STATE ROUTE

CALIFORNIA 198

Corridor System Management Plan

Office of System Planning · District 6 · February 2012

For more information, please contact:

Joanne Striebich
Senior Transportation Planner
Special Projects
Caltrans District 6
(559) 488-4347
joanne_striebich@dot.ca.gov

Steve Curti
Senior Transportation Planner
System Planning Branch
(559) 488-4162
steve_curti@dot.ca.gov

Paul-Albert Marquez
Senior Transportation Planner
Transportation Planning North (Fresno, Madera, and Tulare Counties)
Caltrans District 6
(559) 445-5867
paul_albert_marquez@dot.ca.gov

Randy Treece
Senior Transportation Planner
Transportation Planning South (Kings and Kern Counties)
Caltrans District 6
(559) 488-4153
randy_treece@dot.ca.gov

Graphics:
Jeff Fowler
Graphic Artist
Caltrans District 6
(559) 444-2518
jeff_fowler@dot.ca.gov

Cover: Main photo: SR 198 from Mooney overcrossing; Insert, top left: Oak trees along SR 198 in Kings County; Insert, top right: SR 198 near Lake Kaweah; Insert, bottom right: SR 198 in Visalia at the Santa Fe overcrossing.

State Route 198 Corridor System Management Plan

From the Monterey County line through Fresno County (FRE-PM 0.00 – 42.73), Kings County (KIN- PM 0.00 – 28.32), and Tulare County (TUL-PM 0.00 – 44.16), ending at the boundary with the Sequoia National Park

I approve this Corridor Management Plan as the overall Policy Statement and Strategic Plan that will guide transportation decisions and investments for the Route 198 Corridor.

Sharri Bender Ehlert — 7/31/2012
Sharri Bender Ehlert
District Director
Caltrans – District 6

Gail Miller — 7-18-12
Gail Miller
Deputy District Director
Planning and Local Assistance
Caltrans – District 6

John Liu — 7-30-12
John Liu
Deputy District Director
Maintenance and Traffic Operations
Caltrans – District 6

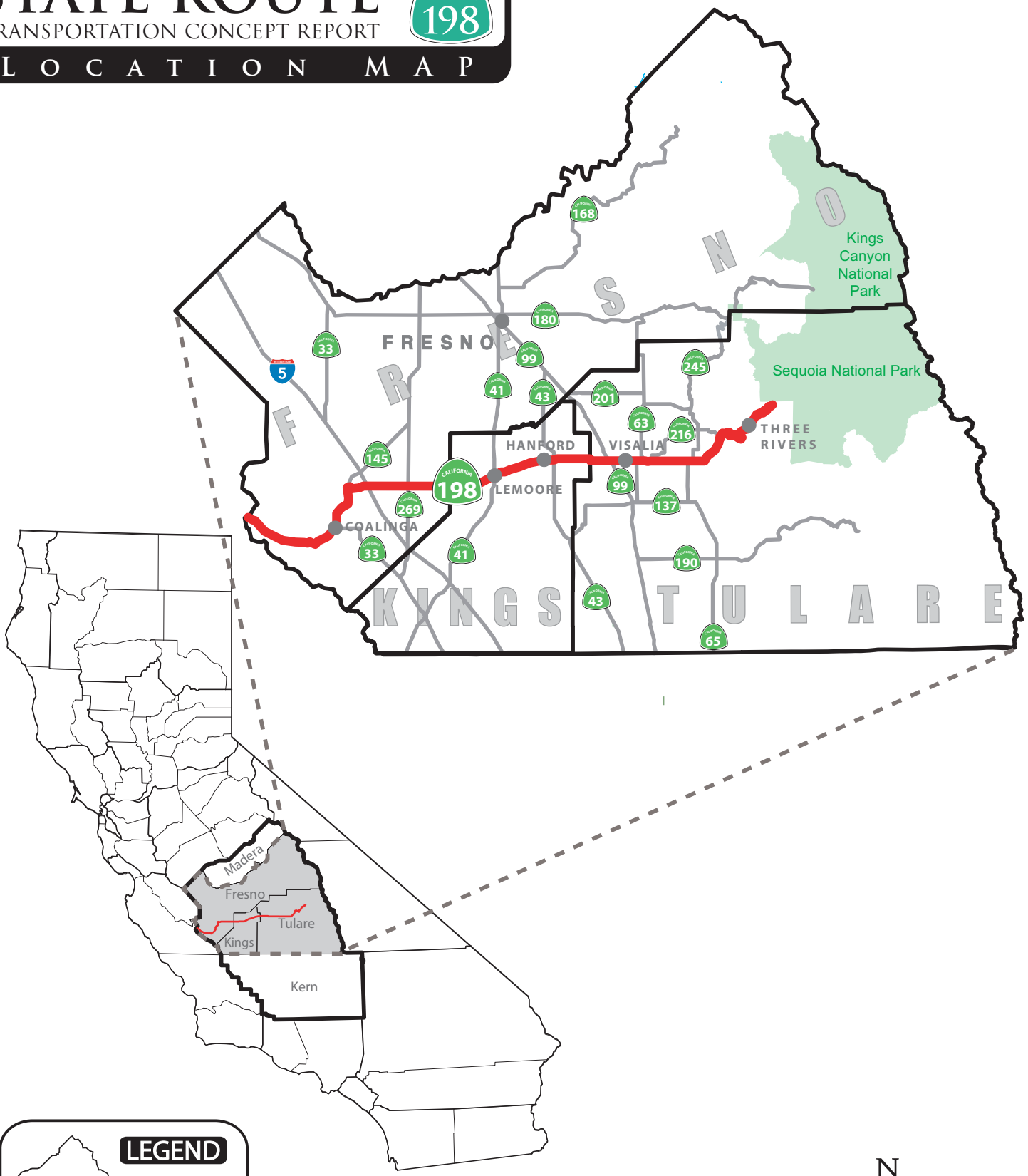
Tony Boren — 4/26/12
Tony Boren
Executive Director
Fresno Council of Governments

Terri King — 4-26-12
Terri King
Executive Director
Kings County Association of Governments

Ted Smalley — 4/13/12
Ted Smalley
Executive Director
Tulare County Association of Governments

STATE ROUTE 198
TRANSPORTATION CONCEPT REPORT
LOCATION MAP

MAP #1



LEGEND

Caltrans District 6 Boundary

Caltrans

N

Not To Scale

FEBRUARY 2012

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FEBRUARY 2012

State Route 198
Corridor System Management Plan

I. INTRODUCTION

A. Purpose and Need

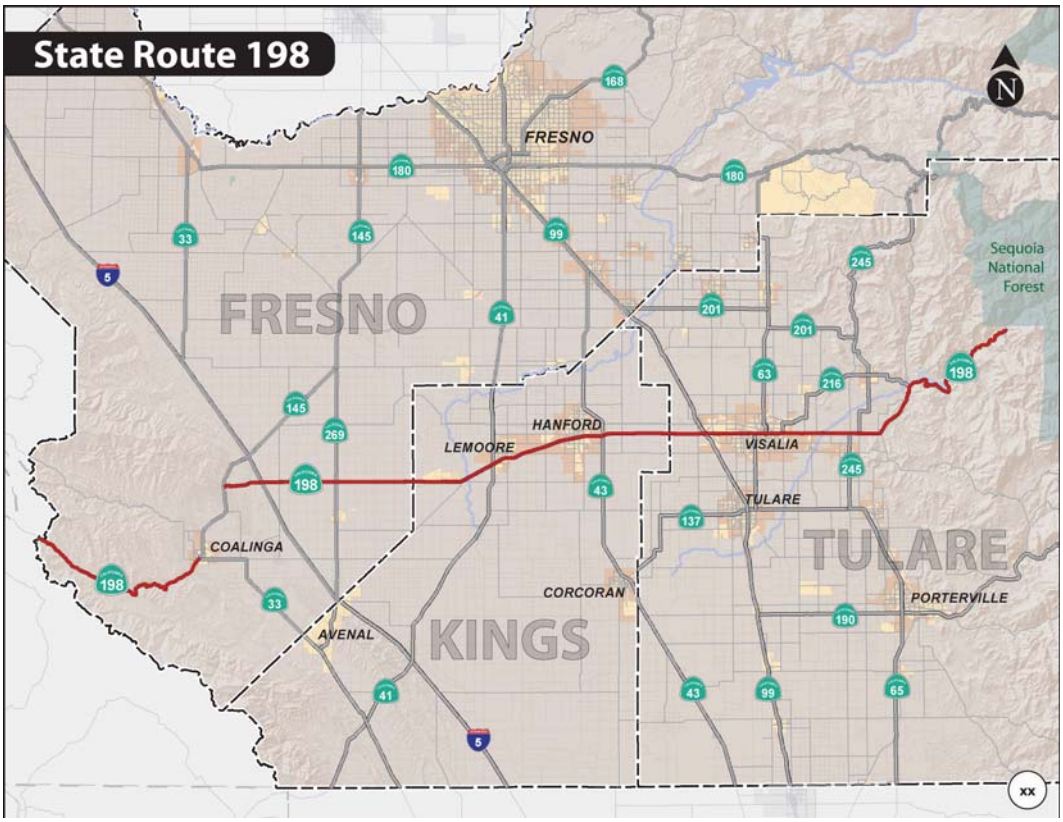
A Corridor System Management Plan (CSMP) is a long-range planning document that identifies recommended management strategies within a transportation corridor. A transportation corridor is not limited to the highway but encompasses all transportation components, taken as a whole. This includes the highway, major local parallel roads, local road intersections, ramps and ramp meters, signal controls, transit, rail, bikes, and pedestrians. The strategies identified are phased and include both operational and more traditional long-range capital expansion strategies. This represents a shift from the traditional approach of identifying localized highway problems and finding solutions that are often expensive and focused on capital improvements. This more encompassing approach allows the transportation corridor to operate for the highest sustained productivity and reliability based on the assessment and evaluation of performance measures, and provides for the possibility to implement lower cost/higher benefit alternative strategies. Included in this document is an assessment of current performance, the identification of causal factors for congestion, and a proposed mix of improvements, strategies, and actions to optimize corridor performance.

Management of the corridor requires a commitment by all partners to apply the principles and practices of system and corridor management and the use of performance measures to provide sustained corridor effectiveness. Cities, Counties, Tribal governments, environmental justice communities, transit providers, and interested stake holders have all been invited to participate in the process of developing this document. The Fresno Council of Governments (FCOG), the Kings County Association of Governments (KCAG), the Tulare County Association of Governments (TCAG), and Caltrans District 6 have signed a Memorandum of Understanding (MOU) that expresses the commitment to manage the corridor through these principles and practices (Appendix A, Page 68). The completed CSMP also requires adoption by these same partners.

As part of the Department's commitment to identifying innovative solutions to improving transportation corridors, Caltrans partnered in the preparation of the *Smart Mobility 2010: A Call to Action for the New Decade*. This study was funded by the California Department of Transportation, the US Department of Transportation, and the US Environmental Protection Agency. It was prepared in collaboration with other project partners - the Governor's Office of Planning & Research, the Department of Housing and Community Development, and numerous external advisors through stakeholder workshops. The study's purpose was to develop practical tools to evaluate the goals and ideals of the Governor's Strategic Growth

Plan, the California Transportation Plan, and bond program projects. New approaches were identified to integrate transportation and land use, addressing both long-range challenges and providing short-term practical actions to implement multimodal and sustainable transportation strategies in California. By considering the placement of the type of land use in relation to the transportation system, and implementing modified performance measures, the benefits of smart mobility can be realized. The fiscal constraints that now exist on transportation projects demand continued diligence, better decision making tools, and extra care in management of public resources. These alternative approaches can help California work toward the development of a sustainable transportation system.

Map #2: State Route 198



B. State Route 198 Background

State Route (SR) 198 was formerly known as Route 10 and was added in sections to the State Highway System between 1909 and 1919. In 1959, the highway became part of the California Freeway and Expressway System, from Interstate 5 (I-5) to the Sequoia National Park boundary. Please see Map #2, above.

Many California roads and highways originated along Tribal hunting and trading routes. The study, "*California Central Valley Tribal Transportation Environmental Justice Collaborative*

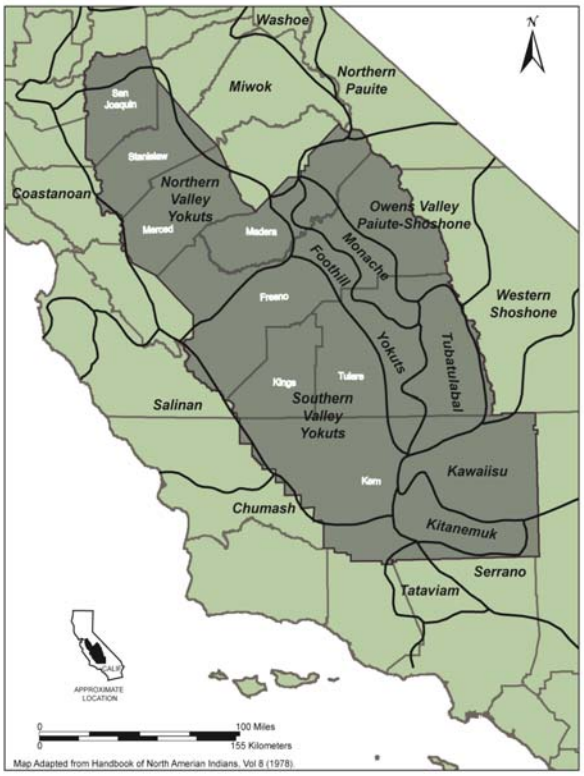


Figure 1:
Map of Ethnographic Territories in Eight County Study Area

Project" identified a number of Tribes that consider portions of the counties of Fresno, Kings, and Tulare as their ancestral lands. This study was funded by a Caltrans Environmental Justice grant and was prepared for the Kern County Council of Governments (KCOG) and the Tubatulabals of Kern Valley Tribe on behalf of the eight San Joaquin Valley Metropolitan Planning Organizations (MPOs). These consist of the San Joaquin Council of Governments (SJCOG), Stanislaus Council of Governments (StanCOG), Merced County Association of Governments (MCAG), Madera County Transportation Commission (MCTC), FCOG, KCAG, KCOG, and TCAG, in coordination with the tribal governments and communities of the region. The final report is available at: www.catribalej.com.

According to the *"Map of Ethnographic Territories in Eight County Study Area*" from the "*California Central Valley Tribal Transportation Environmental Justice Collaborative Project"* report (Figure 1 in this report), SR 198 passes through areas considered to be the traditional indigenous territories of the Southern Valley Yokuts, Foothill Yokuts, and the Monache. The Salinan territory touches on the western edges of Fresno and Kings Counties, and the portion of SR 198 extending west of Caltrans District 6 passes through the Salinan ancestral lands. Please note that many of the ethnographic territories overlap.

Caltrans will consult and coordinate with Tribal Governments and Communities in developing the CSMP. The Tribal Governments and Communities are listed above.

C. Corridor Team

The preparation and implementation of a CSMP requires coordination with local agencies, Tribal governments, and interested stakeholders. This coordination has been accomplished through the creation of a Project Development Team (PDT).

1. PDT Local Partner Members:

City of Coalinga: Bill Skinner; City of Hanford: Cathy Cain, Lou Camara, John Doyel; City of Lemoore: Holly Smyth, David Wlaschin; City of Tulare: Michael Miller; City of Visalia: Ricardo Noguera, Michael Olmos, Jim Ross, Chris Young; Fresno Council of Governments:

Tony Boren, Clark Thompson; Dumna Wo Wah Tribal Government: Robert Ledger; Dunlap Band of Mono Indians: Ben Charley Sr.; Fresno Area Express: John Downs; Fresno County Public Works and Planning: Lynn Gorman; Fresno County Rural Transit Agency: Jeffrey Webster; Kings County Association of Governments: Terri King; Kings County: Greg Gatzka, Kevin McAlister; Lemoore Naval Air Station: Roman Benitez; Michahai Wuksachi Band of Eshom Valley: Ken Woodrow; Northern Band of Mono-Yokuts: Delaine Bill; Salinan Nation - Xolon Tribe: Donna Haro; Santa Rosa Tachi Yokuts Tribe: Lalo Franco; Sierra Nevada Native American Coalition: Lawrence Bill; Tulare County Association of Governments: Ben Giuliani, Ted Smalley; Tulare County: Fred Brusuelas, Ann Chapman, Scott Cochran, Britt Fussell, Roger Hunt, Jake Raper; Tule River Indian Tribe: Ryan Garfield; Wukchumni Council: Susan Weese; Wuksachi Tribe Sierra Foothills: Marie Dominguez.

2. PDT Caltrans District 6 PDT Members:

Central Region Environmental: Kay Goshgarian, Mandy Marine, Trais Norris; Graphics: Jeff Fowler; Maintenance and Traffic Operations: Joel Aguilar, David Arias, Albert Lee, John Liu, Duc Ken Ly, Medel Medina, Bill Moses, Marco Sanchez, Rene Sanchez, Dan Singh; Planning: Neil Bretz, Steve Curti, David Deel, Al Dias, Marta Frausto, Paul-Albert Marquez, Lorena Mendibles, Pedro Ramirez, Vernie Ratnam, Sandra Scherr, Lisa Zito; Project Management: Garth Fernandez; Traffic Management Center: Benjamin Camarena.

II. CORRIDOR DESCRIPTION

A. Corridor Limits:

This CSMP covers the 115.22 miles of SR 198 in Caltrans District 6, from the Monterey County line through Fresno County [FRE-Post Mile (PM) 0.00 – 42.73], Kings County (KIN-PM 0.00 – 28.32), and Tulare County (TUL-PM 0.00 – 44.16), ending at the boundary with the Sequoia National Park (please see Map #2, Page 2).

B. Corridor Function:

SR 198 serves commercial traffic along the corridor, including the transportation of agricultural products. It provides recreational access to Kaweah Lake and Sequoia and Kings Canyon National Parks. It is a primary commuter route and links the cities of Coalinga, Huron, Lemoore, Hanford, and Visalia, and also passes through the unincorporated communities of Armona, Lemon Cove, and Three Rivers. SR 198 provides a link to the Lemoore Naval Air Station (LNAS), one of the Navy's essential aviation facilities in the western United States. LNAS is a major strategic military installation as well as a major employer in the region and fulfills a critical role in the nation's defense. SR 198 is the primary transportation or re-supply corridor supporting the LNAS military operations and military or civilian personnel living or working at the base. The base has a major impact on the local economy, contributing an estimated $750 million annually in wages and contracts to the economy and employs approximately 10,200 personnel. LNAS is the Navy's largest master jet

air station. As the home to half of the Navy's air striking power, it hosts sixteen aircraft squadrons and all of the West Coast Carrier Air Groups.

Lemoore Naval Air Station, Kings County
Photo: Caltrans District 6 System Planning staff

SR 198 connects the central coast of California to the Sierra Nevada Mountains. Within District 6, the route passes over the Coastal Range in Fresno County, and terminates in Tulare County where the route ascends into the Sierra Nevada Mountains. Between these areas, the route passes through the mainly level terrain of the San Joaquin Valley. The area encompassed by this CSMP is predominately rural, with urban development occurring in the cities and communities along the route. The land use in the region is largely agricultural in nature. Several large dairy operations within the project limits rely heavily on SR 198 as a farm-to-market route. Conventional agricultural equipment, such as large tractors and combines, are allowed to travel on this route under the California Vehicle Code.

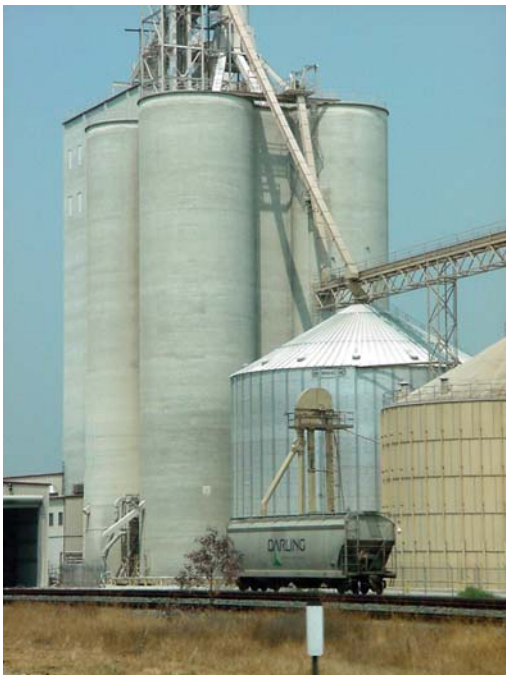
Dairy with cornfield in foreground, Kings County
Photo: Caltrans District 6 System Planning staff

In Fresno County, SR 198 is classified as a minor arterial from the Monterey County line to Firestone Avenue, a principal arterial from Firestone Avenue (Fresno County) to SR 33, a minor arterial from SR 33 to the junction with I-5, and a principal arterial through the remainder of Fresno County. Through both Kings County and Tulare County, the Route is classified as a principal arterial. Under the Federal Aid programs, SR 198 from I-5 to the LNAS is recognized as a Strategic Highway Corridor Network (STRAHNET) route, and part of the National Highway System (NHS) from LNAS east to the end of the route. The remainder of the route is eligible under the Surface Transportation Program (STP). The Surface Transportation Assistance Act (STAA) of 1982

designated SR 198 as part of the National Truck Network (NTN) for large trucks between I-5 and SR 99. Truck volumes range from 11 to 36 percent. Some sections of SR 198 are also designated as "State Terminal Access Route." Please see the Summary Chart on Page 8 for details.

SR 198 serves as an interregional corridor between the central coastal areas of California, the San Joaquin Valley, and the Sierra Nevada Mountains. The route is designated by California as a High Emphasis (HE) Focus (F) Route of the Interregional Road System (IRRS) from I-5 to SR 99. It is a High Emphasis Route from SR 99 to the Sequoia National Park boundary.

The Segment Map, Page 7, shows the segments of SR 198 in Fresno, Kings, and Tulare Counties. Each segment is also discussed individually, starting on Page 14.



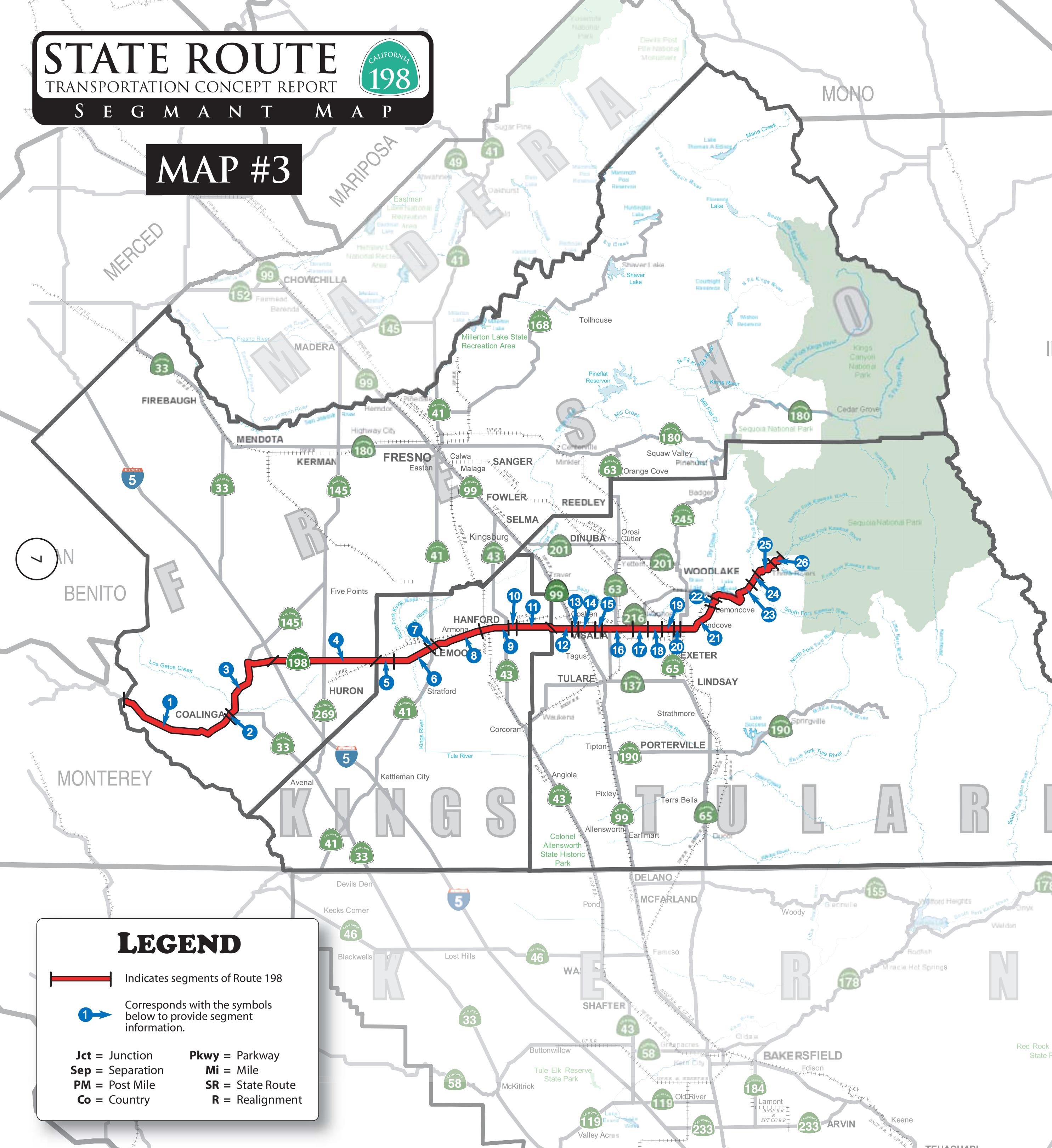
Silos, Kings County
Photo: Caltrans District 6 System Planning staff

Table 1, Summary Chart, Page 8, presents information on both the existing and predicted conditions on SR 198. Future travel conditions along the corridor were forecasted for 2015 and 2035 using the traffic models maintained by the local MPOs for Fresno, Kings, and Tulare Counties. The model incorporates predicted growth rates over a period of years, and provides future-year traffic numbers, including Average Annual Daily Traffic (AADT), as well as future-year Peak Hour (AADT and Peak Hour are defined in Appendix C, Page 75). The forecasted traffic was then distributed along the current facility to forecast a Level of Service (LOS) with and without improvements (LOS defined in Appendix D, Page 76).

Near Lake Kaweah, Tulare County
Photo: Caltrans District 6 System Planning staff

STATE ROUTE 198
TRANSPORTATION CONCEPT REPORT
SEGMANT MAP

MAP #3



Fresno County

1 **Segment 1:** SR 198 PM 0.0 / 21.2
Monterey County line / Firestone Ave

2 **Segment 2:** SR 198 PM 21.2 / 22.7
Firestone Ave / South Jct SR 33

3 **Segment 3:** SR 198 PM 22.7 / 26.8
SR 33 / SR198 / I-5 Separation

4 **Segment 4:** SR 198 PM 26.8 / 42.7
SR198 / I-5 Separation / Kings County line

Kings County

5 **Segment 5:** SR 198 PM 0.0 / 3.0
Fresno County line / Lemoore Naval Air Station

6 **Segment 6:** SR 198 PM 3.0 / R8.9
Lemoore Naval Air Station / SR 41 / SR 198 Separation

7 **Segment 7:** SR 198 PM R8.9 / R10.9
SR 41 / SR 198 Separation / 0.3 Mi E of 18th Ave

8 **Segment 8:** SR 198 PM R10.9 / R16.4
0.3 Mi E of 18th Ave / 0.5 Mi W of 12th Ave

9 **Segment 9:** SR 198 PM R16.4 / R20.4
0.5 Mi W of 12th Ave / 0 .5 Mi W of SR 43 / SR 198 Separation

10 **Segment 10:** SR 198 PM R20.4 / 22.3
0.5 Mi W of SR 43 / SR 198 Separation / 7th Ave

11 **Segment 11:** SR 198 PM 22.3 / 28.3
7th Ave / Tulare County line

Tulare County

12 **Segment 12:** SR 198 PM 0.0 / R3.3
Kings County line / 0.3 Mi E of Rd 68

13 **Segment 13:** SR 198 PM R3.3 / 4.9
0.3 Mi E of Rd 68 / 0.3 Mi E of Rd 80

14 **Segment 14:** SR 198 PM 4.9 / 7.0
0.3 Mi E of Rd 80 / Rd 102

15 **Segment 15:** SR 198 PM 7.0 / R8.4
Rd 102 / 0.3 Mi E of West Main St

16 **Segment 16:** SR 198 PM R8.4 / R12.7
0.3 Mi E of West Main St / 0.1 Mi W of Packwood Creek

17 **Segment 17:** SR 198 PM R12.7 / R14.6
0.1 Mi W of Packwood Creek / Rd 164

18 **Segment 18:** SR 198 PM R14.6 / R16.6
Rd 164 / Outside Canal

19 **Segment 19:** SR 198 PM R16.6 / R18.8
Outside Canal / SR 65

20 **Segment 20:** SR 198 PM R18.8 / R19.8
SR 65 / SR 245

21 **Segment 21:** SR 198 PM R19.8 / 26.9
SR 245 / 0.1 Mi E of Rd 244

22 **Segment 22:** SR 198 PM 26.9 / 28.3
0.1 Mi E of Rd 244 / Rd 248

23 **Segment 23:** SR 198 PM 28.3 / 35.9
Rd 248 / Moro Rd

24 **Segment 24:** SR 198 PM 35.9 / 38.5
Moro Rd / North Fork Dr

25 **Segment 25:** SR 198 PM 38.5 / 42.4
North Fork Dr / Mineral King Rd

26 **Segment 26:** SR 198 PM 42.4 / 44.2
Mineral King Rd / Sequoia National Park Boundary

LEGEND

Indicates segments of Route 198

Corresponds with the symbols below to provide segment information.

Jct = Junction
Sep = Separation
PM = Post Mile
Co = Country
Pkwy = Parkway
Mi = Mile
SR = State Route
R = Realignment

LEGEND

Existing Lanes
Planned or Programmed by 2035
Add Through Lanes
Convert 4 lane exp (4E) to 4 lane fwy (4F)
Conventional
Expressway
Freeway
Number of Lanes 2 4

Monterey Co Line — Firestone Ave — Route 33 S. Jct — Route 5/198 Sep — Fresno/Kings Co Line — Lemoore Naval Air Sta. — Route 41/198 Sep — 18th Ave — 12th — Ave — Route 43/198 Sep

PM 0.0 Fresno County — PM 21.2 — PM 22.7 — PM 26.8 — PM 42.7 — PM 0.0 Kings County — PM 3.0 — PM R8.9 — PM R10.9 — PM R16.4 — PM R20.4

Direction: W - E

COALINGA — LEMOORE — HANFORD

Segment: Is self-explanatory except for several data sets:

Rural/Urban: Indicates whether the segment is in a rural area or city limits.

Terrain: Shows the general highway grade: minimal grade = level; moderate grade = rolling; and severe grade = mountainous.

ROW: Portrays Right-of-Way (ROW) and geometric data in feet.

Shoulder Range: Is a range of treated surface (8' standard), both inside and outside shoulders.

Ultimate Transportation Corridor (UTC): Is the typical ROW needed for the ultimate facility,i.e., 8 lane freeway (8F) 218 feet is the standard typical UTC ROW - will be updated upon corridor plan lining by specific sections of highway.

Facility: Shows the Existing Facility, the desired facility type (2035 Concept) by 2035- RTPAs and Caltrans, and the Ultimate Facility to preserve ROW and plan line beyond 2035. 2C(I) indicates that the highway has been improved in select locations with operational or safety improvements.

LOS: The current LOS (level of service), along with the expected calculated LOS in 2020 and 2035. The 2035 Concept is the target LOS desired, i.e., LOS C, for attainment by 2035.

Deficiency: Occurs when the target LOS is degraded, i.e., LOS D worse than LOS C, with the year of occurrence shown. It also shows whether a capacity improving project is in the STIP, and what the LOS would be with the 2035 Concept improvement.

Directional Split: Denotes the split in the peak hour traffic flow on a directional basis (NB/SB or WB/EB) either in the morning (AM) or evening (PM).

* The Ultimate ROW is generally the same as the existing ROW except where geometric improvements may be required and does not include interchanges.

AADT: signifies Annual Average Daily Traffic.

Peak Hour: Indicates a representation of the maximum hour of traffic flow during the day.
N/A - Not deficient, no project recommended/not applicable.

N/A* - Deficient, no project recommended.

(I)+ 2-lane conventional highway improvements, turn lanes, signals, passing lanes, etc.
****Approximately 5.5 miles of Four-lane Conventional through the City of Coalinga**

SEGMENT	1	2	3	4	5	6	7	8	9
County / Route	FRESNO / 198	FRESNO / 198	FRESNO / 198	FRESNO / 198	KINGS / 198	KINGS / 198	KINGS / 198	KINGS / 198	KINGS / 198
Description Begin	MONTEREY COUNTY LINE	FIRESTONE AVE	JUST SOUTH OF THE JCT W/SR 33	RTE 198/5 SEPARATION	FRESNO/KINGS CO LINE	LEMOORE NAVAL AIR STATION	SR 41/198 SEPARATION	0.3 MI E OF 18TH AVENUE	0.5 MI W OF 12TH AVENUE
Description End	FIRESTONE AVE	JUST SOUTH OF THE JCT W/SR 33	RTE 198/5 SEPARATION	FRESNO/KINGS CO LINE	LEMOORE NAVAL AIR STATION	SR 41/198 SEPARATION	0.3 MI E OF 18TH AVENUE	0.5 MI W OF 12TH AVENUE	0.5 MI W OF SR43/198 SEP
Postmile Limits Begin/End (PM)	0.0 / 21.2	21.2 / 22.7	22.7 / 26.8	26.8 / 42.7	0.0 / 3.0	3.0 / R8.9	R8.9 / R10.9	R10.9 / R16.4	R16.4 / R20.4
Length (MI)	21.2	1.5	4.1	2.0	3.0	5.9	2.0	5.5	4.0
Rural / Urban	Rural	Urban	Rural	Rural	Rural	Rural	Urban	Rural	Urban
Terrain	Mountainous	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
ROW: Range Existing (FT)	60 / 150	60 / 110	60 / 100	60 / 66	60 / 166	166 / 166	142 / 142	142 / 166	142 / 166
Median Range (FT)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	22 / 46	22 / 22	22 / 22	22 / 22
Shoulder Range (FT) - Treated	0 / 10	4 / 10	2 / 8	2 / 8	4 / 8	8 / 10	8 / 8	8 / 8	8 / 8
Lane Width (FT)	12	12	12	12	12	12	12	12	12
Ultimate ROW (FT)	*	*	*	170	170	*	*	*	*
Facility: Existing	2C**	2C**	2C	2C (Short 4C section at Harris Ranch)	2C	4E/4F	4E	4E/4F	4E/4F
2035 Concept	2C(I)+**	2C(I)+**	2C(I)+	4E	4E	4F	4F	4F	4F
UTC	2C(I)+**	2C(I)+**	2C(I)+	4E	4E	4F	4F	4F	4F
LOS: 2009	C	C	C	C	C	B	C	B	B
LOS: 2020	C	C	C	C	C	C	D	C	B
LOS: 2035 (w/o imrovements)	C	C	C	D	D	F	F	D	C
LOS: Concept 2035	C	C	C	C	C	C	C	C	C
Deficiency/Year Deficient	N/A	N/A	N/A	2035	2035	N/A	N/A	2035	N/A
Project in STIP/RTP (Y/N)	No	No	No	Yes	Yes	Yes	Yes	No	No
LOS W/ Concept Improvement	N/A	N/A	N/A	B	B	D	D	C	C
Directional Split (Peak Hour)	56 / 44	56 / 44	56 / 44	62 / 38	62 / 38	76 / 24	76 / 24	57 / 43	57 / 43
AADT: 2009	1,100	4,500	2,400	6,230	4,680	8,890	19,900	29,830	22,100
AADT: 2020	1390	5710	3420	7,900	6,290	13,590	27,080	45,070	30,080
AADT: 2035	1880	7680	5330	10,630	9,120	23,100	39,800	75,530	44,200
Peak Hour: 2009	150	470	250	790	635	2075	1950	2675	2067
Peak Hour: 2020	190	600	360	1,000	850	3,170	2,650	4,040	2,810
Peak Hour: 2035	260	800	560	1,350	1,240	5,390	3,900	6,770	4,130
% Trucks: AADT	35%	35%	35%	36%	36%	20%	20%	20%	20%
% Trucks: Peak Hour	22%	22%	22%	25%	25%	17%	17%	17%	17%

Transportation Concept Report

State Route 198

SUMMARY CHART 1B

LEGEND

Existing Lanes	Conventional
Planned or Programmed by 2035	Expressway
Add Through Lanes	Freeway
Convert 4 lane exp (4E) to 4 lane fwy (4F)	Number of Lanes: 2, 4

Monterey Co Line — Firestone Ave — Route 33 S. Jct — Route 5/198 Sep — Fresno/Kings Co Line — Lemoore Naval Air Sta. — Route 41/198 Sep — 18th Ave — 12th — Ave — Route 43/198 Sep

PM 0.0 Fresno County — PM 21.2 — PM 22.7 — PM 26.8 — PM 42.7 — PM 0.0 Kings County — PM 3.0 — PM R8.9 — PM R10.9 — PM R16.4 — PM R20.4

COALINGA — LEMOORE — HANFORD

Direction: W - E

Segment: Is self-explanatory except for several data sets:

Functional Classification: A process by which streets and highways are grouped into or classification systems.

Freeway/Expressway System: The Statewide system of highways declared to be essential to the future development of California.

Regionally Significant: Serves regional transportation needs including at a minimum all principal arterial highways and all fixed guideway transit facilities.

STRAHNET: A highway that provides defense access, continuity, and emergency capabilities for movements of personnel and equipment in both peace and war.

Lifeline: A route on the State highway system that is deemed so critical to emergency response/life-saving activities of a region or the state that it must remain open.

IRRS: (Interregional Road System): A series of State highway routes, outside the urbanized areas, that provide access to the State's economic centers, major recreational areas, and urban and rural regions.

STAA (Surface Transportation Assistance Act): This act required states to allow larger trucks on the National Network. "Terminal Access" routes are State highways that can accommodate STAA trucks. Other designations i,e., California Legal offer more limited access.

Scenic: A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers.

ICES (Intermodal Corridor of Economic Significance): Significant National Highway System Corridors that link intermodal facilites most directly, conveniently and efficiently to intrastate, interstate, and international markets.

NHS (National Highway System): Included is all interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

SEGMENT	1	2	3	4	5	6	7	8	9
County / Route	FRESNO / 198	FRESNO / 198	FRESNO / 198	FRESNO / 198	KINGS / 198	KINGS / 198	KINGS / 198	KINGS / 198	KINGS / 198
Description Begin	MONTEREY COUNTY LINE	FIRESTONE AVE	SOUTH JCT RTE 33	RTE 198/5 SEPARATION	FRESNO/KINGS CO LINE	LEMOORE NAVAL AIR STATION	SR 41/198 SEPARATION	0.3 MI E OF 18TH AVENUE	0.5 MI W OF 12TH AVENUE
Description End	FIRESTONE AVE	SOUTH JCT RTE 33	RTE 198/5 SEPARATION	FRESNO/KINGS CO LINE	LEMOORE NAVAL AIR STATION	SR 41/198 SEPARATION	0.3 MI E OF 18TH AVENUE	0.5 MI W OF 12TH AVENUE	0.5 MI W OF SR43/198 SEP
Postmile Limits Begin/End (PM)	0.0 / 21.2	21.2 / 22.7	22.7 / 26.8	26.8 / 42.7	0.0 / 3.0	3.0 / R8.9	R8.9 / R10.9	R10.9 / R16.4	R16.4 / R20.4
Length (MI)	21.2	1.5	4.1	2.0	3.0	5.9	2.0	5.5	4.0
Functional Classification	Minor Arterial	Principal Arterial	Minor Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial
National Highway System (NHS) (Y/N)	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Freeway/Expressway System (Y/N)	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Regionally Significant (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
STRAHNET (Y/N)	No	No	No	No	No	No	No	No	No
Lifeline (Y/N)	No	No	No	No	No	No	No	No	No
IRRS (Yes: HE=High Emphasis, F=Focus, G=Gateway or No)	No	No	No	F	F	F	F	F	F
TRUCK NETWORK, STAA: (NN=National Network, TA=Terminal Access, CL= California Legal, R= Special Restrictions, or A=Advisory)	A	TA	CL	NN	NN	TA	TA	TA	TA
Scenic (Yes: Officially Designated, Eligible or No)	No	No	No	No	No	No	No	No	No
ICES (Intermodal Corridor of Economic Significance) (Y/N)	No	No	No	No	No	No	No	No	No
General Plan/RTP LOS Standard	Fresno Co LOS D General Plan/RTP Regionally Significant System	Fresno Co LOS D General Plan/RTP Regionally Significant System	Fresno Co LOS D General Plan/RTP Regionally Significant System	Fresno Co LOS D General Plan/RTP Regionally Significant System	Kings Co LOS D General Plan/RTP Regionally Significant System	Kings Co LOS D General Plan/RTP Regionally Significant System	Kings Co LOS D General Plan/RTP Regionally Significant System	Kings Co LOS D General Plan/RTP Regionally Significant System	Kings Co LOS D General Plan/RTP Regionally Significant System
General Plan/RTP Standard Highway Classification	Arterial	Arterial	Expressway	Expressway	Expressway	Freeway	Freeway	Freeway	Freeway
Passing Lanes (Y/N)	No	No	No	No	No	No	No	No	No
Bike Use Allowed (Y/N)	Yes	Yes	Yes	Yes	Yes	No	No	No	No

Transportation Concept Report

State Route 198

SUMMARY CHART 2A

LEGEND

Existing Lanes

Planned or Programmed by 2035

Add Through Lanes

Convert 4 lane exp (4E) to 4 lane fwy (4F)

Conventional

Expressway

Freeway

Number of Lanes: 2, 4

Route 43/198 Sep — 7th Ave — Kings/Tulare Co Line — Road 68 — Road 80 — Road 102 — W Main St — Packwood Creek — Road 164 — Outside Creek Bridge

PM 20.4 Kings County — PM 22.3 — PM 28.3 — PM 0.0 Tulare County — PM 3.3 — PM 4.9 — PM 7.0 — PM 8.4 — PM 12.7 — PM 14.6 — PM 16.6

Direction: W - E

V I S A L I A

FARMERSVILLE

Segment: Is self-explanatory except for several data sets:

Rural/Urban: Indicates whether the segment is in a rural area or city limits.

Terrain: Shows the general highway grade: minimal grade = level; moderate grade = rolling; and severe grade = mountainous.

ROW: Portrays Right-of-Way (ROW) and geometric data in feet.

Shoulder Range: Is a range of treated surface (8' standard), both inside and outside shoulders.

Ultimate Transportation Corridor (UTC): Is the typical ROW needed for the ultimate facility,i.e., 8 lane freeway (8F) 218 feet is the standard typical UTC ROW - will be updated upon corridor plan lining by specific sections of highway.

Facility: Shows the Existing Facility, the desired facility type (2035 Concept) by 2035- RTPAs and Caltrans, and the Ultimate Facility to preserve ROW and plan line beyond 2035. 2C(I) indicates that the highway has been improved in select locations with

LOS: The current LOS (level of service), along with the expected calculated LOS in 2020 and 2035. The 2035 Concept is the target LOS desired, i.e., LOS C, for attainment by 2035.

Deficiency: Occurs when the target LOS is degraded, i.e., LOS D worse than LOS C, with the year of occurrence shown. It also shows whether a capacity improving project is in the STIP, and what the LOS would be with the 2035 Concept improvement.

Directional Split: Denotes the split in the peak hour traffic flow on a directional basis (NB/SB or WB/EB) either in the morning (AM) or evening (PM).

* The Ultimate ROW is generally the same as the existing ROW except where geometric improvements may be required and does not include interchanges.

AADT: signifies Annual Average Daily Traffic.

Peak Hour: Indicates a representation of the maximum hour of traffic flow during the day.

N/A - Not deficient, no project recommended/not applicable.

N/A* - Deficient, no project recommended.

(I)+ 2-lane conventional highway improvements, turn lanes, signals, passing lanes, etc.

* Concept Facility meets Concept LOS.

SEGMENT	10	11	12	13	14	15	16	17	18
County / Route	KINGS / 198	KINGS / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198
Description Begin	0.5 MI W OF SR 43/198 SEP	7TH AVE	KINGS COUNTY LINE	0.3 MI E OF RD 68	0.3 MI E OF RD 80	RD 102	0.3 MI E OF W MAIN ST	0.1 MI W OF PACKWOOD CREEK	RD 164
Description End	7TH AVE	TULARE COUNTY LINE	0.3 MI E OF RD 68	0.3 MI E OF RD 80	RD 102	0.3 MI E OF W MAIN ST	0.1 MI W OF PACKWOOD CREEK	RD 164	OUTSIDE CREEK BRIDGE
Postmile Limits Begin/End (PM)	20.4 / 22.3	22.3 / 28.3	0.0 / 3.3	3.3 / 4.9	4.9 / 7.0	7.0 / 8.4	8.4 / 12.7	12.7 / 14.6	14.6 / 16.6
Length (MI)	1.9	6.0	3.3	1.6	2.1	1.4	4.3	1.9	2.0
Rural / Urban	Rural	Rural	Rural	Urban	Urban	Urban	Urban	Rural	Urban
Terrain	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
ROW: Range Existing (FT)	80 / 142	80 / 90	80 / 80	140 / 300	218 / 218	218 / 218	142 / 244	107 / 144	142 / 166
Median Range (FT)	0 / 22	0 / 0	0 / 4	22 / 99	22 / 22	22 / 46	22 / 46	22 / 22	22 / 22
Shoulder Range (FT) - Treated	5 / 8	0 / 8	6 / 13	7 / 13	8 / 8	8 / 8	8 / 8	8 / 8	8 / 8
Lane Width (FT)	12	12	12	12	12	12	12	12	12
Ultimate ROW (FT)	*	172	172	*	*	*	*	*	*
Facility: Existing	4E/4F	2C	2C	4F	4F	4F	4F	4F	4F
2035 Concept	4F	4E	4E	4F	4F	4F	4F	4F	4F
UTC	4F	4F	4F	4F	6F	6F	6F	4F	4F
LOS: 2009	B	D	E	B	C	D	C	B	B
LOS: 2020	B	E	E	C	D	F	E	B	B
LOS: 2035 (w/o imrovements)	B	F	F	D	F	F	F	D	C
LOS: Concept 2035	C	C	C	D	D	D	D	C	C
Deficiency/Year Deficient	N/A	2009	2009	N/A	N/A	2035	2035	N/A	N/A
Project In STIP/RTP (Y/N)	No	No	No	No	No	No	No	No	No
LOS W/ Concept Improvement	N/A	C	C	N/A	N/A	N/A	N/A	NA	N/A
Directional Split (Peak Hour)	56 / 44	56 / 44	57 / 43	57 / 43	57 / 43	57 / 43	57 / 43	57 / 43	57 / 43
AADT: 2009	18,000	18,000	19,000	32,170	47,500	53,000	44,130	55,000	21,000
AADT: 2020	22,820	24,790	25,560	42,270	63,130	70,440	59,350	73,980	28,250
AADT: 2035	30,730	36,950	37,010	59,450	90,110	100,540	85,970	107,140	40,910
Peak Hour: 2009	1,650	1,600	1,750	3,033	4,450	5,500	4,818	2,750	2,100
Peak Hour: 2020	2,090	2,200	2,350	3,990	5,910	7,310	6,480	3,700	2,820
Peak Hour: 2035	2,820	3,280	3,410	5,600	8,440	10,430	9,390	5,360	4,090
% Trucks: AADT	13%	11%	20%	12%	12%	8%	8%	11%	11%
% Trucks: Peak Hour	10%	17%	17%	9%	9%	7%	7%	9%	9%

Transportation Concept Report

State Route 198

SUMMARY CHART 2B

LEGEND

Existing Lanes

Planned or Programmed by 2035

Add Through Lanes

Convert 4 lane exp (4E) to 4 lane fwy (4F)

Conventional

Expressway

Freeway

Number of Lanes 2 4

Route 43/198 Sep | 7th Ave | Kings/Tulare Co Line | Route 99 | Road 80 | Road 102 | W. Main St | Packwood Creek | Road | 164 | Outside Creek Bridge

PM 20.4 Kings County | PM 22.3 | PM 28.3 | PM 0.0 Tulare County | PM 3.8 | PM 4.9 | PM 7.0 | PM 8.4 | PM 12.7 | PM 14.6 | PM 16.6

Direction: W - E

V I S A L I A

FARMERSVILLE

Segment: Is self-explanatory except for several data sets:

Functional Classification: A process by which streets and highways are grouped into or classification systems.

Freeway/Expressway System: The Statewide system of highways declared to be essential to the future development of California.

Regionally Significant: Serves regional transportation needs including at a minimum all principal arterial highways and all fixed guideway transit facilities.

STRAHNET: A highway that provides defense access, continuity, and emergency capabilities for movements of personnel and equipment in both peace and war.

Lifeline: A route on the State highway system that is deemed so critical to emergency response/life-saving activities of a region or the state that it must remain open.

IRRS: (Interregional Road System): A series of State highway routes, outside the urbanized areas, that provide access to the State's economic centers, major recreational areas, and urban and rural regions.

STAA (Surface Transportation Assistance Act): This act required states to allow larger trucks on the National Network. "Terminal Access" routes are State highways that can accommodate STAA trucks. Other designations i,e., California Legal offer more limited access.

Scenic: A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers.

ICES (Intermodal Corridor of Economic Significance): Significant National Highway System Corridors that link intermodal facilites most directly, conveniently and efficiently to intrastate, interstate, and international markets.

NHS (National Highway System): Included is all interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

SEGMENT	10	11	12	13	14	15	16	17	18
County / Route	KINGS / 198	KINGS / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198
Description Begin	0.5 MI W OF SR 43/198 SEP	7TH AVE	KINGS COUNTY LINE	Junction SR 99/198	0.3 MI E OF RD 80	RD 102	0.3 MI E OF W MAIN ST	0.1 MI W OF PACKWOOD CREEK	RD 164
Description End	7TH AVE	TULARE COUNTY LINE	Junction SR 99/198	0.3 MI E OF RD 80	RD 102	0.3 MI E OF W MAIN ST	0.1 MI W OF PACKWOOD CREEK	RD 164	OUTSIDE CREEK BRIDGE
Postmile Limits Begin/End (PM)	20.4 / 22.3	22.3 / 28.3	0.0 / 3.8	3.8 / 4.9	4.9 / 7.0	7.0 / 8.4	8.4 / 12.7	12.7 / 14.6	14.6 / 16.6
Length (MI)	1.9	6.0	3.3	1.6	2.1	1.4	4.3	1.9	2.0
Functional Classification	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial
National Highway System (NHS) (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Freeway/Expressway System (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regionally Significant (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
STRAHNET (Y/N)	No	No	No	No	No	No	No	No	No
Lifeline (Y/N)	No	No	No	No	No	No	No	No	No
IRRS (Yes: HE=High Emphasis, F=Focus, G=Gateway or No)	F	F	F	HE	HE	HE	HE	HE	HE
TRUCK NETWORK, STAA: (NN=National Network, TA=Terminal Access, CL= California Legal, R= Special Restrictions, or A=Advisory)	TA	TA	TA	TA	TA	TA	TA	TA	TA
Scenic (Yes: Officially Designated, Eligible or No)	No	No	No	No	No	No	No	No	No
ICES (Intermodal Corridor of Economic Significance) (Y/N)	No	No	No	No	No	No	No	No	No
General Plan/RTP LOS Standard	Kings Co LOS D General Plan/RTP Regionally Significant System	Kings Co LOS D General Plan/RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co/City of Visalia LOS D for General Plan Regionally Significant System	Tulare Co/City of Visalia LOS D for General Plan Regionally Significant System	Tulare Co/City of Visalia LOS D for General Plan Regionally Significant System	Tulare Co/City of Visalia LOS D for General Plan Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System
General Plan/RTP Standard Highway Classification	Expressway	Expressway	Expressway	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway
Passing Lanes (Y/N)	No	No	No	No	No	No	No	No	No
Bike Use Allowed (Y/N)	No	Yes	Yes	No	No	No	No	No	No

Transportation Concept Report

State Route 198

SUMMARY CHART 3A

LEGEND

Existing Lanes

Planned or Programmed by 2035

Add Through Lanes

Convert 4 lane exp (4E) to 4 lane fwy (4F)

Conventional

Expressway

Freeway

Number of Lanes: 2, 4

Outside Creek Br. | Route 65 | Route 245 | Road 244 | Road 248 | Moro Rd | North Fork Dr | Mineral King Rd | Sequoia Nat. | Park Boundary

PM 16.6 Tulare County | PM 18.8 | PM 19.8 | PM 26.9 | PM 28.3 | PM 35.9 | PM 38.5 | PM 42.4 | PM 44.2

Direction: W - E

LEMON COVE (Unincorporated)

THREE RIVERS (Unincorporated)

Segment: Is self-explanatory except for several data sets:

Rural/Urban: Indicates whether the segment is in a rural area or city limits.

Terrain: Shows the general highway grade: minimal grade = level; moderate grade = rolling; and severe grade = mountainous.

ROW: Portrays Right-of-Way (ROW) and geometric data in feet.

Shoulder Range: Is a range of treated surface (8' standard), both inside and outside shoulders.

Ultimate Transportation Corridor (UTC): Is the typical ROW needed for the ultimate facility,i.e., 8 lane freeway (8F) 218 feet is the standard typical UTC ROW - will be updated upon corridor plan lining by specific sections of highway.

Facility: Shows the Existing Facility, the desired facility type (2035 Concept) by 2035- RTPAs and Caltrans, and the Ultimate Facility to preserve ROW and plan line beyond 2035. 2C(I) indicates that the highway has been improved in select locations with

LOS: The current LOS (level of service), along with the expected calculated LOS in 2020 and 2035. The 2035 Concept is the target LOS desired, i.e., LOS C, for attainment by 2035.

Deficiency: Occurs when the target LOS is degraded, i.e., LOS D worse than LOS C, with the year of occurrence shown. It also shows whether a capacity improving project is in the STIP, and what the LOS would be with the 2035 Concept improvement.

Directional Split: Denotes the split in the peak hour traffic flow on a directional basis (NB/SB or WB/EB) either in the morning (AM) or evening (PM).

* The Ultimate ROW is generally the same as the existing ROW except where geometric improvements may be required and does not include interchanges.

AADT: signifies Annual Average Daily Traffic.

Peak Hour: Indicates a representation of the maximum hour of traffic flow during the day.

N/A - Not deficient, no project recommended/not applicable.

N/A* - Deficient, no project recommended.

(I)+ 2-lane conventional highway improvements, turn lanes, signals, passing lanes, etc.

* Concept Facility meets Concept LOS.

SEGMENT	19	20	21	22	23	24	25	26
County / Route	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198
Description Begin	OUTSIDE CREEK BRIDGE	ROUTE 65	ROUTE 245	0.1 MI E OF RD 244	RD 248	MORO RD	NORTH FORK DR	MINERAL KING RD
Description End	ROUTE 65	ROUTE 245	0.1 MI E OF RD 244	RD 248	MORO RD	NORTH FORK DR	MINERAL KING RD	SEQUOIA NATIONAL PARK BOUNDARY
Postmile Limits Begin/End (PM)	16.6 / 18.8	18.8 / 19.8	19.8 / 26.9	26.9 / 28.3	28.3 / 35.9	35.9 / 38.5	38.5 / 42.4	42.4 / 44.2
Length (MI)	2.2	1.0	7.1	1.4	7.6	2.6	3.9	1.8
Rural / Urban	Rural	Rural	Rural	Rural	Rural	Rural	Rural	Rural
Terrain	Flat	Flat	Flat	Rolling	Rolling	Rolling	Rolling	Rolling
ROW: Range Existing (FT)	135 / 200	60 / 140	80 / 80	80 / 100	80 / 137	80 / 150	60 / 80	60 / 60
Median Range (FT)	22 / 22	0 / 22	0 / 0	0 / 0	0 / 4	0 / 0	0 / 0	0 / 0
Shoulder Range (FT) - Treated	0 / 8	8 / 8	5 / 8	0 / 10	0 / 8	1 / 8	1 / 8	1 / 2
Lane Width (FT)	12	12	12	12	12	12	12	12
Ultimate ROW (FT)	*	*	*	*	*	*	*	*
Facility: Existing	4E	4E	2C	2C	2C	2C	2C	2C
2035 Concept	4E	4E	2C(I)	2C(I)	2C(I)	2C(I)	2C(I)	2C(I)
UTC	4E	4E	2C(I)	2C(I)	2C(I)	2C(I)	2C(I)	2C(I)
LOS: 2009	B	B	D	C	D	C	C	C
LOS: 2020	B	B	D	D	D	C	C	C
LOS: 2035 (w/o improvements)	C	B	D	D	D	D	D	C
LOS: Concept 2035	C	C	D	D	E	E	E	E
Deficiency/Year Deficient	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Project in STIP/RTP (Y/N)	No	No	No	No	No	No	No	No
LOS W/ Concept Improvement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NA
Directional Split (Peak Hour)	60 / 40	60 / 40	60 / 40	60 / 40	60 / 40	60 / 40	60 / 40	60 / 40
AADT: 2009	19,500	11,600	7,100	4,200	3,400	3,550	3,000	1,650
AADT: 2020	26,230	14,200	8,290	5,080	3,970	4,150	3,500	2,000
AADT: 2035	37,990	18,280	10,060	6,450	4,820	5,030	4,250	2,530
Peak Hour: 2009	1,900	1,650	850	560	785	530	480	230
Peak Hour: 2020	2,560	2,020	990	680	920	620	560	280
Peak Hour: 2035	3,700	2,600	1,200	860	1,110	750	680	350
% Trucks: AADT	11%	16%	16%	16%	16%	16%	16%	16%
% Trucks: Peak Hour	9%	8%	8%	8%	8%	8%	8%	8%

Transportation Concept Report

State Route 198

SUMMARY CHART 3B

LEGEND

Existing Lanes

Planned or Programmed by 2035

Add Through Lanes

Convert 4 lane exp (4E) to 4 lane fwy (4F)

Conventional

Expressway

Freeway

Number of Lanes 2 4

Outside Creek Br. | Route 65 | Route 245 | Road 244 | Road 248 | Moro Rd | North Fork Dr | Mineral King Rd | Sequoia Nat. | Park Boundary

PM 16.6 Tulare County | PM 18.8 | PM 19.8 | PM 26.9 | PM 28.3 | PM 35.9 | PM 38.5 | PM 42.4 | PM 44.2

Direction: W - E

LEMON COVE (Unincorporated)

THREE RIVERS (Unincorporated)

Segment: Is self-explanatory except for several data sets:

Functional Classification: A process by which streets and highways are grouped into or classification systems.

Freeway/Expressway System: The Statewide system of highways declared to be essential to the future development of California.

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Scenic: A highway may be designated scenic depending upon how much of the natural landscape can be seen by travelers.

ICES (Intermodal Corridor of Economic Significance): Significant National Highway System Corridors that link intermodal facilites most directly, conveniently and efficiently to intrastate, interstate, and international markets.

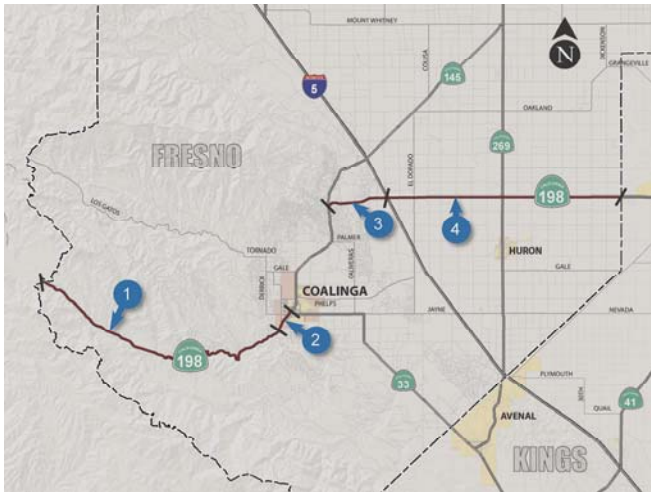
NHS (National Highway System): Included is all interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

SEGMENT	19	20	21	22	23	24	25	26
County / Route	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198	TULARE / 198
Description Begin	OUTSIDE CREEK BRIDGE	ROUTE 65	ROUTE 245	0.1 MI E OF RD 244	RD 248	MORO RD	NORTH FORK DR	MINERAL KING RD
Description End	ROUTE 65	ROUTE 245	0.1 MI E OF RD 244	RD 248	MORO RD	NORTH FORK DR	MINERAL KING RD	SEQUOIA NATIONAL PARK BOUNDARY
Postmile Limits Begin/End (PM)	16.6 / 18.8	18.8 / 19.8	19.8 / 26.9	26.9 / 28.3	28.3 / 35.9	35.9 / 38.5	38.5 / 42.4	42.4 / 44.2
Length (MI)	2.2	1.0	7.1	1.4	7.6	2.6	3.9	1.8
Functional Classification	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial
National Highway System (NHS) (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Freeway/Expressway System (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regionally Significant (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
STRAHNET (Y/N)	No	No	No	No	No	No	No	No
Lifeline (Y/N)	No	No	No	No	No	No	No	No
IRRS (Yes: HE=High Emphasis, F=Focus, G=Gateway or No)	F	F	F	F	F	F	F	F
TRUCK NETWORK, STAA: (NN=National Network, TA=Terminal Access, CL= California Legal, R= Special Restrictions, or A=Advisory)	A	TA	CL	NN	NN	TA	A	A
Scenic (Yes: Officially Designated, Eligible or No)	No	No	No	No	No	No	No	No
ICES (Intermodal Corridor of Economic Significance) (Y/N)	No	No	No	No	No	No	No	No
General Plan/RTP LOS Standard	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System	Tulare Co LOS D for CMP & RTP Regionally Significant System
General Plan/RTP Standard Highway Classification	Freeway	Freeway	Freeway	Freeway	Arterial	Arterial	Arterial	Arterial
Passing Lanes (Y/N)	No	No	No	No	No	No	No	No
Bike Use Allowed (Y/N)	No	No	Yes	Yes	Yes	Yes	Yes	Yes

1. SR 198 Segment Details

a) Segments 1-4: Monterey/Fresno County Line (FRE-PM-0.00) to the Fresno/Kings County Line (FRE-PM-42.73)

In District 6, SR 198 begins at the Fresno/Monterey County line. For 1.2 miles through the City of Coalinga, and just north of the City limits, SR 198 and SR 33 are on the same alignment.



SR 198 is a 2-lane conventional highway throughout Fresno County; the exception is a 4-lane conventional section through Coalinga.

Within Fresno County, the major land uses include: oil fields, rock, sand and gravel mining, retail and service commercial establishments, residences,

Gateway monument on SR 198, City of Coalinga
Photo: Caltrans District 6 System Planning staff

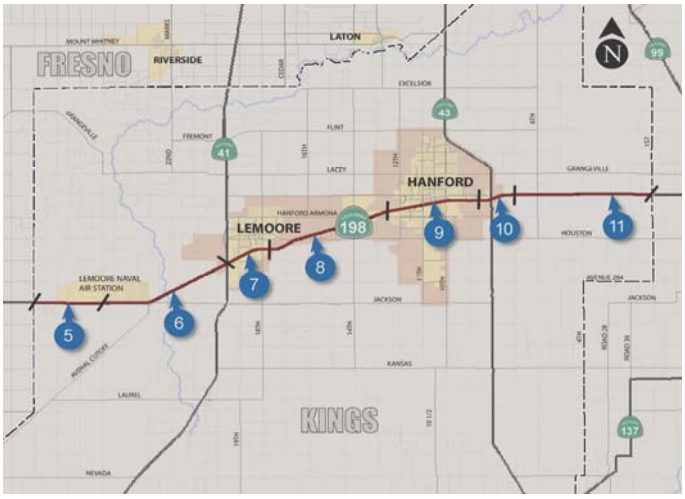
and rangeland. The route crosses Warthan, Los Gatos, and Coalinga Creeks, and the Coalinga Hot Springs canal. The water crossings pose potential environmental considerations for riparian vegetation. The area surrounding the highway is considered highly sensitive for threatened or endangered species and paleontology.

Oil drilling adjacent to SR 198, Fresno County
Photo: Caltrans District 6 System Planning staff

From SR 33 (FRE-PM-22.7) north of Coalinga to the Kings County line (FRE-PM-42.7) the highway passes through a low range of hills between Coalinga and I-5 (FRE-PM-26.8). There are oil fields near the I-5/SR 198 interchange, with agricultural lands bordering the west and east area of I-5. There are also traveler-oriented developments and a private airfield at the SR 198/I-5 interchange.

b) Segments 5-11: Fresno/Kings County Line (KIN-PM-0.00) to the Kings/Tulare County Line (KIN-PM-28.32)

SR 198 passes through Kings County from the Fresno/Kings County line to the Kings/ Tulare County line. From the Fresno County line to LNAS, the highway is a 2-lane conventional highway. From LNAS eastward to the SR 41/198 interchange, the highway widens to a 4-lane expressway/ freeway. The highway crosses the Kings River (KIN-PM-5.7) where riparian vegetation and threatened or endangered species are major considerations.



New bridge under construction at Cross Creek
Photo: Caltrans District 6 System Planning staff

From SR 41 to west of 12th Avenue (KIN-PM-R16.7) and west of the city of Hanford, the route alternates between a 4-lane expressway and a 4-lane freeway. There are existing constraints to improving the route, including a housing development and the SR 41 interchange.

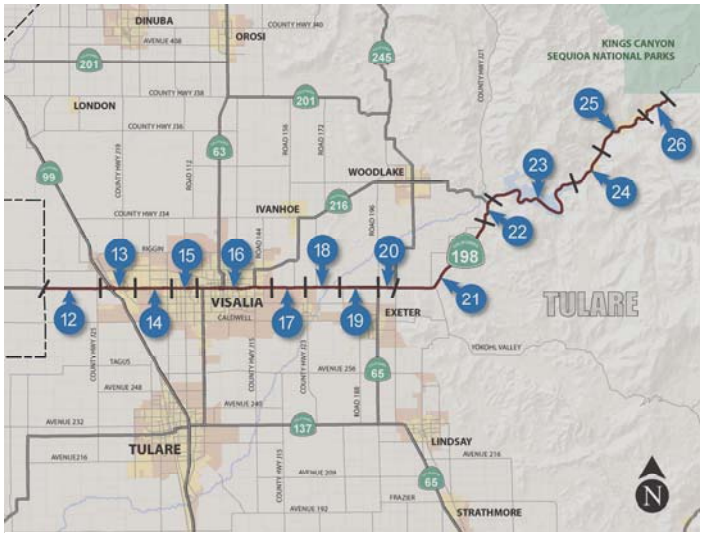
From 12th Avenue to 7th Avenue (KIN-PM-22.3), SR 198 alternates between a 4-lane expressway and a 4-lane freeway. From 7th Avenue to the Kings/Tulare County line (KIN-PM-28.3), the route is a 2-lane conventional highway.

"*Route 198 Hanford Expressway*": The project will construct improvements on SR 198 from 0.6 mile east of SR 43 east of the City of

Hanford to Road 68 in Tulare County, approximately 0.5 mile west of SR 99. This capacity-increasing project will improve operations and enhance safety on SR 198 by widening approximately 10 miles of the existing 2-lane conventional highway to a 4-lane controlled access expressway and construct a new bridge at Cross Creek. The existing alignment will be moved slightly to the north and provide 2 additional lanes to the north of the newly realigned lanes. The realignment of the existing lanes will allow for the preservation of approximately 50 mature walnut and eucalyptus trees along the south side of the highway. The project will also provide a utility easement outside of the state right-of-way, thus providing safer access for utility maintenance vehicles and reducing potential conflicts with the traveling public. An overcrossing will be constructed at Road 68, a heavily traveled county road, to reduce the conflict of cross traffic at the intersection. Access from Road 68 to SR 198 will be maintained with the addition of new frontage roads.

Funding, in the amount of $71.6 million, is from the Corridor Mobility Improvement Account (CMIA) Bond Program. It is supplemented with STIP Regional (RIP), Interregional (IIP), IIP Augmentation, Transportation Congestion Relief Program (TCRP), and SAFETEA-LU Demonstration funds for a total of $124.5 million. Construction is set to be completed in the Spring of 2012.

There are other planned and programmed interchange projects to complete the freeway within the Lemoore and Hanford areas. These projects include 9th Avenue (KIN-PM-19.9), 12th Avenue (KIN-PM-16.4), and 19th Avenue (KIN-PM-R9.47). The 19th Avenue Interchange is programmed, and is expected to begin construction in April 2012. The 12th Avenue interchange reconstruction is also programmed and anticipated to begin construction in January 2013. The 9th Avenue project is further out, with an anticipated construction date of beyond 2031.



c) Segments 12-26: Kings/Tulare County Line (TUL-PM-0.00) to Sequoia National Park Boundary (TUL-PM-44.16)

SR 198 passes through Tulare County from the Kings County boundary to the Route's terminus at the Sequoia National Park boundary. From the Kings/Tulare County line to just east of Road 68, the route is a 2-lane conventional highway (TUL-PM-R3.3).

From just east of Road 68, SR 198 begins a continuous 14-mile long freeway through the city of Visalia to the Outside Creek Bridge (TUL-PM-R16.6). From the Outside Creek Bridge to SR 245 (TUL-PM-R19.8), the route crosses a rural landscape. In this

End of Route 198, Sequoia National Park
Photo: Caltrans District 6 System Planning staff

section, the route is a 4-lane expressway. From there to the Sequoia National Park Boundary the route consists of a 2-lane conventional highway.

The environmental issues of this stretch of highway include traffic noise, water crossings, riparian vegetation, and aesthetics near existing residential development

The *Route 198 Hanford Expressway* project extends into segment 12; please see Page 16 for more information.

"SR-198/Plaza Drive Interchange, Auxiliary Lanes and Widening": The project will make corridor improvements on SR 198 in the City of Visalia. These improvements include: auxiliary lanes on SR 198 between the SR 99 and Plaza Drive interchanges; ramp improvements at the SR 198/Plaza Drive interchange; widening Plaza Drive from 2 to 6 lanes between SR 198 and Hurley Avenue; widening Plaza Drive from 2 to 4 lanes between Airport Drive and SR 198; and widening from 2 to 4 lanes between Crowley Avenue and Goshen Avenue. $7.776 million in cost savings from the CMIA-funded *Route 198 Hanford Expressway* project has been programmed for construction and construction support in Fiscal Year 2011/2012.

The project will improve capacity, safety, and relieve congestion at the SR 198/Plaza Drive interchange and on SR 198 from Plaza Drive to SR 99, and increase capacity to accommodate both local and interregional traffic. The SR 198/Plaza Drive interchange serves the largest industrial park in Tulare County and Plaza Drive (Road 80) serves as the interregional corridor connecting the Cities of Visalia, Dinuba, and SR 99. Traffic is projected to more than double because of increases in traffic from industrial development and more interregional travel. SR 198/Plaza Drive has been identified as one of the most heavily traveled corridors in the City of Visalia's jurisdiction and in the region. In order to keep up with projected high traffic demands, major upgrades to these travel corridors are needed.

Santa Fe Avenue overcrossing, Visalia, California
Photo: Caltrans District 6 System Planning staff

C. Population Characteristics

Communities within the San Joaquin Valley are growing rapidly, and Fresno, Kings, and Tulare Counties are no exception. However, our local partners believe that the Department of Finance 2009 and 2010 estimates for these Counties and the incorporated communities within them are too high. Due to the current economic downturn, actual growth rates are believed to be lower. The Central Valley MPOs are preparing revised population estimates that will reflect the reduced population estimates.

The trend toward increasing population is anticipated to continue throughout the foreseeable future. Increases are due in large part to the availability of land. The anticipated growth necessitates a new approach to managing the corridor.

D. The Transportation Network

As populations in the region increase, more creative alternatives to capacity-enhancing improvements will be necessary. There are a number of alternatives that have the potential to increase the movement of both people and goods without increasing capacity on State Highways. Opportunities exist to design facilities that will optimize pedestrian, bike, and transit usage, and that will create more connectivity among various modes. Such approaches have the potential to reduce congestion on State Highways and local roads by providing alternatives to the traditional single-occupancy vehicle. This section looks at some possible alternatives to the traditional approach of focusing on capital improvements. Many of these strategies are presented in FCOG, KCAG, and TCAG's 2011 Regional Transportation Plans (RTP).

Implementation of the 2011 RTPs will result in improvements to existing transportation systems and will meet required regional transportation needs. Proposed street and highway programs are aimed at reducing existing traffic, improving safety and resolving other circulation conflicts. Implementation of planned improvements to the street and highway network, improvement of county airports, provisions for mass transportation services and facilities, identification of additional bikeways and pedestrian improvements, and improved transportation systems that accommodate goods movement, will have beneficial effects on a region-wide basis.

Caltrans has the responsibility for developing, maintaining, and operating a multi-modal transportation network. This network must function at a high level with respect to goods movement, interregional, interstate, and cross-border travel. In addition to continuing support for the regional Blueprint Planning programs, Caltrans is developing a statewide interregional, multi-modal blueprint to be known as the *California Interregional Blueprint (CIB)*. It will be incorporated into the existing California Transportation Plan (CTP) at the time that plan is updated. The CIB will analyze the benefits of multi-modal, interregional projects on the transportation system, and will expand understanding of the interactions between land use and transportation investments in meeting critical strategic growth and sustainability goals. The benefit of this effort will be stronger partnerships with regional and local agencies and tribal

governments, as well as better data for improved decision making at the State, regional, and local level. The CIB will establish a basis for integrating the interregional system into the Smart Mobility Framework, and to deliver support for economic stewardship, connectivity, and reliability valued by freight shippers and carriers. The Inter-regional Blueprint will synthesize the Blueprint Planning work by regional agencies while focusing on the interregional system that is Caltrans' responsibility.

In addition to concepts presented in FCOG, KCAG, and TCAG's RTPs, this CSMP includes many ideas found in S*mart Mobility 2010: A Call to Action for the New Decade,* mentioned earlier in this document.

1. Goods Movement

Various modes are used in California to move goods, including seaports, airports, railways, dedicated truck lanes, logistics centers, and border crossings. California's economy relies heavily on the efficient and safe delivery of goods to and from our ports and borders, as well as distribution within the State. This includes the movement of raw materials to manufacturing and processing plants, as well as the movement of finished products to market.

Goods movement is critical to the State's economy. Our quality of life depends on the efficient and safe delivery of goods to and from our ports and borders. Goods movement also represents an increasingly important employment sector for Californians. It is important to ensure a dependable level of service for movement into and through major gateways and to ensure connectivity to key intermodal transfer facilities, seaports, air cargo terminals, and freight distribution centers. The San Joaquin Valley is one of four major international trade regions in California, as designated in the *2002 Global Gateways Development Program*, and, as a result, a high priority has been placed on goods movement by Caltrans and local agencies. Improving goods movement infrastructure, and thereby providing alternatives to the reliance on trucking, will also aid in relieving congestion on freeways and will increase mobility for everyone in California.

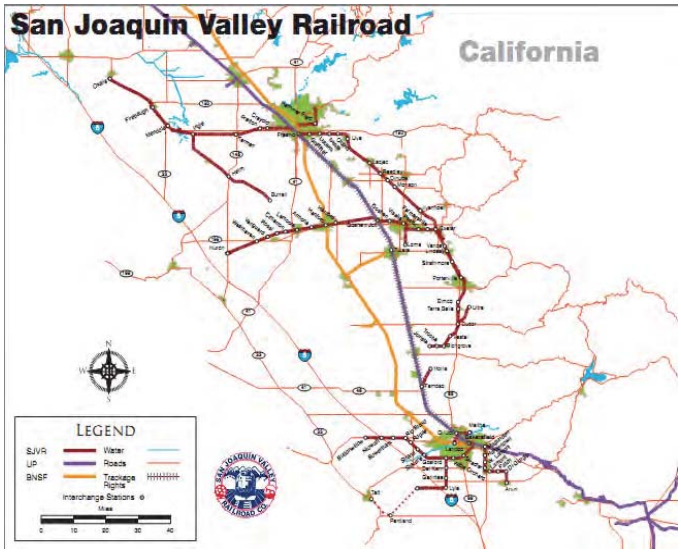
a) Freight Rail

The two Class 1 railroads in California (those having revenues of at least $319.3 million) are the Union Pacific (UP) and Burlington Northern & Santa Fe (BNSF). These two railroads have extensive rail networks connecting California with the rest of the nation, with service to the Southwest, Midwest, and Northwest. Several facilities owned by UP and BNSF stretch for significant lengths north-south through the Valley, providing long distance movement of goods in and out of the San Joaquin Valley.

Union Pacific Freight Train
Photo: courtesy freefoto.com

In the San Joaquin Valley, approximately twenty-five percent of shippers are currently using rail for transporting freight. Rail is limited by travel speed and by fixed routes that offer fewer destinations and carriers; however, it can provide an economical means of transporting bulk goods. While trains demand heavy fuel consumption, they can be less expensive than trucking for long-haul loads. Shipping freight by rail is more energy-efficient than by truck, making preservation and expansion of rail freight facilities vital for both the preservation of natural resources and the development of a sustainable economy. Trains have the ability to haul large amounts of cargo, making the overall energy requirement per unit of weight less than with trucking or air transport. Rail can also provide specialized transport with a variety of rail cars such as flatbeds, refrigerated boxcars, fuel tankers, and piggyback cars, allowing the transport of a large variety of goods.

According to the *San Joaquin Valley Goods Movement Study*, *2000*, UP operates an average of 19 trains per day through the San Joaquin Valley carrying food products, general freight, grain, and lumber. UP has teamed up with CSX Transportation, a company providing rail, intermodal, and rail-to-truck services for coast-to-coast intermodal transportation, linking customers to railroads via trucks and terminals. This provides perishable goods transport as well as refrigerated service from the San Joaquin Valley to New York and Boston. These are connected at locations up and down the Valley by several shorter lines, owned, leased, and/or operated by a number of different companies.



Source: San Joaquin Valley Railroad website

The San Joaquin Valley Railroad (SJVR) is the largest of the regional shortline with about 417 miles of track in operation. The lines are primarily former Southern Pacific

routes, including portions of the former West Valley Line. SJVR carries a diversified range of goods including citrus, recycled glass, fertilizer, paper products, lumber, and many other products.

SJVR connects with UP at Fresno, Goshen, and Bakersfield, and with BNSF at Fresno and Bakersfield as well. The connections to mainline carriers for shippers in outlying areas throughout the Valley benefits the region by reducing congestion, helping to reduce air pollution, and making safe, efficient use of transportation corridors.

San Joaquin Valley food processors continue to show interest in rail as a preferred shipping mode for bulk products. It is expected that rail shipment volumes in the Valley will increase.

i) Rail Abandonments

One key to goods movement via rail is maintaining existing viable rail lines. Many counties throughout California, including Fresno, Kings, and Tulare, have been faced with the issue of rail abandonment. Abandonment of railroad branch lines is detrimental to users relying solely on rail freight service. There is also the potential to impact other facilities in the transportation system. Abandonment proposals additionally results in the loss of potential light or commuter rail corridors that would be difficult to replace. State law requires that local jurisdictions have a right to review proposed abandonments and have the right of first refusal of that right-of-way. Many are choosing to do so, and are considering alternative uses for such facilities.

The UP Coalinga Branchline had been proposed for abandonment. In an effort to preserve the rail corridor, funding was obtained for the rehabilitation of the Coalinga Branchline between Huron and Visalia. The Cross Valley Rail Corridor Project was completed in 2003. The project restored and upgraded 47 miles of track between the cities of Visalia and Huron to accommodate 286,000-pound railcars and facilitate the growth of industrial development in the area. It is anticipated that this short-line railroad service would ultimately take approximately 100 heavy trucks per day off the roadways.

During the past 4 years, SJVR has started to abandon some of their lines within the San Joaquin Valley on a segment-by-segment basis. FCOG and TCAG have chosen to be proactive in planning for future rail service with the recent plans/studies by Railroad Industries Incorporated (RII) on SJVR lines in Fresno and Tulare counties. These efforts include:

- TCAG retaining the services of RII to prepare a business plan that examines the entire portion of rail in Tulare County, a 39.77-mile segment of SJVR rail line between Exeter and the Kern County line (Jovista). The plan evaluated the condition of the rail and determined the feasibility and potential costs associated with acquisition of the rail line and the right-of-way. The plan was completed in November 2010. In February 2011, RII completed and presented a study of the 26-mile segment of the SJVR in eastern Fresno County between Tulare County and the City of Fresno. Fresno COG requested this study in response to recent and potential SJVR abandonments in Tulare County, so that Fresno County can be prepared should SJVR abandonments be proposed in the

county. Shortline rail on the SJVR rail line can provide economic and air quality benefits and that, with gasoline/diesel prices rising, rail will be an increasingly important for goods movement.

- With SJVR abandonments being a Valley wide issue, State Senator Rubio prepared legislation (SB 325) that would allow for the creation of a Central California Railroad Authority that would initially include Kern, Tulare, Kings, and Fresno counties but could be expanded to include all eight Valley counties. The Authority's primary focus would be to identify and protect short-haul rail lines in Kern, Kings, Tulare, Fresno and Merced counties from abandonment. The Authority would be governed by a Board of Directors consisting of elected officials by each participating COG.
- In November 2011, RII completed and presented the results of their SJVR Westside Rail Analysis to Fresno COG. This study consists of 3 separate branch lines: 47.7 miles Fresno to Firebaugh; 24.3 miles Ingel to Burrel; and 42.3 miles Goshen to Huron. These West Side branches are generally in good condition and most customers did not appear to be overly concerned at this time. However, the current traffic is not profitable and SJVR is not encouraging more traffic. The only options will be surcharges, reduced service or deferred maintenance. In addition, surcharges are already imposed by BNSF traffic on the Goshen to Huron line.

Actively pursuing the expansion of short haul rail as demonstrated with the Cross Valley Rail Corridor Project and the efforts to review proposed rail abandonments is a strategy that could help to preserve rail infrastructure not only for intraregional goods movement but also for future passenger service. Hauling unsubsidized freight on conventional passenger corridors could help to off-set the cost of subsidized passenger service. FCOG, KCAG, and TCAG have indicated that preservation of rail facilities is a high priority.

b) Rail Intermodal Facilities

In partnership with the trucking industry, freight rail provides intermodal transportation connecting California seaports with inland producers and consumers. It serves the State's seaports and facilitates international trade. According to the *"State Rail Plan, 2007"* Freight rail also carries 16 percent of the nation's cross-border NAFTA trade. Intermodal, or rail plus truck service, can be an efficient alternative to traditional truck transport. Intermodal terminals are starting and ending points for trains, and provide a central point for distribution of goods between various transportation modes, offering the ability to move freight seamlessly between modes of transport. These facilities have the potential to reduce highway congestion, improve safety by reducing truck movements, reduce roadway deterioration, energy consumption, and emissions, and to provide greater flexibility for shippers to both export and receive goods. However, for these benefits to be realized, it is essential that such facilities be located near highways, freeways, and local roads that can accommodate ease of access.

The railroads have consolidated their intermodal service networks into fewer, larger hubs, in part to provide sufficient volume at one location to justify lift machines. The UP Railroad has intermodal facilities in both Fresno and Lathrop. BNSF has Intermodal facilities in Bakersfield, Fresno, Modesto, and Stockton. These facilities are located near major highways,

and in some cases, ports, to provide interconnectivity to other modes of transportation. While none of these are within the SR 198 CSMP corridor, these facilities have a regional benefit.

c) Air Freight Service

Air freight service provides fast shipment of small items of high value over long distances. Typically, this is at a high cost. Air freight represents a specialized transportation mode, with its major advantages being dependability and a very short in-transit time. Air carriers depend heavily on truck transportation for the delivery of the goods they transport.

The air cargo system in the San Joaquin Valley is comprised of seven airports – all of which offer limited commercial passenger airline and air cargo service. They are: Fresno-Yosemite International Airport in Fresno County; Inyokern Airport in Kern County; Bakersfield's Meadows Field in Kern County; Merced Regional Airport in Merced County; Modesto Municipal Airport in Stanislaus County; Stockton Metropolitan Airport in San Joaquin County, and; Visalia Municipal Airport in Tulare County. Limited air freight service is also available at the Hanford Municipal Airport.

The largest airport within the three-county area included in this CSMP is Fresno-Yosemite International Airport (FYI), located in the City of Fresno. FYI features an air cargo park, located on approximately 87 acres on the north side of the airport. The park includes two aircraft ramps and over 500,000 square feet of air cargo building space to accommodate the needs of air freight companies and to capitalize on Fresno's mid-state location. The park was built to consolidate air cargo in that strategic location and provide room to expand, as cargo needs demand. It is feasible that, with the current facilities and an opportunity to expand, air freight carriers will consider FYI a favorable alternative location as the Los Angeles basin continues to grow.

d) Inland Port

Foreign Trade Zone and/or Enterprise Zone designations provide "Inland Ports" serving as cargo facilitation centers, where a number of import, export, manufacturing, packing, warehousing, forwarding, customs, and other activities could take place in close proximity or at the same site. Such a facility could function as an inland sorting and depository center for ocean containers transported to the inland port via truck or rail.

The City of Shafter has an inland port status facility at its International Trade and Transportation Center. The facility has a container hub allowing distributors to drop empty trailers at the site for pick up by other drivers, thus eliminating a large number of truck trips over the Grapevine and through the Los Angeles basin. While the City of Shafter is south of SR 198, the inland port still has the potential to benefit regional air quality, in addition to creating jobs.

The Port of Stockton has expanded its Foreign Trade Zone designation to include the nearly 475-acre Opus Logistics Center in East Stockton. This is the eighth such site approved for

Stockton. The new facility is strategically located next to the BNSF railroads intermodal facility, and presents a number of benefits to shippers, including direct transfer from ship to rail. While this facility is north of SR 198, such strategies as this have the potential to reduce some truck trips through these three counties, benefiting the SR 198 corridor as well.

e) Trucking

Trucking is the most commonly used mode for transporting freight in the San Joaquin Valley, providing flexibility, timely delivery, and efficiency. The San Joaquin Valley (SJV) Goods Movement Study, prepared for Caltrans and the eight counties of the San Joaquin Valley (Kern, Fresno, Tulare, Kings, Madera, San Joaquin, Stanislaus, and Merced), determined that trucking is the dominant mode for moving freight (see truck percentages, Table 1, Summary Chart, Page 8). Trucking provides flexibility, timely delivery, and efficiency. The increase in freight movement by trucks on State highways is growing faster than can be accommodated by the existing capacity. Trucks constitute up to 36 percent of the AADT in some sections of SR 198, even though the State average is only 9 percent.

The high volume of truck traffic within the Central Valley raises issues of highway maintenance, capacity, and safety. This has led Valley Regional Transportation Planning Agencies (RTPAs) to share a goal of finding ways to encourage a shift of some commodity movement to rail. While the truck volumes on County roads and regional streets will still be a major factor to be addressed, highway systems would be relieved. This would allow the use of existing capacity on that system, freeing up comparable capacity on State highways and lowering maintenance costs for the highway system.

FCOG has also established a Quad-County Freight Advisory Committee, consisting of RTPA staff from Madera, Kings, Tulare, and Fresno counties working in collaboration with both the users (trucking industry, rail carriers, shippers, receivers, etc.) of the transportation system and the providers of that system (Caltrans, local agencies). The primary purpose of the Committee is to identify problems and build consensus among public and private sector freight interests for improving the safety and efficiency of freight movement in the region. Primary objectives of the Freight Advisory Committee include:

- Advise the COGs and other public agencies about specific freight concerns, issues and priorities;
- Allow the Freight Advisory Committee to participate in COG's transportation planning and investment decision processes;
- Help identify, support, and implement promising and effective strategies to improve freight mobility in the region.

2. *Mass Transportation*

The success of any mass transit service is largely dependent on the proximity of the service to where the population is located. To encourage the use of mass transit as an alternative to single-occupancy vehicles, it is essential that these facilities are linked to the appropriate land uses, with adequate parking facilities. The *California Interregional Blueprint* (CIB) to be prepared by Caltrans will provide an analysis of the benefits of multi-modal, interregional projects on the transportation system, and will expand understanding of the interactions between land use and transportation investments in meeting critical strategic growth and sustainability goals. This will provide a valuable tool for both Caltrans and local partner agencies. The interim CIB report is scheduled to be submitted to the California Transportation Commission and the Legislature in December 2012.

a) Aviation

General aviation airports provide a variety of important services, not just in the communities within which they are located, but also to surrounding areas. Airports provide for recreational, business, and charter air travel. Some also serve police and sheriff helicopter patrols, air cargo flights, fire suppression (air tankers), and flight and aircraft mechanical instruction. The report "*Aviation in California: Benefits to Our Economy and Way of Life*" completed by Caltrans Division of Aeronautics in June 2003, provided a comprehensive evaluation of the economic benefits of aviation and airports to California communities and the overall State economy. The report noted that aviation's overall contribution to the California economy (including direct, indirect, and induced impacts) amounts to nearly 9 percent of both total State employment and total State output.

i) Fresno County

There are eight public use/general aviation airports in Fresno County. These include the Coalinga Municipal Airport; Firebaugh Airport; Chandler Executive Airport (classified a Regional General Aviation Airport in the California Aviation system Plan); Harris Ranch Airport (classified a Limited Use Airport in the California Aviation System Plan); Mendota Airport; Reedley Municipal Airport; Selma Aerodrome; and Sierra Sky Park. Of these, only the Coalinga Municipal Airport is within the limits of this CSMP.

Coalinga Municipal Airport: The Coalinga Municipal Airport is a public use airport owned by the City of Coalinga. It is a general aviation facility with two runways and a helipad. There are no commercial flights.

Fresno Yosemite International Airport: The largest airport in Fresno County is Fresno Yosemite International Airport (FYI). FYI is designated as a Primary Commercial Service Hub Airport in the California Aviation System Plan. While this airport is well north of SR 198, it is the major air transportation center in the San Joaquin Valley, drawing from many other locations. The FYI service area consists of six counties including Fresno, Kings,

Madera, Mariposa, Merced and Tulare. The airport offers commercial passenger service as well as air cargo.

ii) Kings County

There are approximately 40 Basic Utility Airports and landing strips Kings County. With the exception of LNAS, these facilities generally belong to one of three classes: 1) publicly-owned airports, open for public use; 2) privately-owned airports, open for public use; and 3) privately-owned airports for private use only. All public-use and private airports in Kings County are used for General Aviation (i.e. smaller, recreational, or business) aircraft. Commercial air passenger service is not available in the County; most commercial air passengers use FYI in Fresno. Much of the airport activity centers on agriculture, where chemical application aircraft (crop dusters) make up a significant portion of all business aircraft. Private airports in Kings County that are open to public use include: Avenal Airport and Corcoran Airport. Private airports, available only for private use, include approximately 40 other aircraft landing facilities. The great majority of these smaller landing strips are used by crop dusters, though several are for the sole use of personal aircraft.

There are also three heliports located in Kings County. All are for private use only. These are located at the JG Boswell Company in Corcoran, the Helistop at the Hanford Community Hospital, and a landing pad at the Westlake Farms airfield. Hanford Municipal Airport does not have a separate helipad for helicopter operations.

Hanford Municipal Airport: The Hanford Municipal Airport is a public use airport owned by the City of Hanford. It is the only city-owned air facility in the County. There is one air charter service available and several crop dusters are based at the facility. All types of General Aviation aircraft use the facility including recreation and business aircraft, including air freight. The airport is located at 9½ Avenue and Hanford-Armona Road. It is south of SR 198, but accessible from the route via local street connections.

Lemoore Naval Air Station: LNAS is the Navy's largest and only west coast Master Jet base. Its principal mission is to support the Strike-Fighter Wing of the U.S. Pacific Fleet, whose mission is to train, man, and equip the west coast Strike-Fighter squadrons. LNAS hosts fourteen F/A-18 operation Strike-Fighter squadrons, two Strike-Fighter Fleet replacement squadrons, and all four west coast Carrier Air Wing Commanders and their staffs. LNAS employs approximately 11,700 military and civilian personnel and contributes millions to the local economy. Additionally, the base generates about 13,500 jobs for the county, which includes military personnel, Department of Defense civilians and contractors, contracts, payroll employees, transient personnel and retirees/veterans. The naval hospital on the base serves over 17,249 active and retired military, military dependents, and Department of Defense personnel in the county. It is likely that the base will continue to expand. LNAS is located adjacent to SR 198, with the main access connecting to the highway. Representatives from LNAS are on the PDT for this CSMP.

Military bases have historically generated significant development in adjacent communities. In partnership with Kings County, Fresno County, and the City of Lemoore, KCAG prepared a Joint Land Use Study. This is a basic planning process designed to identify issues confronting both the civilian community and the military installation and to recommend strategies to address the issues in the context of the local general plan process. The Joint Land Use Study was conducted in a collaborative manner involving a variety of stakeholders, including the local elected officials, planning commissioners, the LNAS military base command staff, community business leaders, land owners, natural resource groups, the development community, and chambers of commerce or other redevelopment agencies. Administrative oversight was provided by KCAG.

iii) Tulare County

Tulare County's airport system can be divided into three components: publicly owned and operated airports; privately owned airports open to public general aviation use; and private "special use" airfields and airstrips. There are five public airports and two privately owned airports open to public use in operation Countywide. The remaining airstrips that presently exist throughout the County are used for agricultural aviation activities. Out of the airports mentioned above, only Visalia Municipal Airport has regularly scheduled commercial service.

Visalia Municipal Airport: Visalia Municipal Airport is a city-owned, public-use airport. The airport is served by one commercial airline which is subsidized by the Essential Air Service program. Air freight services are also available. The airport is located west of the central business district of Visalia, south of SR 198 and east of SR 99. The facility can be accessed from either route.

b) Passenger Rail

In most states, inter-city passenger train service is provided solely by Amtrak. This service is provided with no assistance of any sort from state or local governments. California, through Caltrans, is one state that has been assisting Amtrak in order to allow Amtrak to provide more than just basic service. California has provided Amtrak with capital grants and support for station and track improvements (including signaling), locomotives and cars, and connecting Amtrak bus service. The *Pacific Surfliner*, *San Joaquins*, and *Capitol Corridor* Amtrak lines are funded primarily by the State of California, with Amtrak and Caltrans operating as partners, helping to reduce ticket fares. These trains operate in addition to Amtrak's own interstate trains: the *Coast Starlight,* the

Amtrak Capitol Corridor Route
Photo: Amtrak California

California Zephyr, the *Southwest Chief*, and the *Sunset Limited,* that provide a passenger rail connection for California to the rest of the country.

Amtrak provides accessible Thruway Motorcoach (bus) service on some routes. Portions of the trip may be by bus, depending on the line. Amtrak Thruway Motorcoaches also extend Amtrak's services, providing connectivity to areas not served by passenger rail. The Amtrak line known as the *San Joaquins* runs north-south, linking Bakersfield and the Bay Area with stops in Corcoran, Hanford, Fresno, Madera, Stockton, and Sacramento. The line, via Amtrak Thruway Motorcoach service, provides connections in Bakersfield for travel south to Los Angeles and San Diego, and connections for travel to the east to Tehachapi, Mojave, Barstow, Baker, and Los Vegas. SR 198 provides the region with a link to alternative modes of transportation, including the Amtrak station located in the City of Hanford.

With five million annual passengers, California has more than 20 percent of all Amtrak riders. During the period from May 2010 to May 2011, California experienced record increases in ridership with the *San Joaquins* experiencing the largest increase. Compared to May 2010, ridership on the *San Joaquins* shot up over 12 percent with a 19 percent increase in revenue. The *San Joaquins* is the nation's fifth busiest rail corridor in the United States. The *Pacific Surfliner*, the second most popular rail corridor in the nation, experienced a 4 percent climb in ridership and a 9 percent hike in revenue. This line links San Luis Obispo with San Diego via Santa Barbara and Los Angeles.

The Coalinga Branch Line offers some potential for an expansion of passenger rail service to connect the most densely populated urban areas along the SR 198 corridor, including LNAS, and the cities of Lemoore, Hanford, and Visalia. However, according to the *Cross Valley Passenger Rail Feasibility Study*, prepared for KCAG, there is not enough population to support operating and maintenance cost. If high-speed rail becomes a reality, then passenger service of this east-west corridor could become more viable.

In November 2006, Proposition 1B, the "Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006" was passed by voters and will provide up to $400 million dollars in new funds to expand passenger services. These funds are to provide all passenger and freight services the ability to operate more efficiently by improving capacities, sidings, and track signals.

c) High Speed Rail

The California High Speed Rail Authority (HSRA) has developed a plan to build a high-speed rail line that would service the major metropolitan centers of California. The high-speed rail is planned to eventually provide service that will connect Anaheim/Los Angeles through the Central Valley to San Francisco, and to Sacramento and San Diego. The system would be capable of reaching speeds of 220 miles per hour, and is planned to interconnect with and complement other modes of transportation, such as commercial airports, mass transit, the state's highway network, as well as bike paths and foot traffic.

Artist Rendition, provided by HSRA

A bond measure to fund a portion of the High-Speed Rail was passed in November 2008. In 2009, the HSRA also received funding from the American Recovery and Reinvestment Act (ARRA). With passage of the bond, and the additional ARRA funds, construction could begin as early as 2012. An ideal timeline shows full, Anaheim/Los Angeles to San Francisco high-speed train service by 2020, with smaller sections opening for limited or shared-use service prior to that time. Several stations have been proposed in the San Joaquin Valley.

d) Transit

Public transportation in the United States is a crucial part of the solution to the nation's economic, energy, and environmental challenges. An increased investment in public transportation creates jobs and boosts economic growth, as well as helping to alleviate our nation's overcrowded network of roads by providing transportation choices. A major advantage of transit over single-occupancy vehicle (SOV) facilities is that adding transit, such as an additional bus, to a corridor that has reached capacity is more economical than it is to add another roadway lane. The bus is only needed during peak periods, making it more efficient than providing a travel lane that is under-used during non-peak hours. However, transit can only provide relief for congestion if the bus is not stuck in the same traffic as the SOVs. To reduce the amount of time buses are stuck in congestion, a dedicated transit lane could be established. Investment in carpool and bus lanes on freeways, ramps, and arterial streets is not much more expensive than adding free-flow lanes; however, these alternatives can provide vital relief from the congestion associated with peak travel times. The dedicated transit lane would allow buses to move much faster than the congested traffic in other lanes, possibly making this an attractive alternative to commuters.

A dedicated transit lane could also support Bus Rapid Transit (BRT). Southern California Association of Governments defines BRT in their Regional Transportation Plan as: "*Bus rapid transit (BRT) is designed to provide fast, high-quality bus service. BRT operates in mixed traffic or in dedicated guide-ways, utilizing low-floor buses, taking advantage of signal priority at intersections, boarding and alighting passengers through streamlined processes, and improving bus stop spacing at planned stations. BRT combines the routing flexibility of bus systems with some of the features of rail transit such as limited stops and streamlined boarding and alighting procedures. It uses specially identified buses stopping only at major intersections/destinations*." BRT would be a possible alternative in highly urbanized areas, connecting major residential areas with job centers. Coordination with transit operators on implementation of traffic signal green-light extension technology would be a first step toward

implementation of BRT and peak period bus/carpool lanes on arterial streets. This dedicated lane would not need to be on SR 198; a local parallel road could be utilized.

At the local level, there is no continuous bus service that extends along the entire length of the CSMP corridor. For the interregional travelers on SR 198, the existing transit service consists of Orange Belt Stages. Orange Belt provides connections to Tulare County and the Central Coast via Paso Robles, with stops in Hanford and Lemoore. Orange Belt coordinates with Amtrak for bus connections at the Hanford Intermodal Station.

i. Fresno County

The Fresno County Regional Transit Agency (FCRTA) offers both fixed route and dial-a-ride services. FCRTA services the outlying areas of Fresno County including the thirteen rural incorporated cities of Fresno County: Coalinga, Firebaugh, Fowler, Huron, Kerman, Kingsburg, Mendota, Orange Cove, Parlier, Reedley, Sanger, San Joaquin, and Selma. There is limited service to communities in neighboring counties including: Granville, Hardwick, and Hanford in Kings County; Dinuba in Tulare County; Madera and Children's Hospital - Central Valley in Madera County; and Dos Palos in Merced County. Many unincorporated rural communities are also served, including the following: Alder Springs, Auberry, Burrough Valley, Cantua Creek, Caruthers, Dunlap, Easton, El Porvenir, Five Points, Friant, Halfway, Jose Basin, Lanare, Laton, Marshall Station, Meadow Lakes, Mile High, Miramonte, New Auberry, O'Neills, Pinehurst, Prather, Raisin City, Riverdale, Squaw Valley, Sycamore, Three Rocks, Tollhouse, Tranquillity, and the American Indian Rancherias of Big Sandy, Cold Springs, and Table Mountain. FCRTA offers connections to the following area transportation providers: Fresno Area Express' (FAX) scheduled fixed route service with connections to Valley Children's Hospital in Madera County; FAX's Handy Ride "Americans with Disabilities Act" (ADA) demand responsive services; Clovis Transit's Stageline scheduled, fixed route service; and Clovis Round-Up's demand responsive ADA services. Urban areas of Fresno are serviced by the Fresno Area Express (FAX), Clovis Round-Up, and the Clovis Stage Line.

FAX bus at the Manchester Transit Center
Photo: Caltrans District 6 System Planning Staff

Greyhound and Orange Belt Stages provide transit services to areas outside the county. In addition, Transportes Intercalifornias provides two daily round trips from Fresno to Los Angeles, with connecting services onward to Santa Ana, San Ysidro and Tijuana.

Coalinga Transit System provides Coalinga residents with fixed-route and Dial-A-Ride components. The fixed-route links the City of Coalinga with the City of Fresno. The Dial-A-Ride provides transportation within the City limits.

The City of Fresno has a BRT system in the planning stages. BRT is a type of limited-stop service that relies on technology to help speed up the service. It can operate on exclusive transitways, high-occupancy-vehicle lanes, expressways, or ordinary streets. A BRT line combines ITS technology, priority for transit, rapid and convenient fare collection, and integration with land uses to substantially upgrade bus system performance. The City of Fresno is initiating a pilot project to add a BRT line along one of the major local street corridors. If this line is successful, others will likely be added elsewhere within the City.

ii. Kings County:

At the local level, the largest single provider of public transportation within Kings County is the Kings Area Rural Transit System (KART), under the auspices of the Kings County Area Public Transit Agency. This is a joint powers agency comprised of Kings County and the cities of Hanford, Lemoore, and Avenal. The City of Corcoran does not participate in the KART system. Transit along the SR 198 corridor also involves a combination of demand/response and fixed-route service to the LNAS, and between Hanford and Visalia.

KART provides 14 round trips on the weekdays and eight round trips on Saturdays between Hanford, Lemoore, and LNAS, and 17 round trips on weekdays between Hanford and Lemoore (direct service). In addition, KART provides round trip service from the Hanford Amtrak Station to San Joaquin Valley College, Galen College, Chapman College, and College of the Sequoias in Visalia three times a day, Monday through Friday. The service is spaced early morning, midday, and late afternoon. If this service continues to flourish, and there is demand for Visalia residents to access activity centers in Hanford or Lemoore, Visalia City Coach and Tulare County Area Transit should consider adding new service.

Currently, Greyhound operates service 7 days a week, seven times a day round trip between the City of Tulare and northbound locations along the SR 99 corridor. Orange Belt Stages provides transportation to communities throughout the San Joaquin Valley and the State, and to Las Vegas, Nevada. Orange Belt operates seven days a week, 365 days a year. There are four Orange Belt Stage lines depots in Kings County: Hanford Intermodal facility, Lemoore Chamber of Commerce, Lemoore Naval Air Station, and at Kettleman City.

iii. Tulare County:

The Tulare County Area Transit (TCaT) provides public transit service between cities and in-city transit services for many small communities throughout Tulare County. Fixed route and demand-response Dial-A-Ride services are offered Monday through Friday. TCaT provides direct service between Traver, London, and the City of Dinuba, as well as five roundtrips on the weekdays and two on weekends from the City of Tulare Transit Center to the City of Delano in Kern County.

There are three bus depots in Tulare County: Greyhound Goshen Depot, in the community of Goshen, the Tulare Greyhound Station in the City of Tulare, and the Orange Belt Stage Lines depot in the City of Visalia. Some of the buses are ADA equipped.

Porterville provides public transit through a full-time, fixed route service via Porterville Transit (PT). PT began as a two route system, but has expanded to an eight route system. Porterville's Dial-A-COLT (City Operated Local Transit), offers curb-to-curb (origin to destination, when needed) demand-response service to seniors and riders covered by ADA. Porterville Transit and COLT services are provided within the city limits and to designated unincorporated urban areas of the county, including "county islands" within the city limits. Service to county areas is provided under service agreement between the City and the County. The County of Tulare provides transit service to unincorporated areas surrounding Porterville.

Visalia City Coach (VCC) operates 11 bus routes that serve Visalia, Farmersville, Exeter, and Goshen. VCC connects with Tulare InterModal Express, TCaT, Greyhound, Orange Belt, KART and Amtrak. They also offer Dial-A-Ride, curb-to-curb, paratransit services on a shared-ride, demand-response basis that provides transportation to the elderly and disabled within the city limits of Visalia, Goshen and Farmersville. The Towne Trolley operates in downtown Visalia.

Tulare Transit Express (TTE) provides bus service within the City of Tulare. This includes a route between the City of Tulare to the Tulare County Government Plaza Building in the City of Visalia, with 24 weekday roundtrips and 16 weekend roundtrips. There are free transfers every one-half hour between TTE and VCC systems at the Government Plaza building.

Tulare InterModal Express (TIME) operates 7 bus routes that serve Tulare and Visalia. TIME connects with Tulare County Area Transit, VCC, KART, and Orange Belt.

A direct relationship exists between the size and density of a population and mass transit ridership. High density residential, coordinated commercial and retail development, and major employers located near existing or planned transit lines provide benefits by tying land use, compact growth, and modal enhancement to existing infrastructure. If residential densities within the metropolitan areas increase as expected, this could result in conditions more favorable for increasing use of transit. Planning for pedestrian access to transit stops as future developments are proposed would also make it more likely that a mass transit system would be successful. If land use strategies are implemented within the urban areas, sufficient density to support transit may be achieved. Mass transit may become a more important component of the transportation network in future years.

e) Transit Studies

The Central Valley does not have an integrated transit system that offers extensive inter-county transit and connectivity to other modes such as Bay Area Rapid Transit (BART), Altamont Commuter Express (ACE), and Amtrak. Improvements to inter-county transit services will be

needed to accommodate the projected future demands of inter-county commuters with viable modal choices.

i) San Joaquin Valley (SJV) Express Transit Study: The SJV was a sponsored effort of all eight valley Councils of Governments/Metropolitan Planning Organizations, which make up the San Joaquin Valley Regional Transportation Planning Agencies (SJVTPA). The consultant, Nelson/Nygaard Consulting Associates, commenced this study in February 2008 and completed it in May 2009.

The *SJV Express Transit Study* is valley-wide and comprehensive in its documentation of existing inter and intra-valley transit services. The study further projects future transit demand both within the Valley and to Sacramento, Bay Area, and Southern California destinations. The study proposes service options throughout the San Joaquin Valley and by various modes ranging from rideshare/Transportation Demand Management (TDM), vanpool, commuter express bus, and commuter rail. The study has been coordinated with local transit providers in each of our counties, vanpool programs, and the San Joaquin Regional Rail Commission. The Study recommended the following strategies:

Ridesharing/Vanpool

Recognizing that lower-density land use patterns will continue to dominate most of the SJV for the foreseeable future, the expansion of the ridesharing and vanpool opportunities should be the primary investment to increase transportation choices for inter-county commuters in most of the SJV region. Recommendations for expanding access to ridesharing and vanpool services are:

- Continue with plans to form a Joint Powers Authority (JPA) in the southern portion of the Valley to operate Kings Area Rural Transit (KART) and Agricultural Industries Transportation Services (AITS) Vanpool;
- Expand the existing transit area currently served by San Joaquin County's Commute Connection to include Merced County, and enhance coordination between the participating MPOs;
- Commute Connection should consider pilot testing lease-purchasing vanpool vehicles;
- Prioritize vanpooling to Fresno;
- Provide a single valley-wide ride-matching and vanpool website;
- Invest in more marketing of vanpool to choice riders;
- Expand park-and-ride opportunities;
- Offer Guaranteed Ride Home throughout the Valley; and
- Seek to influence the development of the new Air District trip reduction rule, so that it can fund and promote ridesharing to large employers.

Inter-county Express Bus

Three key corridors (Northern SR 99 corridor to Sacramento; Northern SR 99 corridor to Bay Area; Northern Los Angeles County to Edwards Air Force Base in Eastern Kern County), which were identified through this study, have potential for commuter express transit services. Recommendations for express bus services include:

- Maintain existing inter-county commuter service
- Enhance San Joaquin Regional Transit District subscription routes to Sacramento and the San Francisco Bay Area as funding becomes available
- Study express bus service between Lancaster Metrolink and Edwards Air Force Base

Commuter Rail

Nearly half of the San Joaquin Valley's inter-county commuters travel between the Valley and the neighboring San Francisco Bay Area and Sacramento areas. High trip densities, congested roads, and the opportunity to connect to dense downtowns and high quality local rail service on the destination end makes these corridors good candidates for commuter rail service. Expanding and improving passenger rail service in these rail corridors may be the best way to serve SJV commuters in the coming decades. Recommendations for commuter rail are:

- Develop a coordinated regional advocacy plan for enhanced state and federal investments in commuter rail;
- Work cohesively as Valley Counties to upgrade ACE;
- Work cohesively as Valley Counties for a direct ACE/BART connection;
- Work toward expansion of commuter rail service between Merced and Sacramento; and
- Invest in great station area planning. FCOG and KCOG have both funded long-range transit studies that will look at future potential for light-rail, and bus rapid transit systems that could serve as feeder systems for the high speed rail stations in those regions.

The study summarizes the proposed services by key corridor to best serve the SJV's inter-county commuters. These are:

- Invest in ridesharing, which is the most cost-effective strategy for the region;
- Focus on expanding vanpool offerings;
- Consider expanding subscription bus service from Stockton to Sacramento and the Bay Area;
- Consider implementing bus service between Lancaster Metrolink station and Edwards Air Force Base in Eastern Kern County in partnership with the base; and

- Consider upgrades to commuter rail service to northern SR 99 corridors which includes capitalizing on California High Speed Rail investments.

ii) South Valley Rideshare Study: Another study, also completed in 2009, was the *South Valley Rideshare Study*. Combined with the *SJV Express Transit Study,* improvement in coordinating vanpooling efforts throughout the San Joaquin Valley should be a priority. These studies pointed to vanpooling as a means of reducing greenhouse gas emissions and increase inter-county transportation choices with lower operating costs than traditional transit options. As a result of these studies and the continued popularity of vanpooling, KCAPTA intends to form a new joint powers agency (JPA), called the California Vanpool Authority (CalVANS) with several councils of government (COG) throughout the Valley and the state. This would create a regional agency for vanpool services. Currently, the following agencies intend on entering into the new JPA for CalVANS: Kings County Area Public Transit Agency; KCAG; MCTC; Association of Monterey Bay Area Governments; FCOG; TCAG; and the Sacramento Area Council of Governments.

iii) Tulare County Community College Transit Study: In 2010, TCAG secured a Caltrans planning grant to conduct the *Tulare County Community College Transit Study*. The study examined the transportation needs of students attending College of the Sequoias (COS) Community College in Tulare County. A component of examining the transportation needs of COS students included the evaluation of the success of the Student Transit Pass Program (STTP), which was initiated in the Spring of 2011. Fees currently being paid by COS students are $5 per semester for full time students and $4 per semester for part time students. COS contributes $0.40 per student. Any increase in fares paid by students would require a student vote. A recommendation from the study was that any expansion to transit systems resulting from the COS STTP Program should be covered by the program revenues or by grants for the program. TCAG may also consider augmenting any shortfall in revenues to cover the cost of transit expansion associated with the program. Another component of the study was to analyze the existing agreements between TCAG and transit providers in Tulare and Kings Counties. It is recommended that the fee structure for the program be modified to more accurately distribute funds based on a combination of student ridership and average trip length per transit provider. This STTP program should be re-evaluated after three years for its success/challenges and to make adjustments as needed. Still another component of the study was to create preliminary plans to launch similar programs at other nearby community colleges: Reedley College and Porterville College.

f) High-Occupancy Vehicle Lanes (HOV)

Projected growth in the Valley will necessitate the consideration of some form of congestion relief. HOV facilities are one alternative. HOV lanes are facilities that have been designated

for a specific use by the traveling public. Criteria for using these facilities include the number of passengers per vehicle (two or more), transit vehicles, trucks, and motorcycles. These facilities emphasize "person movement" rather than vehicle movement, with an emphasis on increasing the number of persons per vehicle via transit, vanpool, and all forms of ridesharing. This provides for a more efficient utilization of the existing freeway capacity. HOV facilities may result in not only relieving congestion, but may also play a role in improving the overall air quality in the San Joaquin Valley. Currently, SR 198 does not include any HOV lanes.

In December 2004, Caltrans Districts 6 and 10 completed the "High Occupancy Vehicle Lane Viability for the San Joaquin Valley" study to identify potential HOV corridors. The Department's Policy and Procedures Memorandum (P89-01) states that the "Department will consider an HOV lane alternative for projects which add capacity to metropolitan freeways or proposed new metropolitan freeways," if certain criteria are met. These criteria include freeways with 6 lanes or more in and around urban areas, recurrent congestion, and facilities falling below LOS "D." SR 198 does not meet these criteria. Delay was low and/or at isolated locations. The relatively low level of delay on the freeway mainline would not warrant HOV lanes.

One of the most efficient uses of HOV lanes is to provide priority access to express bus service. Buses are able to move more freely, speeding past congested traffic. This can provide a strong inducement for commuters to take advantage of transit, helping to relieve congestion and extending the service capacity of a freeway by providing an alternative means to get through a congested corridor.

The success of HOV facilities does not rely solely on the identification of a road segment that meets specific criteria, but is also contingent on public involvement and education, supporting policy and programs, and interagency coordination. Caltrans will continue to evaluate, in collaboration with local partner agencies, the possibility of HOV facilities within the San Joaquin Valley. Such a facility, or facilities, may prove viable in the future.

3. Non-Motorized Transportation

In transportation planning, more emphasis is being placed on solving traffic issues without resorting to expansion of highway and freeway facilities. Two possible solutions include providing both improved pedestrian access and improved bicycle facilities. The Central Valley is especially well-suited for both of these alternatives, and both can make a meaningful contribution to the overall transportation system. Residential developments are often within walking distance of commercial centers and/or transit stops. The climate and terrain of the region includes many clear, dry days and moderate temperatures. FCOG, KCAG, and TCAG include goals of encouraging the incorporation of both pedestrian and bicycle facilities into the local planning process.

a) Bicycles

For short trips, the bicycle can serve as an alternative to the automobile; it is non-polluting and energy efficient. Bike enhancements are an element in the region's multi-modal transportation system that will lead to a more efficient transportation network.

Bicycle travel is permitted on conventional state highways within California, as well as many of the state's freeways and expressways. Bicycle travel is currently permitted on SR 198 between US 101 in Monterey County and the Main Gate at LNAS. It is permitted between SR 43 and SR 99, and again east of SR 245 in Tulare County. There are existing bicycle lanes along the SR 198 frontage roads in the City of Visalia and in the community of Three Rivers and the City of Coalinga.

Under Streets and Highway Code Section 888, the Department is not permitted to create an expressway or freeway if it serves an existing bike route unless it creates a safe and convenient alternate route. Likewise, under Section 21960 of the Vehicle Code, the Department cannot close an expressway or freeway to bicycles without the concurrence of local authorities, and only after a public meeting. With the SR 198 Hanford Expressway widening project, excess right-of-way is available for potential use as a bicycle path if Kings and Tulare Counties choose to accept the land.

b) Pedestrians

Walking is also a viable travel mode. For a community to be truly "walkable," there should be dense development, clustered commercial areas, and clearly defined pedestrian walkways. To be successful, a "pedestrian friendly" environment will also include such things as an established and reliable public transit system and a road and highway system that does not present impediments to pedestrians seeking to move from one area to another. Mild weather, coupled with safely-designed sidewalks and paths, can make walking an enjoyable activity. To promote walking as an alternative to traditional automobile-based transportation, new developments should be designed to incorporate ready ingress/egress of subdivisions. Planning pedestrian connectivity to transit stops can also promote walking as a mode of transportation.

Establishing a comprehensive pedestrian/bicycle program that will coordinate engineering, education, enforcement, encouragement, and environmental programs will enhance the viability of both of these alternative modes of transportation. The RTPs of FCOG, KCAG, and TCAG all include the goal of promoting more pedestrian and bike uses as an alternative to driving, along with lists of proposed bicycle and pedestrian projects. Many of these goals and projects are also included in the planning documents of other local agencies. These proposals, whether planned or recommended, will result in improvements to the transportation network, including constructing additional bikeways and pedestrian improvements. The improvements will have beneficial effects on a region-wide basis.

In addition to the usual sources of funding for bicycle/pedestrian facilities, Fresno County has a local sales tax know as *Measure C*. In 2006, the Measure was extended for another 20 years. This extension designates that the funding will be directed toward a multi-modal transportation program, with almost 25 percent of the expected Measure funds directed to public transit services; roughly 30 percent directed to capacity-enhancing street and highway improvements; and, just under 35 percent directed to local street and highway maintenance, ADA improvements, and pedestrian, trail, and bicycle facilities.

Tulare County also has a local sales tax measure, passed in 2006. The *Measure R* Expenditure Plan estimates that the tax will provide $21.8 million per year, totaling $654 million in regional sales tax funds for the 30 year life of the measure. Funding is distributed towards regional projects (50 percent), city/county specific improvements (35 percent), transit, bicycle, rail/environmental projects (14 percent), and administration and planning (1 percent).

Additional information on bicycles and pedestrians is presented in Appendix E, Page 78.

E. Corridor Inventory:

Current AADT, Level of Service, percent Trucks, Peak-Hour AADT, 10 and 25-year AADT forecasts, by segment of the SR 198 Corridor, are presented in Table 1, Summary Chart, Page 8.

1. Traffic Volumes and Type

The high rate of growth in the San Joaquin Valley is quickly using and exceeding the capacity of the SR 198 corridor. In the next 20 years, goods movement is expected to increase, creating even greater pressure on this primary east-west route. The existing facility does not have the capacity to accommodate the growth in population or the increase in goods movement. To maintain the corridor's ability to support ongoing development, facilitate efficient goods movement, and improve the quality of life in the Central Valley, a substantial investment is needed to maintain and improve the corridor. Creative solutions to deal with this impact will be needed, solutions beyond simply increasing capacity. This CSMP is the first step in this process.

SR 198 is an important farm-to-market route. Truck volumes range from 8 percent to 36 percent, while the State average is only 9 percent. The economic vitality of the region is dependent on the efficient flow of goods and services to and from this area and a reduction in traffic delays. Efficient goods movement also plays a role in efforts to reduce the region's high unemployment rate.

Commuter traffic is very dependent on SR 198. There are increasing numbers of commuters who travel this corridor regularly between the Cities of Lemoore, Hanford, Visalia, and LNAS. The mix of commuter traffic with slower moving trucks, recreational vehicles, farm equipment, and an occasional bicycle can reduce the flow of traffic on the existing 2-lane highway portion.

2. Geometrics

Connections with other State Highways: SR 198 has connections with I-5, SRs 33, 269, 41, 43, 99, 63, 65, 245, and 216.

Right-of-Way (ROW) along the Route varies from 60 to 300 feet, and treated shoulders vary from 0 to 13 feet. SR 198 is a 2-lane conventional facility between the Monterey County Line and LNAS, the exception is a 4-lane conventional section through the City of Coalinga. From LNAS to Seventh Avenue the facility is either a 4-lane expressway or 4-lane freeway. From Seventh Avenue to just east of Road 68, the Route is a 2-lane conventional highway. From Road 68 to SR 245, the facility is either a 4-lane Expressway or a 4-lane Freeway. From SR 245 to the Sequoia National Park boundary, the existing facility is a 2-lane conventional highway. Please see Table 1, Summary Chart, Page 8 for details. This table also provides the planned Ultimate Transportation Corridor (UTC), by section, for the entire Route.

Development adjacent to the Route will impact expansion of the facility due to the heightened cost of ROW acquisition. Identification of the UTC and subsequent preservation of the ROW will ensure adequate ROW will be preserved to accommodate facility improvement projects beyond 2035. Caltrans and local agencies should work together to establish plan lines and interchange "footprints," and to have these plan lines adopted into the local agencies' General Plan circulation element so that local agencies can use their land-use authority to preserve the needed ROW for the corridor. This will also accelerate the necessary environmental clearances, as well as reducing the costs associated with ROW acquisition when future capacity-enhancing projects are implemented. This will also ensure that facility improvements can be implemented with a minimum impact to the community.

3. Characteristics

a) Park and Ride Lots

There are no Park and Ride lots on SR 198 in District 6. Future Park and Ride lots could be developed along SR 198 as funding becomes available. Park and Ride lots could be incorporated into each end of a potential bike path utilizing the excess right-of-way that could be available from the Hanford Expressway Project.

b) Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) consists of the electronics, communications, or information technology processing that communicates information to the traveler, improving safety and efficiency. ITS elements include detection, traffic control, incident management, advanced traveler information systems, and transportation management centers. ITS can take the form of traffic signals, closed-circuit televisions, changeable message signs, ramp meters, weigh-in-motion devices, roadway service patrols, weather stations, and highway advisory radio stations. Also included is the centralization of controls for many of these components at traffic or transit management centers. Traveler information broadcast systems, traffic signal

priority for emergency or transit vehicles, ITS data archive management, and vehicle safety warning systems are all a part of ITS. These elements are further explained in detail in Appendix F, Page 79.

Deployment of ITS technology will enhance traveler information services, as well as the operational and safety efficiency of the Route by informing motorists of traffic congestion, inclement weather such as fog, dust, highway construction and/or closings. System monitoring and evaluation are the foundations for sound management of the corridor. Monitoring and evaluation will help to identify the optimum strategies to improve the transportation corridor. Strategies range from maintenance and preservation to system expansion, but will focus on optimization of the existing system by fully incorporating operational strategies into the management plan. Implementation of ITS strategies will complement other improvements, including those improvements that may be implemented by our partner agencies such as transit, light rail, and improvements on the local road system. The goal is that the transportation system, as a whole, including highways, local roads, and alternative modes of transportation, operate as one seamless network.

There are a number of existing ITS elements within the boundaries of the CSMP. These are presented in Table 2, below. There are a number of proposed ITS projects on SR 198, including closed circuit television systems, traffic monitoring stations, changeable message signs, and highway advisory radios. These are presented in Table 3, Page 43. Caltrans District 6 is committed to the implementation of ITS strategies as funding allows.

Implementation of ITS strategies will complement other improvements, including those improvements that may be implemented by our partner agencies such as transit, light rail, and improvements on the local road system. The goal is that the transportation system, as a whole, including highways, local roads, and alternative modes of transportation, operate as one seamless network.

Table 2
Existing ITS Elements

CO	PM	Location	Element Type
FRE	22.38	Elm/SR 33 at Polk Street (SR 33)	Signal
FRE	22.65	EB/WB W of Jct SR 33	Traffic Count Station
FRE	26.64	SB I-5 Ramp Exit	Signal
FRE	26.81	SB SR 198/I-5	Closed Circuit TV
FRE	26.95	At NB I-5 Ramp Exit	Signal
FRE	28.98	WB E of El Dorado Avenue	Changeable Message Sign
KIN	3.01	EB/WB W of Main Gate LNAS	Traffic Count Station
KIN	3.01	EB/WB E of Main Gate LNAS	Traffic Count Station

Table 2 Continued next page

Table 2, Continued
Existing ITS Elements

CO	PM	Location	Element Type
KIN	3.51	LNAS Entrance	Signal
KIN	8.90	EB/WB W of Jct SR 41	Traffic Count Station
KIN	10.54	EB Off at 18th Avenue	Signal
KIN	10.54	WB Off at 18th Avenue	Signal
KIN	10.56	EB/WB W of 18th Avenue	Traffic Count Station
KIN	15.01	WB Off to 14th Avenue	Traffic Count Station
KIN	15.43	EB/WB W of Hanford-Armona Road	Traffic Count Station
KIN	15.54	WB On from Hanford-Armona Road	Traffic Count Station
KIN	15.54	EB Off to Hanford-Armona Road	Traffic Count Station
KIN	15.74	EB/WB W of Hanford-Armona Road	Traffic Count Station
KIN	16.90	EB Off at 12th Avenue	Signal
KIN	16.93	WB Off at 12th Avenue	Signal
KIN	17.75	EB Off to 11th Avenue	Traffic Count Station
KIN	17.76	WB On from 11th Avenue	Traffic Count Station
KIN	17.93	EB Off at 11th & 3rd Avenue	Signal
KIN	17.93	WB On at 11th & 4th Avenue	Signal
KIN	18.95	WB Off at 10th Avenue	Signal
KIN	18.96	EB Off at 10th & 3rd Avenue	Signal
KIN	20.98	EB/WB W of Jct SR 43	Traffic Count Station
TUL	1.53	EB W of SR 99	Changeable Message Sign
TUL	3.84	EB/WB W of Jct SR 99	Traffic Count Station
TUL	4.59	EB Off to Road 80	Traffic Count Station
TUL	4.63	WB On from Road 80	Traffic Count Station
TUL	4.79	Road 80	Vehicle Detection System
TUL	4.80	EB/WB E of Alta; Road 80	Traffic Count Station
TUL	5.02	WB Off to Road 80	Traffic Count Station
TUL	5.12	WB of Plaza Drive	Changeable Message Sign
TUL	5.24	W of Shirk Road	Vehicle Detection System
TUL	6.50	EB Off to Akers Road	Traffic Count Station
TUL	6.50	WB On from Akers Road	Traffic Count Station
TUL	6.80	EB Akers Road	Closed Circuit TV
TUL	6.96	WB at Akers Road North	Signal
TUL	6.96	EB at Akers Road South	Signal
TUL	6.99	EB On from Akers Road	Traffic Count Station
TUL	7.02	E of Crenshaw Road	Vehicle Detection System
TUL	7.76	EB/WB W of Demaree Road	Traffic Count Station
TUL	7.92	WB at Demaree Road Exit	Signal

Table 2 Continued Next Page

Table 2, Continued
Existing ITS Elements, Continued

CO	PM	Location	Element Type
TUL	7.92	WB at Demaree Road North	Signal
TUL	7.96	EB at Demaree Road South	Signal
TUL	7.96	EB at Demaree Road Exit	Signal
TUL	7.98	EB On from Demaree Road	Traffic Count Station
TUL	8.56	WB On from Mooney Blvd/SR 63 S	Traffic Count Station
TUL	8.56	WB On from Mooney Blvd/SR 63 S	Traffic Count Station
TUL	8.57	EB Off to Mooney Blvd/SR 63 S	Traffic Count Station
TUL	8.75	EB/WB W of Jct SR 63 South	Traffic Count Station
TUL	10.19	WB Off to Court Street/SR 63 North	Traffic Count Station
TUL	10.88	EB at Ben Maddox Way Exit	Signal
TUL	11.73	EB/WB E of Lovers Lane OC	Traffic Count Station
TUL	11.74	EB at Lovers Lane Exit	Signal
TUL	11.76	At Lovers Lane	Signal
TUL	18.76	At SR 65	Signal
TUL	18.76	EB/WB W of Jct SR 65	Traffic Count Station
TUL	19.76	At SR 245	Signal
TUL	19.76	EB/WB E of Jct SR 245	Traffic Count Station
TUL	19.76	WB W of Jct SR 245	Traffic Count Station
TUL	19.76	EB W of Jct SR 245 North	Traffic Count Station
TUL	27.96	EB/WB E of Jct SR 216 W	Traffic Count Station
TUL	42.35	EB/WB E of Mineral King Avenue	Traffic Count Station

Table 3
Proposed ITS Elements

CO	PM	Location	Element Type
FRE	12.33	EB/WB W of Parkfield Junction	Traffic Count Station
FRE	12.33	EB/WB E of Parkfield Junction	Traffic Count Station
FRE	19.14	EB/WB at Coalinga Creek	Traffic Count Station
FRE	21.19	Firestone Avenue (Coalinga)	Highway Advisory Radio
FRE	21.19	EB/WB E of Firestone Avenue	Traffic Count Station
FRE	21.70	W of Lucille Street	Changeable Message Sign

Table 3 continued next page

Table 3
Proposed ITS Elements

CO	PM	Location	Element Type
FRE	22.37	EB/WB E of Polk Street	Traffic Count Station
FRE	22.37	EB/WB W of Polk Street	Traffic Count Station
FRE	22.66	EB/WB E of Jct SR 33	Traffic Count Station
FRE	26.81	EB/WB E of Jct I-5	Traffic Count Station
FRE	33.59	W of SR 269	Changeable Message Sign
FRE	34.65	SR 269	Closed Circuit television
FRE	34.66	E of SR 269	Highway Advisory Radio
FRE	34.66	EB/WB E of Jct SR 269	Traffic Count Station
FRE	34.66	EB/WB W of Jct SR 269	Traffic Count Station
FRE	36.60	E of SR 269	Changeable Message Sign
KIN	3.01	E of Main Gate Lemoore	Changeable Message Sign
KIN	4.76	EB Off to Avenal Cutoff	Traffic Count Station
KIN	4.90	WB On from Avenal Cutoff	Traffic Count Station
KIN	4.98	EB On from Avenal Cutoff	Traffic Count Station
KIN	4.99	EB/WB E of Avenal Cutoff	Traffic Count Station
KIN	4.99	EB/WB W of Avenal Cutoff	Traffic Count Station
KIN	5.19	WB Off to Avenal Cutoff	Traffic Count Station
KIN	6.70	W of SR 41	Changeable Message Sign
KIN	8.51	EB Off to SR 41	Traffic Count Station
KIN	8.68	EB Off to SB SR 41	Traffic Count Station
KIN	8.68	EB Off to NB SR 41	Traffic Count Station
KIN	8.70	WB On from SR 41	Traffic Count Station
KIN	8.90	SR 41	Closed Circuit television
KIN	8.90	EB/WB E of Jct SR 41	Traffic Count Station
KIN	9.08	EB On from SR 41	Traffic Count Station
KIN	9.09	WB Off to SR 41	Traffic Count Station
KIN	9.87	E of SR 41	Changeable Message Sign
KIN	10.43	WB On from 18th Ave	Traffic Count Station
KIN	10.56	EB/WB E of 18th Ave	Traffic Count Station
KIN	10.56	EB Off to 18th Ave	Traffic Count Station
KIN	10.68	WB Off to 18th Ave	Traffic Count Station
KIN	10.78	EB On from 18th Ave	Traffic Count Station
KIN	11.89	EB Off to Houston Ave	Traffic Count Station

Table 3 continued next page

Table 3, Continued
Proposed ITS Elements

CO	PM	Location	Element Type
KIN	11.98	WB On from Houston Ave	Traffic Count Station
KIN	12.10	EB On from Houston Ave	Traffic Count Station
KIN	12.28	WB Off to Houston Ave	Traffic Count Station
KIN	12.50	E of Houston Ave	Changeable Message Sign
KIN	14.55	WB On from 14th Ave	Traffic Count Station
KIN	14.55	EB Off to 14th Ave	Traffic Count Station
KIN	14.77	EB/WB E of 14th Ave Interchange	Traffic Count Station
KIN	14.77	EB/WB W of 14th Ave Interchange	Traffic Count Station
KIN	15.01	EB On from 14th Ave	Traffic Count Station
KIN	15.99	WB Off to 13th Ave	Traffic Count Station
KIN	15.99	EB On from Hanford-Armona Road	Traffic Count Station
KIN	16.74	EB Off to 12th Ave	Traffic Count Station
KIN	16.80	WB On from 12th Ave	Traffic Count Station
KIN	16.90	W of SR 43	Changeable Message Sign
KIN	17.03	EB On from 12th Ave	Traffic Count Station
KIN	17.07	WB Off to 12th Ave	Traffic Count Station
KIN	17.91	EB/WB E of 11th Ave	Traffic Count Station
KIN	18.25	WB On from Redington Street/4th Street	Traffic Count Station
KIN	18.32	EB Off to Douty Street/3rd Street	Traffic Count Station
KIN	18.42	WB Off to Redington Street/4th Street	Traffic Count Station
KIN	18.74	EB On from Douty Street	Traffic Count Station
KIN	18.96	EB/WB E of 10th Ave Interchange	Traffic Count Station
KIN	19.11	WB Off to 10th Ave	Traffic Count Station
KIN	19.17	EB On from 10th Ave	Traffic Count Station
KIN	19.63	W of SR 43	Changeable Message Sign
KIN	20.73	WB On from SB SR 43	Traffic Count Station
KIN	20.73	EB Off to SR 43	Traffic Count Station
KIN	20.74	SR 43	Highway Advisory Radio
KIN	20.92	EB On from SB SR 43	Traffic Count Station
KIN	20.97	EB/WB E of Jct SR 43	Traffic Count Station
KIN	20.98	SR 43	Closed Circuit television
KIN	21.06	WB On from NB SR 43	Traffic Count Station

Table 3 continued next page

Table 3, Continued
Proposed ITS Elements

CO	PM	Location	Element Type
KIN	21.22	EB On from NB SR 43	Traffic Count Station
KIN	21.24	WB Off to SR 43	Traffic Count Station
KIN	21.50	WB E 7th Avenue	Changeable Message Sign
KIN	23.32	EB/WB E of Sixth Avenue	Traffic Count Station
TUL	1.51	At Road 56	Roadside Weather Info. Sys.
TUL	2.01	EB/WB W of Road 60 (North)	Traffic Count Station
TUL	3.01	Road 68	Vehicle Detection System
TUL	4.96	EB On from Road 80	Traffic Count Station
TUL	5.00	W of Road 86	Vehicle Detection System
TUL	5.30	Road 88 (ET 613)	Vehicle Detection System
TUL	6.50	W of SR 63	Changeable Message Sign
TUL	6.57	Roeben Avenue	Vehicle Detection System
TUL	6.76	EB Akers Road	Ramp Metering Station
TUL	6.76	WB Akers Road	Ramp Metering Station
TUL	6.76	Akers Road	Vehicle Detection System
TUL	7.02	E of Crenshaw Road	Vehicle Detection System
TUL	7.40	EB Off to Demaree Road	Traffic Count Station
TUL	7.50	WB On from Demaree Road	Traffic Count Station
TUL	7.51	WB Mineral King Avenue /Chinowth Road	Ramp Metering Station
TUL	8.10	EB Noble Avenue/Main Street	Ramp Metering Station
TUL	8.10	E of W Main Street/County Center	Vehicle Detection System
TUL	8.17	WB Off to Demaree Road	Traffic Count Station
TUL	8.55	WB Mineral King Avenue /Mooney Boulevard (Route 63)	Ramp Metering Station
TUL	8.56	At Mooney Boulevard	Vehicle Detection System
TUL	8.95	EB Noble Avenue/Mooney Boulevard (SR 63)	Ramp Metering Station
TUL	9.04	WB Off to Mooney Boulevard /SR 63 SO	Traffic Count Station
TUL	9.47	WB Mineral King Avenue /Conyer Street (SR 63)	Ramp Metering Station
TUL	9.51	WB On from Watson Avenue	Traffic Count Station
TUL	9.53	EB Off to Watson Avenue	Traffic Count Station
TUL	10.19	EB On from Court Street/SR 63 NO	Traffic Count Station

Table 3 continued next page

Table 3, Continued
Proposed ITS Elements

CO	PM	Location	Element Type
TUL	10.21	EB Noble Ave/Santa Fee Ave (SR 63)	Ramp Metering Station
TUL	10.73	WB Mineral King Ave/Ben Maddox Way	Ramp Metering Station
TUL	10.80	EB Off to Ben Maddox Way	Traffic Count Station
TUL	10.81	WB On from Ben Maddox Way	Traffic Count Station
TUL	10.88	EB at Ben Maddox Way Exit	Signal
TUL	10.95	EB On from Ben Maddox Way	Traffic Count Station
TUL	10.96	EB Noble Avenue/Ben Maddox Way	Ramp Metering Station
TUL	10.98	WB Off to Ben Maddox Way	Traffic Count Station
TUL	11.20	E of SR 63	Changeable Message Sign
TUL	11.55	EB Off to Lovers Lane	Traffic Count Station
TUL	11.70	WB Mineral King Avenue/Lovers Lane	Ramp Metering Station
TUL	11.73	WB On from Lovers Lane/ Stapp Avenue	Traffic Count Station
TUL	11.92	WB Off to Lovers Lane/Stapp Avenue	Traffic Count Station
TUL	11.92	EB On from Lovers Lane	Traffic Count Station
TUL	11.93	EB Lovers Lane	Ramp Metering Station
TUL	13.46	EB Off to Road 156	Traffic Count Station
TUL	13.52	WB On from Road 156	Traffic Count Station
TUL	13.71	EB On from Road 156	Traffic Count Station
TUL	13.99	WB Off to Road 156	Traffic Count Station
TUL	14.45	Lovers Lane	Vehicle Detection System
TUL	14.53	EB Off to Road 164	Traffic Count Station
TUL	14.65	EB On from Road 164	Traffic Count Station
TUL	14.66	WB On from Road 164	Traffic Count Station
TUL	14.78	WB Off to Road 164	Traffic Count Station
TUL	14.87	Lovers Lane	Vehicle Detection System
TUL	18.76	At Route 65	Vehicle Detection System
TUL	18.81	At Route 65 (Road 196)	Roadside Weather Info. Sys.
TUL	26.48	SR 65	Highway Advisory Radio
TUL	27.96	EB/WB W of Jct SR 216	Traffic Count Station
TUL	30.75	EB/WB E of Kaweah Boat Marina	Traffic Count Station
TUL	35.91	EB/WB W of Morro Road	Traffic Count Station
TUL	37.40	EB/WB W of W Three Rivers Drive	Traffic Count Station
TUL	38.49	EB/WB E of North Fork Drive	Traffic Count Station
TUL	39.69	EB/WB E of E Three Rivers Drive	Traffic Count Station
TUL	42.35	EB/WB W of Mineral King Road	Traffic Count Station

4. Parallel Roadways

State highways function primarily to move interregional traffic. For example, SR 198 moves traffic through Tulare, Kings, and Fresno Counties, as well as between SR 99 and I-5. State highways also provide access to population centers for employment and distribution of goods to local markets. The local and regional road systems (including arterial and collector roads) function to move people and goods between neighboring communities or within a community. To insure a seamless transportation system, it is important to assess the entire transportation system with regard to how traffic moves and transitions from origin to destination.

The local parallel road to a State highway is an essential component of the transportation network. With growth in population and traffic, it is inherent that traffic will increase. The increase in traffic along with occasional traffic incidents would slow and occasionally stop traffic on the existing State highway. This, in turn, causes the need for alternative routes to move people and goods through the communities and the region.

Major local parallel roads should be readily accessible to travelers (including bicyclists) using the State Highway and provide alternative routes during times of congestion and other traffic incidents. Turning radii and shoulder widths would be of concern in using a local road as a parallel route to the freeway. The width of local arterial roads should be adequate to accommodate a four-lane road with a median for dual left-turn lanes, shoulders, and bicycle lanes/routes. In addition, there may be inadequate right-of-way for the local arterial roads as they transition to the State highway facility. The CSMP is not intended to impose new requirements for the cities and counties to collect data or make road improvements. The local jurisdictions or the regional planning agency should already be collecting traffic information on the local roads when developing the Regional Transportation Plan, the regional transportation improvement program, and the circulation elements of local general plans.

From the Monterey/Fresno County line to Coalinga, the only alternative roadways would be State highways considerably north or south of SR 198. Within Coalinga, Polk Street/Jayne Avenue and West Phelps Avenue could be used to move traffic to I-5.

Possible parallel local roads within Kings County include Houston Avenue/Caldwell Avenue and Grangeville Boulevard/Avenue 304 because of their proximity to SR 198 and total length of each. These could relieve traffic on SR 198. Caldwell Avenue would be the preferred road as it extends east of SR 99 and provides better connectivity between the population centers in the cities of Lemoore, Hanford, Visalia, and Tulare. It should also be noted that both Grangeville Boulevard and Avenue 304 may have inadequate shoulder widths and turning radii. Houston Avenue/Caldwell Avenue runs east-west uninterrupted between the SR 198/16th Avenue Interchange and SR 99, a distance of approximately 21 miles. It passes through the industrial area in the southern part of the City of Hanford and through SR 43. Currently, Houston Avenue/Caldwell Avenue would function more appropriately as the major east-west parallel road to SR 198.

Grangeville Boulevard/Avenue 304 extends from LNAS to SR 99, a distance of approximately 27 miles. It passes through SR 41, the City of Hanford's residential and commercial development and high school in the northern part of the City, and SR 43. Because Grangeville Boulevard passes through developed urban areas, there may be mobility issues with local traffic. Grangeville Boulevard is also a bike route. Nonetheless, Grangeville Boulevard/Avenue 304 is an east-west parallel road to SR 198, and its viability would be enhanced with improvements to the SR 99/Betty Drive Interchange. This would provide access east of SR 99, and would make the road comparable to Houston Avenue/Caldwell Avenue. Because it extends further west through the City of Lemoore and into LNAS, it would provide access to additional population centers.

Flint Avenue between SR 41 and SR 43 is another east-west parallel road for future consideration. It runs approximately 9.5 miles in length, and is located 2 miles north of Grangeville Boulevard. Flint Avenue currently avoids urban development in the cities of Lemoore and Hanford. In addition, Flint Avenue would serve traffic to and from population centers to the north in Fresno County, including the cities of Fresno and Selma. With its connectivity to two state highways running parallel to SR 198, and part of the regional road system, Flint Avenue may be considered as a potential parallel route to SR 198 in the future.

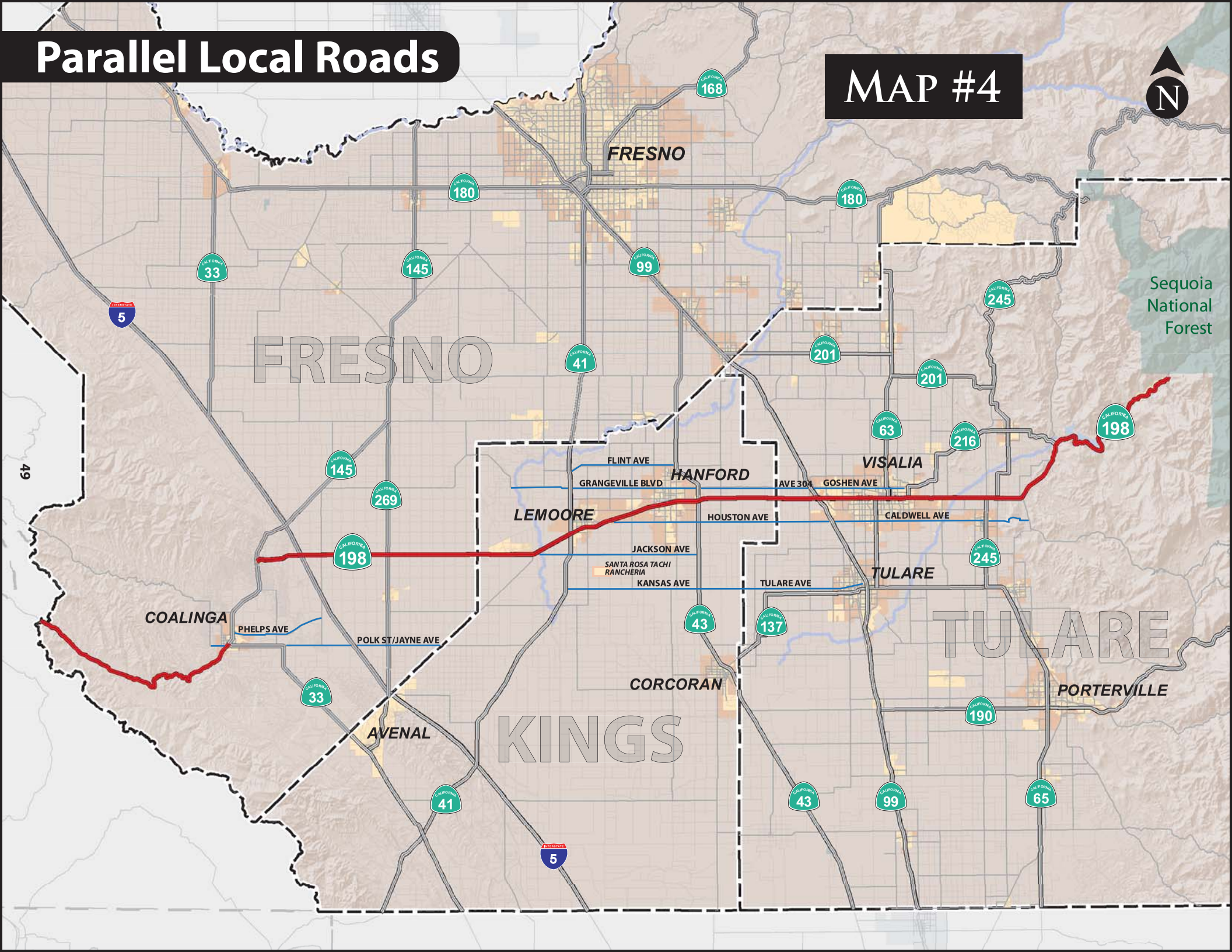
Jackson Avenue between LNAS and SR 43 is approximately 15 miles in length. It provides a potential southern parallel road to SR 198 serving the population of the LNAS, the City of Lemoore, the Santa Rosa Rancheria, and the City of Hanford. From SR 43, vehicles can travel northerly to Houston Avenue and then easterly to SR 99 in Tulare County. However, Jackson Avenue has two bridges on the Kings River which would not carry all permitted loads and are substandard in width.

Kansas Avenue/Tulare Avenue is a potential parallel road for SR 198 because of its direct connection between SR 99 in the City of Tulare. It provides another choice for Corcoran and Avenal Prison employees coming from Tulare. In addition, it does not encroach upon urban development. However, it is quite a distance from SR 198 (approximately 8 miles), and is therefore less desirable as a parallel road.

Goshen Avenue in Tulare County could serve as a parallel roadway to route traffic around an incident or congestion within the City of Visalia. East of the urbanized area of Visalia, there are not any viable, straight-forward alternatives.

The roads identified above would serve as parallel roadways primarily in cases of occasional congestion and for incident management. Please see Map #4, Parallel Roads, Page 49. The Caltrans Traffic Management Center has identified local roads to be used in the case of an incident on SR 198. These detours are shown in Appendix G, beginning on Page 83.

Parallel Local Roads



5. Parallel State Highways

I-5, SR 269, SR 41, SR 99, SR 63, and SR 245 could all be used to move traffic north and south in the event of an incident on SR 198. From these routes, traffic could be diverted onto local roads.

The only State highways running east-west that could serve as alternatives to SR 198 would be SR 180 in Fresno County and SR 58 in Kern County. There are shorter State highways closer than these two, but none that cover approximately the same distance as SR 198. Both SR 180 and SR 58 are some distance from SR 198. Please see Appendix H, Page 85 for maps depicting the locations of these State highways.

III. COMPREHENSIVE CORRIDOR PERFORMANCE ASSESSMENT

A. Existing Conditions

Current AADT, Level of Service, percent Trucks, Peak-Hour AADT, 10 and 25-year AADT forecasts, by segment of SR 198, are presented in Table 1, Summary Chart, Page 8.

The information necessary to understand existing traffic conditions in the study area, and identify specific causes of problems, has been collected. This information includes pavement condition, accident data, and tachometer runs (a device fitted to a vehicle that provides information on the speed of the vehicle in traffic). Tachometer runs have recently been replaced with the use of automated detection. These are discussed in more detail in the section on Operations Assessment, Page 54.

B. Choosing Performance Measures

Appropriate performance measures and analysis tools must be selected for the Corridor, based in large part on the quantity and quality of data available. The following performance measures have been chosen for this Corridor, as the technology for implementing them is available. These are also the same measures included within the "*Freeway Performance Initiative Traffic Analysis*" report prepared for Metropolitan Transportation Commission (MTC), ensuring consistency across all corridors and different transportation modes. The measures will provide a means to demonstrate that the mobility gains of any corridor capacity improvements have been maintained after those improvements are in place. The recommended performance measures may undergo additions/changes as Caltrans District 6 enhances detection within the corridor.

1. Benefit/Cost Ratio

Viable measures, ranging from system management strategies to maximize the efficient use of existing Corridor capacity, to more traditional capital improvement projects that will increase

corridor capacity, will be evaluated as projects are proposed. The evaluation will be accomplished using the "Benefit/Cost (B/C) Ratio".

The B/C Ratio is a systematic process for calculating and comparing benefits and costs to determine if the proposed project is a sound investment (justification/feasibility), and to see how it compares with alternative projects (ranking/priority assignment). Benefit-Cost Analysis works by first defining the project and any alternatives, then identifying, measuring, and valuing the benefits and costs of each.

2. Safety-Assessment and Performance Measure (Accident Rates)

Table 4, below, presents the three-year accident average compared to average rates on similar State Route segments. The data presented is for the period January 2007 – December 2009. The information is presented by segment. Rates are either equal to or slightly below the statewide average.

Table 4
Accidents Per Million Vehicle Miles

			Actual			Statewide Average		
Co.	**Post Mile**	**Location**	**Total***	**F + I****	**Fatal**	**Total***	**F + I****	**Fatal**
FRE	0.0 - 21.2	Monterey Co Line - Firestone Avenue	2.78	1.13	0	1.95	0.99	0.05
FRE	21.2 - 22.7	Firestone Avenue - S Jct SR 33	1.31	0.73	0	1.66	0.68	0.02
FRE	22.7 - 26.8	S Jct SR 33 - SR 198/I - 5 Separation	2.14	1.03	0	0.91	0.41	0.03
FRE	26.8 - 42.7	SR 198/I-5 Separation - Fresno /Kings County Line	0.46	0.14	0	0.81	0.34	0.03
KIN	0.0 - 3.0	Fresno/Kings County Line - LNAS Main Gate	0.51	0.23	0	0.81	0.34	0.03
KIN	3.0 - R8.9	LNAS Main Gate - SR 41/198 Separation	0.38	0.14	0.01	0.43	0.16	0.01
KIN	R8.9 - R10.9	SR 41/SR 198 Separation - 0.3 mile E of 18th Avenue	1.26	0.32	0.07	0.84	0.29	0.01
KIN	R10.9 - R16.4	0.3 mile E of 18th Avenue - 0.5 mile W of 12th Avenue	0.52	0.18	0	0.56	0.21	0.01

Table 4 Continued Next Page

Table 4, Continued
Accidents Per Million Vehicle Miles

Co.	Post Mile	Location	Actual Total*	Actual F + I**	Actual Fatal	Statewide Average Total*	Statewide Average F + I**	Statewide Average Fatal
KIN	R16.4 - R20.4	0.5 mile W of 12th Avenue - 0.5 mile W of SR 43/SR 198 Separation	0.65	0.25	0.03	0.72	0.24	0.01
KIN	R20.4 - 22.3	0.5 mile W of SR 43/198 Separation - 7th Avenue	0.27	0.21	0	0.76	0.29	0.02
KIN	22.3 - 28.3	7th Avenue - Kings/Tulare County Line	0.62	0.27	0	0.77	0.33	0.02
TUL	0.0 - R3.3	Kings/Tulare Co. Line - 0.3 mi E of Road 68	0.67	0.26	0.01	0.77	0.33	0.67
TUL	R3.3 - 4.9	0.3 mile E of Road 68 - 0.3 mile E of Road 80; Left alignment	1.51	0.65	0.14	0.49	0.19	0.01
TUL	R3.3 - 4.9	0.3 mile E of Road 68 - 0.3 mile E of Road 80; Right alignment	0.63	0.23	0	0.47	0.19	0.01
TUL	4.9 - 7.0	0.3 mile E of Road 80 - Road 102	0.49	0.12	0	1.03	0.42	0.01
TUL	7.0 - R8.4	Rd 102 - 0.3 mile E of W Main Street	0.51	0.18	0	1.04	0.42	0.01
TUL	R8.4 - R12.7	0.3 mile E of W Main Street - 0.1 mile W of Packwood Creek	0.83	0.25	0.01	0.78	0.25	0.01
TUL	R12.7 - R14.6	0.1 mile W of Packwood Creek - Road 164	0.38	0.09	0	0.46	0.17	0.01
TUL	R14.6 - R16.6	Road 164 - Outside Creek Bridge	0.32	0.19	0.02	0.45	0.16	0.01
TUL	R16.6 - R18.8	Outside Creek Bridge - SR 65	1.04	0.29	0.02	0.64	0.25	0.01
TUL	R18.8 - R19.8	SR 65 - SR 245	0.89	0.37	0	0.59	0.23	0.01
TUL	R19.8 - 26.9	SR 245 - 0.1 mile E of Road 244	0.6	0.28	0.02	0.8	0.34	0.26
TUL	26.9 - 28.3	0.1 mile E of Road 244 - Road 248	0.87	0.58	0	0.83	0.35	0.03

Table 4 Continued Next Page

Table 4, Continued
Accidents Per Million Vehicle Miles

TUL	28.3 - 35.9	Road 248 - Moro Road	0.8	0.28	0	0.89	0.39	0.02
TUL	35.9 - 38.5	Moro Road - North Fork Drive	0.9	0.5	0.1	1.71	0.87	0.04
TUL	38.5 - 42.4	North Fork Drive - Mineral King Road	1.58	0.79	0	1.72	0.87	0.04
TUL	42.4 - 44.2	Mineral King Road - Sequoia National Park Boundary	1.27	0.95	0	1.84	0.93	0.05
Average within the limits of this CSMP			0.9	0.39	0.02	0.92	0.39	0.05

*Total = Fatal + Injury + Non-Injury; **F + I = Fatal + Injury. Accident data from the Traffic Accident Surveillance and Analysis System (TASAS); three-year average, January 2007 – December 2009.

3. Incident Management

The goal of incident management is to clear the incident as quickly as possible, thereby reducing congestion and delay. Elements of ITS play a role in relaying information in order to get responders such as California Highway Patrol, tow trucks, ambulances, etc. to the scene as quickly as possible.

The Central Valley Transportation Management Center (TMC), located in Fresno, California, is dedicated to improving the time required to clear incidents from SR 198. One step in achieving this has been the use of closed circuit television cameras (CCTV) at points where drivers must make a decision to stay on the mainline, merge to access another freeway, or to get on or off the freeway. These are places where accidents are most likely to occur. CCTV have proven to reduce the delay in mobilizing State forces responding to an incident.

There are times when clearing an incident quickly is not possible, or is not enough to reduce traffic delays. At these times, traffic may be moved around an incident on SR 198 using either other State highways, local roads, or a combination of the two. The Central Valley TMC has a number of established alternative routes identified for use. The alternatives are presented in Appendix G, Page 83.

A California Highway Incident Management Summit was held in April 2007 with partners to discuss the goal of clearing highway incidents within 90 minutes. Some of the solutions were to implement technical interoperable communications systems, establish Caltrans/CHP communication centers, train with consistent terminology within departments, and revisions of laws to allow quick clearing activities. Should these solutions be implemented, an obvious future performance measure would be the time to clear an incident.

4. Operations Assessment

The operations assessment is presented in table format in Table 1, Summary Chart, Page 8, and includes the current AADT, Level of Service, percent Trucks, Peak-Hour AADT, 10 and 25-year AADT forecasts, by segment.

a) Level of Service

An improvement in LOS, or maintaining the existing LOS under conditions of an increase in AADT, would be a valid performance measure for evaluating improvement in operations.

The LOS describes the operating conditions on a roadway. LOS is defined in categories ranging from A-F, with A representing the best traffic flow and F representing the worst. As a general rule, Caltrans uses a target of LOS C or D as this provides the highest traffic throughput with the least traveler disruption. Without any project improvements, the LOS on SR 198 would deteriorate to predominately LOS E or F by the year 2035 in the section from the LNAS to 18th Avenue (Kings County), 7th Avenue (Kings County) to Road 168 (Tulare County), Road 80 to Packwood Creek (Tulare County), and Road 48 to the Sequoia National Park boundary. Implementation of the 2035 concept facility would improve all sections to LOS C or D, with the exception of Road 80 to Packwood Creek. Some portions of this section would continue to be E or F. Please see Table 1, Summary Chart, Page 8. An improvement in LOS is a measurable improvement in performance.

Please note: The number of lanes needed to meet the UTC for this Route is only a guideline. The minimum right-of-way is "subject to change" in urban and suburban areas where a Route also serves local circulation needs. The need to widen the roadway beyond the UTC may be necessary to maintain the target LOS. The local jurisdictions should endeavor to maintain adequate right-of-way to maintain the target LOS, which in an urban setting could exceed the UTC number of lanes. Where the State legislature has designated the Route as part of the Freeway and Expressway System, interchange and freeway right-of-way should be part of the General Plan so as not to adversely affect development.

b) Congestion

The degree of congestion can also provide an assessment of the operations of a freeway facility (with a posted speed limit of 65 to 70 mph). One method of determining the degree of congestion is to conduct a tachometer run. In the past, Caltrans conducted tachometer runs where Caltrans staff would drive the urbanized portion of a freeway and document travel speed, travel time, and delays to determine if there is any congestion along the corridor. The vehicular speed threshold to make a determination that congestion exists is 35 mph. If vehicular speeds dip below 35 mph on the highway/freeway for more than a 15-minute period during peak commute periods on a typical incident-free weekday, the roadway is considered congested.

Caltrans District 6 Traffic Operations conducted tachometer runs (see Appendix I, Tachometer Runs, Page 86) along SR 198 from the LNAS main gate to the SR 99/198 separation, as well as the section in the City of Visalia from Shirk Road to the Road 156 undercrossing. This assessment was conducted on November 10, 2004, November 15, 2004, and December 1, 2007 during morning and evening hours that were anticipated to be peak traffic times. During these operations, vehicular speeds never dipped below 49 mph. From the information gathered, there were no areas that met the Caltrans definition of congested, vehicular speeds dropping below 35 mph. While Caltrans defines congestion as traffic speeds below 35 mph, traffic demands can exceed capacity at some bottleneck locations resulting in traffic speeds to drop below the posted speed or the free-flow speed. The traveling public experiences this as congestion, even if speeds are above 35 mph.

While the tachometer runs did not demonstrate congestion, additional demand is anticipated with the planned growth in the area as well as the large percentage of truck traffic during the AM and PM peak periods. A variety of things can impact capacity, such as the number and width of lanes; the location, spacing, and type of interchanges; the presence and width of shoulders; and the condition of the pavement. Increasing capacity could be achieved by widening the route; however, the ability to widen the route in some locations is hampered by available right-of-way and adjacent development.

As more ITS technology becomes available along a route, Caltrans will use automated detection to monitor congestion along the route. Caltrans District 6 continues to increase the amount of such detection units along the corridor, particularly in the urban areas.

5. Mobility

Mobility describes how well the corridor moves people and freight. The mobility performance measures are readily measurable and straightforward for documenting current conditions, but they are also easily forecast, making them useful for comparing future conditions with and without improvements. Travel time and delay are typically used to quantify mobility. There are other measures that are used as well, such as volume-based measures derived from distance and travel times. Examples of these are Vehicle Miles Traveled (VMT), Person Miles Traveled (PMT), Vehicle Hours Traveled (VHT), and Person Hours Traveled (PHT).

a) Travel Time

Travel time is a measurement of the time it takes for a vehicle to traverse between two points on a corridor. This may be defined as the time to travel the entire study corridor, or a measurement of the time between intermediate starting and ending points. The free flow and maximum travel times should be collected.

Travel time can be obtained using Performance Measurement Systems (PeMS) or the 511 Traveler Information Broadcast System. There are benefits and disadvantages to each of these approaches. In District 6, the 511 Traveler Information Broadcast System is currently not available to provide data, so PeMS would need to be used. The PeMS system can

automatically compute travel times using speed data from freeway detectors and collects data at 30-second intervals. With the use any of the measurement systems, consideration must be given for the exclusion of data collected when unusual conditions occurred (e.g., accidents, weather, and special events). Because of the ease of collecting information using an automated data collection system, Caltrans District 6 has committed to adding detection units to the system as quickly as possible.

Caltrans District 6 conducted tachometer runs during the AM and PM peak periods along the corridor on three separate dates: November 10, 2004; December 1, 2004; and November 15, 2007. The tachometer runs determined that there are only minor slowdowns during peak hours. Please see Appendix I, Tachometer Runs, Page 86, for the tachometer run data.

b) Delay

Delay can be defined as the difference in travel time between actual congested conditions and the free-flow speed at the freeway speed limit and is reported as vehicle-hours of delay. Caltrans defines the congested speed threshold as 35 mph. This is the speed range at which traffic flow becomes stop and go. Speeds above 35 mph are not considered delay. The recommended process for determining existing delay is to calculate this performance measure from actual data sources.

There are two types of delay: recurrent and nonrecurrent.

- Recurrent delay occurs when travel demand exceeds freeway design capacity, and speeds are 35 mph or less during peak-commute periods on a typical incident-free weekday. The delay condition must last for 15 minutes or longer.
- Nonrecurrent delay is caused by irregular events, such as accidents, events, maintenance, or short-term construction.

In the case of SR 198, delay was evaluated using tachometer runs, conducted during AM and PM peak periods. The tachometer runs measured the actual traffic speeds and determined that this section of SR 198 is not currently experiencing delay, using the definition specified above. Caltrans will continue to monitor this, relying more heavily on automated detection as addition detection is added to the corridor.

6. Maintenance and Preservation

a) Maintenance

Maintenance costs, including roadsides, pavement, bridges, guardrails, median barriers, signs, and delineation, have increased an average of 4 percent per year over the last five years. Maintaining adequate appearance and condition ratings is becoming increasingly difficult. The 10-year State Highway Operations and Protection Program (SHOPP) includes investments in projects in both the rehabilitation and preventive maintenance categories. This investment is expected to provide highway appearance and condition ratings similar to current conditions,

which are less than Caltrans performance targets and the desires of the communities served by SR 198.

The current rehabilitation strategy is to maintain and rehabilitate the existing facility with plans to improve various interchanges and widen the roadway where feasible. Projects from the SHOPP maintain or improve the condition, safety, and operation of the highway, and protect the investment that has been made on the facility. The SHOPP program includes six types of projects:

- Collision Reduction;
- Roadway Preservation;
- Bridge Preservation;
- Roadside Preservation;
- Mobility Improvements; and
- Mandates (storm water requirements and emergency type projects).

Nominated projects for each category compete for available dollars with other projects on a statewide basis. Safety improvements that meet certain thresholds of cost-benefit criteria are funded off the top of the SHOPP before other needs are addressed. They do not need to compete for funding on a statewide basis.

b) Pavement Condition

Table 5, Page 58, presents the pavement condition for SR 198. The pavement condition is in various states of pavement distress ranging from no priority distress areas to (0 percent) a section with a priority distress percentage of 23 percent. The distressed areas average approximately 12 percent of the total pavement area for the section of SR 198. Percentages shown below are averages for each segment.

The overall State of California goal is to maintain the existing level of pavement distress, per the 2007 Pavement Asset Management document, which is 12,998 lane miles or 26 percent of the system. The overall average for this section of SR 198 does not exceed the State average (26 percent).

c) Preservation

Both the 2035 concept and the UTC for SR 198 is a 2-lane conventional highway (with improvements) from the Monterey County line to the SR 198/I-5 Separation (the exception is a 4-lane conventional section through Coalinga and the section adjacent to the I-5/SR 198 interchange). The 2035 and UTC for the Route then transitions to either a 4-lane expressway or a 4-lane freeway from the SR 198/I-5 Separation to SR 245, the exception being a UTC for the section from Road 80 to Packwood Creek calling for a 6-lane freeway. From SR 245 to the end of the SR at the Sequoia National Park boundary, both the 2035 and UTC are the same; 2-lane conventional highway with improvements. For specifics on the future concept for an individual segment of SR 198, please see Table 1, Summary Chart, on Page 8. Identification

of the UTC and subsequent preservation will ensure adequate ROW to accommodate facility improvement projects beyond 2035. Caltrans goal for the future is to work with local agencies and regional planning partners to develop conceptual alignments of corridors and footprints for interchanges that are believed to require expansion in the future. If these conceptual plans were to be adopted into the local jurisdictions' General Plans, those jurisdictions could use their land-use authority to preserve the necessary ROW for the corridor. Caltrans has also been requesting mitigation from development in the form of irrevocable offers of dedication of ROW through the Intergovernmental Review process. This will also help to preserve the needed ROW.

Table 5
Pavement Condition Data

Co.	Postmile	Location	Priority Distressed Areas[1]
FRE	0.0 21.2	Monterey Co Line-Firestone Avenue	23%
FRE	21.2 - 22.7	Firestone Avenue - S Jct SR 33	16%
FRE	22.7 - 26.8	S Jct SR 33 - SR 198/I-5 Separation	8%
FRE	26.8 - 42.7	SR 198/I-5 Separation - Fresno/Kings Co Line	11%
KIN	0.0 - 3.0	Fresno/Kings Co Line - LNAS Main Gate	15%
KIN	3.0 - R8.9	LNAS Main Gate - SR 41/198 Separation	22%
KIN	R8.9 - R10.9	SR 41/198 Separation - 0.3 mile E of 18th Avenue	5%
KIN	R10.9 - R16.4	0.3 mile E of 18th Avenue - 0.5 mile W of 12th Avenue	13%
KIN	R16.4 - R20.4	0.5 mile W of 12th Avenue - 0.5 mile W of SR 43/SR 198 Sep.	21%
KIN	R20.4 - 22.3	0.5 mile W of SR 43/SR 198 Separation - 7th Avenue	0%
KIN	22.3 - 28.3	7th Avenue - Kings/Tulare Co Line	0%
TUL	0.0 R3.3	Kings/Tulare Co. Line - 0.3 mile E of Road 68	12%
TUL	R3.3 - 4.9	0.3 mile E of Road 68 - 0.3 mile E of Road 80	1%
TUL	4.9 - 7.0	0.3 mile E of Road 80 - Road 102	0%
TUL	7.0 - R8.4	Road 102 - 0.3 mile E of W Main Street	0%
TUL	R8.4 - R12.7	0.3 mile E of W Main St - 0.1 mile W of Packwood Creek	13%
TUL	R12.7 - R14.6	0.1 mile W of Packwood Creek - Road 164	16%
TUL	R14.6 - R16.6	Road 164 - Outside Creek Bridge	12%
TUL	R16.6 - R18.8	Outside Creek Bridge - SR 65	16%
TUL	R18.8 - R19.8	SR 65 - SR 245	10%
TUL	R19.8 - 26.9	SR 245 - 0.1 mile E of Road 244	5%
TUL	26.9 - 28.3	0.1 mile E of Road 244 - Road 248	18%
TUL	28.3 - 35.9	Road 248 - Moro Road	12%
TUL	35.9 - 38.5	Moro Road - North Fork Drive	23%
TUL	38.5 - 42.4	North Fork Drive - Mineral King Road	20%
TUL	42.4 - 44.2	Mineral King Road - Sequoia National Park Boundary	22%
		Cumulative, CSMP Limits:	**12%**

Note[1]: Percent of roadway with major structural distress, minor structural distress, or poor ride quality.

Preservation will accelerate the necessary environmental clearances, reducing both the time needed to implement an improvement and the costs associated with implementation. Preserving and protecting the needed right-of-way for future expansion of State facilities will greatly benefit the State, local communities, and the public by providing a logical and orderly process for subsequent project delivery.

7. Management and Agreements

Traditional capacity-enhancing improvement projects are funded from the State Transportation Improvement Program (STIP), of which the local agencies receive 75 percent and Caltrans 25 percent. It is therefore necessary to manage the SR 198 corridor in coordination with the local Metropolitan Planning Organizations in order to maximize limited transportation funds.

Caltrans District 6 entered into a Memorandum of Understanding (MOU) with FCOG, KCAG, and TCAG for the preparation of this CSMP. The purpose of the MOU was to document the commitment of all parties to manage the corridor through applying principles and practices of system and corridor management and performance measurement for sustained corridor performance. Please refer to the signed MOU Appendix A, Page 68. The transportation partners will meet on a regular basis for the following activities and decisions:

- Agreement to work plan, time line, roles, and responsibilities for development of the CSMP, including resources.
- Review draft products, including initial performance assessments and technical documents.
- Coordinate corridor planning and evaluation efforts and share information on related topics to corridor performance measurement and improvement.
- Identify opportunities for heightened understanding by local jurisdictions and the public on the mobility benefits of system and corridor management.

Infrastructure expansion, although still an important and viable strategy for this section of SR 198, cannot be the only strategy for addressing the mobility needs of Californians. System management is needed to optimize the corridor. Corridor productivity can only be restored and maintained through a coordinated planning and management effort of all transportation partners. This CSMP identifies a number of elements essential to this goal. The "System Management Pyramid," Figure 2, Page 65, provides a visual representation of these elements.

One method of evaluating the success of corridor management will be the implementation of improvement projects that provide the most benefit for the least cost. Benefit can be in the areas of reduced congestion, delay, travel time, or accident reduction, and can be measured by Caltrans Benefit/Cost Ratio. This evaluation can assist in determining which projects to implement first. Another measure is the degree to which one unified vision for SR 198, across all jurisdictions, can be implemented.

8. Alternatives to Improve Performance

Over the next twenty-five years and beyond, Caltrans and local agencies will need to balance the expansion of SR 198 to add more capacity with the impacts of that expansion on the environment and local communities. This will include consideration of alternate parallel highway routes. The proposed High Speed Rail Corridor will be another consideration as will the diversion of goods movement through bypasses, particularly around the urban areas. Measures to increase efficiency, as outlined in the section on ITS, will be an important part of improving performance. Performance measures will need to be identified for each alternative when proposed.

IV. FUTURE CORRIDOR PERFORMANCE

A. Ten, Twenty, and Beyond Twenty Year Corridor Performance

Current AADT, Level of Service, percent Trucks, Peak-Hour AADT, 10 and 20-year AADT forecasts are all presented in Table 1, Summary Chart, Page 8.

The planned and proposed improvements for the SR 198 corridor are presented in the Ten-, Twenty-, and Beyond Twenty-Year Improvement Plans (Table 7, 8, and 9, on Pages 61, 62, and 63). Clearly identifying the long-term goals for the Corridor and developing a corresponding list of priority projects to achieve those goals will make the funding decisions much easier and will ensure that improvements proceed in a logical and efficient manner.

The first step in establishing priorities is determining which projects have identified funding and the estimated construction years. The next step is to develop lists of other projects that are included in the Regional Transportation Plans or that Caltrans and/or our local partners know will be needed in the future.

B. Ten-Year Improvement Plan

Table 6, Page 61, presents a ten-year list of the improvement projects chosen for this section of the corridor. The list is flexible, allowing for adjustments when project priorities change. These improvements will be funded through a variety of sources. These sources include the STIP, Interregional Improvement Program (IIP), RIP funds, SHOPP funds, Measure money, and local development contributions. Additional funding, from local/State/Federal sources, may be available.

Table 6
Ten-Year Improvement Plan

Co.	Post Mile	Location	Description	Funding Source	Est. Const. Year	2011 Est. Const. Costs ($ X 1,000)
KIN	4.8	Various: Fresno, Kern, Kings, Madera, Tulare	Install CMS	SHOPP	2016	$2,873
KIN	8.9 - 10.1	In Lemoore, from SR 41 to 18 1/2 Ave (Vine St); 19th Ave interchange	Construct interchange	STIP	2012	$36,234
KIN	R14.7 - 18.0	In and near Hanford, at the 14th Ave UC, Hanford-Armona Rd UC and 11th Ave UC	Rehabilitate three (3) bridge decks	SHOPP	2012	$12,138
KIN	R16.5 - R17.2	In Hanford, at Ave 12	Reconstruct interchange	STIP, RIP, local	2015	$24,024
KIN	R21.5 - R28.3	Near Hanford, from east of SR 43 to west of SR 99	Highway planting	IIP	2012	$4,500
TUL	R4.8	In Visalia, at Plaza Drive	Modify interchange	RIP, Measure R	2012	$17,520
TUL	R5.26	In Visalia, at Road 88	Construct new OC	Local	2021	$11,085
TUL	R6.26	In Visalia, at Roeben Street	Construct new OC	Local	2021	$11,138
TUL	6.76	In Visalia, at Akers Street	Widening & safety improvements	RIP, Measure R	2020	$2,045
TUL	R8.75	In Visalia, at McAuliff Street	Construct new OC	Local	2021	$11,935
TUL	R9.5	In Visalia, at SR 63/198, at EB off-ramp and intersection of Watson St and Noble Avenue	Install signals and widen off-ramp	SHOPP	2012	$1,856

Table 6 continued next page

Table 6, Continued
Ten-Year Improvement Plan

Co.	Post Mile	Location	Description	Funding Source	Est. Const. Year	2011 Est. Const. Costs ($ X 1,000)
TUL	R11.23	In Visalia, at Pinkham Street	Construct new OC	Local	2021	$11,500
TUL	R11.55	In Visalia, at Lovers Lane	Widen on/off ramps and bridge structure	Measure R, local	2018	$29,108
TUL	R12.0	In Visalia, Vista Ave Pedestrian OC	ADA compliance upgrades	SHOPP	2016	$6,642

C. Twenty – Year Improvement Plan

The 20-year improvement plan (2021-2035) is comprised of funding primarily from the STIP, SHOPP, Measure money, and the Regional Improvement Program (RIP) funds. As funding from other local, state, or federal sources becomes available, this funding should be applied to the planned projects to insure that they are funded through construction. Please see Table 8, Page 63, for a list of proposed projects.

Table 7
Twenty-Year Improvement Plan

Co.	Post Mile	Location	Description	Funding Source	Est. Const. Year	2011 Est. Cost ($ X 1,000)
FRE	26.8	Interchange at I-5	Widen Bridge to 4 lanes	SHOPP	2025	$12,800
TUL	5.76	In Visalia, at Shirk Street	Widen on/off ramps and bridge structure	RIP, Measure R	2022	$19,311
TUL	4.05 – 11.74	Various downtown interchanges	Widen on/off ramps and bridge structure	RIP, Measure R	2022	$27,285
TUL	14.6	Near Farmersville, at Road 164	Widen Bridge Structure and improve ramps	Measure R	2027	$47,512

D. Beyond Twenty Year Improvement Plan

Caltrans has identified a number of improvements along this corridor that may be necessary, based on a continuation of the past pattern and direction of development. The Regional Transportation Plans of our local partners have also identified some potential improvements for this section of the corridor. These improvements are presented in Table 8, below. The projects listed as being beyond twenty-years are unconstrained. Projects identified in this Table will be subject to change, with modifications to cost inevitable and modifications in scope possible. New priorities may emerge that will cause these projects to be delayed, or to be advanced, in order to meet demands.

Table 8
Beyond Twenty-Year Improvement Plan

Co.	Post Mile	Location	Description	Funding Source	Est. Const. Year	2011 Est. Cost ($ X 1,000)
KIN	0.0-2.8	From Fresno Co line to LNAS	Construct passing lanes	SHOPP	>2031	Not Determined
KIN	7.16	At 21st Avenue Alignment	Construct interchange	RIP	>2031	Not Determined
KIN	R8.8 - R10.5	In & near Lemoore from 41/198 sep to 18th Ave OC; Latache median barrier	Install Median Barrier	SHOPP	>2031	$1,750
KIN	9.7	Near Hanford, at 13th Avenue / Hanford Armona Road	Reconstruct Interchange	RIP, Local	>2031	Not Determined
KIN	12.7	At 16th Ave	Construct Overcrossing	RIP, Local	>2031	Not Determined
KIN	0.0-2.8	From Fresno Co line to LNAS	Construct passing lanes	SHOPP	>2031	Not Determined
KIN	7.16	At 21st Avenue Alignment	Construct interchange	RIP	>2031	Not Determined

Table 8 Continued Next Page

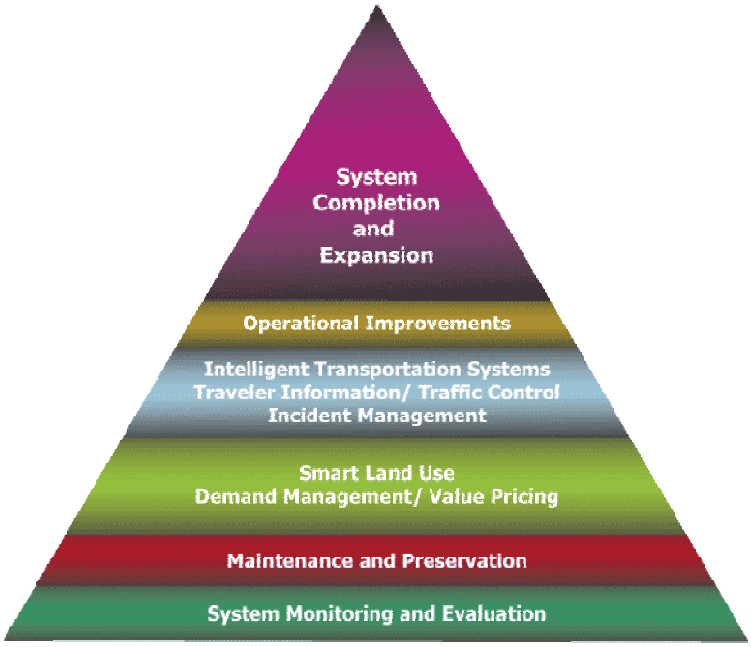
Table 8, Continued
Beyond Twenty-Year Improvement Plan

Co.	Post Mile	Location	Description	Funding Source	Est. Const. Year	2011 Est. Cost ($ X 1,000)
KIN	R8.8 - R10.5	In & near Lemoore from 41/198 sep to 18th Ave OC; Latache median barrier	Install Median Barrier	SHOPP	>2031	$1,750
KIN	9.7	Near Hanford, at 13th Avenue / Hanford Armona Road	Reconstruct Interchange	RIP, Local	>2031	Not Determined
KIN	12.7	At 16th Ave	Construct Overcrossing	RIP, Local	>2031	Not Determined
KIN	R19.7-R20.3	In Hanford, at 9th St Interchange	Construct interchange	RIP, Local	>2031	$25,032
KIN	23.0	At 6th Ave	Construct interchange	RIP, Local	>2031	Not Determined
KIN	27.0	At 2nd Ave	Construct interchange	RIP, Local	>2031	Not Determined
KIN-TUL	21.5/28.3 0.0/3.3	Rte 43 to Tulare Co - Rte 99	Widen from 2 to 4 lanes	RTIP, IIP, Measure R	>2031	Not Determined
TUL	12.7	In Visalia, at Ave 148	Construct new interchange	RIP, Measure R	>2031	$50,484
TUL	R15.1-R18.9	Near Visalia, from east of Farmersville Rd to east of SR 65	AC overlay and widen	SHOPP	>2031	$6,807

V. CONCLUSION

Corridor productivity can only be restored and maintained through a coordinated planning and management effort of all transportation partners. California's *Strategic Growth Plan* includes system management strategies that contribute to the successful management of the corridor. This comprehensive plan is best visualized by the "System Management Pyramid."

Figure 2: The System Management Pyramid



Each element on the pyramid, while represented separately, works as an essential part of the whole. The elements may be summarized as follows:

A. System Monitoring and Evaluation

The basic foundation of successful system management is System Monitoring and Evaluation. This is accomplished through comprehensive performance assessment and analysis. Understanding how a corridor performs and why it performs the way it does is critical to developing appropriate strategies.

The first step in this effort is to analyze the system as it exists now. This includes the identification of recurrent bottlenecks, their causes, and the impact that these individual bottlenecks have on the whole of the corridor. This was done in the past using tachometer runs and; future analysis will be conducted using automated detectors. Analysis of the accident history will also provide a means of understanding the current system.

Part of monitoring and evaluating the system is to measure the effectiveness of an improvement project using performance measures. One aspect of effectiveness includes measures to prevent fixing a problem at one location, only to move the same problem to another location. A list of performance measures is included in this document. These performance measures represent the best measurement of system performance for this corridor with its unique characteristics and challenges. The current technology available to make a determination of performance was a factor in the choice of which measures would be used. Most advanced performance measures require that adequate detection be in place. The current detection system is sparse, but Caltrans has future plans to expand the detection network. This is a critical step to optimizing our ability to measure performance. Funding is limited, but detection is often included as part of improvement projects and with wireless radar detectors the detection system can be installed before the construction of the remainder of the project even begins. Caltrans believes this technology will provide the means necessary to fully monitor and evaluate the system.

B. Maintenance and Preservation

Maintaining the system in as optimum a condition as possible will require all partners' participation. The corridor does not operate in isolation, but is part of an overall network. The goal is to create a "seamless" transportation network among all modes and all jurisdictions. Caltrans must work together to determine the best strategies to maximize operations of the entire system. Basic maintenance strategies have been presented earlier in this document as well as a list of planned and programmed SHOPP projects.

C. Smart Land Use, Demand Management/Value Pricing

Land use decisions are the prerogative of local government, but these decisions impact the whole of the transportation system. Appropriate planning can reduce this impact. Approving developments that are compatible with an adjacent or nearby transportation system, be it a freeway, airport, or transit station, would help to protect the system. Preserving right-of-way to allow for future, planned, capacity-enhancing projects will reduce the time to deliver projects and the overall price.

The extent of the usefulness of demand management strategies, and which ones will be most effective, is largely dependent on the current ITS components available on the system. Demand Management strategies may be more available along this corridor in the future, depending on the priority placed on implementing ITS strategies. Existing and proposed ITS elements have been identified in this document.

Caltrans is committed to identifying innovative solutions to improving transportation corridors. As part of this commitment, Caltrans partnered in the "*Smart Mobility 2010: A Call to Action for the New Decade*." This study was funded by the California Department of Transportation, the US Department of Transportation, and the US Environmental Protection Agency. It was prepared in collaboration with other project partners - the Governor's Office of Planning &

Research, the Department of Housing and Community Development, and numerous external advisors through stakeholder workshops. The study's purpose was to develop practical tools to evaluate the goals and ideals of the Governor's Strategic Growth Plan, the California Transportation Plan, and bond program projects. New approaches were identified to integration of transportation and land use, addressing both long-range challenges and providing short-term practical actions to implement multimodal and sustainable transportation strategies in California. By considering the placement of the type of land use in relation to the transportation system, and implementing modified performance measures, the benefits of smart mobility can be realized. The fiscal constraints that now exist on transportation projects demand continued diligence, better decision making tools, and extra care in management of public resources. These alternative approaches can help California work toward the development of a sustainable transportation system.

D. Intelligent Transportation Systems/Traveler Information/Traffic Control/Incident Management

The various components of ITS, Traveler Information, Traffic Control, and Incident Management have been described elsewhere in this document. The existing elements as well as those that are proposed are listed in this CSMP. All of these strategies offer a means of optimizing the performance of the system, without the need for capacity-enhancing construction projects, and for perhaps a greater return on investment.

E. Operational Elements

As discussed earlier in this document, the LOS describes the operating conditions on a roadway. Without any project improvements, the LOS on some sections is projected to deteriorate to LOS E or F by the year 2035. To counter this, numerous operational improvements have been proposed in this document, including capacity-enhancing projects and projects to maintain the condition of the system. Proposed improvements are presented in this document.

F. System Completion and Expansion

Projects planned for this CSMP area are of various types, some ITS, some maintenance, some capacity-enhancing. Caltrans and the partner agencies will need to work together, and be diligent and creative, in locating appropriate funding for the most critical projects.

While this last item is at the top of the pyramid, the process of system management does not stop here. Effective system management will be an ongoing process, and may in fact begin all over again at the bottom of the pyramid. New needs will be identified; new technology available, and Caltrans and the local partners will need to remain flexible and responsive. The CSMP must also remain flexible and responsive. Caltrans District 6 will update the CSMP on a three-to-five year cycle or as needed to reflect changes in the corridor.

SIGNATORIES
MEMORANDUM OF UNDERSTANDING
FOR THE
FRESNO/KINGS/TULARE ROUTE 198 CORRIDOR SYSTEM
MANAGEMENT PLAN

From the Monterey County line through Fresno County (FRE-PM 0.00 – 42.73), Kings County (KIN- PM 0.00 – 28.32), and Tulare County (TUL-PM 0.00 – 44.16), ending at the boundary with the Sequoia National Park

Sharri Bender Ehlert
Interim District Director
Caltrans - District 6

11/7/2011
Date

Tony Boren
Executive Director
Fresno Council of Governments

11/1/11
Date

Terri King
Executive Director
Kings County Association of Governments

10-26-11
Date

Ted Smalley
Executive Director
Tulare County Association of Governments

8/25/11
Date

California Department of Transportation
District 6
Corridor System Management Plan (CSMP)

State Route 198

From the Monterey County line through Fresno County (FRE-PM 0.00 – 42.73), Kings County (KIN- PM 0.00 – 28.32), and Tulare County (TUL-PM 0.00 – 44.16), ending at the boundary with the Sequoia National Park

Charter for Development and Implementation

The Development and Implementation of a Corridor System Management Plan (CMSP) for Route 198 from the From the Monterey County line through Fresno County, Kings County, and Tulare County, ending at the boundary with the Sequoia National Park.

.

This Charter or MOU is between the California Department of Transportation, District 6 (hereinafter, District 6) and the Fresno Council of Governments (FCOG), Kings County Association of Governments (KCAG), and Tulare County Association of Governments (TCAG). This MOU constitutes solely a guide to the respective obligations, intentions and policies of the partners and District 6 to identify the development and management of the Route 198 corridor. This MOU addresses the principles and practices, system management process, roles and responsibilities and commitment of the responsible partners. This MOU is not designed to authorize funding for the project effort, nor is it a legally binding contract. It is the intent of this MOU to establish a mutual policy leading to a cooperative effort between District 6 and partners for the improvement of Route 198.

Purpose

The purpose of this charter is to document the commitment of all parties to manage the corridor through applying the principles and practices of system and corridor management and performance measurement for sustained corridor performance. The initial phase is development and implementation of a CSMP, across all jurisdictions and modes, for highest mobility benefits to travelers in the corridor. The CSMP will assess current performance, identify causal factors for congestion, and based on testing of alternative corridor management improvement scenarios propose the best mix of improvements, strategies and actions to restore throughput, improve travel times, reliability, safety, and preserve the corridor. The CSMP is a guide for managing the corridor among all partners.

Principles and Practices

The following principles and practices will guide development and implementation of the CSMP.

- Corridor productivity can only be restored and maintained through a coordinated planning and management effort of all transportation partners. Restoring productivity is vital to the state, regional and local economy and quality of life and safety for travelers.
- The department, regional agencies, local jurisdictions, and modal operators are partners in developing an effective CSMP to guide corridor management for highest productivity, reliability, safety and preservation based on performance assessment and measurement.
- Development of the CSMP is complementary to and consistent with federal provisions for a continuing, cooperative, and comprehensive planning process among transportation partners.
- Supports federal congestion management system requirements for Transportation Management Areas, state congestion management program provisions, and SAFETEA-LU provisions for increased emphasis on system and corridor management and performance measurement in regional transportation plans as well as for real-time traveler information.
- Improvements identified in the CSMP to restore corridor productivity should be candidates for all categories of regional and local funding as applicable.

Roles and Responsibilities

The transportation partners (and other applicable partners) will meet on a regular basis for the following activities and decisions:

- Agreement to a work plan, time line, and roles and responsibilities for development of the CSMP, including resources.
- Review draft products, including initial performance assessments and technical documents.
- Coordinate Corridor planning and evaluation efforts and share information on related topics to corridor performance measurement and improvement.
- Identify opportunities for heightened understanding by local jurisdictions and the public on the mobility benefits of system and corridor management.

Appendices:

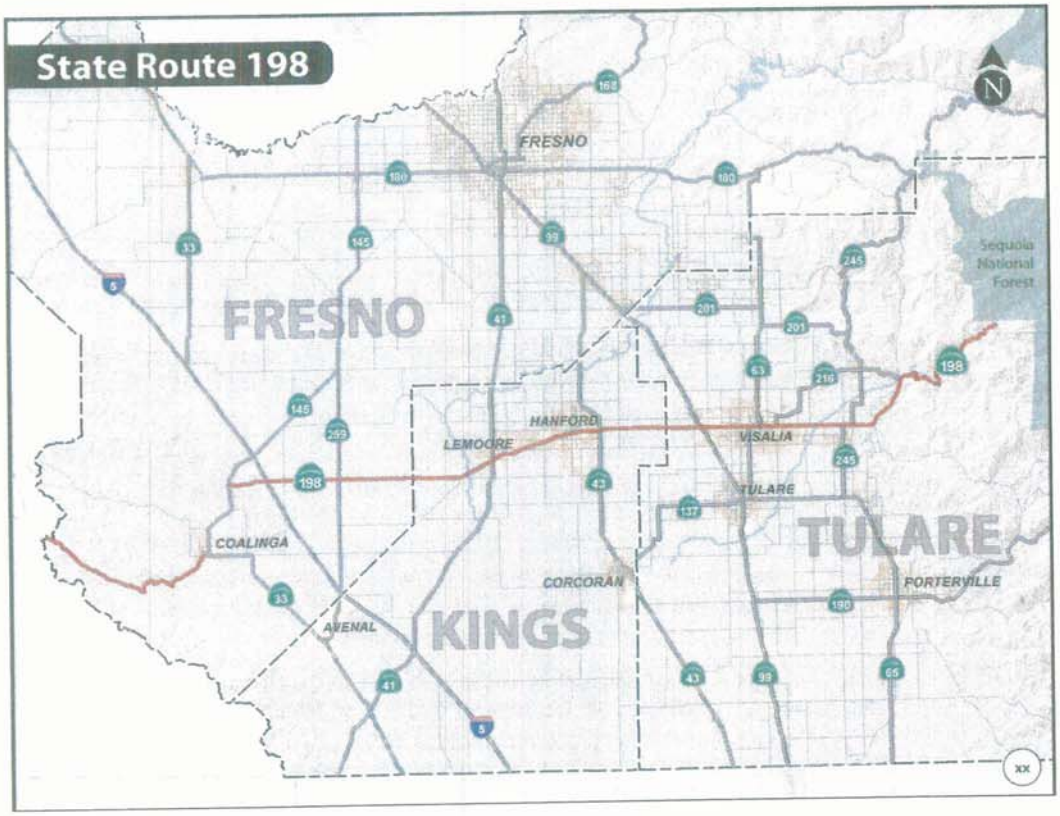
- Draft Work Plan (Attachment 1)
- Map of Route 198 corridor included in this CSMP

Corridor 198: From the Monterey County line through Fresno County (FRE-PM 0.00 – 42.73), Kings County (KIN- PM 0.00 – 28.32), and Tulare County (TUL-PM 0.00 – 44.16), ending at the boundary with the Sequoia National Park

ID	Task Description	2011												2012												2013	
		Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
1	Establish CSMP Team																										
2	Prepare Work Plan																										
3	Key Meetings (throughout the workplan)																										
4	Develop Draft MOU/Initiate Process Commitment																										
5	Complete Process Commitment (Signed MOU)																										
6	Prepare And Share Project Narrative With MPO																										
7	Orientation/Education Sessions for Partner Agencies																										
8	Document Existing Traffic Data/Conduct Counts As Needed																										
9	Assess Micro-Simulation Needs																										
10	Establish Corridor Performance Measures																										
11	Initiate Base Performance Assessment																										
12	Continue Performance Assessment Initiate Bottleneck Identification																										
13	Identify Planned and Programmed Improvements Including ITS Elements																										
14	Ongoing CSMP Preparation																										
15	Identify Alternative Performance Scenarios (Project, Actions, Strategies)																										
16	Micro-Sim/analyze All Planned and Programmed Projects.																NA										
17	Micro-Sim/Model Improvement Scenarios																										
18	Establish Initial Staging / Sequencing Plan																										
19	Full Performance Assessment and Analysis																										
20	Assess Future Performance In Corridor																										
21	Develop Recommendations and Performance Improvement Estimates																										
22	CSMP Adoption																										
23	Ongoing Management Of Corridor Using CSMP																										
24	Continuous Corridor Performance Assessment																										
25	Implementing CSMP For Highest Performance Outcomes Throughout Corridor																										

P:\190-Special Studies\Route 198 CSMP\198 CSMP Workplan final.xls

ATTACHMENT 2
MAP OF CORRIDOR



Appendix B
References

Fresno Council of Governments (FCOG)
2035 Tulare Street, Suite 201
Fresno, California 93721
Phone: (559) 233-4148

Kings County Association of Governments (KCAG)
339 West "D" Street, Suite B
Lemoore, CA 93245
(559) 582-3211 ext. 2654

Tulare County Association of Governments (TCAG)
210 North Church Street
Visalia, CA 93277
(559) 624-7274

Air Quality District:

San Joaquin Valley Air Pollution Control District
1990 E Gettysburg Ave
Fresno, CA 93726
(559) 230-6000

Air Basin: San Joaquin Valley

Air Basin Determination:
Adequate for PM2.5;
Extreme for Ozone.

Transit Services:

For inquiries on transit services, please contact the MPO (listed above) for more information or refer to the listed transit providers in the Transit section in this document.

Traffic Accident Data:

Caltrans District 6
Office of Traffic Investigations
(559) 488-4123

Appendix C
Annual Average Daily Traffic (AADT) and Peak-Hour Definitions

a) AADT: Annual Average Daily Traffic is the total volume of traffic for the year divided by 365 days. The traffic count year is from October 1st through September 30th. Very few locations in California are actually counted continuously. Traffic Counting is generally performed by electronic counting instruments moved from locations throughout the State in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. AADT presents a statewide picture of traffic flow, helps to evaluate traffic trends, to compute accident rates, and for other purposes.

b) **Peak Hour:** For purposes of this document, "peak hour" traffic is calculated as ten percent of the AADT. This value is useful in estimating the amount of congestion experienced, and shows how near to capacity the highway is operating. Unless otherwise indicated, peak hour values indicate the volume in both directions.

Appendix D
Level of Service (LOS)

Level of Service (LOS) is a qualitative measure of operating conditions within a traffic stream, and their perception by motorists and/or passengers. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety.

LOS A on freeways describes primary free-flow operations. Average operating speeds at the freeflow speed generally prevail. Vehicles are almost unimpeded in their ability to maneuver within the traffic stream. On intersections LOS A describes operations with very low delay, up to 5 seconds per vehicle. This LOS occurs when progression is extremely favorable and most vehicles arrive during the green phase.

LOS B represents a reasonable free-flow, and speeds are generally maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. For intersections, LOS B describes operations with delay greater than 5 and up to 15 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both.

LOS C provides for flow with speeds still at or near the freeway flow speed of the freeway. Freedom to maneuver within the traffic stream is noticeably restricted at LOS C, and lane changes require more vigilance on the part of the driver. For intersections, LOS C describes operations with delay greater than 15 and up to 25 seconds per vehicle.

LOS D is the level at which speeds begin to decline slightly with increasing flows. In this range, density begins to deteriorate somewhat more quickly with increasing flow. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions. For intersections, LOS D describes operations with delay greater than 25 and up to 40 seconds per vehicle.

LOS E on freeways is the value that corresponds to the maximum flow rate, or capacity, on the facility. Operations in this level are volatile, because there are virtually no usable gaps in the traffic stream. For intersections, LOS E describes operations with delay greater than 40 and up to 60 seconds per vehicle.

LOS F on freeways represents a stop and go, low speed conditions with little or poor maneuverability. Speed and traffic flow may drop to zero and considerable delays occur. For intersections, LOS F describes operations with delay in excess of 60 seconds per vehicle. This level, considered by most drivers unacceptable often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection.

Levels of Service for different facilities can generally be categorized as follows:

Appendix D, Continued
Level of Service

Used for all freeways and expressways			
LOS	**Demand/Capacity Ratio**	**Congestion or Delay**	**Traffic Description**
F0	1.01-1.25	Considerable; 0-1 hour delay	Forced Flow, heavy congestion, long queues form behind breakdown points, stop and go
F1	1.26-1.35	Severe, 1-2 hour delay	Very heavy congestion, very long queues
F2	1.36-1.45	Very severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods
F3	>1.46	Extremely severe; 3+ hours of delay	Gridlock

Used for two and four lane freeways and expressways			
LOS	**Demand/Capacity Ratio**	**Congestion or Delay**	**Traffic Description**
A	<0.34	None	Free flow
B	0.35-0.52	None	Free to stable flow, light to moderate volumes
C	0.53-0.69	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeable restricted
D	0.70-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver
E	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor

Used for conventional highways			
LOS	**Demand/Capacity Ratio**	**Congestion or Delay**	**Traffic Description**
B	<0.45	None	Free to stable flow, light to moderate volumes
C	0.46-0.65	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted
D	0.66-0.85	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver
E	0.86-1.00		Significant Extremely unstable flow, maneuverability and psychological comfort extremely poor
F	>1.00	Considerable	Forced or breakdown. Delay measured in average flow travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle

Appendix E
Bicycle and Pedestrian Facilities

Bicycle Facilities: Bicycle facilities within the state are classified into four categories:

Class 1 Bikeways (Bike Paths): Bike Paths are separate *off-highway* facilities for the exclusive use of bicyclists and with cross flow by motor vehicles minimized.
Class 2 Bikeways (Bike Lanes): Bike Lanes are for preferential use by bicyclists and can be established within the paved area of state highways. Such facilities are approved by, and subsequently maintained by, local jurisdictions and/or Caltrans. Bike lanes are separated from traffic lanes on California highways by the use of a painted 6" stripe on the pavement and are designated as bike lanes by the use of white R81 (Bike Lane), R-81A (Begin) and R81-B (End) "regulatory" signs (MUTCD Chapter 9 - California Supplement - 2004).
Class 3 Bikeways (Bike Routes): Bike Routes are shared facilities which serve either to (a) provide continuity to other bike facilities (usually a Class 1 or Class 2 bikeway); or (b) to designate a preferred route through a high demand corridor. Such facilities are approved by, and subsequently maintained by, local jurisdictions and/or Caltrans. Bike Routes are not separated from traffic lanes but are designated as bike routes through the use of green D11-1 (Bike Route), M4-11 (Begin) and M4-12 (End) "guide" signs. (MUTCD - Chapter 9 - 2003).
Shared Roadway (No Bikeway Designation): Most bicycle travel on conventional state highways and local streets occurs on facilities without any bikeway designations, signs or striping. Virtually all highways in use by bicyclists for inter-city and recreational travel fall under this "share-the-road" scenario.

(1) **Deputy Directive 64-R1 (DD-64-R1)** - **(Policy)** The Department provides for the needs of travelers of all ages and abilities in all programming, planning, design,, construction, operations and maintenance activities and products on the State highway system. The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycles, pedestrians and transit modes as integral elements of the transportation system."

(2) **PDPM - Chapter 31** (Non-motorized Transportation Facilities) Section 1 - General - Introduction ".... State and federal laws require Caltrans to promote and facilitate increased use of non-motorized transportation. The purpose of this chapter is to outline pertinent statutory requirements, planning policies, and implementing procedures regarding non-motorized transportation facilities."

(3) **Streets and Highway Code - Section 888** - "The department shall not construct a state highway as a freeway that will result in the severance or destruction of an existing major route for non-motorized transportation traffic and light motorcycles, unless it provides a reasonable, safe, and convenient alternate route, or such a route already exists."

(4) **California Vehicle Code - Section 21960 (Bikes & Pedestrians on Freeways)** (a) The Department of Transportation and local authorities [i.e. acting together - not separately], [may] by order, ordinance, or resolution, with respect to freeways, expressways ... prohibit or restrict the use of the freeways, expressways, or any portion thereof by pedestrians, bicycles or other non-motorized traffic..."

Appendix F
Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems are any electronic transportation system that communicates information to the traveler that will improve safety and efficiency. ITS includes traffic signals, closed-circuit televisions, changeable message signs, ramp meters, weigh-in-motion devices, roadway service patrols, weather stations, highway advisory radio stations, and transportation management centers. Traveler Information Broadcast Systems, traffic signal priority for emergency or transit vehicles, ITS data archive management, and vehicle safety warning systems are all a part of ITS. Also included is centralizing the control of many of these components from traffic or transit management centers.

Deployment of ITS technology will enhance traveler information services, as well as the operational and safety efficiency of the Route by informing motorists of traffic congestion, inclement weather such as fog, dust, highway construction and/or closings. Currently, there is a regional architecture in existence called the "San Joaquin Valley ITS." This architecture covers the 8 counties within the San Joaquin Valley (San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern). This Plan is available at: http://www.kimleyhorn.com/ Caarchitecture/task9/sjintro.htm.

1. 511 Traveler Information System

On July 21, 2000, the Federal Communications Commission (FCC) designated 511 as the single travel information telephone number to be made available to states and local jurisdictions across the country. The 511 system provides information about travel conditions, allowing travelers to make better choices: choice of time, choice of route, and choice of mode of transportation. It can also be expanded to provide transit information and rideshare options. SAFETEA-LU mentions provisions for the 511 system to be implemented at the regional level as the urban metropolitan areas convert their existing traveler systems or establish enhanced 511 services.

The state is divided into nine sections on the CalTrans Quickmap website:

- San Diego (also located on the Web at www.511sd.com)
- Southern California
- Ventura
- Bay Area (also located on the Web at www.511.com)
- Yosemite (also located on the Web at www.yosemite.com)
- North Coast
- Northern California
- Central California (also located on the Web at www.511sjv.org
- Travelers in the Sacramento region may visit www.sacregion511.org.

At this time, the Central Coast is still unavailable.

2. Detection

Detection is one of the most important components of ITS. Detection refers to the real-time measurement of transportation movements and conditions. In the past, measurements have been conducted periodically (such as once per year) and those measurements were used to determine the need for infrastructure expansion.

Appendix F, Continued
Intelligent Transportation Systems (ITS)

Optimizing management strategies will require that accurate, on-going data collection be provided by detection systems placed throughout the corridor. Without detection systems, transportation agencies cannot implement advanced traffic control strategies, cannot inform the public about traffic conditions, expected delays and options, and cannot detect and react to incidents quickly enough to minimize the impacts created by those incidents. The route within the limits of this CSMP does not currently include a sufficient detection system to fully optimize these strategies. Improvement projects are typically planned to include detection units as part of the construction. Caltrans commitment to the installation of detection units includes installing wireless radar units at the first available opportunity. Even though these wireless units would be part of the project, they can be installed before construction, without the effort and cost of disturbing a more traditional system when the road construction begins.

3. Traffic Control

Traffic control, another element of ITS, includes signal strategies for managing traffic flows on arterials as well as ramp metering on the freeway system. These strategies offer great promise to improve the productivity of the transportation system. There are, however, challenges for Caltrans in utilizing some of these options. Local agencies are often concerned that traffic control devices will cause additional traffic to choose local streets as an alternative. Caltrans will need to work with local partners to reach solutions that will be agreeable to all parties.

4. Incident Management

Incident Management is a significant component of ITS. Most studies in the United States suggest that incidents such as accidents, special events, and severe weather conditions are responsible for about half of the delay on our freeway system. Motorists are accustomed to normal delays. However, traffic incidents disrupt the motorist's normal routine, creating unplanned delays. Such delays can cause negative impacts to motorists. Unanticipated delays may also create frustration, aggressive driving, and the potential for "Road Rage." Such aggressive behavior poses a danger not only to other motorists but also to emergency response personnel. The goal of effective Traffic Incident Management (TIM) is to reduce the time it takes to clear traffic incidents from the roadway. The less time it takes to clear an incident, the less congestion and delay the motorist experiences. Safety for both the emergency response personnel and the traveling public is improved. Even small improvements in this process can yield significant benefits. Effective TIM relies on advanced technologies to allow for expedited incident detection, verification, coordination among necessary emergency response agencies, and the subsequent clearance of an incident as rapidly as possible.

Collision and/or natural causes will often require lane or road closures. Changeable Message Signs (CMS) systems are used to inform travelers of the road closure, and, if applicable, existing traffic control [such as one-way controlled traffic, California Highway Patrol (CHP) pace vehicles] and the estimated amount of delay. CMS systems are also used to warn of high winds and accidents.

5. Advanced Traveler Information Systems

One of the more progressive components of ITS is the Advanced Traveler Information System (ATIS). Most commuters get information about traffic conditions from the media; for instance, radio stations. ATIS will provide modal-specific, time-of-day demand data that will allow travelers to get the most out

Appendix F, Continued
Intelligent Transportation Systems (ITS)

of the transportation system. The system would allow travelers to manage their trips in the most efficient manner. Implementing advanced traveler information systems requires a partnership between transportation agencies and the public. However, it is clear that the framework is not yet fully developed and that, at this time, current detection systems are not adequate for real-time, tailored information.

6. Transportation Management Centers (TMC)

Effective ITS implementation requires coordination of all components TMCs play an important role in day-to-day system management, providing coordinated incident responses, as well as integration of various systems. An example of integration would be the coordination of ramp metering and arterial signal management. Traveler information also requires sharing data with both public and private partners. Different agencies, such as Caltrans, CHP, and the media, play different roles and have different systems for incident management. The TMC integrates these roles and systems in one location to optimize performance. TMCs are used in emergencies, Amber Alerts, and provide an Emergency Operations Center function during natural disasters, such as earthquakes. TMCs also serve a security preparedness function; staff can monitor the urban freeway system, quickly activate response strategies (such as changeable message signs), or notify the proper authorities when security risks are identified.

Logical phasing for implementing the components of an effective Traffic Management System would be:

a. Installing simple, adaptive-scheme ramp metering;
b. Optimizing the meter rates;
c. Implementing a corridor adaptive ramp-metering scheme within urbanized areas;
d. Advanced arterial signal actuation strategies and improved incident management; and
e. With all of these in place, a comprehensive traveler information system as the final goal.

Monitoring and evaluation are the foundations for sound management of the corridor and will help to identify the optimum strategies to improve the transportation corridor. Strategies range from maintenance and preservation to system expansion, but will focus on optimization of the existing system by fully incorporating operational strategies into the management plan. Implementation of ITS strategies will complement other improvements, including those improvements that may be implemented by partner agencies such as transit, light rail, and improvements on the local road system. The goal is that the whole of the transportation system, including highways, local roads, and alternative means of transportation, operate as one seamless network.

7. Transportation Demand Management

Transportation Demand Management is designed to reduce vehicle trips during peak hours. Transportation Demand Management is specifically targeted at the work force, as commuters generate the majority of peak hour traffic. Incorporating these strategies is a part of land use decisions, the prerogative of local government. Strategies include:

Appendix F, Continued
Intelligent Transportation Systems (ITS)

- Rideshare programs
- Transit usage
- Flex hours
- Vanpools
- Bicycling and walking
- Telecommuting
- Mixed land uses (jobs – housing balance)

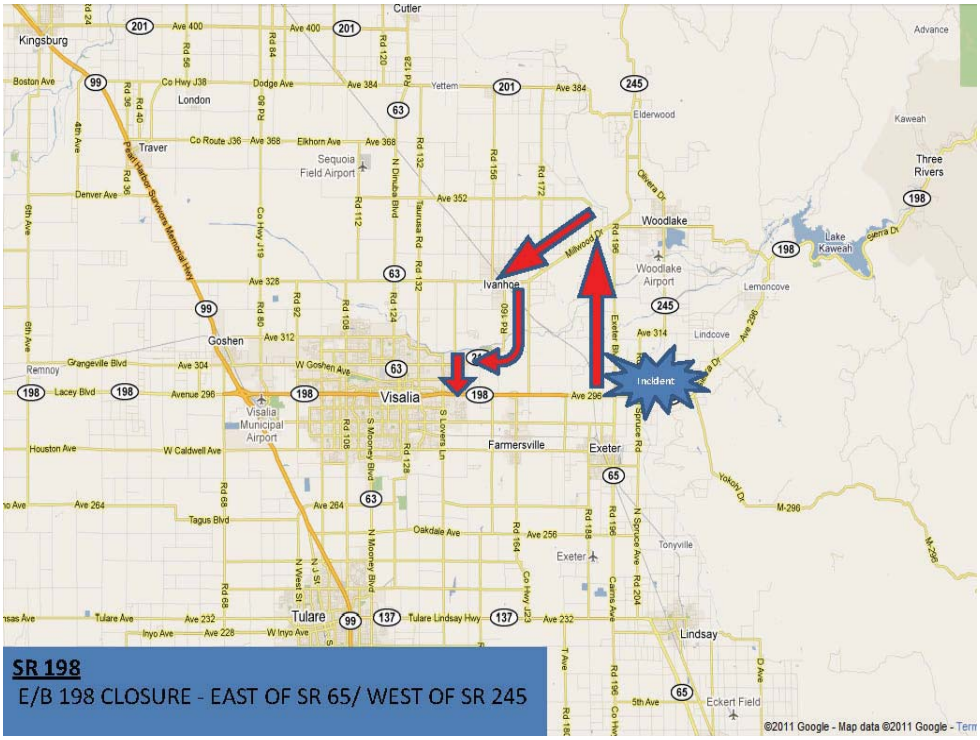
Transportation Demand Management programs could be required by local jurisdictions for any large commercial or office project and could be tied to incentives of some sort to encourage the development of such programs.

FEBRUARY 2012

Appendix G
Local Road Detours

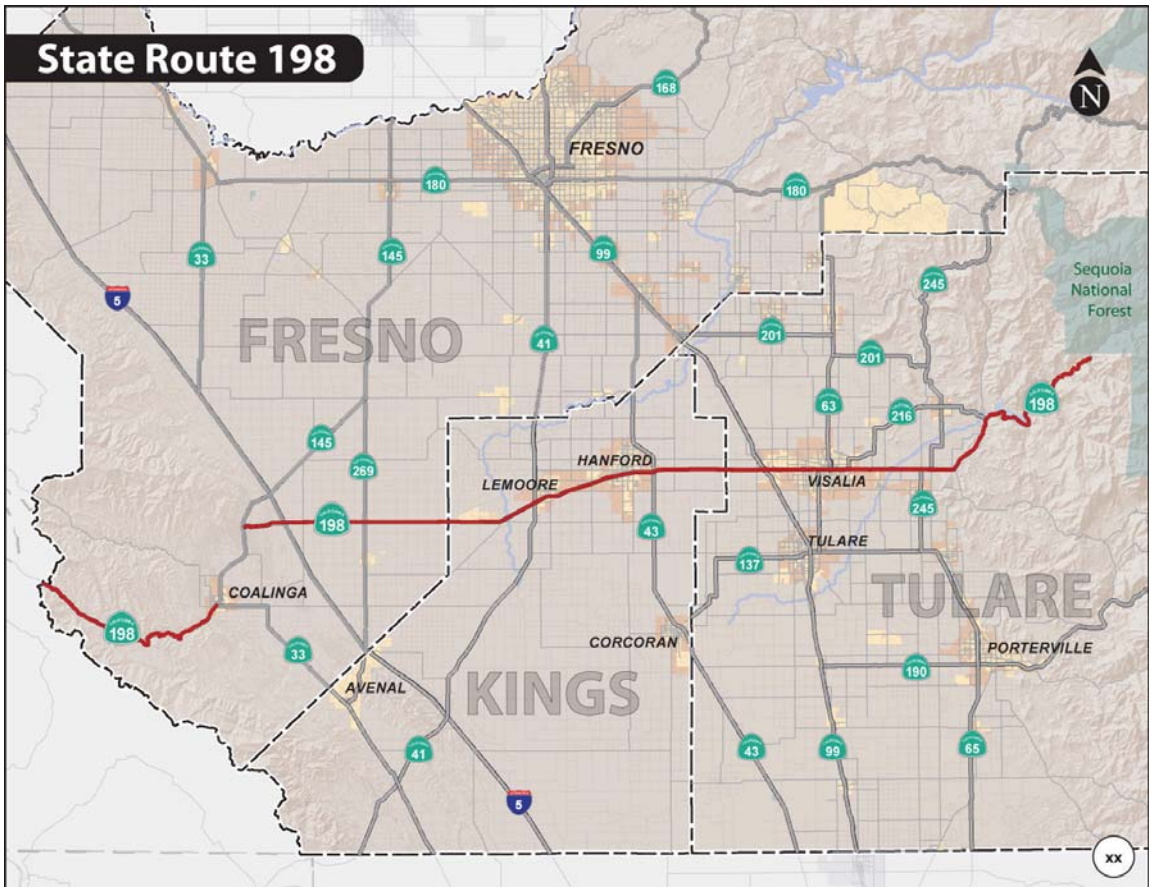
FEBRUARY 2012

Appendix G, Continued
Local Road Detours



FEBRUARY 2012

Appendix H
Possible State Highway Road Detours



Appendix I
Tachometer Run Data

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 11/10/2004 - Wednesday
Set: 01/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	6:43:20 AM					
AKERS	6.760	6:44:15 AM	5325	56	64.84	0	0
DEMAREE RD.	7.760	6:45:10 AM	5256	55	65.16	0	0
MOONEY BLVD/63	8.753	6:46:05 AM	5256	55	65.16	0	0
WATSON WEST OC	9.744	6:47:00 AM	5256	55	65.16	0	0
BEN MADDOX OC	10.734	6:47:54 AM	5169	54	65.27	0	0
LOVERS LANE UC	11.719	6:48:49 AM	5251	55	65.09	0	0
PACKWOOD CREEK	12.721	6:49:45 AM	5309	56	64.64	0	0
ROAD 156 UC	13.737	6:50:42 AM	5357	57	64.08	0	0
						1	1
RUN TOTALS	7.989	0:07:23	42180	443	64.92	1	1

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 11/10/2004 - Wednesday
Set: 01/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	6:54:03 AM					
PACKWOOD CREEK	12.721	6:54:59 AM	5357	57	64.08	0	0
LOVERS LANE UC	11.719	6:55:56 AM	5357	57	64.08	0	0
BEN MADDOX OC	10.734	6:56:51 AM	5181	55	64.23	0	0
WATSON WEST OC	9.744	6:57:46 AM	5192	55	64.36	0	0
MOONEY BLVD/63	8.753	6:58:43 AM	5304	57	63.44	0	0
DEMAREE RD.	7.760	6:59:38 AM	5176	55	64.16	0	0
AKERS RD.	6.760	7:00:32 AM	5299	54	66.90	0	0
SHIRK RD OC	5.760	7:01:29 AM	5293	57	63.32	0	0
						0	0
RUN TOTALS	7.985	0:07:27	42160	447	64.31	0	0

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 11/10/2004 - Wednesday
Set: 02 Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	7:05:08 AM					
AKERS	6.760	7:06:03 AM	5309	56	64.64	0	0
DEMAREE RD.	7.760	7:06:59 AM	5288	56	64.38	0	0
MOONEY BLVD/63	8.753	7:07:55 AM	5245	56	63.86	0	0
WATSON WEST OC	9.744	7:08:52 AM	5267	57	63.00	0	0
BEN MADDOX OC	10.734	7:09:48 AM	5155	56	62.76	0	0
LOVERS LANE UC	11.719	7:10:44 AM	5267	56	64.12	0	0
PACKWOOD CREEK	12.721	7:11:40 AM	5293	56	64.45	0	0
ROAD 156 UC	13.737	7:12:37 AM	5341	57	63.89	0	0
RUN TOTALS	7.986	0:07:30	42165	450	63.89	0	0

Appendix I, Continued
Tachometer Run Data

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 11/10/2004 - Wednesday
Set: 02/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	7:16:10 AM					
PACKWOOD CREEK	12.721	7:17:06 AM	5432	57	64.98	0	0
LOVERS LANE UC	11.719	7:18:01 AM	5235	55	64.89	0	0
BEN MADDOX OC	10.734	7:18:57 AM	5219	56	63.54	0	0
WATSON WEST OC	9.744	7:19:54 AM	5256	57	62.87	0	0
MOONEY BLVD/63	8.753	7:20:51 AM	5224	57	62.49	0	0
DEMAREE RD.	7.760	7:21:48 AM	5277	57	63.13	0	0
AKERS RD.	6.760	7:22:44 AM	5251	56	63.93	0	0
SHIRK RD OC	5.760	7:23:40 AM	5235	56	63.73	0	0
RUN TOTALS	7.979	0:07:31	42128	451	63.69	0	0

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 11/10/2004 - Wednesday
Set: 04/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	7:27:46 AM					
AKERS	6.760	7:28:42 AM	5288	57	63.25	0	0
DEMAREE RD.	7.760	7:29:39 AM	5299	57	63.38	0	0
MOONEY BLVD/63	8.753	7:30:35 AM	5256	56	63.99	0	0
WATSON WEST OC	9.744	7:31:31 AM	5203	56	63.34	0	0
BEN MADDOX OC	10.734	7:32:27 AM	5240	56	63.80	0	0
LOVERS LANE UC	11.719	7:33:24 AM	5245	57	62.74	0	0
PACKWOOD CREEK	12.721	7:34:20 AM	5245	56	63.86	0	0
ROAD 156 UC	13.737	7:35:17 AM	5352	57	64.02	0	0
RUN TOTALS	7.979	0:07:32	42128	452	63.55	0	0

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 11/10/2004 - Wednesday
Set: 04/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	7:38:20 AM					
PACKWOOD CREEK	12.721	7:39:17 AM	5400	58	63.48	0	0
LOVERS LANE UC	11.719	7:40:13 AM	5267	56	64.12	0	0
BEN MADDOX OC	10.734	7:41:10 AM	5272	57	63.06	0	0
WATSON WEST OC	9.744	7:42:05 AM	5192	55	64.36	0	0
MOONEY BLVD/63	8.753	7:43:01 AM	5224	56	63.60	0	0
DEMAREE RD.	7.760	7:43:57 AM	5272	56	64.19	0	0
AKERS RD.	6.760	7:44:52 AM	5235	55	64.89	0	0
SHIRK RD OC	5.760	7:45:52 AM	5309	60	60.33	0	0
RUN TOTALS	7.987	0:07:33	42170	453	63.47	0	1

Appendix I, Continued
Tachometer Run Data

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 11/10/2004 - Wednesday
Set: 05/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	7:49:17 AM					
AKERS	6.760	7:50:12 AM	5331	56	64.90	0	0
DEMAREE RD.	7.760	7:51:07 AM	5283	55	65.49	0	0
MOONEY BLVD/63	8.753	7:52:01 AM	5235	54	66.09	0	0
WATSON WEST OC	9.744	7:52:58 AM	5213	57	62.36	0	0
BEN MADDOX OC	10.734	7:53:56 AM	5267	58	61.91	0	0
LOVERS LANE UC	11.719	7:54:52 AM	5155	56	62.76	0	0
PACKWOOD CREEK	12.721	7:55:49 AM	5357	57	64.08	0	0
ROAD 156 UC	13.737	7:56:46 AM	5341	57	63.89	0	0
RUN TOTALS	7.989	0:07:30	42181	450	63.91	0	1

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 11/10/2004 - Wednesday
Set: 05 Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	8:00:10 AM					
PACKWOOD CREEK	12.721	8:01:07 AM	5443	58	63.98	0	0
LOVERS LANE UC	11.719	8:02:03 AM	5304	56	64.58	0	0
BEN MADDOX OC	10.734	8:02:57 AM	5176	54	65.35	0	0
WATSON WEST OC	9.744	8:03:51 AM	5203	54	65.69	0	0
MOONEY BLVD/63	8.753	8:04:50 AM	5283	59	61.05	0	0
DEMAREE RD.	7.760	8:05:45 AM	5181	55	64.23	0	0
AKERS RD.	6.760	8:06:40 AM	5288	55	65.55	0	0
SHIRK RD OC	5.760	8:07:37 AM	5299	57	63.38	0	0
RUN TOTALS	7.988	0:07:28	42176	448	64.19	0	0

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 11/10/2004 - Wednesday
Set: 06/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	8:11:25 AM					
AKERS	6.760	8:12:22 AM	5283	58	62.10	0	0
DEMAREE RD.	7.760	8:13:18 AM	5304	56	64.58	0	0
MOONEY BLVD/63	8.753	8:14:18 AM	5272	60	59.91	0	0
WATSON WEST OC	9.744	8:15:19 AM	5256	61	58.75	0	0
BEN MADDOX OC	10.734	8:16:19 AM	5160	60	58.64	0	0
LOVERS LANE UC	11.719	8:17:15 AM	5240	56	63.80	0	0
PACKWOOD CREEK	12.721	8:18:14 AM	5240	59	60.55	0	0
ROAD 156 UC	13.737	8:19:13 AM	5405	59	62.47	0	0
RUN TOTALS	7.985	0:07:49	42160	469	61.29	1	1

Appendix I, Continued
Tachometer Run Data

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 12/1/2004 - Wednesday
Set: 01/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	4:11:22 PM					
PACKWOOD CREEK	12.721	4:12:24 PM	5380	63	58.22	0	0
LOVERS LANE UC	11.719	4:13:23 PM	5308	59	61.34	0	0
BEN MADDOX OC	10.734	4:14:21 PM	5222	58	61.39	0	0
WATSON WEST OC	9.744	4:15:19 PM	5218	58	61.34	0	0
MOONEY BLVD/63	8.753	4:16:17 PM	5220	58	61.36	0	0
DEMAREE RD.	7.760	4:17:16 PM	5218	59	60.30	0	0
AKERS RD.	6.760	4:18:14 PM	5338	58	62.75	0	0
SHIRK RD OC	5.760	4:19:16 PM	5241	62	57.63	0	0
RUN TOTALS	7.982	0:07:55	42144	475	60.49	1	1

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 12/1/2004 - Wednesday
Set: 02/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	4:00:31 PM					
AKERS	6.760	4:01:28 PM	5351	58	62.90	0	0
DEMAREE RD.	7.760	4:02:24 PM	5239	56	63.79	0	0
MOONEY BLVD/63	8.753	4:03:18 PM	5261	54	66.43	0	0
WATSON WEST OC	9.744	4:04:14 PM	5244	56	63.85	0	0
BEN MADDOX OC	10.734	4:05:10 PM	5175	56	63.01	0	0
LOVERS LANE UC	11.719	4:06:05 PM	5215	55	64.65	0	0
PACKWOOD CREEK	12.721	4:07:07 PM	5280	62	58.06	0	7
ROAD 156 UC	13.737						
						0	0
RUN TOTALS	6.963	0:06:37	36764	397	63.14	0	8

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 12/1/2004 - Wednesday
Set: 02 Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	4:34:13 PM					
PACKWOOD CREEK	12.721	4:35:13 PM	5384	61	60.17	0	0
LOVERS LANE UC	11.719	4:36:11 PM	5305	58	62.36	0	0
BEN MADDOX OC	10.734	4:37:07 PM	5209	56	63.42	0	0
WATSON WEST OC	9.744	4:38:04 PM	5216	57	62.39	0	0
MOONEY BLVD/63	8.753	4:39:02 PM	5218	58	61.34	0	0
DEMAREE RD.	7.760	4:40:00 PM	5296	58	62.26	0	0
AKERS RD.	6.760	4:40:57 PM	5294	57	63.33	0	0
SHIRK RD OC	5.760	4:41:53 PM	5199	56	63.30	0	0
RUN TOTALS	7.977	0:07:41	42120	461	62.30	0	1

Appendix I, Continued
Tachometer Run Data

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 12/1/2004 - Wednesday
Set: 03/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	4:22:56 PM					
AKERS	6.760	4:23:53 PM	5307	58	62.38	0	0
DEMAREE RD.	7.760	4:24:51 PM	5306	58	62.37	0	0
MOONEY BLVD/63	8.753	4:25:50 PM	5251	59	60.68	0	0
WATSON WEST OC	9.744	4:26:55 PM	5200	65	54.55	0	0
BEN MADDOX OC	10.734	4:27:58 PM	5230	63	56.60	0	0
LOVERS LANE UC	11.719	4:28:56 PM	5222	58	61.38	0	0
PACKWOOD CREEK	12.721	4:29:53 PM	5239	57	62.67	0	0
ROAD 156 UC	13.737	0	0	0	0.00	1	1
RUN TOTALS	6.961	0:06:58	36754	418	59.95	1	1

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 12/1/2004 - Wednesday
Set: 03/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	4:56:29 PM					
PACKWOOD CREEK	12.721	4:57:28 PM	5400	60	61.36	0	0
LOVERS LANE UC	11.719	4:58:29 PM	5264	61	58.84	0	0
BEN MADDOX OC	10.734	4:59:30 PM	5272	61	58.93	0	0
WATSON WEST OC	9.744	5:00:30 PM	5180	60	58.86	0	0
MOONEY BLVD/63	8.753	5:01:30 PM	5219	60	59.30	0	0
DEMAREE RD.	7.760	5:02:28 PM	5255	58	61.78	0	0
AKERS RD.	6.760	5:03:25 PM	5254	57	62.85	0	0
SHIRK RD OC	5.760	5:04:22 PM	5319	57	63.62	0	0
RUN TOTALS	7.985	0:07:54	42163	474	60.65	1	1

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 12/1/2004 - Wednesday
Set: 04 Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	4:45:29 PM					
AKERS	6.760	4:46:26 PM	5336	58	62.73	0	0
DEMAREE RD.	7.760	4:47:23 PM	5254	57	62.85	0	0
MOONEY BLVD/63	8.753	4:48:21 PM	5257	58	61.80	0	0
WATSON WEST OC	9.744	4:49:20 PM	5233	59	60.48	0	3
BEN MADDOX OC	10.734	4:50:19 PM	5195	59	60.04	0	0
LOVERS LANE UC	11.719	4:51:18 PM	5210	59	60.21	0	0
PACKWOOD CREEK	12.721	4:52:19 PM	5280	61	59.01	0	0
ROAD 156 UC	13.737	4:53:21 PM	5406	62	59.45	0	0
RUN TOTALS	7.987	0:07:53	42172	473	60.79	0	4

Appendix I, Continued
Tachometer Run Data

Code: TUL198WB
Location: TUL-198-13.737/5.76
Date: 12/1/2004 - Wednesday
Set: 04/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
ROAD 156 UC	13.737	5:20:37 PM					
PACKWOOD CREEK	12.721	5:21:34 PM	5382	58	63.26	0	0
LOVERS LANE UC	11.719	5:22:33 PM	5289	59	61.13	0	0
BEN MADDOX OC	10.734	5:23:29 PM	5262	56	64.07	0	0
WATSON WEST OC	9.744	5:24:25 PM	5160	56	62.83	0	0
MOONEY BLVD/63	8.753	5:25:21 PM	5277	56	64.25	0	0
DEMAREE RD.	7.760	5:26:17 PM	5237	56	63.76	0	0
AKERS RD.	6.760	5:27:15 PM	5260	58	61.84	0	0
SHIRK RD OC	5.760	5:28:13 PM	5324	58	62.59	0	0
RUN TOTALS	7.991	0:07:37	42192	457	62.95	0	0

Code: TUL198EB
Location: TUL-198-5.76/13.737
Date: 12/1/2004 - Wednesday
Set: 05/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
SHIRK ROAD	5.760	5:08:39 PM					
AKERS	6.760	5:09:39 PM	5332	61	59.60	0	0
DEMAREE RD.	7.760	5:10:38 PM	5278	59	60.99	0	0
MOONEY BLVD/63	8.753	5:11:37 PM	5245	59	60.61	0	0
WATSON WEST OC	9.744	5:12:37 PM	5183	60	58.89	0	0
BEN MADDOX OC	10.734	5:13:39 PM	5243	62	57.66	0	0
LOVERS LANE UC	11.719	5:14:44 PM	5186	65	54.39	0	0
PACKWOOD CREEK	12.721	5:15:49 PM	5344	65	56.05	0	0
ROAD 156 UC	13.737	5:16:49 PM	5301	60	60.24	0	0
RUN TOTALS	7.975	0:08:11	42111	491	58.48	1	1

Appendix I, Continued
Tachometer Run Data

Code: KIN198EB
Location: KIN-198-3.011/32.16
Date: 11/15/2007 - Thursday
Set: 01 /Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
LNAS MAIN GATE	3.011	3:21:55 PM					
AVENAL OC	4.992	3:23:48 PM	10475	114	62.65	0	4
JCT 41/198	8.897	3:27:33 PM	20652	225	62.58	0	7
AVE 19	9.470	3:28:09 PM	3031	36	57.41	0	0
AVE 18	10.561	3:29:13 PM	5728	64	61.02	0	0
HOUSTON AVE OC	12.106	3:30:42 PM	8155	89	62.47	0	0
14 AVE UC	14.767	3:33:10 PM	14072	148	64.83	0	0
12 AVE OC	16.910	3:35:09 PM	11257	119	64.50	0	0
11 AVE UC	17.912	3:36:06 PM	5362	57	64.14	0	0
10 AVE UC	18.959	3:37:05 PM	5522	59	63.81	0	0
43/198 SEP	20.975	3:39:00 PM	10595	115	62.82	0	0
2-LANE BEGIN	21.811	3:39:54 PM	4420	54	55.81	0	0
6TH AVE	23.320	3:41:26 PM	7973	92	59.09	0	0
2ND AVE	27.340	3:45:39 PM	21242	253	57.25	0	0
END OF COUNTY	28.325	3:46:42 PM	5186	63	56.13	0	0
RD 56	29.825	3:48:20 PM	7892	98	54.91	1	1
RD 68	31.335						
JCT RTE 99/198	32.160						
						0	0
RUN TOTALS	26.811	0:26:26	141562	1586	60.86	1	12

Code: KIN198WB
Location: KIN-198-32.16/3.011
Date: 11/15/2007 - Thursday
Set: 01/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
JCT RTE 99/198	32.160	3:53:28 PM					
RD 68	31.335	3:54:16 PM	4435	49	61.71	0	0
RD 56	29.825	3:55:47 PM	7919	91	59.33	0	0
END OF COUNTY	28.325	3:57:18 PM	7917	91	59.32	0	0
2ND AVE	27.340	3:58:18 PM	5271	60	59.90	0	0
6TH AVE	23.320	4:02:20 PM	21210	242	59.76	0	8
2-LANE BEGIN	21.811	4:03:50 PM	7975	90	60.42	0	0
43/198 SEP	20.975	4:04:38 PM	4382	48	62.24	0	0
10 AVE UC	18.959	4:06:35 PM	10686	117	62.27	0	0
11 AVE UC	17.912	4:07:35 PM	5478	60	62.25	0	0
12 AVE OC	16.910	4:08:34 PM	5283	59	61.05	0	0
14 AVE UC	14.767	4:10:36 PM	11317	122	63.25	0	0
HOUSTON AVE OC	12.106	4:13:05 PM	14105	149	64.54	0	0
AVE 18	10.561	4:14:31 PM	8150	86	64.61	0	0
AVE 19	9.470	4:15:32 PM	5773	61	64.53	0	0
JCT 41/198	8.897	4:16:03 PM	2934	31	64.53	0	0
AVENAL OC	4.992	4:19:41 PM	20660	218	64.62	0	0
LNAS MAIN GATE	3.011	4:21:23 PM	8009	102	53.54	14	33
RUN TOTALS	28.694	0:27:56	151504	1676	61.63	14	41

Appendix I, Continued
Tachometer Run Data

Code: KIN198EB
Location: KIN-198-3.011/32.16
Date: 11/15/2007 - Thursday
Set: 02/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
LNAS MAIN GATE	3.011	4:21:41 PM					
AVENAL OC	4.992	4:23:44 PM	10447	124	57.44	9	32
JCT 41/198	8.897	4:27:15 PM	20640	211	66.70	0	0
AVE 19	9.470	4:27:46 PM	3032	31	66.69	0	0
AVE 18	10.561	4:28:45 PM	5764	59	66.61	0	0
HOUSTON AVE OC	12.106	4:30:08 PM	8128	83	66.77	0	0
14 AVE UC	14.767	4:32:34 PM	14018	146	65.46	0	0
12 AVE OC	16.910	4:34:34 PM	11347	120	64.47	0	0
11 AVE UC	17.912	4:35:30 PM	5291	56	64.42	0	0
10 AVE UC	18.959	4:36:28 PM	5492	58	64.56	0	0
43/198 SEP	20.975	4:38:21 PM	10718	113	64.67	0	0
2-LANE BEGIN	21.811	4:39:12 PM	4392	51	58.72	0	0
6TH AVE	23.320	4:40:47 PM	7992	95	57.36	0	0
2ND AVE	27.340	4:44:59 PM	21207	252	57.38	0	0
END OF COUNTY	28.325	4:46:01 PM	5224	62	57.45	0	0
RD 56	29.825	4:47:35 PM	7905	94	57.34	0	0
RD 68	31.335	4:49:09 PM	7912	94	57.39	0	0
JCT RTE 99/198	32.160						
RUN TOTALS	28.316	0:27:29	149509	1649	61.82	9	32

Code: KIN198 WB
Location: KIN-198-32.16/3.011
Date: 11/15/2007 - Thursday
Set: 02/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
JCT RTE 99/198	32.160	4:52:19 PM					
RD 68	31.335	4:53:07 PM	4392	49	61.11	0	0
RD 56	29.825	4:54:43 PM	8015	96	56.92	1	1
END OF COUNTY	28.325	4:56:17 PM	7927	94	57.50	0	0
2ND AVE	27.340	4:57:18 PM	5146	61	57.52	0	0
6TH AVE	23.320	5:01:30 PM	21252	252	57.50	0	0
2-LANE BEGIN	21.811	5:03:04 PM	8001	94	58.03	0	0
43/198 SEP	20.975	5:03:51 PM	4370	47	63.39	0	0
10 AVE UC	18.959	5:05:45 PM	10637	114	63.62	0	0
11 AVE UC	17.912	5:06:44 PM	5508	59	63.65	0	0
12 AVE OC	16.910	5:07:41 PM	5322	57	63.66	0	0
14 AVE UC	14.767	5:09:43 PM	11310	122	63.21	0	0
HOUSTON AVE OC	12.106	5:12:11 PM	14019	148	64.58	0	0
AVE 18	10.561	5:13:37 PM	8146	86	64.58	0	0
AVE 19	9.470	5:14:38 PM	5775	61	64.55	0	0
JCT 41/198	8.897	5:15:10 PM	3034	32	64.64	0	0
AVENAL OC	4.992	5:18:48 PM	20660	218	64.62	0	0
LNAS MAIN GATE	3.011	5:20:28 PM	7951	100	54.21	9	32
RUN TOTALS	28.687	0:28:10	151465	1690	61.11	10	33

Appendix I, Continued
Tachometer Run Data

Code: KIN198EB
Location: KIN-198-3.011/32.16
Date: 11/15/2007 - Thursday
Set: 03/Run: 1

LOCATION	PM	TIME	FEET	SECONDS	SPEED	<35	<50
LNAS MAIN GATE	3.011	5:20:42 PM					
AVENAL OC	4.992	5:23:05 PM	10496	144	49.70	24	46
JCT 41/198	8.897	5:26:52 PM	20600	227	61.87	0	0
AVE 19	9.470	5:27:25 PM	2997	33	61.92	0	0
AVE 18	10.561	5:28:29 PM	5809	64	61.89	0	0
HOUSTON AVE OC	12.106	5:29:59 PM	8167	90	61.87	0	0
14 AVE UC	14.767	5:32:34 PM	14049	155	61.80	0	0
12 AVE OC	16.910	5:34:38 PM	11253	124	61.87	0	0
11 AVE UC	17.912	5:35:40 PM	5319	62	58.49	0	0
10 AVE UC	18.959	5:36:39 PM	5481	59	63.34	0	0
43/198 SEP	20.975	5:38:33 PM	10728	114	64.16	0	0
2-LANE BEGIN	21.811	5:39:22 PM	4363	49	60.71	0	0
6TH AVE	23.320	5:41:05 PM	7984	103	52.85	0	22
2ND AVE	27.340	5:45:14 PM	21253	249	58.20	0	0
END OF COUNTY	28.325	5:46:11 PM	5183	57	62.00	0	0
RD 56	29.825	5:47:56 PM	7925	105	51.46	0	48
RD 68	31.335	5:49:44 PM	7980	108	50.38	0	54
JCT RTE 99/198	32.160						
	0.000						
RUN TOTALS	28.331	0:29:03	149587	1743	58.51	24	170

Appendix J
Documents Used in the Preparation of this CSMP

1) 2002 Global Gateways Development Program; Caltrans; January 2002
2) Aviation in California: Benefits to Our Economy and Way of Life; Caltrans Division of Aeronautics; June 2003
3) Bay Area/California High-Speed Rail Ridership and Revenue Forecasting Study; California High-Speed Rail Authority; August 2007
4) California Central Valley Tribal Transportation Environmental Justice Collaborative Project; Dr. Donna Miranda-Begay, Project Manager; September 2010
5) California Highways, Route 198, The California Highways Organization, online resource
6) California State Rail Plan; Caltrans; March 2008
7) City of Coalinga General Plan; City of Coalinga; June 2009
8) City of Hanford General Plan; City of Hanford; June 2002
9) City of Lemoore General Plan; City of Lemoore; May 2008
10) City of Tulare General Plan; City of Tulare; June 2009
11) City of Visalia Draft General Plan; City of Visalia; March 2011
12) County of Fresno General Plan; Fresno County; August 2000
13) County of Kings General Plan; Kings County; January 2010
14) County of Tulare Draft General Plan; Tulare County; March 2010
15) Cross Valley Passenger Rail Feasibility Study; Kings County Association of Governments; May 1997
16) Demographic Research Unit, California State Census Data Center, Census 2000 PL94-171; California Department of Finance; June 2003
17) Freeway Performance Initiative Traffic Analysis Final Report; Metropolitan Transportation Commission; October 2007
18) Goods Movement Action Plan; Business, Transportation and Housing Agency and California Environmental Protection Agency; January 2007
19) High Occupancy Vehicle Lane Viability for the San Joaquin Valley; Caltrans District 6 and District 10; December 2005
20) I-880 Corridor System Management Plan; Caltrans District 4; October 2010
21) Interregional Transportation Strategic Plan; Caltrans; June 1998
22) Regional Transportation Plan; Fresno Council Governments; July 29, 2010
23) Regional Transportation Plan; Kings County Association of Governments; July 2010
24) Regional Transportation Plan; Tulare County Association of Governments; July 2010
25) Draft San Joaquin Valley Goods Movement Study; Counties of the San Joaquin Valley and Caltrans; June 2008
26) San Joaquin Valley Interregional Goods Movement Plan, Existing Conditions Assessment; Fresno Council of Governments, November 2011
27) State Route 198 Transportation Concept Report (TCR); Caltrans District 6; November 2002
28) Transportation Management System (TMS) Master Plan; Caltrans; February 2004
29) Traffic Operations Strategic Plan; Caltrans; April 2000

Appendix K
Acronyms and Abbreviations

AADT - Average Annual Daily Traffic
AASHTO - American Association of State Highway and Transportation Officials
ACE - Altamont Commuter Express
ADA - Americans with Disabilities Act
AITS - Agricultural Industries Transportation Services
ARRA - American Recovery and Reinvestment Act
ATIS - Advanced Traveler Information System
ATMIS - Advanced Transportation Management Information Systems
AVE - Avenue
B/C - Benefit/Cost
BART - Bay Area Rapid Transit
BNSF - Burlington Northern Santa Fe
BRT - Bus rapid transit
CalVANS - California Vanpool Authority
CAPM - Capital Preventive Maintenance
CCTV - Closed Circuit Television Cameras
CHP - California Highway Patrol
CIB - California Interregional Blueprint
CMAQ - Congestion Mitigation and Air Quality
CMIA - Corridor Mobility Improvement Account
CMS - Changeable Message Sign
COG - Council of Governments
COLT-City Operated Local Transit
CSMP - Corridor System Management Plan
CT - Caltrans
CTC - California Transportation Commission
CTP - California Transportation Plan
EB - Eastbound
EJ - Environmental Justice
F - Focus Route
FAX - Fresno Area Express
FCOG - Fresno Council of Governments
FCRTA - Fresno Regional Transit Agency
FRE - Fresno County
FREQ - Freeway Queue Macroscopic Freeway Operation Model Software
FTIP - Federal Transportation Improvement Program
FYI - Fresno Yosemite International Airport
HAR - Highway Advisory Radio
HE - High Emphasis Route
HOV - High-Occupancy Vehicle Lanes
HSRA - High Speed Rail Authority
I-5 - Interstate 5
ICES - Intermodal Corridor of Economic Significance
IIP - Interregional Improvement Program
IRI - International Ride Index

Appendix K, Continued
Acronyms and Abbreviations

IRRS - Interregional Road System
ITIP - Interregional Transportation Improvement Program
ITMS - Intermodal Transportation Management System
ITS - Intelligent Transportation System
ITSP - Interregional Transportation Strategic Plan
JCT - Junction
JPA - Joint Powers Authority
KART - Kings Area Rural Transit System
KCAG - Kings County Association of Governments
KCOG - Kern Council of Governments
KIN - Kings County
KP - Kilo Post
LNAS - Lemoore Naval Air Station
LOS - Level of Service
MCAG - Merced County Association of Governments
MCTC - Madera County Transportation Commission
MIS - Major Investment Study
MOU - Memorandum of Understanding
MPO - Metropolitan Planning Organization
MSL - Maintenance Service Level
MTC - Metropolitan Transportation Commission
NB - Northbound
ND – Not Determined
NHS - National Highway System
NTN - National Truck Network
OC - Overcrossing
OH - Overhead
PCR - Pavement Condition Report
PCS - Pavement Condition Survey
PDT - Project Development Team
PeMS - Performance Measurement System
PHT - Person Hours Traveled
PM - Post Mile
PMT - Person Miles Traveled
PSR - Project Study Report
PSSR - Project Scope Summary Report
PT - Porterville Transit
RCR - Route Concept Report
RII - Railroad Industries Incorporated
RIP - Regional Improvement Program
ROW - Right-of-Way
RTIP - Regional Transportation Improvement Program
RTP - Regional Transportation Plan
RTPA - Regional Transportation Planning Agency
RWIS - Road Weather information System
SAFETEA-LU - Safe Accountable Flexible Efficient Transportation Equity Act- Legacy for Users

Appendix L, Continued
Acronyms and Abbreviations

SB – southbound
SEP - Separation
SHOPP - State Highway Operation Protection Program
SJCOG - San Joaquin Council of Governments
SJUAPCD - San Joaquin Unified Air Pollution Control District
SJV - San Joaquin Valley
SJVTPA - San Joaquin Valley Regional Transportation Planning Agencies
SJVR - San Joaquin Valley Railroad
SOV - Single Occupancy Vehicle
STAA - Surface Transportation Assistance Act
StanCOG - Stanislaus Council of Governments
SJCOG - San Joaquin Council of Governments
STIP - State Transportation Improvement Program
STP - Surface Transportation Program
STRAHNET - Strategic Highway Corridor Network
TA - Terminal Access Route
TASAS - Traffic Accident Surveillance and Analysis System
TAZ - Transportation Analysis Zones
TCAG - Tulare County Association of Governments
TCaT - Tulare County Area Transit
TCIF - Trade Corridors Improvement Fund
TCM - Transportation Control Measure
TCR - Transportation Concept Report
TCRP - Transportation Congestion Relief Program
TDM - Transportation Demand Management
TIM - Traffic Incident Management
TMC - Transportation Management Center
TIME - Tulare Intermodal Express
TMS - Transportation Management System
TMS - Traffic Monitoring Systems
TRIP - Thomas Road Improvement Program
TTE-Tulare Transit Express
TUL - Tulare County
UC - Undercrossing
UP - Union Pacific Railroad
UTC - Ultimate Transportation Concept
V/C - Volume/Capacity ratio
VCC - Visalia City Coach
VHT - Vehicle Hours Traveled
VMT - Vehicle Miles Traveled
WB - Westbound