follows the rolling terrain of the project area. Locust Road provides primary access to the western side of the Panorama project site. The volume of traffic on Locust Road varies along its length, with roughly 700 vehicles per day counted in the area from Fourth Street to Kimberly Road and 3,200 vehicles per day in the area from Kimberly Road to the Deschutes Road interchange.

Fourth Street and Gas Point Road

Fourth Street and Gas Point Road provide primary east-west circulation through the community of Cottonwood. Each is a two-lane road with left turn lanes. Gas Point Road is designated in the *Shasta County General Plan* as a four-lane arterial road west of Main Street. Fourth Street is designated as a two-lane arterial road east of Main Street. Gas Point Road carries 13,000 vehicles per day west of Interstate 5, while the volume on Fourth Street east of Main Street is 3,050 vehicles per day.

Trefoil Lane

Trefoil Lane is a local east-west road that links Main Street with Balls Ferry Road in the area south of the proposed project. Trefoil Lane is approximately 24 feet wide with limited shoulders. Trefoil Lane carries approximately 650 vehicles per day.

Cattleman Drive

Cattleman Drive is an unpaved two-lane local road that connects Main Street near the I-5 ramps with Locust Road.

Jim Dandy Drive

Jim Dandy Drive is an unpaved local road that intersects Balls Ferry Road just east of Trefoil Lane. Jim Dandy Drive parallels the Union Pacific Railroad (UPRR) and Balls Ferry Road to the northeast, then turns north, providing access to rural residential and agricultural lands.

Arena Way

Arena Way is a minimally improved private road that provides access to the northern portion of the project site.

BICYCLE FACILITIES

The *Regional Transportation Plan* (Shasta County RTPA, 2004) outlines the location and nature of existing bicycle facilities in Shasta County. Bicycle facilities are categorized within three classifications:

- Class I Bikeways are trails or paths that are separated from automobile traffic;

- Class II Bikeways are bicycle lanes that are on-street but delineated by striping; and
- Class III Bikeways are bicycle routes where bicycles and automobiles share the road.

Today there are no designated bicycle facilities on the rural roads in the immediate vicinity of the project. The closest facilities are on Deschutes Road.

EXISTING TRANSIT FACILITIES

Public transportation within Shasta County is provided by the Redding Area Bus Authority (RABA), which offers both fixed-route and demand-response transit services. RABA currently operates fixed routes for the cities of Redding, Shasta Lake, and Anderson, and para-transit vehicles for demand-response service. All fixed routes operate Monday through Friday on one-hour headways. However, fixed route service is not available to the project site, and the closest stop is on SR 273 near the Deschutes Road/Factory Outlets interchange.

RAIL SERVICE

Union Pacific Railroad provides rail service through Shasta County. The Union Pacific single track main line runs parallel to Interstate 5 and carries both passengers and freight. The *Shasta County General Plan* notes that train movements average 24 per day within the Redding Metropolitan area.

Within the project area there are existing at-grade rail crossings at Balls Ferry Road and at Kimberly/Locust Road. There are additional at-grade crossings near intersections of SR 273 as rails parallel SR 273 from South Street in Anderson north into the City of Redding. Grade separated crossings are provided at I-5, Deschutes Road, and Main Street.

The configuration of the existing railroad crossing near the project site is unconventional. The Balls Ferry crossing near Trefoil Lane moves the alignment of Balls Ferry Road from the west side of the railroad to the east side of the rails through a pair of reversing curves. The curve radii are approximately 100 feet and are shorter than would be considered standard for the design speed of the road. Measures to advise motorists of these curves have been installed on Balls Ferry Road in advance of the crossing. The crossing is controlled by gates in both directions.

EXISTING TRAFFIC CONDITIONS

Peak Hour Traffic Volumes

To assess existing traffic conditions, KD Anderson & Associates, Inc., utilized recent data presented in *The Vineyards at Anderson DEIR* (City of Anderson, 2008). This data was supplemented with a.m. and p.m. peak-hour turning movement counts at study intersections near the project, which were obtained during February and April 2008.

(Current peak-hour traffic volumes and the lane configurations at each intersection are shown in Figures 3 and 3a of Appendix G.: Traffic)

LEVEL OF SERVICE METHODOLOGIES

To assess the quality of existing traffic conditions, Levels of Service (LOS) were calculated at study area intersections and for individual roadway segments. "Level of Service" is a qualitative measure of traffic operating conditions whereby a letter grade "A" through "F", corresponding to progressively worsening traffic operating conditions, is assigned to an intersection or roadway segment. Table 4.15.1 presents the characteristics associated with each LOS grade. As shown in Table 4.15.1, LOS "A", "B" and "C" are considered satisfactory to most motorists, while LOS "D" is marginally acceptable. LOS "E" and "F" are associated with severe congestion and delay and are unacceptable to most motorists.

**Table 4.15.1
Level of Service Definitions**

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Delay ≤ 10.0 sec	Little or no delay. Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10.0 sec and ≤ 20.0 sec	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay > 20.0 sec and < 35.0 sec	Average traffic delays. Delay > 15 sec/veh and < 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35.0 sec and ≤ 55.0 sec	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay > 55.0 sec and ≤ 80.0 sec	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80.0 sec	Intersection blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.

Source: KD Anderson & Associates, Inc., 2008. (Data from Caltrans Highway Capacity Manual, 2000)

Shasta County identifies an LOS C for new roads and requires mitigation when new projects reduce the LOS below E on existing transportation facilities. Caltrans' *Guide for the Preparation of Traffic Impact Studies* (State of California Department of Transportation, 2002), identifies a target service level of between LOS C and LOS D on State highway facilities, and the City of Anderson uses LOS D.

Level of Service at Intersections

Levels of Service were calculated for different intersection control types using the respective methods presented in the *Highway Capacity Manual* (Caltrans, 2000). Intersection Levels of Service were calculated using TRAFFIX version 7.9 software.

Level of Service on Roadway Segments

As previously mentioned, a Level of Service may be calculated on a street or roadway segment. In urban areas, general roadway Levels of Service can suggest probable peak-hour conditions based on application of typical peak-hour/daily traffic relationships. Table 4.15.2 presents Level of Service thresholds for various streets classifications that have been presented in previous Shasta County traffic studies.

**Table 4.15.2
Roadway Segment Daily Volume Level of Service Thresholds**

Roadway	No. of Lanes*	Maximum Volume for Given Service Level				
		A	B	C	D	E
Freeway	4	24,000	28,000	32,000	36,000	40,000
Major Arterial	4	22,000	25,000	29,000	32,500	36,000
Major Collector	2	11,000	12,500	14,500	16,000	18,000
Minor Collector	2	9,000	10,500	12,000	13,500	15,000
Local Street	2	22,000	2,600	3,000	3,400	38,000

Source: KD Anderson & Associates, Inc., 2008.

* Total number of lanes in both directions Source: Shasta Ranch Mining and Reclamation Plan DEIR

In response to Caltrans District 2 request, the Level of Service on Interstate 5 through the study area was evaluated using the procedures contained in the *Highway Capacity Manual*. These procedures were the basis for Level of Service calculations presented in the *Interstate 5 Transportation Concept Report* (Caltrans, 2008). As noted in Table 4.15.3, vehicle density, expressed in terms of cars per mile per lane, is the evaluation measure.

**Table 4.15.3
Freeway Level of Service Thresholds**

Level of Service	Density Range (passenger cars/mile/lane)	
	Mainline	Ramp Merge - Diverge
A	0-11	≤ 10
B	11-18	10 – 20
C	18-26	20 – 28
D	26-35	28 – 35
E	35-45	> 35
F	>45	Demand exceeds capacity

Source: KD Anderson & Associates, Inc., 2008.

The operation of freeway ramps in the immediate vicinity of the point of entry and exit from the mainline has also been evaluated. The procedures for calculating Level of Service at ramp merge/diverge areas on freeways are also presented in the *Highway Capacity Manual*. As noted in Table 4.15.3, vehicle density in the ramp influence area, also expressed in terms of passenger cars per mile per lane, is the evaluation parameter employed to identify Level of Service.

TRANSPORTATION AND TRAFFIC

CURRENT LEVELS OF SERVICE

Intersections

Table 4.15.4 presents existing Levels of Service at the study intersections. In addition, Table 4.15.4 also indicates whether the study intersections satisfy Caltrans' peak-hour volume warrants for signalization.

As Table 4.15.4 indicates, most of the study area intersections operate at LOS D or better, but there are three exceptions. During the p.m. peak hour, the Gas Point Road/Rhonda Road intersection operated at LOS E. However, Shasta County recently signalized this intersection; with the new signal, the intersection operates at LOS C or better. During the a.m. peak hour, motorists waiting at the NB I-5 off ramp/Gas Point Road intersection experience delays that are indicative of LOS F. During the a.m. peak hour, the Riverside Avenue/NB I-5 ramp intersection operates at LOS E.

Table 4.15.4
Existing Intersection Levels of Service and Signal Warrants

Intersection	Control	AM Peak Hour		PM Peak Hour		Warrants Met?*
		LOS	Average Delay (sec)	LOS	Average Delay (sec)	
1. SR 273/Factory Outlets Drive	Signal	B	19.9	B	18.5	n.a.
2. Factory Outlets Drive/SB I-5 ramps	Signal	B	11.8	B	15.4c	n.a.
3. Deschutes Road/NB I-5 ramps/Locust Road	All-Way Stop	B	10.7	B	11.8	No
4. Locust Road/Barney Road	NB/SB Stop	B	10.1	B	11.1	No
5. Locust Road/Kimberly Road	NB/SB Stop	A	8.9	A	8.9	No
6. Balls Ferry Road/Panorama Point Road	SB Stop	A	9.0	A	9.0	No
7. Locust Road/Arena Way (Road A)***	WB Stop	-	-	-	-	-
8. Locust Road/Vantage Drive	EB Stop	A	8.7	A	8.8	No
9. Locust Road/Road E***	WB Stop	-	-	-	-	-
10. Locust Road/Road D***	WB Stop	-	-	-	-	-
11. Main Street/Cattleman Drive	WB Stop	B	12.2	B	11.9	No
12. Main Street/Trefoil Lane	EB/WB Stop	B	13.3	B	11.0	No
13. Locust Road/Trefoil Lane	EB/WB Stop	A	9.6	A	9.4	No
14. Amberwood Mobile Home Park/Trefoil Lane	SB Stop	A	8.5	A	8.6	No
15. Balls Ferry Road/Trefoil Lane	EB Stop	A	9.2	A	9.2	No
16. Gas Point Road/Rhonda Road	All-Way stop	C	21.7**	E*	48.5**	Yes
17. Gas Point Road/SB I-5 ramps	SB Stop	B	14.0	B	13.3	No
18. Gas Point Road/NB I-5 ramps	NB Stop	F	74.3	D	32.5	No
19. Fourth Street/Main Street	All-Way stop	B	10.7	A	9.9	No
20. Fourth Street/Locust Road	NB/SB Stop	B	10.8	B	10.2	No
21. Fourth Street/Balls Ferry Road	EB Stop	A	9.2	A	9.2	No
22. Balls Ferry Road /SB I-5 ramps	Signal	B	14.2	B	16.2	n.a.
23. Balls Ferry Road/NB I-5 ramps	Signal	C	21.7	C	27.9	n.a.
24. Riverside Avenue/SB I-5 ramps	SB Stop	C	15.5	C	19.2	No
25. Riverside Avenue/NB I-5 ramps	NB Stop	E	42.8	C	16.8	No

Source: KD Anderson & Associates, Inc., 2008.

BOLD indicates a Level of Service in excess of adopted minimum standard.

* Indicates whether or not Level of Service criteria have been exceeded to the point of warranting an infrastructure update.

** Intersection has been signalized since time of study.

*** New road proposed within subdivision boundary, as shown in the *Panorama Planned Development Tentative Site Plans* (Appendices Compact Disc).

Roadway Segment Level of Service Based on Daily Traffic Volumes

The current daily traffic volumes reported on Shasta County roads in the study area suggest that these facilities provide Levels of Service that satisfy the LOS C minimum. As shown in Table 4.15.5, the highest volume of traffic is on Gas Point Road west of Interstate 5, and this volume is indicative of LOS C.

**Table 4.15.5
Existing Roadway Levels of Service**

Street	Location	Lanes	Facility Type	Existing Conditions	
				Daily Volume	LOS
Locust Road	Barney Road to Kimberly Road	2	Minor Collector	3,191	A
	Kimberly Road to Vantage Drive	2		744	A
	Vantage Drive to Trefoil Lane	2		711	A
	Trefoil Lane to Fourth Street	2		711	A
Gas Point Road	Rhonda Road to SB I-5	2	Major Collector	13,002	C
Fourth Street	Main Street to Locust Road	2	Major Collector	3,055	A
Main Street	Fourth Street to I-5	4	Major Collector	6,379	A
Balls Ferry Road	Fourth Street to Trefoil Lane	2	Minor Collector	1,531	A
	Trefoil Lane to Panorama Point Road	2		1,500	A
Panorama Point Road	Kimberly Road to Balls Ferry Road	2	Minor Collector	800	A
Trefoil Lane	Main Street to Locust Road	2	Minor Collector	653	A
	Locust Road to Balls Ferry Road	2		653	A

Source: KD Anderson & Associates, Inc., 2008.

Levels of Service on Interstate 5

The Level of Service occurring today on mainline Interstate 5 is identified in Table 4.15.6. These results assume year 2007 daily volumes reported by Caltrans and the analysis methodology contained in the *Interstate 5 Transportation Concept Report*. As shown, the Levels of Service on Interstate 5 range from LOS C to LOS D, which is considered to be within an acceptable range.

**Table 4.15.6
Mainline Interstate 5 Levels of Service**

Location	Lanes	Existing Conditions		
		Volume	Density (pc/mi/ln)	LOS
South of Gas Point Road	4	42,500	20.4	C
Gas Point Road to Main Street	4	51,000	30.3	D
Main Street to SR 273	4	51,000	30.3	D
SR 273 to Deschutes Road	4	51,000	30.3	D
Deschutes Road to Balls Ferry Road	4	62,000	27.6	D
Balls Ferry Road to North Street	4	62,000	27.6	D
North Street to Riverside Avenue	4	62,000	27.6	D
Riverside Avenue to Knighton Road	4	63,000	23.9	C
Knighton Road to South Bonnyview Drive	4	56,000	21.4	C

Source: KD Anderson & Associates, Inc., 2008.

Levels of Service at Interstate 5 Ramps

Levels of Service at study area ramps have been determined, and the results are identified in Table 4.15.7. These results assume mainline peak-hour directional volumes identified by Caltrans. As noted, the ramp merge-diverge areas along Interstate 5 operate at LOS C or better.

**Table 4.15.7
Existing Peak Hour Ramp Levels of Service
At Interstate 5 Interchanges**

Direction	Ramp	Action	AM Peak Hour			PM Peak Hour		
			Volume	Density (pc/mi/ln)	Level of Service	Volume	Density (pc/mi/ln)	Level of Service
<i>I – 5/Riverside Avenue</i>								
Southbound	On ramp	Merge	185	19	B	255	25	C
Northbound	Off ramp	Diverge	245	25	C	210	23	C
<i>I-5/North Street</i>								
Southbound	Off ramp	Diverge	375	21	C	555	27	C
Northbound	On ramp	Merge	510	24	C	475	21	C
<i>I-5/Balls Ferry Road</i>								
Southbound	On ramp	Merge	250	18	B	400	24	C
Northbound	Off ramp	Diverge	320	23	C	380	22	C
<i>I-5 /Deschutes Road</i>								
Southbound	Off ramp	Diverge	235	20	B	515	26	C
Northbound	On ramp	Merge	310	22	C	350	20	B
<i>I-5/SR 273</i>								
Southbound	On ramp	Merge	300	19	B	400	23	C
Northbound	Off ramp	Diverge	330	24	C	305	21	C
<i>I-5/Main Street</i>								
Southbound	Off ramp	Diverge	215	20	C	310	24	C
Northbound	On ramp	Merge	210	21	C	175	19	B
<i>I-5/Gas Point Road</i>								
Southbound	Off ramp	Diverge	155	13	B	280	16	B
Northbound	On ramp	Merge	465	18	B	300	16	B
Southbound	On ramp	Merge	195	19	B	205	21	C
Northbound	Off ramp	Diverge	135	18	B	155	18	B

Source: KD Anderson & Associates, Inc., 2008.

REGULATORY SETTING

A discussion of transportation-related state and local regulations, as well as objectives and policies in the *Shasta County General Plan* that are pertinent to the transportation analysis for the project, are included below.

California Department of Transportation (Caltrans)

Caltrans policies are applicable to I-5 and SR-273, and are summarized in the *Caltrans' Guide for the Preparation of Traffic Impact Studies* (State of California Department of Transportation, 2002). These guidelines identify when a traffic impact study is required, what should be included in the study, analysis scenarios, and guidance on acceptable analysis methodologies. Caltrans endeavors to maintain a target service level of between LOS C and LOS D on State highway facilities; however, this may not always be feasible and a lower service level may be acceptable.

Regional Transportation Planning Agency (RTPA)

The Shasta County Regional Transportation Planning Agency (RTPA) is the agency responsible for transportation planning for the Shasta County region, including the three cities and the unincorporated area. The planning process is in compliance with the laws and guidelines developed by Caltrans and the Federal Department of Transportation. This responsibility includes development and adoption of transportation policy direction, review and coordination of transportation planning, preparation and endorsement of an Overall Work Program (OWP), a Regional Transportation Plan (RTP), a Regional Transportation Improvement Plan (RTIP), and a Federal Transportation Improvement Plan (FTIP). (RTPA, 2006)

Shasta County General Plan

The *Shasta County General Plan* Circulation Element sets forth future plans for the transportation system in the County. Objectives and policies pertaining to transportation are shown below:

Objective

- C8 To ensure that adequate provision for expanding opportunities for rail transport and trucking service are accommodated in the County's overall transportation plans.

Policies

- C-6a Future road and street development including future right-of-way shall comply with the adopted County Development Standards.
- C-6c New residential lots less than five acres in size in urban and/or suburban residential areas shall avoid direct access to arterial and collectors. Where feasible, such lots shall be served by an internal street system. In all other cases, maximize intersection and driveway spacing on arterial and collector streets. Where feasible, utilize shared/common driveways.
- C-6g All new land divisions shall be provided with a legally accessible road.
- C-6j New development shall provide circulation improvements for emergency access by police, fire, and medical vehicles; and shall provide for escape by

residents/occupants in accordance with the *Shasta County Fire Safety Standards*.

- C-6k Shasta County shall adopt the following Level of Service (LOS) standards for considering any new roads:
- Rural arterials and collectors - LOS C
 - Urban/suburban arterials and collectors - LOS C
- C-6l New development, which may result in exceeding LOS E on existing facilities, shall demonstrate that all feasible methods of reducing travel demand have been attempted to reach LOS C. New development shall not be approved unless traffic impacts are adequately mitigated. Such mitigation may take the form of, but not be limited to the following:
- Provision of capacity improvements to the specific road link to be impacted, the transit system, or any reasonable combination;
 - Provision of demand reduction measures included as part of the project design or project operation or any feasible combination.
- C8b Working in conjunction with Caltrans the County shall designate and provide signed truck routes, ensure that adequate pavement depth, lane widths, loading areas, bridge capacities, vertical height of overpasses and utility lines, and turn radii are maintained on the designated truck routes, and prohibit commercial truck traffic from non-truck routes except for deliveries.
- C8c Adequate truck access to off-street loading areas in commercial and industrial areas shall be provided in all new development applications.

4.15.2 THRESHOLDS OF SIGNIFICANCE

Criteria for determining the significance of impacts related to transportation and traffic were based on the Environmental Checklist Form in Appendix G of the State CEQA Guidelines (Cal. Code Regs., Title 14, Section 15000 et seq.). An impact related to transportation and traffic was considered significant if it would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections).
- Exceed, either individually or cumulatively, a Level of Service standard established by the County Congestion Management Agency for designated roads or highways.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Result in inadequate parking capacity.
- Conflict with adopted policies plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

To further refine the second bullet statement above, Shasta County has determined that a project may have significant impacts on traffic and circulation if it results in any of the following:

Intersections:

- An intersection that operates acceptably (LOS A, B, C, or D) without the project is degraded to an unacceptable LOS (E or F) due to the additional traffic from the project.
- An intersection that is operating at an unacceptable LOS without the project, experiences an increase of 5 or more seconds of control delay due to the addition of project traffic.

Roadway Segments:

- A roadway segment that operates acceptably (LOS A, B, C, or D) without the project is degraded to an unacceptable LOS (E or F) due to the additional traffic from the project.
- A roadway segment that operates unacceptably experiences an increase in its daily volume to capacity ratio (V/C) of 0.05 or greater due to the addition of project traffic.

Freeway Ramp Merge, Diverge:

- A freeway ramp that is operating at an acceptable level (LOS A, B, C, or D) deteriorates to an unacceptable level (LOS E or F) due to the addition of project traffic.
- A freeway ramp that is operating at an unacceptable level experiences an increase of 10 or more passenger car equivalents (PCE's).

Design:

- Result in more than **50** left-turning vehicles per hour at an intersection without a separate left-turn lane.

4.15.3 ENVIRONMENTAL IMPACTS AND MITIGATION

Impact TRA-4.15-1 Substantial Increase in Traffic (*Significant and Unavoidable Impact*)

This section describes the impacts resulting solely from build-out of the Panorama Planned Development. Project impacts have been quantified by estimating the number and directional distribution of project trips, and by superimposing those trips onto current background traffic volumes. Levels of Service were then calculated for the "Existing Plus Project" conditions. (Cumulative impacts resulting from other anticipated development are described in Section 5.1.). The design of access and circulation system improvements accompanying the project has also been reviewed.

PROJECT CHARACTERISTICS

Trip Generation

The number of automobile trips generated by the proposed project can be estimated through application of rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation, Seventh Edition* (2007). Table 4.15.8 presents the trip generation rates for the proposed project, and Table 4.15.9 presents the number of trips generated by the proposed subdivision. As noted, the Panorama Planned Development, as proposed, would generate 4,115 daily trips, with 323 and 434 trips occurring during the weekday a.m. and p.m. peak hour, respectively. Development of the site under current General Plan designations, with 130 single-family residences, would generate 1,244 daily trips, with 98 and 132 trips during the a.m. and p.m. peak hours, respectively.

**Table 4.15.8
Trip Generation Rates**

Land Use	Trips Per Dwelling Unit						
	Daily	AM Peak Hour			PM Peak Hour		
		inbound	outbound	total	inbound	outbound	total
Single Family Residential	9.57	0.19	0.56	0.75	0.65	0.36	1.01

Source: KD Anderson & Associates, Inc., 2008.

**Table 4.15.9
Trip Generation Estimate**

Land Use	Quantity	Trips						
		Daily	AM Peak Hour			PM Peak Hour		
			inbound	outbound	total	inbound	outbound	total
Panorama Planned Development (Proposed Project)	430 DU's	4,115	82	241	323	280	155	434
Current GP designation	130 DU's	1,244	25	73	98	85	47	132

Source: KD Anderson & Associates, Inc., 2008.
DU = Dwelling Unit

Trip Distribution

The distribution of trips to and from the project site was determined based on information developed from the Shasta County regional travel demand forecasting model. The results

were then reviewed and refined to account for the location of site access. Table 4.15.10 presents the trip distribution for project generated traffic. As shown, roughly 1/3 of the site trips are expected to be oriented to the south and 2/3 would be expected to be headed north.

**Table 4.15.10
Project Trip Distribution**

Direction	Route	Percentage of Total Trips
North	North on I-5 beyond Knighton Road	25.5%
	Knighton Road east of Interstate 5	2.0%
	Riverside Avenue west of Interstate 5	5.9%
	Balls Ferry Road west of Interstate 5	1.2%
	Balls Ferry Road east of Interstate 5	9.9%
	SR 273 north of Factory Outlets Drive – Deschutes Road	8.3%
	SR 273 south of Factory Outlets Drive – Deschutes Road	8.0%
East	Deschutes Road east of Locust Road	2.5%
	Kimberly Road east of Locust Road	0.6%
	Balls Ferry Road east of Panorama Point Road	0.8%
	Black Lane east of Balls Ferry Road	0.9%
West	Gas Point Road west of Interstate 5	6.0%
South	Interstate 5 south of Gas Point Road	8.6%
	Cottonwood south of Fourth Street	12.7%
	Cottonwood north of Fourth Street	7.1%
Total		100%

Source: KD Anderson & Associates, Inc., 2008.

Trip Assignment

Having identified the overall directional orientation of project trips, it was next necessary to assign those trips to the local street system. This assignment required review of the location of project's access and internal circulation system and identification of the “least time path” between various locations on the site and regional destinations. Information in the *Shasta County Southern Region Transportation Planning Study* (Shasta County RTPA, 2006) was also considered.

The proposed plan includes three connections to Locust Road in the area between Cottonwood and Deschutes Road. The on-site circulation system would link Locust Road with Balls Ferry Road in the area of the Trefoil Lane intersection. While the overall regional destinations would be the same, because of the scale of the project, trips originating towards the western side of the site would choose routes that are different from those made by residences closer to the eastern boundary.

Figure 4.15.2: Trip Distribution identifies the assignment of project traffic on the study area street system at project build-out when all on-site roads have been constructed and the project is fully occupied. Review of this forecast reveals that approximately 85 percent of the site trips would access the site via Locust Road and 15 percent would use the access on Balls Ferry Road. (The distribution of project-only trips at study area intersections is shown in Figures 5 and 5a of Appendix G: Traffic.)

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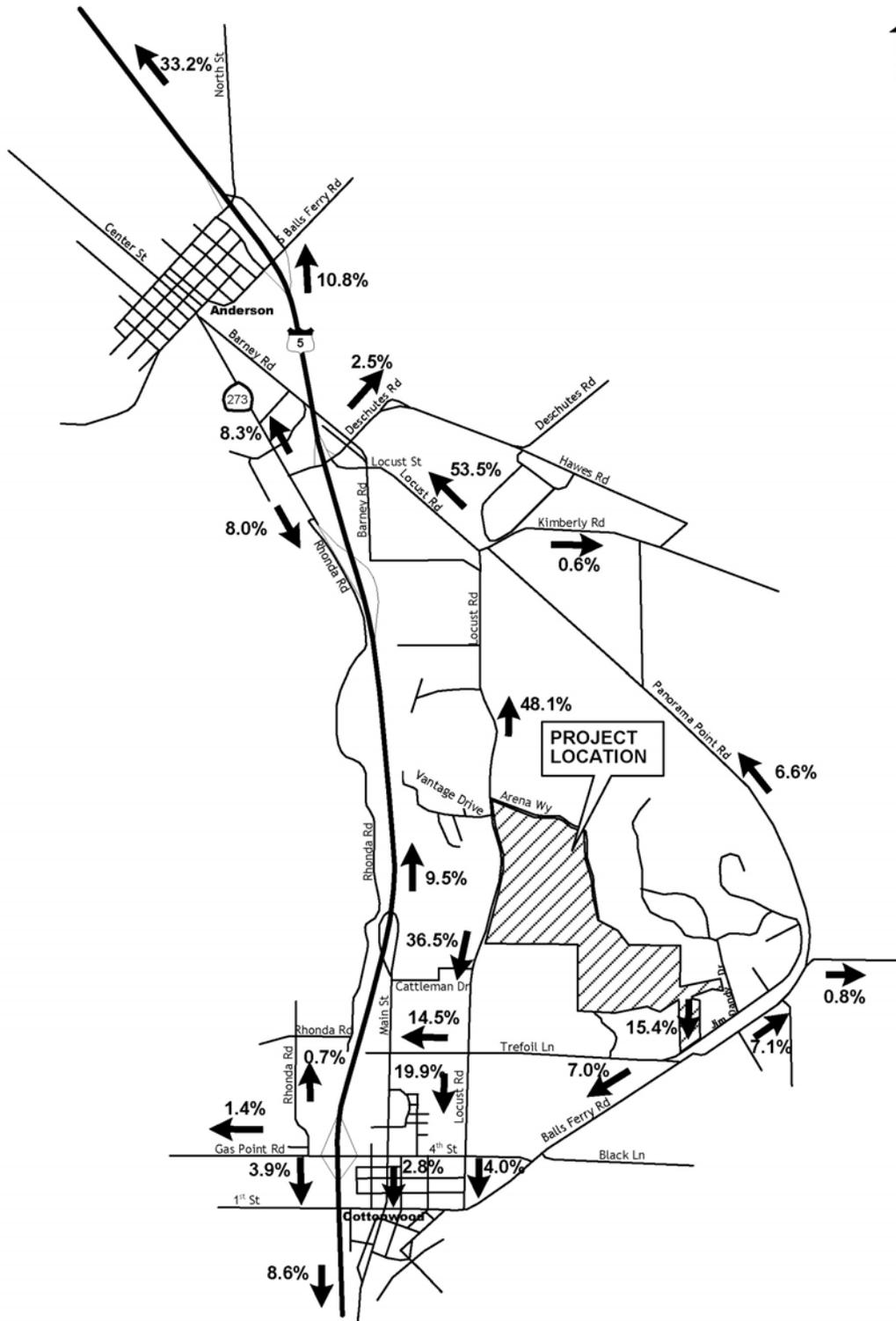


Figure 4.15.2

Trip Distribution

(Source: KD Anderson & Associates, Inc., 2008)

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EXISTING PLUS PROJECT TRAFFIC CONDITIONS

“Existing plus Project” peak-hour traffic volumes were created by superimposing project traffic onto existing background conditions (Shown in Figures 6 and 6a: Existing Plus Project Traffic Volumes and Lane Configurations of Appendix G: Traffic). Resulting peak-hour intersection Levels of Service were calculated for this condition, as presented in Table 4.15.11. Table 4.15.12 compares daily traffic volumes on areas streets with and without the proposed project.

Assumed Improvements

The Existing Plus Project condition assumes implementation of roadway improvements that are included in the project description. At the southeastern end of the site, these proposed improvements include re-aligning Jim Dandy Drive intersection with Balls Ferry Road to provide greater separation from the railroad crossing. (See Figure 4.15.3)

Level of Service at Intersections

As shown in Table 4.15.11, the addition of trips generated by the proposed project would incrementally increase the length of delays experienced at study area intersections. However, with two exceptions, the resulting Level of Service at study intersections would remain within the LOS thresholds adopted by Shasta County and the City of Anderson.

Development of the project would increase delays at the Gas Point Road/NB I-5 ramps intersection, where current condition is LOS F in the a.m. peak hour. In this case, the incremental increase in delay resulting from the project is 10.9 seconds. Because the a.m. value exceeds the 5.0 threshold employed by Shasta County, the project’s impact to this intersection would be significant.

Development of the project would increase the length of delays at the Riverside Avenue/NB I-5 ramps intersection. The current Level of Service for side-street traffic is LOS E in the a.m. peak hour, and the addition of project trips would reduce the Level of Service to LOS F. As the incremental increase in delay associated with the project (i.e., 7.2 seconds) exceeds the 5.0 second threshold, the impact to this intersection would be significant.

Levels of Service on Roadway Segments

Based on the thresholds of significance adopted by Shasta County, the addition of project traffic would not result in Level of Service impacts to the roadway segments maintained by the County, as shown in Table 4.15.12. Because minimum Levels of Service could be maintained, the project’s impact to County roads would not be significant.

TRANSPORTATION AND TRAFFIC

**Table 4.15.11
Existing Plus Project Intersection Levels of Service**

Intersection	Control	AM Peak Hour				PM Peak Hour				Warrants Met?
		Existing		Ex Plus Project		Existing		EX plus Project		
		LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	LOS	Average Delay (sec)	
1. SR 273/Factory Outlets Drive	Signal	B	19.9	C	20.2	B	18.5	B	19.0	n.a.
2. Factory Outlets Drive/SB I-5 ramps	Signal	B	11.8	B	11.9	B	15.4c	B	15.7	n.a.
3. Deschutes Road/NB I-5 ramps/Locust Road	All-Way Stop	B	10.7	B	13.1	B	11.8	C	17.3	No
4. Locust Road/Barney Road	NB/SB Stop	B	10.1	B	11.7	B	11.1	B	14.2	No
5. Locust Road/Kimberly Road	NB/SB Stop	A	8.9	A	9.9	A	8.9	A	9.6	No
6. Balls Ferry Road/Panorama Point Road	SB Stop	A	9.0	A	9.2	A	9.0	A	9.0	No
7. Locust Road/Arena Way (Road A)*	WB Stop	-	-	A	9.2	-	-	A	9.3	No
8. Locust Road/Vantage Drive	EB Stop	A	8.7	A	9.1	A	8.8	A	9.3	No
9. Locust Road/Road E*	WB Stop	-	-	A	9.1	-	-	A	9.2	No
10. Locust Road/Road D*	WB Stop	-	-	A	9.4	-	-	A	9.5	No
11. Main Street/Cattleman Drive	WB Stop	B	12.2	B	11.5	B	11.9	B	12.2	No
12. Main Street/Trefoil Lane	EB/WB Stop	B	13.3	B	13.3	B	11.0	B	11.6	No
13. Locust Road/Trefoil Lane	EB/WB Stop	A	9.6	B	10.2	A	9.4	B	10.2	No
14. Amberwood Mobile Home Park/Trefoil Lane	SB Stop	A	8.5	A	8.6	A	8.6	-	-	No
14A. Balls Ferry Road/Road X*	EB Stop	-	-	A	9.3			A	9.0	No
15. Balls Ferry Road/Trefoil Lane	EB Stop	A	9.2	A	9.4	A	9.2	A	9.4	No
16. Gas Point Road/Rhonda Road	Signal	C	26.5	C	26.8	C	28.1	C	28.5	n.a.
17. Gas Point Road/SB I-5 ramps	Signal	B	10.9	B	11.7	B	15.9	B	16.2	n.a.
18. Gas Point Road/NB I-5 ramps	NB Stop	F	74.3	F	85.2	D	32.5	D	32.7	No
19. Fourth Street/Main Street	All-Way stop	B	10.7	B	11.3	A	9.9	B	10.6	No
20. Fourth Street/Locust Road	NB/SB Stop	B	10.8	B	11.9	B	10.2	B	11.6	No
21. Fourth Street/Balls Ferry Road	EB Stop	A	9.2	A	9.3	A	9.2	A	9.4	No
22. Balls Ferry Road/SB I-5 ramps	Signal	B	14.2	B	14.2	B	16.2	B	16.2	n.a.
23. Balls Ferry Road/NB I-5 ramps	Signal	C	21.7	C	21.9	C	27.9	C	28.2	n.a.
24. Riverside Avenue/SB I-5 ramps	SB Stop	C	15.5	C	15.9	C	18.7	C	19.2	No
25. Riverside Avenue/NB I-5 ramps	NB Stop	E	42.8	F	50.0	C	16.3	C	16.8	No

Source: KD Anderson & Associates, Inc., 2008.

Bold text indicates Level of Service in excess of adopted minimum standard. **Highlighted** conditions are significant.

* New road proposed within subdivision boundary, as shown in the *Panorama Planned Development Tentative Site Plans* (Appendices Compact Disc).

**Table 4.15.12
Existing Plus Project Roadway Levels of Service**

Street	Location	Lanes	Facility Type	Existing Conditions		Existing Plus Project		
				Daily Volume	LOS	Daily Volume		LOS
						Project Only	Total	
Locust Road	Barney Road to Kimberly Road	2	Minor Collector	3,191	A	2,210	5,401	A
	Kimberly Road to Road A*	2		744	A	1,900	2,644	A
	Road A* to Road D*	2		711	A	1,040	1,751	A
	Road D* to Trefoil Lane	2		711	A	1,415	2,126	A
	Trefoil Lane to Fourth Street	2		711	A	810	1,521	A
Gas Point Road	Rhonda Road to SB I-5	2	Major Collector	13,002	C	250	13,252	C
Fourth Street	Main Street to Locust Road	2	Major Collector	3,055	A	670	3,725	A
Main Street	Fourth Street to I-5	4	Major Collector	6,379	A	400	6,779	A
Balls Ferry Road	Fourth Street to Trefoil Lane	2	Minor Collector	1,531	A	300	1,831	A
	Trefoil Lane to Road X*	2		1,500	A	350	1,850	A
	Road X* to Panorama Point Road	2		1,500	A	280	1,780	A
Panorama Point Road	Kimberly Road to Balls Ferry Road	2	Minor Collector	800	A	280	1,080	A
Trefoil Lane	Main Street to Locust Road	2	Minor Collector	653	A	600	1,253	A
	Locust Road to Balls Ferry Road	2		653	A	40	693	A

Source: KD Anderson & Associates, Inc., 2008.

* New road proposed within subdivision boundary, as shown in the *Panorama Planned Development Tentative Site Plans* (Appendices Compact Disc).

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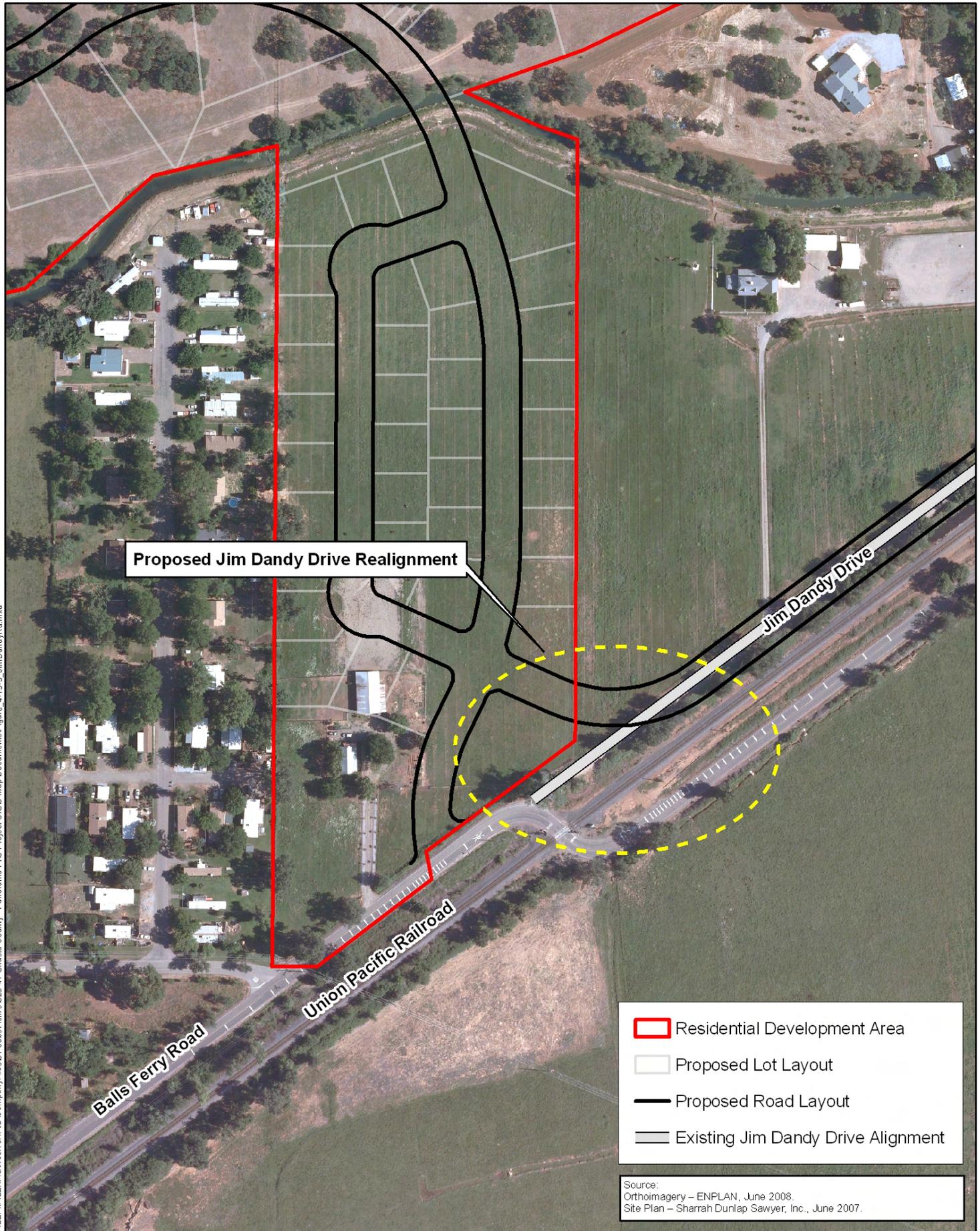


Figure 4.15.3

Proposed Jim Dandy Drive Realignment

Feature and boundary locations depicted are approximate only. 09.29.09



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**Table 4.15.13
Existing Plus Project Mainline Interstate 5 Level of Service**

Location	Lanes	Existing Conditions			Existing Plus Project				
		Daily Volume	Density (Pc/mile/lane)	LOS	Daily Volume			Density (pc/mi/ln)	LOS
					Project Only	Total	Net v/c		
South of Gas Point Road	4	42,500	20.4	C	355	42,855	<0.010	20.9	C
Gas Point Road to Main Street	4	51,000	30.3	D	400	51,400	<0.010	30.7	D
Main Street to SR 273	4	51,000	30.3	D	400	51,400	<0.010	30.7	D
SR 273 to Deschutes Road	4	51,000	30.3	D	400	51,400	<0.010	30.7	D
Deschutes Road to Balls Ferry Road	4	62,000	27.6	D	1,840	63,840	0.023	28.8	D
Balls Ferry Road to North Street	4	62,000	27.6	D	1,380	63,380	0.017	28.5	D
North Street to Riverside Avenue	4	62,000	27.6	D	1,380	63,380	0.017	28.5	D
Riverside Avenue to Knighton Road	4	63,000	23.9	C	1,135	64,135	0.014	24.9	C
Knighton Road to South Bonnyview Drive	4	56,000	21.4	C	1,050	57,050	0.013	21.8	C
Capacity of 4 lane assumed to be 80,000 ADT at LOS E.									

Source: KD Anderson & Associates, Inc., 2008.

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Levels of Service on Mainline Interstate 5

The addition of project traffic may exacerbate the LOS D conditions already occurring on mainline Interstate 5, as noted in Table 4.15.13. However, as Caltrans endeavors to maintain a target service level of between LOS C and LOS D on State highway facilities, the project's impact to mainline Interstate 5 would not be significant.

Level of Service at Interstate 5 ramps

As shown in Table 4.15.14, the addition of project traffic would increase vehicle density in the area of Interstate 5 ramps. Project traffic would result in the Level of Service on southbound Interstate 5 deteriorating to LOS D in the area of the North Street southbound off-ramp. However, as Caltrans endeavors to maintain a target service level of between LOS C and LOS D on State highway facilities, the project's impact to Interstate 5 at this location would not be significant.

MITIGATION CONSIDERATIONS

The extent to which off-site roadway improvements or transportation programs are needed to mitigate the impacts of the proposed project is described below. In some cases, the project proponent is expected to provide the full improvements needed. In other cases, where the contribution of project-generated traffic is minimal, it is more appropriate for the project proponent to contribute a "fair-share" payment for the cost of the improvements. Traffic impact fee programs are currently in place or are being considered to establish funding mechanisms for some of the recommended improvements. An overview of these programs is provided below, followed by the discussion of recommended mitigations and possible funding mechanisms for such improvements.

In accordance with a recent court decision [*Tracy First v. City of Tracy* (August 27, 2009)—Cal.App.4th], where traffic impacts occur outside of the lead agency's jurisdiction and there is no traffic mitigation plan and fee program in place, payment of a "fair share" contribution is not necessary. Under these circumstances, mitigation is not "fully enforceable" since there is no way to ensure that any mitigation funds collected would actually be applied toward the identified mitigation; the impact is therefore considered significant and unavoidable. (Association of Environmental Professionals, 2009)

Existing and Contemplated Traffic Impact Fee Programs

The following existing and planned improvement programs apply to the proposed project.

South Region Transportation Planning Study and Traffic Impact Fee Program. The Shasta County Regional Transportation Planning Agency conducted a comprehensive review of circulation needs and improvement options in the South County area. The study investigated alternatives for new arterial routes west of Interstate 5 and identified options of improving the Interstate 5 interchanges at Gas Point Road and at Main Street. The total cost of identified improvements is \$52 million. The project site is within the Zone of Benefit for the planning study and fee program.

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**Table 4.15.14
Existing Plus Project Peak Hour Ramp Levels of Service at Interstate 5 Interchanges**

Direction	Ramp	Action	AM Peak Hour							PM Peak Hour						
			Existing			Ex Plus Project				Existing			Ex Plus Project			
						Volume		Den	LOS				Volume		Den	LOS
			Vol	Den	LOS	Project Only	Total			Vol	Den	LOS	Project Only	Total		
I-5/Riverside Avenue																
Southbound	On ramp	Merge	185	19	B	5	190	19	B	255	25	C	17	272	26	C
Northbound	Off ramp	Diverge	245	25	C	14	259	26	C	210	23	C	9	219	23	C
I-5/North Street																
Southbound	Off ramp	Diverge	375	21	C	0	375	21	C	555	27	C	0	555	28	D
Northbound	On ramp	Merge	510	24	C	0	510	25	C	475	21	C	0	475	22	C
I-5/Balls Ferry Road																
Southbound	On ramp	Merge	250	18	B	9	259	18	B	400	24	C	31	431	25	C
Northbound	Off ramp	Diverge	320	23	C	27	347	24	C	380	22	C	17	402	22	C
I-5/Deschutes Road																
Southbound	Off ramp	Diverge	235	20	B	28	263	20	C	515	26	C	98	613	27	C
Northbound	On ramp	Merge	310	22	C	84	394	23	C	350	20	B	54	404	21	C
I-5/SR 273																
Southbound	On ramp	Merge	300	19	B	0	300	19	B	400	23	C	0	400	23	C
Northbound	Off ramp	Diverge	330	24	C	0	330	24	C	305	21	C	0	305	21	C
I-5/Main Street																
Southbound	Off ramp	Diverge	215	20	C	8	223	20	C	310	24	C	27	337	25	C
Northbound	On ramp	Merge	210	21	C	23	233	21	C	175	19	B	15	190	19	B
I-5/Gas Point Road																
Southbound	Off ramp	Diverge	155	13	B	0	155	13	B	280	16	B	0	280	16	B
Northbound	On ramp	Merge	465	18	B	0	465	18	B	300	16	B	0	300	16	B
Southbound	On ramp	Merge	195	19	B	21	216	19	B	205	21	C	13	218	21	C
Northbound	Off ramp	Diverge	135	18	B	7	142	18	B	155	18	B	24	179	18	B

Source: KD Anderson & Associates, Inc., 2008.

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With regard to the locations impacted by the Panorama Planned Development, the South Region study identified the following improvement projects:

Main Street Interchange Improvements. The Main Street Interchange Improvements project would create a connection to the area west of Interstate 5 and construct roundabout intersections at the ramp terminals. The estimated cost of these improvements is \$9.8 million.

Interim Improvements to the I-5/Gas Point Road Interchange. The Interim Improvements to the I-5/Gas Point Road Interchange project would widen Gas Point Road to the extent feasible without widening the existing overcrossing. Resulting intersection geometry would include left-turn lanes on Gas Point Road at the SB and NB ramp intersections and at the Rhonda Road intersection. These intersections would also be signalized (signalization of the Gas Point Road/SB I-5 ramp intersection was recently completed). This improvement has an estimated cost of \$3.7 million.

Ultimate Improvements to the I-5/Gas Point Road Interchange. The Ultimate Improvements to the I-5/Gas Point Road Interchange project would widen the structure over Interstate 5 and relocate the southbound ramp intersection to provide greater separation from Rhonda Road. The estimated cost of this improvement is \$12.2 million, of which \$7.2 million would be borne locally.

Deschutes Interchange Fee Program. Shasta County and the City of Anderson collect fees towards improvements to the I-5/Deschutes interchange from a local area that lies on both sides of the freeway but is generally north of the Panorama Planned Development. The southern limit of the County area that contributes to the cost of interchange improvements lies immediately north of the Panorama Planned Development site.

Fix 5 Partnership. Caltrans District 2, Shasta County RTPA, and the Tehama County Transportation Commission, as well as Shasta County, Tehama County, and their incorporated cities, are engaged in a process to identify and fund long-term improvements to the 61-mile-long Interstate 5 corridor through Shasta and Tehama counties. The focus of the partnership has been creation of a third travel lane in each direction on mainline Interstate 5. The nexus study prepared for corridor improvements estimated the cost of a 6-lane Interstate 5 at \$546 million and identified an accompanying impact fee that would be assigned to new development. However, the impact fee has not yet been adopted by the local agencies that would have to agree to participate in the fee program.

Mitigation Recommendations

The Gas Point Road/NB I-5 intersection would need to be signalized to deliver an adequate Level of Service. The project applicant could contribute its fair share to the cost of this improvement by paying adopted fees. However, this action would not guarantee that the signal would be installed by the time that the Panorama Planned Development project adds traffic to the intersection. The intersection cannot be signalized without installing a portion of the interim I-5/Gas Point Road interchange improvement project, and the total cost of this improvement is approximately \$3.7 million. Because Shasta County

has recently made improvements to the west side of the interchange, improvements to the east side of the interchange are judged to be within the capability of the project proponents with reimbursement for costs beyond the project's fair share. Thus, this impact can be mitigated to a less than significant level. The project proponent should signalize the intersection when Caltrans and Shasta County determine the signal warrants are satisfied.

The Riverside Avenue/NB I-5 ramps intersection would need to be signalized in order to deliver an adequate Level of Service. Although the City of Anderson is considering creation of a district to fund improvements to the I-5/Riverside Avenue interchange, no plans or fee mechanisms have been adopted. Further, there is no guarantee that Caltrans would agree to signalize the intersection. Because Shasta County has no jurisdiction over this intersection and no plans or fees programs are currently in place, mitigation is not feasible and the impact would be significant and unavoidable.

The following mitigation is necessary to improve intersection Levels of Service:

MM TRA-4.15-1. The project proponent shall signalize the Gas Point Road/NB I-5 ramps intersection. The signal shall be installed when Shasta County, in consultation with Caltrans, determines that signal warrants are satisfied.

Following mitigation, impacts at the Gas Point Road/NB I-5 ramps intersection would be less than significant. However, impacts at the Riverside Avenue interchange would be significant and unavoidable.

Impact TRA-4.15-2 Exceed a Level of Service Standard for Designated Roads or Highways (*Significant and Unavoidable Impact*)

Project implementation would result in significant Level of Service impacts at the Gas Point Road/NB I-5 ramps and at the Riverside Avenue/NB I-5 ramps. See analysis under Impact TRA-4.15-1.

Implementation of Mitigation Measure TRA-4.15-1 would reduce the above Level of Service impacts at the Gas Point Road/NB I-5 ramps intersection to an acceptable level; however, as discussed above, Level of Service impacts at the Riverside Avenue/NB I-5 ramps intersection would remain significant and unavoidable.

Impact TRA-4.15-3 Result in a Change in Air Traffic Patterns (*No Impact*)

The project is not in the vicinity of a public or private airstrip. There would be no impact on air traffic patterns.

No mitigation measures are necessary as there would be no impact on air traffic patterns.

Impact TRA-4.15-4 Substantially Increase Hazards Due to a Design Feature or Incompatible Uses *(Less-than-Significant Impact with Mitigation Incorporated)***NEW BALLS FERRY ROAD ACCESS**

As indicated in the current site plan/tentative map, the Jim Dandy Drive intersection with Balls Ferry Road would be relocated to the southwest. This access would be approximately 180 feet from the Trefoil Lane intersection and 80 feet from the beginning of the short-radius curve on Balls Ferry Road that turns across the railroad.

The feasibility of developing access at this location without modifying other parts of Balls Ferry Road is dependent on factors such as sight distance at the new location, speed of traffic on Balls Ferry Road, the amount of traffic turning at the adjoining Trefoil Lane intersection and the effect on the existing UPRR crossing. Because the terrain in the area along Balls Ferry Road is relatively level, adequate sight distance would be available looking to the south. Looking north, motorists should be able to see southbound traffic on the other side of the UPRR. Because of the tight curves, the speed of traffic on this portion of Balls Ferry Road is constrained as the curves have a comfortable speed of only 15 mph (HDM Table 203.2). The volume of traffic turning off of and onto Trefoil Lane is low (i.e., fewer than 15 vehicles per hour).

The new Road X intersection would be roughly 180 feet north of the existing Trefoil Lane intersection. Local agencies typically adopt standards for minimum distance between offset intersections in order to reduce conflicts between turning vehicles. These standards range from 150 feet on local/collector roads to 250 feet on higher speed arterials. In this case, the distance between Road X and Trefoil Lane could be a concern under high speed conditions, but would be adequate for slowly moving traffic.

The effect of the new intersection on the UPRR crossing would relate to the possibility of vehicles queuing on the crossing in conflict with a train. Assuming the new intersection had stop control on the Road X approach, southbound vehicles should not be stopped at the intersection and would not be queuing back towards the tracks. Northbound traffic may occasionally be stopped by traffic waiting to turn left, but this would not affect the crossing.

Overall, the addition of a new intersection may add a degree of confusion to a location that is unconventional at best. Because the current road alignment slows traffic, it would be feasible to add this closely spaced intersection. However, to address the additional turning traffic, it would be beneficial to widen Balls Ferry Road to provide a left-turn lane at the new access even though the left-turning volume is less than the County's 50 vph threshold.

LOCATION OF NEW INTERSECTIONS ON LOCUST ROAD

The Road A intersection would be roughly 200 feet north of the existing Vantage Drive intersection, and the new Road E intersection would be roughly 1,000 feet south of that intersection. As noted above, typical standards for minimum distance between offset

intersections range from 150 feet on local/collector roads to 250 feet on higher speed arterials. In this case, due to the speed on Locust Road, the distance between Road A and Vantage Drive could be a concern. The subdivision should either be re-configured to align these intersections, or a continuous two-way left-turn lane should be developed between the intersections.

LEFT TURN LANES AT NEW INTERSECTIONS

The need for left-turn lanes at the proposed new access intersections has been evaluated based on the County's 50 vph threshold. This criterion was compared to the cumulative traffic volumes anticipated at the project access intersections to determine if left-turn lanes could be needed. At the Road A (Arena Way) intersection on Locust Road the left-turn volume is 84 vph, and at the Road E intersection on Locust Road the p.m. peak-hour left-turn volume is projected to be 48 vph. Southbound left-turn lanes would be needed at each location. The number of left turns at the Road D intersection on Locust Road would be minimal, and none of the internal intersections within the subdivision are expected to have left-turning volumes that would justify left-turn lanes. Additional acceleration, deceleration, and/or right-turn lanes are not necessary, as overall traffic volumes are relatively low.

INTERNAL CIRCULATION

The volume of traffic occurring on internal project streets has been estimated. Highest volumes are expected on Road A near the project's western limits where a count of 1,500 vehicles per day is expected. The volume on Road A would drop at locations to the east, with 1,150 vehicles per day east of the Road C intersection and 500 vehicles per day in the area of Road T. The projected daily traffic volume on Road D through the western residential area would range from 500 to 1,000 vehicles per day. These volumes can be accommodated by the two-lane roads planned through the site, and direct residential frontage can be accommodated.

Implementation of Mitigation Measure TRA-4.15-4 would mitigate potentially significant design-feature impacts to a less-than-significant level.

MM TRA-4.15-4

- 4) The project proponent shall widen Balls Ferry Road to provide a northbound left-turn lane at the new access.
- 5) The project proponent shall widen Locust Road to provide a southbound left-turn lane at the Road A intersection. Road A shall be moved to align with Vantage Drive or a two-way left-turn lane shall be constructed between the two intersections.
- 6) The project proponent shall widen Locust Road to provide a southbound left-turn lane at the Road E intersection.

Impact TRA-4.15-5 Result in Inadequate Emergency Access *(Less-than-Significant Impact with Mitigation Incorporated)*

Implementation of the project as proposed would result in increased congestion at off-site intersections and substandard access to the project site, as discussed under Impact TRA-4.15-1 and Impact TRA-4.15-4. However, the Levels of Service would drop below acceptable standards at only two intersections: Gas Point Road/NB I-5 ramps and Riverside Avenue/NB I-5ramps. First-response emergency vehicles are expected to originate from Cottonwood or Anderson, and are highly unlikely to use the Riverside Avenue/I-5 NB ramps, which are on the north side of Anderson. Implementation of Mitigation Measures TRA-4.15-1 would improve the Level of Service at the Gas Point Road/NB I-5 ramps intersection to an acceptable level, while Mitigation Measures TRA-4.15-4 would ensure adequate access to the site from both Locust Road and Balls Ferry Road.

With implementation of these two measures, potential impacts with respect to emergency access would be less than significant.

Impact TRA-4.15-6 Result in Inadequate Parking Capacity *(No Impact)*

All residences would be developed in accordance with the *Shasta County Zoning Plan*, and would include the required number of parking spaces per dwelling unit.

There would be no impact with respect to parking capacity. No mitigation measures are necessary.

Impact TRA-4.15-7 Conflict with Alternative Transportation *(Less-than-Significant Impact with Mitigation Incorporated)***TRANSIT**

Development of the project could increase the need for transit services and alternative transportation modes to serve the Cottonwood/South County area. However, development of this project alone would not result in an increase in demand that would create a significant impact that would necessitate changing current transit operations. Considering the type of development, a semi-rural single-family residential development, the number of potential new transit riders would be relatively small.

PEDESTRIANS/BICYCLISTS

With development of the project, additional pedestrian (including school children) and bicycle traffic could be created on the roads that link the site with Cottonwood and with the retail opportunities west of Interstate 5. Project design includes a Class I Bikeway through the project site, connecting Locust Road with Balls Ferry Road. However, the proposed Class I Bikeway does not provide any connection between the project site and Cottonwood, school sites, or other community services, and conflicts could result between automobiles, pedestrians, and bicyclists in those areas. To mitigate for these potential conflicts, the project applicant should provide Class II/III Bikeways on both sides of Locust Road, within the existing right-of-way, to Fourth Street. Class II Bikeways should be

established in areas where Shasta County currently has sufficient right-of-way; Class III Bikeways should be established in areas where Shasta County does not currently have adequate right-of-way for a Class II facility. It is anticipated that Class II Bikeways would be established at a future date, when the County acquires right-of-way in those areas.

MM TRA-4.15-7

The project applicant or its successors in interest shall provide Class II/III Bikeways on both sides of Locust Road, within the existing right-of-way, from the northern site boundary to Fourth Street. Class II Bikeways shall be established in areas where Shasta County currently has sufficient right-of-way; Class III Bikeways shall be established in areas where Shasta County does not currently have sufficient right-of-way for a Class II facility.

Following mitigation, impacts related to alternative transportation modes are considered to be less than significant.

4.15.4 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Implementation of the recommended mitigation measures (MM TRA-4.15-1, MM TRA-4.15-4, and MM TRA-4.15.7) would reduce the following project impacts to a less-than-significant level:

- Increased congestion of other intersections and along other roadways in the study area, including the Gas Point Road/NB I-5 ramps intersection.
- Potential hazards due to proposed design features.
- Potential constraints with respect to emergency access.
- Potential conflicts with increased pedestrian and bicycle traffic.

No feasible mitigation is available to Shasta County to improve the Level of Service at the Riverside Avenue/NB I-5 ramps intersection. Therefore, traffic impacts at this location are considered to be significant and unavoidable.

End of Section.