STATE ROUTE

CALIFORNIA 58

Corridor System Management Plan

Department of Transportation · District 06 Planning · September 2011

Caltrans

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Front cover photos of Route 58 from top to bottom: east of Tehachapi city limits; Rosedale Highway just west of Route 99; near State Route 223, west of Buttonwillow.

Route 58 Corridor System Management Plan

Route 58: In Kern County from the San Luis Obispo County Line to the San Bernardino County Line

Caltrans District 6 – Postmile: (KER–58–PM–0.00 through PM–143.86)

I approve this Corridor Management Plan as the overall Policy Statement and Strategic Plan that will guide transportation decisions and investments for the Route 58 Corridor.

Sharri Bender Ehlert
Interim District Director
Caltrans - District 6

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Caltrans - District 6

Ronald Brummett
Executive Director
Kern Council of Governments

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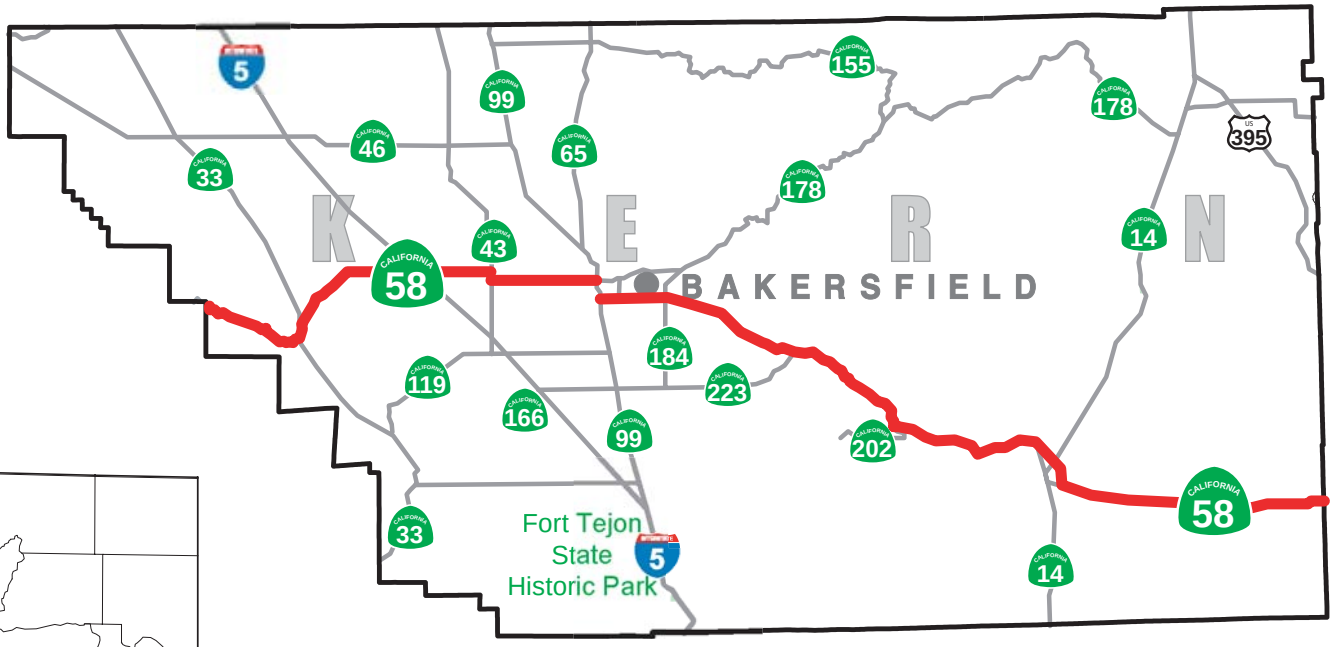
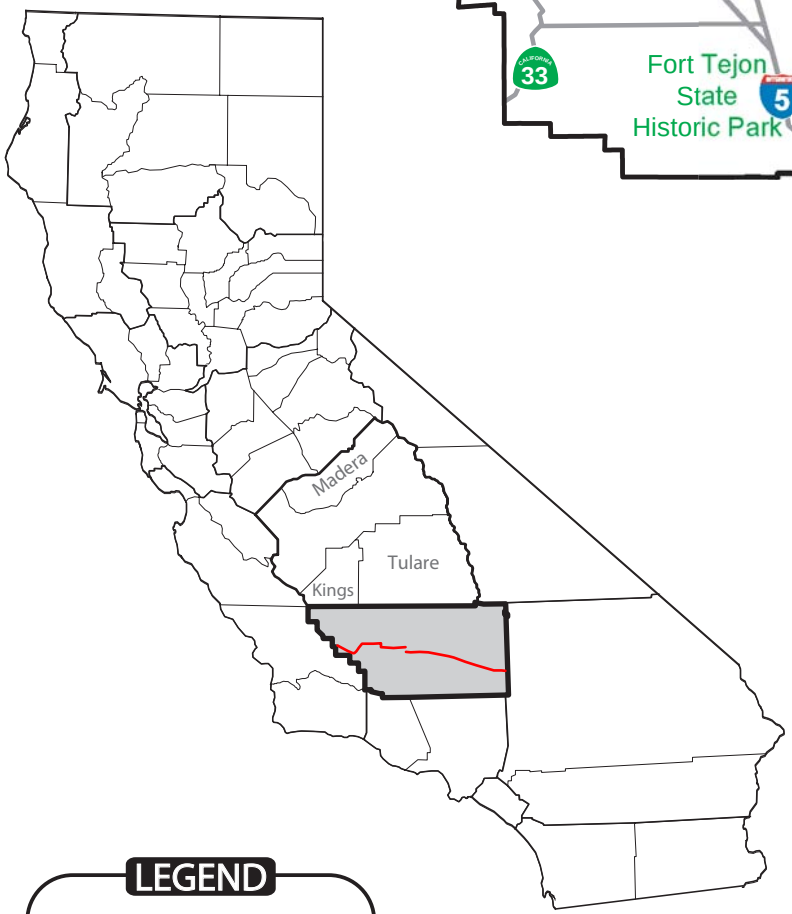
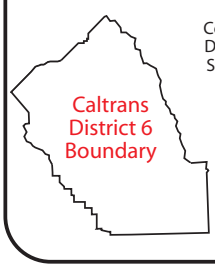




LEGEND



Counties within District 6 which SR 58 traverses

Caltrans

N

Not To Scale

i

Route 58
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, transit providers, and interested stake holders have all been invited to participate in the process of developing this document. The Kern Council of Governments (KCOG) and Caltrans District 6 have signed a Memorandum of Understanding (MOU) that documents the commitment of all parties to manage the corridor through these principles and practices (Appendix A, Pages 66 – 71). The completed CSMP also requires adoption by these same partners.

As part of Caltrans commitment to identifying innovative solutions to improving transportation corridors, we 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 need for this study originated with the idea that practical tools were needed 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.

B. Route 58 Background

Many California roads and highways originated along Tribal hunting and trading routes. A recently completed study, the "*California Central Valley Tribal Transportation Environmental Justice Collaborative Project*," identified a number of Tribes that include portions of what is now Kern County as their ancestral lands. Some portions of the current Route 58 touch upon these ancestral lands. According to the report "South of the Tubatulabal and Shoshone were the Kawaiisu, then the Kitanemuk, and a small portion of Tataviam in Kern County. A small section of Kern County between the Kitanemuk and Tataviam is the traditional territory of the Serrano. The area east of the Kitanemuk is Vanyume territory. Note that many of the ethnographic territories overlap."

This study was funded by a Caltrans Environmental Justice grant and was prepared for the Kern County Council of Governments and the Tubatulabals of Kern Valley Tribe on behalf of the eight San Joaquin Valley MPOs; the San Joaquin Council of Governments (SJCOG), Stanislaus Council of Governments (StanCOG), Merced County Association of Governments (MCAG), Madera County Transportation Commission (MCTC), Fresno Council of Governments (FCOG), Kings County Association of Governments (KCAG), KCOG, Tulare County Association of Governments (TCAG) in coordination with the tribal governments and communities of said region.

Route 58 runs east-west for 234 miles across the Coastal Ranges, San Joaquin Valley, the Tehachapi Mountains and the high desert. The western terminus is near Santa Margarita (at the junction with Route 101) and its eastern terminus is at Barstow (at the junction with Interstate 15). It is an important corridor, interconnecting with a number of other Routes: Route 33, Interstate 5 (I-5), Route 43, Route 178, Route 99, Route 204, Route 184, Route 223, Route 202, Route 14, U.S. Route 395 at Kramer Junction, and ends at I-15 near Barstow.

Route 58 was first designated as Legislative Route Number 58. It was defined in the 1919 Third Bond Act as the route from Mojave to Needles via Barstow. In 1925, the Highway Commission was authorized to construct and maintain a state highway extending from San Bernardino to Needles. The route was extended from Bakersfield to Mojave in 1931, and then extended again to a point near Santa Margarita to the Arizona State line. In 1935, a bridge over the Colorado River into Arizona was constructed, with the construction, ownership, operation, and maintenance to be conducted jointly with the State of Arizona. Initially, the Route bore a number of different designations: Route 178 between US 101 and Bakersfield;

US 466 between Bakersfield and Barstow; US 66 between Barstow and the Arizona border; and Route 178 between Route 33 at McKittrick and Route 99 in Bakersfield. After 1964, the designation was changed to Route 58 between Santa Margarita (US 101) and Barstow.

Route 58 serves both interregional and interstate travel. The Route crosses the Tehachapi Mountains, south of the Sierra Nevada, allowing motorists to travel between the Central Valley to Las Vegas, Nevada, and Phoenix, Arizona without having to face the traffic congestion in the greater Los Angeles area. The Route serves as an extension of the Interstate System by connecting I-5 in Bakersfield to I-15 in Barstow. I-15 connects to I-40 in Barstow as well. This system provides a continuous east-west freeway route from Barstow to Wilmington, North Carolina on I-15, and a north-south connection from San Diego to Canada on I-40.

This CSMP includes the portion of Route 58 within Caltrans District 6, from the San Luis Obispo County line to the San Bernardino County line, the portion of the Route within Kern County.

MAP #2
ROUTE 58 IN KERN COUNTY

C. Corridor Team

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

1. PDT Local Partner Members:

Chumash Council of Bakersfield: Louise Appodaca, Arianne Chow-Garcia; Chumash Native Nation: Linda Silvas; City of Bakersfield: Martin Ortiz, Ryan Starbuck; City of Tehachapi:

David James; Kawaiisu Band of Kern Valley Indians: Cathy Day Paradise; Kawaiisu Tribe: Harold Williams; Kawaiisu Tribe of the Tejon Indian Reservation: David Robinson; Kern Council of Governments: Robert Ball, Raquel Pacheco, Peter Smith, Joe Stramaglia; Kern County: Brian Blacklock, Cheryl Casdorph, Patricia Ebel, Barry Nienke; Kern River Paiute Council: Arlene Apalatea, Patricia Henry; Kern Valley Indian Community: Bob Robinson; Kern Valley Indian Council: Julie Turner; Kudzubitcwanap Palap Tribe: Robert Gomez; Monache Intertribal Association: Carol Wermuth, Ron Wermuth; Santa Rosa Rancheria Tachi Yokuts Tribe: Ruben Barrios, Lalo Franco; Tejon Indian Tribe: Kathy Morgan; Tubatulabal of Kern County: Donna Begay; Tule River Indian Tribe: Larry Galupe, Ryan Garfield; White Blanket Paiute Rancheria: Josephine Stone.

2. Caltrans PDT Members:

Caltrans Central Region Environmental: Kirsten Helton, Kelly Hobbs, Mandy Marine; Caltrans District 6 Maintenance and Traffic Operations: Joel Aguilar, David Arias, Albert Lee, John Liu, Warren Lum, Bill Moses, Marco Sanchez, Dan Singh; Caltrans District 6 Planning: Christine Cox-Kovacevich, Steve Curti, Al Dias, Marta Frausto, David Madden, Steven McDonald, Pedro Ramirez, Hector Rangel, Vernie Ratnam, Sandra Scherr, Jeff Sorensen, Randy Treece, Lisa Zito; Caltrans District 6 Program Management: Curt Hatton, Richard Helgeson, Paul Pineda, Minerva Rodriguez; Caltrans District 6 Traffic Management Center: Benjamin Camarena; Caltrans District 9 Planning: Brandon Fitt, Brad Mettam.

II. CORRIDOR DESCRIPTION

A. Corridor Limits:

This CSMP covers the 143.86 miles of Route 58 within Kern County, from the San Luis Obispo line [Kern County (KER) Post Mile (PM) 0.0] to the San Bernardino County line (KER PM 143.86).

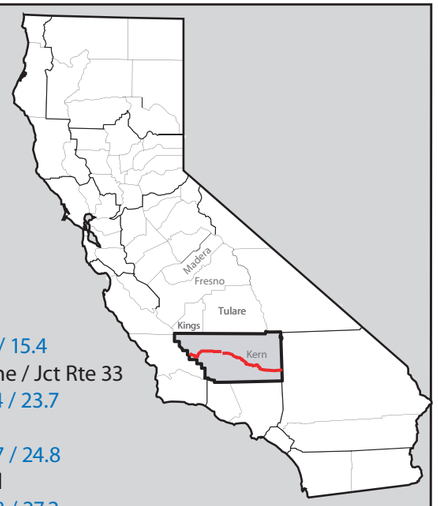
B. Corridor Function:

1. Description of the Corridor

The Segment Map, Page 5, shows the 22 segments of Route 58 in Kern County. Each segment is discussed in detail following the Segment Map and Summary Chart. Table 1, Summary Chart, Pages 6 – 7 and Table 2, Geometrics, Pages 8 – 9, present information on both the existing and predicted conditions on Route 58. Future travel conditions along the corridor were forecasted for 2015 and 2035 using the traffic models maintained by KCOG. The model incorporates predicted growth rates over a period of years, and provides future-year traffic numbers. The forecast provides future year Average Annual Daily Traffic (AADT, see definition Page 10), as well as a prediction for future Peak Hour (see definition Page 10). The forecasted traffic was then distributed among the current facility to forecast a Level of Service (LOS) with and without improvements. LOS is defined in Appendix B, Pages 72 & 73.

STATE ROUTE 58
TRANSPORTATION CONCEPT REPORT
SEGMENT MAP

MAP #3



Kern County

1. **Segment 1:** SR 58 PM 0.0 / 15.4
   San Luis Obispo County line / Jct Rte 33
2. **Segment 2:** SR 58 PM 15.4 / 23.7
   Jct Rte 33 / Lokern Rd
3. **Segment 3:** SR 58 PM 23.7 / 24.8
   Lokern Rd / Corn Camp Rd
4. **Segment 4:** SR 58 PM 24.8 / 27.2
   Corn Camp Rd / 0.1 Mi W of Buttonwillow
5. **Segment 5:** SR 58 PM 27.2 / 28.2
   0.1 Mi W of Buttonwillow / Leslie St
6. **Segment 6:** SR 58 PM 28.2 / 31.6
   Leslie St / Interstate 5/58 SEP
7. **Segment 7:** SR 58 PM 31.6/ 45.8
   Interstate 5/58 SEP / 0.3 Mi W of Allen Rd
8. **Segment 8:** SR 58 PM 45.8 / 51.8
   0.3 Mi W of Allen Rd / N Jct Rte 58/99/178 SEP
9. **Segment 9:** SR 58 PM R52.4 / R54.4
   S Jct Rte 58/99 SEP / Union Ave OC
10. **Segment 10:** SR 58 PM R54.4 / R55.4
    Union Ave OC / Cottonwood Rd UC
11. **Segment 11:** SR 58 PM R55.4 / R59.4
    Cottonwood Rd UC / Rte 58 / 184 SEP
12. **Segment 12:** SR 58 PM R59.4 / R60.5
    Rte 58 / 184 SEP / Vineland Rd OC
13. **Segment 13:** SR 58 PM R60.5 / R65.7
    Vineland Rd OC / Tower Line Rd OC
14. **Segment 14:** SR 58 PM R65.7 / 74.9
    Tower Line Rd OC / 0.7 Mi E of Bena Rd UC
15. **Segment 15:** SR 58 PM 74.9 / 77.1
    0.7 Mi E of Bena Rd UC / Caliente / Bealeville Rds
16. **Segment 16:** SR 58 PM 77.1 / R90.7
    Caliente / Bealeville Rds / Rte 202 / 58 SEP
17. **Segment 17:** SR 58 PM R90.7 / R95.2
    Rte 202 / 58 SEP / Tehachapi Rd OC
18. **Segment 18:** SR 58 PM R95.2 / 104.3
    Tehachapi Rd OC / 2.7 Mi E of Cameron Canyon Rd OC
19. **Segment 19:** SR 58 PM 104.3 / R107.6
    2.7 Mi E of Cameron Rd OC / 4 Mi W of N Jct Rte 14
20. **Segment 20:** SR 58 PM R107.6 / 118.0
    4 Mi W of N Jct Rte 14 / 4.2 Mi E of Airport Rd
21. **Segment 21:** SR 58 PM 118.0 / R129.0
    4.2 Mi E of Airport Rd / 1.4 Mi E of California City Blvd
22. **Segment 22:** SR 58 PM R129.0 / 143.9
    1.4 Mi E of California City Blvd / San Bernardino County line

LEGEND

- Indicates segments of Route 58
- 1 → Corresponds with the symbols below to provide segment information.

Jct = Junction
PM = Post Mile
Mi = Mile
SR = State Route

LEGEND

Existing Lanes

Planned or Programmed by 2035

Through and Auxiliary Lanes | Convert existing expressway to freeway | Add Through Lanes

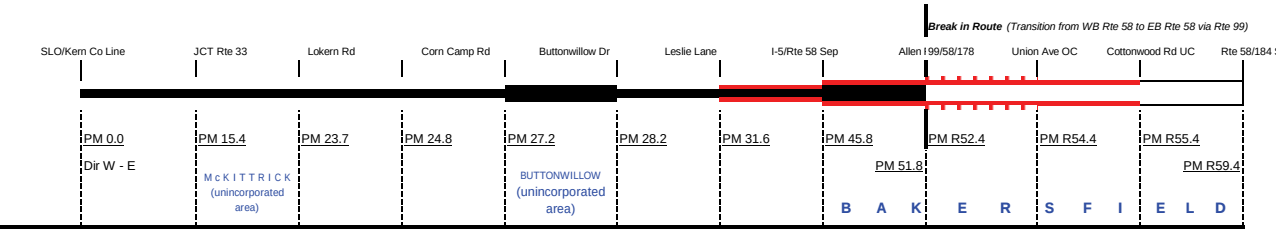
Conventional

Freeway

Number of Lanes: 2, 4, 6

* Lengths not to scale

Dir = Direction



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.

Ultimate Transportation Corridor (UTC): Is the typical ROW needed for the ultimate facility will be updated upon corridor plan lining by specific sections of highway.

LOS: The current (2009) LOS (level of service), along with the expected calculated LOS in 2020 and 2035. The 2035 Concept is the target LOS desired.

Design Exception: 6 lanes on 110-foot ROW.
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 2030 Concept improvement.
New Alignment: Westside Parkway and Centennial ***Proposed facility on existing alignment.**
Corridor projects will eventually connect State Route 99 with I-5. Being constructed in phases.

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).

% Trucks: shows the percentage of trucks for AADT and Peak Hour.

AADT: signifies Annual Average Daily Traffic.

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

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

^ Deficent, no project recommended.

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

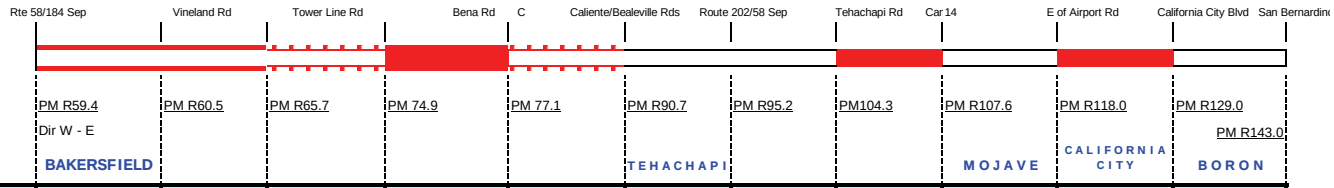
***** Concept Facility meets Concept LOS.

Facility: Shows the Existing Facility, the desired facility type (2035 Concept) by 2035- RTPA's and Caltrans, and the Ultimate Facility to preserve ROW and plan line beyond 2035.

SEGMENT	1	2	3	4	5	6	7	8	9	10	11
County / Route	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58
Description Begin	SAN LUIS OBISPO CO LINE	JCT ROUTE 33	LOKERN RD	CORN CAMP RD	BUTTON-WILLOW DR	LESLIE LANE	INTERSTATE 5/SR 58 SEP	0.3 MI W OF ALLEN RD	S JCT ROUTE 99/58/178	UNION AVE OC	COTTONWOOD RD UC
Description End	JCT ROUTE 33	LOKERN RD	CORN CAMP RD	BUTTON-WILLOW DR	LESLIE LANE	INTERSTATE 5/SR 58 SEP	0.3 MI W OF ALLEN RD	N JCT ROUTE 99/58/178	UNION AVE OC	COTTONWOOD RD UC	ROUTE 58/184 SEP
Postmile Limits Begin/End (PM)	0.0 / 15.4	15.4 / 23.7	23.7 / 24.8	24.8 / 27.2	27.2 / 28.2	28.2 / 31.6	31.6 / 45.8	45.8 / 51.8	R52.4 / R54.4	R54.4 / R55.4	R55.4 / R59.4
Length (MI)	15.4	7.6	1.1	2.4	1.0	3.4	14.2	6.0	2.0	1.0	4.0
Rural / Urban	Rural	Rural	Rural	Rural	Rural	Rural	Rural	Urban	Urban	Urban	Urban
Terrain	Mountainous	Rolling	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat	Flat
ROW: Range Existing (FT)	60 / 60	60 / 60	60 / 110	60 / 146	60 / 70	60 / 110	60 / 100	110 / 110	240 / 240	240 / 240	240 / 240
Median Range (FT)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	24 / 24	60 / 84	84 / 84	60 / 60
Shoulder Range (FT) - Treated	0 / 0	2 / 2	4 / 4	8 / 8	0 / 0	6 / 8	2 / 8	8 / 10	10 / 10	10 / 10	10 / 10
Lane Width (FT)	9	10	12	12	11	12	12	12	12	12	12
Ultimate ROW (FT)	60	110	110	240	240	146	134	134	240	240	240
Facility: Existing	2C	2C	2C	2C	4C	2C	2C	4C	4F	4F	6F
2035 Concept	2C(I)+	2C(I)+	2C(I)+	2C(I)++	4C	2C(I)++	4 - 6C	6 - 8C	6F + AUX	6F	6F
UTC (Route 58 on new alignment through segments 5, 6, 7, & 8)	2C(I)+	2C(I)+	2C(I)+	4C	4C	4F	6C	8F + AUX	8F + AUX	8F	8F
Facility Concept New Alignment 2035	***	***	***	***	4F	6F	6F	6F + AUX	***	***	***
Facility New Alignment UTC	***	***	***	***	8F	8F	8F	8F + AUX	***	***	***
Facility New Alignment Ultimate ROW	***	***	***	***	240+	240+	240+	240+	***	***	***
LOS: 2009	C	B	C	B	B	D	E	F	F	F	F
LOS: 2020	C	B	C	C	B	E	F	F	F	F	F
LOS: 2035	C	B	C	C	B	E	F	F	F	F	F
LOS: Concept 2035	C	C	C	C	C	C	D	D	D	D	D
Deficiency/Year Deficient	N/A	N/A	N/A	N/A	N/A	2009	2009	2009	2009	2009	2009
Project in STIP/RTP (Y/N)	No	No	No	No	No	No	Yes	Yes	Yes	No	Yes
LOS w/ Concept Improvement	N/A	N/A	N/A	N/A	N/A	N/A	C*	F	D*	F	N/A
Directional Split (Peak Hour)	52/48	52/48	57/43	60/40	59/41	56/44	55/45	53/47	52/48	54/46	54/46
AADT: 2009	350	800	7,900	8,000	5,600	10,500	23,000	56,000	81,000	78,000	63,000
AADT: 2020	450	970	9,670	9,790	7,200	13,200	27,500	67,000	105,100	96,600	78,900
AADT: 2035	580	1,130	11,450	11,590	8,800	15,900	31,900	77,700	130,700	115,500	95,300
Peak Hour: 2009	52	80	670	670	1,110	1,500	2,550	4,250	8,650	8,400	7,550
Peak Hour: 2020	70	100	820	820	1,400	1,900	3,000	5,100	10,500	9,800	9,500
Peak Hour: 2035	90	110	970	970	1,800	2,300	3,500	5,900	13,000	12,200	11,400
% Trucks: AADT	50%	50%	44%	40%	40%	37%	34%	27%	18%	18%	22%
% Trucks: Peak Hour	42%	42%	37%	35%	32%	30%	28%	7%	15%	15%	17%

LEGEND

Existing Lanes — Conventional
Planned or Programmed by 2035 — Freeway
Through and Auxiliary Lanes; Convert existing expressway to freeway; Add Through Lanes
Number of Lanes: 2, 4, 6
* Lengths not to scale
Dir = Direction



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) 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

Facility: Shows the Existing Facility, the desired facility type (2035 Concept) by 2035- RTPA's and Caltrans, and the Ultimate Facility to preserve ROW and plan line beyond 2035.

LOS: The current (2009) LOS (level of service), along with the expected calculated LOS in 2020 and 2035. The 2035 Concept is the target LOS desired.

Deficiency: Occurs when target LOS is degraded, i.e., LOS D worse than LOS C, with year of occurrence. STIP project identified along with LOS with improvement at a 2035 Concept.

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).

% Trucks: shows the percentage of trucks for AADT and Peak Hour.

AADT: signifies Annual Average Daily Traffic.

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

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

^ Deficent, no project recommended.

(I)+: 2-lane conventional highway improvements, turn lanes, signals, ***** Concept Facility meets Concept LOS.

99P: Median width 100 feet or greater, with or without variance

SEGMENT	12	13	14	15	16	17	18	19	20	21	22
County / Route	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58
Description Begin	ROUTE 58/184 SEP	VINELAND RD OC	TOWER LINE RD OC	0.7 MI E OF BENA RD UC	CALIENTE/ BEALEVILLE RDS	ROUTE 202/58 SEP	Tehachapi Blvd. OC	2.7 MI E OF CAMERON CYN RD	4 MI W OF N JCT ROUTE 14	4.2 MI E OF AIRPORT RD	1.4 MI E OF CA CITY BLVD
Description End	VINELAND RD OC	TOWER LINE RD OC	0.7 MI E OF BENA RD UC	CALIENTE/ BEALEVILLE RDS	ROUTE 202/58 SEP	Tehachapi Blvd. OC	2.7 MI E OF CAMERON CYN RD	4 MI W OF N JCT ROUTE 14	4.2 MI E OF AIRPORT RD	1.4 MI E OF CA CITY BLVD	SAN BERNARDINO CO LINE
Postmile Limits Begin/End (PM)	R59.4 / R60.5	R60.5 / R65.7	R65.7 / 74.9	74.9 / 77.1	77.1 / R90.7	R90.7 / R95.2	R95.2 / 104.3	104.3 / R107.6	R107.6 / R118.0	R118.0 / R129.0	R129.0 / R143.0
Length (MI)	1.1	5.2	9.2	2.2	13.6	4.5	9.1	3.3	10.4	11.0	14.9
Rural / Urban	Urban	Rural	Rural	Rural	Rural	Urban	Rural	Rural	Rural	Rural	Rural
Terrain	Flat	Flat	Mountainous	Mountainous	Mountainous	Rolling	Rolling	Flat	Flat	Flat	Flat
ROW: Range Existing (FT)	240 / 240	214 / 214	200 / 200	200 / 200	225 / 225	200 / 200	190.0 / 194.0	200 / 200	200 / 200	300 / 300	300 / 300
Median Range (FT)	60 / 70	70 / 70	16 / 36	16 / 22	16 / 22	46 / 46	10 / 46	10 / 22	12 / 22	14 / 99P	99P / 99P
Shoulder Range (FT) - Treated	10 / 10	10 / 10	10 / 10	10 / 10	10 / 10	10 / 10	4 / 10	4 / 8	4 / 8	8 / 10	8 / 10
Lane Width (FT)	12	10	12	12	12	12	12	12	12	12	12
Ultimate ROW (FT)	240	214	200	200	225	200	194	200	200	300	300
Facility: Existing	4F	4F	4F	4E	4F	4F	4F	4E	4F	4E	4F
2035 Concept	6F	6F	4F + AUX	6F + AUX	4F + AUX	4F + AUX	4F	4F	4F	4F	4F
UTC	8F	6F	6F + AUX	6F + AUX	6F + AUX	6F + AUX	6F	6F	6F	6F	6F
LOS: 2009	B	B	B	C	B	B	B	B	B	B	B
LOS: 2020	C	C	C	C	C	B	B	B	B	B	B
LOS: 2035	C	C	C	D	E	C	C	C	C	C	C
LOS: Concept 2035	D	C	C	C	C	C	C	C	C	C	C
Deficiency/Year Deficient	2020	2020	2009	2020	2009	2020	2035	N/A	2009	N/A	N/A
Project in STIP/RTP (Y/N)	No	No	Yes	Yes	Yes	No	No	No	No	Yes	No
LOS W/ Concept Improvement	B*	B*	B*	C*	C*	N/A	N/A	B*	N/A	B*	N/A
Directional Split (Peak Hour)	54/46	54/46	54/46	54/46	54/46	54/46	54/46	54/46	57/43	57/43	57/43
AADT: 2009	28,500	22,800	21,500	23,000	23,000	22,500	21,000	20,500	20,500	17,000	15,350
AADT: 2020	34,100	28,600	28,900	32,400	33,900	33,200	29,900	29,200	28,900	23,400	23,500
AADT: 2035	39,600	34,500	37,000	43,100	47,000	46,000	40,200	39,300	38,500	30,500	33,400
Peak Hour: 2009	2,900	2,500	2,100	2,500	2,400	1,900	1,700	1,700	1,800	1,800	1,600
Peak Hour: 2020	3,500	3,100	2,800	3,500	3,500	2,800	2,400	2,400	2,500	2,500	2,400
Peak Hour: 2035	4,000	3,800	3,600	4,700	4,900	3,900	3,300	3,300	3,400	3,200	3,500
% Trucks: AADT	33%	33%	33%	39%	30%	39%	39%	39%	38%	40%	40%
% Trucks: Peak Hour	25%	25%	25%	30%	30%	30%	30%	30%	30%	30%	30%

LEGEND

Existing Lanes — Conventional

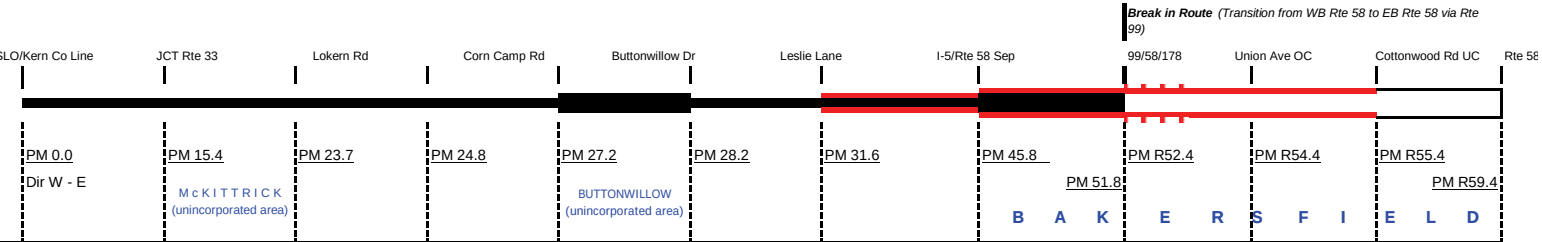
Planned or Programmed by 2035 — Freeway

Through and Auxiliary — Convert existing expressway to freeway — Add Through Lanes

Number of Lanes: 2, 4, 6

* Lengths not to scale

Dir = Direction



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): State routes, outside urbanized areas, providing access to economic and recreational centers.

TRUCK NETWORK, STAA: (NN=National Network, TA=Terminal Access, CL= California Legal, R= Special Restrictions, or A=Advisory)

Scenic (Yes: Officially Designated, Eligible or No)

ICES (Intermodal Corridor of Economic Significance): National Highway System Corridors that link intermodal facilites directly, conveniently and efficiently to domestic 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	10	11
County / Route	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58
Description Begin	SAN LUIS OBISPO CO LINE	JCT ROUTE 33	LOKERN RD	CORN CAMP RD	BUTTON-WILLOW DR	LESLIE LANE	INTERSTATE 5/SR 58 SEP	0.3 MI W OF ALLEN RD	S JCT ROUTE 99/58/178	UNION AVE OC	COTTONWOOD RD UC
Description End	JCT ROUTE 33	LOKERN RD	CORN CAMP RD	BUTTON-WILLOW DR	LESLIE LANE	INTERSTATE 5/SR 58 SEP	0.3 MI W OF ALLEN RD	N JCT ROUTE 99/58/178	UNION AVE OC	COTTONWOOD RD UC	ROUTE 58/184 SEP
Postmile Limits Begin/End (PM)	0.0 / 15.4	15.4 / 23.7	23.7 / 24.8	24.8 / 27.2	27.2 / 28.2	28.2 / 31.6	31.6 / 45.8	45.8 / 51.8	R52.4 / R54.4	R54.4 / R55.5	R55.4 / R59.4
Length (MI)	15.4	7.6	1.1	2.4	1.0	3.4	14.2	6.0	2.0	1.0	4.0
Functional Classification	Major Arterial	Major Arterial	Major Arterial	Major Arterial	Major Arterial	Major Arterial	Major Arterial	Principal Arterial (P1M)	Principal Arterial (P1M)	Principal Arterial (P1P)	Principal Arterial (P1P)
National Highway System (NHS) (Y/N)	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Freeway/ Expressway Sys	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Regionally Significant (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
STRAHNET (Y/N)	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Lifeline (Y/N)	No	No	No	No	No	No	No	No	No	No	No
IRRS (Yes: HE=High Emphasis, F=Focus, G=Gateway or No)	No	No	No	No	No	No	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G
TRUCK NETWORK, STAA	A	CL	CL	CL	CL	CL	CL, TA	TA	NN	NN	NN
Scenic	No	No	No	No	No	No	No	No	No	No	No
ICES (Y/N)	No	No	No	No	No	No	No	No	Yes	Yes	Yes
General Plan/RTP LOS Standard	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Metro. Bakersfield Gen. Plan LOS C; Kern Co. General Plan D	Metropolitan Bakersfield General Plan Boundary LOS C	Metropolitan Bakersfield General Plan Boundary LOS C	Metropolitan Bakersfield General Plan Boundary LOS C	Metropolitan Bakersfield General Plan Boundary LOS C
General Plan/ RTP Classification	Expressway	Expressway	Expressway	Expressway	Expressway	Expressway	Freeway	Freeway	Freeway	Freeway	Freeway
Passing Lanes (Y/N)	No	No	No	No	No	No	No	No	No	No	No
Transit within 1/4 mile (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bikes allowed (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No

LEGEND

Existing Lanes — Conventional

Planned or Programmed by 2035 — Freeway

Through and Auxiliary | Convert existing expressway to freeway | Add Through Lanes | Number of Lanes

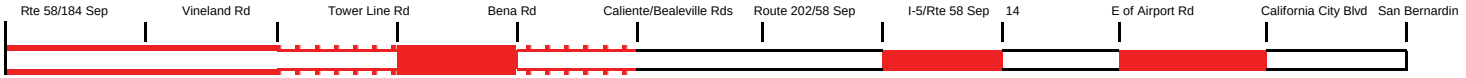
2

4

6

* Lengths not to scale

Dir = Direction



		PM R59.4 Dir W - E BAKERSFIELD	PM R60.5	PM R65.7	PM 74.9	PM 77.1	PM R90.7 TEHACHAPI	PM R95.2	PM104.3	PM R107.6 MOJAVE	PM R118.0 CALIFORNIA CITY	PM R129.0 PM R143.0 BORON
Functional Classification: A process by which streets and highways are grouped into or classification systems.	**SEGMENT**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
	County / Route	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58	KERN / 58
Freeway/Expressway System: The Statewide system of highways declared to be essential to the future development of California.	Description Begin	ROUTE 58/184 SEP	VINELAND RD OC	TOWER LINE RD OC	0.7 MI E OF BENA RD UC	CALIENTE/ BEALEVILLE RDS	ROUTE 202/58 SEP	Tehachapi Blvd. OC	2.7 MI E OF CAMERON CYN RD	4 MI W OF N JCT ROUTE 14	4.2 MI E OF AIRPORT RD	1.4 MI E OF CA CITY BLVD
	Description End	VINELAND RD OC	TOWER LINE RD OC	0.7 MI E OF BENA RD UC	CALIENTE/ BEALEVILLE RDS	ROUTE 202/58 SEP	Tehachapi Blvd. OC	2.7 MI E OF CAMERON CYN RD	4 MI W OF N JCT ROUTE 14	4.2 MI E OF AIRPORT RD	1.4 MI E OF CA CITY BLVD	SAN BERNARDINO CO LINE
Regionally Significant: Serves regional transportation needs including at a minimum all principal arterial highways and all fixed guideway transit facilities.	Postmile Limits Begin/End (PM)	R59.4 / R60.5	R60.5 / R65.7	R65.7 / 74.9	74.9 / 77.1	77.1 / R90.7	R90.7 / R95.2	R95.2 / 104.3	104.3 / R107.6	R107.6 / R118.0	R118.0 / R129.0	R129.0 / R143.0
	Length (MI)	1.1	5.2	9.2	2.2	13.6	4.5	9.1	3.3	10.4	11.0	14.9
	Functional Classification	Principal Arterial (P1P)	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial (P1P)	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial	Principal Arterial
STRAHNET: A highway that provides defense access, continuity, and emergency capabilities for movements of personnel and equipment in both peace and war.	National Highway System (NHS) (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Freeway/ Expressway Sys	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Regionally Significant (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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.	STRAHNET (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Lifeline (Y/N)	No	No	No	No	No	No	No	No	No	No	No
IRRS: (Interregional Road System): State routes, outside urbanized areas, providing access to economic and recreational centers.	IRRS (Yes: HE= High Emphasis, F= Focus, G=Gateway or No)	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G	HE, F, G
TRUCK NETWORK, STAA: (NN=National Network, TA=Terminal Access, CL= California Legal, R= Special Restrictions, or A=Advisory)	TRUCK NETWORK, STAA	NN	NN	NN	NN	NN	NN	NN	NN	NN	NN	NN
	Scenic	No	No	No	No	No	No	No	No	No	Eligible	Eligible
Scenic (Yes: Officially Designated, Eligible or No)	ICES (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ICES (Intermodal Corridor of Economic Significance): National Highway System Corridors that link intermodal facilites directly, conveniently and efficiently to domestic and international markets.	General Plan/RTP LOS Standard	Metropolitan Bakersfield General Plan Boundary LOS C	Metropolitan Bakersfield General Plan Boundary LOS C	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System	Kern Co LOS D for CMP & RTP Regionally Significant System
	General Plan/ RTP Classification	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway
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.	Passing Lanes (Y/N)	No	No	No	No	No	No	No	No	No	No	No
	Transit within 1/4 mile (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Bikes allowed (Y/N)	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes

a) AADT: Average Annual 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. In some cases, it is necessary to perform counts manually 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.

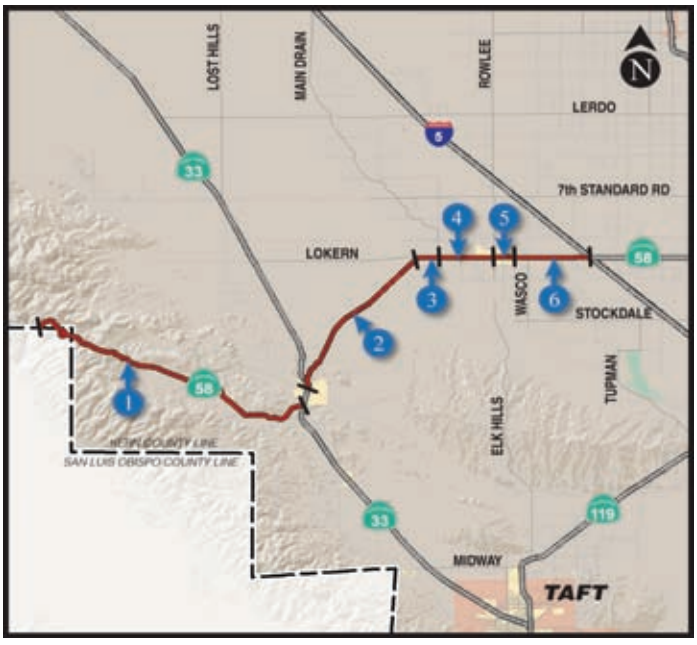
b) Peak Hour: For purposes of this document, "peak hour" traffic is calculated as ten percent of the AADT. This value is useful to in estimating the amount of congestion experienced, and shows how near to capacity the highway is operating. Unless otherwise indicated, peak hour values indicate the volume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

a) Segments 1-6: San Luis Obispo County line to the I-5/Route 58 Separation

Begins: At San Luis Obispo County line.

Ends: At the I-5/Route 58 Separation in Kern County.

Land Use: Along with the rural towns of Buttonwillow and McKittrick, the land use consists of rangeland, agricultural lands, and agri-business. The highway crosses the California Aqueduct at PM 23.0 and the Buena Vista Canal at PM 24.0. Oil wells, along with related storage tanks and facilities, exist alongside the route. Commercial activity exists at the I-5 interchange.



Facility: With the exception of the section in Buttonwillow (Segment 5) which is a 4-lane conventional highway, Route 58 (Segments 1-6) is mainly a 2-lane conventional highway. Lane widths can be narrow, varying from 9-12 feet with only a striped median. Paved shoulder widths vary from 0 to 8 feet.

Interchanges and other State highway connections: There is an interchange connection with I-5 and an intersection with

Route 33. For less than a mile, Route 58 coincides with Route 33 through the town of McKittrick.

Environmental/Historical Resources: There are restrictions to protect blunt-nosed leopard lizards, San Joaquin kit foxes, the San Joaquin antelope ground squirrels, Tipton kangaroo rats, giant kangaroo rats, Swainson's hawk, Kern mallow, California jewel-flower, and Hoover's woolly star. These restrictions enact mitigation agreements between Caltrans, Department of Fish and Game, and the U.S. Fish and Wildlife Service. Other environmental concerns include water issues, crude petroleum close to the surface, and the terrain itself, along with development along the highway in Buttonwillow and at I-5. Possible issues would include the potential historic resources of the aqueduct and canals.

b) Segments 7-8: I-5/Route 58 Separation to North Junction Route 58/99/178

Begins: At the I-5/Route 58 Separation.

Ends: At the North Junction Route 58/99/178 Separation.

Land Use: Segments 7-8 traverse agricultural land with a combination of residences, commercial businesses, and industrial facilities. Along Rosedale Highway in the urban areas of Bakersfield, west of Route 99, are mixed land uses consisting of residential and commercial development. In recent years this area has experienced rapid growth in the commercial district and especially in new residential land use. Oil fields, oil wells, and related refineries are scattered throughout this stretch of highway.

Facility: The highway is mostly a 2-lane conventional highway with the exception of urban Bakersfield, where it is a 4-lane conventional highway.

Interchanges and other State highway connections: There is an intersection connection (west to east) with Route 43. Route 58 coincides with Route 178 to the east and also connects via an interchange with Route 99.

Environmental/Historical Resources: There are restrictions to protect the blunt-nosed leopard lizard, San Joaquin kit fox, San Joaquin antelope ground squirrel, Tipton kangaroo rat, Buena

Vista Lake shrew, Swainson's hawk, California jewel-flower, and Hoover's woolly star plants.

The foundation for improving the transportation network in Metropolitan Bakersfield is the **Bakersfield Beltway System.** This system of freeways and expressways consists of six roadways: 1) Route 58 Connector; 2) Westside Parkway; 3) I-5 Connector; 4) West Beltway; 5) South Beltway; and 6) North Beltway. Together, the first three roadways constitute the **Centennial Corridor**. Please see Map #4, Page 13 for an illustration of the Bakersfield Beltway System.

New Alignment: A new alignment has been proposed for a portion of Route 58 (See Map #5, Centennial Corridor, on Page 14). When fully constructed, the new alignment would establish an east-west freeway connection from Route 99 to I-5. The "Westside Parkway" project is on this new alignment, and extends from Truxtun Avenue to Heath Road. The Mohawk Street to Allen Road section of the Westside Parkway project (Phase 2) is in construction now. Phase 2 includes a six-lane freeway from Mohawk Street to Allen Road with full interchanges at Mohawk Street, Coffee Road, and Calloway Drive. Construction also includes a bridge over the Parkway at Jewetta Avenue, a temporary signalized intersection at Allen Road, and sound walls adjacent to residential areas.

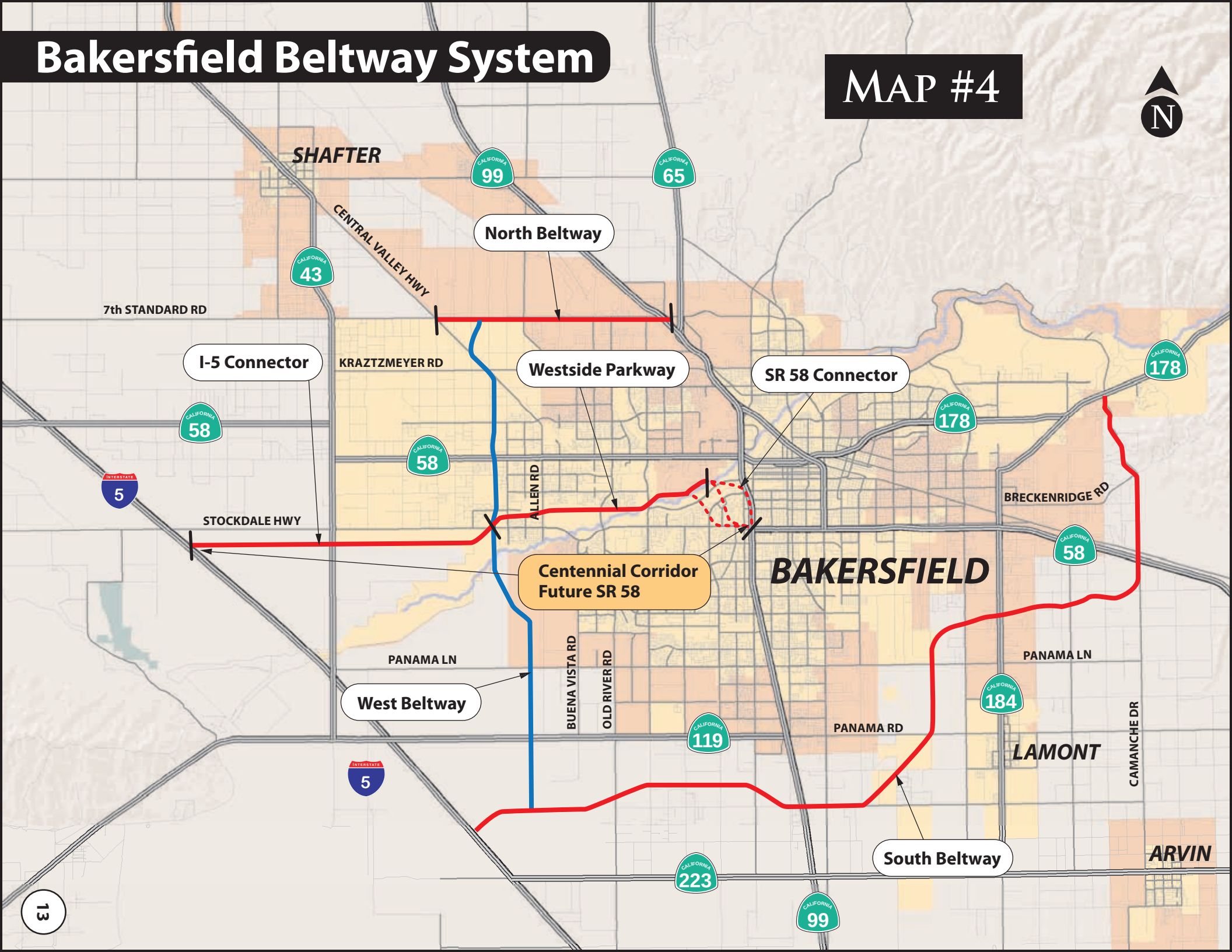
The sections from Mohawk Street east to Truxtun Avenue and from Allen Road west to Stockdale/Heath will be built as funds become available.

There is currently an Environmental Impact Report/Environmental Impact Statement (EIR/EIS) underway. For purposes of this EIR/EIS, the project has been divided into three segments:

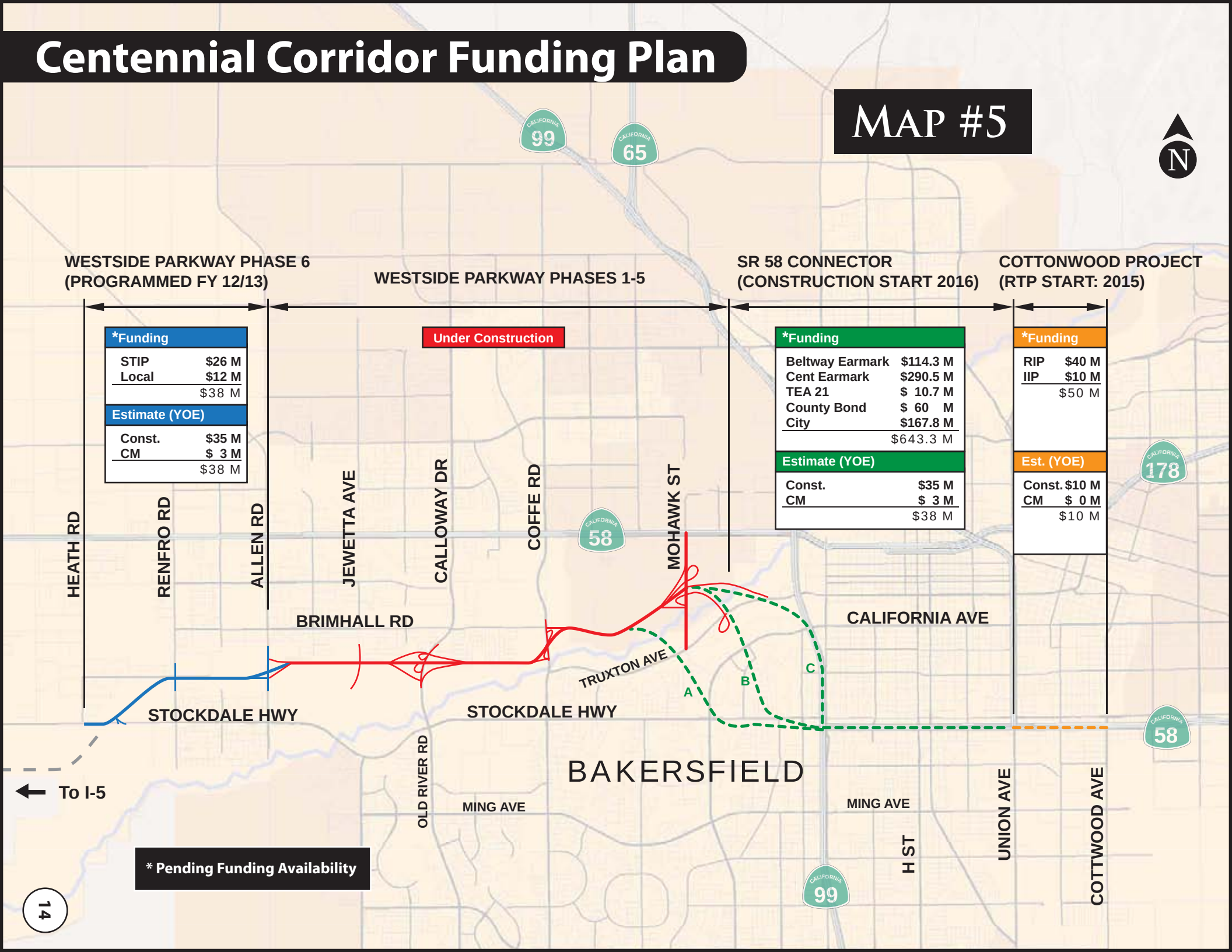
1. Eastern Connection, which would connect the Westside Parkway to the existing Route 58 Freeway;
2. Westside Parkway, which extends from Heath Road to Truxtun Avenue; and,
3. Western Segment, which extends from I-5 to Heath Road.

The Western Segment and the Westside Parkway portions of the project have been addressed in previous environmental documents. This EIR/EIS will incorporate by reference these previous two documents. New information will be provided to the extent necessary to ensure the environmental record is reflective of the current conditions. Construction of the facility would be phased. The timeframe for construction of the Western Segment is unknown and is not anticipated in the near future. Construction of Phase 1 of the Westside Parkway began in the summer of 2009 is expected to open to traffic in the spring of 2012.

The Eastern Connection has not been subject to previous environmental studies. Various alternatives to connect Route 58 to the Westside Parkway are under consideration, including options west of Route 99, east of Route 99, and parallel to Route 99 as well as a


Bakersfield Beltway System
MAP #4
N
SHAFTER
CENTRAL VALLEY HWY
North Beltway
7th STANDARD RD
I-5 Connector
KRAZTZMEYER RD
Westside Parkway
SR 58 Connector
STOCKDALE HWY
ALLEN RD
BRECKENRIDGE RD
Centennial Corridor
Future SR 58
BAKERSFIELD
PANAMA LN
West Beltway
BUENA VISTA RD
OLD RIVER RD
PANAMA RD
LAMONT
CAMANCHE DR
South Beltway
ARVIN
99
65
43
58
5
178
184
119
223
13

Centennial Corridor Funding Plan



"No Build" alternative and a transportation systems management alternative. The Department will continue to screen the alternatives identified through the scoping process and only carry forward those alternatives that are considered viable for evaluation in the EIR/EIS.

KCOG, the City of Bakersfield, the County of Kern, and Caltrans are all partners in the Thomas Road Improvement Program (TRIP).

Relinquishment: Once the new alignment of Route 58 has been constructed, portions of the existing route will be relinquished to the City of Bakersfield. Once relinquished, these sections will become City streets. As with the construction of the new alignment, the relinquishment will be phased. The current phasing plan is:

- Phase 1 from Allen to Mohawk: Estimated relinquishment is December 2011.
- Phase 2 from Route 43 to Allen: Estimated relinquishment is 2014 – 2015, with completion of the West Side Parkway.
- Phase 3 from Mohawk to Route 99: Estimated relinquishment is for 2018, with the completion of the Centennial Corridor (from the Route 99/Route 58 junction to the West Side Parkway).

c) Segments 9-12: South Junction Route 58/99 Separation to Vineland Road Overcrossing

Begins: At the North Junction Route 58/99 Separation (via Route 99 and the South Junction Route 58/99 Separation).

Ends: At the Vineland Road Overcrossing.

Land Use: Segments 9-12 consist of mixed land uses in Bakersfield. These include residential, commercial, and industrial facilities.

Facility: There is a freeway break from the Route 58/99/178 interchange south along Route 99 for approximately two miles. The route then continues east from the south junction Route 58/99 Separation. The segment starts as a 4-lane freeway and expands into a 6-lane freeway

near the Cottonwood Road overcrossing. The 6-lane freeway ends near the Route 184 interchange and continues as a 4 -lane freeway.

Interchanges and other State highway connections: Route 58 coincides with Route 178, which proceeds eastward. It also merges with Route 99, continuing south to the freeway-to-freeway connector with eastbound Route 58, which is the south junction to Route 99. Other interchange connections (west to east) are with Routes 204 and 184.

Environmental/Historical Resources: There are restrictions to protect the San Joaquin kit fox. Environmental issues related to the future new alignment would include traffic noise, aesthetic impacts, and right-of-way (ROW) acquisition concerns in the urbanized area of Bakersfield. Traffic noise and aesthetic impacts are concerns with the current alignment.

d) Segments 13-17: Vineland Road Overcrossing to Tehachapi Boulevard Overcrossing

Begins: Vineland Road Overcrossing near the east Bakersfield city boundary.

Ends: Tehachapi Boulevard Overcrossing near the east Tehachapi city boundary.

Land Use: Segments 13-17 traverse agricultural land. Level agriculture land extends from Bakersfield to General Beale Road, transitioning to rural mountainous terrain. Land uses include mining and ranching.

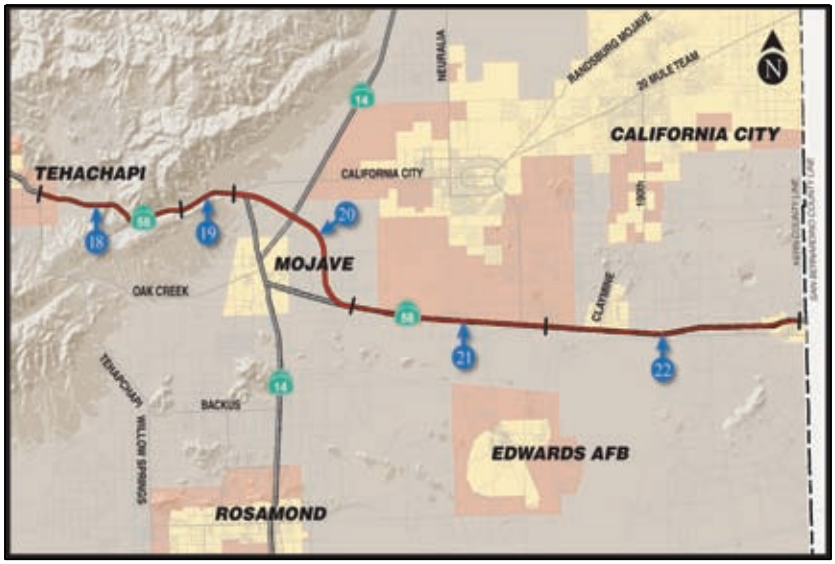
Facility: From the Vineland Road Overcrossing near the east Bakersfield city boundary to the Tehachapi Boulevard Overcrossing near the east Tehachapi city boundary, most of the highway is a 4-lane freeway, except for a short section along Route 223 where a 4-lane expressway exists. Kern Council of Governments is proposing a feasibility study for an interchange at this location.

Interchanges and other State highway connections: Interchanges (west to east) occur at Route 202 and an at-grade connection on Route 223. Route 202 traverses through the southern area of Tehachapi. Route 223 extends to Arvin several miles south.

Environmental/Historical Resources: There are

restrictions to protect the San Joaquin kit fox, Swainson's hawk, Tehachapi slender salamander, California jewel-flower, and Bakersfield cactus. Aesthetic impacts are a concern in urban Bakersfield.

e) Segments 18-22: Tehachapi Boulevard Overcrossing to the San Bernardino County line



Begins: Tehachapi Boulevard Overcrossing near the east Tehachapi city boundary.

Ends: At the San Bernardino County line near Boron.

Land Use: The route travels through flat desert territory, transitioning from rolling hills. The terrain is mountainous near Tehachapi, traverses through desert territory and ends approximately one mile east of Boron. Other land uses include mining, wind farms, military installations, and desert recreation.

Facility: From the Tehachapi Boulevard Overcrossing to the San Bernardino County line near Boron, Route 58 begins as a 4-lane freeway for approximately twenty miles, becomes a 4-lane expressway for nearly ten miles, then reverts back to a 4-lane freeway for over sixteen miles.

Interchanges and other State highway connection(s): The Mojave Bypass, which is not to be confused with the segment of Route 15 between its north junction with Route 215 near Devore and the California/Nevada State line Mountain Pass Summit, begins on existing Route 58 five miles northwest of the community of Mojave. The highway crosses Route 14 northeast of Mojave and reconnects with business 58.

Environmental/Historical Resources: Environmental concerns include protecting the Desert Tortoise and the Mojave ground squirrel.

C. Population Characteristics

Communities in California are undergoing rapid growth, and communities in Kern County are no exception to this growth trend. Kern County was among the top six fastest growing

counties in California in 2008-09. The California Department of Finance estimated that population in the Kern region increased at a compounded annual rate of 2.7 percent between April 2000 and January 2005, one percentage point higher than the rate for California as a whole (1.7 percent). About one in every 50 people in California lives in Kern County, making Kern now California's thirteenth most populated county. Over the past decade, growth has concentrated in metropolitan Bakersfield and the communities of Rosamond, and the greater

TABLE 3
POPULATION CHARACTERISTICS, KERN COUNTY

	Census 2000	Forecast 2010	Forecast 2020	Forecast 2030	Forecast 2035	Forecast Growth 2010–2035	
						Rate	Increase
Kern County	661,653	845,600	1,010,800	1,208,200	1,321,000	1.8%	19,016
Metro Bakersfield	409,800	533,461	640,536	764,941	848,487	1.8%	12,601
Arvin	12,956	17,100	22,800	29,100	33,400	2.6%	652
Bakersfield	246,899	341,700	437,800	541,600	609,600	2.3%	10,716
California City	8,385	15,300	20,600	26,700	30,700	2.7%	616
Delano	39,499	55,100	68,000	81,400	90,000	1.9%	1,396
Maricopa	1,111	1,150	1,250	1,340	1,400	0.8%	10
McFarland	9,835	13,800	17,000	20,400	22,500	1.9%	348
Ridgecrest	24,927	28,700	32,900	37,000	39,400	1.3%	428
Shafter	12,731	16,300	22,700	30,300	35,500	3.1%	768
Taft	8,811	9,300	11,600	14,000	15,500	2.0%	248
Tehachapi	11,125	14,000	18,200	22,800	25,800	2.4%	472
Wasco	21,263	26,000	33,100	40,700	45,700	2.2%	788

Tehachapi area. Other communities, such as California City, Delano, McFarland, Taft, and Wasco have also experienced significant population growth, mainly due to prison construction. Delano's population has surpassed that of Ridgecrest, making it the second largest city in Kern County.

In the past, Kern County has experienced significant growth due to "spillover" from southern California; Los Angeles commuters moving into Kern County. During the peak of the housing boom, Kern County posted a growth rate greater than 3 percent. In 2006, the City of Bakersfield estimated that 2 out of every 5 new houses in the Southern Metropolitan area were purchased by Southern Californians, accounting for as much as 20 percent of new housing purchases in this area. This influx from southern California is expected to decline. Interest rates, housing prices, fuel costs, and traffic congestion continue to rise, making Kern less attractive to commuters from the Los Angeles area. New developments in Northern Los Angeles County, such as the "Centennial Master Planned New Town" are expected to draw some of the commuters from the Southland. This is a large mixed-use development on the Tejon Ranch that will include 30,000 housing units. This may siphon some of the anticipated growth from southern Kern in the near term. There is a possibility, however, that this housing development will have growth-inducing effects, and could increase traffic entering Kern County.

The General Plans prepared by the local jurisdictions within the Kern region have designated sufficient land to accommodate anticipated growth, assuming water and urban services are available; however increases in population will likely lead to increased traffic. Creative solutions to alleviate the anticipated traffic congestion will need to be explored. One possible solution is the consideration of where to locate various land uses, the impacts those uses will have to transportation systems, and methods to interconnect various modes of travel to facilitate the efficient movement of people and goods. The anticipated growth necessitates a new approach to managing the corridor. Caltrans will work with our local partners to identify potential innovative solutions.

D. Transportation Alternatives

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 KCOG's 2011 Regional Transportation Plan (RTP).

Implementation of the 2011 RTP 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, provision of 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.

In addition to concepts presented in KCOG's RTP, we have included many ideas found in S*mart Mobility 2010: A Call to Action for the New Decade,* mentioned earlier in this document.

1. Goods Movement

Improving the movement of goods in California is a high priority. The State's economy and quality of life depend upon the efficient, safe delivery of goods to and from our ports and borders. 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. Improving goods movement infrastructure is also pivotal to relieve congestion on freeways and increase mobility for everyone in California.

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.

a) Freight Rail

Trucking is the most commonly used mode for transporting freight in the San Joaquin Valley, providing flexibility, timely delivery, and efficiency, with only approximately 25% of shippers currently using rail. Rail is limited by travel speed

and by fixed routes that offer fewer choices. Rail, however, 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.

San Joaquin Valley food processors continue to show interest in rail as a preferred shipping mode for bulk products. 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.

Two major rail companies, Union Pacific (UP) and Burlington Northern Santa Fe (BNSF), serve Kern County. 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. The San Joaquin Valley Railroad operates regional freight service between Tulare, Fresno, and Kern Counties on leased Union Pacific branch lines, providing a connection to mainline carriers for outlying areas throughout the Valley. They primarily move freight comprised of agricultural products.

i. Tehachapi Trade Corridor Improvements

Proposition 1B, the "Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006," was approved by voters on November 7, 2006. The Bond provided $2 billion to the Trade Corridors Improvement Fund (TCIF) for infrastructure improvements along corridors that have a high volume of freight movement. One project that met the criteria of the TCIF was the Tehachapi Trade Corridor Improvements project. The Tehachapi Trade Corridor connects northern California with the major transcontinental UP and BNSF routes in southern California. The Corridor is a 68-mile stretch of primarily single-track railroad over the Tehachapi Mountains between Bakersfield and the Mojave. This route has a high volume of traffic, with many tunnels, sharp curves, and grades ranging from 2 to 2.5 percent. Approximately 40 trains per day operate through the Corridor.

The project will result in seven miles of new track, three new universal crossovers, modification or elimination of the tunnels, and 21 miles of

upgraded signal systems. It is anticipated to improve current rail freight movements by 25 percent while removing 1,700 trucks per day from parallel highways. This alternative would greatly increase the capacity of the corridor while reducing truck emissions by as much as tenfold. The estimated cost of the project is $111.4 million. A portion will be funded by TCIF with BNSF funding the remainder. Construction is scheduled to start early in 2012.

Regional goods movement is characterized by shipments to and from the 8-county Central Valley region to out-of-state destinations. There is currently no intra-state rail travel from the San Joaquin Valley. Goods currently traveling between the valley and southern California or the Bay Area are shipped almost entirely by truck as the national rail companies are unwilling to ship cargo less than 700 miles. This is especially true of containerized freight. The expansion of short haul rail could play a role in preserving rail infrastructure not only for intraregional goods movement but also for future passenger service. Hauling un-subsidized freight on conventional passenger corridors could help to off-set the cost of subsidized passenger service.

It is expected that rail shipment volumes in the Valley will increase, although market share may continue to decline as demand for shorter-haul service increases and the quality of rail intermodal facilities improve. KCOG has indicated that preservation of rail facilities is a high priority, along with exploring alternative strategies such as public/private partnerships and leveraging passenger rail service to preserve the short haul system.

b) Rail Intermodal Facilities

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.

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 freight service is an emerging element of freight movement in the San Joaquin Valley. Air carriers depend heavily on truck transportation for the delivery of the goods they transport. Future expansion of air freight as a goods movement strategy will require consideration of efficient access for truck transport via local roads, State highways, and freeways.

Air Freight cargo is of increasing economic significance. Major airports in both Southern and Northern California are experiencing significant air cargo constraints that include limitations on both facilities and operations capacity, thereby presenting an opportunity for the Central Valley. At this time, the most likely candidate to take advantage of this opportunity is the Fresno-Yosemite International Airport in the City of Fresno, considerably north of the Route 58 corridor. While air freight has not played a large role in the Kern area, it is feasible that air freight carriers might consider Kern County a favorable alternative location in the future as the Los Angeles basin continues to grow and operations at Meadows Field expand.

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 take place in close proximity or at the same site. Such facilities function as inland sorting and depository center for ocean containers transported to the inland port via truck or rail. These inland ports are of great interest given their potential ability to reduce highway congestion around ports, 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. It is essential that these facilities accommodate easy access for both rail and trucks.

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 north of Route 58, 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 major freeways. This presents a number of benefits to shippers, including direct transfer from ship to rail. While this facility is north of Route 58, improvement in strategies that have the potential to reduce some truck trips through Kern County could benefit the Route 58 corridor as well.

e) Trucking

Route 58 is part of the Strategic Highway Corridor Network (STRAHNET) between Route 99 and I-15. It has been designated for oversized trucks under the Surface Transportation Assistance Act of 1982 (STAA) from I-5 in Kern County to 1-15 near the City of Barstow. It is also included as a High Emphasis, Focus route under the Interregional Road System (IRRS) and is part of the National Highway System from the I-5/Route 58 separation in Kern County to the I-15 junction in Barstow.

Route 58 is a critical east/west truck corridor, with a heavy emphasis on goods movement. While I-5 and Route 99 are the major north – south trucking corridors in the San Joaquin Valley, Route 58 experiences significant volumes of heavy trucks. The transport of various types of commodity by truck connects the San Joaquin Valley to the rest of the state, with shipments to and from southern California and the Bay Area constituting the greatest percentage of the total tonnage (18 and 14 percent of the total, respectively).

In 2000, the counties of the San Joaquin Valley, in conjunction with Caltrans, hired a consulting firm to conduct the "San Joaquin Valley Goods Movement Study." This study found that trucking is the dominant mode for moving freight within the Valley, while rail accounted for 11% of the total tonnage.

San Bernardino Associated Governments (SANBAG), in association with KCOG and Caltrans, commissioned the "SR-58 Origin and Destination Truck Study." The objective of the study was to gain statistical information on the origin and destination of trucks traveling on Route 58 between San Bernardino and Kern Counties and to better understand the types of cargo being transported by the trucks. Truck traffic along the Route 58 Corridor is generally heaviest near the Route 99 Interchanges in Bakersfield. Between Route 99 and I-15, truck traffic makes up a relatively large percentage of total traffic. Vehicle classification counts show truck percentages ranging between 30% and 40%, depending on the segment. The study surveyed the different types of trucks, determining that the majority of trucks (86%) are the 5-axle double unit type.

Forecasted growth along these corridors is expected to increase dramatically over the next several decades. Alternatives to accommodate the anticipated growth, such as promoting the linkage of trucking facilities to rail and airports and the location of compatible land uses to such facilities, should be explored. Decision-making for

such alternatives lies with our local partners, but Caltrans has an interest in the implementation of these alternatives.

Caltrans and our local transportation partners will need to give special attention to Route 58 and other interregional routes to ensure that they remain in serviceable condition and that major reconstruction costs are minimized. Caltrans is working on developing the Statewide Freight Model. This model will help Caltrans, the Air Resources Board, and local partner agencies better understand freight movement in California and its impacts on highway infrastructure, transportation networks, highway safety, energy use, and emissions. Expected completion date is December 2012.

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 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.

a) 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 the basic service. Capital grants and support for station and track improvements (including signaling), locomotives and cars, and connecting Amtrak bus service have been provided. 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 *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 *San Joaquins* runs north-south, linking Bakersfield and the Bay Area with stops in 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 Las Vegas. When disruptions to train service occur, arrangements may be made to provide alternative accessible accommodations via motorcoach or other means of transportation.

The *San Joaquins* is the fourth busiest route in the Amtrak national system, and operates six times in each direction, 365 days per year. At the present time, four round trips daily operate between the Bay Area and Bakersfield, and two round trips operate directly between Sacramento (no bus to Stockton) and Bakersfield. Ridership in fiscal year 2003 – 2004 was over 750,000. Adding additional trains to the existing *San Joaquins* line has been considered.

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.

b) 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. Stretching initially from Anaheim/Los Angeles through the Central Valley to San Francisco, and later to Sacramento and San Diego, the system is capable of reaching speeds of 220 miles per hour.

The California high-speed train will operate primarily on exclusive tracks, although some portions of the route will be shared with other existing passenger rail operations. Extensive portions of the system will lie within, or adjacent to, existing rail or highway right-of-way (rather than on a new alignment) to reduce potential environmental impacts and minimize land acquisition.

A bond measure to fund at least a portion of the High-Speed Rail was passed in November 2008. The bond measure authorizes $9 billion in spending for high-speed rail improvements and other rail services. The American Recovery and Reinvestment Act (ARRA) directed funds to high-speed train projects throughout the country, of which the HSRA received a significant portion. 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.

The HSRA has recommended alignments through the Valley that include both the UP/SP and BNSF railroad corridors, both running generally parallel to Route 99. Several stations have been proposed in the San Joaquin Valley. One alignment of the proposed High Speed Rail will also parallel Route 58 east of Bakersfield through Tehachapi on the proposed "Bakersfield – Palmdale" route. There is an adopted High Speed Rail Station located in downtown Bakersfield.

A Heavy Maintenance Facility has also been proposed as part of the High Speed Rail project. Several Central Valley communities are competing for the facility, including the City of Bakersfield. KCOG's 2011 RTP proposes that a commuter rail service to connect the proposed High Speed Rail Heavy Maintenance Facility with the Bakersfield High Speed Rail station would be a viable commuter option. Such a service has the potential to reduce single-occupancy vehicle trips and provides connectivity for passengers using the High Speed Rail to travel out of the area. The State of California has invested $393 million in track and signal improvements to the San Joaquin Valley BNSF line, in exchange for the permission to run six passenger trains per day. This could be an opportunity for the proposed commuter rail service.

c) Transit

As congestion increases, creative solutions to ease this congestion will need to be considered. One alternative would be improvements and/or expansion of the existing transit system. A major advantage of transit over single-occupancy vehicle 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 single occupancy vehicles. To reduce the amount of time buses are stuck in congestion would be to create a dedicated transit lane. 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. The dedicated 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 the highly urbanized areas of the City of Bakersfield, 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 Bus Rapid Transit and peak period bus/carpool lanes on arterial streets. This dedicated lane would not need to be on Route 58; a local parallel road could be utilized.

Both fixed-route and dial-a-ride buses serve the local traveler. Common transit carriers in Kern County include Golden Empire Transit (GET), Orange Belt Stages, and Kern Regional Transit. Kern Regional Transit operates fixed route and dial-a-ride service throughout rural Kern County and along Route 58 from Buttonwillow through Bakersfield, Keene, Tehachapi, Mojave, Boron, Rosamond, and Lancaster. Passengers may transfer to other regional carriers in Bakersfield, Mojave, and Lancaster.

The Eastern Sierra Transit Authority (ESTA) is the primary provider of public bus services throughout Inyo and Mono Counties, and the sole provider of interregional public transportation for the entire Eastern Sierra Region. ESTA also provides bus service to Kern County, connecting with Kern Regional Transit, and continues to the Lancaster Transit station in Los Angeles County with a stop in Mojave.

Two maps follow (Pages 29 & 30) that depict the interconnection of transit to the highway system. Map #6, Transit Network in Kern County, includes all of the Kern Regional Transit routes, and Map #7, Transit Network in Metropolitan Bakersfield, includes the transit routes for Golden Empire Transit (map used with permission from Golden Empire Transit). As noted, Eastern Sierra Transit buses interconnect with Kern Regional Transit at stops in eastern Kern County.

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 area 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.

For more information, please see Appendix C, Transit in Kern County, Page 74.

Transit network in Kern County

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

GET Golden Empire Transit District

SYSTEM MAP

869-2GET
www.getbus.org

LEGEND

- Bus Route
- Direction of Travel
- Transfer Facility
- Point of Interest
- Medical Facility
- College/University

MAP NOT TO SCALE

DOWNTOWN TRANSIT CENTER

NORTH

22nd St

WESTCHESTER 12 | HALF MOON 9 | FOOTHILL 8

14 CAL STATE | 26 ROSEDALE | 9 FOOTHILL | 8 WIBLE

OILDALE 2 | AIRPORT DR 3 | BAK COLLEGE 5 | VALLEY PLAZA 5

2 VALLEY PLAZA REXLAND ACRES | 17 BAK COLLEGE | 17 SW CENTER | 4 BAK COLLEGE

Eye St | Chester Ave | Alley

SOUTHWEST TRANSIT CENTER

NORTH

Wible Rd

11 BAK COLLEGE
13 GREENFIELD
8 FOOTHILL HIGH
2 OILDALE
7 KMC
SOUTHWEST/ VALLEY PLAZA 15
6 EAST HILLS
PANAMA LN/ AKERS 10
11 CAL STATE
WESTCHESTER/ SOUTHWEST 25
2 REXLAND
7 STOCKDALE H.S./ SILVER CREEK

NOTE: Routes 5 &17 stop on Wible Rd. north of the SW Transit Center.

NOTE: No service on Mt. Vernon to Adult School on Sundays (as listed on page 45).

d) Transit Studies

i) The Merced County Association of Governments (MCAG)

MCAG was the administrative lead for the "*San Joaquin Valley Express Transit Study*," completed in May 2009. The study was done under the guidance of the San Joaquin Policy Council, with the San Joaquin Unified Air Pollution Control District (SJUAPCD) and Caltrans as partners.

The study evaluated the possibility for inter-county commuter express transportation services within the San Joaquin Valley region and between the San Joaquin Valley and its neighbors, with a primary goal to identify markets that would support inter-county commuter express transportation services. Commuter express transit would provide an alternative to single-occupancy vehicles for workers traveling to employment locations. This type of service generally covers longer distances than typical intra-urban bus routes. Implementation of such a service could relieve pressure on congested freeways during peak times, and decrease emissions that contribute to air pollution.

The study determined that the San Joaquin Valley is a challenging environment for inter-county commuter transit for a number of reasons. First, most of the region's land area is rural or very low-density residential in character, and is expected to remain so for the foreseeable future. Even in the Valley's urban areas, residential and employment densities are low and too dispersed to be served by a transit service that could be competitive with an automobile. Long distance travel, with varied origins and destinations spread over a wide geographic area is very difficult to serve with traditional transit services. While a number of corridors were identified as having the potential for this type of service, Route 58 was not one of them. Additionally, for most of the region's communities, the most attractive alternative to single-occupancy vehicle travel will remain ridesharing. The corridors identified as having potential to support inter-county commuter transit were:

a) The northern Highway 99 corridor, including the cities of Merced, Modesto, Manteca, Stockton, Lodi, and Sacramento. These are some of the region's most transit competitive cities, and the corridor represents its strongest internal travel markets. There will be nearly 10,000 daily trips on Route 99 heading towards Sacramento by 2030.

b) The northern Highway 99 corridor to the Bay Area. The stretch of I-580 that crosses the Altamont Pass between Tracy and Livermore is expected to carry more than 50,000 commute trips per day by 2030. Commuters would be divided between a diverse set of Bay Area

destinations. Service planning for the corridor will focus on ways to enhance connections to ACE and BART, as well as ways to enhance service to destinations very close to the west side of the Altamont pass.

c) The Cities of Madera and Visalia to the City of Fresno. Fresno attracts a large number of workers from surrounding communities, and these commute markets are expected to grow substantially. The most feasible origin points for transit service into Fresno are Visalia in the south and Madera to the north.

d) Los Angeles County to Edwards Air Force Base in Eastern Kern County. More than 20,000 people work at Edwards Air Force Base, and it is likely than many of these employees are included in the projected flow of workers from Los Angeles to Kern County by 2030. This study considers connecting transit service from Lancaster Metrolink station to the Air Force Base.

ii) GET Public Transportation Services Plan

In 2005, GET submitted an application for a Caltrans Community-Based Transportation Planning grant to help plan transit service improvements within metropolitan Bakersfield. The purpose was to develop a service plan to provide more innovative and effective options to reach under-served and hard-to-serve neighborhoods and major destinations. The study engaged GET's stakeholders in the planning process and developed plans that would improve mobility and increase transportation choices and usage given available resources. The study was completed in 2008 and several service improvements, including headway improvements and service extensions, have been implemented.

iii) Eastern Sierra Public Transportation Study

The *Eastern Sierra Public Transportation Study*, completed in 2005, focused on public transportation services in Mono, Inyo and eastern Kern Counties. The study was a comprehensive effort to address short-term interregional transit demands, identify strategies to enhance intra-regional mobility, and present a preliminary feasibility analysis of longer-term passenger rail service between Mammoth Lakes and the Los Angeles region. The Study area was composed of numerous rural communities, resort towns, and a few urban centers clustered along the Route 395 corridor and along Route 14. Given the varied geography, sparse populations and long distances that buses must travel, the study found that transit operations through the Eastern Sierra region provide exceptionally good coverage. Nearly all communities within the study area have some level of transit service, offering basic mobility to meet

some travel demands. While the Route 58 corridor was not the focus of this study, current transit connections exist between the transit providers studied and Kern Regional Transit that have the potential of reducing congestion on Route 58.

iv) Regional Rural Transit Strategy

In 2002, Kern COG initiated a study to evaluate alternatives to the current network of rural transit services. The study was conducted by Nelson\ Nygaard consultants, working with Kern COG and a project advisory committee representing transit providers and social services throughout Kern County. There were three separate reports, but together presented an inventory of existing public transit services in rural Kern County, identified possible alternatives to existing public transit service, and recommendations of strategies to improve the rural Kern County public transit system. The reports also provided discussion of coordinating alternatives, increasing the visibility and importance of transit in Kern County, and creating partnerships between transit and non-transit organizations.

The reports presented a series of alternatives for further consideration. These included recommendations for alternative methods of county-wide public transit service that focused on improving efficiency, effectiveness and cost savings. A future cost benefit analysis will be necessary to fully assess which recommendations should be given priority.

e) 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 designated criteria for their use, including the number of passengers per vehicle (two or more), transit vehicles, trucks, and motorcycles. These facilities put a priority on "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 a more efficient utilization of the existing freeway capacity. HOV facilities may result not only relieving congestion, but may also play a role in improving the overall air quality in the San Joaquin Valley. Currently, Route 58 within Kern County does not include any HOV lanes.

In 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 or more lanes in and around

urban areas, recurrent congestion, and facilities falling below LOS "D." A portion of Route 58 meets these criteria. After study, however, it was determined that an HOV alternative for Route 58 would not be viable in the near term. Delay was low and/or at isolated locations. The relatively low level of delay on the freeway mainline would not warrant an HOV lane.

In 1994, the Environmental Impact Report for Westside Parkway and Downtown Parkway (now called the Centennial Corridor south) also studied the development of an HOV lane. Modeling showed that the facility would carry a third of the traffic necessary to make the facility run efficiently by 2015. However, analyzing for a much longer time horizon indicated that the facility could eventually benefit from an HOV/Low Emission Vehicle/Bus lane as it becomes more congested.

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 incorporation of an express bus and future HOV/bus lane on the freeway portion of Route 58 in the metropolitan Bakersfield could provide some relief to congestion.

The success of an HOV facility 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 policies 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.

f) Bicycles and Pedestrians

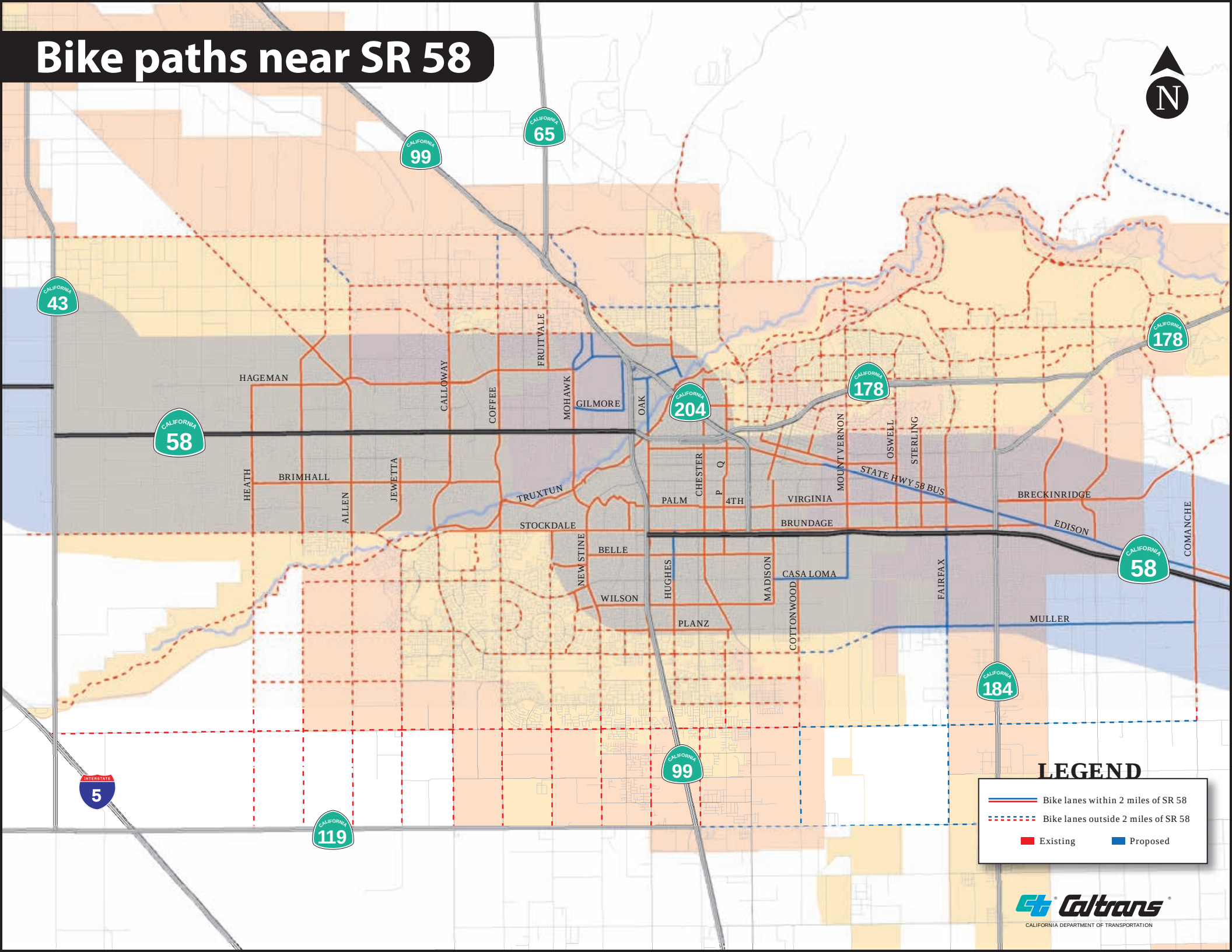
In transportation planning, more emphasis is being placed on solving traffic issues without resorting to expansion of highway and freeway facilities. Two possible solutions include providing both improved pedestrian access and improved bicycle facilities. Kern County is especially well-suited for both of these alternatives, and they can therefore 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. 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.

i. Bicycles

Bicycle facilities have several different classifications. Class I Bike Paths provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flow by motorists minimized. Class II Bike Lanes bikeways provide a striped lane for one-way bike travel on a street or highway. Class III Bike Routes provide for shared use with pedestrian or motor vehicle travel. From the San Luis Obispo County line to the junction with Route 99 in Bakersfield (KER PM 00.00 – PM 51.80), Route 58 is comprised of two- and four-lane conventional roadway segments. Bicycles and pedestrians are allowed on all segments. However, within these segments, shoulder widths vary from non-existent to ten feet. From the junction of Route 99 to the junction of Route 223 (KER PM R52.3 – PM 75.6) the route is comprised of four- to eight-lane freeway segments all of which are closed to bicycle and pedestrian travel. An alternate route exists following a combination of Coffee Road, Stockdale Highway, Brundage Lane, Edison Highway and Bena Road. For the most part, the alternate route parallels the closed Route 58 freeway segments but is approximately five miles longer, frequently lacks rideable shoulders and has grades that are steeper than those encountered on the freeway segments.

The City of Bakersfield has an existing Class 1 bikeways alignment that parallels Route 58, west of Route 99 to Route 43 (Enos Lane). This alignment is known as the "*Kern River Bikepath*." The facility is located along the south side of the Kern River and transverses the City of Bakersfield in an east-west direction. Portions of the alternate route through Bakersfield are currently classified as either Class II Bike Lane or Class III Bike Route bike facilities (please see Appendix C, Page 74). From Route 223 to the junction of Business 58 [north end] (KER PM 75.6 to PM R108.8), the highway is comprised of freeway segments, with wide shoulders, some with rumble strips, which are open to bicycle travel. From Business 58 [north end] to Business 58 [south end] (KER PM R108.85 – PM R116.20) the highway is comprised of a new freeway segment that is closed to bicycle travel. An alternate route exists following the old Route 58 alignment through the city of Mojave. From Business 58 [south end] to Twenty Mule Team Road (KER PM R116.20 - PM R136.40), Route 58 is comprised of both expressway and freeway segments with 8-10 foot shoulders. These segments are open to bicycle travel. Some segments contain rumble strips. From Twenty-Mule Team Road to the San Bernardino County line (KER PM R136.4 - PM R143.8) Route 58 is comprised of freeway segments with 8-10 foot shoulders. All of these segments are open to bicycle travel. Additionally, an alternate route also exists following Twenty-Mule Team Road through the City of Boron to the San Bernardino County line (see Map #8, Page 36, for existing and proposed bike routes in the Metropolitan Bakersfield area).

Bike paths near SR 58



ii) 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 truly 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. In 2001, Kern COG adopted the *Kern County Bicycle Facilities Plan*, which provided a listing of bicycle transportation facilities, both constructed and planned. It serves as the guide to developing bicycle facilities in an orderly and timely fashion within the region. Included in the Plan is the goal of promoting more pedestrian and bike uses throughout the county as an alternative to driving. KCOG's 2011 Regional Transportation Plan has a list of proposed capital bicycle and pedestrian projects. In 2011, AB 1358 will require General Plan Circulation Elements to include transit systems, bike systems, and pedestrian facilities in addition to automobile circulation networks. In addition, KCOG's 2011 RTP lists projects, either planned or as recommended goals that will result in improvements to the street and highway network, including constructing additional bikeways and pedestrian improvements. These improvements will have beneficial effects on a region-wide basis.

Additional information on bicycles and pedestrians is presented in Appendix D and E, Pages 75 - 76.

g) Aviation

Caltrans Division of Aeronautics completed a Final Report in June 2003 that provided a comprehensive evaluation of the economic benefits of aviation and airports to California communities and the overall State economy. The report, prepared by Economics Research Associates, 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. This economic benefit is enhanced by designing transportation

infrastructure to maximize access to key intermodal passenger hubs, such as regional airports.

The County of Kern, under the direction of the Kern County Department of Airports, owns and operates seven airports in the County. Meadows Field, in Bakersfield, is the largest. The remaining airports – Elk Hills/Buttonwillow, Kern Valley (Near Kernville), Lost Hills, Poso, Taft, and Wasco Airports – serve general aviation, primarily in those communities and the surrounding area. Of these, only Elk Hills/Buttonwillow Airport can be said to be within the general Route 58 Corridor.

i) Elk Hills/Buttonwillow Airport: Elk Hills/Buttonwillow Airport is a public airport located three miles south of Buttonwillow. The airport is mostly used for general aviation. The airport is south of Route 58, accessed by a local road.

ii) Meadows Field: Meadows Field in Bakersfield provides commercial passenger and cargo service as well as full services to the general aviation community. The new terminal at Meadows Field provides good access to Route 99 via Seventh Standard Road, and improvements to this access route are scheduled in the Federal Transportation Improvement Program. The potential for Meadows Field to serve as an overflow facility for Southern California's air traffic may create additional needs for improvements to ground access. Improvements to Airport Drive, Snow Road, Seventh Standard Road and Route 65 near the airport may be necessary. Better connectivity with the existing Amtrak station in downtown Bakersfield and the high speed rail could result in the need for a transit shuttle, bus rapid transit, light rail, or spur connection between downtown Bakersfield and the airport.

iii) Bakersfield Municipal Airport: The City of Bakersfield owns and operates the Bakersfield Municipal Airport located approximately 3 miles south of Route 58 along the east side of Route 204 (Union Avenue). The airport is home to over 100 general aviation aircraft. It does not provide commercial airline service, but does have charter and executive services.

iv) Tehachapi Municipal Airport: The City of Tehachapi operates a general aviation municipal airport. The airport provides business, personal and recreational aviation services and is located between Route 58 and Tehachapi Boulevard. The airport is also adjacent to the Burlington Northern Santa Fe/Union Pacific Railroad, but a railroad spur into the airport is not currently available.

v) Mountain Valley Airport: Located approximately two miles south of Tehachapi Municipal Airport, is the Mountain Valley Airport. The facility is

used for glider operations and training. The airport was established at this location due to the close proximity to where the Sierra Nevada Mountains, Tehachapi Mountains and the Mojave Desert meet, creating various lift effects suitable for soaring. The Skylark North Glider School offers glider training for civilians as well as for the US Air Force Test Pilot School (from Edwards Air Force Base), the National Test Pilot School (from the Mojave Air & Space Port), NASA and others.

vi) Mojave Air and Space Port: The Mojave Air and Space Port is located south of Route 58, east of Route 14, near the town of Mojave. The facility first opened as a small, rural airfield in 1935. It has served as a U.S. Marine Corps Air Station and a U.S. Navy airfield. In 1961, Kern County obtained title to the airport. In 1972, the East Kern Airport District was formed to administrate the airport; it administers the airport to this day. Besides being a general-use public airport, Mojave Air and Space Port is home to the National Test Pilot School where more test pilots are educated than any other site in the world. The facility is also a world renowned flight research center hosting light industrial to highly-advanced aerospace design, flight testing, space industry development, research, and aircraft heavy maintenance and storage.

vii) Rosamond Skypark Airport: Rosamond Skypark Airport is a general aviation airport with one asphalt surfaced runway. It is located in the community of Rosamond, south of the Route 58 corridor, and is reachable by Route 14.

viii) California City Municipal Airport: The California City Municipal Airport is north of the Route 58 corridor, but reachable via Route 14. The airport is used for general aviation activities, especially recreational aviation. It is located northwest of California City, approximately eight miles east of Route 14 and two miles north of California City Boulevard.

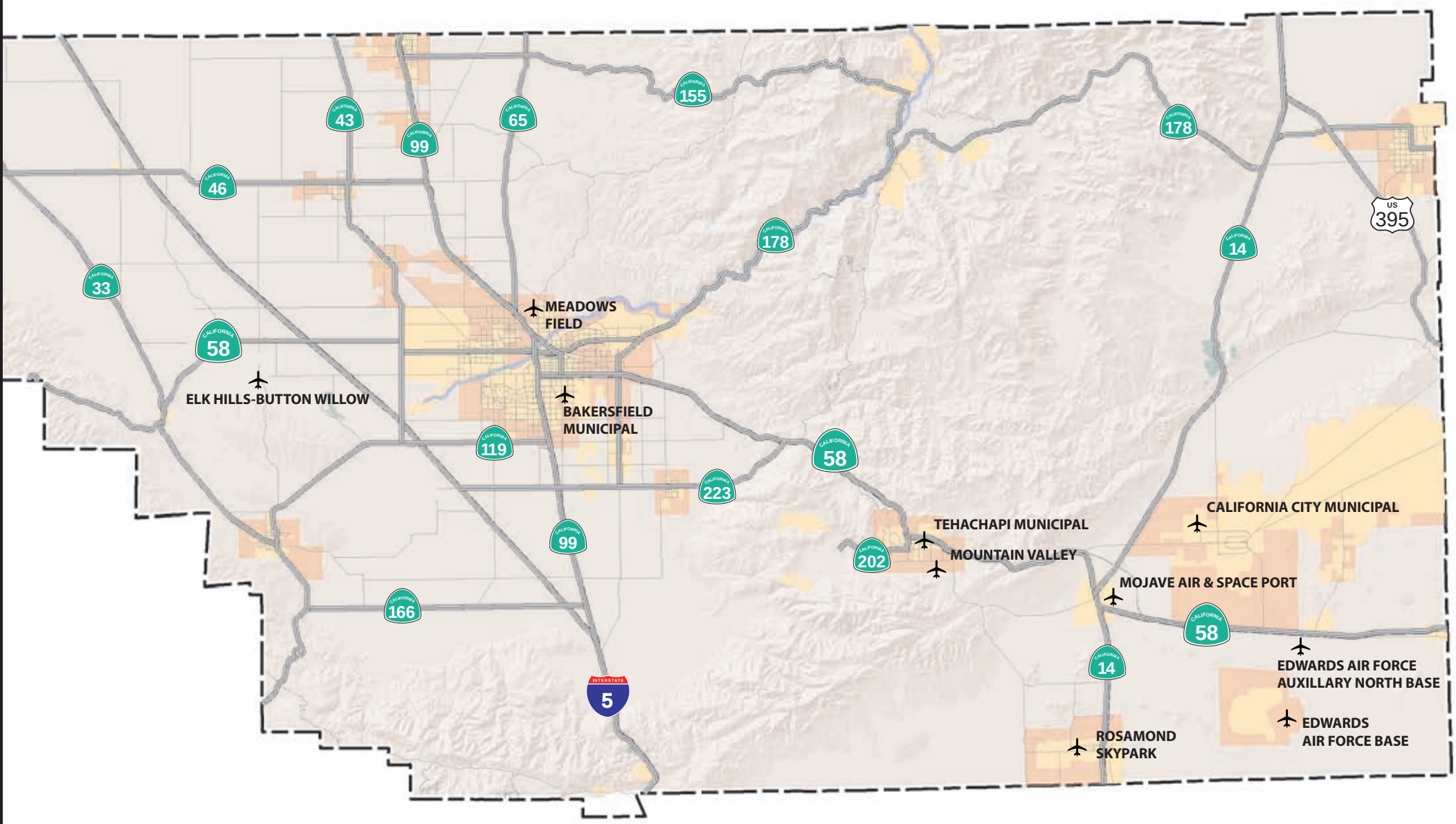
ix) Edwards Air Force Base: Edwards Air Force Base is a United States Air Force base located on the border of Kern County, Los Angeles County, and San Bernardino Counties. Edwards has been an air base since 1933.

Please see Map 9 on Page 40 for the locations of these aviation facilities.

E. Corridor Inventory:

Current AADT, Level of Service, Percent Trucks, Peak-Hour AADT, 10 and 25-year AADT forecasts, by segment of the Route 58 Corridor, are presented in Table 1, Summary Chart, Pages 6 and 7.

Airports near SR 58



Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

1. Traffic Volumes and Type

The high rate of growth in the San Joaquin Valley is quickly using and exceeding the capacity of the Route 58 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 this increase in growth and goods movement. To maintain the corridor's ability to support ongoing development, facilitate efficient goods movement, and improve the quality of life, 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. The various transportation improvement alternatives, including capacity-enhancing projects, will be evaluated to ensure that the best solution for a given section of the corridor is chosen. In the past, capacity-enhancing projects were the first solution, designed to accommodate the additional traffic and reduce congestion.

Route 58 serves both interregional and interstate travel. It operates as an extension of the Interstate System by connecting I-5 in Bakersfield to I-15 and I-40 in Barstow. The Route is a critical east/west truck corridor, with a heavy emphasis on goods movement, and with significant volumes of heavy trucks traveling between central and southern California and other states. Additionally, special events, even those adjacent to other Routes, can impact Route 58. As a regional facility, Route 58 is used by many people coming from out of the area. Large special events require coordination with the CHP and the Traffic Management Center to keep traffic flowing and reduce both delays and accidents.

2. Geometrics

Route 58 through Kern County has considerable variability; varying from a 2-lane conventional highway at the western end to a 6-lane freeway through urban sections of Bakersfield. The eastern leg is comprised of both 4-lane expressway and 4-lane freeway segments. The width of the median has a range of 0 to 100 feet or greater. The width of the paved shoulders varies from 0 to 10 feet. Lane width varies from 9 to 12 feet (see Table 2, Geometrics, Pages 8 and 9). In Kern County, there are connections at I-5, Routes 99, 204, 184, 202, and 14.

3. Characteristics

a) Park and Ride lots

Route 58 has three park and ride lots. All are located in Bakersfield. One is at the interchange of Route 58/Route 99 and has 49 spaces. The other two are at the interchange with Route 184. They are located on the northwest and southeast quadrant of the interchange (KER-58-PM-59.4) and each includes 18 spaces.

Future park-and-ride locations should be planned at the terminus of an express bus/BRT/light rail line, and near major intermodal facilities such as freeway interchanges, airports, and regional rail. This will maximize use of mass transit by making it more convenient. Currently, a large number of informal park and ride areas have been established at commercial centers throughout Bakersfield. They support van pools that go to the prisons, oil fields and other outlying resource employment areas surrounding Metropolitan Bakersfield. Facilitating the expansion of van pooling is important to supporting the stated goals of the region.

b) Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) seek to promote more efficient use of the existing highway and transportation network, increase safety and mobility, and decrease the environmental impacts of congestion. ITS consist of the electronics, communications, or information technology processing that communicates information to the traveler, improving safety and efficiency. ITS elements include detection, traffic monitoring, incident management, advanced traveler information systems, transportation management centers, 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.

Numerous applications of ITS exist throughout the Route 58 corridor. Please see Table 4, Page 43, for a list of the existing elements. Proposed ITS elements are presented in Table 5, Pages 44 and 45. These elements are further explained in detail in Appendix F, Pages 77 – 80.

The Federal Highway Administration sponsored the preparation of Early Deployment Plans (EDPs) to identify ITS application opportunities. The EDP's primary focus for the Kern County region is to maximize safety, traffic flow, and efficiency in both rural and urban areas. It presents an integrated, multi-modal, phased strategic plan to address the surface transportation needs and problems of the Kern region through the use of ITS. By preparing the EDP, Kern County will be in a position to take advantage of federal and other funding opportunities and implement various components of ITS. Kern COG was the lead agency for this study, with key participation from Caltrans District 6 and Caltrans New Technology and Research Program, as well as various Cities and transportation agencies within the Kern region. The overall goal of Kern's ITS EDP was to develop a multiyear strategic deployment plan that would result in a well-balanced, integrated, intermodal transportation system. Transportation needs that have the potential of

TABLE 4
EXISTING ITS ELEMENTS IN THE CSMP AREA

KER 58 – PM	LOCATION	TYPE OF ITS
43.98	58 (Rosedale) @ Heath	Signal
44.99	58 (Rosedale) @ Renfro	Signal
45.5	58 (Rosedale) @ Jenkins Road	Signal
46.1	58 (Rosedale) @ Allen Road	Signal
46.59	58 (Rosedale) @ Old Farm Road	Signal
47.6	58 (Rosedale) @ Verdugo	Signal
48.1	58 (Rosedale) @ Calloway Drive	Signal
48.43	58 (Rosedale) @ NW Promenade II	Signal
48.61	58 (Rosedale) @ Main Plaza Drive	Signal
48.9	58 (Rosedale) @ NW Promenade	Signal
49.1	58 (Rosedale) @ Coffee Road	Signal
49.6	58 (Rosedale) @ Patton Way	Signal
50	58 (Rosedale) @ Fruitvale Avenue	Signal
51	EB @ Landco Road	Changeable Message Sign
51	58 (Rosedale) @ Landco Drive	Signal
51.4	58 (Rosedale) @ Gibson Street	Signal
51.5	58 @ Rosedale Plaza	Signal
51.6	58 (Rosedale) @ Camino Del Rio Court	Signal
51.63	EB/WB West of Camino Del Rio Court	Traffic Count Station
51.73	58 (Rosedale) @ 99 SB off	Signal
52.16	Real Road @ 58	Signal
52.26	EB off to SB 99	Traffic Count Station
52.296	WB off to SB Route 99	Traffic Count Station
52.618	WB off to NB Route 99	Traffic Count Station
52.803	EB on from N/B Route 99	Traffic Count Station
53.39	EB/WB East of H Street	Traffic Count Station
53.41	H ST. @ Richland/Loustalot	Signal
53.53	CHESTER @ Richland/Loustalot	Signal
54.44	58 (SB) @ S. Union	Signal
54.51	Liggett Street @ Brundage Lane	Signal
55.14	WB @ Bakersfiled Corral	Changeable Message Sign
55.4	58 @ Cottonwood	Signal
55.4	WB Cottonwood Road	Traffic Monitoring Station
56.4	58 @ Mt. Vernon EB Ramp	Signal
57.41	EB/WB East of Oswell Street	Traffic Count Station
58.42	58 @ Fairfax Avenue (EB)	Signal
64.92	EB JWO Towerline Road	Changeable Message Sign
65.68	EB/WB West of Towerline Road	Traffic Count Station
65.88	EB on From Towerline Road	Traffic Count Station
69.35	W of General Beale Road (ET 101)	Traffic Monitoring Station
69.75	EB/WB West of General Beale Road	Traffic Count Station
77.25	EB/WB East of Bear Mountain Ranch	Traffic Count Station

TABLE 5
PROPOSED ITS ELEMENTS IN THE CSMP AREA

KER 58 – PM	LOCATION	TYPE OF ITS
15.5	Route 33	Highway Advisory Radio
17.9	E of Route 33	Changeable Message Sign
17.9	E of Route 33	Traffic Monitoring Station
29.5	W of Interstate 5	Changeable Message Sign
29.5	W of Interstate 5	Traffic Monitoring Station
32.6	E of Interstate 5	Changeable Message Sign
39.8	Route 43	Highway Advisory Radio
45.5	E of Renfro Rd	Traffic Monitoring Station
46.0	Allen Rd	Closed Circuit Television
46.9	Jewetta Rd	Traffic Monitoring Station
48.1	Calloway Drive	Closed Circuit Television
48.6	E of Calloway Dr	Traffic Monitoring Station
49.1	Coffee Road	Closed Circuit Television
49.3	E of Coffee Rd	Traffic Monitoring Station
50.0	E of Fruitvale Ave	Traffic Monitoring Station
50.0	E of Fruitvale Ave	Traffic Monitoring Station
50.6	Mohawk Street	Closed Circuit Television
51.0	Landco Rd	Traffic Monitoring Station
51.0	Landco Rd	Roadside Weather Info. Sys
51.7	Jct. Route 58/99	Closed Circuit Television
52.4	NB/SB Route 99 to EB Route 58	Ramp Metering System
52.9	Hughes Ln	Traffic Monitoring Station
52.9	Hughes Ln	Closed Circuit Television
53.2	H St	Ramp Metering System
53.2	E of South H Ave	Traffic Monitoring Station
53.5	Chester Ave OC	Closed Circuit Television
53.5	Route 204	Traffic Monitoring Station
53.6	EB on from Chester Ave	Ramp Metering System
54.3	WB on from SB Union Ave	Ramp Metering System
54.3	EB on from SB Union Ave	Ramp Metering System
54.4	Union Ave OC	Traffic Monitoring Station
54.4	Union Ave OC	Closed Circuit Television
54.5	Brundage Ln/Union Ave	Ramp Metering System
54.5	NB Union Ave	Ramp Metering System
55.1	W of Route 184	Roadside Weather Info. Sys.
55.1	Bakersfield Corral	Closed Circuit Television
55.4	Brundage Ln/Cottonwood Rd	Ramp Metering System
55.6	Cottonwood Rd	Ramp Metering System
56.2	WB on from Mt Vernon Ave	Ramp Metering System
56.4	Mt Vernon Ave UC	Closed Circuit Television
56.9	E of Mt Vernon	Traffic Monitoring Station
57.3	Oswell St	Ramp Metering System
57.9	West of Route 184	Changeable Message Sign
57.9	E of Oswell St	Traffic Monitoring System
58.1	Fairfax Rd	Traffic Monitoring Station
58.3	EB off to Fairfax Rd	Ramp Metering System
58.4	Fairfax Rd OC	Closed Circuit Television
59.2	SB Route 184	Ramp Metering System
59.4	Jct. Route 184	Traffic Monitoring Station

TABLE 5 CONTINUED NEXT PAGE

TABLE 5, CONTINUED
PROPOSED ITS ELEMENTS IN THE CSMP AREA

KER 58 – PM	LOCATION	TYPE OF ITS
59.5	Route 184	Closed Circuit Television
59.5	NB Route 184	Ramp Metering System
59.6	E of Route 184	Highway Advisory Radio
60.5	E of Route 184	Changeable Message Sign
64.9	E of Route 184	Roadside Weather Info. Sys.
75.6	Route 223	Closed Circuit Television
75.6	Route 223	Traffic Monitoring Station
75.6	Route 223	Highway Advisory Radio
92.6	Tehachapi	Closed Circuit Television
112.8	Route 14	Closed Circuit Television

being addressed by ITS technologies have been identified and ITS elements that would be beneficial, cost-effective, and implementable have been evaluated. The strategic plan facilitates the integration and coordination of ITS applications valley- and state-wide in conjunction with other EDPs conducted throughout California.

In Kern County, poor visibility because of Tule fog and blowing dust, large percentages of truck traffic, high winds in eastern Kern County, steep grades, snow and ice, rock falls, and red-light violations all contribute to the growing concerns about highway safety. Tule fog, is a problem throughout the entire Central Valley region and has accidents and the closing of the main arteries through the valley. Fog in Kern's mountains causes similar incidents along Route 58. In the urban areas, red-light violations are an issue. Blowing dust, causes similar difficulties for travelers. In eastern Kern County, high winds can cause high-profile vehicles to overturn, and snow, ice, and rock falls can make travel unpredictable in rural areas. This EDP places traveler safety first in determining ITS solutions for Kern.

KCOG developed six programs that integrate existing ITS efforts underway and will incrementally develop a sound basis for future expansion of ITS in the region. These programs are:

• Communication Network Development Program – Connects different agencies within the region to allow coordination in operating and managing the transportation system. Examples include building communication links with Bakersfield's Synchronous Optical Networking (SONET), SONET ring and developing smart call boxes. SONET is a standardized system for transporting larger amounts of telephone calls and data over the same fiber without synchronization problems.

• Traffic and Incident Management Program – Integrates various state, regional, and local agencies into a comprehensive, region-wide approach to traffic and incident

management. Examples include census stations, system and/or incident detectors; coordinated incident management procedures, and freeway changeable message signs.

• Kern Traveler Safety Program – Combines applications that address safety, such as weather stations, smart studs, and rock-fall detection systems.

• Kern Informed Traveler Program – Uses advanced warning systems for the reduction of accidents and congestion. Examples include advanced traveler information system development, Bakersfield's transportation operations center upgrades, and interactive commuter kiosks.

• Kern Smart Transit Program - Increases transit's share of the commuting market by providing an alternative mode that is flexible, convenient, and responsive to customer demand. Examples include upgrading Golden Empire Transit service and coordinating Golden Empire Transit and Kern Regional Transit schedules.

• Enhanced Emergency Response Program – Provides police, sheriff, fire, ambulance, and other service providers with tools that determine quickly and accurately which routes will be most beneficial. Examples include workstations for emergency response providers and establishing emergency corridor routes. Implementation of these programs will make transportation throughout Kern County safer, more efficient, and noticeably more pleasant for travelers. These programs were developed specifically for the Kern region, but each was developed as a part of an open, expandable plan, in order to provide a starting point for valley-wide integration of ITS. Regional integration will provide further benefits.

Transmitting ITS data requires an integrated fiber optic network planned along Route 58 and other corridors in the urbanized area. With such a fiber optic network in place, the Caltrans Central Valley Traffic Management Center (TMC) at the District Office in Fresno would be able to relay this data, monitor conditions and provide for rapid response when conditions deteriorate.

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.

4. Parallel Roadways

The CSMP Development Guidance document includes identifying parallel roadways. The CSMP however, 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.

Within the City of Bakersfield, there are many, smaller local roads that could be used to divert traffic around an incident on Route 58. However, once into the mountain areas, the main choice would be to go south on Route 14, connect with Route 138. Route 138 connects with I-5 just south of Gorman. This would provide access to the Valley via the Grapevine on I-5, a detour used often when the section of Route 58 passing through the Tehachapi Mountains is closed due to weather or incidents.

The Central Valley TMC has established detours in the event of an incident on Route 58. The detour maps are presented in Appendix G, Pages 81 – 85.

5. Parallel State Highways

Both I-5 and Route 33 in western Kern County could be used to move traffic north and south in the event of an incident on Route 58. From these routes, traffic could be diverted onto local roads.

Routes 119 and 223 could serve as parallel state highways; both are south of Route 58. Route 178 would provide a parallel State highway for portions of Bakersfield, from Route 99 east to approximately just east of Morning Drive. At that point, Route 178 turns to the north, entering the Kern River Canyon, and Route 58 turns south. However, Route 178 could be used to move traffic around a major traffic incident on Route 58, although there are oversized vehicle restrictions on Route 178. On the west side of Route 99, local roads would be needed for incident management. Route 99 and I-5 would provide north-south connectivity to move traffic to a suitable parallel facility. Route 138, connecting with I-5 just south of Gorman, then over the I-5 Grapevine, is a detour used often when Route 58 is closed due to weather or incidents. Please see Appendix H, Page 86, for a map of State Highways mentioned in this narrative.

III. COMPREHENSIVE CORRIDOR PERFORMANCE ASSESSMENT

A. Existing Conditions

Current AADT, LOS, Percent Trucks, Peak-Hour AADT, 10 and 25-year AADT forecasts, by segment of the Route 58 Corridor, are presented in Table 1, Summary Chart, Pages 6 and 7. The information necessary to understand existing traffic conditions in the study area, and identify specific causes of problems, has been collected. This information includes Tachometer runs, pavement condition, accident data, and Freeway Queue Macroscopic Freeway Operation Model Software (FREQ) modeling. These are discussed in more detail in the section on Operations Assessment.

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 urban 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.

KCOG uses the Kern Regional Transportation Model as the primary tool for measuring system-level performance. This deviates, but compliments, Caltrans tools for measuring performance. The KCOG model uses monitoring data and growth assumptions to compare performance measures. The two primary categories of performance measures are the Sustainable Mobility Framework and Environmental Justice. The model generates several factors, including travel times, vehicle miles traveled, passenger miles traveled, transit boardings, transit trip hours, and transit trip distance. The number of road miles of LOS C or worse for 2006 (base year), 2035 build scenario, and 2035 no-build scenario are also generated. The 2035 build scenario assumes all of the constrained projects listed in KCOG's 2011 Regional Transportation Plan will have been completed by this date, whereas the No-Build scenario assumes 2035 traffic levels on the same network as in 2006.

C. Develop Mitigation Strategies and Projects

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. Caltrans typically uses the "Benefit/Cost (B/C) ratio" as an analysis tool.

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 alternate 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 6, Page 50, presents the three-year accident history on Route 58 by segment. The accident pattern on Route 58 has remained relatively constant, with some segments decreasing, others increasing slightly. Overall, the changes are not statistically significant.

3. Incident management

The goal of incident management is to clear the incident as quickly as possible, thereby reducing congestion and delay. This is discussed in more depth in the section on ITS, Page 42.

The Central Valley Traffic Management Center, located in Fresno, has a number of established routes identified for use in incident management. The alternatives are presented in Appendix G, Pages 81 – 85. In addition, these alternatives are discussed in the section on Parallel Roadways on Page 47.

The Central Valley TMC is dedicated to improving the time required to clear incidents from Route 58. 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 areas where accidents are most likely to occur. CCTV have proven to reduce the delay in mobilizing State forces responding to an incident.

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.

TABLE 6
ACCIDENTS PER MILLION VEHICLE MILES

KER 58 POST MILE	LOCATION	ACTUAL Total*	F + I	Fatal	STATEWIDE AVERAGE Total*	F + I	Fatal
	San Luis Obispo Co Line to City of Bakersfield						
0.0 – 15.4	SLO Co Line – Route 33	5.52	3.02	0.00	2.35	1.13	0.052
15.4 – 23.7	Route 33 – Lokern Rd	2.56	1.39	0.107	1.64	0.79	0.036
23.7 – 24.8	Lokern Rd – Corn Camp Rd	0.27	0.00	0.00	1.36	0.66	0.030
24.8 – 27.2	Corn Camp Rd – Buttonwillow Ave	0.27	0.11	0.00	1.35	0.65	0.030
27.2 – 28.2	Buttonwillow Ave – Leslie Lane	1.01	0.50	0.00	1.58	0.66	0.036
28.2 – 31.6	Leslie Lane – Interstate 5	0.62	0.26	0.00	0.94	0.46	0.036
31.6 – 45.8	Interstate 5 – Allen Rd	1.16	0.47	0.019	1.05	0.49	0.034
City of Bakersfield area							
45.8 – 51.8	Allen Rd – N JCT RTE 99/58/178	2.15	0.95	0.018	1.72	0.73	0.030
R52.4 – R54.4	S JCT RTE 99/58/178 – Union Ave	1.54	0.53	0.00	0.95	0.34	0.010
R54.4 – R55.4	Union Ave – Cottonwood Rd	2.08	0.61	0.012	0.77	0.29	0.010
R55.4 – R59.4	Cottonwood Rd – RTE 58/184	0.71	0.23	0.00	0.56	0.20	0.008
R59.4 – R60.5	RTE 58/184 – Vineland Rd	0.46	0.26	0.00	0.54	0.20	0.008
Bakersfield to Tehachapi							
R60.5- R65.7	Vineland Rd – Tower Line Rd	0.24	0.14	0.020	0.49	0.21	0.015
R65.7 – 74.9	Tower Line Rd – Bena Rd	0.37	0.15	0.013	0.48	0.21	0.015
74.9 – 77.1	Bena Rd – Caliente/Bealeville Rds	0.84	0.33	0.018	0.66	0.30	0.018
77.1 – R90.7	Caliente/Bealeville – Route 202	0.64	0.27	0.012	0.58	0.25	0.018
R90.7 – R95.2	Route 202 – Tehachapi Rd	0.30	0.12	0.009	0.59	0.22	0.007
Tehachapi to San Bernardino Co. Line							
R95.2 – 104.3	Tehachapi Rd – Cameron Canyon	0.48	0.23	0.031	0.53	0.23	0.015
104.3 – R107.6	Cameron Can. – 4 mi N of RTE 14	0.35	0.19	0.013	0.64	0.29	0.017
R107.6 – R118.0	4 mi N of RTE 14 – 4 mi E of Airport RD	0.36	0.18	0.047	0.51	0.22	0.014
R118.0 – R129.0	4 mi E of Airport Rd – Ca City Blvd	0.21	0.11	0.00	0.61	0.27	0.016
R129.0 – R143.9	Ca City Blvd – San Bernardino Co Line	0.18	0.11	0.008	0.47	0.21	0.016
CSMP Limits		0.18	0.11	0.008	0.47	0.21	0.016

*Total = Fatal + Injury + Non-Injury; **F + I = Fatal + Injury. Accident data from the Traffic Accident Surveillance and Analysis System (TASAS); three-year (36 months) average from June 1, 2006 through May 31, 2009.

4. Operations Assessment

The operations assessment is presented in table format in Table 1, Summary Chart, Pages 6 and 7, 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 (LOS)

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 (Please see Appendix B, Pages 72 & 73 for the definition of LOS). 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 would deteriorate to predominately LOS E or F by the year 2035 in the section from the I-5/Route 58 separation to the Tehachapi Boulevard Overcrossing and the section from just east of California City Boulevard (Boron) to the San Bernardino Line. However, implementation of the 2030 concept facility would improve this to LOS C or D (see Table 1, Summary Chart, Pages 6 and 7), providing a measurable improvement in performance.

Please note: The number of lanes needed to meet the Ultimate Transportation Concept (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. In some sections, additional right-of-way may be necessary to accommodate access to the local road system.

b) Congestion

The degree of congestion can also provide an assessment of the operations of the Route. One method of determining the degree of congestion is to conduct a Tachometer run. A Tachometer run is conducted by Caltrans staff driving the route segments to document travel speed, travel time, and delays to determine if there is any congestion along the corridor. The vehicular speed threshold to determine congestion on highways/freeways 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, Pages 87 – 102) along the urban section of Route 58 from the Route 99/58 separation to the Vineland Road Overcrossing in the City of Bakersfield. This

assessment was conducted on June 3, 2009 and June 4, 2009 during both morning and evening hours anticipated as the peak traffic times. During these operations, vehicular speeds never dipped below 55 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.

To determine the existence of bottlenecks, Caltrans District 6 Traffic Operations prepared a FREQ analysis of both the eastbound and westbound sections of Route 58 from the junction with Route 99 to the Vineland Road Overcrossing (Appendix J, Pages 103 - 107). FREQ is a PC-based macroscopic freeway corridor simulation model. It models the movement of groups of vehicles, or the average behavior of all vehicles, on a given section of a facility for a given time period. FREQ can analyze a one-directional freeway corridor that can include an arterial or group of "bundled" arterials, and weaving sections by reducing the capacity of the corridor. It can analyze a variety of freeway conditions, including HOV facilities, ramp control optimization, normal and priority entry control, time-varying reconstruction activities, freeway incidents, geometric changes, freeway-arterial diversion, future growth scenarios, and Advanced Transportation Management Information Systems (ATMIS) combinations. FREQ can be used to evaluate alternatives for enhancing operations on the Route as well.

The data indicates that existing conditions on the Route 58, both east and west bound, are at free-flow conditions. FREQ predicts that in 2030 without any improvements to the facility bottlenecks will exist on westbound Route 58 at several locations:

- 6:00 AM to 11:00 AM: a bottleneck will likely form downstream of the onramp from Union/Brundage Lane, backing up to the offramp for Mount Vernon Avenue by 8:00 AM;
- Another bottleneck forms downstream of the onramp for H Street, forming around 6:00 AM and lasting until approximately 8:00 AM;
- Traffic slows to the off to Route 99 for approximately the same time period.

In the eastbound direction, FREQ also predicts the following bottlenecks developing in 2030 if no improvements are made to the facility:

- 2:00 PM to 9:00 PM: a bottleneck will likely develop downstream from the onramp from northbound Union Avenue;
- Slowing occurring at the offramp to Cottonwood Road during the same time period.

KCOG has identified the following sections of Route 58 as experiencing an LOS of F: the Route 58/Route 99 junction to Cottonwood Road and the Route 58/Route 99 junction to Main Plaza Drive. Construction projects have been identified that will improve the LOS. The completed Centennial Corridor, described in Section II, Subsection B, Page 12, will provide the necessary capacity for east/west travel and relieve congestion on the existing Route 58.

Caltrans will continue to monitor congestion, initially with Tachometer runs, but with more reliance on automated detection as the amount of such detection units continues to increase.

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 forecasted, 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 the Tachometer run method, Performance Measurement System (PeMS), or the 511 Traveler Information Broadcast System. There are benefits and disadvantages to each of these approaches. While the PeMS system can automatically compute travel times using speed data from freeway detectors, many places, including most of this section of the Route 58 corridor, do not have sufficient working detection units. Because of this, Caltrans District 6 has

primarily relied on Tachometer runs for collecting the data needed to analyze existing conditions. Tachometer runs provide the most direct measurement of speeds and travel times; however, they are resource-intensive. The number of samples for a given corridor will therefore be lower with an automated system. Also, Tachometer runs occur on a schedule of every 10 to 30 minutes, while PeMS continuously collects data at 30-second intervals. On the other hand, PeMS sensors are located at specific points along the freeway, and segment speeds between the sensors are estimated based on the speeds at the sensor locations. Tachometer run measurements do not have these gaps. With 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. In the future, it will be possible to measure Travel Time using the PeMS system almost exclusively.

Caltrans District 6 conducted Tachometer runs during the AM and PM peak periods along the corridor. The Tachometer runs determined that there are minor slow downs during the peak hour, resulting in an increase in travel time, but speeds generally remained over 60 mph, with only an occasional drop to 50 mph at a few locations at a few time periods.

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 Route 58, delay was evaluated using Tachometer runs, conducted during the AM and PM peak periods. The Tachometer runs measured the actual traffic speeds and it was determined that this section of Route 58 is not currently experiencing delay, using the definition specified above. Caltrans will continue to

monitor this, relying more heavily on automated detection as additional detection is added to the corridor.

KCOG's goal for mobility is to measure the performance for Transportation Analysis Zones (TAZ) identified as being areas for Environmental Justice (EJ) consideration. Peak highway and transit trip periods (evening commute times) are used to demonstrate worst-case scenario. EJ TAZs throughout the county enjoyed shorter average travel times than the county as a whole. That trend is projected to be maintained over both the 2035 build and the 2035 no-build scenario. On the whole, people living in EJ TAZs will have shorter average travel times anywhere within the county than the county will have as a whole.

6. Maintenance and Preservation

a) Maintenance

Maintenance costs, including roadsides, pavement, bridges, guardrail, median barrier, 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 Route 58.

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 7, below, presents the pavement condition for Route 58. As can be seen, the pavement condition is in various states of pavement distress ranging from no priority distressed areas (0%) to a section with a priority distress percentage of 39.8%. The distressed areas average approximately 8.90% of the total pavement area for the section of Route 58 included within this CSMP area. Percentages shown below are averages for each segment.

TABLE 7
PAVEMENT DATA – ROUTE 58 KERN

Post Mile	Location	Priority Distressed Areas
San Luis Obispo Co Line to City of Bakersfield		
0.0 – 15.4	SLO Co Line – Route 33	23.4%
15.4 – 23.7	Route 33 – Lokern Rd	16.2%
23.7 – 24.8	Lokern Rd – Corn Camp Rd	12.1%
24.8 – 27.2	Corn Camp Rd – Buttonwillow Ave	19.9%
27.2 – 28.2	Buttonwillow Ave – Leslie Lane	20.0%
28.2 – 31.6	Leslie Lane – Interstate 5	39.8%
31.6 – 45.8	Interstate 5 – Allen Rd	10.0%
City of Bakersfield area		
45.8 – 51.8	Allen Rd – N JCT RTE 99/58/178	0.2%
R52.4 – R54.4	S JCT RTE 99/58/178 – Union Ave	19.2%
R54.4 – R55.4	Union Ave – Cottonwood Rd	23.9%
R55.4 – R59.4	Cottonwood Rd – RTE 58/184	7.5%
R59.4 – R60.5	RTE 58/184 – Vineland Rd	1.9%
Bakersfield to Tehachapi		
R60.5- R65.7	Vineland Rd – Tower Line Rd	0.0%
R65.7 – 74.9	Tower Line Rd – Bena Rd	0.1%
74.9 – 77.1	Bena Rd – Caliente/Bealeville Rds	0.0%
77.1 – R90.7	Caliente/Bealeville – Route 202	1.5%
R90.7 – R95.2	Route 202 – Tehachapi Rd	0.0%
Tehachapi to San Bernardino Co. Line		
R95.2 – 104.3	Tehachapi Rd – Cameron Canyon	0.0%
104.3 – R107.6	Cameron Can. – 4 mi N of RTE 14	0.1%
R107.6 – R118.0	4 mi N of RTE 14 – 4 mi E of Airport RD	0.0%
R118.0 – R129.0	4 mi E of Airport Rd – Ca City Blvd	1.5%
R129.0 – R143.9	Ca City Blvd – San Bernardino Co Line	0.0%
Cumulative, CSMP Limits		**8.9%**

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

The overall Caltrans 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% of the system. The overall average for this section of Route 58 does not exceed the State average (26%).

c) Preservation.

The 2035 concept for Route 58 is a 2-lane or 4-lane conventional highway from the San Luis Obispo County line to just west of Allen Road. The Route then transitions to a 6-lane conventional highway until the Route 99/58/178 junction, at which point it becomes a 6-lane or 4-lane freeway to Bena Road. From Bena Road to the San Bernardino County Line, the Route has alternating sections of 4-lane Expressway and 4-lane freeway. The UTC is a 2-lane or 4-lane conventional highway from the San Luis Obispo County line to Leslie Lane. From Leslie Lane to the end of the Route at the San Bernardino County line, the UTC varies from 4-lane freeway through to an 8-lane freeway. For specifics on the future concept for an individual segment of Route 58, please see Table 1, Summary Chart, on Pages 6 and 7.

It is important to identify and preserve transportation corridors needed to expand or enhance transportation. Kern region's local governments will find it difficult to obtain optimal locations for these corridors unless efforts to preserve them are made early. The American Association of State Highway and Transportation Officials (AASHTO) report on corridor preservation states that early efforts provide the following benefits:

- prevent inconsistent development;
- minimize or avoid environmental, social and economic impacts;
- prevent loss of desirable corridor locations;
- allow for orderly assessment of impacts;
- permit orderly project development; and
- reduce costs.

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 the 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. Preservation would accelerate the necessary environmental clearances, reducing both time and costs. 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 in terms of reducing time and resulting in overall cost savings.

7. Management and Agreements

Caltrans District 6 entered into a MOU with KCOG 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, Pages 66 – 71. 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.

Traditional capacity-enhancing improvement projects are funded from the State Transportation Improvement Program (STIP), of which the local agencies receive 75% and Caltrans 25%. It is therefore necessary to manage the Route 58 corridor in coordination with the local Metropolitan Planning Organizations in order to maximize the limited transportation funds.

Infrastructure expansion, although still an important and viable strategy for this section of Route 58, 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 1, Page 63, 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 of performance is the degree to which one unified vision for Route 58, across all jurisdictions, can be implemented. The necessary collaboration is well underway.

8. Alternatives to Improve Performance

Over the next twenty-five years and beyond, Caltrans and local agencies will need to balance the question of expanding Route 58 to add more capacity with the impacts 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 would 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 on the freeway.

IV. FUTURE CORRIDOR PERFORMANCE

A. Ten and 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, Pages 6 and 7.

The planned and proposed improvements for the Route 58 corridor are presented in the Ten-, Twenty-, and Beyond Twenty-Year Improvement Plans (Tables 8, 9, and 10, on Pages 60 – 62). These improvements will be funded through a variety of sources. These sources include the STIP, Interregional Improvement Program (IIP), Regional Improvement Program (RIP) funds, SHOPP funds, and local development contributions. Additional funding, from local/State/Federal sources, may be available.

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. This approach will also reduce overall costs and time in the project development process. The CSMP will identify the projects needed most along the corridor to improve safety, reduce congestion, and facilitate efficient goods movement.

The first step in establishing priorities was to determine which projects have identified funding and the estimated construction years. The next step was 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. These are shown as 10-Year, 20-Year, and Beyond Twenty-Year Improvement Plans (Tables 8, 9, and 10, on Pages 60 - 62).

B. Ten Year Improvement Plan

Table 8 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.

TABLE 8
TEN-YEAR IMPROVEMENT PLAN

Post Mile - KER	Location	Description	2010 Estimated Cost	Funding Source	Est. Const. Year
0.0	On Centennial Corridor, between SR 58 and I-5	New 8-Lane Freeway	$518 mil	Local	2018
27.3 – 53.9	Various	Construct ADA ramps	$1 mil	SHOPP	2011
46.1 – 52.4	Allen Road to SR 99	Widen to 6F	$29.4 mil	Local	2011
50.8	Minkler Spur/Landco	Construct grade sep.	$17.4 mil	Local	2013
51.8 – 55.4	SR 99 to Cottonwood Rd.	Widen from 4F to 6F	$50 mil	STIP	2015
99.4 – 99.6	Westbound Sand Canyon Rd. Undercrossing Bridge	Bridge Deck Replacement	$3.5 mil	SHOPP	2014
114.6	Near Mojave, 1.5 mi west of Business Route 58 east overcrossing	Apply temporary soil binder	$3.8 mil	SHOPP	2011

1. SHOPP

The SHOPP projects would be completed as warranted and as funds allow throughout this section of Route 58. Given historical trends, it is anticipated that up to one-third of the planned improvements may be completed within 10 years. SHOPP funding limits may reduce the percentage of projects completed within the ten-year time frame; projects will be implemented as funding becomes available. The SHOPP projects not completed within the 10-year horizon will likely be constructed within the 20-year planning horizon of the CSMP.

2. ITS

ITS elements planned for this segment included installing Traffic Monitoring Systems (TMS), Changeable Message Signs (CMS), Road Weather Information System (RWIS), CCTV system, ramp metering, and Highway Advisory Radio (HAR). These elements

will help keep motorists apprised of incidents and inclement weather as well as improve performance along the corridor. The SHOPP/ITS projects may be funded and completed in conjunction with other programmed improvement projects. Please refer to Table 5, Pages 44 and 45, for other proposed ITS projects along the Route 58 corridor.

C. Twenty-Year Improvement Plan

The 20-year improvement plan would also be comprised of funding from a diversity of funding sources. These are presented in Table 9.

There are additional improvements for preservation, safety and operations that are proposed for Route 58 this period. Most of the SHOPP/ITS projects should be completed within 20 years.

TABLE 9
TWENTY-YEAR IMPROVEMENT PLAN

POST MILE - KER	LOCATION	DESCRIPTION	2010 EST. COST	FUNDING	EST. CONST. DATE
52.4 – 55.4	SR 99 to Cottonwood Rd	Widen to 8 Lanes	$47.4 mil	STIP	>2018
52.4 – 55.7	Various; from 0.1 mile east of SR 99/SR 58 sep. to 0.3 mi. east of Cottonwood Rd. UC	Freeway Maintenance Access	$1.1 mil	SHOPP	>2018
71.9 – 74.0	3.5 KM east of General Beale Rd to 0.3 KM west of Bena Rd UC	Construct Truck Climbing Lanes	$10.4 mil	SHOPP	>2018
111.8	Near Mojave, Borrow Site-B	Revegetation to restore ecological area	$3.3 mil	SHOPP	>2018

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 10, Page 62.

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 10
BEYOND TWENTY-YEAR IMPROVEMENT PLAN

POST MILE	LOCATION	DESCRIPTION	EST. COST	FUNDING	2010 EST. CONST. DATE
31.6	I-5 to SR 43	Widen to 4F	$31 mil	STIP	>2035
43.5 – 45.5	Between Wegis Ave and Jenkins Road	Construct SR 58/West Beltway Intersection	$5 mil	Local	>2030
69.7	Near General Beale Road	New Truck Weigh Station	$11 mil	STIP	>2035
69.7	General Beale Road	Construct new interchange	$54 mil	STIP	>2035
69.7 – 92.6	General Beale Rd to east of Tehachapi	New truck auxiliary lanes/escape ramp	$86 mil	Local	>2035
91.67	Mill Street Bridge OC	Improvements/ widening	Unknown	Unknown	>2018
92.1 – 93.2	Dennison Road	Construct new interchange	$10.87 mil	RIP	>2035

V. CONCLUSION

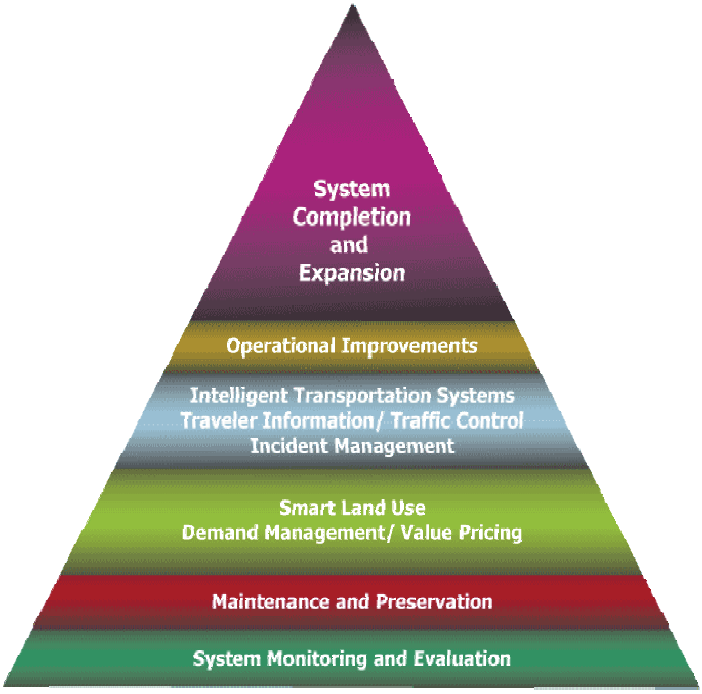
Corridor productivity can only be restored and maintained through a coordinated planning and management effort of all transportation partners. This "Strategic Growth Plan" includes system management strategies that will contribute to the successful management of the corridor. This comprehensive plan is best visualized by the "System Management Pyramid" (Figure 1, Page 63). 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 that we now have. This will include the identification of recurrent bottlenecks, their causes, and the impact that these individual bottlenecks have on the whole of the corridor. This has been done using Tachometer runs and FREQ modeling. Analysis of the accident history will also provide a means of understanding the current system.

FIGURE 1
THE SYSTEM MANAGEMENT PYRAMID



Part of monitoring and evaluating the system is to measure the effectiveness of an improvement project using performance measures. A list of performance measures is included in this document. These performance measures represent the best measurement of system performance for this individual section of the 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. 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 (Tables 8, 9, and 10, Pages 60 - 62).

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. Preserving right-of-way to allow for future, planned, capacity-enhancing projects will reduce the time to deliver projects and the overall price. Approving only those developments that are compatible with an adjacent or nearby transportation system, be it a freeway, airport, or transit station, would also help to protect the system.

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 ITS elements are identified in Table 4, Page 43, and the proposed ITS elements are listed in Table 5, Pages 44 and 45.

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

The various components of Intelligent Transportation Systems, Traveler Information, Traffic Control, and Incident Management have been described elsewhere in this document. Some elements exist today along the corridor (Table 4, Page 43); others have been proposed and are listed in Table 5, Pages 44 and 45. 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 of Route 58 is projected to deteriorate to predominately 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 ITS elements are listed in Table 5, Pages 44 and 45; other projects are outlined in Tables 8, 9, and 10 on Pages 60 - 62).

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. Table 8, Page 60, presents the 10-year improvement plan for this section of Route 58.

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 be updating this document as necessary to reflect changes in the corridor.

SIGNATORIES

MEMORANDUM OF UNDERSTANDING
FOR
A CORRIDOR SYSTEM MANAGEMENT PLAN

ROUTE 58
FROM THE SAN LUIS OBISPO COUNTY LINE TO THE SAN BERNARDINO COUNTY LINE (KER PM 0.00 – 143.86)

5/4/10

Malcolm X. Dougherty
District Director
California Department of Transportation, District 6
1352 West Olive Avenue
Fresno, CA 93728

Date

April 20, 2010

Ronald Brummett
Executive Director
Kern Council of Governments
1401 19th Street, Suite 300
Bakersfield, CA 93301

Date

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

State Route 58
(KER PM 0.00 through 143.86)
Charter for Development and Implementation

The Development and Implementation of a Corridor System Management Plan (CMSP) for Route 58 from the San Luis Obispo County Line to the San Bernardino County line. This Charter or MOU is between the California Department of Transportation, District 6 (hereinafter, District 6) and the Kern Council of Governments (KCOG). This MOU constitutes solely as a guide to the respective obligations, intentions and policies of the partners and District 6 to identify the development and management of the Route 58 corridor through Kern County, between the San Luis Obispo County line and the San Bernardino County line. 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 58.

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.

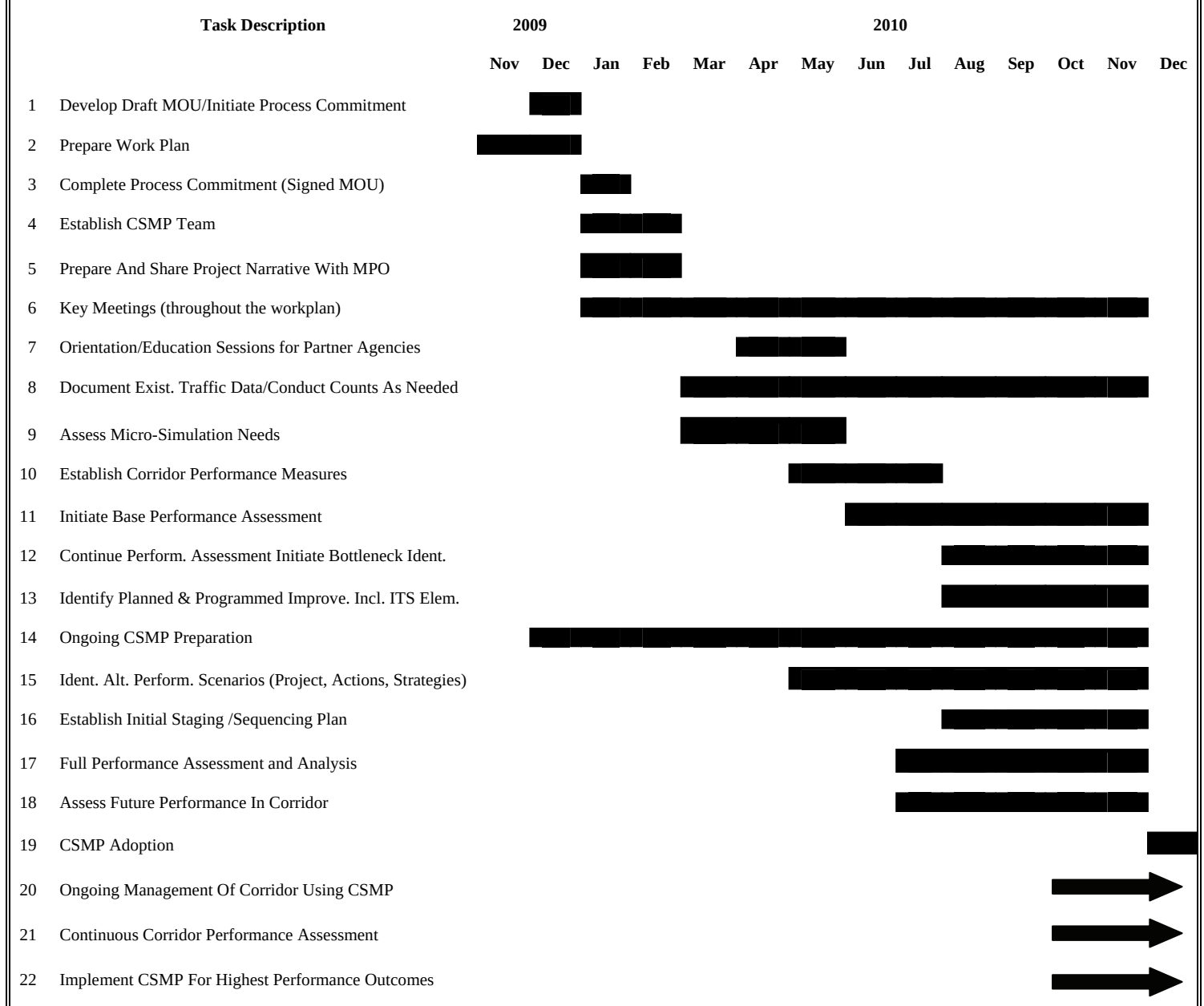
Appendices:

- Draft Work Plan (Attachment 1)
- Map of Route 58 corridor from Kern Post Mile (PM) 0.00 to 143.86 (Attachment 2)

ATTACHMENT 1
WORK PLAN

ROUTE 58 CSMP WORKPLAN

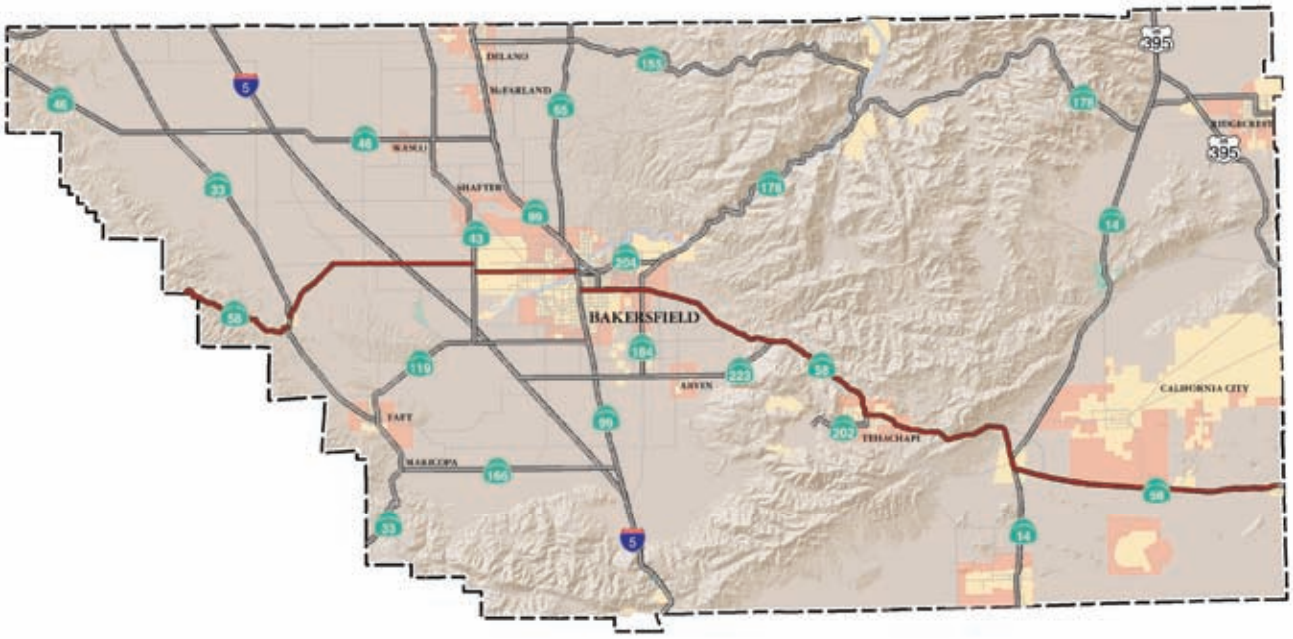
Corridor: Route 58; KER PM 0.00 - PM 143.86



Executive Steering Committee
District 6 Director
District 6 Deputy Director, Planning and Local Programs
District 6 Deputy Director, Maintenance and Operations
District 6 Deputy Director, Program Project Management
Executive Director, Kern Council of Governments

CSMP Development Team
District 6 South Planning Staff
District 6 Technical Planning Staff
District 6 System Planning Staff
District 6 Traffic Operations Staff
District 6 Traffic Engineering Staff
City of Bakersfield Planning Staff
City of Bakersfield Public Works Staff
County of Bakersfield Planning Staff
County of Bakersfield Public Works Staff

ATTACHEMENT 2
MAP OF ROUTE 58 CORRIDOR



APPENDIX B
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:

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 C
Transit Services in Kern County

Segment	KER Post Mile	From/To	Transit Services
1 – 6	0.7 – 31.6	San Luis Obispo County line to I-5/58 SEP	*The Kern Regional Transit operates from Buttonwillow to the Bakersfield area.*
7 – 11	31.6 – 59.4	I-5/58 SEP to RTE 58/184 SEP	*Common transit carriers include Greyhound Bus Lines, Orange Belt Stages, and Amtrak connections. Golden Empire Transit (GET) operates Fixed Routes within Bakersfield. Kern Regional Transit operates Fixed Routes.*
12 – 22	59.4 – 143.9	RTE 58/184 SEP to San Bernardino County line	*Common transit carriers include Greyhound Bus Lines, Orange Belt Stages, and the Amtrak Connection (Amtrak's continuing bus to Tehachapi, Mojave and Boron). Kern Regional Transit operates throughout rural Kern County eastward to Boron with both Fixed Route and Dial-a-Ride services.*
19 – 20	*107.6 – 118.0*	*From Mojave to Route 14*	*The Eastern Sierra Transit Authority (ESTA) is the primary provider of public bus services throughout Inyo and Mono Counties, and the sole provider of interregional public transportation for the entire Eastern Sierra Region. ESTA's CREST route connects the Eastern Sierra corridor along Hwy 395 and travels North to Reno, Nevada and South to Lancaster, CA with connections to Los Angeles and Kern Counties. There is a stop in Mojave.*

APPENDIX D
Bicycle 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 E
Pedestrian Facilities

Segment (s) PM From / To	Pedestrian Facilities by Segment (1) (2)
Kern County All Segments - All Post Miles	Sections of Route 58 are access-controlled freeway and pedestrians are prohibited. In the sections where pedestrians are allowed, pedestrian and ADA concerns, such as the installation and maintenance of crosswalks, sidewalks, ramps, curb cuts, hand railings and pedestrian activated signal heads etc., are primarily to be found within some sections included within this Route's population centers. Much of this Route is rural with few, if any, pedestrian or ADA concerns needing to be addressed at this time. The sections, however, from Allen Road to Route 99 and the portion through Buttonwillow do have pedestrian and ADA concerns. Additional ADA and pedestrian concern may occur anywhere along this route should any form of urban development occur in the future.

(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."

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APPENDIX F
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

ITS 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.

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.

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. Route 201

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 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

Effective ITS implementation requires coordination of all components. Transportation Management Centers (TMC) 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:

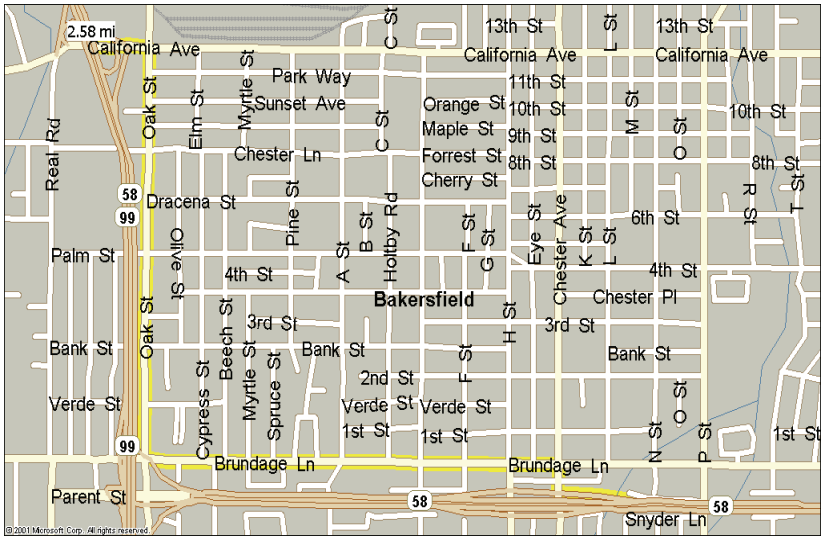
- Rideshare programs
- Transit usage
- Flex hours
- Vanpools
- Bicycling and walking
- Telecommuting
- Mixed land uses (jobs – housing balance)

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.

APPENDIX G
LOCAL ROAD DETOURS

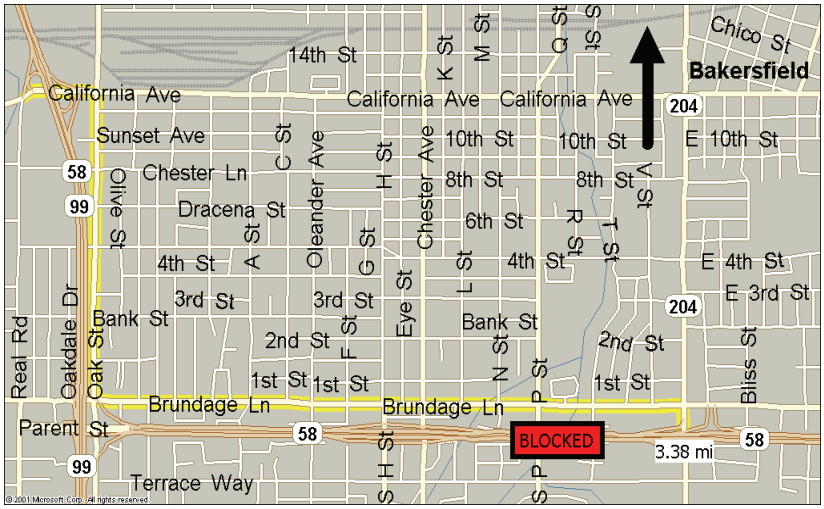
Kern 58 Map#1
Maintenance Call Area: 613

EB Traffic: Off at California Ave., east to Oak St., South to Brundage Ln., east to Chester Ave., south to Route 58. **WB Traffic:** Reverse.



Kern 58 Map#2
Maintenance Call Area: 613

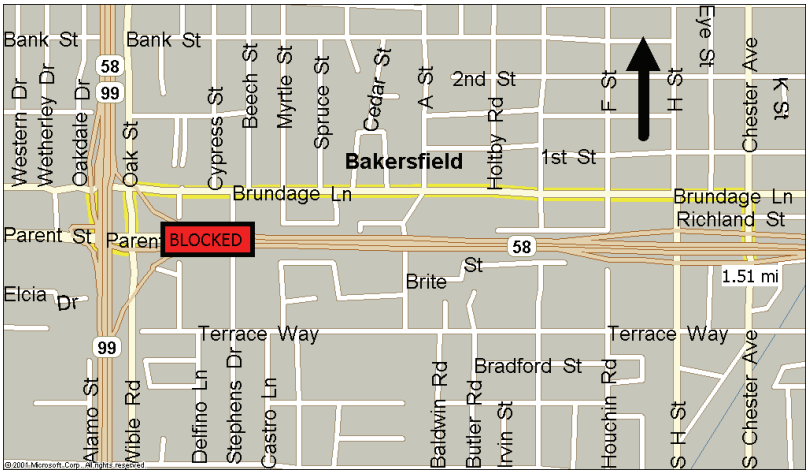
EB Traffic: Off at California Ave., east to Oak St., South to Brundage Ln., east to Union Ave., south to Route 58. **WB Traffic:** Reverse.



APPENDIX G
LOCAL ROAD DETOURS, CONTINUED

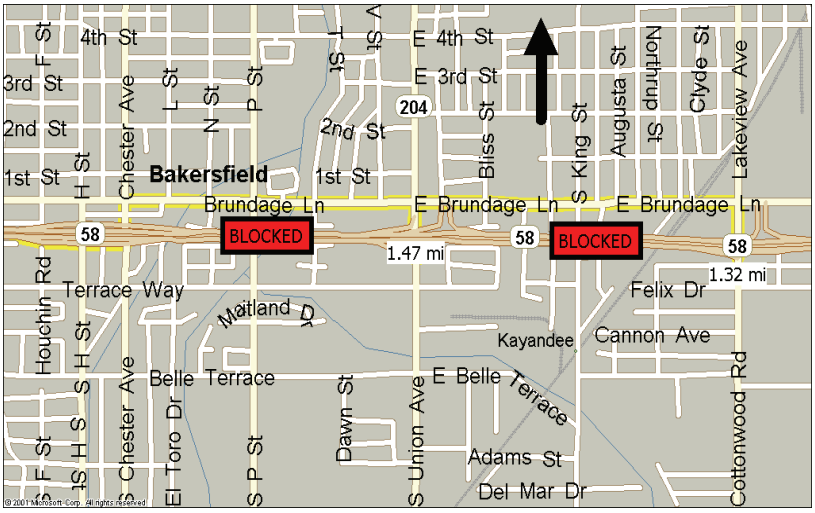
Kern 58 Map#3
Maintenance Call Area: 613

EB Traffic: Off at Stockdale Hwy., east to Oak St., north to Brundage Ln., east to Chester Ave., south to Route 58. **WB Traffic:** Reverse.



Kern 58 Map#4
Maintenance Call Area: 613

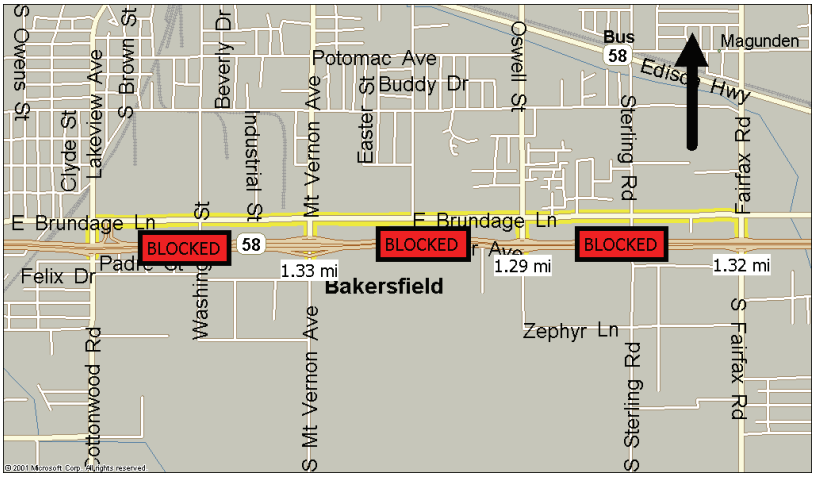
EB Traffic: Off at Chester Ave., north to Brundage Ln., east to Union or Lakeview Ave./Cottonwood Rd., south to Route 58. **WB Traffic: Reverse.**



APPENDIX G
LOCAL ROAD DETOURS, CONTINUED

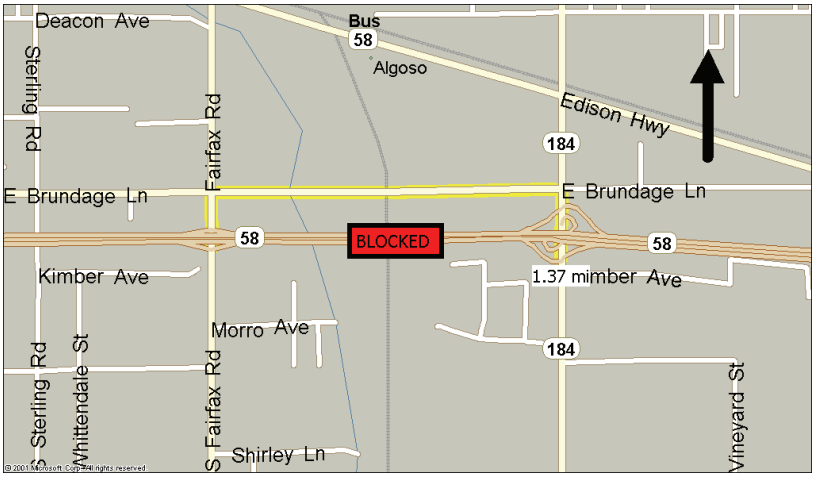
Kern 58 Map#5
Maintenance Call Area: 613

EB Traffic: Off at Lakeview Ave., Mt. Vernon Ave., or Oswell St., north to Brundage Ln., east to closet return or Fairfax Rd., south to Route 58. **WB Traffic:** Reverse.



Kern 58 Map#6
Maintenance Call Area: 613

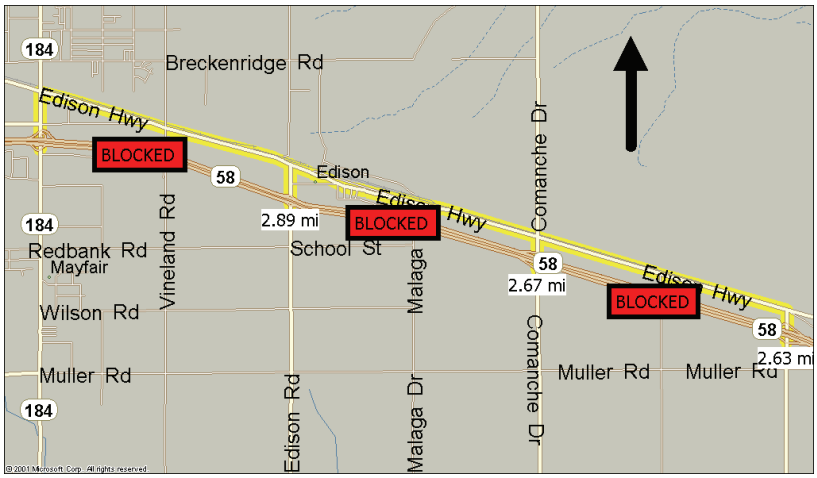
EB Traffic: Off at Fairfax Rd., north to Brundage Ln., east to Route 184, south to Route 58.
WB Traffic: Reverse.



APPENDIX G
LOCAL ROAD DETOURS, CONTINUED

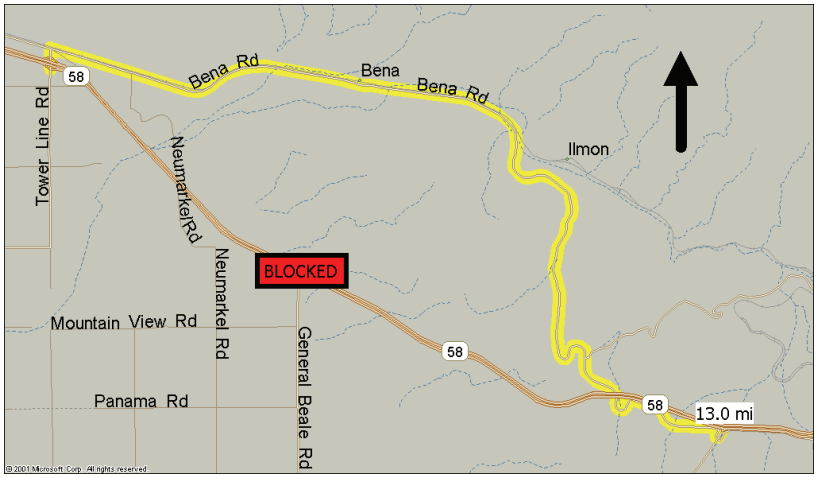
Kern 58 Map#7
Maintenance Call Area: 613

EB Traffic: Off at Route 184, Edison Rd., or Comanche Dr., north to Edison Hwy, east to closet return, south to Route 58. **WB Traffic:** Reverse. **Alternative:** Off at Route 184, south to Route 223, then east to Route 58.



Kern 58 Map#8
Maintenance Call Area: 613

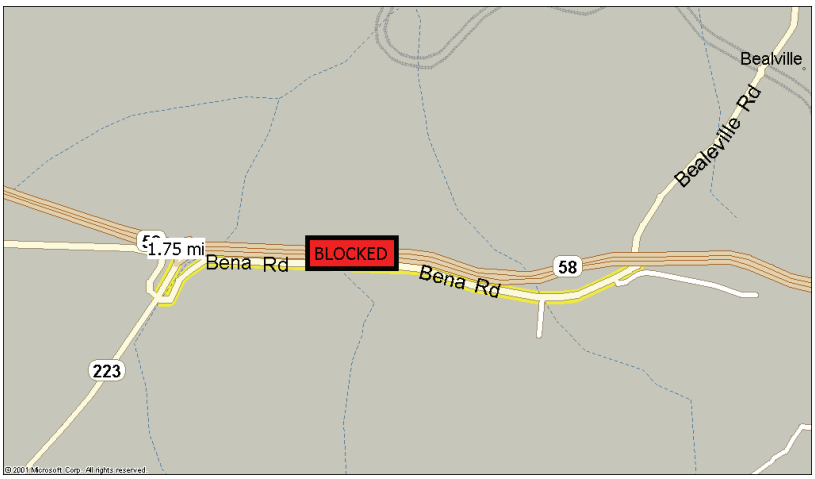
EB Traffic: Off at Tower Line Rd., north to Edison Hwy/Bena Rd., east to Route 223, north to Route 58. **WB Traffic:** Reverse.



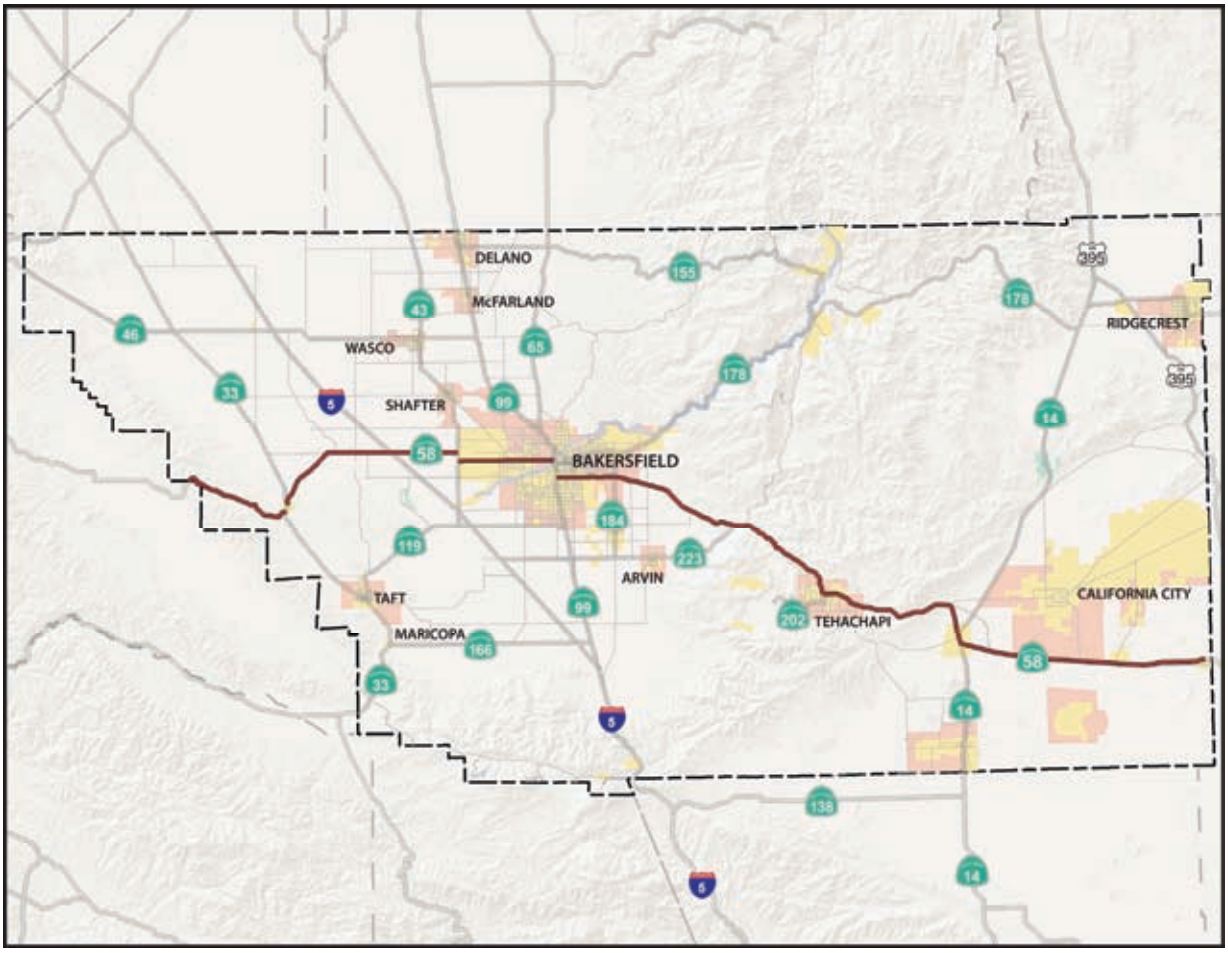
APPENDIX G
LOCAL ROAD DETOURS, CONTINUED

Kern 58 Map#9
Maintenance Call Area: 613

EB Traffic: Off at Route 223/Bena Rd., south to Bealeville Rd., east to Route 58. **WB Traffic:** Reverse.



APPENDIX H
STATE HIGHWAY ROAD DETOURS



APPENDIX I
TACHOMETER RUN DATA SHEETS
EASTBOUND PM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	16:14:24					
HUGHES LN OC	52.891	16:14:54	0.56	30	67	0	0
CHESTER AVE OC	53.519	16:15:27	0.63	33	69	0	0
UNION AVE OC	54.419	16:16:18	0.90	51	64	0	0
COTTONWOOD RD	55.404	16:17:13	0.99	55	64	0	0
MT VERNON AVE	56.410	16:18:09	1.01	56	65	0	0
OSWELL ST UC	57.412	16:19:03	1.00	54	67	0	0
FAIRFAX RD OC	58.436	16:20:00	1.02	57	65	0	0
VINELAND RD OC	60.450	16:21:59	2.01	119	61	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	16:33:35					
HUGHES LN OC	52.891	16:34:04	0.56	29	69	0	0
CHESTER AVE OC	53.519	16:34:36	0.63	32	71	0	0
UNION AVE OC	54.419	16:35:30	0.90	54	60	0	0
COTTONWOOD RD	55.404	16:36:33	0.99	63	56	0	0
MT VERNON AVE	56.410	16:37:28	1.01	55	66	0	0
OSWELL ST UC	57.412	16:38:23	1.00	55	66	0	0
FAIRFAX RD OC	58.436	16:39:18	1.02	55	67	0	0
VINELAND RD OC	60.450	16:41:14	2.01	116	63	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	16:51:58					
HUGHES LN OC	52.891	16:52:27	0.56	29	69	0	0
CHESTER AVE OC	53.519	16:53:00	0.63	33	69	0	0
UNION AVE OC	54.419	16:53:59	0.90	59	55	0	0
COTTONWOOD RD	55.404	16:54:53	0.99	54	66	0	0
MT VERNON AVE	56.410	16:55:47	1.01	54	67	0	0
OSWELL ST UC	57.412	16:56:41	1.00	54	67	0	0
FAIRFAX RD OC	58.436	16:57:35	1.02	54	68	0	0
VINELAND RD OC	60.450	16:59:27	2.01	112	65	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
EASTBOUND PM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	17:11:54					
HUGHES LN OC	52.891	17:12:24	0.56	30	67	0	0
CHESTER AVE OC	53.519	17:12:58	0.63	34	66	0	0
UNION AVE OC	54.419	17:13:49	0.90	51	64	0	0
COTTONWOOD RD	55.404	17:14:46	0.99	57	62	0	0
MT VERNON AVE	56.410	17:15:41	1.01	55	66	0	0
OSWELL ST UC	57.412	17:16:36	1.00	55	66	0	0
FAIRFAX RD OC	58.436	17:17:31	1.02	55	67	0	0
VINELAND RD OC	60.450	17:19:24	2.01	113	64	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	17:30:57					
HUGHES LN OC	52.891	17:31:27	0.56	30	67	0	0
CHESTER AVE OC	53.519	17:32:01	0.63	34	66	0	0
UNION AVE OC	54.419	17:32:50	0.90	49	66	0	0
COTTONWOOD RD	55.404	17:33:45	0.99	55	64	0	0
MT VERNON AVE	56.410	17:34:39	1.01	54	67	0	0
OSWELL ST UC	57.412	17:35:35	1.00	56	64	0	0
FAIRFAX RD OC	58.436	17:36:32	1.02	57	65	0	0
VINELAND RD OC	60.450	17:38:29	2.01	117	62	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
EASTBOUND PM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	16:08:10					
HUGHES LN OC	52.891	16:08:42	0.56	32	63	0	0
CHESTER AVE OC	53.519	16:09:19	0.63	37	61	0	0
UNION AVE OC	54.419	16:10:08	0.90	49	66	0	0
COTTONWOOD RD	55.404	16:11:05	0.99	57	62	0	0
MT VERNON AVE	56.410	16:11:59	1.01	54	67	0	0
OSWELL ST UC	57.412	16:12:53	1.00	54	67	0	0
FAIRFAX RD OC	58.436	16:13:48	1.02	55	67	0	0
VINELAND RD OC	60.450	16:15:36	2.01	108	67	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	16:27:44					
HUGHES LN OC	52.891	16:28:12	0.56	28	72	0	0
CHESTER AVE OC	53.519	16:28:46	0.63	34	66	0	0
UNION AVE OC	54.419	16:29:34	0.90	48	67	0	0
COTTONWOOD RD	55.404	16:30:25	0.99	51	70	0	0
MT VERNON AVE	56.410	16:31:19	1.01	54	67	0	0
OSWELL ST UC	57.412	16:32:13	1.00	54	67	0	0
FAIRFAX RD OC	58.436	16:33:09	1.02	56	66	0	0
VINELAND RD OC	60.450	16:35:00	2.01	111	65	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	16:46:00					
HUGHES LN OC	52.891	16:46:27	0.56	27	75	0	0
CHESTER AVE OC	53.519	16:47:01	0.63	34	66	0	0
UNION AVE OC	54.419	16:47:49	0.90	48	67	0	0
COTTONWOOD RD	55.404	16:48:41	0.99	52	68	0	0
MT VERNON AVE	56.410	16:49:36	1.01	55	66	0	0
OSWELL ST UC	57.412	16:50:33	1.00	57	63	0	0
FAIRFAX RD OC	58.436	16:51:30	1.02	57	65	0	0
VINELAND RD OC	60.450	16:53:22	2.01	112	65	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
EASTBOUND PM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	17:04:01					
HUGHES LN OC	52.891	17:04:30	0.56	29	69	0	0
CHESTER AVE OC	53.519	17:05:10	0.63	40	57	0	0
UNION AVE OC	54.419	17:06:00	0.90	50	65	0	0
COTTONWOOD RD	55.404	17:06:53	0.99	53	67	0	0
MT VERNON AVE	56.410	17:07:45	1.01	52	70	0	0
OSWELL ST UC	57.412	17:08:38	1.00	53	68	0	0
FAIRFAX RD OC	58.436	17:09:31	1.02	53	70	0	0
VINELAND RD OC	60.450	17:11:14	2.01	103	70	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	17:29:29					
HUGHES LN OC	52.891	17:29:55	0.56	26	77	0	0
CHESTER AVE OC	53.519	17:30:24	0.63	29	78	0	0
UNION AVE OC	54.419	17:31:14	0.90	50	65	0	0
COTTONWOOD RD	55.404	17:32:10	0.99	56	63	0	0
MT VERNON AVE	56.410	17:33:02	1.01	52	70	0	0
OSWELL ST UC	57.412	17:33:54	1.00	52	69	0	0
FAIRFAX RD OC	58.436	17:34:46	1.02	52	71	0	0
VINELAND RD OC	60.450	17:36:30	2.01	104	70	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
EASTBOUND AM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	6:38:13					
HUGHES LN OC	52.891	6:38:42	0.56	29	69	0	0
CHESTER AVE OC	53.519	6:39:14	0.63	32	71	0	0
UNION AVE OC	54.419	6:40:01	0.90	47	69	0	0
COTTONWOOD RD	55.404	6:40:53	0.99	52	68	0	0
MT VERNON AVE	56.410	6:41:45	1.01	52	70	0	0
OSWELL ST UC	57.412	6:42:38	1.00	53	68	0	0
FAIRFAX RD OC	58.436	6:43:33	1.02	55	67	0	0
VINELAND RD OC	60.450	6:45:20	2.01	107	68	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	6:56:04					
HUGHES LN OC	52.891	6:56:32	0.56	28	72	0	0
CHESTER AVE OC	53.519	6:57:05	0.63	33	69	0	0
UNION AVE OC	54.419	6:57:56	0.90	51	64	0	0
COTTONWOOD RD	55.404	6:58:48	0.99	52	68	0	0
MT VERNON AVE	56.410	6:59:40	1.01	52	70	0	0
OSWELL ST UC	57.412	7:00:31	1.00	51	71	0	0
FAIRFAX RD OC	58.436	7:01:25	1.02	54	68	0	0
VINELAND RD OC	60.450	7:03:07	2.01	102	71	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	7:14:04					
HUGHES LN OC	52.891	7:14:32	0.56	28	72	0	0
CHESTER AVE OC	53.519	7:15:04	0.63	32	71	0	0
UNION AVE OC	54.419	7:15:54	0.90	50	65	0	0
COTTONWOOD RD	55.404	7:16:47	0.99	53	67	0	0
MT VERNON AVE	56.410	7:17:39	1.01	52	70	0	0
OSWELL ST UC	57.412	7:18:33	1.00	54	67	0	0
FAIRFAX RD OC	58.436	7:19:28	1.02	55	67	0	0
VINELAND RD OC	60.450	7:21:17	2.01	109	67	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
EASTBOUND AM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	7:32:04					
HUGHES LN OC	52.891	7:32:31	0.56	27	75	0	0
CHESTER AVE OC	53.519	7:33:02	0.63	31	73	0	0
UNION AVE OC	54.419	7:33:47	0.90	45	72	0	0
COTTONWOOD RD	55.404	7:34:37	0.99	50	71	0	0
MT VERNON AVE	56.410	7:35:28	1.01	51	71	0	0
OSWELL ST UC	57.412	7:36:21	1.00	53	68	0	0
FAIRFAX RD OC	58.436	7:37:12	1.02	51	72	0	0
VINELAND RD OC	60.450	7:38:57	2.01	105	69	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	7:50:01					
HUGHES LN OC	52.891	7:50:28	0.56	27	75	0	0
CHESTER AVE OC	53.519	7:51:00	0.63	32	71	0	0
UNION AVE OC	54.419	7:51:48	0.90	48	67	0	0
COTTONWOOD RD	55.404	7:52:38	0.99	50	71	0	0
MT VERNON AVE	56.410	7:53:29	1.01	51	71	0	0
OSWELL ST UC	57.412	7:54:21	1.00	52	69	0	0
FAIRFAX RD OC	58.436	7:55:14	1.02	53	70	0	0
VINELAND RD OC	60.450	7:57:02	2.01	108	67	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	8:07:30					
HUGHES LN OC	52.891	8:07:58	0.56	28	72	0	0
CHESTER AVE OC	53.519	8:08:30	0.63	32	71	0	0
UNION AVE OC	54.419	8:09:16	0.90	46	70	0	0
COTTONWOOD RD	55.404	8:10:10	0.99	54	66	0	0
MT VERNON AVE	56.410	8:11:02	1.01	52	70	0	0
OSWELL ST UC	57.412	8:11:52	1.00	50	72	0	0
FAIRFAX RD OC	58.436	8:12:44	1.02	52	71	0	0
VINELAND RD OC	60.450	8:14:31	2.01	107	68	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
EASTBOUND AM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	6:46:49					
HUGHES LN OC	52.891	6:47:17	0.56	28	72	0	0
CHESTER AVE OC	53.519	6:47:49	0.63	32	71	0	0
UNION AVE OC	54.419	6:48:43	0.90	54	60	0	0
COTTONWOOD RD	55.404	6:49:42	0.99	59	60	0	0
MT VERNON AVE	56.410	6:50:37	1.01	55	66	0	0
OSWELL ST UC	57.412	6:51:28	1.00	51	71	0	0
FAIRFAX RD OC	58.436	6:52:21	1.02	53	70	0	0
VINELAND RD OC	60.450	6:54:11	2.01	110	66	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	7:05:03					
HUGHES LN OC	52.891	7:05:33	0.56	30	67	0	0
CHESTER AVE OC	53.519	7:06:06	0.63	33	69	0	0
UNION AVE OC	54.419	7:06:58	0.90	52	62	0	0
COTTONWOOD RD	55.404	7:07:55	0.99	57	62	0	0
MT VERNON AVE	56.410	7:08:47	1.01	52	70	0	0
OSWELL ST UC	57.412	7:09:40	1.00	53	68	0	0
FAIRFAX RD OC	58.436	7:10:34	1.02	54	68	0	0
VINELAND RD OC	60.450	7:12:25	2.01	111	65	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	7:23:01					
HUGHES LN OC	52.891	7:23:30	0.56	29	69	0	0
CHESTER AVE OC	53.519	7:24:04	0.63	34	66	0	0
UNION AVE OC	54.419	7:24:52	0.90	48	67	0	0
COTTONWOOD RD	55.404	7:25:47	0.99	55	64	0	0
MT VERNON AVE	56.410	7:26:39	1.01	52	70	0	0
OSWELL ST UC	57.412	7:27:31	1.00	52	69	0	0
FAIRFAX RD OC	58.436	7:28:24	1.02	53	70	0	0
VINELAND RD OC	60.450	7:30:20	2.01	116	63	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
EASTBOUND AM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	7:46:49					
HUGHES LN OC	52.891	7:47:19	0.56	30	67	0	0
CHESTER AVE OC	53.519	7:47:52	0.63	33	69	0	0
UNION AVE OC	54.419	7:48:41	0.90	49	66	0	0
COTTONWOOD RD	55.404	7:49:35	0.99	54	66	0	0
MT VERNON AVE	56.410	7:50:27	1.01	52	70	0	0
OSWELL ST UC	57.412	7:51:19	1.00	52	69	0	0
FAIRFAX RD OC	58.436	7:52:12	1.02	53	70	0	0
VINELAND RD OC	60.450	7:54:02	2.01	110	66	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
ROUTE 99/58SEP	52.332	8:05:19					
HUGHES LN OC	52.891	8:05:48	0.56	29	69	0	0
CHESTER AVE OC	53.519	8:06:21	0.63	33	69	0	0
UNION AVE OC	54.419	8:07:12	0.90	51	64	0	0
COTTONWOOD RD	55.404	8:08:07	0.99	55	64	0	0
MT VERNON AVE	56.410	8:08:59	1.01	52	70	0	0
OSWELL ST UC	57.412	8:09:50	1.00	51	71	0	0
FAIRFAX RD OC	58.436	8:10:42	1.02	52	71	0	0
VINELAND RD OC	60.450	8:12:30	2.01	108	67	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND PM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	16:06:39					
FAIRFAX RD OC	58.436	16:08:22	2.01	103	70	0	0
OSWELL ST UC	57.412	16:09:17	1.02	55	67	0	0
MT VERNON AVE	56.410	16:10:11	1.00	54	67	0	0
COTTONWOOD RD	55.404	16:11:04	1.01	53	68	0	0
UNION AVE OC	54.419	16:11:58	0.99	54	66	0	0
CHESTER AVE OC	53.519	16:12:51	0.90	53	61	0	0
HUGHES LN OC	52.891	16:13:25	0.63	34	66	0	0
ROUTE 99/58SEP	52.332	16:13:39	0.56	14	---	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	16:24:41					
FAIRFAX RD OC	58.436	16:26:25	2.01	104	70	0	0
OSWELL ST UC	57.412	16:27:19	1.02	54	68	0	0
MT VERNON AVE	56.410	16:28:12	1.00	53	68	0	0
COTTONWOOD RD	55.404	16:29:06	1.01	54	67	0	0
UNION AVE OC	54.419	16:30:03	0.99	57	62	0	0
CHESTER AVE OC	53.519	16:30:58	0.90	55	59	0	0
HUGHES LN OC	52.891	16:31:33	0.63	35	65	0	0
ROUTE 99/58SEP	52.332	16:32:10	0.56	37	54	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	16:43:55					
FAIRFAX RD OC	58.436	16:45:39	2.01	104	70	0	0
OSWELL ST UC	57.412	16:46:33	1.02	54	68	0	0
MT VERNON AVE	56.410	16:47:26	1.00	53	68	0	0
COTTONWOOD RD	55.404	16:48:23	1.01	57	64	0	0
UNION AVE OC	54.419	16:49:18	0.99	55	64	0	0
CHESTER AVE OC	53.519	16:50:11	0.90	53	61	0	0
HUGHES LN OC	52.891	16:50:44	0.63	33	69	0	0
ROUTE 99/58SEP	52.332	16:51:15	0.56	31	65	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND PM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	17:03:15					
FAIRFAX RD OC	58.436	17:04:59	2.01	104	70	0	0
OSWELL ST UC	57.412	17:05:51	1.02	52	71	0	0
MT VERNON AVE	56.410	17:06:44	1.00	53	68	0	0
COTTONWOOD RD	55.404	17:07:37	1.01	53	68	0	0
UNION AVE OC	54.419	17:08:47	0.99	70	51	0	0
CHESTER AVE OC	53.519	17:10:00	0.90	73	44	0	8
HUGHES LN OC	52.891	17:10:35	0.63	35	65	0	0
ROUTE 99/58SEP	52.332	17:11:10	0.56	35	57	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	17:22:05					
FAIRFAX RD OC	58.436	17:23:51	2.01	106	68	0	0
OSWELL ST UC	57.412	17:24:46	1.02	55	67	0	0
MT VERNON AVE	56.410	17:25:38	1.00	52	69	0	0
COTTONWOOD RD	55.404	17:26:34	1.01	56	65	0	0
UNION AVE OC	54.419	17:27:27	0.99	53	67	0	0
CHESTER AVE OC	53.519	17:28:17	0.90	50	65	0	0
HUGHES LN OC	52.891	17:28:50	0.63	33	69	0	0
ROUTE 99/58SEP	52.332	17:29:22	0.56	32	63	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	17:41:09					
FAIRFAX RD OC	58.436	17:42:56	2.01	107	68	0	0
OSWELL ST UC	57.412	17:43:50	1.02	54	68	0	0
MT VERNON AVE	56.410	17:44:44	1.00	54	67	0	0
COTTONWOOD RD	55.404	17:45:37	1.01	53	68	0	0
UNION AVE OC	54.419	17:46:30	0.99	53	67	0	0
CHESTER AVE OC	53.519	17:47:19	0.90	49	66	0	0
HUGHES LN OC	52.891	17:47:53	0.63	34	66	0	0
ROUTE 99/58SEP	52.332	17:48:26	0.56	33	61	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND PM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	16:18:07					
FAIRFAX RD OC	58.436	16:19:51	2.01	104	70	0	0
OSWELL ST UC	57.412	16:20:44	1.02	53	70	0	0
MT VERNON AVE	56.410	16:21:36	1.00	52	69	0	0
COTTONWOOD RD	55.404	16:22:29	1.01	53	68	0	0
UNION AVE OC	54.419	16:23:24	0.99	55	64	0	0
CHESTER AVE OC	53.519	16:24:37	0.90	73	44	0	8
HUGHES LN OC	52.891	16:25:14	0.63	37	61	0	0
ROUTE 99/58SEP	52.332	16:25:46	0.56	32	63	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	16:37:31					
FAIRFAX RD OC	58.436	16:39:13	2.01	102	71	0	0
OSWELL ST UC	57.412	16:40:04	1.02	51	72	0	0
MT VERNON AVE	56.410	16:40:55	1.00	51	71	0	0
COTTONWOOD RD	55.404	16:41:48	1.01	53	68	0	0
UNION AVE OC	54.419	16:42:41	0.99	53	67	0	0
CHESTER AVE OC	53.519	16:43:33	0.90	52	62	0	0
HUGHES LN OC	52.891	16:44:07	0.63	34	66	0	0
ROUTE 99/58SEP	52.332	16:44:38	0.56	31	65	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	16:55:47					
FAIRFAX RD OC	58.436	16:57:24	2.01	97	75	0	0
OSWELL ST UC	57.412	16:58:16	1.02	52	71	0	0
MT VERNON AVE	56.410	16:59:09	1.00	53	68	0	0
COTTONWOOD RD	55.404	17:00:04	1.01	55	66	0	0
UNION AVE OC	54.419	17:00:55	0.99	51	70	0	0
CHESTER AVE OC	53.519	17:01:42	0.90	47	69	0	0
HUGHES LN OC	52.891	17:02:14	0.63	32	71	0	0
ROUTE 99/58SEP	52.332	17:02:42	0.56	28	72	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND PM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	17:21:30					
FAIRFAX RD OC	58.436	17:23:05	2.01	95	76	0	0
OSWELL ST UC	57.412	17:23:56	1.02	51	72	0	0
MT VERNON AVE	56.410	17:24:46	1.00	50	72	0	0
COTTONWOOD RD	55.404	17:25:40	1.01	54	67	0	0
UNION AVE OC	54.419	17:26:31	0.99	51	70	0	0
CHESTER AVE OC	53.519	17:27:20	0.90	49	66	0	0
HUGHES LN OC	52.891	17:27:51	0.63	31	73	0	0
ROUTE 99/58SEP	52.332	17:28:21	0.56	30	67	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	17:38:48					
FAIRFAX RD OC	58.436	17:40:25	2.01	97	75	0	0
OSWELL ST UC	57.412	17:41:14	1.02	49	75	0	0
MT VERNON AVE	56.410	17:42:05	1.00	51	71	0	0
COTTONWOOD RD	55.404	17:42:59	1.01	54	67	0	0
UNION AVE OC	54.419	17:43:50	0.99	51	70	0	0
CHESTER AVE OC	53.519	17:44:40	0.90	50	65	0	0
HUGHES LN OC	52.891	17:45:12	0.63	32	71	0	0
ROUTE 99/58SEP	52.332	17:45:41	0.56	29	69	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND AM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	6:47:56					
FAIRFAX RD OC	58.436	6:49:37	2.01	101	72	0	0
OSWELL ST UC	57.412	6:50:29	1.02	52	71	0	0
MT VERNON AVE	56.410	6:51:20	1.00	51	71	0	0
COTTONWOOD RD	55.404	6:52:13	1.01	53	68	0	0
UNION AVE OC	54.419	6:53:04	0.99	51	70	0	0
CHESTER AVE OC	53.519	6:53:50	0.90	46	70	0	0
HUGHES LN OC	52.891	6:54:22	0.63	32	71	0	0
ROUTE 99/58SEP	52.332	6:54:51	0.56	29	69	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	7:05:29					
FAIRFAX RD OC	58.436	7:07:08	2.01	99	73	0	0
OSWELL ST UC	57.412	7:07:58	1.02	50	74	0	0
MT VERNON AVE	56.410	7:08:49	1.00	51	71	0	0
COTTONWOOD RD	55.404	7:09:42	1.01	53	68	0	0
UNION AVE OC	54.419	7:10:37	0.99	55	64	0	0
CHESTER AVE OC	53.519	7:11:29	0.90	52	62	0	0
HUGHES LN OC	52.891	7:12:03	0.63	34	66	0	0
ROUTE 99/58SEP	52.332	7:12:31	0.56	28	72	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	7:24:01					
FAIRFAX RD OC	58.436	7:25:40	2.01	99	73	0	0
OSWELL ST UC	57.412	7:26:31	1.02	51	72	0	0
MT VERNON AVE	56.410	7:27:20	1.00	49	74	0	0
COTTONWOOD RD	55.404	7:28:10	1.01	50	72	0	0
UNION AVE OC	54.419	7:29:00	0.99	50	71	0	0
CHESTER AVE OC	53.519	7:29:49	0.90	49	66	0	0
HUGHES LN OC	52.891	7:30:22	0.63	33	69	0	0
ROUTE 99/58SEP	52.332	7:30:50	0.56	28	72	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND AM RUNS, VEHICLE NUMBER 1

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	7:41:28					
FAIRFAX RD OC	58.436	7:43:09	2.01	101	72	0	0
OSWELL ST UC	57.412	7:44:04	1.02	55	67	0	0
MT VERNON AVE	56.410	7:44:59	1.00	55	66	0	0
COTTONWOOD RD	55.404	7:46:05	1.01	66	55	0	0
UNION AVE OC	54.419	7:47:08	0.99	63	56	0	0
CHESTER AVE OC	53.519	7:47:56	0.90	48	67	0	0
HUGHES LN OC	52.891	7:48:31	0.63	35	65	0	0
ROUTE 99/58SEP	52.332	7:48:59	0.56	28	72	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	7:59:27					
FAIRFAX RD OC	58.436	8:01:05	2.01	98	74	0	0
OSWELL ST UC	57.412	8:01:55	1.02	50	74	0	0
MT VERNON AVE	56.410	8:02:45	1.00	50	72	0	0
COTTONWOOD RD	55.404	8:03:42	1.01	57	64	0	0
UNION AVE OC	54.419	8:04:37	0.99	55	64	0	0
CHESTER AVE OC	53.519	8:05:25	0.90	48	67	0	0
HUGHES LN OC	52.891	8:06:02	0.63	37	61	0	0
ROUTE 99/58SEP	52.332	8:06:31	0.56	29	69	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	8:17:04					
FAIRFAX RD OC	58.436	8:18:43	2.01	99	73	0	0
OSWELL ST UC	57.412	8:19:37	1.02	54	68	0	0
MT VERNON AVE	56.410	8:20:30	1.00	53	68	0	0
COTTONWOOD RD	55.404	8:21:21	1.01	51	71	0	0
UNION AVE OC	54.419	8:22:11	0.99	50	71	0	0
CHESTER AVE OC	53.519	8:22:57	0.90	46	70	0	0
HUGHES LN OC	52.891	8:23:29	0.63	32	71	0	0
ROUTE 99/58SEP	52.332	8:23:42	0.56	13	---	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND AM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	6:38:11					
FAIRFAX RD OC	58.436	6:39:57	2.01	106	68	0	0
OSWELL ST UC	57.412	6:40:52	1.02	55	67	0	0
MT VERNON AVE	56.410	6:41:46	1.00	54	67	0	0
COTTONWOOD RD	55.404	6:42:40	1.01	54	67	0	0
UNION AVE OC	54.419	6:43:39	0.99	59	60	0	0
CHESTER AVE OC	53.519	6:44:29	0.90	50	65	0	0
HUGHES LN OC	52.891	6:45:02	0.63	33	69	0	0
ROUTE 99/58SEP	52.332	6:45:31	0.56	29	69	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	6:57:05					
FAIRFAX RD OC	58.436	6:58:48	2.01	103	70	0	0
OSWELL ST UC	57.412	6:59:41	1.02	53	70	0	0
MT VERNON AVE	56.410	7:00:33	1.00	52	69	0	0
COTTONWOOD RD	55.404	7:01:26	1.01	53	68	0	0
UNION AVE OC	54.419	7:02:19	0.99	53	67	0	0
CHESTER AVE OC	53.519	7:03:07	0.90	48	67	0	0
HUGHES LN OC	52.891	7:03:39	0.63	32	71	0	0
ROUTE 99/58SEP	52.332	7:04:09	0.56	30	67	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	7:15:06					
FAIRFAX RD OC	58.436	7:16:50	2.01	104	70	0	0
OSWELL ST UC	57.412	7:17:42	1.02	52	71	0	0
MT VERNON AVE	56.410	7:18:34	1.00	52	69	0	0
COTTONWOOD RD	55.404	7:19:26	1.01	52	70	0	0
UNION AVE OC	54.419	7:20:18	0.99	52	68	0	0
CHESTER AVE OC	53.519	7:21:08	0.90	50	65	0	0
HUGHES LN OC	52.891	7:21:42	0.63	34	66	0	0
ROUTE 99/58SEP	52.332	7:22:16	0.56	34	59	0	0

APPENDIX I, CONTINUED
TACHOMETER RUN DATA SHEETS
WESTBOUND AM RUNS, VEHICLE NUMBER 2

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	7:33:00					
FAIRFAX RD OC	58.436	7:34:44	2.01	104	70	0	0
OSWELL ST UC	57.412	7:35:38	1.02	54	68	0	0
MT VERNON AVE	56.410	7:36:32	1.00	54	67	0	0
COTTONWOOD RD	55.404	7:37:24	1.01	52	70	0	0
UNION AVE OC	54.419	7:38:19	0.99	55	64	0	0
CHESTER AVE OC	53.519	7:39:07	0.90	48	67	0	0
HUGHES LN OC	52.891	7:39:44	0.63	37	61	0	0
ROUTE 99/58SEP	52.332	7:40:19	0.56	35	57	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	7:56:49					
FAIRFAX RD OC	58.436	7:58:34	2.01	105	69	0	0
OSWELL ST UC	57.412	7:59:27	1.02	53	70	0	0
MT VERNON AVE	56.410	8:00:20	1.00	53	68	0	0
COTTONWOOD RD	55.404	8:01:16	1.01	56	65	0	0
UNION AVE OC	54.419	8:02:08	0.99	52	68	0	0
CHESTER AVE OC	53.519	8:02:56	0.90	48	67	0	0
HUGHES LN OC	52.891	8:03:28	0.63	32	71	0	0
ROUTE 99/58SEP	52.332	8:03:54	0.56	26	77	0	0

Link	Post Mile	Time	Distance	Seconds	Speed	35 mph Delay	50 mph Delay
VINELAND RD OC	60.450	8:15:08					
FAIRFAX RD OC	58.436	8:16:51	2.01	103	70	0	0
OSWELL ST UC	57.412	8:17:44	1.02	53	70	0	0
MT VERNON AVE	56.410	8:18:36	1.00	52	69	0	0
COTTONWOOD RD	55.404	8:19:31	1.01	55	66	0	0
UNION AVE OC	54.419	8:20:24	0.99	53	67	0	0
CHESTER AVE OC	53.519	8:21:14	0.90	50	65	0	0
HUGHES LN OC	52.891	8:21:47	0.63	33	69	0	0
ROUTE 99/58SEP	52.332	8:22:17	0.56	30	67	0	0

APPENDIX J
FREQ DATA
GRAPHICAL DISPLAY OF FREEWAY CONDITIONS

The output is displayed for each subsection (numbered across the top of the data area) and for each time slice (numbered down the left of the data area). The colors that are used for the data displayed are defined as follows:

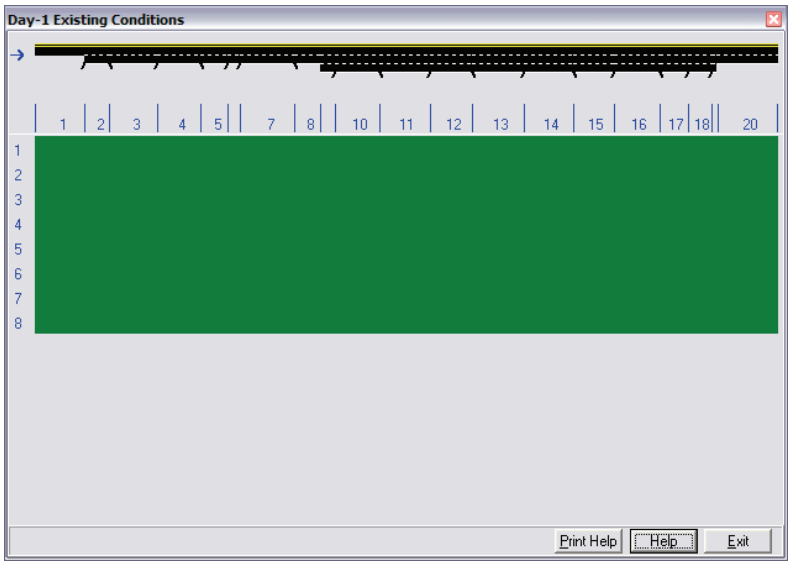
GREEN: Free-flow conditions

BLUE: Near capacity conditions where: 0.9 <= V/C < 1.00. Might indicate a "hidden" bottleneck.

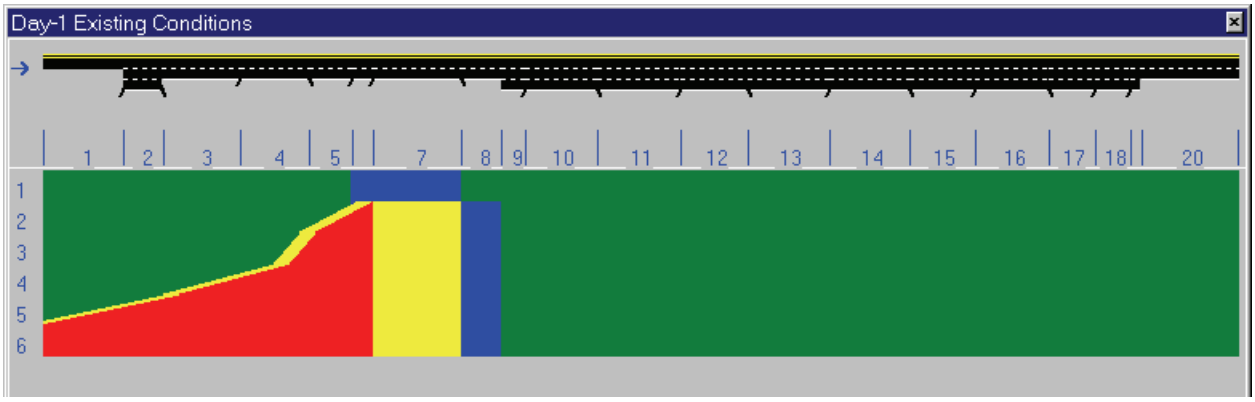
YELLOW: Bottleneck (V/C = 1.00) located immediately downstream of the queue and a transition area between free-flow conditions and congested conditions

RED: Congested flow conditions

APPENDIX J, CONTINUED
FREQ DATA
GRAPHICAL DISPLAY OF FREEWAY CONDITIONS



Kern 58; Eastbound; Existing conditions
1:00 PM to 9:00 PM



Kern 58; Eastbound; 2030 conditions
1:00 PM to 9:00 PM

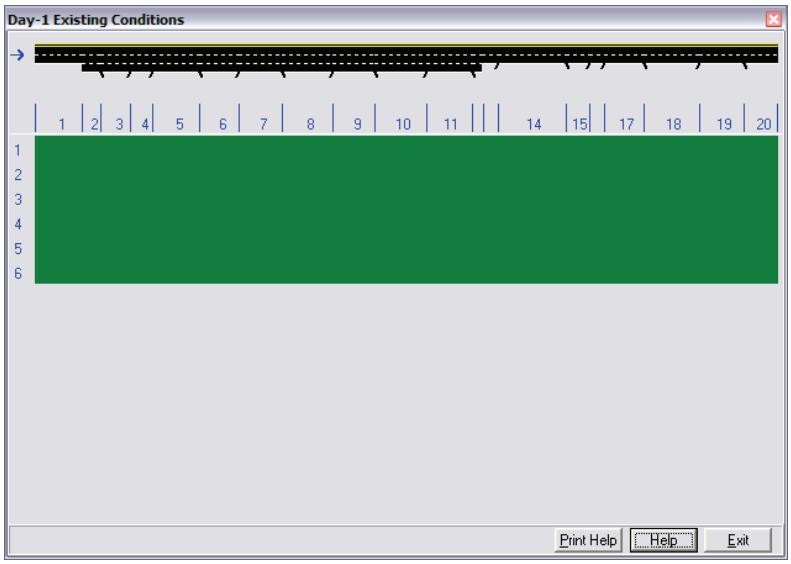
APPENDIX J, CONTINUED
FREQ DATA
GRAPHICAL DISPLAY OF FREEWAY CONDITIONS

Numbers on graphical display correspond to the following locations:

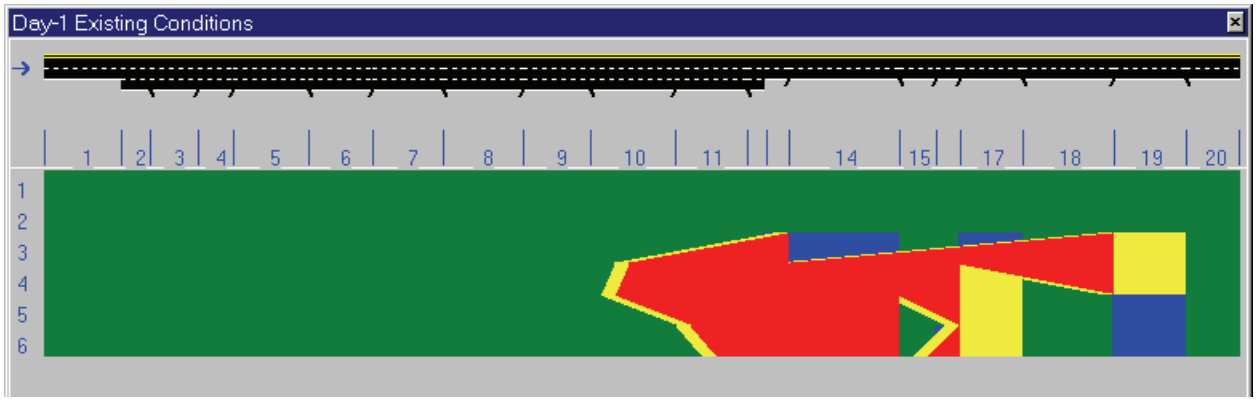
Kern 58, Eastbound

Subsection Number	Post Mile	Location
SS1	52.33	Route 99 to On-ramp from Route 99
SS2	52.80	Off-ramp from H Street
SS3	53.25	On-ramp from Chester Avenue
SS4	53.65	Off-ramp to Union Avenue
SS5	54.33	On-ramp from SB Union Avenue
SS6	54.55	On-ramp from NB Union Avenue
SS7	55.40	Off-ramp to Cottonwood Road
SS8	55.40 – 55.55	Mainline between on & off ramps Cottonwood
SS9	55.55	On-ramp Cottonwood Road
SS10	55.55 – 56.55	Mainline between on for Cottonwood, off to Mt. Vernon
SS11	56.55	On-ramp to Mt. Vernon Avenue
SS12	57.17	Off-ramp to Oswell Street
SS13	57.59	On-ramp from Oswell Street
SS14	58.26	Off-ramp to Fairfax Road
SS15	58.58	On-ramp from Fairfax Road
SS16	59.40	Off-ramp to Route184
SS17	59.66	On-ramp from southbound Route 184
SS18	59.66	On-ramp from northbound Route 184
SS19	59.68	On-ramp to northbound Route 184
SS20	60.45	Mainline from nb 184 to Vineland Road

APPENDIX J, CONTINUED
FREQ DATA
GRAPHICAL DISPLAY OF FREEWAY CONDITIONS



Kern 58; Westbound; Existing conditions
5:00 AM to 11:00 AM



Kern 58; Westbound; 2030 conditions
5:00 AM to 11:00 AM

APPENDIX J, CONTINUED
FREQ DATA
GRAPHICAL DISPLAY OF LOCATIONS

Numbers on graphical display correspond to the following locations:

Kern 58, Westbound

Subsection Number	Post Mile	Location
SS1	60.45	Vineland Road west
SS2	59.68	Off-ramp to northbound Route 184
SS3	59.49	On-ramp from northbound Route 184
SS4	59.24	On-ramp from southbound Route 184
SS5	59.24 – 58.59	Mainline between on-ramps to Route184
SS6	58.28	On-ramp from Fairfax Road
SS7	57.68	Off-ramp to Oswell Street
SS8	57.26	On-ramp from Oswell Street
SS9	56.68	Off-ramp to Mt. Vernon Avenue
SS10	56.25	On-ramp from Mt. Vernon Avenue
SS11	55.60	Off-ramp to Brundage Lane
SS12	55.60 – 55.47	Mainline between ramps to/from Brundage Lane
SS13	55.47	On-ramp from Brundage Lane
SS14	55.47 – 54.58	Mainline from Brundage to off for Union Ave/Brundage
SS15	54.58	Off-ramp to Union Avenue/Brundage
SS16	54.45 – 54.39	On-ramps northbound/southbound Union Avenue
SS17	53.76	Off-ramp to Chester Avenue
SS18	53.26	On-ramp from H Street
SS19	52.62	Off to Route 99
SS20	52.33	Route 99

APPENDIX K
DOCUMENTS USED IN THE PREPARATION OF THIS CSMP

1) 2002 Global Gateways Development Program; Caltrans
2) Bay Area/California High-Speed Rail Ridership and revenue Forecasting Study; California High-Speed Rail Authority
3) California Central Valley Tribal Transportation Environmental Justice Collaborative Project; Dr. Donna Miranda-Begay, Project Manager; September 2010
4) California Highways, Route 58; The California Highways Organization; online resource
5) California State Rail Plan; Caltrans
6) City of Bakersfield General Plan; City of Bakersfield
7) City of Tehachapi General Plan; City of Tehachapi
8) County of Kern General Plan; Kern County
9) Demographic Research Unit: Census 2000 PL94-171; California State Census Data Center, California Department of Finance
10) Freeway Performance Initiative Traffic Analysis, Final Report; Metropolitan Transportation Commission; October 2007
11) Goods Movement Action Plan; Business, Transportation and Housing Agency and California Environmental Protection Agency, January 2007
12) High Occupancy Vehicle Lane Viability for the San Joaquin Valley; Caltrans District 6 and District 10
13) I-880 Corridor System Management Plan; Caltrans District 4
14) Interregional Transportation Strategic Plan; Caltrans
15) Kern County Bicycle Facilities Plan, Kern County; adopted by the Council of Governments, October 2001
16) Kern Council of Governments; 2011 Regional Transportation Plan
17) Kern Valley Airport Master Plan; Kern County Department of Airports, April 2006
18) Mainstreaming ITS and Use in the Planning and Programming Environment; Caltrans
19) Meadows Field Airport Master Plan; Kern County Department of Airports, June 2006
20) Regional Transportation Plan; Kern Council of Governments
21) Regional Growth Forecast; Kern Council of Governments, October 2009
22) Report on Corridor Preservation; The American Association of State Highway and Transportation Officials (AASHTO), July 1990
23) San Joaquin Valley Goods Movement Study; Counties of the San Joaquin Valley and Caltrans
24) Smart Mobility 2010: A Call to Action for the New Decade; Caltrans, US Department of Transportation, and US Environmental Protection Agency; February 2010
25) Southeast Kern County Regional Fee Nexus Study; Kern Council of Governments, July 14, 2004
26) Southern California Association of Governments (SCAG) Regional Transportation Plan; Southern California Association of Governments; May 8, 2008
27) SR-58 Origin and Destination Truck Study; San Bernardino Associated Governments, Kern Council of Governments, and Caltrans District 6, District 8, District 9, & Headquarters, Draft study January 2009

APPENDIX K, CONTINUED
DOCUMENTS USED IN THE PREPARATION OF THIS CSMP

28) State Route 58 Transportation Concept Report (TCR); Caltrans District 6
29) State Route 58 TCR; Caltrans District 8
30) Transportation Management System (TMS) Master Plan; Caltrans
31) Traffic Operations Strategic Plan; Caltrans
32) Wasco Airport Master Plan; Kern County Department of Airports, November 2006

APPENDIX L
ACRONYMS

AADT - Average Annual Daily Traffic
AASHTO - American Association of State Highway and Transportation Officials
ADA - Americans with Disabilities Act
ARRA - American Recovery and Reinvestment Act
ATIS - Advanced Traveler Information System
ATMIS - Advanced Transportation Management Information Systems
B/C - Benefit/Cost
BNSF - Burlington Northern Santa Fe
BRT - Bus rapid transit
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
CSMP - Corridor System Management Plan
CT - Caltrans
CTC - California Transportation Commission
EB - Eastbound
EDP - Early Deployment Plan
EJ - Environmental Justice
ESTA - Eastern Sierra Transit Authority
FCOG - Fresno Council of Governments
FREQ - Freeway Queue Macroscopic Freeway Operation Model Software
FTIP - Federal Transportation Improvement Program
GET - Golden Empire Transit
HAR - Highway Advisory Radio
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
IRRS - Interregional Road System
ITIP - Interregional Transportation Improvement Program
ITMS - Intermodal Transportation Management System
ITS - Intelligent Transportation System
ITSP - Interregional Transportation Strategic Plan
KCAG - Kings County Association of Governments
KCOG - Kern Council of Governments
KER - Kern County
KP - Kilo Post

APPENDIX L, CONTINUED
ACRONYMS

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
RCR – Route Concept Report
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
SANBAG - San Bernardino Associated Governments
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
SJVR - San Joaquin Valley Railroad
SONET - Synchronous Optical Networking
STAA - Surface Transportation Assistance Act
StanCOG - Stanislaus Council of Governments
STIP - State Transportation Improvement Program
STRAHNET - Strategic Highway Corridor Network
TA - Terminal Access Route

APPENDIX L, CONTINUED
ACRONYMS

TASAS - Traffic Accident Surveillance and Analysis System
TAZ - Transportation Analysis Zones
TCAG - Tulare County Association of Governments
TCIF - Trade Corridors Improvement Fund
TCM - Transportation Control Measure
TCR - Transportation Concept Report
TCRP - Transportation Congestion Relief Program
TIM - Traffic Incident Management
TMC - Transportation Management Center
TMS - Transportation Management System
TMS - Traffic Monitoring Systems
TRIP - Thomas Road Improvement Program
UC - Undercrossing
UP - Union Pacific Railroad
UTC - Ultimate Transportation Concept
V/C - Volume/Capacity ratio
VHT - Vehicle Hours Traveled
VMT - Vehicle Miles Traveled
WB - Westbound