4.8 TRAFFIC AND CIRCULATION

4.8 TRAFFIC AND CIRCULATION

INTRODUCTION

This section contains the setting, impacts, and mitigation measures associated with the traffic and circulation aspects of the proposed project and alternatives. The project includes the actions and performance standards of the *First Draft of the Cache Creek Resources Management Plan (CCRMP) for Lower Cache Creek*, Yolo County, December 4, 1995, as well as the proposed channel improvement program, implementation of passive recreational uses, and the proposed ordinance changes.

The setting describes the existing conditions of the area transportation system for each travel mode including the roadways, the transit system, bicycle and pedestrian facilities and school bus operations. The traffic study area is shown on Figure 4.8-1. Impacts and mitigation measures are identified for which proposed goals and policies act as mitigation. Potential impacts associated with implementation of the proposed goals, objectives, actions, performance standards, and regulations are also identified. Mitigation measures including added goals, objectives, actions, performance standards, regulations, and area-wide programs are provided.

It should be noted that the assumptions used in this section (as well as the related air quality and noise assessments) differ from those used in other sections. For the cumulative conditions analysis without the project, this section assumes the OCMP and its associated increased production levels are in place, but not the in-channel production from creek maintenance. The purpose of this assumption is to isolate the traffic impacts of the in-channel production from the other cumulative traffic generators, such as the increased commercial mining associated with the OCMP. This allows for a clear distinction between the impacts of the in-channel maintenance activities and the impacts of the OCMP, which are addressed in a separate environmental document.

None of the responses received on the Notice of Preparation were directly relevant to the traffic and circulation impacts of the CCRMP.

SETTING

Description of the Regional Environment

The study area is located in a rural environment characterized by agricultural uses including orchards, field crops, and open land. Residential development is limited in the area, with agricultural residences scattered throughout.

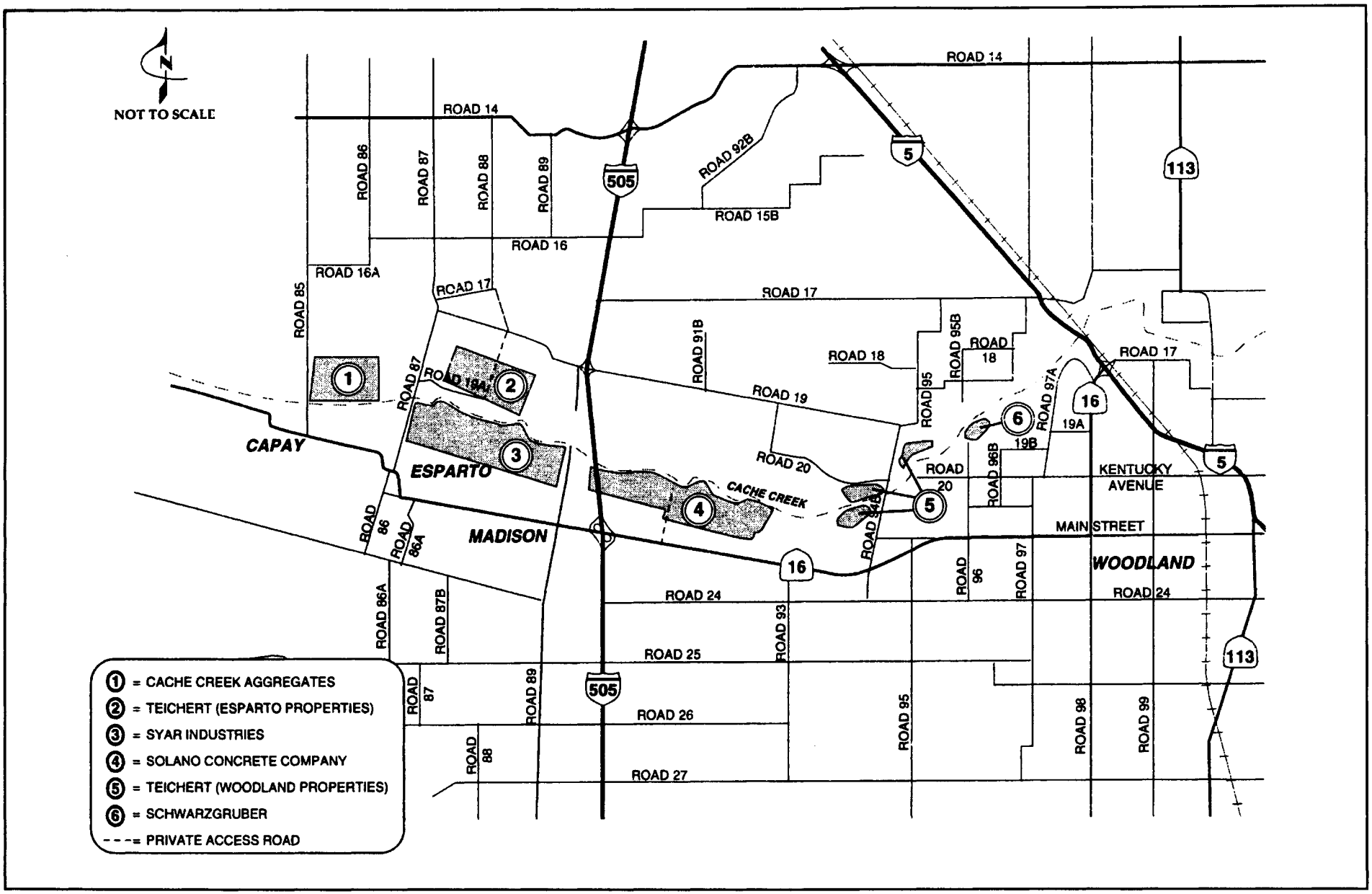


Figure 4.8-1 Traffic Study Area

SOURCE: FEHR & PEERS ASSOCIATES, INC.

The transportation system within the study area is almost entirely dependent upon on the roadway system for the movement of goods and people. The automobile is the primary travel mode for most trips. The majority of regional travel occurs on Interstate 5, Interstate 505 and SR 16.

Description of the Local Environment

Transportation within the local environment includes travel on the roadway system, the transit system, the bicycle/pedestrian system and school bus operations. The following summarizes the current status of each facility within the study area.

Existing Roadway System

The discussion of the roadway system includes a summary of the current roadway conditions and operations, intersection operations, accident history and truck traffic. It concludes with a summary of existing operational deficiencies in the road system.

Roadway Conditions and Operations

With the exception of I-5, I-505 and SR 16, all study roadways in the region are two-lane County roads. Roads numbered between 80 and 100 have north-south directionality and Roads numbered between 10 and 40 have east-west directionality. In addition, a number of smaller roads are located between the primary County roads. These smaller roadways are designated with an "A" or a "B" suffix following the County Road number. Each of the study roadways that serve aggregate-related travel is described below.

Interstate 5 is a four-lane freeway that serves north-south travel throughout the entire State of California. Within the study area, it serves the eastern portion of the study area and maintains interchange access at Road 14, Road 98 and several streets within Woodland.

Interstate 505 is a four-lane, north-south freeway that connects with Interstate 80 near Vacaville and Interstate 5 near Dunnigan. Within the study area, interchanges exist at SR 16, Road 14 and Road 19.

State Route 16 is a two-lane, east-west highway that traverses Amador County, Sacramento County, Yolo County and Colusa County. Within the study area, SR 16 begins at Interstate 5 and intersects Main Street in Woodland three miles to the south. It then runs west for several miles through western Yolo County, eventually turning in a northwesterly direction into western Colusa County. SR16 runs along the southern boundary of the study area.

The pavement along the majority of SR 16 is considered to be in fair to good condition with two to four foot paved shoulders.[1] Passing is permitted along western portions of SR 16 where the speed limit is 55 miles per hour.

Road 14 is an east-west rural road which forms the northern boundary of the study area. It extends east from Road 85 to I-5 and beyond and provides direct access to both I-505 and I-5 via interchanges. Passing is permitted along the majority of Road 14 and the pavement is in poor condition with no paved shoulders in most locations. A one-mile section of Road 14 is unpaved (i.e., gravel roadbed) directly west of I-505. This section contains several sharp turns with a posted speed limit of 25 miles per hour.

Road 19 is a two-lane, east-west road extending between Road 87 on the west and Road 94B on the east. The pavement quality is generally poor and paved shoulders are narrow and infrequent. The interchange at Road 19 and I-505 features northbound and southbound diagonal on- and off-ramps and a long, fairly steep incline over the interstate for eastbound through vehicles. A sharp horizontal curve is located west of the I-505 interchange with a 30 mile-per-hour speed limit.

Road 20 begins just west of Road 96 and extends east to Road 98 where it becomes Kentucky Avenue. The pavement is considered fair west of Road 96, and fair to poor east of Road 96. Cracks in the road are apparent in the westbound direction. There are no shoulders along the majority of the roadway, although the lanes are wide (greater than 12 feet). Passing is permitted between Road 97 and Road 96.

Road 85 extends north from the town of Capay beyond Road 14, forming the western boundary of the study area. The bridge along Road 85 across Cache Creek was washed out in 1995 and reconstruction is expected to be complete by the end of 1996. South of Road 16A, the pavement is in fair to poor condition, with narrow lanes and no paved shoulders. North of Road 16A, the pavement appears to be in slightly better condition and the lanes are slightly wider. Passing is permitted along the majority of this roadway.

Road 87 begins at SR 16 in Esparto and heads north beyond Road 14. Passing is permitted along the majority of the roadway south of Road 19 and along portions of the roadway north of Road 19. The pavement along the majority of Road 87 appears to be in fair condition.

Road 89 is a north-south road that runs parallel to I-505 approximately one mile to the west from Road 19 south to Winters (State Route 128). It discontinues across Cache Creek. The pavement condition between Cache Creek and SR 16 is poor and includes numerous cracks and potholes. The travel lanes and shoulders are narrow and passing is permitted along this segment.

---

[1] Refer to Table 4.8-1 for more information on existing pavement conditions.

Road 96 is a north-south road that begins at Road 24 and terminates just beyond Road 20. This road has narrow paved shoulders and passing is permitted along the entire route. The speed limit is 50 miles per hour and the pavement is in fair condition.

Road 98 is a north-south road that forms the western boundary of the City of Woodland and the eastern boundary of the study area. Road 98 begins at Interstate 80 (I-80) where it forms the I-80/Pedrick Road interchange. It continues north through the western portion of the City of Davis, forming the SR 16 / Road 98 / Main Street intersection. For the purposes of this study, the concurrent three-mile section of road north of this intersection, known both as SR 16 and Road 98, will be referred to as Road 98.

Existing pavement conditions for all study roadways are shown in Table 4.8-1.

The operating efficiency of each existing roadway segment was evaluated based on procedures described in the *Highway Capacity Manual - Special Report 209,* Transportation Research Board, 1994. The quality of operations are described in terms of service levels, which vary qualitatively from 'A' (best) to 'F' (worst). Table 4.8-2 provides a general description of traffic operations for each service level.

For the purposes of this study, roadway segments were analyzed by comparing average daily traffic volumes to the applicable capacity thresholds. The level of service thresholds for SR 16 and County roads are displayed in Table 4.8-3.[2]

Daily traffic counts were conducted at each aggregate producer's main access roadway during October and November, 1995. Traffic counts were conducted over a five-day period. The daily counts include a breakdown of vehicle mix by the number of axles in order to assist in the analysis of potential truck impacts. Average daily traffic counts at other locations (see Figure 4.8-2) were also provided by Yolo County Public Works Department.[3]

It should be noted that the aggregate industry varies seasonally, with the highest activity levels occurring between May and November. According to representatives of the area aggregate producers, the traffic counts conducted in October and November are representative of a high level of production activity.[4] The agricultural industry also varies seasonally, with peak operations occurring in the summer months.[5] Therefore, the counts

---

[2] Refer to the separately bound technical appendix entitled *Technical Appendix to the Long-Term Mining and Reclamation Permit Application Projects along Cache Creek in Yolo County*, Fehr & Peers Associates, February, 1996, for detailed calculations.

[3] Data was collected by the Yolo County Public Works Department on various days and at several locations between 1992 and 1995.

[4] Per telephone conversations with Mr. Anthony Russo of Solano Concrete Company, Mr. Ben Adamo of Cache Creek Aggregates, Mr. John Perry of Syar Industries, and Ms. Lillie Noble of Teichert Aggregates in December of 1995.

[5] According to a representative of Mike Lowry Trucking, August and September are the peak months for hauling agricultural products in Yolo County.

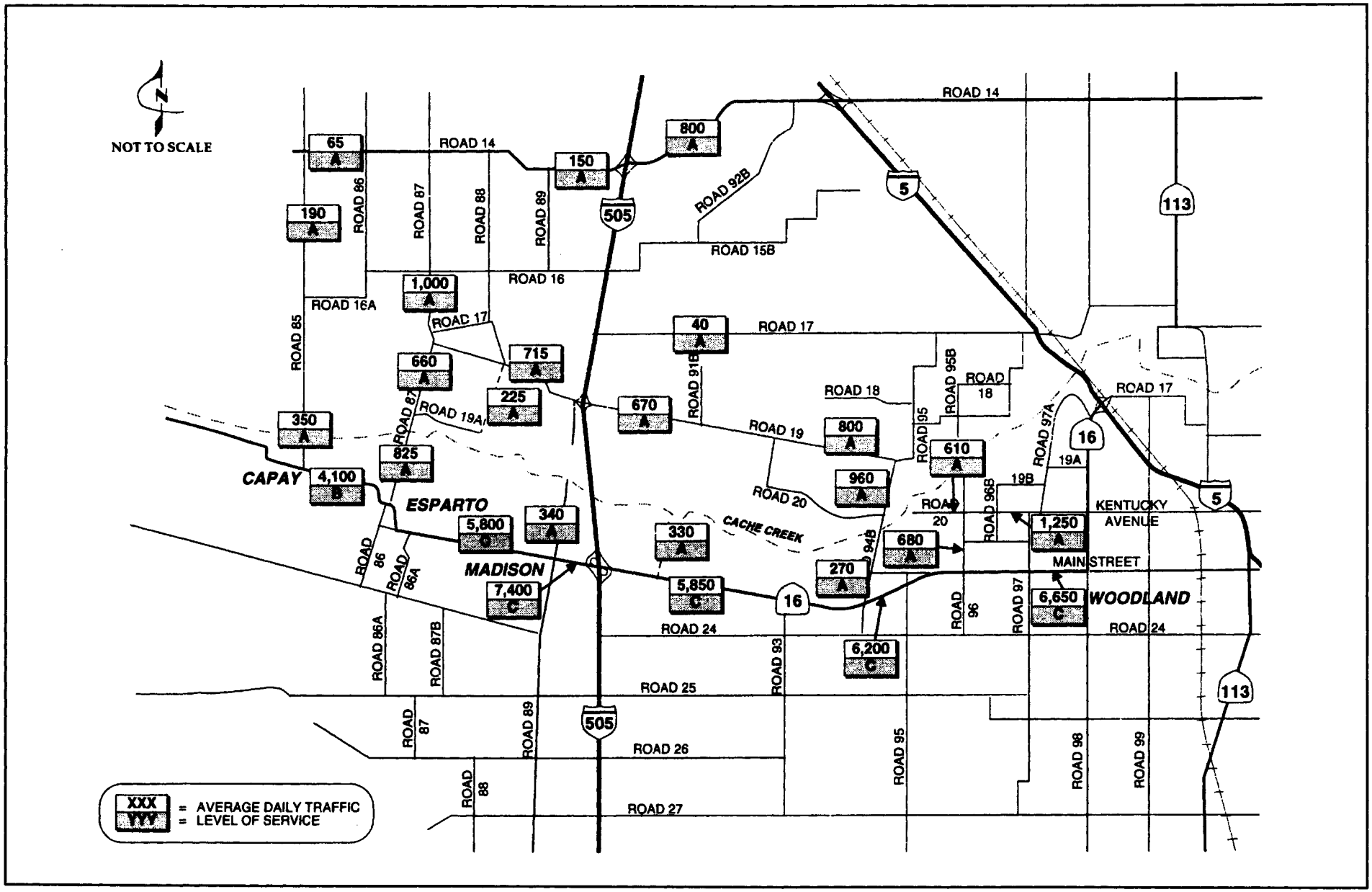


Figure 4.8-2 Existing Roadway Segment Traffic Volumes and Levels of Service

SOURCE: FEHR & PEERS ASSOCIATES, INC.

Table 4.8-1
Roadway Segment Pavement Conditions

Road	Roadway Segment	Lane Width (ft.)	Shoulder Width (ft.)[1]	Pavement Condition[2]
SR 16	Road 98 to Road 96	12	2-4	Fair to Good
SR 16	Road 96 to I-505	12	2-4	Fair
SR 16	I-505 to Road 87	12	2-4	Fair
SR 16	Road 87 to Road 85	12	2-4	Fair
Road 14	Road 85 to I-505	10-12	0-1	Poor
Road 19	Road 87 to I-505	10-12	0-1	Poor
Road 20	Road 96 to Road 98	12	0-1	Poor to Fair
Road 85	Cache Creek to Road 14	8-10	0-1	Poor
Road 87	SR 16 to Road 19	12	0-2	Fair
Road 89	Cache Creek to SR 16	12	0-1	Poor
Road 96	SR 16 to Road 20	12	0-2	Fair to Good
Road 98	SR 16 to I-5	12	2-4	Fair to Good

Notes: [1] Observed width of paved shoulder.
[2] Based on field observations. 'Good' pavement is defined as generally smooth surface with limited cracking. 'Fair' pavement is defined as slightly rough with some cracking. 'Poor' pavement is defined as noticeably rough with considerable cracking and some potholes.

Table 4.8-2
Level of Service Description

LOS	Description
A	Represents free flow. Individual users are virtually unaffected by the presence of other vehicles in the traffic stream.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.
C	Stable flow, but marks the beginning of the range of flow in which operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	Represents high-density, but stable flow.
E	Represents operating conditions at or near the capacity level.
F	Represents forced or breakdown flow.

Source: *Highway Capacity Manual, Special Report 209,* Transportation Research Board. 1994.

Table 4.8-3
Roadway Segment Service Level Criteria

Roadway Segment	Average Daily Traffic Volume at				
	LOS A	LOS B	LOS C	LOS D	LOS E
State Route 16	2,100	5,000	8,500	14,200	23,700
County Roads	1,300	3,400	6,100	10,600	18,000

Source: Fehr & Peers Associates, 1995 based on the *Highway Capacity Manual, Special Report 209,* Transportation Research Board, 1994.

conducted for this study is considered to be a conservative representation of existing conditions.

Figure 4.8-2 shows existing daily traffic volumes and corresponding levels of service on roadway segments in the study area, and indicates that all segments of SR 16 under study currently operate at LOS B or C. All County roads currently operate at LOS A.

Intersection Operations

Key intersections within the OCMP study area that are analyzed in this report include:

- Road 20 / Road 96;
- Road 20 / Road 98;
- State Route 16 / Road 96;
- State Route 16 / Road 98 / Main Street;
- State Route 16 / I-505 Northbound Ramps;
- State Route 16 / I-505 Southbound Ramps;
- State Route 16 / Road 89;
- Road 19 / Road 87;
- Road 19 / I-505 Northbound Ramps;
- Road 19 / I-505 Southbound Ramps;
- Road 14 / Road 85;
- Road 14 / I-505 Northbound Ramps; and
- Road 14 / I-505 Southbound Ramps.

To evaluate existing intersection operations, peak hour intersection turning movement counts were conducted during October and November, 1995 at the 13 study intersections. Additional counts were conducted during the morning peak hour at various intersections to determine the number of aggregate trucks in relation to the total number of trucks. Based on the peak hours of plant operations, as well as school traffic and adjacent street traffic, 7:00 - 9:00 a.m. and 2:00 - 4:00 p.m. were selected as the morning and afternoon peak periods (i.e., two peak hours) for analysis.

Two-way stop-controlled intersections were analyzed using the methodology described in the *Highway Capacity Manual, Special Report 209*, Transportation Research Board, 1994. This methodology calculates the average delay for all vehicles entering an intersection during the peak hour. It should be noted that the calculation of average delay includes through movements which are assumed to have no delay. Thus, if there is a large number of through-movement vehicles, average delay may be small even if considerable delay occurs on the side street.

All-way stop-controlled intersections were analyzed based on the methodology described in the *Highway Capacity Manual, Special Report 209*, Transportation Research Board, 1985. In this methodology, the level of service for an intersection during the peak hour is reported as either 'LOS C or better' or 'Worse than LOS C'.

Each of the study intersections was analyzed to determine the existing peak hour operations. The results are summarized in Table 4.8-4.[6] Table 4.8-4 indicates that each intersection currently operates at LOS C or better during the a.m. and p.m. peak hour.

Accident History

Accident data from January, 1992 to December, 1994 were obtained for SR 16 from the Caltrans Traffic Accident Surveillance and Analysis System (TASAS) database. Provided in Table 4.8-5 is a summary of total accidents, accidents involving trucks, and a comparison of the actual accident rates to the statewide averages for similar facilities

Table 4.8-5 shows that the actual accident rate on SR 16 is less than or equal to the average rate on the eastern segments (I-5 to Road 97), but greater than the average rate on the western segments (Road 97 to Grafton Street). Of the nine accidents involving trucks (all types) over the three-year period, seven were multi-vehicle collisions. Most of these collisions occurred as vehicles were turning or passing. It is not known whether any of these trucks were associated with the aggregate industry.

Accident data on County roads from January, 1992 to October, 1995 were obtained from the Yolo County Public Works Department via police accident reports. Table 4.8–6 summarizes the accidents by intersection. Additional accidents may have occurred at these intersections, since accident reports are not always provided to the Yolo County Police Department. While the accident data reported in Table 4.8-6 may not precisely estimate the frequency of accidents, the data represents the most reliable assessment of traffic safety available.

[6] The traffic volume data and calculation sheets are included in the separately bound technical appendix entitled *Technical Appendix to the Long-Term Mining and Reclamation Permit Application Projects along Cache Creek in Yolo County*, Fehr & Peers Associates, February, 1996.

Table 4.8-4
Existing Conditions - Intersection Levels of Service

Intersection	Type of Control	AM Peak Hour LOS[1]	PM Peak Hour LOS[1]
Road 20 / Road 96	All-Way Stop	LOS C or Better	LOS C or Better
Road 20 / Road 98	Side-Street Stop	A	A
SR 16 / Road 96	Side-Street Stop	A	A
SR 16 / Road 98 / Main Street	All-Way Stop	LOS C or Better	LOS C or Better
SR 16 / I-505 Northbound Ramps	Side-Street Stop	A	A
SR 16 / I-505 Southbound Ramps	Side-Street Stop	A	A
SR 16 / Road 89	All-Way Stop	LOS C or Better	LOS C or Better
Road 19 / I-505 Northbound Ramps	Side-Street Stop	A	A
Road 19 / I-505 Southbound Ramps	Side-Street Stop	A	A
Road 19 / Road 87	Side-Street Stop	A	A
Road 14 / I-505 Northbound Ramps	Side-Street Stop	A	A
Road 14 / I-505 Southbound Ramps	Side-Street Stop	A	A
Road 14 / Road 85	Side-Street Stop	A	A

Notes: Results are presented as LOS A, B, C, D, E or F for side-street stop-controlled intersections. Results are presented as either "LOS C or better" or "Worse than LOS C" for all-way stop-controlled intersections.
Source: Fehr & Peers Associates, 1995.

Table 4.8-5
Summary of Accidents on SR 16 - January, 1992 to December, 1994

SR 16 Segment	Length (miles)	Total Accidents	Total Acc. Involving Trucks	Total Fatalities	Statewide Avg. Acc. Rate (per million veh)	Actual Acc. Rate (per million veh)
Rd 98 to I-5	3.0	22	1	0	1.64	1.64
Rd 98 to Rd 97	1.0	6	1	0	1.30	0.57
Rd 97 to Rd 94B	3.0	21	1	1	0.95	1.02
Rd 94B to I-505	4.5	32	6	1	0.97	1.31
I-505 to Rd 89	1.0	6	0	0	0.96	1.04
Rd 89 to Rd 21A	3.0	16	0	1	1.00	0.96
Rd 21A to Grafton St.	0.3	2	0	0	1.38	1.57

Source: Caltrans Traffic Accident Surveillance and Analysis System (TASAS) data.

Table 4.8-6
Summary of Accidents on County Roads - January, 1992 to October, 1995

Intersection	# of Accidents	Type	Cause
Road 20 / Road 96	2	Ran off road Ran off road	Speeding Inattention
Road 20 / Road 98	3	Broad-side Hit object Ran off road	Intoxication Inattention Inattention
SR 16 / Road 96	1	Hit object	Inattention
SR 16 / Road 85	2	Hit object Hit object	Fell asleep Intoxication
Road 19 / Road 87	2	Rear-end Hit object	Unknown Unknown
Road 14 / I-505	1	Head-on	Sun in eyes
Road 14 / Road 89	1	Hit object	Unknown
Road 14 / Road 88	1	Ran off road	Unknown
Road 14 / Road 85	1	Hit object	Inattention

Source: Yolo County Public Works Department Accident Records, 1992 - Present

Table 4.8-6 shows that accidents occurred infrequently (i.e., once per year or less on average) at these intersections. The majority of accidents involved single vehicles running off the road or hitting a fixed object, such as a telephone pole or tree. Twenty-one percent of the accidents involved more than one vehicle. No accidents were reported at the SR 16 / Road 98 / Main Street intersection, which experiences the greatest traffic volumes of any study intersection.

Truck Traffic

According to the Public Works Department staff, the County does not currently have designated truck routes. Truck travel is allowed on all County roads and State highways unless identified at a specific location. For the aggregate industry, primary haul routes have been identified in conjunction with a project's approval. Within the study area, truck travel associated with the aggregate industry primarily occurs on Interstates 5 and 505,

State Route 16, and County Roads 19, 20, 89, 96, 97 and 98. Figure 4.8-3 displays the current haul routes of aggregate truck travel within the study area.

Truck classification counts were conducted at each study intersection during the morning peak period (7:00 - 9:00 a.m.) of two weekdays during October and November of 1995. As discussed above, this time of year is considered by the area producers as being representative of a high level of production activity. Therefore, this data is considered to be a conservative representation of existing conditions.

Table 4.8-7 shows the total number of trucks, and the number of aggregate, agricultural, and utility trucks using each study intersection during the morning peak period. The numbers shown are an average of the two weekday morning peak period truck counts.

Table 4.8-7 indicates that trucks related to the aggregate industry contribute significantly (between 30 percent and 70 percent of all trucks) to existing truck traffic at most study intersections along SR 16. The relative proportion of aggregate trucks to all trucks appears to depend on the proximity of the intersection to existing mining operations and truck routings.

Summary of Existing Operational Issues

The area roadway system does not currently experience substantial traffic congestion, but as described below, it does include some facilities with existing design features that do not meet current County standards or that represent potential safety concerns.

These facilities generally include non-standard road designs, narrow or substandard bridges, frequent accident locations, segments with deteriorated pavement and intersections with limited curve radii (i.e., sharp intersection curves that cause vehicles to turn into oncoming lanes of travel). Figure 4.8-4 displays the existing operational deficiencies that may be impacted by the project alternatives. A brief description of each facility is provided below.

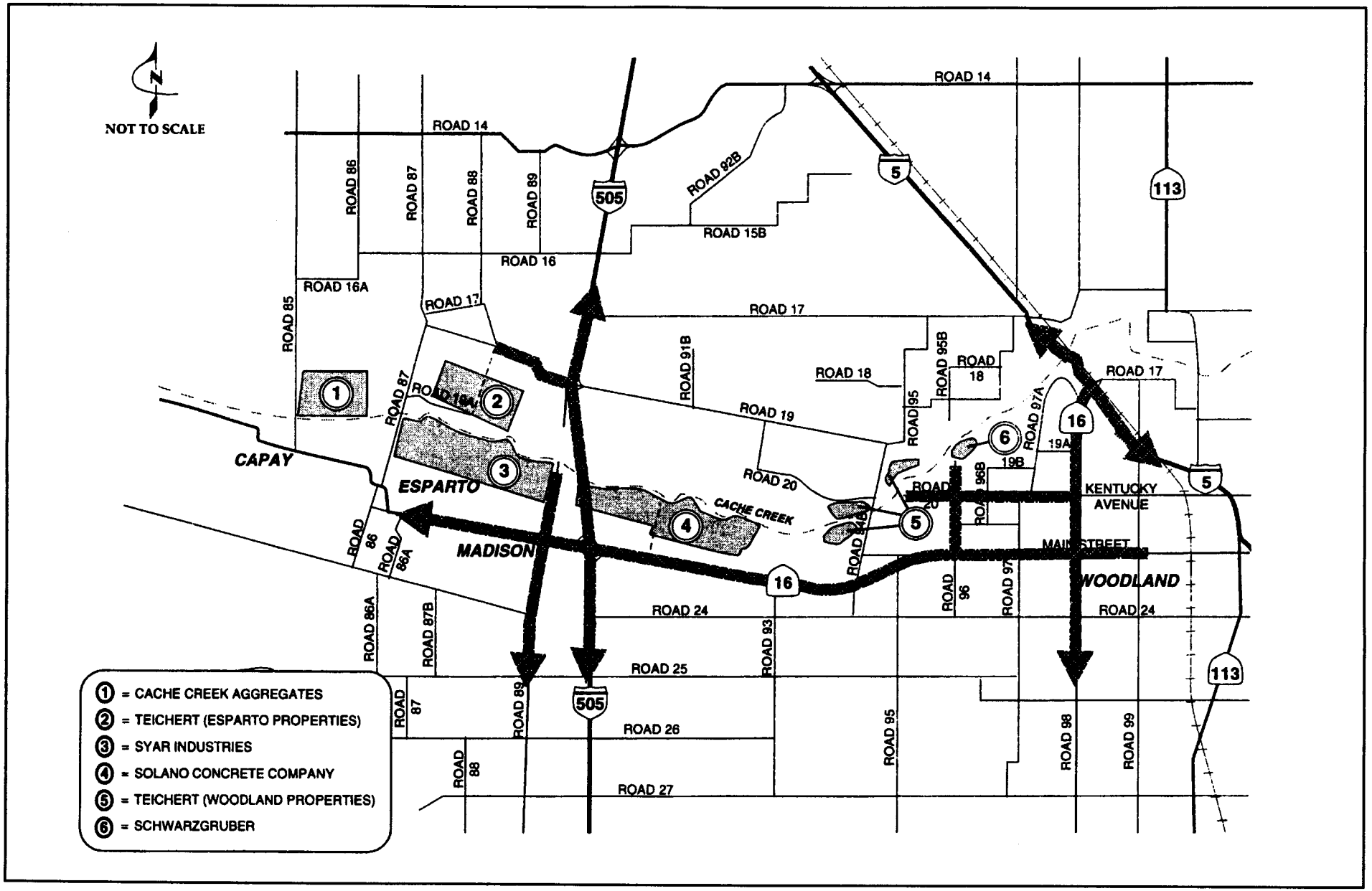


Figure 4.8-3 Current Haul Routes

SOURCE: FEHR & PEERS ASSOCIATES, INC.

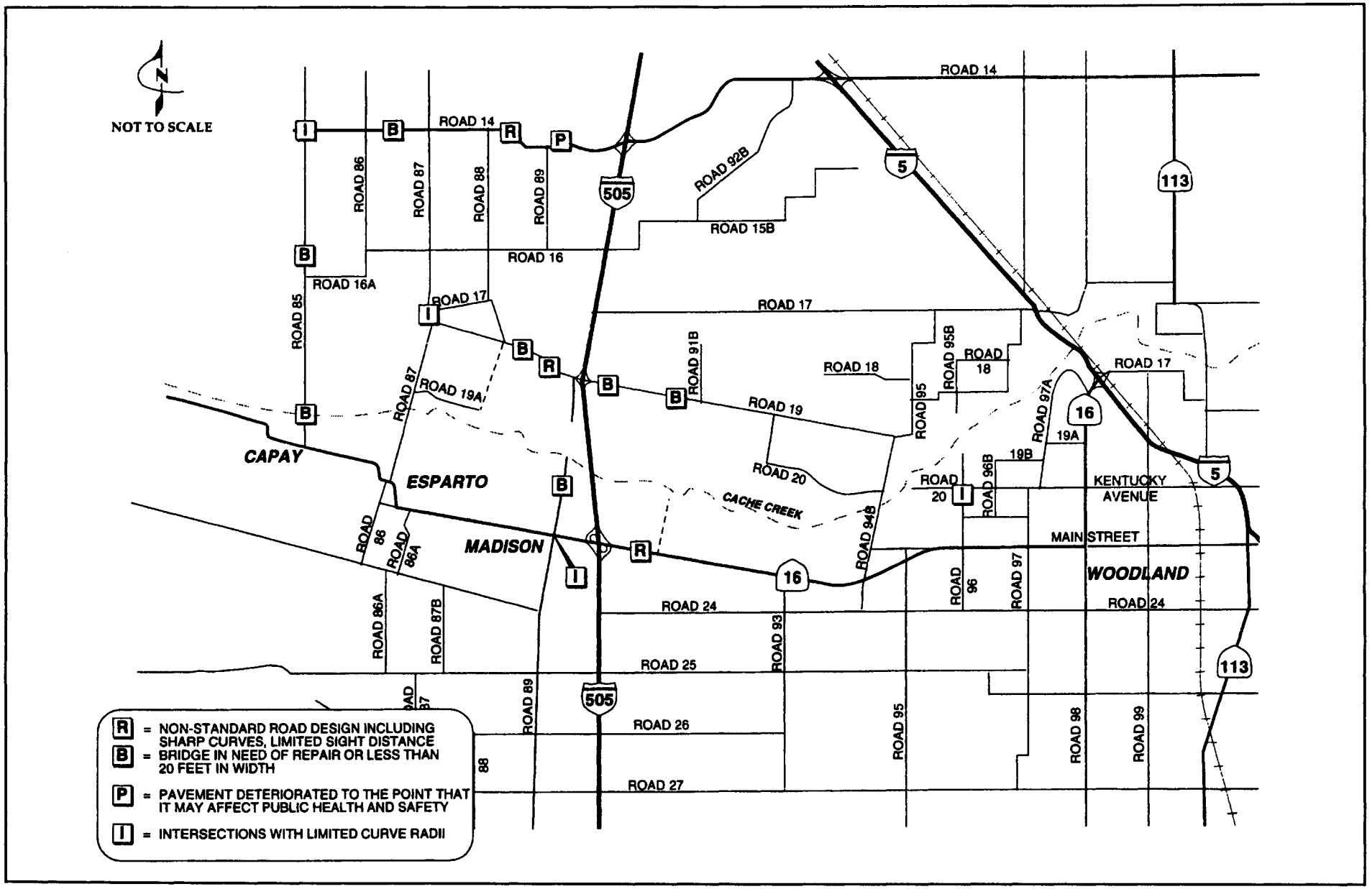


Figure 4.8-4 Existing Operational Issues

SOURCE: FEHR & PEERS ASSOCIATES, INC.

Table 4.8-7
Truck Types at Intersections During Morning[1] Peak Period

Intersection	# of Trucks Aggregate	Truck Type			
		Aggregate	Agricultural[2]	Utility[3]	Other[4]
Road 20 / Road 96	110	104 (94%)	1 (1%)	1 (1%)	4 (4%)
Road 20 / Road 98	135	93 (69%)	17 (12%)	5 (4%)	20 (15%)
SR 16 / Road 96	79	29 (37%)	21 (26%)	14 (18%)	15 (19%)
SR 16 / Road 98	98	30 (31%)	15 (15%)	14 (14%)	39 (40%)
SR 16 / I-505 NB Ramps	111	64 (58%)	13 (12%)	8 (7%)	26 (23%)
SR 16 / I-505 SB Ramps	90	57 (63%)	12 (13%)	6 (7%)	15 (17%)
SR 16 / Road 89	87	38 (44%)	15 (17%)	9 (10%)	25 (29%)
Road 19 / I-505 NB Ramps	15	10 (67%)	5 (33%)	0 (0%)	0 (0%)
Road 19 / I-505 SB Ramps	27	24 (89%)	3 (11%)	0 (0%)	0 (0%)
Road 19 / Road 87	11	1 (9%)	7 (64%)	1 (9%)	2 (18%)
Road 14 / I-505 NB Ramps	14	5 (36%)	7 (50%)	0 (0%)	2 (14%)
Road 14 / I-505 SB Ramps	15	3 (20%)	7 (47%)	0 (0%)	5 (33%)
Road 14 / Road 85	3	0 (0%)	3 (100%)	0 (0%)	0 (0%)

Notes: [1] Number of trucks based on the average of two weekday morning peak period (7:00 - 9:00) a.m. counts.
[2] Including farm goods, equipment, and hay trucks.
[3] Including gas, electric, and garbage trucks.
[4] Including tanker, delivery, moving, fire, and lumber trucks.
Source: Fehr & Peers Associates, 1995.

Non-Standard Road Design. These are roadways with design features that do not meet current County standards. Field observations[7] identified several locations with non-standard road designs such as sharp horizontal curves or limited sight distance. Each is listed below.

- A safety concern was identified on State Route 16 between I-505 and the entrance to the Solano Concrete plant. Vehicles travelling eastbound on SR 16 just east of the interchange conflict with trucks exiting I-505 northbound and turning right towards the plant. The trucks entering the plant slow down, while the speeds of the eastbound through vehicles on SR 16 are increasing. The lack of a shoulder and a left-turn lane for eastbound traffic on SR 16 causes a safety concern as documented in the *Certified Environmental Impact Report for the Solano Concrete Company Short-Term, Off-Channel Mining Permit Application*, Yolo County, September 5, 1995.

- On Road 19 west of I-505, a series of two sharp horizontal curves exist with a non-standard horizontal road alignment requiring a speed limit of 30 miles per hour. This alignment does not meet current County standards for design speeds on County roadways. The reduced design speed causes a potential for accidents, particularly from vehicles drifting into oncoming travel lanes and rollover accidents from excessive speeds through the curves.

- Road 14, west of I-505, also contains several sharp horizontal curves. This section has a posted speed limit of 25 miles per hour and portions are unpaved (i.e., gravel). The unpaved portion of the road is identified as a separate issue in the section on deteriorated pavement.

Narrow or Substandard Bridges. These are bridges that are less than 20 feet in width or that have been identified as being in need of structural repair by the State or Federal government. Bridge widths were obtained from the *County of Yolo Bridge Replacement Workshop (December, 1993)*, and were verified by field observations.[8]

Two bridges, each located on Road 89, were listed by the Federal government as being in need of replacement or rehabilitation. One bridge is the southbound approach of the SR 16 / Road 89 intersection; the other is located about one-half mile to the north.

The following list summarizes bridges less than 20 feet in width within the study area. The general location of each bridge is provided along with the County bridge number.

- Road 14 between Road 86 and Road 87 (014--11.95);
- Road 19 west of I-505 (019--13.76);

[7]Site surveys conducted at various locations by Fehr & Peers Associates' staff on December 22, 1995 .

[8] Site surveys conducted at various locations by Fehr & Peers Associates' staff on December 22, 1995.

- Road 19 - two bridges east of I-505 (019--15.15, 019--16.79); and
- Road 85 north of Road 16A (085--11.71).

Frequent Accident Locations. These include locations in which four or more accidents have occurred in a twelve-month period during the past three years. The data indicate that no individual locations experienced four or more accidents over a 12-month period within the past three years.

Deteriorated Pavement. These include pavement sections that have deteriorated to the point that they may affect public health and safety. Field observations[9] indicated that only one road segment has pavement that meets this condition. A one-mile segment of Road 14 is gravel and the addition of traffic is considered undesirable without improvements to the surface. It should be noted that while a number of road segments were identified as having 'poor' pavement in Table 4.8-1, only the Road 14 section identified above is considered to be deficient to the point that it may affect public health and safety.

Intersections with Limited Curve Radii. These are cases where the limited curve radius at an intersection may cause a truck to access an on-coming lane while making a turning movement. Based on field observations,[10] the following intersections were identified as having limited turning radii:

- Road 14 / Road 85 - the northbound right-turning movement;
- Road 19 / Road 87 - the northbound right-turning movement;
- Road 20 / Road 96 - all right-turning movements; and
- SR 16 / Road 89 - the westbound right-turning movement.

Transit System

The Yolo County Transit Authority operates 'Yolobus', a fixed-route (i.e., buses follow a pre-determined route) bus service for Yolo County residents. On Mondays and Thursdays, Yolobus provides round-trip service from Capay, Esparto, and Madison to Woodland. A bus departs from Capay at 10:00 a.m. and picks up passengers in Esparto and Madison. It arrives in Woodland at 10:30 a.m. and departs again at 12:30 p.m., dropping off its last passengers in Capay by 12:50 p.m. Figure 4.8-5 shows the existing routing of Yolobus within the study area.

Bicycle and Pedestrian System

Bicycle and pedestrian travel within the study area is limited primarily because of the rural, limited density character of the area. The lack of bicycle and pedestrian facilities also contributes to the limited amount of bicycle/pedestrian travel. According to the *County of*

[9] Site surveys conducted at various locations by Fehr & Peers Associates' staff on December 22, 1995.

[10] Site surveys conducted at various locations by Fehr & Peers Associates' staff on December 22, 1995.

Yolo Bikeway Plan, January 1993, no bicycle facilities currently exist within the study area. This was verified by field observations.[11]

School Bus Operations

Residents living in the unincorporated areas of Yolo County rely on school buses to transport children to school. Two school districts, Woodland Joint Unified and Esparto Unified, are located within the study area. The jurisdiction of the Woodland Joint Unified School District extends from Woodland to Road 95, while the Esparto Unified School District has jurisdiction west of Road 95.

School district staff were contacted to identify existing school bus routes and schedules.[12] Within the study area, the Woodland Joint Unified School District operates three buses. One bus operates south of SR 16 on Roads 96, 97, and 98 and picks up elementary school students attending school in Woodland. The other buses operate along various study roadways including SR 16 and Road 20. These buses serve both high school and elementary school students. Buses typically operate from 6:00 a.m. to 9:00 a.m. and 2:00 p.m. to 5:00 p.m.

The Esparto Unified School District operates four buses that transport students from their residences to schools in Esparto.[13] Buses currently travel on numerous roadways within the study area, including SR 16 from Esparto to Road 93, Roads 93, 85, 86 and 87, and Road 19 from Road 87 to beyond I-505. There are currently three stops on SR 16 within the study area. Hours of bus travel typically occur from 6:00 a.m. to 8:00 a.m. and from 1:00 p.m. to 4:00 p.m.

Figure 4.8-5 shows the roadways within the study area typically traveled by school buses, as well as the current student pick-up locations along SR 16.

Regulatory Setting

The regulatory setting section identifies the policies, plans and regulations of other related planning documents that may be applicable to this analysis. These policies were used to formulate the basis of the standards of significance against which project impacts are evaluated. The following lists the policies and programs relevant to the traffic and circulation analysis.

---

[11] Site surveys conducted at various locations by Fehr & Peers Associates' staff on December 22, 1995.

[12] Telephone conversation with Eldon Sims, Supervisor, Transportation Department of the Woodland Joint Unified School District Transportation Department on 11/8/95.

[13] Per telephone conversation with Art Plunkett, Maintenance, Operations and Transportation Supervisor for the Esparto Unified School District on 11/8/95.

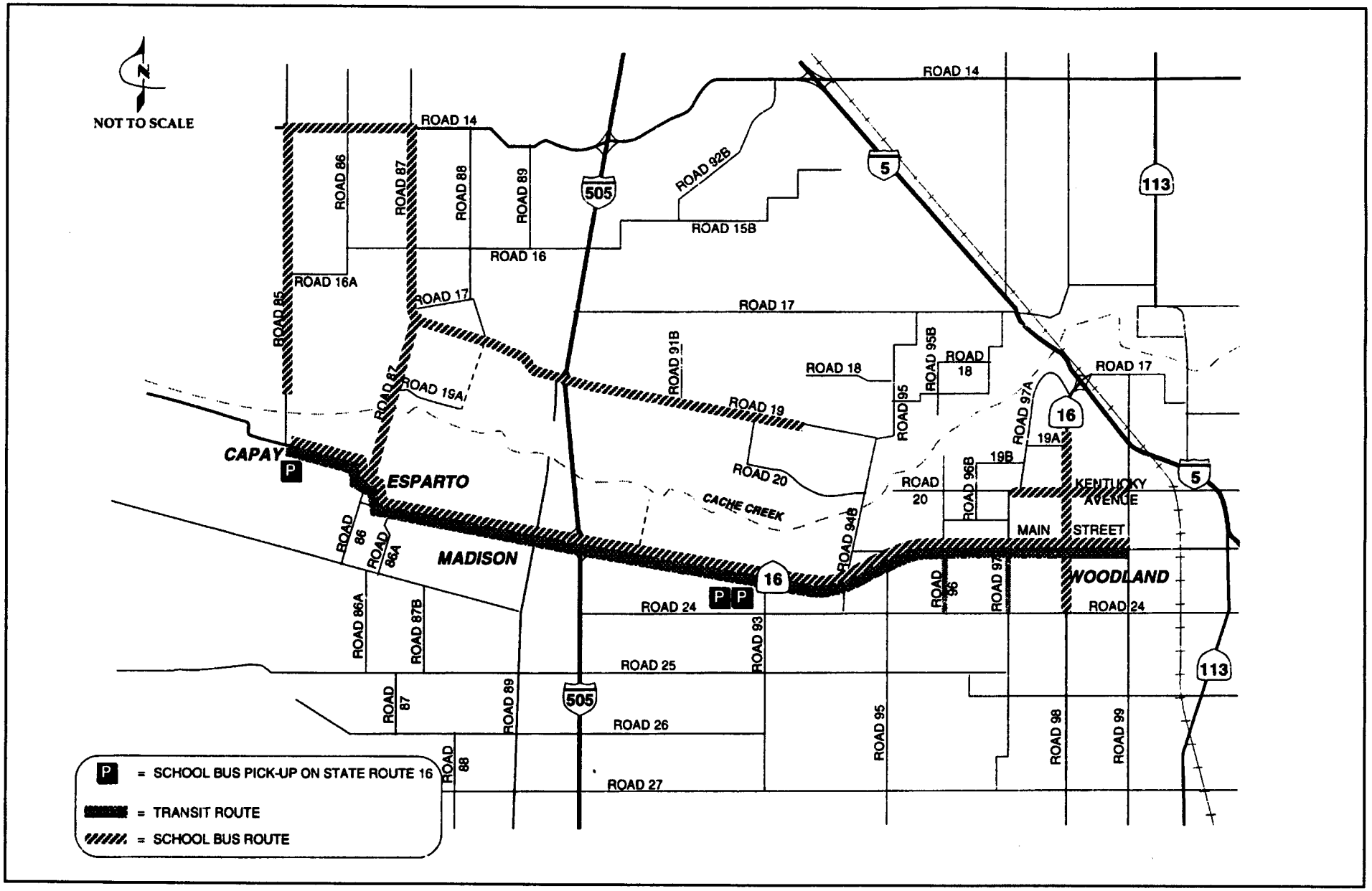


Figure 4.8-5 Transit and School Bus Routes

SOURCE: FEHR & PEERS ASSOCIATES, INC.

Yolo County General Plan

CIR 3 Transportation, Basic: Yolo County shall plan, develop, and maintain a comprehensive, coordinated transportation system and road net to insure all persons the opportunity for safe, efficient, convenient, and pleasant movement of persons and goods without substantial congestion or delay, while encouraging greater efficiency, including the substitution of alternate transportation and consideration of ground, air, and water modes.

CIR 4 Circulation/Reduce Conflicts and Tie Communities: Yolo County shall seek to design and implement a circulation and transportation system which:

1. Reduces conflicts between land use and circulation-transportation.

2. Shields adjoining areas and community from noise, fumes, dust, and congestion.

3. Promotes new non-polluting forms of transportation.

4. Requires routing, construction, and operation of transportation facilities to protect or enhance environmental quality.

5. Develops intra-community ties by creating a functional and aesthetically pleasing system of transportation corridors, pedestrian and bicycle ways and landscaped open areas which harmonize development in areas of transition.

CIR 5 Public Transit/Reduce Autos: Yolo County shall seek to establish, expand, and improve a balanced public transportation system, integrated with the Regional System, to meet basic transportation needs as expeditiously as possible; to encourage diversion of substantial numbers of riders from autos to transit; to meet the transportation needs of the elderly, the handicapped, and the young; and to facilitate interconnections with other modes of transit.

CIR 6 Measures to Improve Circulation: Yolo County shall continue to seek and improve upon measures to relieve traffic congestion and to ensure traffic safety. Some of the measures to achieve this policy include:

- Traffic signal synchronization
- Local and linear congestion relief construction
- Turning lanes
- Improved signing and striping
- Ramp metering
- Flex-time
- Encourage conversion from individual auto transit to mass transit
- Other similar measures

CIR 7 Service Level: Yolo County shall require a service level of "C" for all County roads (service Level "C" is "a stable flow of traffic and a relatively satisfactory operating speed.).

CIR 8 Maintenance/Safety: Yolo County shall maintain and upgrade all road facilities to the established standards including capacity, curve, alignment, signing, traffic control, access control, and special safety features.

CIR 11 Pedestrian Safety: Yolo County shall promote pedestrian safety by providing appropriate pedestrian controls and amenities and by requiring these things to be provided in private development projects, subject to County approvals.

CIR 12 Pedestrians: Yolo County shall promote and ensure the provision of facilities and routes where appropriate for safe and convenient use by pedestrians including sidewalks, pedestrian access to all public facilities and transit stops, and to public areas in the community including waterfront projects and recreation hiking trails.

CIR 14 Bikeways and Pedestrian Ways: Yolo County shall plan and promulgate adequate, safe bikeways and pedestrian ways, integrated with other transit modes and coordinated with all form of development.

CIR 17 Residential Truck Routes: Yolo County shall discourage truck traffic on residential streets and shall apply traffic controls, speed limits, and load limits on residential street truck routes where assignment to truck traffic is unavoidable.

CIR 18 Direct Access to Arterials and State Highways: Direct driveway access to County and State arterials and highways shall be discouraged. Such direct access shall be prohibited in new subdivisions of more than four parcels.

Route Concept and Development Report for State Route 16

The Route Concept and Development Report for State Route 16, California Department of Transportation, District 3, July, 1987, identifies level of service D as the concept level of service for State Route 16 through the study area.

IMPACTS AND MITIGATION MEASURES

The impact analysis identifies the impacts of the proposed project on the roadway system, the transit system, pedestrian and bikeway systems and school bus operations. The first part of this section describes the assumptions and methodology used in the analysis, while the second part identifies the standards for determining when an impact is considered significant. The third part documents the impact analysis results and identifies specific project impacts and mitigation measures.

Assumptions and Methodology

This section begins with a discussion of the planned improvements for each travel mode. Next, the expected trip generation of the project, the no project and the alternatives under cumulative conditions are summarized, as are the cumulative haul route assumptions. The cumulative conditions analysis is conducted for 2027, the year corresponding with the end of the proposed 30-year permit period. The analysis results of each travel mode are presented for each alternative.

Planned Improvements

According to the *Yolo County General Plan*, Yolo County, July, 1983 and the *Yolo County Congestion Management Program*, Yolo County, January, 1994, no major road improvements are planned in the study area. However, some improvements were included as conditions of approval for other developments under previous entitlements in the area. (See Figure 4.8-6). These include:

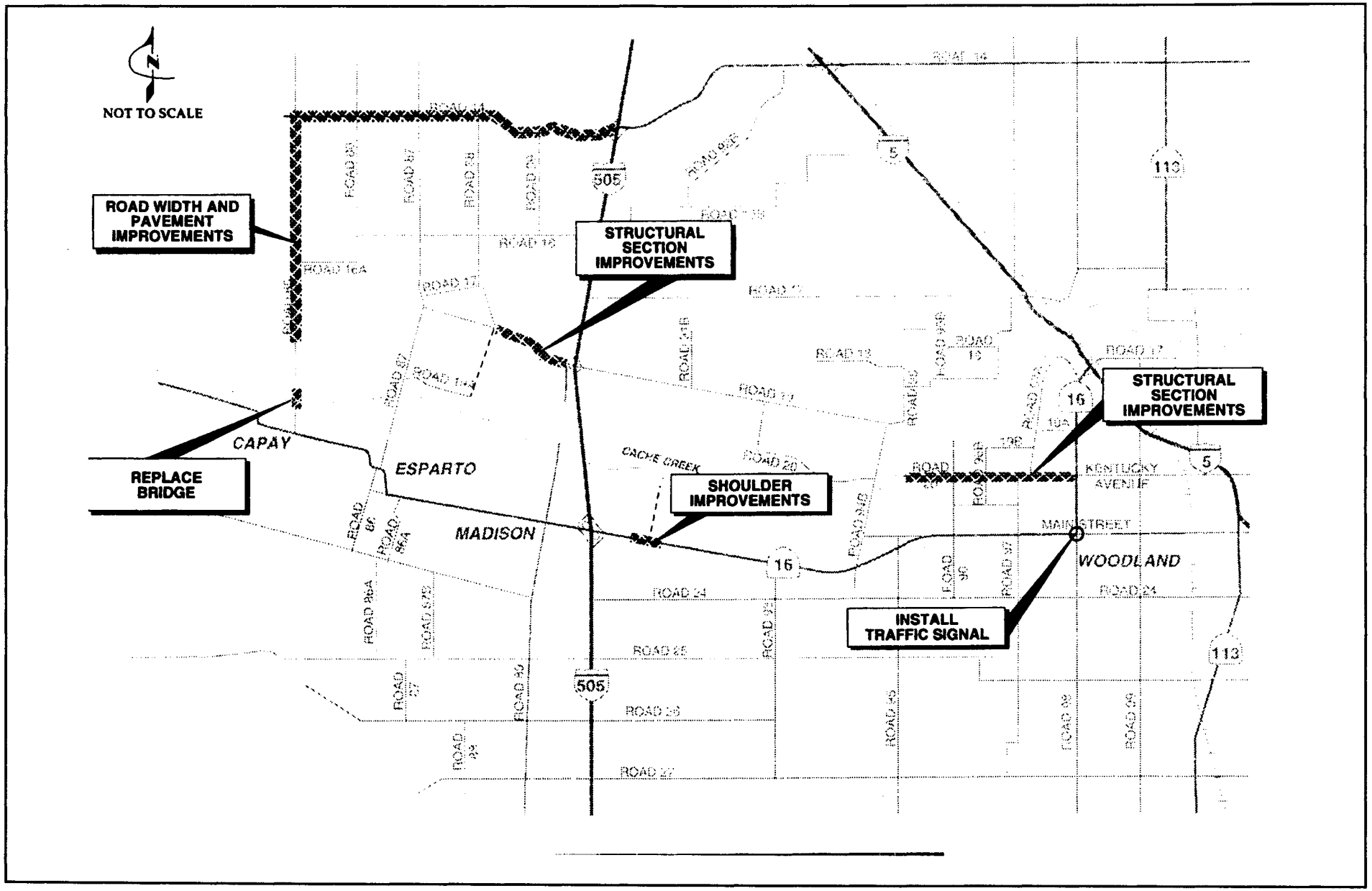


Figure 4.8-6 Planned Roadway Improvements

SOURCE: FEHR & PEERS ASSOCIATES, INC.

- Install asphalt to provide a paved eight-foot shoulder for a 300-foot segment of SR 16 adjacent to the Solano Concrete driveway to facilitate passing maneuvers;[14]
- Improve the structural section of Road 19 from the Teichert Esparto access road to I-505;[15]
- Widen and improve the pavement of Roads 85 and 14 to serve the Cache Creek Aggregates site;[16]
- Improve the structural section of Road 20 from the Teichert Woodland plant entrance to Road 98;[17] and
- Install a traffic signal at the SR 16/Road 98 intersection in conjunction with the Wild Wing project.[18]

In addition, improvements are planned for the site access intersections at the Wild Wing and Pheasant Glen developments.[19]

According to discussions with Yolo County Transit Authority staff, the Authority does not foresee increased Yolobus service within the study area given that modest growth is expected in the area. According to the *County of Yolo Bikeway Plan* , January 1993, a Class II (i.e., on-street) bike lane is planned in the future along County Road 24 from Woodland to I-505 and along State Route 16 west of I-505.

School bus operations are not expected to change substantially in the future. It is difficult to identify needed operational improvements since school bus routes are continually changing in response to the location of students. For this reason, improvements such as bus shelters or turnouts have not been proposed by school district officials.

---

[14] Improvement required of the Solano Concrete Company as a mitigation measure included in the *Certified Environmental Impact Report for the Short-Term Off-Channel Mining Permit Application*, Yolo County, September, 1995.

[15] Improvement required of Teichert Aggregates as a mitigation measure included in the *Certified Environmental Impact Report for the Short-Term Mining and Reclamation Project for the Reiff Site*, Yolo County, September, 1995.

[16] Based on conversations with Ben Adamo of Cache Creek Aggregates, February 13, 1996.

[17] Improvement required of the Teichert Aggregates as a mitigation measure included in the *Certified Environmental Impact Report for the Short-Term Mining and Reclamation Project for the Woodland Properties Site*, Yolo County, September, 1995.

[18] Per the *Public Improvement Plan for the Wild Wing Country Club, Mitigation Monitoring and Reporting Program*, Yolo County, August 17, 1992.

[19] Per the *Public Improvement Plan for the Wild Wing Country Club, Mitigation Monitoring and Reporting Program*, Yolo County, August 17, 1992 and the *Conditions of Approval for the Pheasant Glen Golf Course Project*, Yolo County, November 6, 1991.

Trip Generation for the Draft CCRMP

Existing Conditions

The following lists the key assumptions associated with the trip generation of the proposed project under existing conditions.

- A total of 1,200,000 tons per year will be removed from the creek for maintenance purposes during the first five years.[20] For the purposes of this analysis, it was assumed that this gravel would be processed at the plants in the area and that 60 percent of the total would be useable gravel. Each of the 6 plants was assumed to produce 120,000 tons per year for the first five years.

- Because of the limited-use intent of the passive recreational uses in the Cache Creek area, traffic generated by these uses would be negligible in consideration of all other background traffic generated in the study area.

- Trucks are assumed to carry 22 tons per load. An average work year is assumed to include 247 work days.

Under existing conditions, even though implementation of the CCRMP would require channel stabilization and erosion control, in-channel commercial mining currently being conducted and permitted would cease. Since the quantity of in-channel mining from the producers is far greater than the level of activity associated with proposed creek maintenance, traffic generation would be substantially reduced under an existing plus project condition. Therefore, this impact analysis focusses on the cumulative plus project condition, in which case the producers would be assumed to mine off-channel as proposed under the OCMP.

Cumulative Conditions

The following lists the key assumptions associated with the trip generation of the proposed project under cumulative conditions (i.e., 2027).

- After the first five years, a total of 200,000 tons per year will be mined by Yolo County for maintenance purposes. For the purposes of this analysis, it was assumed that this gravel would be processed at the plants in the area and that 60 percent of the total would be useable gravel. Each of the 6 plants was assumed to produce 20,000 tons per year after the first five years.

[20] After the first five years, the volume of in-channel mining would be reduced to 200,000 tons per year.

- Because of the limited-use intent of the passive recreational uses in the Cache Creek area, traffic generated by these uses would be negligible in consideration of all other background traffic generated in the study area.

- Trucks are assumed to carry 22 tons per load. An average work year is assumed to include 247 work days.

Table 4.8-8 displays trip generation of the proposed project under cumulative (2027) conditions. As this shows, the project would result in an increase of 48 trips per day.

Trip Generation for Cumulative Conditions without the Project

To conduct the cumulative conditions analysis without the project (i.e. cumulative no project), the following assumptions regarding background traffic, population growth, and the roadway network were utilized in the analysis. Similar to the trip generation assumptions, the land use assumptions are conservative so as to ensure project impacts are not underestimated.

- For this cumulative analysis, the increased levels of commercial mining under the OCMP were assumed in place. The purpose of this assumption was to more clearly identify the project impacts, (i.e., the impacts of in-channel creek maintenance activities). It was assumed that each applicant seeking a long-term permit would operate at maximum production levels under the OCMP, thereby generating the maximum number of truck trips for an average day. Specific production sales assumptions include:

    - The Cache Creek Aggregates site, located north of Cache Creek between Road 85 and Road 87, would increase from a currently permitted total of 748,650 tons per year to 1,000,000 tons per year;

    - The Solano Concrete site, located north of SR 16 and east of I-505, would increase from a current maximum of 772,417 tons per year to 1,200,000 tons per year;

    - The Syar Industries site, located between Roads 87 and 89 north of SR 16, would increase its maximum production total of 960,871 tons per year to 1,952,000 tons per year;

    - The Teichert - Esparto Properties site, located south of Road 19 between Road 87 and I-505, would increase from the current permitted maximum level of 750,000 tons per year to 1,000,000 tons per year; and

    - The Teichert - Woodland Properties site, located at the western end of Road 20, would increase from the current permitted maximum level of 1,064,224 tons per year to 1,200,000 tons per year.

Table 4.8-8
Cumulative Conditions Project Trip Generation

Estimated Production from Creek Maintenance	Site						Total
	Woodland Properties	Esparto Properties	Syar Industries	Solano Concrete	Cache Creek Aggregates	Schwarz-gruber	
Total Annual Production (tons):	33,333	33,333	33,333	33,333	33,333	33,333	200,000
Usable Annual Production (tons):[1]	20,000	20,000	20,000	20,000	20,000	20,000	120,000
Average Daily Production (tons):[2]	81	81	81	81	81	81	486
Average Daily Truck Loads:[3]	4	4	4	4	4	4	24
Average Daily Truck Trips:	8	8	8	8	8	8	48
Average Morning Peak Hour Trips:	2	2	2	2	2	2	12
Inbound	1	1	1	1	1	1	6
Outbound	1	1	1	1	1	1	6
Average Evening Peak Hour Trips:	2	2	2	2	2	2	12
Inbound	1	1	1	1	1	1	6
Outbound	1	1	1	1	1	1	6

Notes: [1] Assumes that 60 percent of aggregate production is usable.
[2] Assumes 247 work days per year.
[3] Assumes 22 tons per load.

- Schwarzgruber, an existing mining operation located along Road 96, would operate at current production levels from 1997 through 2001, and at 158,650 tons per year from 2002 to 2032.

- No producer will process raw aggregate materials brought in from another location.

- The volume of recycled materials is assumed to be 4 percent of total production, with 2 percent resulting in new truck trips. Since this does not count against the producer's production totals, it is assumed that this will result in additional truck trips. The assumption of increased recycling under cumulative conditions reflects technological changes and the goal of the OCMP which encourages recycling.

- A "dummy variable" of 200 acres was assumed as a part of the cumulative condition. Of the 200 acres, 150 acres is assumed to be located along Cache Creek west of I-505, while 50 acres is assumed to be located east of I-505.

- Granite, an existing mining operation in the study area, was assumed to have mined all resources by 1997 and therefore not be in operation thereafter.

- The Wild Wing (337 single family dwelling units) and Pheasant Glen (18-hole golf course) planned developments are assumed in place by 2027.

- Cumulative background traffic levels were computed by applying growth rates to existing background daily traffic volumes and intersection turning movements. Caltrans' count data revealed that the expected annual growth rate of traffic on SR 16 east and west of Road 89 is 1.5 and 2.0 percent, respectively. A 1.5 percent annual growth rate was conservatively assumed for all County roads, which is consistent with the annual growth rate of 1.6 percent projected by the Yolo County Community Development Agency[21] for the entire unincorporated Yolo County.

- Growth in the Woodland area is assumed to occur consistent with the *City of Woodland General Plan and Draft EIR*, City of Woodland, adopted February 27, 1996. This corresponds to a population growth rate of 2.0 percent per year.

The cumulative no project conditions analysis encompasses the scenario that the future activities listed above would take place, but no in-channel production from creek maintenance would occur.

Trip Generation for Project Alternatives

Four project alternatives have been identified for evaluation in this document. Table 4.8-9 summarizes the total trip generation for each project alternative, which is followed by a

[21] Per 2/9/96 telephone conversation with David Morrison, Resource Management Coordinator for the Yolo County Community Development Agency based on data provided by SACOG.

brief discussion of the general traffic and circulation aspects of each alternative based on the production totals for each producer listed in the project description.

It should be noted that none of the reduction in traffic volumes are related to in-channel production from creek maintenance. The reduction in traffic is entirely attributable to the difference in off-channel mining from the no project (i.e., OCMP levels) to the levels identified for each alternative.

Alternative 1a: No Project (Existing Conditions)

Under this alternative, aggregate production would continue at the existing 1995 production levels and no creek management program would be implemented. As this alternative represents existing conditions, no new traffic would be generated and no new traffic impacts would result. In fact, this alternative results in a net reduction of 1,626 trips per day in comparison to the cumulative condition without the project. This large reduction is due entirely to the reduction in commercial mining of this alternative as compared to the no project scenario (i.e., the OCMP). Existing deficiencies would continue to deteriorate, but at a slower rate than under other alternatives involving increased levels of production. Since Cache Creek Aggregates would not be operational, impacts to Roads 85 and 14 would be eliminated under this alternative.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Under this alternative, production is assumed to occur at maximum permitted levels under existing permits and no maintenance mining would occur. Volumes would increase over current levels, but would be reduced by 893 daily trips in comparison to the cumulative no project condition. This large reduction is due entirely to the reduction in commercial mining of this alternative as compared to the no project scenario (i.e., the OCMP). Existing deficiencies would continue to deteriorate, but at a slower rate than under other alternatives involving increased levels of production.

Alternative 2: No Mining (Alternative Site)

Under this alternative, existing permits to mine and operate plants would be voided for all producers. To meet market demand, mining would occur in the Marysville/Yuba City and Sacramento regions and the aggregate necessary for construction would be imported into the study area. The total market demand in future years is expected to be approximately 2.2 million tons per year.

The only study area roadways expected to be impacted by truck deliveries destined outside the area are Interstates 5 and 505; however, County roads would not be impacted unless

Table 4.8-9
Comparison of Trip Generation by Alternative

Alternative	Average Daily Traffic - Cumulative Conditions		
	Proposed Maximum Levels - No Project Conditions[1]	Proposed Levels Under Each Alternative[2]	Change Compared to Proposed Maximum Levels
CCRMP	2,412	2,460	48
Alt 1a - Actual 1995 Levels	2412	786	-1,626[3]
Alt 1b - 1995 Permitted Levels	2,412	1,519	-893[3]
Alt 2 - No Mining	2,412	28	-2,384[3]
Alt 3 -Channel Bank Widening	2,412	733	-1,699[3]

Notes:
1 Based on proposed maximum sales production total of 6,510,650 tons per year, plus auto traffic generated from increased employment at each site.
2 Based on total tonnage identified for each alternative, plus estimates for changes in auto traffic due to changes in employment at each site. Does not include production from creek maintenance.
3 The decrease in total traffic is entirely attributable to the difference if off-channel mining from the no project (i.e., OCMP levels) to the levels identified for each alternative. No change in production from creek maintenance is projected.

Source: Fehr & Peers Associates, 1996.

they served a project-specific construction location. Assuming construction within the study area represents 10 percent of the market demand (i.e., 220,000 tons per year), an average of 82 truck trips would access area roadways per day. This represents a net reduction of approximately 2,384 truck trips per day in comparison to levels under the cumulative no project condition. This large reduction is due entirely to the reduction in commercial mining of this alternative as compared to the no project scenario (i.e., the OCMP). State Route 16 would likely be the most heavily travelled roadway for these local deliveries, and minimal traffic would be expected on most County roads.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Under this alternative, the CCRMP would establish a wider channel boundary, which would require the lengthening of local bridge crossings of Cache Creek. No maintenance mining would occur in-channel; however, 2.03 million tons per year is assumed to be mined off-channel. Specific assumptions regarding the locations of the off-channel mining include 444,000 tons per year from Solano Concrete, 1.52 million tons per year from Syar and the remaining 66,000 tons per year from the Lowe rezone property at the Teichert Esparto properties site. Alternative 3 would result in a net reduction of 1,699 trips per day in comparison to the cumulative no project condition. This large reduction is due entirely to

the reduction in commercial mining of this alternative as compared to the no project scenario (i.e., the OCMP).

Proposed Haul Routes

The proposed haul routes for each of the five long-term permit applications were obtained from each applicant. Since most of the truck traffic is destined to/from locations outside the study area, a majority would utilize SR 16 to access I-505 or I-5. A limited number of trips would also be destined for the City of Woodland and the City of Davis. Figure 4.8-7 shows the study area roadways proposed to be used as haul routes. A detailed summary of the haul routes and trip distribution assumptions for each producer is included in the separately bound technical appendix entitled *Technical Appendix to the Long-Term Mining and Reclamation Permit Application Projects along Cache Creek in Yolo County*, Fehr & Peers Associates, February, 1996.[22]

Analysis of Cumulative Conditions without the Project

Figure 4.8-8 displays the cumulative daily traffic projections and levels of service for the study roadways under the no project scenario. As this shows, all facilities would continue to operate at acceptable levels of service. All segments of State Route 16 east of Esparto would degrade to LOS D, while most County road segments would continue to operate at LOS A or B.

The no project scenario contributes to the exacerbation of existing deficiencies, as well as the accelerated deterioration of pavement. The specific locations and the degree to which facilities are impacted is discussed in detail in the following section of this report.

Each of the study intersections was analyzed under the cumulative no project condition to determine the morning and afternoon peak hour level of service. Table 4.8-10 summarizes the results of the analysis.[23] As this shows, the intersections of Road 89 and Road 98 with State Route 16 were found to operate unacceptably in 2027. A review of the peak hour traffic signal warrant criteria listed in the *Traffic Manual*, California Department of Transportation, 1991, reveals that a traffic signal would be warranted at both intersections.

None of the aspects of the cumulative no project condition would result in a disruption or interference with any existing or planned bicycle, pedestrian or transit facilities. Similarly, school bus operations would not be disrupted as a direct result of the increased traffic projected under the no project condition.

---

[22] It should be noted that the Cache Creek Aggregates site is currently considering three haul route alternatives. For the purposes of this analysis, the currently permitted route accessing Road 85 to Road 14 and I-505 was assumed.

[23] The traffic volumes and calculation sheets are included in the separately bound technical appendix entitled *Technical Appendix to the Long-Term Mining and Reclamation Permit Application Projects along Cache Creek in Yolo County*, Fehr & Peers Associates, February, 1996.

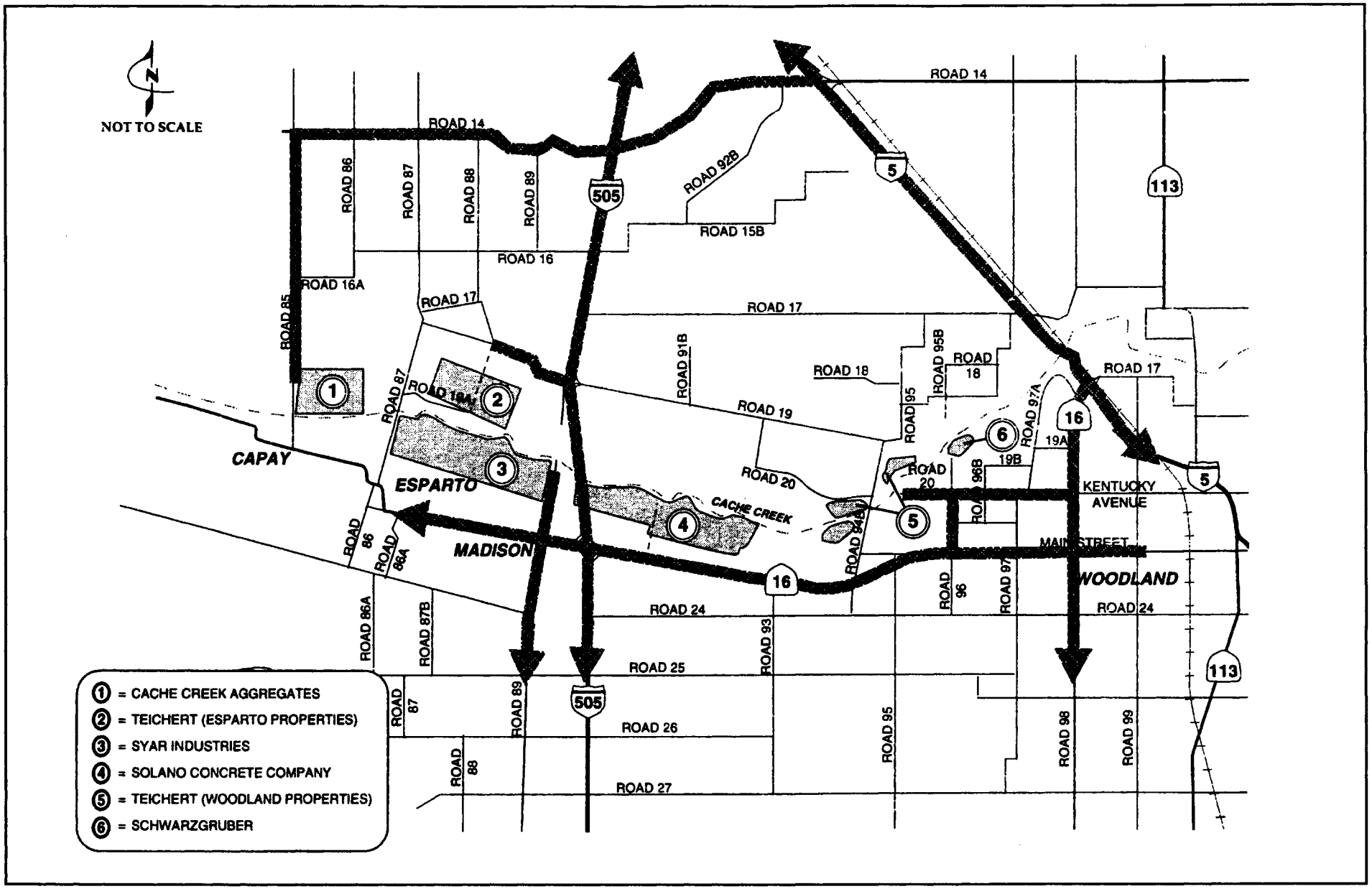
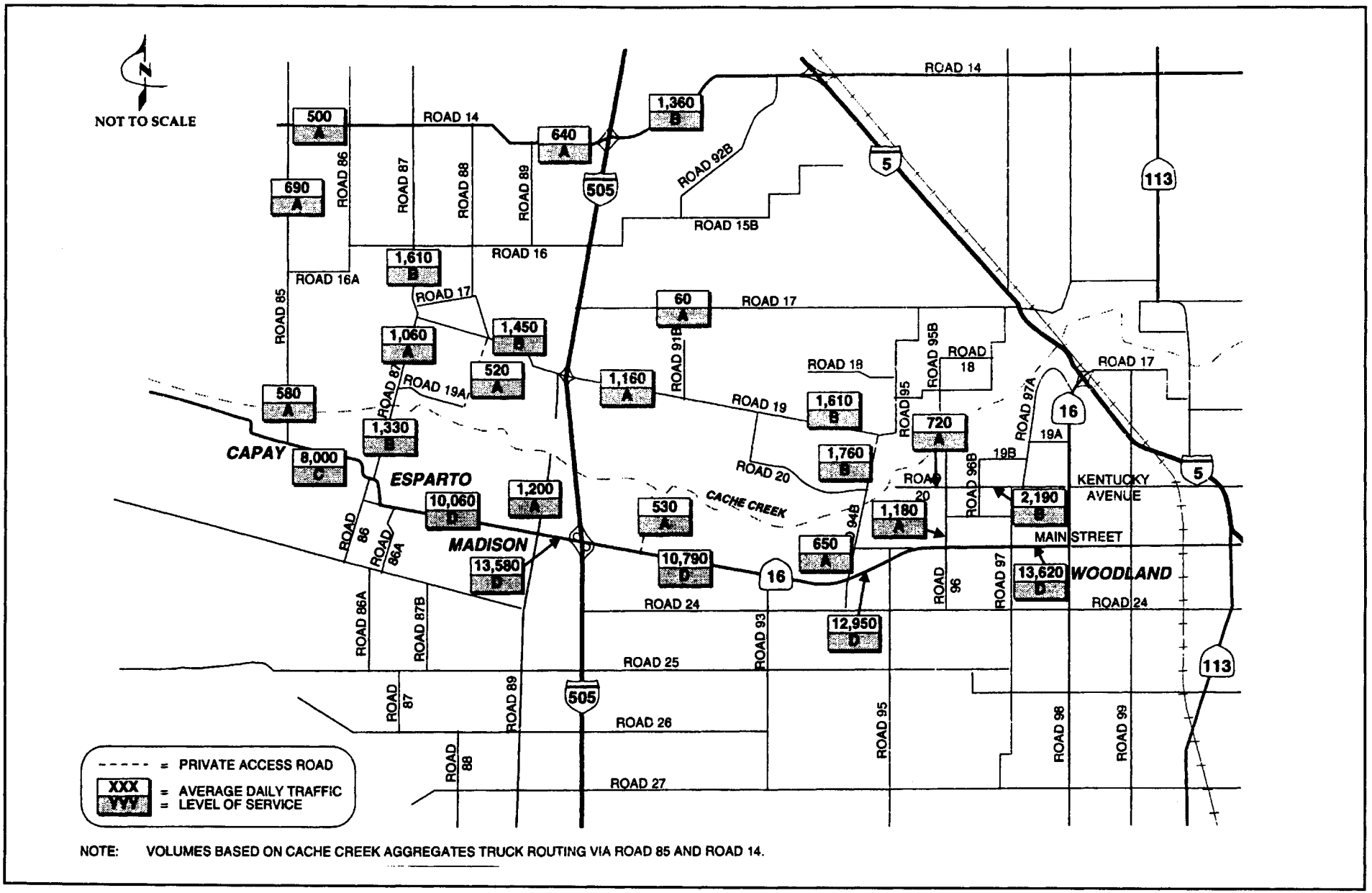


Figure 4.8-7 Proposed Haul Routes

SOURCE: FEHR & PEERS ASSOCIATES, INC.



NOTE: VOLUMES BASED ON CACHE CREEK AGGREGATES TRUCK ROUTING VIA ROAD 85 AND ROAD 14.

Figure 4.8-8 Cumulative No Project Roadway Segment Volumes and Levels of Service

SOURCE: FEHR & PEERS ASSOCIATES, INC.

Table 4.8-10 Cumulative No Project Conditions - Intersection Levels of Service		
Intersection	AM Peak Hour LOS	PM Peak Hour LOS
Road 20 / Road 96	LOS C or better	LOS C or better
Road 20 / Road 98	B	A
SR 16 / Road 96	A	A
SR 16 / Road 98	Worse than LOS C	Worse than LOS C
SR 16 / I-505 Northbound Ramps	A	A
SR 16 / I-505 Southbound Ramps	A	A
SR 16 / Road 89	Worse than LOS C	Worse than LOS C
Road 19 / I-505 Northbound Ramps	A	A
Road 19 / I-505 Southbound Ramps	A	A
Road 19 / Road 87	A	A
Road 14 / I-505 Northbound Ramps	A	A
Road 14 / I-505 Southbound Ramps	A	A
Road 14 / Road 85	A	A
Notes: Results are presented as LOS A, B, C, D, E or F for side-street stop-controlled intersections. Results are presented as either "LOS C or better" or "Worse than LOS C" for all-way stop-controlled intersections. Please refer to methodology discussion on page 4.8-9 of this section. Source: Fehr & Peers Associates, 1995.		

Analysis of Cumulative Conditions with the Project Alternatives

Cumulative conditions analyses were also conducted for each project alternative. The proposed project was analyzed first to determine which roadways and intersections were deemed potentially critical for any other alternative.

CCRMP (Proposed Project)

The proposed project includes the traffic generated by channel improvements as described above. Figure 4.8-9 shows cumulative daily traffic projections and levels of service for the study roadways under the cumulative scenario with the proposed project. Similar to the no project condition, all County roads would operate at LOS A or B, while the operations of SR 16 would operate at LOS D in most locations. All facilities would operate above the identified LOS standard of significance identified above. No changes in LOS would result from the addition of the project traffic.

The proposed project contributes to the exacerbation of existing deficiencies, as well as the accelerated deterioration of pavement at a rate greater than the cumulative no project condition. The specific locations and the degree to which facilities are impacted is discussed in detail in the following section of this report.

The peak hour intersection operations were also analyzed under cumulative conditions with the project. The resulting morning and afternoon peak hour levels of service are shown in Table 4.8-11.[24] The results are identical to the results of the no project analysis. The intersections of Road 89 and Road 98 with State Route 16 would operate unacceptably and meet warrants for installation of a traffic signal.

Similar to the no project condition, the increased traffic that would result from the project would not disrupt or interfere with any existing or planned bicycle, pedestrian, or transit facilities, school bus operations.

Other Project Alternatives

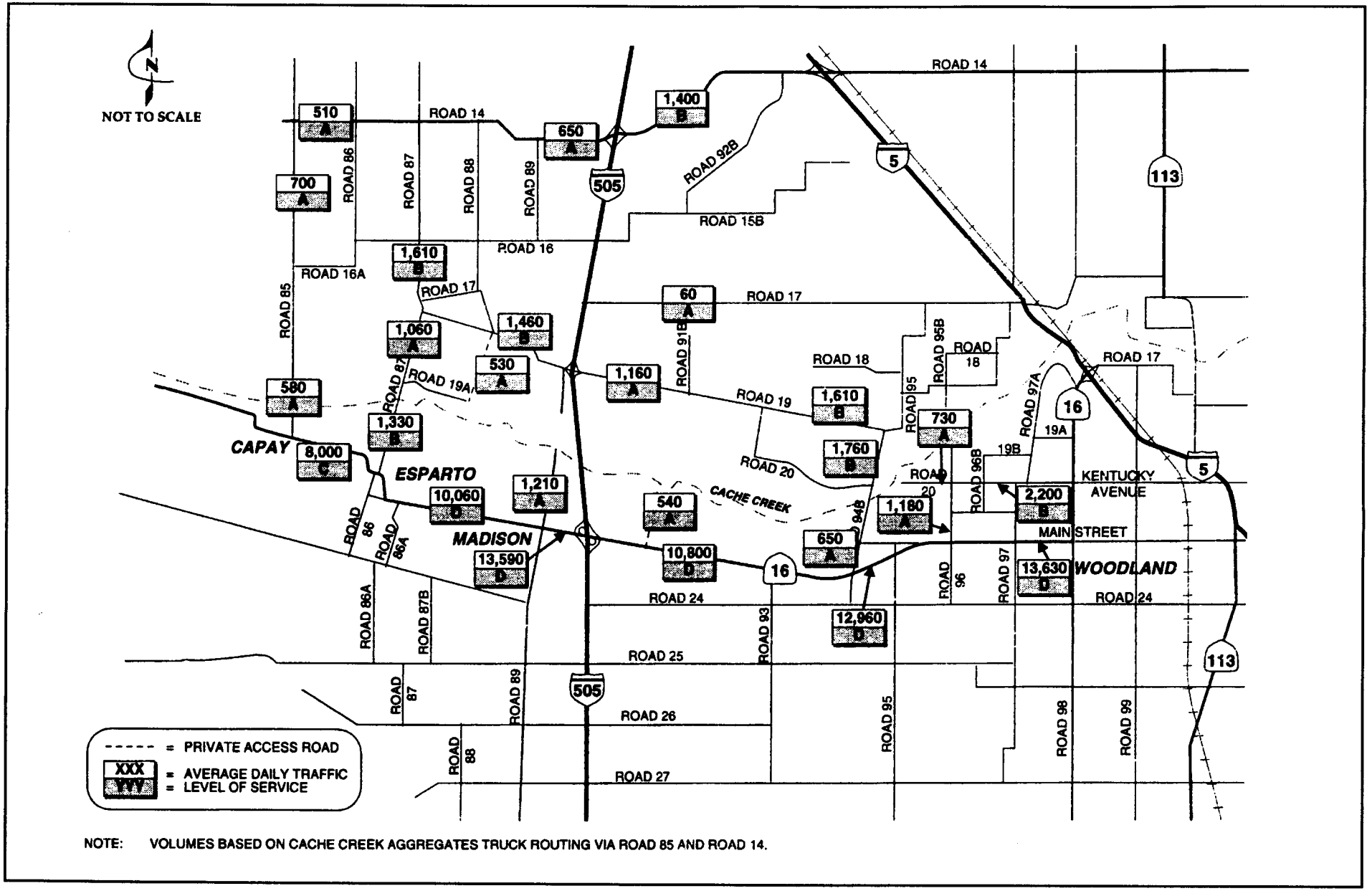
As shown in Figures 4.8-8 and 4.8-9, the only roadway that approaches its threshold for acceptability is SR 16, where LOS D operations are projected with or without the project. Given that the proposed project would not cause any of the County roads to approach their operational threshold, the analysis of the remaining alternatives focusses on SR 16. Table 4.8-12 shows the resulting average daily volumes and LOS for each study segment of SR 16 under each alternative. As this shows, the project alternatives would cause only slight variations in traffic on this facility, with no changes in LOS.

In terms of the intersection operations, only two locations would present operational problems under cumulative conditions, either with or without the project. The intersections of SR 16 with Roads 98 and 89 would operate "worse than LOS C" and would meet the peak hour volume warrants for a traffic signal. Therefore, the analysis of the other alternatives focussed on these two locations. Table 4.8-13 shows the morning and afternoon peak hour operations at both intersections under each alternative. As shown, no changes in operating conditions would occur as a result of any of the alternatives. Furthermore, the peak hour traffic signal warrant criteria would be met under all alternatives.

Although each of the project alternatives would result in varying levels of traffic on the study area roadways, none would disrupt or interfere with any existing or planned bicycle, pedestrian, transit facilities or school bus operations.

---

[24] The traffic volumes and calculation sheets are included in the separately bound technical appendix entitled *Technical Appendix to the Long-Term Mining and Reclamation Permit Application Projects along Cache Creek in Yolo County*, Fehr & Peers Associates, February, 1996.



NOTE: VOLUMES BASED ON CACHE CREEK AGGREGATES TRUCK ROUTING VIA ROAD 85 AND ROAD 14.

Figure 4.8-9 Cumulative Plus Project Roadway Segment Volumes and Levels of Service

SOURCE: FEHR & PEERS ASSOCIATES, INC.

Table 4.8-11
Cumulative Conditions with Project - Intersection Levels of Service

Intersection	AM Peak Hour LOS	PM Peak Hour LOS
Road 20 / Road 96	LOS C or better	LOS C or better
Road 20 / Road 98	B	A
SR 16 / Road 96	A	A
SR 16 / Road 98	Worse than LOS C	Worse than LOS C
SR 16 / I-505 Northbound Ramps	A	A
SR 16 / I-505 Southbound Ramps	A	A
SR 16 / Road 89	Worse than LOS C	Worse than LOS C
Road 19 / I-505 Northbound Ramps	A	A
Road 19 / I-505 Southbound Ramps	A	A
Road 19 / Road 87	A	A
Road 14 / I-505 Northbound Ramps	A	A
Road 14 / I-505 Southbound Ramps	A	A
Road 14 / Road 85	A	A

Notes: Results are presented as LOS A, B, C, D, E or F for side-street stop-controlled intersections. Results are presented as either "LOS C or better" or "Worse than LOS C" for all-way stop-controlled intersections.
Source: Fehr & Peers Associates, 1995.

Table 4.8-12
Average Daily Traffic and Level of Service on SR 16 for Project Alternatives

Alternative	Segment of SR 16					
	West of Road 87	Road 86A to Road 89	Road 89 to I-505	Solano Plant to Road 94B	Road 94B to Road 96	Road 96 to Road 98
Existing	4,100 - B	5,800 - C	7,400 - C	5,850 - C	6,200 - C	6,650 - C
Cumulative No Project	8,000 - C	10,060 - D	13,580 - D	10,790 - D	12,950 - D	13,620 - D
CCRMP	8,000 - C	10,070 - D	13,590 - D	10,800 - D	12,960 - D	13,630 - D
1a	8,000 - C	10,060 - D	13,070 - D	10,500 - D	12,660 - D	13,360 - D
1b	8,000 - C	10,060 - D	13,200 - D	10,610 - D	12,770 - D	13,460 - D
2	8,000 - C	10,070 - D	12,850 - D	10,400 - D	12,570 - D	13,260 - D
3	8,000 - C	10,060 - D	13,510 - D	10,570 - D	12,730 - D	13,470 - D

Source: Fehr & Peers Associates, 1996.

Table 4.8-13 Cumulative Levels of Service at SR 16 Intersections with Roads 89 and 98				
Alternative	**SR 16 / Road 98 Intersection**		SR 16 / Road 89 Intersection	
	AM Peak Hour LOS	PM Peak Hour LOS	AM Peak Hour LOS	PM Peak Hour LOS
Existing	LOS C or better	LOS C or better	LOS C or better	LOS C or better
Cumulative Background	Worse than LOS C	Worse than LOS C	Worse than LOS C	Worse than LOS C
CCRMP	Worse than LOS C	Worse than LOS C	Worse than LOS C	Worse than LOS C
1a	Worse than LOS C	Worse than LOS C	Worse than LOS C	Worse than LOS C
1b	Worse than LOS C	Worse than LOS C	Worse than LOS C	Worse than LOS C
2	Worse than LOS C	Worse than LOS C	Worse than LOS C	Worse than LOS C
3	Worse than LOS C	Worse than LOS C	Worse than LOS C	Worse than LOS C
Source: Fehr & Peers Associates, 1996.				

Standards of Significance

The project would have a significant effect on traffic and circulation if it would:

- Change the level of service of a County roadway segment or intersection from acceptable levels (i.e., LOS A, B, or C) to unacceptable levels (i.e., LOS D, E, or F) as specified by Circulation Policy CIR-7 of the Yolo County General Plan, July, 1993.

- Change the level of service on a State highway from acceptable levels (i.e., LOS A, B, C, or D) to unacceptable levels (i.e., LOS E or F) as specified by the *Route Concept and Development Report for State Route 16*, Caltrans District 3, July, 1987.

- Exacerbate conditions on a roadway or an intersection that currently operates at an unacceptable level of service.

- Add substantial (e.g., 10 or more per day) vehicle trips to a roadway facility that does not currently meet the standards identified below:

    - Non-standard road design according to County and State design standards;

    - Bridges less than 20 feet in width or those identified by the Federal or State government as being in need of structural repair;

- Locations in which four or more reported accidents have occurred in a 12-month period during the past three years;
- Pavement that has deteriorated to the degree that it may affect public health and safety; and
- Intersections in which limited curve radii cause a truck to access an on-coming lane while making a turning movement.

- Add substantial (e.g., 50 or more per day) loaded truck trips to a County-maintained roadway in which the pavement will deteriorate and require repair during the life of the permit.
- Disrupt or interfere with existing or planned transit operations and facilities of the Yolo County Transit Authority.
- Create hazards for pedestrians or bicyclists.
- Disrupt or interfere with existing or planned bicycle facilities as identified in the *County of Yolo Bikeway Plan, January 1993.*
- Disrupt or interfere with existing or planned school bus operations of the Woodland Joint Unified and Esparto Unified School Districts.

The results of the impact analysis were evaluated for each alternative based on the standards of significance listed above. Each impact is identified, followed by an analysis of impacts under the CCRMP and each of the alternatives. Finally, mitigation measures are proposed for each impact along with an assessment of the significance of the impact with the mitigation in place.

For the applicable impact, the discussion describes the amount of traffic each alternative contributes to each impacted facility beyond the cumulative no project condition. Table 4.8-14 summarizes this information for each of the impacts.

Impact 4.8-1
Potential Increase in Vehicle Trips

Draft CCRMP

The proposed levels of production from creek maintenance would generate a total of 48 new trips to the area roadway system. However, this impact is considered less-than significant because it does not result in any significant changes in traffic volumes on any of the study area roadways per the standards of significance listed above. No mitigation is required.

Table 4.8-14
Average Daily Traffic Volume by Impact for each Alternative

Impact	Description	Existing Volume	Cumulative No Project Volume[1]	Incremental Change in Average Daily Traffic (from Cumulative No Project)				
				CCRMP	Alt. 1a[3]	Alt. 1b[3]	Alt. 2[3]	Alt. 3[3]
4.8-1	Increase in Vehicle Trips	n.a.	2,412	48	-1,626	-893	-2,384	-1,699
4.8-2	Construction Impacts to Bridges	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4.8-3	SR 16 / Rd 98 intersection - LOS[2]	14,000	24,530	8	-260	-160	-360	-180
4.8-4	SR 16 / Rd 89 intersection - LOS[2]	6,320	12,430	8	-530	-400	-770	-280
4.8-5	Road 19, west of I-505 - alignment	715	1,450	8	-230	-100	-380	-360
4.8-6	SR 16, east of I-505 - alignment	5,850	10,790	8	-390	-240	-550	-390
4.8-7	Road 14, west of I-505 - alignment	150	640	8	-430	-120	-430	-420
4.8-8	Road 14, west of I-505 - pavement	150	640	8	-430	-120	-430	-420
4.8-9	Road 89, north of SR 16 - bridges	340	1,200	8	-530	-400	-770	-170
4.8-10	Road 19, west of I-505 - bridge	715	1,450	8	-230	-100	-380	-360
4.8-11	Road 85, north of Road 16A - bridge	190	690	8	-430	-120	-430	-420
4.8-12	Road 14, west of I-505 - bridge	150	640	8	-430	-120	-430	-420
4.8-13	Rd 85 / Rd 14 intersection - radii[2]	100	600	8	-430	-120	-430	-420
4.8-14	SR 16 / Rd 89 intersection - radii[2]	6,320	12,430	8	-530	-400	-770	-170
4.8-15	Rd 20 / Rd 96 intersection - radii[2]	910	1,930	8	-150	-90	-500	-49
4.8-16	Accelerated pavement deterioration	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Notes: [1] Cumulative no project volume includes background traffic plus each producer operating at proposed maximum production.
[2] Based on daily approach volumes at each leg of the intersection.
[3] The decrease in total traffic is entirely attributable to the difference if off-channel mining from the no project (i.e., OCMP levels) to the levels identified for each alternative. No change in production from creek maintenance is projected.
n.a. = not applicable - impact applies to multiple facilities
Source: Fehr & Peers Associates, 1996

Alternative 1a: No Project (Existing Conditions)

The impact is eliminated under Alternative 1a because no production from creek maintenance would occur. Because of reduction in background commercial off-channel mining, this alternative would result in a net decrease of 1,626 trips per day in comparison to the cumulative no project condition.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

The impact is eliminated under Alternative 1b because no production from creek maintenance would occur. Because of reduction in background commercial off-channel mining, this alternative would result in a net decrease of 893 trips per day in comparison to the cumulative no project condition.

Alternative 2: No Mining (Alternative Site)

The impact is eliminated under Alternative 2 because no production from creek maintenance would occur. Because of reduction in background commercial off-channel mining, this alternative results in the net reduction of 2,384 trips per day in comparison to the cumulative no project condition.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

The impact is eliminated under Alternative 3 because no production from creek maintenance would occur. Because of reduction in background commercial off-channel mining, this alternative results in the net reduction of 1,699 trips per day in comparison to the cumulative no project condition.

Mitigation Measure 4.8-1a (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-2
Potential for Traffic Impacts During Bridge Reconstruction

Draft CCRMP

With the implementation of the CCRMP, the in-channel mining would not require the reconstruction of bridges over Cache Creek. Therefore, Impact 4.8-2 would be eliminated under this alternative.

Alternative 1a: No Project (Existing Conditions)

The impact is eliminated under Alternative 1a because the reconstruction of bridges over Cache Creek would not be required.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

The impact is eliminated under Alternative 1b because the reconstruction of bridges over Cache Creek would not be required.

Alternative 2: No Mining (Alternative Site)

The impact is eliminated under Alternative 2 because the reconstruction of bridges over Cache Creek would not be required.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

In order to provide the wider channel bank for Cache Creek under Alternative 3, a number of bridge structures would require reconstruction. In each case, the bridge span would have to be lengthened to accommodate the increased width of the creek. The structures impacted would include the bridges at Road 85, Road 87 and I-505.

Traffic would have to be rerouted during construction. For the County road bridges, it is likely that the entire roadway would have to be closed. Because the I-505 bridge includes two separate two-lane bridges, it may be possible to reconstruct one bridge at a time. In this case, either the travel lanes would have to be reduced to one in each direction through the construction area, or a temporary bridge structure would have to be constructed to maintain two lanes of travel in each direction. This final decision regarding routing of traffic during construction would be made by Caltrans.

It is estimated that, depending on the type of bridge structure and the length of additional span, the reconstruction could take between 9 and 15 months per bridge. The traffic impacts of the reconstruction of the each bridge is discussed below.

- Road 85 Bridge was washed out in 1995 and is currently scheduled for reconstruction by the end of 1996. Traffic is currently routing around this location without substantial impacts. Although some longer trips are required, the impacts associated with this bridge location would be minimal.

- Road 87 Bridge is currently serving approximately 825 vehicles per day. This volume is currently being accommodated at LOS A operations, even with the Road 85 bridge closed. The temporary closure of the Road 87 bridge would not adversely impact the traffic operations of the area road system, but it would cause the rerouting of school bus trips. This presents an significant impact, but would be mitigated by the completion of the Road 85 bridge prior to the closure of the Road 87 bridge.

- I-505 Bridge is currently accessed by approximately 10,000 vehicles per day for local, regional and interregional travel. A high percentage of this volume is truck traffic. If Caltrans allowed the reduction of travel lanes to one in each direction, the

temporary lane closure would cause delays to traffic through the construction area. If Caltrans requires the construction of a temporary bridge to maintain two travel lanes in each direction, the cost may be substantially higher, but the delays to traffic would be minimal.

Mitigation Measure 4.8-2a (CCRMP, A-1a, A-1b, A-2)

None required.

Mitigation Measure 4.8-2b (A-3)

The following Performance Standard should be added to the CCRMP:

> *The County shall develop a detailed traffic management plan to identify the routing of traffic during construction of each bridge structure. The plan shall be designed to ensure adverse traffic impacts are minimized, specifically addressing the routing of auto and truck travel, as well as transit, school bus operations and emergency vehicle access. For the Interstate 505 bridge, the County shall coordinate closely with Caltrans and obtain their approval for the construction and traffic management plan in conjunction with the encroachment permit process.*

Implementation of Mitigation Measure 4.8-2b would reduce this impact to a less-than-significant level under Alternative 3.

Impact 4.8-3
Potential Change in LOS at the State Route 16/Road 98/Main Street Intersection

Draft CCRMP

The SR 16/Road 98/Main Street intersection is projected to operate at 'worse than LOS C' under cumulative conditions with or without the proposed project. A review of the peak hour traffic signal warrant criteria listed in the *Traffic Manual*, California Department of Transportation, 1991, reveals that a traffic signal would be warranted at this intersection in 2027. The construction of left-turn lanes on each approach and the installation of a traffic signal would result in acceptable operations at this intersection. However, because the project would not add 10 or more daily trips to this intersection, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Since implementation of Alternative 1a would result in a net decrease of 260 daily trips through the intersection in comparison to the cumulative no project condition, the impact is eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Since implementation of Alternative 1b would result in a net decrease of 160 daily trips through the intersection in comparison to the cumulative no project condition, the impact is eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips through the intersection by 360 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips through the intersection by 180 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Mitigation Measure 4.8-3a (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-4
Potential change in LOS at the State Route 16/Road 89 Intersection

Draft CCRMP

The SR 16/Road 89 intersection is projected to operate at 'worse than LOS C' under cumulative conditions with or without the proposed project. A review of the peak hour traffic signal warrant criteria listed in the *Traffic Manual*, California Department of Transportation, 1991, reveals that a traffic signal would be warranted at this intersection in 2027. The construction of left-turn lanes on each approach and the installation of a traffic signal would result in acceptable operations at this intersection. However, because the project would not add 10 or more daily trips to this intersection, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Since implementation of Alternative 1a would result in a net decrease of 530 daily trips through the intersection in comparison to the cumulative no project condition, the impact is eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Since implementation of Alternative 1b would result in a net decrease of 400 daily trips through the intersection in comparison to the cumulative no project condition, the impact is eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips through the intersection by 770 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips through the intersection by 280 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the intersection improvements would still be required to achieve acceptable operations.

Mitigation Measure 4.8-4a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-5
Potential Impacts to the Non-Standard Segment of Road 19, West of Interstate 505

Draft CCRMP

This segment of Road 19 consists of two sharp horizontal curves that do not meet current County design standards. These non-standard curves create a potential for vehicles to drift into the oncoming travel lane, particularly when travelling at higher speeds. This existing deficiency increases the overall potential for accidents as compared to more standard designs. However, because the project would not add 10 or more daily trips to this segment, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along this segment by 230 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along this segment by 100 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along this segment by 380 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along this segment by 360 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-5a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-6
Potential Impacts to the Non-Standard Segment of State Route 16 Between Interstate 505 and the Entrance to the Solano Concrete Plant

Draft CCRMP

This segment of State Route 16 lacks a left-turning lane and shoulders for eastbound travel, thereby causing a safety concern. Even though there are current plans to add a 300-foot paved shoulder along this section of SR 16 to improve passing opportunities, the improvement is a short-term solution that is not ideal from a capacity and/or safety standpoint. Therefore, further improvements are required, which could include:[25]

- Add a left-turn lane for eastbound left-turning movements into the Solano Concrete plant; and

[25] Source: *Certified Environmental Impact Report for the Solano Concrete Company Short-Term Mining Permit Application*, Yolo County, September, 1995.

- Eliminate the free right-turn movement from the northbound I-505 off-ramp to improve the vehicle spacing remove the potential for speed conflicts for eastbound travel near the Solano driveway.

Specific mitigation measures will be identified in the environmental impact report being prepared for the long-term permit application for the Solano Concrete facility.

Because the project would not add 10 or more daily trips to this segment, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along this segment by 390 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along this segment by 240 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along this segment by 550 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along this segment by 390 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-6a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-7
Potential Impacts to the Non-Standard Segment of Road 14, West of Interstate 505

Draft CCRMP

This segment of Road 14 consists of several sharp horizontal curves to the west of Interstate 505. The posted speed limit for these curves is 25 miles per hour and the added traffic would increase the accident potential and pose a potential safety concern. Roadway realignment improvements to County standards would be necessary to mitigate this impact.

Because the project would not add 10 or more daily trips to this segment, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along this segment by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along this segment by 120 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along this segment by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along this segment by 420 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-7a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-8
Potential Impacts to the Non-Standard Pavement Segment of Road 14, West of Interstate 505

Draft CCRMP

The pavement consists of gravel along this approximately one-mile long segment of Road 14, west of I-505. The addition of more than 10 trips per day would exacerbate this existing deficiency and require improvements to ensure safe and efficient operations. Specifically, structural section and pavement surface improvements would likely be required to mitigate this impact.

Because the project would not add 10 or more daily trips to this segment, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along this segment by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along this segment by 120 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along this segment by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along this segment by 420 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the roadway improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-8a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-9
Potential Impacts to Two Non-Standard Bridges on Road 89, North of State Route 16

Draft CCRMP

Two bridges (089 --16.41, 089 --16.72) on Road 89, north of SR 16, were identified by the Federal government as being in need of structural repair. These existing deficiencies would be mitigated by the replacement of the bridges under the Federal program in which the County must provide 20 percent of the funding to obtain the 80 percent Federal assistance.

Because the project would not add 10 or more daily trips to these bridges, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along these bridges by 530 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along these bridges by 400 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along these bridges by 770 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along these bridges by 170 in comparison to the cumulative no project condition. Thus, the impact would be

eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-9a: (CCRMP, A-1a, A-b, A-2, A-3)

None required.

Impact 4.8-10
Potential Impacts to a Non-Standard Bridge on Road 19, West of Interstate 505

Draft CCRMP

The bridge (089 --13.76) on Road 19, west of I-505, was identified as currently having a non-standard width of less than 20 feet. The lack of sufficient width creates a potential safety concern, particularly when two vehicles access the bridge in opposite directions of travel at the same time. This existing deficiency would be mitigated by the widening of the bridge to safely accommodate two-way truck travel.

Because the project would not add 10 or more daily trips to this bridge, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along this bridge by 230 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along this bridge by 100 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along this bridge by 380 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along this bridge by 360 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-10a (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-11
Potential Impacts to a Non-Standard Bridge on Road 85, North of Road 16A

Draft CCRMP

The bridge (085 --11.71), located north of Road 16A, was identified as currently having a non-standard width of less than 20 feet. The lack of sufficient width creates a potential safety concern, particularly when two vehicles access the bridge in opposite directions of travel at the same time. This existing deficiency would be mitigated by the widening of the bridge to safely accommodate two-way truck travel.

Because the project would not add 10 or more daily trips to this bridge, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along this bridge by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along this bridge by 120 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along this bridge by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along this bridge by 420 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-11a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-12
Potential Impacts to a Non-Standard Bridge on Road 14, West of Interstate 505

Draft CCRMP

The bridge (014 --11.95), located on Road 14, between Road 86 and Road 87, was identified as currently having a non-standard width of less than 20 feet. The lack of sufficient width creates a potential safety concern, particularly when two vehicles access the bridge in opposite directions of travel at the same time. This existing deficiency would be mitigated by the widening of the bridge to safely accommodate two-way truck traffic.

Because the project would not add 10 or more daily trips to this bridge, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips along this bridge by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips along this bridge by 120 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips along this bridge by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips along this bridge by 420 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-12a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-13
Potential Impacts to the Non-Standard Curve Radii at the Road 85 / Road 14 Intersection

Draft CCRMP

The limited curve radii at the Road 85 / Road 14 intersection causes trucks to access an on-coming lane while making a turning movement. This is caused by a combination of narrow lane widths and sharp curves at the intersection. This existing deficiency could result in increased accident potential at the intersection and could create overall traffic safety concern. Improvements such as widened travel lanes and the provision of turn lanes would be required to mitigate this impact.

Because the project would not add 10 or more daily trips to this intersection, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips through this intersection by 430 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips through this intersection by 120 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips through this intersection by 430 in comparison to the cumulative no project condition. Thus, the impact

would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening

Implementation of Alternative 3 would reduce the number of daily trips through this intersection by 420 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-13a (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-14
Potential Impacts to the Non-Standard Curve Radii at the State Route 16 / Road 89 Intersection

Draft CCRMP

The limited curve radii at the State Route 16 / Road 89 intersection causes trucks to access an on-coming lane while making a turning movement. This is caused by a combination of narrow lane widths and sharp curves at the intersection. This existing deficiency could result in increased accident potential at the intersection and could create overall traffic safety concern. Improvements such as widened travel lanes and the provision of turn lanes would be required to mitigate this impact.

Because the project would not add 10 or more daily trips to this intersection, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips through this intersection by 530 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips through this intersection by 400 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips through this intersection by 770 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would reduce the number of daily trips through this intersection by 170 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-14a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-15
Potential Impacts to the Non-Standard Curve Radii at the Road 20 / Road 96 Intersection

Draft CCRMP

The limited curve radii at the Road 20 / Road 96 intersection causes trucks to access an on-coming lane while making a turning movement. This is caused by a combination of narrow lane widths and sharp curves at the intersection. This existing deficiency could result in increased accident potential at the intersection and could create overall traffic safety concern. Improvements such as widened travel lanes and the provision of turn lanes would be required to mitigate this impact.

Because the project would not add 10 or more daily trips to this intersection, the impact is not considered significant. No mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would reduce the number of daily trips through this intersection by 150 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would reduce the number of daily trips through this intersection by 90 in comparison to the cumulative no project condition. Thus, the impact

would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would reduce the number of daily trips through this intersection by 500 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Alternative 3: Channel Bank Widening

Implementation of Alternative 3 would reduce the number of daily trips through this intersection by 490 in comparison to the cumulative no project condition. Thus, the impact would be eliminated. However, based on cumulative no project traffic, the improvements would still be required to mitigate the cumulative impact.

Mitigation Measure 4.8-15a: (CCRMP, A-1a, A-1b, A-2, A-3)

None required.

Impact 4.8-16
Potential for Accelerated Pavement Deterioration

Draft CCRMP

Although the project would add a total of 48 truck trips per day to the road system in comparison to the cumulative no project condition, none of the roads would experience an increase of 50 or more loaded trucks per day. Therefore, this impact is considered less-than-significant and no mitigation is required.

Alternative 1a: No Project (Existing Conditions)

Implementation of Alternative 1a would not result in the addition of 50 or more loaded truck trips per day in comparison to the cumulative no project condition. Therefore, this impact is eliminated and no mitigation is required.

Alternative 1b: No Project (Existing Permits and Regulatory Condition)

Implementation of Alternative 1b would not result in the addition of 50 or more loaded truck trips per day in comparison to the cumulative no project condition. Therefore, this impact is eliminated and no mitigation is required.

Alternative 2: No Mining (Alternative Site)

Implementation of Alternative 2 would not result in the addition of 50 or more loaded truck trips per day in comparison to the cumulative no project condition. Therefore, this impact is eliminated and no mitigation is required.

Alternative 3: Channel Bank Widening (Implement Streamway Influence Boundary)

Implementation of Alternative 3 would not result in the addition of 50 or more loaded truck trips per day in comparison to the cumulative no project condition. Therefore, this impact is eliminated and no mitigation is required.

Mitigation Measure 4.8-16 (CCRMP, A-1a, A-1b, A-2, A-3)

None required.