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DEPARTMENT OF
PUBLIC WORKS

CITY OF SACRAMENTO
CALIFORNIA

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August 15, 1989

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ROBERT L. LEE
TRANSPORTATION
DIVISION MANAGER

Transportation and Community Development Committee
Sacramento, California

Honorable Members In Session:

SUBJECT: Informative Report Regarding the Annual Monitoring of
Eight South Natomas Intersections

SUMMARY

As an implementation measure of the South Natomas Community Plan, the City of Sacramento made a commitment to a traffic monitoring program for the South Natomas Community. The attached report, which was provided to the South Natomas Community Association, identifies the study intersections and lists the results of the monitoring program. The results indicate that no action is required at this time.

BACKGROUND

The City Council adopted the South Natomas Community Plan (SNCP) on November 29, 1988. An implementation measure of the SNCP was a commitment to an annual traffic monitoring program (City Council Resolution No. 88-1018). Eight intersections in South Natomas, east of Interstate 5, were identified for the monitoring program to begin in Fiscal Year 1988-89. Additional intersections west of Interstate 5 will be added to the monitoring program in future years.

The results of this year's monitoring indicate that current traffic levels do not require any remedial action at this time. The information and results of the program are contained in the attached report for your additional information.

The report was forwarded to the Natomas Community Association on June 30, 1989. The board of the association has reviewed the report and concurs with its findings.

FINANCIAL DATA

None.

POLICY CONSIDERATIONS

None.

MBE/WBE

No Impacts.

RECOMMENDATION

This item is being presented for the Committee's information and to file. No action is required.

Respectfully submitted,


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Supervising Engineer

Approved for Committee Information:

for 
WALTER J. SLIPE
City Manager

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MELVIN H. JOHNSON
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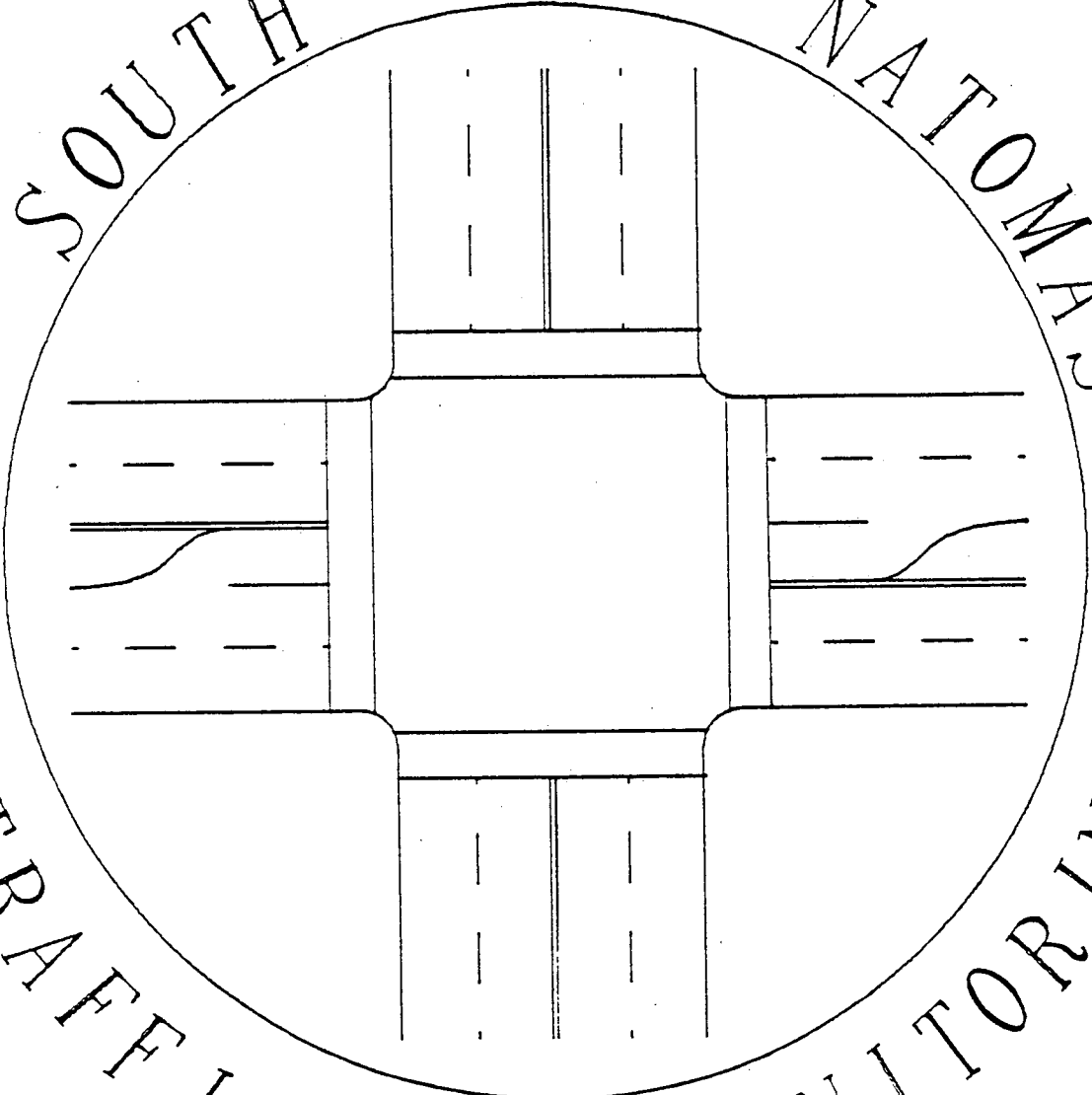
August 15, 1989
District No. 1

Edward Williams, Assistant Civil Engineer
Transportation Division, 449-5307

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Attachments

SOUTH NATOMAS
TRAFFIC MONITORING



1989-90

INTRODUCTION

As an implementation measure of the South Natomas Community Plan the City of Sacramento made a commitment to a traffic monitoring program for the South Natomas Community. The program specifies intersections in the South Natomas area to be analyzed annually as a basis for tracking the change in traffic patterns in South Natomas. The portion of the study required for the fiscal year 1989-90 is addressed in this report.

The City Council adopted the South Natomas Community Plan (SNCP) on November 29, 1988. An implementation measure of the SNCP was a commitment to an annual traffic monitoring program (Appendix A). Eight intersections in South Natomas, east of Interstate 5, were identified for studies to begin in Fiscal Year 1988-89. Additional intersections west of Interstate 5 will be added to the program in future years.

For the first year of the monitoring program, the following intersections were evaluated:

1. Northgate Boulevard and I-80 W.B. Ramps
2. Northgate Boulevard and I-80 E.B. Ramps
3. San Juan Road and Truxel Road
4. San Juan Road and Northgate Boulevard
5. West El Camino and Truxel Road
6. West El Camino and Northgate Boulevard
7. Garden Highway and Truxel Road
8. Garden Highway and Northgate Boulevard

Figure 1 illustrates the intersections that were to be monitored in 1989, and the AM and PM peak hour turning movements at the intersections are shown. These intersections were also evaluated during the environmental review for the SNCP (see Appendix B).

The 1987 levels of service incorporated in the SNCA were calculated using an intersection capacity method for signalized intersections from the 1980 publication of the Transportation Research Board, Interim Materials on Highway Capacity (Circular 212).

City staff's 1989 analysis used the Circular 212 Planning method as well as the 1985 Highway Capacity Manual's (HCM) operational method for signalized locations. For unsignalized locations, staff utilized the Circular 212 and HCM methods where applicable. Staff chose to also present the HCM method of capacity analysis since it is a method of analyzing signals that are currently operating. The HCM method is much more sensitive to existing geometry and signal phasing. The Circular 212 capacity analysis was appropriate for the SNCP environmental review, but staff believes that the 1985 HCM method will give a more accurate picture of congestion in South Natomas.

Table 1 & 2 define the levels of service for the Circular 212's signalized and unsignalized intersections respectively. Table 3 defines the level of service for the HCM method of analysis.

Tables 4 and 5 list the results of the 1989 analysis for AM and PM peak hour traffic operations, along with the levels of service from the South Natomas Traffic Impact Analysis of 1988 (1987 count data).

Four of the eight intersections analyzed indicated a significant change in level of service since the 1988 traffic analysis. They are San Juan Road and Truxel Road, Northgate Boulevard and San Juan Road, Garden Highway and Truxel Road, and Garden Highway and Northgate Boulevard. The changes are as follows:

SAN JUAN ROAD AND TRUXEL ROAD

The intersection of San Juan Road and Truxel Road (3) was shown to operate at Los "A" in 1987. Because the intersection is a 4-way stop, the LOS was determined by modeling the location as a signalized 2 phase intersection. However, City staff feels that the method is no longer appropriate for this location as the geometry of the intersection and number of pedestrians cannot be accurately modeled using the Circular 212 planning method. Using approximations for capacity from the 1985 HCM and engineering judgment, staff estimates that AM and PM peak hour LOS to be middle or low "C" and at times border on "D" (refer to tables 4 & 5).

NORTHGATE BOULEVARD AND SAN JUAN ROAD

The intersection of Northgate Boulevard and San Juan Road (4) has experienced a significant increase in LOS. The increased operating efficiency is a direct result of the intersection expansion and signal upgrade installed in late Fall, 1988 (refer to tables 4 & 5).

GARDEN HIGHWAY AND TRUXEL ROAD

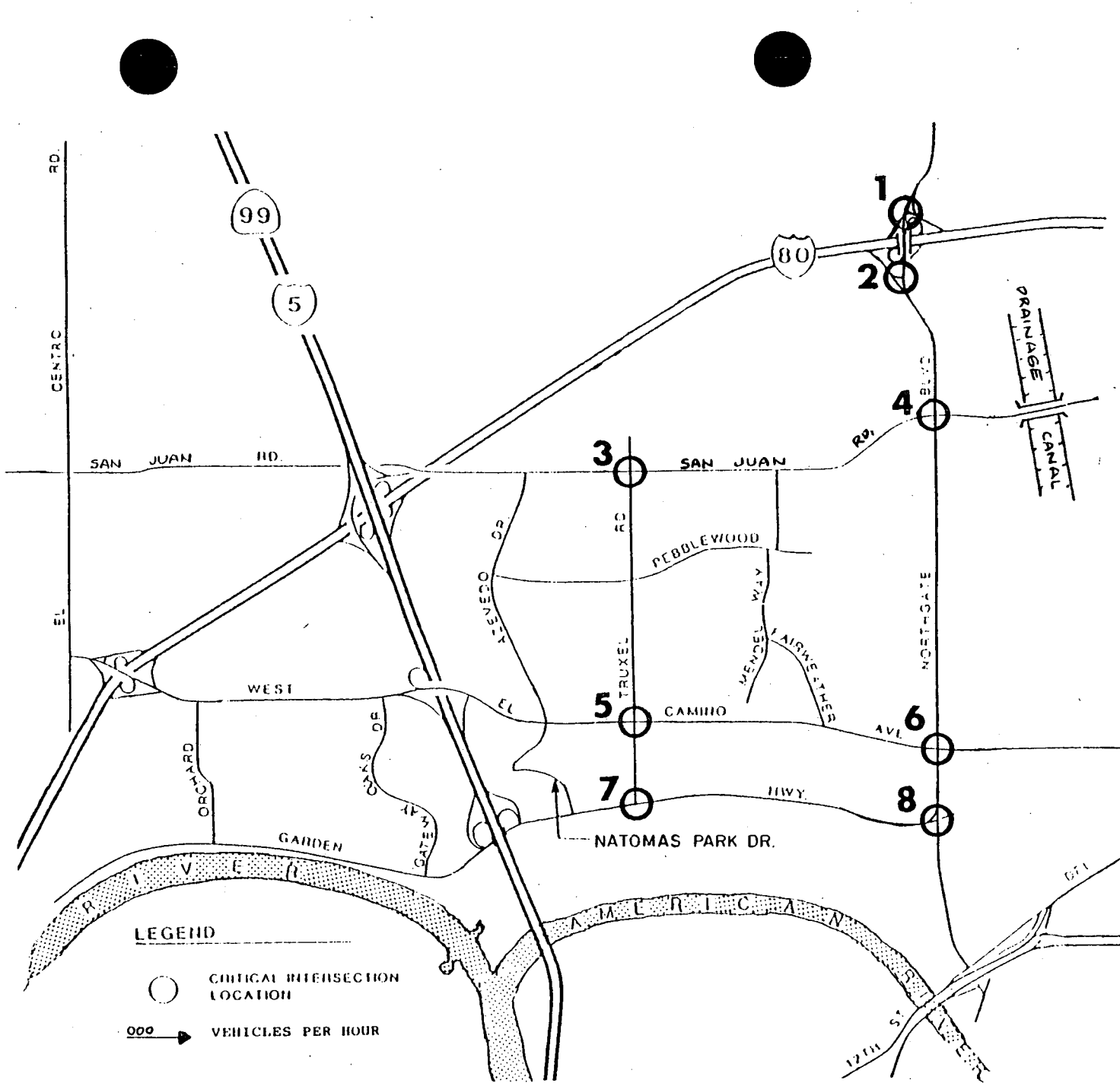
The unsignalized intersection of Garden Highway and Truxel Road (7) was previously modeled as a signalized location, as a traffic signal is scheduled for this location in Fiscal Year 1990-91. However, staff has analyzed the intersection under actual operating conditions which indicates a highly congestive condition, but operations will improve when the signal is installed.

GARDEN HIGHWAY AND NORTHGATE BOULEVARD

The intersection of Garden Highway and Northgate Boulevard (8) has shown a decrease in LOS from A to B during the AM peak hour. The decrease is due primarily to an increase of 20% in analysis traffic volumes.

Results of the study indicate two of the eight intersections exceed 80% of capacity, Garden Highway & Truxel Road, and West El Camino Avenue & Northgate Boulevard. Based on the findings presented in this report, the levels of service and vehicular capacity at the study locations are within the parameter set forth in the SNCP.

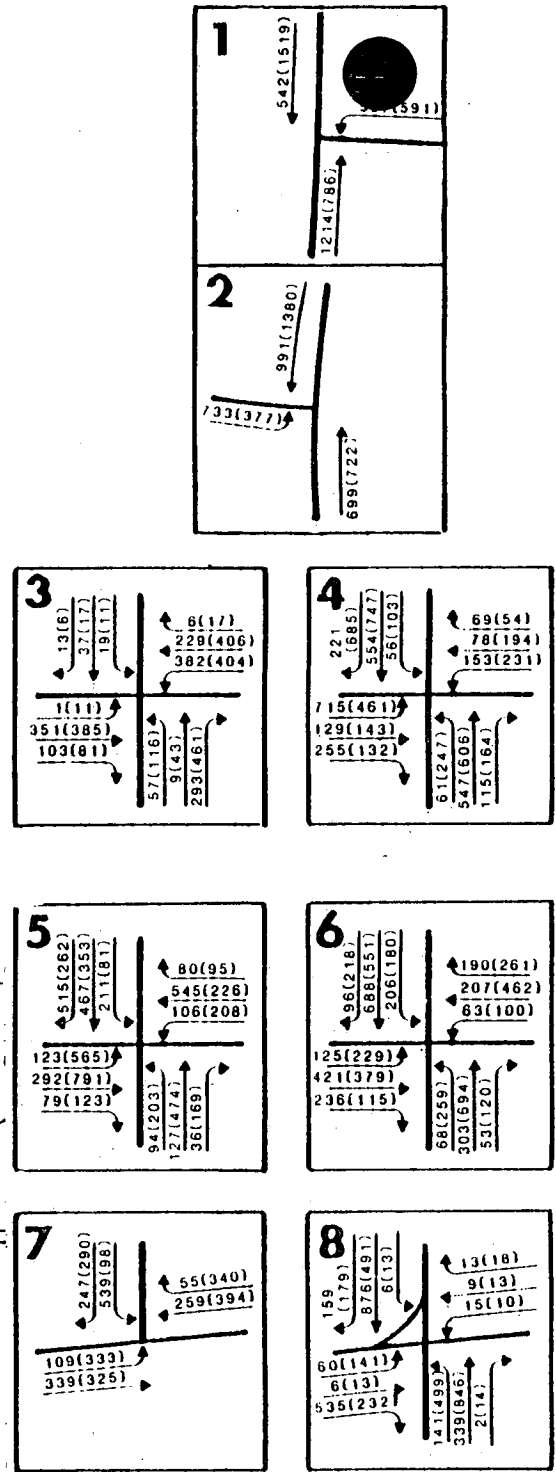
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MONITORED INTERSECTION LOCATIONS

SPRING 1989

FIGURE 1.



AM (PM)

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE	INTERSECTION	FREEWAY
"A"	Uncongested operations, all queues clear in a single-signal cycle. V/C - 0.00 - 0.06*	Free flow vehicles unaffected by other vehicles in the traffic stream. V/C - 0.00 - 0.35
"B"	Uncongested operations, all queues clear in a single cycle. V/C - 0.61 - 0.70	Higher speed range of stable flow. Volume 50 percent of capacity or less. V/C - 0.36 - 0.54
"C"	Light congestion, occasional backups on critical approaches. V/C - 0.71 - 0.80	Stable flow with volumes not exceeding 77 percent capacity. V/C - 0.55 - 0.77
"D"	Significant congestion of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. V/C - 0.81 - 0.90	Upper end of stable flow conditions. Volumes do not exceed 93 percent of capacity. V/C - .78 - 0.93
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). V/C - 0.91 - 1.00	Unstable flow at roadway capacity. Operating speeds 30 to 25 MPH or less. V/C - 0.94 - 1.00
"F"	Total breakdown, stop-and-go operation. V/C > 1.00	Stop-and-go traffic with operating speeds less than 30 MPH. V/C - > 1.00

*Source: Page 11 of Transportation Research Board, 1980. (Circular 212)

TABLE 1

LEVEL OF SERVICE AND EXPECTED DELAY FOR
RESERVE CAPACITY RANGES (CIR. 212)

RESERVE CAPACITY	LEVEL OF SERVICE	EXPECTED TRAFFIC DELAY
400 or more	A	Little or no delay
300 to 399	B	Short traffic delays
200 to 299	C	Average traffic delays
100 to 199	D	Long traffic delays
0 to 99	E	Very long traffic delays
Less than 0	E	Failure - extreme congestion
(Any value)	F	Intersection blocked by external causes

TABLE 2

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (1985 HCM)

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤ 5.0
B	5.1 TO 15.0
C	15.1 TO 25.0
D	25.1 TO 40.0
E	40.1 TO 60.0
F	> 60.0

TABLE 3

INTERSECTION ANALYSIS

PEAK

INTERSEC. NO.	INTERSECTION	CIR. 212 1987		CIR. 212 1989		HCM OPERATIONAL 1989	
		V/C	LOS	V/C	LOS	DELAY (SEC/VEH)	LOS.
1.	Northgate Blvd./ I-80 W.B. Ramp	*.53	A	*.59	A	11.7	B
2.	Northgate Blvd./ I-80 E.B. Ramp	*.46	A	*.58	A	11.3	B
3.	San Juan Rd./Truxel Rd. -(Unsignalized 4-way Stop) -(Assuming, 2 phase signal)	Not Analyzed .55	A	Not Analyzed .55	A	Not applicable	C
4.	Northgate Blvd./ San Juan Rd.	*.87	D	*.49	A	24.2	C
5.	W. El Camino Ave./ Truxel Rd.	*.40	A	*.46	A	20.8	C
6.	W. El Camino Ave./ Northgate Blvd.	*.63	B	*.64	B	17.3	C
7.	Garden Hwy.Truxel Rd. (Unsignalized, stop on Minor Leg)	*.44	A	**82	D	**	F
8.	Garden Hwy./Northgate Blvd.	*.48	A	*.63	B	21.6	C

* Circular 212 planning method for signalized intersections

** Circular 212 or HCM for unsignalized intersections

TABLE 4

INTERSECTION ANALYSIS
PM PEAK

INTERSEC. NO.	INTERSECTION	CIR. 212 1987		CIR. 212 1989		HCM OPERATIONAL 1989	
		V/C	LOS	V/C	LOS	DELAY (SEC/VEH)	LOS.
1.	Northgate Blvd./ I-80 W.B. Ramp	*.55	A	*.70	B	11.5	B
2.	Northgate Blvd./ I-80 E.B. Ramp	*.45	A	*.59	A	9.1	B
3.	San Juan Rd./ Truxel Rd. -(Unsignalized, 4-Way stop) -(Assume, 2 phase signal)	Not Analyzed *.50	A	Not Analyzed .61	A	Not Applicable	C
4.	Northgate Blvd./ San Juan Rd.	*.99	E	*.52	A	24.9	C
5.	W. El Camino Ave./ Truxel Rd.	*.56	A	*.59	A	23.8	C
6.	W. El Camino Ave./ Northgate Blvd.	*.88	D	*.95	E	29.3	D
7.	Garden Hwy/Truxel Rd. (Unsignalized, stop on minor leg)	*.54	A	** .93	E	**	F
8.	Garden Hwy./ Northgate Blvd.	*.65	B	*.65	B	10.8	B

* Circular 212 planning method for signalized intersections

** Circular 212 or HCM for unsignalized intersections

TABLE 5

- B. City would establish a traffic monitoring program for the plan areas east of Interstate 5 as follows:
1. Monitoring would begin in Fiscal Year 1988-89 and would be conducted on an annual basis;
 2. The intersections that would be monitored would be:
 - A. Garden Highway and Northgate Blvd.; and
 - B. West El Camino and Northgate Blvd.; and
 - C. San Juan Road and Northgate Blvd.; and
 - D. San Juan Road and Truxel Road; and
 - E. West El Camino and Truxel Road; and
 - F. Garden Highway and Truxel Road; and
 - G. Northgate Blvd. and I-80.
 3. If the level of service on these intersections is equal to or exceeds 80 percent of capacity during the peak hour at 5 of the 7 locations:
 - A. A traffic analysis would be conducted and made available to the public; and
 - B. The traffic analysis would be used to determine the priorities in which FBA projects should be built.
 - C. The City would consider supplemental TSM measures such as development of a shuttle van service and construction of an additional roadway/bicycle/pedestrian link between North and South Natomas west of I-5.
 - D. Development money earmarked for transportation from new projects in the area would be restricted to construction of projects that would improve circulation east of I-5.
 4. If the level of service at Northgate Blvd. and I-80 (X.B.2.g) is equal to or exceeds 80 percent of capacity during the peak hour, the City would work with Caltrans to investigate options to improve intersection operation at this location.

EXISTING INTERSECTION LOS

INT. NO.	INTERSECTION	AM		PM	
		V/C	LOS	V/C	LOS
1.	Northgate Blvd./I-80 WB Ramps	0.53	A	0.55	A
2.	Northgate Blvd./I-80 EB Ramps	0.46	A	0.45	A
3.	San Juan Rd./Truxel Road	0.55	A	0.50	A
4.	San Juan Rd./W. Silver Eagle/ Northgate Blvd. ¹	0.87	D	0.99	E
5.	W. El Camino Ave./I-80 WB Ramps	0.10	A	0.12	A
6.	W. El Camino Ave./I-80 EB Ramps	0.33	A	0.22	A
7.	W. El Camino Ave./Orchard Lane	0.29	A	0.27	A
8.	W. El Camino Ave./Gateway Oaks Dr.	0.24	A	0.35	A
9.	W. El Camino Ave./I-5 NB Ramps	0.69	B	0.43	A
10.	W. El Camino Ave./Azevedo Drive	0.65	B	0.61	B
11.	W. El Camino Ave./Truxel Road	0.40	A	0.56	A
12.	W. El Camino Ave./Northgate Blvd. ¹	0.63	B	0.88	D
13.	Garden Hwy./Gateway Oaks Dr.	0.31	A	0.42	A
14.	Garden Hwy./I-5 SB Ramps	0.24	A	0.34	A
15.	Garden Hwy./I-5 NB Ramps	0.44	A	0.49	A
16.	Garden Hwy./Creekside Oaks Dr. ²	N/A	N/A	N/A	N/A
17.	Garden Hwy./Truxel Road	0.44	A	0.54	A
18.	Garden Hwy./Northgate Blvd.	0.48	A	0.65	

- B
1. Intersections which currently exceed the City's standard of LOS "C".
 2. The Garden Highway/Creekside Oaks Drive intersection was not open at the time traffic counts were conducted.
- N/A Not Applicable