

# TRAFFIC ANALYSIS

Kaufman and Broad  
Development

of the May Ranch  
(Revised Land Use Plan)

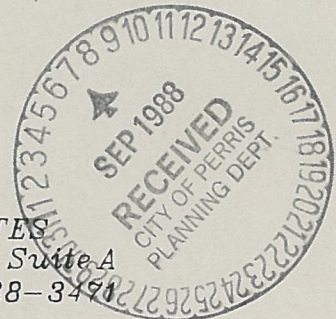
*Prepared for*

CITY OF PERRIS

*Submitted by*

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AUGUST 31, 1988



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August 31, 1988

Mr. Carl Parsons  
Director of Planning and  
Community Development  
CITY OF PERRIS  
101 North "D" Street  
Perris, CA 92370

Dear Carl:

This is the traffic analysis report for the revised May Ranch Specific Plan dated August 5, 1988.

Of the several findings listed in the report, the most significant in our judgment is the conclusion that with or without the May Ranch development, the Ramona Expressway from at least Redlands Avenue to the I-215 Freeway will need grade separated intersections and a "freeway to freeway" interchange at I-215 to handle predicted future traffic volumes at a satisfactory level of service.

In spite of the assumed future widening of the Ramona Expressway that will provide six through traffic lanes, double left turn lanes and additional right turn only lanes, the calculated level of service at the intersections of Redlands Avenue and Perris Boulevard (even if the May Ranch is not developed) will be at the "F" level.

At the I-215 interchange, even assuming ramp widening, double left turns on the overcrossing structure and signalization at the ramp terminals, the calculated level of service is "F" with or without the May Ranch development.

It is emphasized that this study did not estimate the future traffic volumes that would use the Ramona Expressway that will be generated in the Hemet/San Jacinto area. Future developments in this area will add to the traffic volumes predicted from this particular study.

On a wider regional basis, it is concluded that serious consideration should be given to the conversion of the Ramona/Cajalco Expressway to freeway standards and that this freeway be extended into Orange County to join the eastern transportation corridor, thereby providing a completely separate route from the 91 Freeway to service the Perris/Moreno Valley/Hemet/San Jacinto area.

Mr. Carl Parsons  
August 31, 1988  
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This study has put into some focus the need for extensive planning and implementation of additional arterial facilities needed to serve this growing area.

Respectfully submitted,

MOHLE, GROVER & ASSOCIATES



R. Henry Mohle  
President

RHM:jh

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## INTRODUCTION

The purpose of this report is to present the findings of a study concerning the proposed development by Kaufman & Broad of the May Property located in the northeast corner of the City. This study is based on the revised land use plan and specific plan dated August 5, 1988.

The general location of the project is shown on Figure 1 titled "Project Location Map."

The figure also indicates the location of the McCanna Ranch project to be developed by Barratt of Irvine.

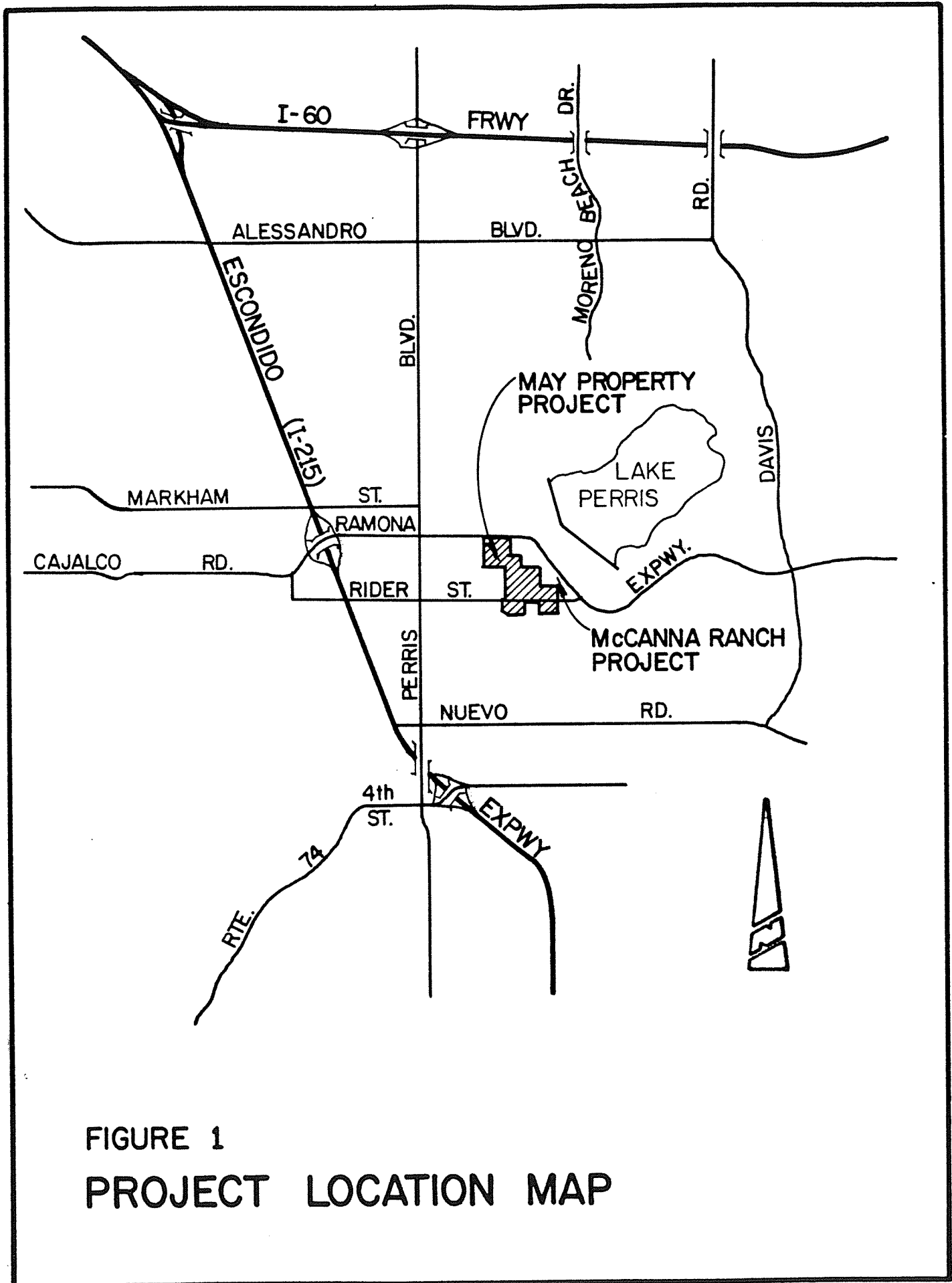
The May Property constituting 744 acres is proposed to have 3,508 single family dwelling units, 375 multi-family dwelling units and 77 acres of commercial development. The previously approved McCanna Ranch project, which borders the May Property development on the easterly side, has been approved for 1,490 single family dwelling units.

Figure 2 titled "Arterial Network" shows the general overall layout of the May Property development and the arterials serving the study area.

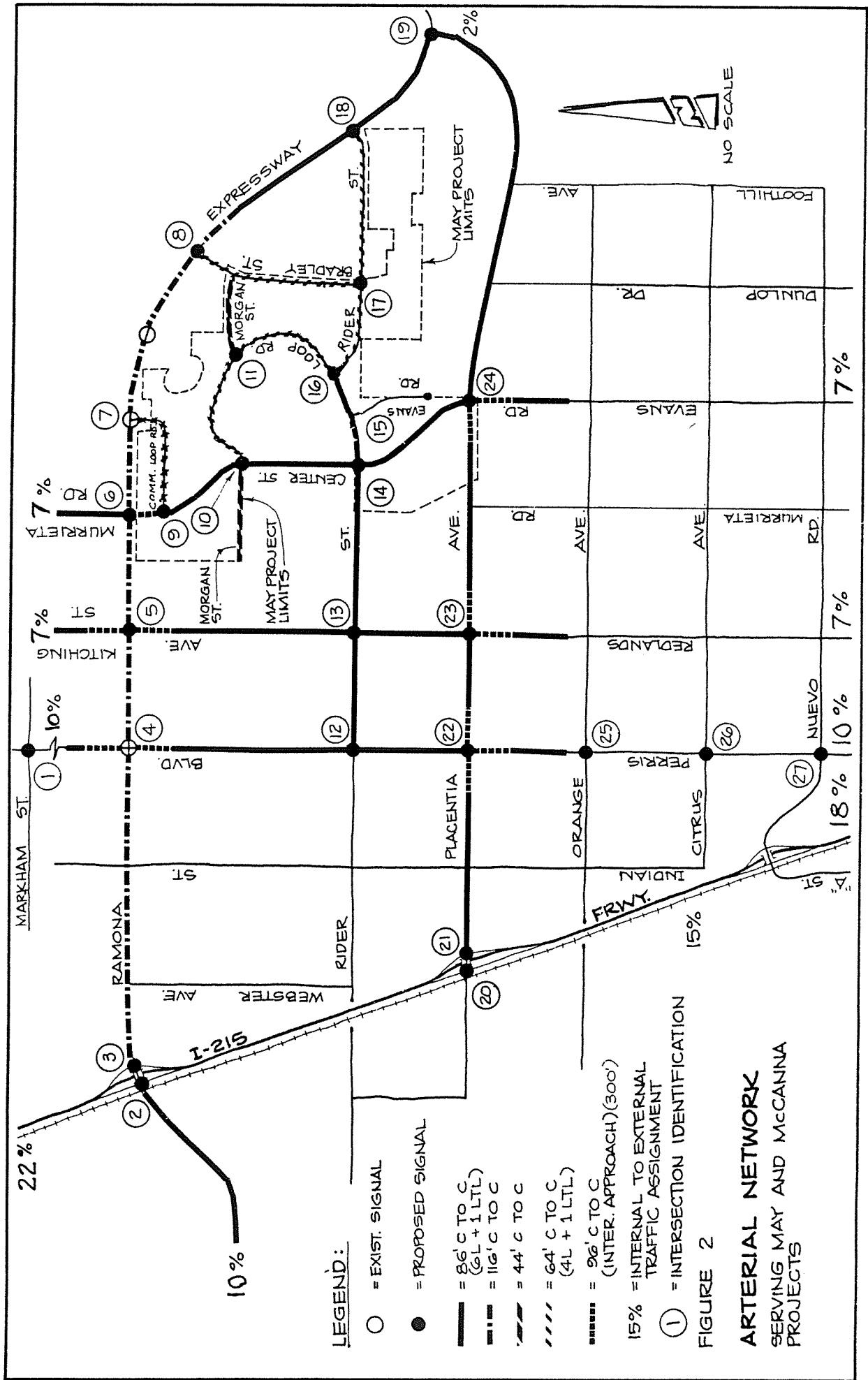
Recognizing that there are large areas of undeveloped land within the general area of the Barratt and May Properties, it was decided that a more realistic analysis should involve cumulative traffic impact that would result from the development of land generally located westerly and southerly of the May Property along the Ramona Expressway to the Placentia Avenue corridor.

Since specific development plans were not available, the existing zoning was utilized for these presently unplanned areas to generate development intensity, and therefore traffic demands. To put the study into some perspective, the May Property and Barratt McCanna Ranch developments constitute some 5,373 dwelling units while the total of 26,224 dwelling units were assumed in the study area based on existing zoning. This means that 20 percent of the total dwelling units in the study area are located in the May and Barratt projects.

It is recognized that the City General Plan Study, which has just been started, will most likely modify the assumptions concerning land development in the non-May Property and Barratt areas included in this study. However, land developments assumed are the best available and are considered reasonable for purposes of this analysis.



**FIGURE 1**  
**PROJECT LOCATION MAP**



**LEGEND:**

- = EXIST. SIGNAL
- = PROPOSED SIGNAL
- = 86' C TO C (6L + 1 LTL)
- - - = 116' C TO C
- · · = 44' C TO C
- //// = 64' C TO C (4L + 1 LTL)
- ..... = 96' C TO C (INTER. APPROACH) (300')
- 15% = INTERNAL TO EXTERNAL TRAFFIC ASSIGNMENT
- ① = INTERSECTION IDENTIFICATION

FIGURE 2

**ARTERIAL NETWORK  
SERVING MAY AND MCCANNA  
PROJECTS**



## STUDY METHODOLOGY

The purpose of this portion of the report is to provide a brief overview of the way in which the study was conducted. There were four scenarios analyzed in this study:

1. Existing traffic in addition to the traffic generated by the May Ranch project only.
2. Existing traffic plus the traffic produced by the May Ranch and McCanna Ranch projects.
3. Existing traffic along with the traffic generated by all zones in the North Perris area with the exception of the May Ranch.
4. Existing traffic in addition to the traffic produced by all zones in the North Perris region, May Ranch inclusive.

The steps involved with each scenario are discussed below.

### Traffic Generation

The first step in the overall process was to make an estimate of the 24 hour and peak hour traffic volumes that would be generated from the various project areas, not only from the May and Barratt developments but also from the areas outside of the projects included in this study, when necessary. Figure 3 titled "Zone Map" shows how the study area was subdivided into 62 small areas called "traffic zones."

For each of these zones, estimates were made concerning ultimate land use and traffic generation values. It is pertinent to note that all of the commercial areas were assumed to have 25 percent building coverage. The industrial park acreages were assumed to have a land coverage of 20 percent.

Table 1 titled "Trip Generation, North Perris Area" shows the zone numbers, land use, assumed development intensity and the peak hour and 24 hour traffic volumes resulting from the indicated land use for each of the 62 zones. The table shows that on an overall 24 hour basis there are approximately 483,000 vehicle trip ends generated by the traffic zones in the study area. Likewise, Table 2 titled "Trip Generation, May Ranch" lists data for 27 zones within the May ranch project for convenience. This table indicates there will be about 84,000 trip ends produced by the May Ranch daily.



TABLE 1  
TRIP GENERATION  
NORTH PERRIS AREA

ZONE	LAND USE	SIZE	TRIP RATES					TRIP ENDS				
			AM		PM		24	AM		PM		24
			IN	OUT	IN	OUT	HOUR	IN	OUT	IN	OUT	HOUR
0601	AGRICULTURAL	226 AC	0.00	0.00	0.00	0.00	2.0	0	0	0	0	452
0140	MANUFACTURING	9 KSF	0.76	0.17	0.20	0.77	7.0	7	2	2	7	63
0607	MANUFACTURING	87 KSF	0.76	0.17	0.20	0.77	7.0	66	15	17	67	609
0625	MANUFACTURING	348 KSF	0.76	0.17	0.20	0.77	7.0	264	59	70	268	2436
0626	MANUFACTURING	2091 KSF	0.76	0.17	0.20	0.77	7.0	1589	355	418	1610	14637
0196	COMMERCIAL	478 KSF	0.65	0.28	1.59	1.79	40.4	311	134	760	856	19311
0671	COMMERCIAL	87 KSF	1.29	0.55	3.26	3.40	78.0	112	48	284	296	6786
0675	MANUFACTURING	610 KSF	0.76	0.17	0.20	0.77	7.0	464	104	122	470	4270
0696	AGRICULTURAL	20 AC	0.00	0.00	0.00	0.00	2.0	0	0	0	0	40
0699	COMMERCIAL	348 KSF	0.74	0.32	1.73	1.95	45.4	258	111	602	679	15799
0501	RESIDENTIAL	1608 DU	0.20	0.55	0.64	0.37	10.1	322	884	1029	595	16241
0401	RESIDENTIAL	960 DU	0.20	0.55	0.64	0.37	10.1	192	528	614	355	9696
1228	COMMERCIAL	403 KSF	0.70	0.30	1.66	1.87	42.9	282	121	669	754	17289
0701	MANUFACTURING	1394 KSF	0.76	0.17	0.20	0.77	7.0	1059	237	279	1073	9758
0799	AGRICULTURAL	480 AC	0.00	0.00	0.00	0.00	2.0	0	0	0	0	960
0812	MOBILE HOME	15 AC	0.91	2.71	2.87	2.04	39.1	14	41	43	31	587
0801	COMMERCIAL	828 KSF	0.53	0.23	1.43	1.61	34.8	439	190	1184	1333	28814
1230	MANUFACTURING	450 KSF	0.76	0.17	0.20	0.77	7.0	342	77	90	347	3150
0871	MANUFACTURING	2091 KSF	0.76	0.17	0.20	0.77	7.0	1589	355	418	1610	14637
1299	COMMERCIAL	50 KSF	1.61	0.69	4.26	4.43	94.7	81	35	213	221	4735
0897	AGRICULTURAL	31 AC	0.00	0.00	0.00	0.00	2.0	0	0	0	0	62
1801	MANUFACTURING	3111 KSF	0.76	0.17	0.20	0.77	7.0	2364	529	622	2395	21777
1701	COMMERCIAL	19 KSF	2.38	1.02	6.78	7.05	132.9	45	19	129	134	2525
1705	MOBILE HOME	75 AC	0.91	2.71	2.87	2.04	39.1	68	203	215	153	2933
1728	MANUFACTURING	610 KSF	0.76	0.17	0.20	0.77	7.0	464	104	122	470	4270
1825	AGRICULTURAL	140 AC	0.00	0.00	0.00	0.00	2.0	0	0	0	0	280
1771	COMMERCIAL	56 KSF	1.54	0.66	4.03	4.20	91.0	86	37	226	235	5096
1751	RESIDENTIAL	1650 DU	0.09	0.44	0.46	0.21	6.1	149	726	759	347	10065
2071	COMMERCIAL	80 KSF	1.34	0.57	3.40	3.54	80.3	107	46	272	283	6424
0693	AGRICULTURAL	4 AC	0.00	0.00	0.00	0.00	2.0	0	0	0	0	8
2005	RESIDENTIAL	1375 DU	0.09	0.44	0.46	0.21	6.1	124	605	633	289	8388
0725	RESIDENTIAL	653 DU	0.11	0.30	0.35	0.21	4.8	72	196	229	137	3134
1071	RESIDENTIAL	1490 DU	0.30	0.50	0.60	0.30	12.0	447	745	894	447	17880
2101	RESIDENTIAL	2085 DU	0.20	0.55	0.64	0.37	10.1	417	1147	1334	771	21059
1301	RESIDENTIAL	12400 DU	0.20	0.55	0.64	0.37	10.1	2480	6820	7936	4588	125240
0830	COMMERCIAL	109 KSF	1.18	0.51	2.93	3.05	72.1	129	56	319	332	7859
0901	COMMERCIAL	381 KSF	0.72	0.31	1.68	1.90	43.8	274	118	640	724	16688
0840	RESIDENTIAL	225 DU	0.20	0.55	0.64	0.37	10.1	45	124	144	83	2273
0911	RESIDENTIAL	231 DU	0.20	0.55	0.64	0.37	10.1	46	127	148	85	2333
0915	RESIDENTIAL	198 DU	0.20	0.55	0.64	0.37	10.1	40	109	127	73	2000
0850	RESIDENTIAL	217 DU	0.20	0.55	0.64	0.37	10.1	43	119	139	80	2192
0916	PUBLIC PARK	9 AC	5.47	0.00	0.00	3.33	36.6	49	0	0	30	329
0921	RESIDENTIAL	187 DU	0.09	0.44	0.46	0.21	6.1	17	82	86	39	1141
0946	RESIDENTIAL	300 DU	0.20	0.55	0.64	0.37	10.1	60	165	192	111	3030
0955	RESIDENTIAL	172 DU	0.20	0.55	0.64	0.37	10.1	34	95	110	64	1737
0976	RESIDENTIAL	203 DU	0.20	0.55	0.64	0.37	10.1	41	112	130	75	2050
0977	PUBLIC PARK	6 AC	5.47	0.00	0.00	3.33	36.6	33	0	0	20	219
0980	RESIDENTIAL	252 DU	0.20	0.55	0.64	0.37	10.1	50	139	161	93	2545
0999	RESIDENTIAL	280 DU	0.20	0.55	0.64	0.37	10.1	56	154	179	104	2828
1630	RESIDENTIAL	128 DU	0.20	0.55	0.64	0.37	10.1	26	70	82	47	1293
1505	RESIDENTIAL	150 DU	0.20	0.55	0.64	0.37	10.1	30	83	96	56	1515
1526	RESIDENTIAL	128 DU	0.20	0.55	0.64	0.37	10.1	26	70	82	47	1293
1511	RESIDENTIAL	81 DU	0.20	0.55	0.64	0.37	10.1	16	45	52	30	818
1540	RESIDENTIAL	16 DU	0.20	0.55	0.64	0.37	10.1	3	9	10	6	162
0996	RESIDENTIAL	300 DU	0.20	0.55	0.64	0.37	10.1	60	165	192	111	3030
0997	PUBLIC PARK	10 AC	5.47	0.00	0.00	3.33	36.6	55	0	0	33	366
1601	COMMERCIAL	152 KSF	1.03	0.44	2.50	2.60	64.2	157	67	380	395	9758
1605	RESIDENTIAL	203 DU	0.20	0.55	0.64	0.37	10.1	41	112	130	75	2050
1606	RESIDENTIAL	192 DU	0.20	0.55	0.64	0.37	10.1	38	106	123	71	1939
1616	RESIDENTIAL	232 DU	0.20	0.55	0.64	0.37	10.1	46	128	148	86	2343
1621	RESIDENTIAL	188 DU	0.09	0.44	0.46	0.21	6.1	17	83	86	39	1147
1625	COMMERCIAL	174 KSF	0.98	0.42	2.34	2.44	61.2	171	73	407	425	10649
			TOTALS					15817	16884	24348	24155	482998

TABLE 2  
TRIP GENERATION  
MAY RANCH

ZONE	LAND USE	SIZE	TRIP RATES					TRIP ENDS				
			AM		PM		24	AM		PM		24
			IN	OUT	IN	OUT	HOUR	IN	OUT	IN	OUT	HOUR
0830	COMMERCIAL	109 KSF	1.18	0.51	2.93	3.05	72.1	129	56	319	332	7859
0901	COMMERCIAL	381 KSF	0.72	0.31	1.68	1.90	43.8	274	118	640	724	16688
0840	RESIDENTIAL	225 DU	0.20	0.55	0.64	0.37	10.1	45	124	144	83	2273
0911	RESIDENTIAL	231 DU	0.20	0.55	0.64	0.37	10.1	46	127	148	85	2333
0915	RESIDENTIAL	198 DU	0.20	0.55	0.64	0.37	10.1	40	109	127	73	2000
0850	RESIDENTIAL	217 DU	0.20	0.55	0.64	0.37	10.1	43	119	139	80	2192
0916	PUBLIC PARK	9 AC	5.47	0.00	0.00	3.33	36.6	49	0	0	30	329
0921	RESIDENTIAL	187 DU	0.09	0.44	0.46	0.21	6.1	17	82	86	39	1141
0946	RESIDENTIAL	300 DU	0.20	0.55	0.64	0.37	10.1	60	165	192	111	3030
0955	RESIDENTIAL	172 DU	0.20	0.55	0.64	0.37	10.1	34	95	110	64	1737
0976	RESIDENTIAL	203 DU	0.20	0.55	0.64	0.37	10.1	41	112	130	75	2050
0977	PUBLIC PARK	6 AC	5.47	0.00	0.00	3.33	36.5	33	0	0	20	219
0980	RESIDENTIAL	252 DU	0.20	0.55	0.64	0.37	10.1	50	139	161	93	2545
0999	RESIDENTIAL	280 DU	0.20	0.55	0.64	0.37	10.1	56	154	179	104	2828
1630	RESIDENTIAL	128 DU	0.20	0.55	0.64	0.37	10.1	26	70	82	47	1293
1505	RESIDENTIAL	150 DU	0.20	0.55	0.64	0.37	10.1	30	83	96	56	1515
1526	RESIDENTIAL	128 DU	0.20	0.55	0.64	0.37	10.1	26	70	82	47	1293
1511	RESIDENTIAL	81 DU	0.20	0.55	0.64	0.37	10.1	16	45	52	30	818
1540	RESIDENTIAL	16 DU	0.20	0.55	0.64	0.37	10.1	3	9	10	6	162
0996	RESIDENTIAL	300 DU	0.20	0.55	0.64	0.37	10.1	60	165	192	111	3030
0997	PUBLIC PARK	10 AC	5.47	0.00	0.00	3.33	36.6	55	0	0	33	366
1601	COMMERCIAL	152 KSF	1.03	0.44	2.50	2.60	64.2	157	67	380	395	9758
1605	RESIDENTIAL	203 DU	0.20	0.55	0.64	0.37	10.1	41	112	130	75	2050
1606	RESIDENTIAL	192 DU	0.20	0.55	0.64	0.37	10.1	38	106	123	71	1939
1616	RESIDENTIAL	232 DU	0.20	0.55	0.64	0.37	10.1	46	128	148	86	2343
1621	RESIDENTIAL	188 DU	0.09	0.44	0.46	0.21	6.1	17	83	86	39	1147
1625	COMMERCIAL	174 KSF	0.98	0.42	2.34	2.44	61.2	171	73	407	425	10649
TOTALS							1603	2411	4163	3334	83587	

At this point it is pertinent to point out that consideration was given to the traffic generated from the Lake Perris recreational area and the proposed "Farmers Fair." These developments are located on the northerly side of the Ramona Expressway in the vicinity of the May and McCanna Ranch developments. The report prepared by Justin F. Farmer, Transportation Engineers, dated February 9, 1987, titled "Report on Traffic and Circulation Study for the Farmers Fair, Ramona Expressway between Center Street and Evans Street," provided a very detailed analysis of traffic expected for these two developments.

Based on a detailed review of this report, it is concluded that because of the relatively infrequent occurrence of peak traffic from these developments, the traffic impacts from these developments would not be included in the present study. It is fully recognized that in the future when there are special events at the Farmers Fair at peak weekend times the traffic from the Lake Perris recreational area and the Farmers Fair will have an impact. However, on a daily basis these impacts are very infrequent and the traffic from these two developments does not in any way affect the conclusions of this report.

#### Trip Distribution

The next step in the analysis procedure was to determine for the peak hour periods the percentage distribution of traffic from each of the analysis zones. It is emphasized that the entire traffic analysis is based on analyzing the a.m. and p.m. peak hour traffic conditions. It is the peak hours that are the most critical and therefore the analysis is focused on these peak periods.

Special studies by the Southern California Association of Governments (SCAG) were utilized in determining the general distribution of trips for the year 2010 from this geographical area. Specifically, zone to zone trip tables were obtained from SCAG for all of their traffic analysis zones in this general geographical area.

In addition to the SCAG trip distribution percentages, the 1988 Edition of "California Population Characteristics - Regional Market Update and Projections" published by the Center for Continuing Study for the California Economy was reviewed.

One of the significant considerations was the rapidly increasing housing and employment centers being developed along the I-215 corridor in North San Diego County. In the future it is predicted by SCAG that a significant proportion of trips will be oriented along the I-215 corridor in a southerly direction as home-based peak hour work trips originate from the specific study area.

One of the key facts in the trip distribution determination is the recognition that trips from the study area will be oriented in a westerly manner so as to gain access to either Perris Boulevard or the I-215 Freeway. The vast majority of traffic in the morning, for

instance, will therefore be headed in a westbound direction except for trips of a very local nature.

Figure 2 titled "Arterial Network" shows the external percentage orientation of traffic from the general study area. According to SCAG, 85 percent of the vehicle trips generated within the study area in the a.m. peak hour will terminate or originate outside of the study area, while 80 percent of the traffic will be external in the p.m. peak hour. It is pointed out that a specific percentage distribution was applied to each individual traffic analysis zone; however, Figure 2 is intended to show the overall general trip distribution utilized for this study. This distribution scheme was applied to each of the four scenarios.

#### Trip Assignment

Having generated the peak hour both inbound and outbound traffic for each traffic zone and having determined the directional distribution of this traffic, the next step in the process is to assign the specific peak hour trips to study intersections. A computerized iterative procedure known as "multi-path assignment" was then utilized to simulate the rerouting of traffic along other streets as intersections approached capacity. For the purposes of this report, 27 signalized intersections were selected for quantitative analysis. These intersections are shown on Figure 2. The numbered intersections are assumed to be signalized and are on the street system that will serve the study area from an arterial traffic service viewpoint. The same traffic network scheme, including the 27 intersections and lane configurations, was used when analyzing each scenario with the exception of scenario 4, which requires three through lanes in each direction along Rider Street from Perris Boulevard to Center Street.

It will be noted that the Arterial Network specifically shows the proposed new interchange on Placentia Avenue at the I-215 Freeway. It is assumed that this interchange, shown on the adopted Freeway Agreement, will be constructed concurrently with the upgrading of the existing expressway to Interstate standards.

#### INTERSECTION TRAFFIC VOLUME ESTIMATES

The generated and attractor traffic as shown in each of the respective traffic zones on Table 1 was "loaded" onto the arterial network shown on Figure 2. More specifically, recognizing that signalized intersections represent the capacity constraints in an urban arterial street network, the traffic generated from the existing zones together with existing traffic observed along the Ramona Expressway and Perris Boulevard was analyzed at the 27 intersections indicated on Figure 2, the Arterial Network map. Additional external zone to external zone trips passing through the study area were not included in the analysis because levels of service along arterials within the study area already reach the "F" level at some locations as shown in scenario 4. MGA's "MONITOR" computer program, which is based on TRANSYT 7-F, was used to analyze the 27 intersections.

In distributing the traffic to the arterial network, the general distribution percentages shown around the periphery of the arterial network map were used in the traffic distribution process. These external directional percentages were determined from 2010 SCAG projections and value judgment on the part of MGA. The percentage distributions shown on Figure 2 assume that the arterial network and interchange locations will be in place at the time the total study area has been built and is generating traffic in accordance with the estimates shown on Table 1.

It is recognized that important arterial street links such as Murrieta Road northerly of the Ramona Expressway and Placentia Avenue between Evans Road and the Ramona Expressway are not within the project limits of the May project. These arterials are required to serve the overall circulation needs of the area.

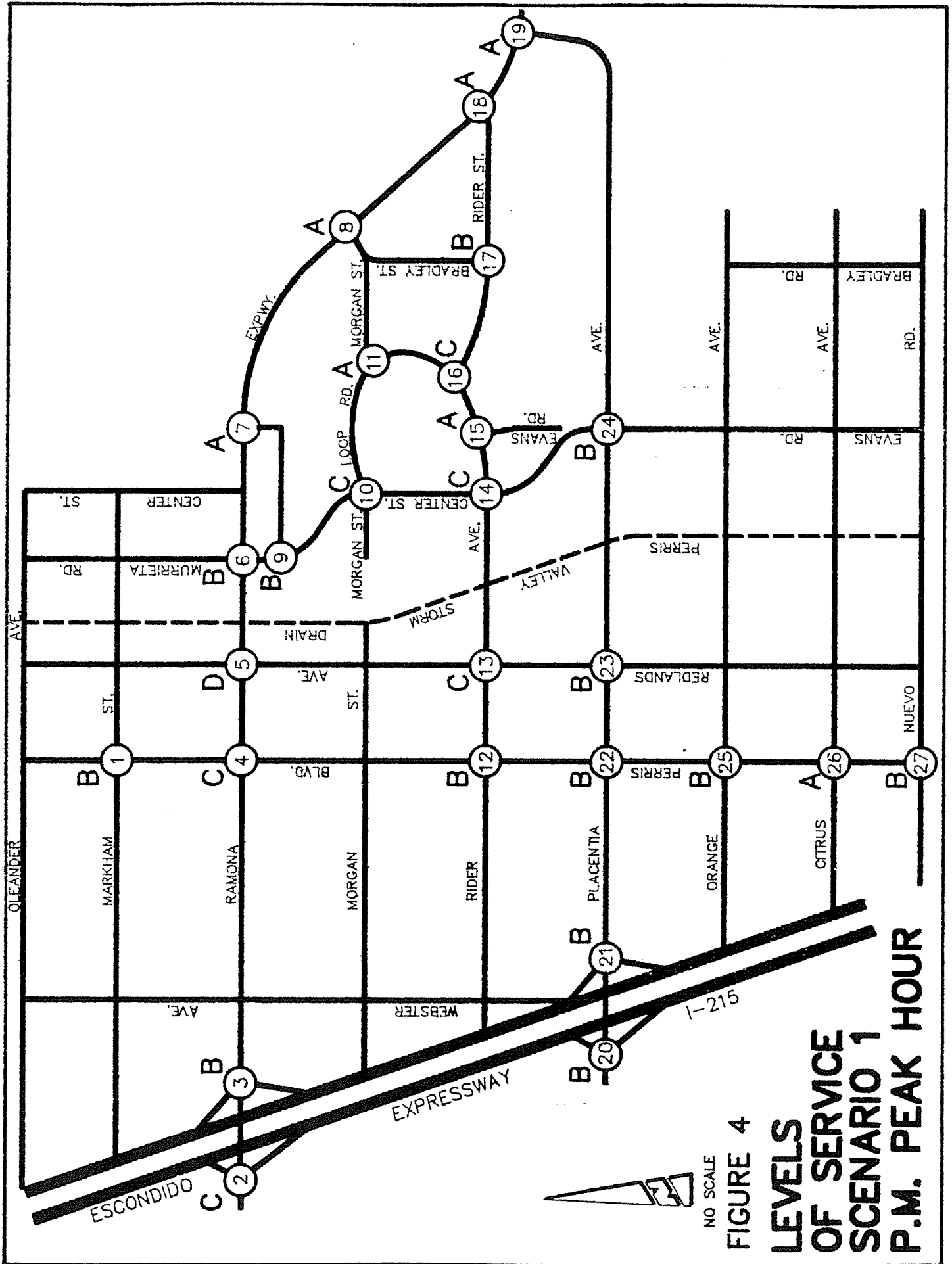
Tables 3, 7, 11 and 14 titled "Intersection Peak Hour Volumes" show the estimated a.m. and p.m. peak hour volumes for each of the predicted through and turning movements at each of the 27 study intersections for each respective scenario.

Tables 4, 8, 12 and 15 titled "Intersection Analysis Results - A.M." and Tables 5, 9, 13 and 16 titled "Intersection Analysis Results - P.M." show the estimated levels of service resulting at the study intersections for both the a.m. and p.m. peak hour periods as well as the assumed number of lanes at each of the intersections for each respective scenario. Predicted levels of service for the p.m. peak hour are illustrated on the following four pages (Figures 4, 5, 6 and 7).

A review of these tables indicates that with the proposed lane arrangements, the majority of intersections will operate at a level of service "D" or better when the May Ranch and McCanna Ranch projects and study area are fully developed. Level of service "D" has an upper limit of 40 seconds of stop time delay per vehicle. The stop time delay numbers shown in the tables labeled "Intersection Analysis Results" column 4 indicate the weighted average delay at the particular intersection. Appendix A gives a description of the various levels of service.

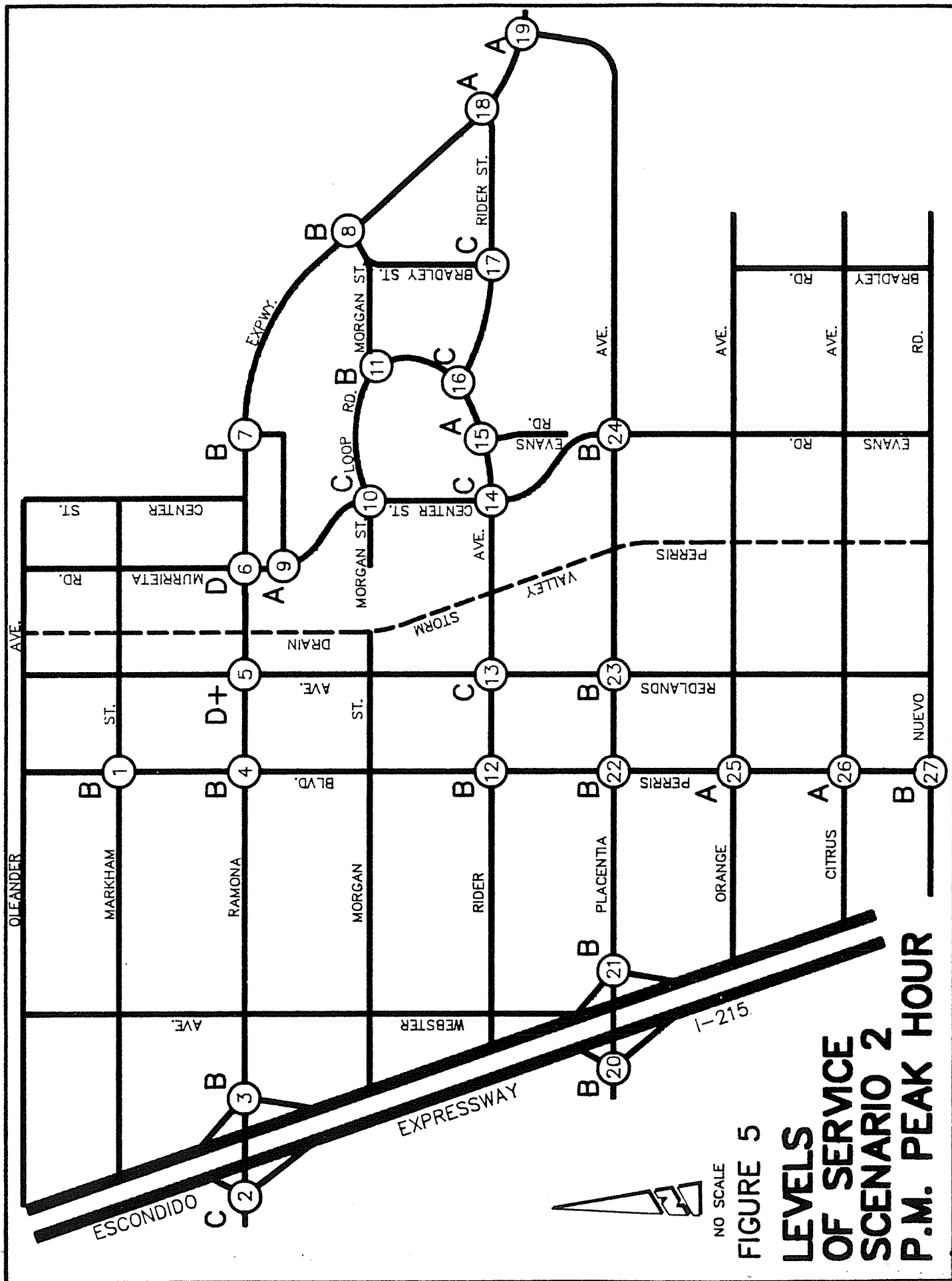
Table 19 demonstrates the traffic conditions that will exist at key intersections under each scenario. Some levels of service may improve as one progresses from one scenario to the next. This is due to the selection of different routes taken by drivers as some intersections reach capacity.

At a few intersections in this extensive network, estimated delays may exceed this level. However, from a point of view of overall planning and traffic analysis, the overall distribution of traffic is believed to be in balance with the proposed land use densities. It is important to recognize that the intersections need to have the number of lanes as indicated on the tables in order to achieve enough capacity so as to provide an acceptable level of service to the vast majority of intersections.



**FIGURE 4**  
**LEVELS OF SERVICE**  
**SCENARIO 1**  
**P.M. PEAK HOUR**

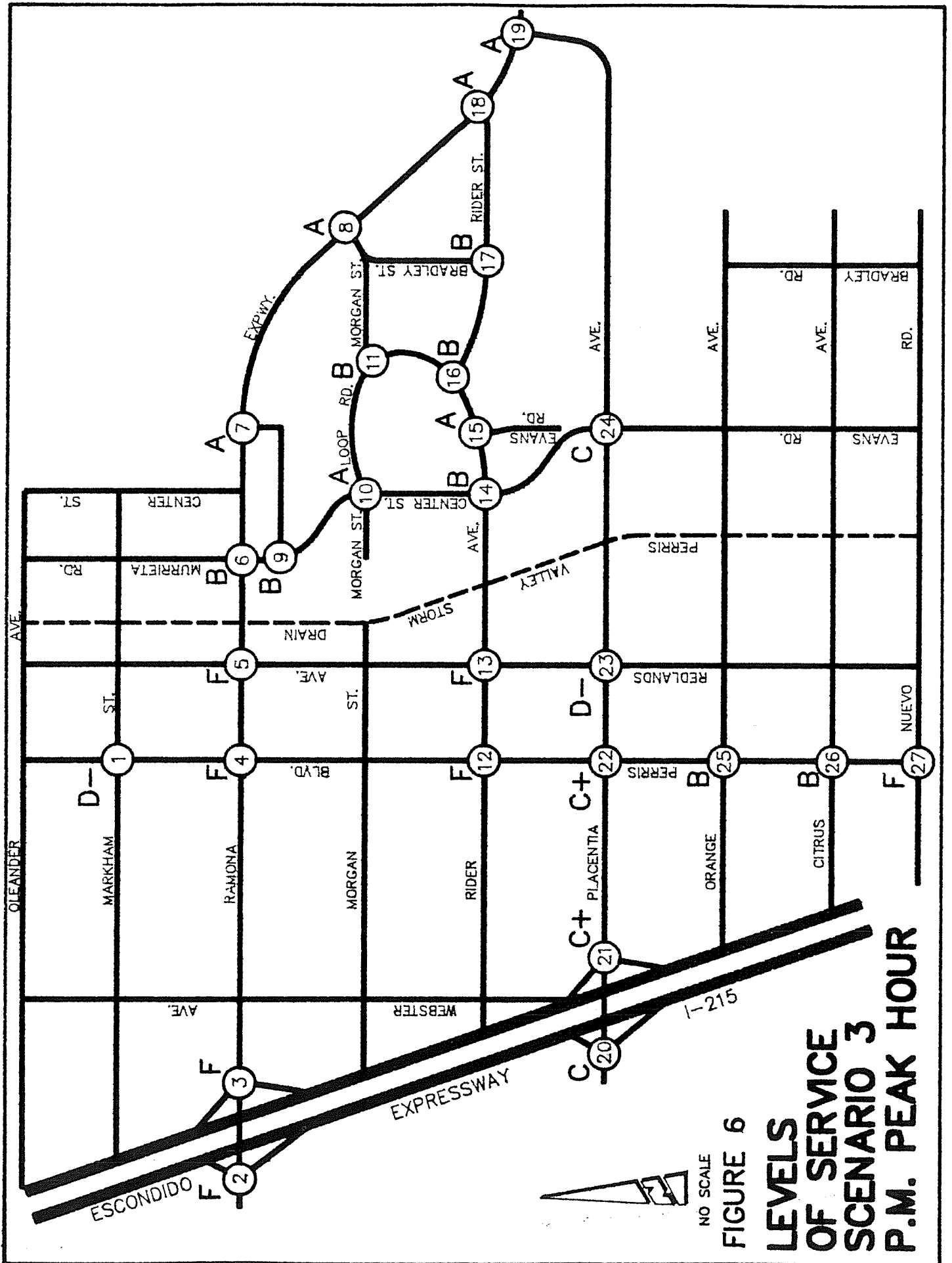




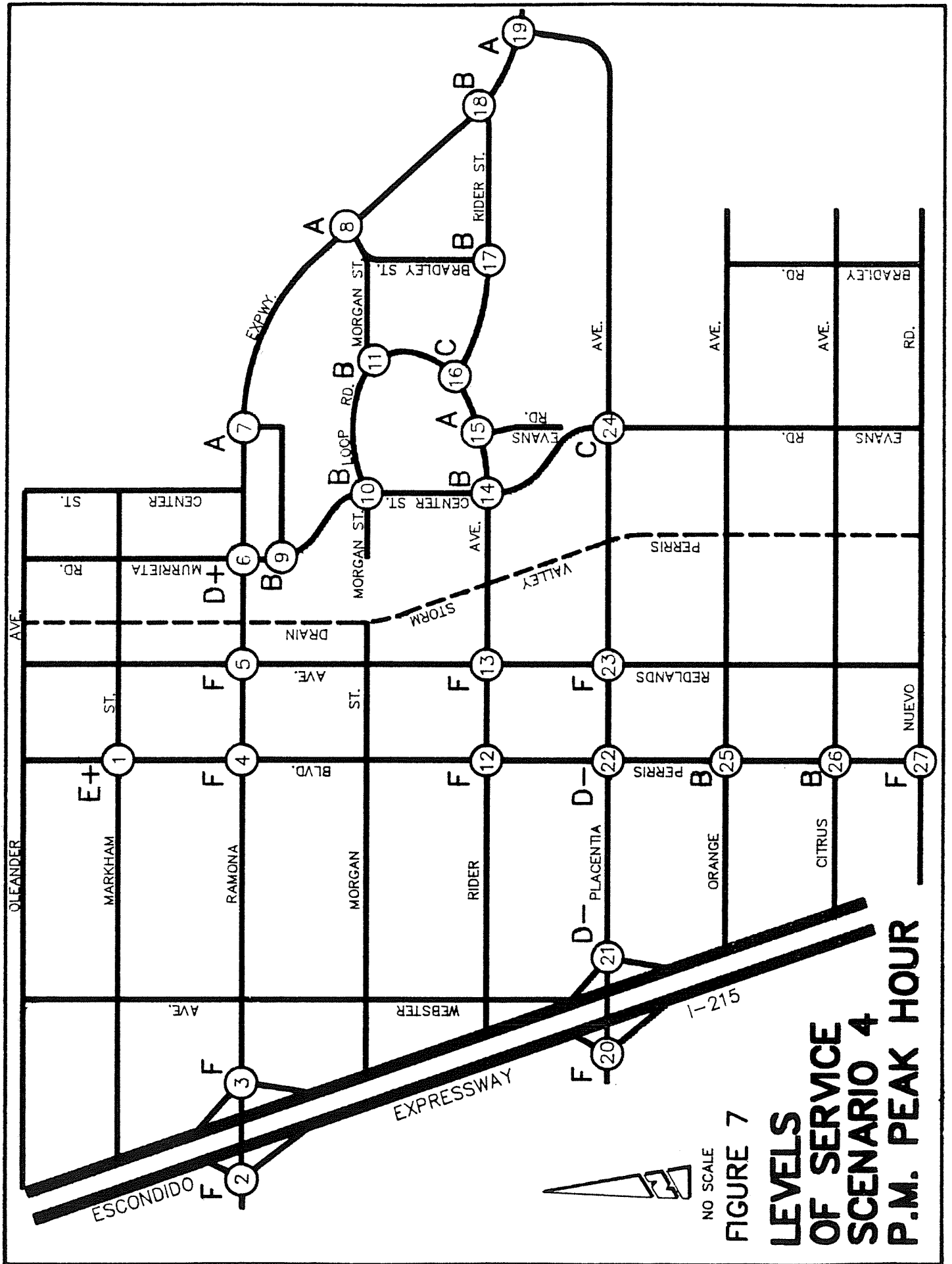
NO SCALE

FIGURE 5

**LEVELS OF SERVICE OF SCENARIO 2 P.M. PEAK HOUR**



**FIGURE 6**  
**LEVELS OF SERVICE**  
**SCENARIO 3**  
**P.M. PEAK HOUR**



NO SCALE

FIGURE 7

**LEVELS OF SERVICE OF SCENARIO 4 P.M. PEAK HOUR**

## SCENARIO 1

NOTE: For all scenarios, an estimate of the 24 hour traffic volumes may be made by multiplying the p.m. peak hour volumes by a factor of 10.

It is emphasized that this study is based on analyzing the peak hour volumes at the signalized intersections since these locations are the capacity-limiting points in the arterial network.

TABLE 3  
INTERSECTION PEAK HOUR VOLUMES  
EXISTING + MAY RANCH TRAFFIC ONLY

INTERSECTION NUMBER	INTERSECTION NAME	PEAK HOUR	EBT	EBL	EBR	SBT	SBL	SBR	WBT	WBL	WBR	NBT	NBL	NBR
1	PERRIS BLVD @ MARKHAM ST	AM	0	0	0	853	0	0	0	0	0	670	0	0
		PM	0	0	0	917	0	0	0	0	0	1001	0	0
2	CAJALCO RD @ I-215 S/B	AM	363	0	190	0	577	44	482	211	0	0	0	0
		PM	619	0	187	0	999	120	621	440	0	0	0	0
3	RAMONA EXPWY @ I-215 N/B	AM	708	232	0	0	0	0	520	0	909	0	173	156
		PM	1534	84	0	0	0	0	860	0	641	0	202	240
4	RAMONA EXPWY @ PERRIS BLVD	AM	648	128	88	400	221	232	1128	57	302	240	68	67
		PM	1510	192	72	308	465	144	1265	112	381	428	82	114
5	RAMONA EXPWY @ REDLANDS AVE	AM	880	0	56	20	96	0	1456	17	130	15	41	24
		PM	1967	0	122	34	219	0	1626	72	177	34	143	54
6	RAMONA EXPWY @ MURRIETA RD	AM	319	0	671	104	12	0	540	16	5	158	1063	5
		PM	617	0	1613	238	15	0	445	22	3	208	1429	1
7	RAMONA EXPWY @ EVANS RD	AM	326	0	0	0	0	0	557	0	0	0	0	0
		PM	625	0	0	0	0	0	472	0	0	0	0	0
8	RAMONA EXPWY @ BRADLEY ST	AM	326	0	0	0	0	0	557	12	0	0	0	12
		PM	625	0	0	0	0	0	472	13	0	0	0	0
9	COMM. LOOP RD @ MURRIETA RD	AM	0	195	12	429	0	62	0	0	0	1016	13	0
		PM	0	129	8	1131	0	189	0	0	0	831	21	0
10	LOOP RD @ CENTER ST	AM	0	0	39	231	209	0	0	98	544	365	25	31
		PM	0	0	30	508	570	0	0	71	381	447	57	93
11	MORGAN ST @ LOOP RD	AM	0	0	0	177	28	0	0	0	0	307	0	0
		PM	0	0	0	334	0	0	0	0	21	274	0	0
12	RIDER AVE @ PERRIS BLVD	AM	0	0	0	545	0	0	0	247	0	375	0	76
		PM	0	0	0	492	0	0	0	276	0	634	0	269
13	RIDER AVE @ REDLANDS AVE	AM	86	0	0	19	73	0	247	270	25	45	0	187
		PM	279	0	0	81	147	0	276	222	152	69	0	384
14	RIDER AVE @ CENTER ST	AM	149	86	0	170	85	152	336	107	146	203	0	39
		PM	351	209	0	354	161	121	237	101	112	319	0	99
15	RIDER AVE @ EVANS ST	AM	178	0	0	0	0	0	323	0	0	0	0	0
		PM	333	0	0	0	0	0	270	0	0	0	0	0
16	RIDER ST @ LOOP RD	AM	0	0	0	140	80	0	0	201	198	66	0	67
		PM	0	0	0	105	208	0	0	149	142	140	0	196
17	RIDER ST @ BRADLEY ST	AM	55	0	24	0	12	0	126	11	1	0	79	1
		PM	120	0	72	0	0	0	104	12	3	0	57	0
18	RAMONA EXPWY @ RIDER ST	AM	315	0	24	0	0	0	519	23	0	0	49	29
		PM	584	0	51	0	0	0	448	45	0	0	37	13
19	RAMONA EXPWY @ PLACENTIA AVE	AM	330	0	14	0	0	0	531	15	0	0	11	13
		PM	585	0	13	0	0	0	479	22	0	0	14	0
20	PLACENTIA AVE @ I-215 S/B	AM	0	0	0	0	55	0	0	318	0	0	0	0
		PM	0	0	0	0	122	0	0	360	0	0	0	0
21	PLACENTIA AVE @ I-215 N/B	AM	55	0	0	0	0	0	318	0	52	0	0	0
		PM	122	0	0	0	0	0	360	0	127	0	0	123
22	PLACENTIA AVE @ PERRIS BLVD	AM	55	0	0	637	0	144	217	110	0	451	0	26
		PM	135	111	0	589	0	170	307	111	0	803	0	86
23	PLACENTIA AVE @ REDLANDS AVE	AM	81	29	0	120	12	157	160	33	11	221	0	66
		PM	203	46	6	168	20	116	292	52	5	429	0	161
24	PLACENTIA AVE @ EVANS RD	AM	11	97	34	133	12	80	13	0	1	92	23	0
		PM	0	0	0	175	0	58	18	0	4	207	42	0
25	ORANGE AVE @ PERRIS BLVD	AM	0	0	0	738	0	0	0	0	0	477	0	0
		PM	0	0	0	689	0	0	0	0	0	889	0	0
26	CITRUS AVE @ PERRIS BLVD	AM	0	0	0	738	0	0	0	0	0	477	0	0
		PM	0	0	0	689	0	0	0	0	0	889	0	0
27	NUEVO RD @ PERRIS BLVD	AM	190	0	0	738	0	0	0	0	0	477	0	0
		PM	357	0	0	689	0	0	0	0	0	889	0	0

TABLE 4  
 INTERSECTION ANALYSIS RESULTS  
 EXISTING + MAY RANCH TRAFFIC ONLY  
 A.M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	EBT	EBL	EBR	SBT	SBL	LANE CONFIGURATION							
									SBR	WBT	WBL	WBR	NBT	NBL	NBR	
1	MARKHAM ST @ PERRIS BLVD	B	7	2	1	S	3	1	S	2	2	1	S	3	1	S
2	CAJALCO RD @ I-215 S/B	B	13	2	-	1	S	2	1	2	2	1	-	-	-	-
3	RAMONA EXPWY @ I-215 N/B	B	11	2	2	-	-	-	-	2	2	2	1	S	1	2
4	RAMONA EXPWY @ PERRIS BLVD	C	17	3	2	1	3	2	1	3	3	2	1	3	2	1
5	RAMONA EXPWY @ REDLANDS AVE	A	4	3	2	2	3	1	S	3	3	2	1	3	1	S
6	RAMONA EXPWY @ MURRIETA RD	B	7	3	2	2	3	2	1	3	3	2	1	3	2	1
7	RAMONA EXPWY @ EVANS RD	A	1	3	-	S	-	-	-	3	3	2	1	3	1	1
8	RAMONA EXPWY @ BRADLEY ST	A	2	3	-	S	-	-	-	3	3	2	1	3	1	1
9	COMMERCIAL LOOP RD @ MURRIETA RD	B	6	1	S	S	3	2	S	2	1	S	3	3	2	S
10	LOOP RD @ CENTER ST	C	15	2	1	S	3	2	S	2	2	1	S	3	2	S
11	MORGAN ST @ LOOP RD	A	2	-	-	-	2	1	-	-	1	1	1	2	-	S
12	RIDER ST @ PERRIS BLVD	B	10	2	1	S	3	1	S	2	1	1	S	3	1	S
13	RIDER ST @ REDLANDS AVE	B	13	2	1	S	3	1	S	2	1	1	S	3	1	S
14	RIDER ST @ CENTER ST	B	13	2	2	S	3	1	S	2	2	2	S	3	2	S
15	RIDER ST @ EVANS RD	A	1	2	-	S	-	-	-	2	2	1	-	-	1	S
16	RIDER ST @ LOOP RD	B	14	1	S	S	2	1	S	S	2	2	S	2	1	S
17	RIDER ST @ BRADLEY ST	B	10	2	1	S	S	1	1	2	1	1	S	1	1	S
18	RAMONA EXPWY @ RIDER ST	B	6	3	-	S	-	-	-	3	3	2	-	-	2	1
19	RAMONA EXPWY @ PLACENTIA AVE	A	1	3	-	S	-	-	-	3	3	2	-	-	2	1
20	PLACENTIA AVE @ I-215 S/B	B	6	2	-	S	-	2	1	2	2	2	-	-	2	-
21	PLACENTIA AVE @ I-215 N/B	A	2	2	2	-	-	-	-	2	2	2	1	S	1	2
22	PLACENTIA AVE @ PERRIS BLVD	B	10	3	2	1	3	2	1	3	3	2	1	3	2	1
23	PLACENTIA AVE @ REDLANDS AVE	B	10	3	1	S	3	1	S	3	3	1	S	3	1	S
24	PLACENTIA AVE @ EVANS RD	B	9	3	2	S	3	2	S	2	2	1	2	3	2	S
25	ORANGE AVE @ PERRIS BLVD	A	3	2	1	S	3	2	S	2	2	1	S	3	2	S
26	CITRUS AVE @ PERRIS BLVD	A	4	2	1	S	3	2	S	2	2	1	S	3	2	S
27	NUEVO RD @ PERRIS BLVD	B	7	3	2	1	3	1	S	3	3	1	S	3	2	S

S = SHARED WITH THRU LANE

TABLE 5  
 INTERSECTION ANALYSIS RESULTS  
 EXISTING + MAY RANCH TRAFFIC ONLY  
 P.-M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	LANE CONFIGURATION												
				EBT	EBL	EBR	SBT	SBL	SBR	WBT	WBL	WBR	NBT	NBL	NBR	
1	MARKHAM ST @ PERRIS BLVD	B	9	2	1	S	3	1	S	2	2	1	S	1	1	S
2	CAJALCO RD @ I-215 S/B	C	19	2	-	1	S	2	-	1	2	2	-	-	-	-
3	RAMONA EXPWY @ I-215 N/B	B	7	2	2	-	-	-	-	-	2	2	-	-	-	-
4	RAMONA EXPWY @ PERRIS BLVD	C	21	3	1	1	3	2	1	1	3	2	1	1	3	2
5	RAMONA EXPWY @ REDLANDS AVE	D	32	3	2	S	3	1	S	3	3	2	1	1	3	1
6	RAMONA EXPWY @ MURRIETA RD	B	9	3	2	2	3	2	1	1	3	2	1	1	3	1
7	RAMONA EXPWY @ EVANS RD	A	1	3	-	S	-	-	-	-	3	2	-	-	-	-
8	RAMONA EXPWY @ BRADLEY ST	A	1	3	-	S	-	-	-	-	3	2	-	-	-	-
9	COMMERCIAL LOOP RD @ MURRIETA RD	B	7	1	S	S	3	2	-	S	2	1	S	1	1	1
10	LOOP RD @ CENTER ST	C	19	2	1	S	3	2	2	S	2	2	2	2	2	S
11	MORGAN ST @ LOOP RD	A	2	-	-	-	2	1	-	-	-	1	-	-	-	-
12	RIDER ST @ PERRIS BLVD	B	7	2	1	S	3	1	S	2	2	1	S	1	1	S
13	RIDER ST @ REDLANDS AVE	C	17	2	1	S	3	1	S	2	2	1	S	1	1	S
14	RIDER ST @ CENTER ST	C	16	2	2	S	3	1	S	2	2	2	S	2	2	S
15	RIDER ST @ EVANS RD	A	1	2	-	S	-	-	-	-	2	1	S	-	-	-
16	RIDER ST @ LOOP RD	C	18	1	S	S	2	1	S	S	2	2	S	1	1	S
17	RIDER ST @ BRADLEY ST	B	14	2	1	S	S	1	S	2	2	1	S	1	1	S
18	RAMONA EXPWY @ RIDER ST	A	3	3	-	S	-	-	-	-	3	3	-	-	-	-
19	RAMONA EXPWY @ PLACENTIA AVE	A	2	3	-	S	-	-	-	-	3	3	-	-	-	-
20	PLACENTIA AVE @ I-215 S/B	B	7	2	-	S	S	2	-	1	2	2	-	-	-	-
21	PLACENTIA AVE @ I-215 N/B	B	14	2	2	-	-	-	-	-	2	2	-	-	-	-
22	PLACENTIA AVE @ PERRIS BLVD	B	10	3	2	1	3	2	1	1	3	2	1	1	3	2
23	PLACENTIA AVE @ REDLANDS AVE	B	11	3	3	1	3	1	S	3	3	1	S	3	1	S
24	PLACENTIA AVE @ EVANS RD	B	9	3	3	2	3	2	S	3	2	1	2	2	3	2
25	ORANGE AVE @ PERRIS BLVD	B	6	2	1	S	3	2	S	2	2	1	S	3	3	2
26	CITRUS AVE @ PERRIS BLVD	A	2	2	1	2	3	2	S	2	2	1	S	3	3	2
27	NUEVO RD @ PERRIS BLVD	B	10	3	3	1	3	1	S	3	3	1	S	3	3	2

S = SHARED WITH THRU LANE

TABLE 6  
 PERCENT INTERSECTION PEAK HOUR VOLUME  
 FROM  
 MAY RANCH PROJECT  
 EXISTING + MAY RANCH TRAFFIC ONLY

INTERSECTION NUMBER	INTERSECTION NAME	TOTAL INTERSECTION VOLUME	MAY RANCH PMPH VOLUME	MAY RANCH VOLUME PERCENT
1	MARKHAM ST @ PERRIS BLVD	1918	618	32
2	CAJALCO RD @ I-215 S/B	2986	1438	48
3	RAMONA EXPWY @ I-215 N/B	3561	2089	58
4	RAMONA EXPWY @ PERRIS BLVD	5073	2829	55
5	RAMONA EXPWY @ REDLANDS AVE	4398	3390	77
6	RAMONA EXPWY @ MURRIETA RD	4537	3529	77
7	RAMONA EXPWY @ EVANS RD	1077	69	6
8	RAMONA EXPWY @ BRADLEY ST	1080	72	6
9	COMMERCIAL LOOP RD @ MURRIETA RD	2261	2261	100
10	LOOP RD @ CENTER ST	2107	2107	100
11	MORGAN ST @ LOOP RD	589	589	100
12	RIDER ST @ PERRIS BLVD	1661	701	42
13	RIDER ST @ REDLANDS AVE	1550	1550	100
14	RIDER ST @ CENTER ST	1994	1994	100
15	RIDER ST @ EVANS RD	563	563	100
16	RIDER ST @ LOOP RD	900	900	100
17	RIDER ST @ BRADLEY ST	325	325	100
18	RAMONA EXPWY @ RIDER ST	1138	130	11
19	RAMONA EXPWY @ PLACENTIA AVE	1073	65	6
20	PLACENTIA AVE @ I-215 S/B	442	442	100
21	PLACENTIA AVE @ I-215 N/B	692	692	100
22	PLACENTIA AVE @ PERRIS BLVD	2272	1312	57
23	PLACENTIA AVE @ REDLANDS AVE	1400	1400	100
24	PLACENTIA AVE @ EVANS RD	581	581	100
25	ORANGE AVE @ PERRIS BLVD	1578	618	39
26	CITRUS AVE @ PERRIS BLVD	1578	618	39
27	NUEVO RD @ PERRIS BLVD	1925	965	50



SCENARIO 2

TABLE 7

INTERSECTION PEAK HOUR VOLUMES  
EXISTING + MAY RANCH + McCANNA RANCH TRAFFIC ONLY

INTERSECTION NUMBER	INTERSECTION NAME	PEAK HOUR	EBT	EBL	EBR	SBT	SBL	SBR	WBT	WBL	WBR	NBT	NBL	NBR
1	MARKHAM ST @ PERRIS BLVD	AM	0	0	0	929	0	0	0	0	32	745	0	0
2	CAJALCO RD @ I-215 S/B	PM	439	0	190	787	283	0	0	0	36	1040	0	0
3	RAMONA EXPWY @ I-215 N/B	PM	753	0	195	0	744	44	588	282	0	0	0	0
4	RAMONA EXPWY @ PERRIS BLVD	AM	1955	84	0	0	1286	120	696	502	0	0	0	0
5	RAMONA EXPWY @ REDLANDS AVE	AM	1905	192	110	400	297	232	1607	50	377	240	68	101
6	RAMONA EXPWY @ MURRIETA RD	AM	1301	0	53	308	335	144	1541	133	420	428	92	106
7	RAMONA EXPWY @ EVANS RD	AM	2247	0	99	41	133	0	1973	84	200	15	30	49
8	RAMONA EXPWY @ BRADLEY ST	AM	1213	0	663	103	66	0	1305	49	114	37	130	62
9	COMM. LOOP RD @ MURRIETA RD	AM	562	0	357	529	275	0	888	44	95	315	1283	23
10	LOOP RD @ CENTER ST	AM	1056	0	468	0	0	0	967	0	0	0	537	0
11	MORGAN ST @ LOOP RD	AM	327	0	245	0	0	0	718	19	0	0	344	0
12	RIDER ST @ PERRIS BLVD	AM	627	0	440	0	0	0	555	30	0	0	421	23
13	RIDER ST @ REDLANDS AVE	AM	128	0	13	429	11	61	470	0	2	956	14	0
14	RIDER ST @ CENTER ST	AM	562	0	30	1031	207	179	0	0	0	822	24	0
15	RIDER ST @ EVANS RD	AM	820	237	1	308	146	123	0	0	0	263	0	0
16	RIDER ST @ LOOP RD	AM	919	0	0	0	0	0	0	0	0	409	0	0
17	RIDER ST @ BRADLEY ST	AM	57	188	24	0	81	0	525	526	192	104	0	248
18	RAMONA EXPWY @ RIDER ST	AM	326	0	24	0	194	318	0	338	133	399	0	526
19	RAMONA EXPWY @ PLACENTIA AVE	AM	598	0	49	0	0	0	125	11	1	0	79	1
20	PLACENTIA AVE @ I-215 S/B	AM	356	0	14	0	0	0	98	12	3	0	56	1
21	PLACENTIA AVE @ I-215 N/B	AM	620	0	13	0	55	0	527	32	0	0	48	44
22	PLACENTIA AVE @ PERRIS BLVD	AM	0	0	0	0	159	0	464	58	0	0	36	35
23	PLACENTIA AVE @ REDLANDS AVE	AM	55	0	0	0	0	0	547	14	0	0	11	14
24	PLACENTIA AVE @ EVANS RD	AM	282	260	0	634	0	267	508	21	0	0	14	13
25	ORANGE AVE @ PERRIS BLVD	AM	81	141	6	219	19	173	0	494	0	0	0	0
26	CITRUS AVE @ PERRIS BLVD	AM	292	47	34	227	13	84	13	0	1	144	24	0
27	NUOVO RD @ PERRIS BLVD	AM	11	135	0	226	12	68	18	433	4	306	42	0
		AM	0	0	0	844	0	0	0	0	0	553	0	0
		PM	0	0	0	764	0	0	0	0	0	1032	0	0
		PM	262	0	0	844	0	0	0	0	0	553	0	0
		PM	343	0	0	764	0	0	0	0	0	1032	0	0

TABLE 8

INTERSECTION ANALYSIS RESULTS

EXISTING + MAY RANCH + MCCANNA RANCH TRAFFIC ONLY

A.M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	EBT	EBL	EBR	SBT	SBL	SBR	LANE CONFIGURATION						
										WBT	WBL	WBR	NBT	NBL	NBR	
1	MARKHAM ST @ PERRIS BLVD	B	13	2	1	S	3	1	S	2	1	S	3	1	S	
2	CAJALCO RD @ I-215 S/B	B	14	2	-	1	S	2	1	2	2	-	-	-	-	
3	RAMONA EXPY @ I-215 N/B	C	25	2	2	-	-	-	1	2	2	-	-	-	-	
4	RAMONA EXPY @ PERRIS BLVD	B	11	3	2	1	3	2	1	3	2	1	3	2	1	
5	RAMONA EXPY @ REDLANDS AVE	B	5	3	2	S	3	1	S	3	2	1	3	1	S	
6	RAMONA EXPY @ MURRIETA RD	E	45	3	2	2	3	2	1	3	2	1	3	2	1	
7	RAMONA EXPY @ EVANS RD	B	10	3	-	S	-	-	-	3	2	-	-	-	-	
8	RAMONA EXPY @ BRADLEY ST	B	8	3	-	S	-	-	-	3	2	-	-	-	-	
9	COMMERCIAL LOOP RD @ MURRIETA RD	A	4	1	S	S	3	2	S	2	1	S	3	2	S	
10	LOOP RD @ CENTER ST	C	16	2	1	S	3	2	S	2	2	S	3	2	S	
11	MORGAN ST @ LOOP RD	B	10	-	-	-	2	1	-	-	1	1	2	-	-	
12	RIDER ST @ PERRIS BLVD	B	11	2	1	S	3	1	S	2	1	S	3	1	S	
13	RIDER ST @ REDLANDS AVE	B	11	2	1	S	3	1	S	2	1	S	3	1	S	
14	RIDER ST @ CENTER ST	C	18	2	2	S	3	1	S	2	2	S	3	2	S	
15	RIDER ST @ EVANS RD	A	2	2	-	S	-	-	-	2	2	-	-	-	-	
16	RIDER ST @ LOOP RD	B	15	1	S	S	2	1	S	S	2	S	2	1	S	
17	RIDER ST @ BRADLEY ST	C	17	2	1	S	S	1	1	2	1	S	1	S	S	
18	RAMONA EXPY @ RIDER ST	A	5	3	-	S	-	-	-	3	2	-	-	-	-	
19	RAMONA EXPY @ PLACENTIA AVE	A	2	3	-	S	-	-	-	3	2	-	-	-	-	
20	PLACENTIA AVE @ I-215 S/B	B	8	2	-	S	-	2	1	2	2	-	-	-	-	
21	PLACENTIA AVE @ I-215 N/B	A	2	2	2	-	-	-	-	2	2	-	-	-	-	
22	PLACENTIA AVE @ PERRIS BLVD	B	10	3	2	1	3	2	1	3	2	1	3	2	1	
23	PLACENTIA AVE @ REDLANDS AVE	B	10	3	1	S	3	1	S	3	1	S	3	1	S	
24	PLACENTIA AVE @ EVANS RD	B	6	3	2	S	3	2	S	2	1	2	3	2	S	
25	ORANGE AVE @ PERRIS BLVD	A	4	2	1	S	3	2	S	2	1	S	3	2	S	
26	CITRUS AVE @ PERRIS BLVD	A	3	2	1	2	3	2	S	2	1	S	3	2	S	
27	NUEVO RD @ PERRIS BLVD	B	9	3	2	1	3	1	S	3	1	S	3	2	S	

S = SHARED WITH THRU LANE

TABLE 9  
INTERSECTION ANALYSIS RESULTS

EXISTING + MAY RANCH + MCCANNA RANCH TRAFFIC ONLY  
P.M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	EBT	EBL	EBR	SBT	SBL	SBR	LANE CONFIGURATION					
										WBT	WBL	WBR	NBT	NBL	NBR
1	MARKHAM ST @ PERRIS BLVD	B	11	2	1	S	3	1	S	2	1	S	3	1	S
2	CAJALCO RD @ I-215 S/B	C	20	2	2	1	S	2	1	2	2	1	1	1	1
3	RAMONA EXPHY @ I-215 N/B	B	7	2	2	1	1	1	1	2	2	1	1	1	1
4	RAMONA EXPHY @ PERRIS BLVD	B	15	3	2	1	3	2	1	3	2	1	3	2	1
5	RAMONA EXPHY @ REDLANDS AVE	D+	26	3	2	S	3	1	S	3	2	1	3	1	S
6	RAMONA EXPHY @ MURRIETA RD	D	33	3	2	2	3	2	1	3	2	1	3	2	1
7	RAMONA EXPHY @ EVANS RD	B	8	3	1	S	3	1	1	3	2	1	3	1	1
8	RAMONA EXPHY @ BRADLEY ST	B	9	3	1	S	3	1	1	3	2	1	3	1	1
9	COMMERCIAL LOOP RD @ MURRIETA RD	A	4	1	S	S	3	2	S	2	1	S	3	2	1
10	LOOP RD @ CENTER ST	C	16	2	1	S	3	2	S	2	2	S	3	2	S
11	MORGAN ST @ LOOP RD	B	5	1	1	1	2	1	1	1	1	1	1	1	S
12	RIDER ST @ PERRIS BLVD	B	7	2	1	S	3	1	S	2	1	S	3	1	S
13	RIDER ST @ REDLANDS AVE	C	16	2	1	S	3	1	S	2	1	S	3	1	S
14	RIDER ST @ CENTER ST	C	16	2	2	S	3	1	S	2	2	S	3	2	S
15	RIDER ST @ EVANS RD	A	1	2	1	S	3	1	1	2	2	S	3	1	S
16	RIDER ST @ LOOP RD	C	16	1	S	S	2	1	S	S	2	S	2	1	S
17	RIDER ST @ BRADLEY ST	C	21	2	1	S	S	1	1	2	1	S	1	1	S
18	RAMONA EXPHY @ RIDER ST	A	4	3	1	S	1	1	1	3	2	1	1	1	1
19	RAMONA EXPHY @ PLACENTIA AVE	A	1	3	1	S	1	1	1	3	2	1	1	1	1
20	PLACENTIA AVE @ I-215 S/B	B	5	2	1	S	S	2	1	2	2	1	1	1	1
21	PLACENTIA AVE @ I-215 N/B	B	12	2	2	1	1	2	1	2	2	1	1	1	1
22	PLACENTIA AVE @ PERRIS BLVD	B	14	3	1	S	3	2	1	3	2	1	3	2	1
23	PLACENTIA AVE @ REDLANDS AVE	B	14	3	1	S	3	1	S	3	2	1	3	2	1
24	PLACENTIA AVE @ EVANS RD	B	10	3	2	S	3	2	S	2	2	1	3	2	1
25	ORANGE AVE @ PERRIS BLVD	A	2	2	1	S	3	2	S	2	2	1	3	2	1
26	CITRUS AVE @ PERRIS BLVD	A	3	2	1	2	3	2	S	2	2	1	3	2	1
27	NUOVO RD @ PERRIS BLVD	B	10	3	2	1	3	1	S	3	2	1	3	2	1

S = SHARED WITH THRU LANE

TABLE 10  
 PERCENT INTERSECTION PEAK HOUR VOLUME  
 FROM  
 MAY RANCH PROJECT  
 EXISTING + MAY RANCH + McCANNA RANCH TRAFFIC ONLY

INTERSECTION NUMBER	INTERSECTION NAME	TOTAL INTERSECTION VOLUME	MAY RANCH PMPH VOLUME	MAY RANCH VOLUME PERCENT
1	MARKHAM ST @ PERRIS BLVD	2136	618	28
2	CAJALCO RD @ I-215 S/B	3552	1438	40
3	RAMONA EXPWY @ I-215 N/B	4281	2089	48
4	RAMONA EXPWY @ PERRIS BLVD	5714	2829	49
5	RAMONA EXPWY @ REDLANDS AVE	4870	3390	69
6	RAMONA EXPWY @ MURRIETA RD	5834	3529	60
7	RAMONA EXPWY @ EVANS RD	2556	69	2
8	RAMONA EXPWY @ BRADLEY ST	1805	72	3
9	COMMERCIAL LOOP RD @ MURRIETA RD	2261	2261	100
10	LOOP RD @ CENTER ST	2107	2107	100
11	MORGAN ST @ LOOP RD	900	589	65
12	RIDER ST @ PERRIS BLVD	2025	701	34
13	RIDER ST @ REDLANDS AVE	2237	1550	69
14	RIDER ST @ CENTER ST	2779	1994	71
15	RIDER ST @ EVANS RD	1404	563	40
16	RIDER ST @ LOOP RD	1721	900	52
17	RIDER ST @ BRADLEY ST	834	325	38
18	RAMONA EXPWY @ RIDER ST	1200	130	10
19	RAMONA EXPWY @ PLACENTIA AVE	1149	65	5
20	PLACENTIA AVE @ I-215 S/B	552	442	80
21	PLACENTIA AVE @ I-215 N/B	1074	692	64
22	PLACENTIA AVE @ PERRIS BLVD	2871	1312	45
23	PLACENTIA AVE @ REDLANDS AVE	1810	1400	77
24	PLACENTIA AVE @ EVANS RD	782	581	74
25	ORANGE AVE @ PERRIS BLVD	1796	618	34
26	CITRUS AVE @ PERRIS BLVD	1796	618	34
27	NUEVO RD @ PERRIS BLVD	2129	965	45

SCENARIO 3

INTERSECTION TRAFFIC WITHOUT MAY RANCH  
 INTERSECTION TRAFFIC WITHOUT MAY RANCH

INTERSECTION NUMBER	INTERSECTION NAME	PEAK HOUR	EST	EBR	SBT	SBL	SBR	WBT	WBL	WBR	MBT	MBL	MBR
1	PERRIS BLVD @ MARKHAM ST	AM	98	23	1534	87	118	696	137	464	962	240	22
2	CAJALCO RD @ I-215 S/B	PM	727	173	1293	512	94	375	162	376	1626	45	156
3	RAMONA EXPWY @ I-215 N/B	AM	1150	0	0	1505	44	1485	350	0	0	0	0
4	RAMONA EXPWY @ PERRIS BLVD	PM	1620	0	0	1725	120	1998	882	0	0	0	0
5	RAMONA EXPWY @ REDLANDS AVE	AM	2423	232	0	0	0	1599	0	1560	0	237	752
6	RAMONA EXPWY @ MURRIETA RD	PM	3261	84	0	0	0	2500	0	1508	0	380	708
7	RAMONA EXPWY @ EVANS RD	AM	1221	187	888	464	403	2023	208	450	945	476	124
8	RAMONA EXPWY @ BRADLEY ST	PM	2479	531	1507	456	249	1841	94	471	1184	519	130
9	COMM. LOOP RD @ MURRIETA RD	AM	1182	202	853	213	278	2300	152	338	320	131	168
10	LOOP RD @ CENTER ST	PM	2519	354	744	367	277	1877	194	257	1091	330	295
11	MORGAN ST @ LOOP RD	AM	1070	224	115	239	306	1810	0	796	678	674	0
12	RIDER AVE @ PERRIS BLVD	PM	1588	415	231	1489	231	1546	0	682	209	551	0
13	RIDER AVE @ REDLANDS AVE	AM	1125	0	0	0	0	2372	0	0	0	244	0
14	RIDER AVE @ CENTER ST	PM	2800	0	0	0	0	2083	0	0	0	156	0
15	RIDER AVE @ EVANS ST	AM	1023	0	0	0	0	2230	16	0	0	152	0
16	RIDER ST @ LOOP RD	PM	2596	0	0	0	0	1963	17	0	0	130	13
17	RIDER ST @ BRADLEY ST	AM	0	0	383	0	0	0	0	0	1343	0	0
18	RAMONA EXPWY @ RIDER ST	PM	0	0	1410	0	0	0	0	0	749	0	0
19	PLACENTIA AVE @ I-215 S/B	AM	0	0	383	0	0	0	0	0	1093	0	0
20	PLACENTIA AVE @ I-215 N/B	PM	0	0	1410	0	0	0	0	0	749	0	0
21	PLACENTIA AVE @ PERRIS BLVD	AM	0	0	0	0	0	0	0	0	1093	0	0
22	PLACENTIA AVE @ REDLANDS AVE	PM	0	0	0	0	0	0	0	0	749	0	0
23	PLACENTIA AVE @ REDLANDS AVE	AM	0	0	0	0	0	0	0	0	1093	0	0
24	ORANGE AVE @ PERRIS BLVD	PM	0	0	0	0	0	0	0	0	749	0	0
25	CITRUS AVE @ PERRIS BLVD	AM	0	0	0	0	0	0	0	0	1093	0	0
26	NUEVO RD @ PERRIS BLVD	PM	0	0	0	0	0	0	0	0	749	0	0
27		AM	0	0	0	0	0	0	0	0	1093	0	0

TABLE 12

INTERSECTION ANALYSIS RESULTS

OVERALL TRAFFIC WITHOUT MAY RANCH

A.M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	EBT	EBL	EBR	SBT	SBL	LANE CONFIGURATION							
									SBR	WBT	WBL	WBR	NBT	NBL	NBR	
1	MARKHAM ST @ PERRIS BLVD	D+	27	2	1	S	3	1	S	2	2	S	3	1	S	S
2	CAJALCO RD @ I-215 S/B	D	31	2	-	1	S	2	1	2	-	-	-	-	-	-
3	RAMONA EXPY @ I-215 N/B	F	137	2	2	-	-	-	-	2	2	-	-	-	-	-
4	RAMONA EXPY @ PERRIS BLVD	C+	17	3	2	1	3	2	1	3	2	1	3	2	1	2
5	RAMONA EXPY @ REDLANDS AVE	C+	19	3	2	S	3	2	S	3	3	1	3	2	S	S
6	RAMONA EXPY @ MURRIETA RD	C	15	3	2	2	3	2	1	3	2	1	3	2	1	1
7	RAMONA EXPY @ EVANS RD	A	5	3	-	S	-	-	-	3	2	-	-	-	-	-
8	RAMONA EXPY @ BRADLEY ST	A	3	3	-	S	-	-	-	3	2	-	-	-	-	-
9	COMMERCIAL LOOP RD @ MURRIETA RD	B	3	1	-	-	3	2	S	2	1	S	3	2	S	S
10	LOOP RD @ CENTER ST	B	6	2	1	S	3	2	S	2	2	S	3	2	S	S
11	MORGAN ST @ LOOP RD	B	8	-	-	-	2	1	-	-	-	1	2	-	-	-
12	RIDER ST @ PERRIS BLVD	C	15	2	1	S	3	1	S	2	1	S	3	1	S	S
13	RIDER ST @ REDLANDS AVE	C	20	2	1	S	3	1	S	2	1	S	3	1	S	S
14	RIDER ST @ CENTER ST	A	1	2	1	S	3	1	S	2	1	S	3	1	S	S
15	RIDER ST @ EVANS RD	A	1	2	-	S	-	-	-	2	1	-	-	-	-	-
16	RIDER ST @ LOOP RD	B	8	1	S	S	2	1	S	S	2	S	2	1	S	S
17	RIDER ST @ BRADLEY ST	B	14	2	1	S	1	1	1	2	1	S	1	1	S	S
18	RAMONA EXPY @ RIDER ST	A	5	3	-	S	-	-	-	3	3	-	-	-	-	-
19	RAMONA EXPY @ PLACENTIA AVE	A	3	3	-	S	-	-	-	3	3	-	-	-	-	-
20	PLACENTIA AVE @ I-215 S/B	B	13	2	-	S	-	2	2	2	2	-	-	-	-	-
21	PLACENTIA AVE @ I-215 N/B	B-	12	2	2	-	-	-	-	2	2	-	-	-	-	-
22	PLACENTIA AVE @ PERRIS BLVD	C	17	3	2	1	3	2	1	3	2	1	3	2	1	2
23	PLACENTIA AVE @ REDLANDS AVE	B-	14	3	1	S	3	1	S	3	3	1	3	2	S	S
24	PLACENTIA AVE @ EVANS RD	B-	10	3	2	S	3	2	S	2	2	S	3	2	S	S
25	ORANGE AVE @ PERRIS BLVD	A	3	2	1	S	3	2	S	2	2	S	3	2	S	S
26	CITRUS AVE @ PERRIS BLVD	B	8	2	1	2	3	2	S	2	2	S	3	2	S	S
27	NUEVO RD @ PERRIS BLVD	D	35	3	2	1	3	1	S	3	3	S	3	2	S	S

S = SHARED WITH THRU LANE



TABLE 13

INTERSECTION ANALYSIS RESULTS

OVERALL TRAFFIC WITHOUT MAY RANCH

P.M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	LANE CONFIGURATION												
				EBT	EBL	EBR	SBT	SBL	SBR	WBT	WBL	WBR	NBT	NBL	NBR	
1	MARKHAM ST @ PERRIS BLVD	D-	38	2	1	S	3	1	S	2	2	1	S	3	1	S
2	CAJALCO RD @ I-215 S/B	F	246	2	-	1	S	2	-	1	2	-	-	-	-	-
3	RAMONA EXPY @ I-215 N/B	F	182	2	2	-	-	-	-	-	2	-	1	S	1	2
4	RAMONA EXPY @ PERRIS BLVD	F	118	3	2	1	3	2	1	1	3	2	1	3	2	1
5	RAMONA EXPY @ REDLANDS AVE	F	110	3	2	S	3	2	S	3	3	2	1	3	2	S
6	RAMONA EXPY @ MURRIETA RD	B	14	3	2	2	3	2	1	1	3	2	1	3	2	1
7	RAMONA EXPY @ EVANS RD	A	3	3	-	S	-	-	-	-	3	2	-	-	1	1
8	RAMONA EXPY @ BRADLEY ST	A	2	-	S	-	3	-	-	-	3	2	-	-	1	1
9	COMMERCIAL LOOP RD @ MURRIETA RD	B	6	1	-	S	3	2	2	S	2	1	S	3	2	S
10	LOOP RD @ CENTER ST	A	5	2	1	S	3	2	2	S	2	2	S	3	2	S
11	MORGAN ST @ LOOP RD	B	11	-	-	-	2	1	-	-	-	1	1	2	-	S
12	RIDER ST @ PERRIS BLVD	F	88	2	1	S	3	1	1	S	2	1	S	3	1	S
13	RIDER ST @ REDLANDS AVE	F	92	2	1	S	3	1	1	S	2	1	S	3	1	S
14	RIDER ST @ CENTER ST	B	10	2	1	S	3	1	1	S	2	2	S	3	2	S
15	RIDER ST @ EVANS RD	A	1	2	-	S	-	-	-	-	2	1	-	S	1	S
16	RIDER ST @ LOOP RD	B	6	1	S	2	1	1	1	S	2	2	S	2	1	S
17	RIDER ST @ BRADLEY ST	B	7	2	1	S	1	1	1	1	2	1	S	1	1	S
18	RAMONA EXPY @ RIDER ST	A	3	3	-	S	-	-	-	-	3	2	-	-	2	1
19	RAMONA EXPY @ PLACENTIA AVE	A	1	3	-	S	-	-	-	-	3	2	-	-	2	1
20	PLACENTIA AVE @ I-215 S/B	C	16	2	-	S	-	-	-	-	2	2	-	-	-	-
21	PLACENTIA AVE @ I-215 N/B	C+	59	2	2	-	S	2	2	1	2	2	1	S	1	2
22	PLACENTIA AVE @ PERRIS BLVD	C+	20	3	2	1	3	2	1	1	3	2	1	3	2	1
23	PLACENTIA AVE @ REDLANDS AVE	D-	37	3	3	1	3	1	1	S	3	1	S	3	2	S
24	PLACENTIA AVE @ EVANS RD	C	17	3	2	S	3	2	2	S	2	1	2	3	2	S
25	ORANGE AVE @ PERRIS BLVD	B	7	2	1	S	3	2	2	S	2	1	S	3	2	S
26	CITRUS AVE @ PERRIS BLVD	B	7	2	1	2	3	2	2	S	2	1	S	3	2	S
27	NUEVO RD @ PERRIS BLVD	F	116	3	2	1	3	1	3	S	3	2	S	3	2	S

S = SHARED WITH THRU LANE

SCENARIO 4

TABLE 4  
INTERSECTION PEAK HOUR VOLUMES  
OVERALL TRAFFIC

INTERSECTION NUMBER	INTERSECTION NAME	PEAK HOUR	EBT	EBL	EBR	SBT	SBL	SBR	WBT	WBL	WBR	NBT	NBL	NBR
1	MARKHAM ST @ PERRIS BLVD	AM	96	26	25	1559	170	132	736	209	478	1093	247	32
		PM	596	319	460	1423	412	108	474	195	570	1618	40	271
2	CAJALCO RD @ I-215 S/B	AM	1283	0	479	0	1556	44	1689	449	0	0	0	0
		PM	1906	0	503	0	1910	120	2266	1050	0	0	0	0
3	RAMONA EXPWY @ I-215 N/B	AM	2607	232	0	0	0	0	1793	0	1782	0	345	722
		PM	3731	84	0	0	0	0	2866	0	1856	0	450	905
4	RAMONA EXPWY @ PERRIS BLVD	AM	1357	198	333	1012	481	487	2377	166	493	1079	427	133
		PM	2714	475	512	1671	621	220	2262	102	422	1403	681	195
5	RAMONA EXPWY @ REDLANDS AVE	AM	1384	211	398	845	307	248	2717	169	333	454	98	187
		PM	2939	316	258	982	565	246	2235	363	330	1310	332	180
6	RAMONA EXPWY @ MURRIETA RD	AM	908	126	845	263	260	261	1756	21	1201	652	1202	6
		PM	1391	146	2147	543	1709	83	1519	30	893	614	1327	37
7	RAMONA EXPWY @ EVANS RD	AM	1040	0	134	0	0	0	2701	0	0	0	287	0
		PM	2745	0	312	0	0	0	2269	15	0	0	160	1
8	RAMONA EXPWY @ BRADLEY ST	AM	945	0	105	0	0	0	2507	24	0	0	204	18
		PM	2429	0	326	0	0	0	2148	22	0	0	135	23
9	COMM. LOOP RD @ DAMES ST	AM	18	154	39	765	12	60	0	11	0	1648	14	0
		PM	14	123	26	2197	18	146	69	0	1	1459	47	3
10	LOOP RD @ CENTER ST	AM	11	0	49	661	170	0	14	200	388	1197	23	24
		PM	36	0	21	1772	375	0	48	28	309	1162	53	228
11	MORGAN ST @ LOOP RD	AM	0	0	0	147	31	0	0	93	75	233	0	72
		PM	0	0	0	385	77	0	0	89	32	326	0	125
12	RIDER AVE @ PERRIS BLVD	AM	31	16	18	1069	148	121	621	581	537	1338	217	482
		PM	774	245	275	2144	179	246	323	611	382	1568	255	819
13	RIDER AVE @ REDLANDS AVE	AM	318	310	39	295	164	376	931	767	267	1038	423	311
		PM	889	348	516	1402	542	435	696	577	373	679	192	914
14	RIDER AVE @ CENTER ST	AM	388	86	105	640	58	267	1175	234	69	1096	519	54
		PM	1540	231	379	1711	57	75	897	158	59	1197	384	238
15	RIDER AVE @ EVANS ST	AM	409	0	0	0	0	0	1237	0	0	0	0	0
		PM	1596	0	0	0	0	0	944	0	0	0	0	0
16	RIDER ST @ LOOP RD	AM	0	0	0	223	63	0	0	1041	122	159	0	201
		PM	0	0	0	316	155	0	0	631	103	359	0	1247
17	RIDER ST @ BRADLEY ST	AM	72	112	23	23	12	169	746	11	3	15	74	1
		PM	982	176	63	23	11	102	452	12	3	11	55	1
18	RAMONA EXPWY @ RIDER ST	AM	941	0	22	0	0	0	2481	648	0	0	49	53
		PM	2384	0	68	0	0	0	2135	404	0	0	36	893
19	RAMONA EXPWY @ PLACENTIA AVE	AM	979	0	16	0	0	0	3113	75	0	0	16	54
		PM	3249	0	27	0	0	0	2517	61	0	0	23	71
20	PLACENTIA AVE @ I-215 S/B	AM	0	0	0	0	1281	0	0	1019	0	0	0	0
		PM	0	0	0	0	1586	0	0	1418	0	0	0	0
21	PLACENTIA AVE @ I-215 N/B	AM	1264	27	0	0	0	0	1019	0	1111	0	0	957
		PM	1586	0	0	0	0	0	1413	0	1526	0	15	1413
22	PLACENTIA AVE @ PERRIS BLVD	AM	828	416	118	1348	57	320	1994	129	121	1479	243	62
		PM	2325	734	156	2300	161	602	1423	104	143	1828	133	44
23	PLACENTIA AVE @ REDLANDS AVE	AM	526	396	71	255	20	835	1079	452	395	968	205	186
		PM	1177	970	217	1473	327	695	762	290	121	696	156	766
24	PLACENTIA AVE @ EVANS RD	AM	341	46	65	439	176	412	966	16	898	658	508	19
		PM	911	508	687	770	1266	101	504	31	471	831	286	11
25	ORANGE AVE @ PERRIS BLVD	AM	0	0	0	1732	0	7	158	25	45	1566	244	0
		PM	135	97	227	2262	160	1	24	72	67	1928	51	152
26	CITRUS AVE @ PERRIS BLVD	AM	0	0	6	1747	0	0	11	359	0	1800	117	0
		PM	12	0	248	2524	37	0	11	22	0	2122	14	779
27	NUEVO RD @ PERRIS BLVD	AM	1068	692	4	1445	53	606	1619	506	128	1103	70	523
		PM	1595	1285	16	1148	270	1382	1238	1181	5	1643	72	788

TABLE 15

INTERSECTION ANALYSIS RESULTS

OVERALL TRAFFIC

A.M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	EBT	EBL	EBR	SBT	SBL	LANE CONFIGURATION							
									SBR	WBT	WBL	WBR	NBT	NBL	NBR	
1	MARKHAM ST @ PERRIS BLVD	C	21	2	1	S	3	1	S	2	1	S	3	3	1	S
2	CAJALCO RD @ I-215 S/B	F	70	2	-	1	S	2	-	2	-	-	-	-	-	-
3	RAMONA EXPWY @ I-215 N/B	F	380	2	2	-	-	-	-	2	-	-	-	S	1	2
4	RAMONA EXPWY @ PERRIS BLVD	C-	23	3	2	1	3	2	1	3	2	1	3	3	2	1
5	RAMONA EXPWY @ REDLANDS AVE	C-	24	3	2	1	3	2	1	3	2	1	3	3	1	S
6	RAMONA EXPWY @ MURRIETA RD	C	25	3	2	2	3	2	2	3	2	1	3	3	2	1
7	RAMONA EXPWY @ EVANS RD	B	8	3	-	S	-	-	-	3	2	-	-	-	1	1
8	RAMONA EXPWY @ BRADLEY ST	B	6	3	-	S	-	-	-	3	2	-	-	-	1	1
9	COMMERCIAL LOOP RD @ MURRIETA RD	B	9	1	S	S	3	1	S	2	1	S	3	3	1	S
10	LOOP RD @ CENTER ST	B	9	2	1	S	3	1	S	2	2	1	S	3	1	S
11	MORGAN ST @ LOOP RD	B	15	-	-	-	2	1	-	-	1	1	1	2	-	S
12	RIDER ST @ PERRIS BLVD	C	19	2	1	S	3	1	S	2	1	S	3	3	1	S
13	RIDER ST @ REDLANDS AVE	C	23	2	1	S	3	1	S	2	1	S	3	3	1	S
14	RIDER ST @ CENTER ST	C	16	2	2	S	3	1	S	2	2	2	3	3	2	S
15	RIDER ST @ EVANS RD	A	1	2	-	S	-	-	-	2	1	-	-	-	1	S
16	RIDER ST @ LOOP RD	B	10	1	S	S	2	1	S	S	2	1	S	2	1	S
17	RIDER ST @ BRADLEY ST	B	10	2	1	S	S	1	S	2	1	S	1	1	S	S
18	RAMONA EXPWY @ RIDER ST	A	5	3	-	S	-	-	-	3	3	-	-	-	1	1
19	RAMONA EXPWY @ PLACENTIA AVE	A	2	3	-	S	-	-	-	3	2	-	-	-	2	1
20	PLACENTIA AVE @ I-215 S/B	B	13	2	-	S	-	2	-	2	2	-	-	-	-	-
21	PLACENTIA AVE @ I-215 N/B	B	8	2	2	-	-	-	-	2	-	-	-	-	1	2
22	PLACENTIA AVE @ PERRIS BLVD	C	25	3	2	1	3	2	1	3	2	1	3	3	2	1
23	PLACENTIA AVE @ REDLANDS AVE	C	22	3	1	S	3	1	S	3	1	S	3	3	1	S
24	PLACENTIA AVE @ REDLANDS AVE	C	19	3	2	S	3	2	S	2	1	S	3	3	2	S
25	ORANGE AVE @ PERRIS BLVD	B	6	2	1	S	3	2	S	2	1	S	3	3	2	S
26	CITRUS AVE @ PERRIS BLVD	B	6	2	1	2	3	2	S	2	1	S	3	3	2	S
27	NUEVO RD @ PERRIS BLVD	F	65	3	2	1	3	1	S	3	1	S	3	3	2	S

S = SHARED WITH THRU LANE

TABLE 16

INTERSECTION ANALYSIS RESULTS

OVERALL TRAFFIC

P.M. PEAK HOUR

INTERSECTION NUMBER	INTERSECTION NAME	LEVEL OF SERVICE	AVERAGE DELAY (SEC)	EBT	EBL	EBR	SBT	SBL	SBR	LANE CONFIGURATION						
										WBT	WBL	WBR	MBT	NBL	NBR	
1	MARKHAM ST @ PERRIS BLVD	E+	41	2	1	S	3	1	S	2	2	1	S	3	1	S
2	CAJALCO RD @ I-215 S/B	F	434	2	-	1	S	2	-	2	2	-	-	-	-	-
3	RAMONA EXPY @ I-215 N/B	F	715	2	2	-	-	-	1	2	2	-	-	S	1	2
4	RAMONA EXPY @ PERRIS BLVD	F	111	3	2	1	3	2	1	3	3	2	-	3	2	1
5	RAMONA EXPY @ REDLANDS AVE	F	212	3	2	2	3	1	S	3	3	2	2	3	1	S
6	RAMONA EXPY @ MURRIETA RD	D+	26	3	2	2	3	2	1	3	3	2	1	3	2	1
7	RAMONA EXPY @ EVANS RD	A	3	3	-	S	-	-	-	3	3	2	2	-	1	1
8	RAMONA EXPY @ BRADLEY ST	A	2	3	-	S	-	-	-	3	3	2	2	-	1	1
9	COMMERCIAL LOOP RD @ MURRIETA RD	B	10	1	S	S	3	1	S	2	2	1	S	3	1	S
10	LOOP RD @ CENTER ST	B	8	2	1	S	3	1	S	2	2	1	S	3	1	S
11	MORGAN ST @ LOOP RD	B	10	-	-	-	2	1	-	-	-	-	1	2	-	-
12	RIDER ST @ PERRIS BLVD	F	88	3	1	S	3	1	S	3	3	1	S	3	1	S
13	RIDER ST @ REDLANDS AVE	F	113	3	1	S	3	1	S	3	3	1	S	3	1	S
14	RIDER ST @ CENTER ST	B	10	3	2	S	3	1	S	3	3	2	S	3	2	S
15	RIDER ST @ EVANS RD	A	1	2	-	S	-	-	-	2	2	1	S	2	1	S
16	RIDER ST @ LOOP RD	C	24	1	S	S	2	1	S	2	2	1	S	2	1	S
17	RIDER ST @ BRADLEY ST	B	9	2	1	S	S	1	1	2	2	1	S	1	1	S
18	RAMONA EXPY @ RIDER ST	B	10	3	-	S	-	-	-	3	3	2	-	-	-	-
19	RAMONA EXPY @ PLACENTIA AVE	A	2	3	-	S	-	-	-	3	3	2	-	-	-	-
20	PLACENTIA AVE @ I-215 S/B	F	109	2	-	S	-	2	1	2	2	2	-	-	-	-
21	PLACENTIA AVE @ I-215 N/B	D-	36	2	2	-	-	-	-	2	2	-	-	-	-	-
22	PLACENTIA AVE @ PERRIS BLVD	D-	38	3	2	1	3	2	1	3	3	2	-	1	2	2
23	PLACENTIA AVE @ REDLANDS AVE	F	100	3	1	S	3	1	S	3	3	1	S	3	1	S
24	PLACENTIA AVE @ EVANS RD	C	16	3	2	S	3	2	S	3	3	2	S	3	2	S
25	ORANGE AVE @ PERRIS BLVD	B	7	2	1	S	3	2	S	3	3	2	S	3	2	S
26	CITRUS AVE @ PERRIS BLVD	B	8	2	1	2	3	2	S	3	3	2	S	3	2	S
27	NUEVO RD @ PERRIS BLVD	F	299	3	2	1	3	1	S	3	3	1	S	3	2	S

S = SHARED WITH THRU LANE

TABLE 17  
 PERCENT INTERSECTION PEAK HOUR VOLUME  
 FROM  
 MAY RANCH PROJECT  
 OVERALL TRAFFIC

INTERSECTION NUMBER	INTERSECTION NAME	TOTAL INTERSECTION VOLUME	MAY RANCH PMPH VOLUME	MAY RANCH VOLUME PERCENT
1	MARKHAM ST @ PERRIS BLVD	6486	638	9
2	CAJALCO RD @ I-215 S/B	7755	955	12
3	RAMONA EXPWY @ I-215 N/B	9892	1451	14
4	RAMONA EXPWY @ PERRIS BLVD	11278	1375	12
5	RAMONA EXPWY @ REDLANDS AVE	10056	1543	15
6	RAMONA EXPWY @ MURRIETA RD	10439	2308	22
7	RAMONA EXPWY @ EVANS RD	5501	175	3
8	RAMONA EXPWY @ BRADLEY ST	5083	150	2
9	COMMERCIAL LOOP RD @ MURRIETA RD	4109	1890	45
10	LOOP RD @ CENTER ST	4042	1797	44
11	MORGAN ST @ LOOP RD	1034	747	72
12	RIDER ST @ PERRIS BLVD	7821	1295	16
13	RIDER ST @ REDLANDS AVE	7563	1759	23
14	RIDER ST @ CENTER ST	6926	2241	32
15	RIDER ST @ EVANS RD	2560	855	33
16	RIDER ST @ LOOP RD	2851	1127	39
17	RIDER ST @ BRADLEY ST	1887	364	19
18	RAMONA EXPWY @ RIDER ST	5920	168	2
19	RAMONA EXPWY @ PLACENTIA AVE	5948	119	2
20	PLACENTIA AVE @ I-215 S/B	3024	521	17
21	PLACENTIA AVE @ I-215 N/B	5963	1087	18
22	PLACENTIA AVE @ PERRIS BLVD	9953	1419	14
23	PLACENTIA AVE @ REDLANDS AVE	7650	1940	25
24	PLACENTIA AVE @ EVANS RD	6377	1204	18
25	ORANGE AVE @ PERRIS BLVD	5175	295	5
26	CITRUS AVE @ PERRIS BLVD	5779	729	12
27	NUEVO RD @ PERRIS BLVD	10618	1103	10

### MAY RANCH PROJECT TRAFFIC CONTRIBUTION

Tables 6, 10 and 17 titled "Percent Intersection P.M. Volume from May Ranch Project" show the percentage of estimated intersection p.m. peak hour volumes attributable to traffic generated within the May Ranch project for scenarios 1, 2 and 4. The third scenario did not include the May Ranch traffic.

These percentages are indicative of the specific impact that the May Ranch project has on the various 27 intersections studied and give a measure of the May Ranch's share of the impact of these locations. local improvement funds for streets and intersections.

### RAMONA EXPRESSWAY

A review of Figures 6 and 7, together with corresponding tables, indicates that for scenarios 3 and 4; that is, buildout of the study area without the May Ranch and the entire study area, the predicted peak hour levels of service at the intersections on the Ramona Expressway at Redlands Avenue, Perris Boulevard and at the I-215 Freeway interchange are at the "F" level.

In calculating the levels of service at these intersections, it has been assumed that the Ramona Expressway will be widened to provide three through lanes of traffic in each direction, double left turn lanes in all directions and separate right turn lanes in all directions. At the I-215 Freeway, the overcrossing has been assumed to be widened in order to provide double left turn lanes and widening has been assumed for the respective off ramps.

Even with these extensive improvements, operation of these intersections as conventional signalized intersections has still resulted in a very unsatisfactory level of service "F" condition.

It is concluded that grade separations on the Ramona Expressway at these locations are needed to improve the peak hour level of service. In effect, the Ramona Expressway should be converted to a type of freeway at least from Redlands Avenue westerly to the I-215 Freeway.

It is believed pertinent to recognize that this particular study did not analyze future traffic volumes that will use the Ramona Expressway generated from new developments in the Hemet/San Jacinto area. When these projects are analyzed, the traffic volumes would be even higher than predicted in this study for these intersections and, therefore, the case would still be stronger for conversion of the expressway to some type of grade separation design.

This project is also focused on the need to consider on a regional basis the extension of the Ramona/Cajalco Expressway alignment into Orange County and to connect the Ramona/Cajalco Expressway alignment to the eastern transportation corridor to be constructed in Orange County.

This new freeway would provide a separate corridor between the Perris/Moreno Valley/Hemet/San Jacinto area to the Orange County area, thereby bypassing the unreasonable congestion occurring daily on the Route 91 Freeway.

It is recognized that such a Ramona/Cajalco Expressway connection into Orange County might necessitate tunneling under the mountains; however, it is believed that such a routing is needed enough to warrant serious consideration.

Separation structures at the intersections of the Ramona Expressway at Redlands Avenue and at Perris Boulevard could cost \$3 million dollars each. Based on scenario 4, the May Ranch traffic contribution during the p.m. peak hour to the Redlands Avenue at Ramona Expressway intersection is estimated to be 15 percent while at the Perris Boulevard intersection with the Ramona Expressway the May Ranch project percentage is estimated to be 12 percent.

Obviously, when external traffic originating in the San Jacinto/Hemet area is added to the Ramona Expressway total, the percentage contribution attributable to the May Ranch would be lower.

A discussion of the specifics of implementation of a conversion of the Ramona Expressway to some type of grade separated routing is beyond the scope of this study. However, the study has documented clearly the need to seriously consider as a public policy issue the revision of the classification of at least a portion of the Ramona Expressway to some type of facility that will handle higher volumes of traffic at a satisfactory level of service which undoubtedly means grade separations at the key critical intersections.

#### STATE ROUTE 215

The purpose of this portion of the report is to discuss the impact of the predicted traffic volumes from the study area, including the May Ranch, on State Highway Route 215.

State Route 215 will be upgraded to interstate standards with completion scheduled by the early 1990's. At the present time this route through the study area has four lanes for moving traffic. Signalization exists at the Alessandro Boulevard and Nuevo Road intersections. The upgrading to interstate standards will replace these signalized intersections with interchanges.

Based on the 1987 "Traffic Volumes on California State Highways," the 24 hour volume during the peak month on Route 215 northerly of the Ramona Expressway was 45,500 vehicles per day. The peak hour traffic volume in both directions was reported to be 5,200 vehicles per hour. Assuming a 55/45 directional split during the peak hour, the peak hour volume in the heaviest direction would be 2,860 vehicles per hour.



When the route is converted to interstate standards, three lanes in each direction will be initially constructed with provisions for an ultimate fourth lane in each direction.

Based on the p.m. peak hour analysis of this report, it is expected that an additional 3,600 vehicles per hour in the southbound direction northerly of the Ramona Expressway will be using I-215 for access to destinations within the study area. The 1987 estimated directional peak hour flow of 2,860 vehicles added to the 3,600 southbound volume generated from the study area totals 6,460 vehicles per hour. The capacity of the freeway in the southbound direction with three lanes available will be approximately 6,000 vehicles per hour.

Considering only the traffic generated by the May Ranch, it is predicted that during the p.m. peak hour in the southbound direction on I-215 northerly of the Ramona Expressway interchange, the traffic volume destined to the May Ranch area would be approximately 620 vehicles. This volume added to the estimated current peak hour directional volume of 2,860 vehicles per hour means that the total would be approximately 3,500 vehicles per hour which is substantially less than the 6,000 vehicle per hour freeway capacity in the southbound direction.

This overall traffic study, together with this discussion, points out the necessity that consideration be given to expanding the I-215 Freeway to four lanes in each direction. This need has been substantiated by MGA's study for the City of Perris concerning the 4th Street interchange and a proposed new interchange at Ellis Avenue.

In addition to the need for an eight lane facility for I-215, a corridor study is justified to find an acceptable routing for another freeway in the north/south direction to be located easterly of the City of Perris. Based on the knowledge of land use developments in the general region, it is believed that an additional north/south freeway will be needed in the future and that cooperative arrangements involving the various political entities should consider formation of a corridor study task force to determine the need and feasibility of such a second north/south freeway to serve this general area.

#### MITIGATION MEASURES

The overall mitigation measures for the arterial system serving the study area and in particular the May Ranch project are to ensure that the intersections and connecting links are constructed to the indicated lane arrangements as shown in Tables 15 and 16 at the time the area is fully developed.

Specifically, the recommended street sections within the May Ranch project are shown on Figure 2.

Table 18 titled "Street Sections" shows the recommended street sections for the arterial network within the May Ranch project area.

TABLE 18  
STREET SECTIONS

STREET	CURB TO CURB WIDTH, FEET
Evans Road/Center Street	86
Evans Road/Center Street Approaches to:	
Placentia Avenue	96
Rider Street (Northbound)	96
Ramona Expressway	96
Placentia Avenue	86
Placentia Avenue Approaches to:	
Evans Road/Center Street	96
Perris Boulevard	96
Loop Road	64
Bradley Street	64
Rider Street (Perris Boulevard to Loop Road)	86
Rider Street (Loop Road to Ramona Expressway)	64
Rider Street Approach to:	
Center Street (Eastbound)	96
Ramona Expressway	116
Morgan Street	44
Commercial Loop Road	40

TABLE 19

LEVEL OF SERVICE COMPARISON  
FOR KEY INTERSECTIONS

INTERSECTION NUMBER	INTERSECTION NAME	PEAK HOUR	EXISTING AND MAY RANCH TRAFFIC ONLY	EXISTING, MAY RANCH AND MCCANNA RANCH TRAFFIC ONLY	OVERALL TRAFFIC WITHOUT MAY RANCH	OVERALL TRAFFIC
2	CAJALCO RD @ I-215 S/B	AM	B	B	D	F
3	RAMONA EXPWY @ I-215 N/B	PM	C	C	F	F
4	RAMONA EXPWY @ PERRIS BLVD	PM	B	B	F	F
5	RAMONA EXPWY @ REDLANDS AVE	AM	C	B	C+	C-
6	RAMONA EXPWY @ MURRIETTA RD	AM	A	B	F	F
12	RIDER ST @ PERRIS BLVD	AM	D	D+	F	F
20	PLACENTIA AVE @ I-215 S/B	AM	B	E	C	C
21	PLACENTIA AVE @ I-215 N/B	PM	B	D	B	D+
22	PLACENTIA AVE @ PERRIS BLVD	AM	B	B	C	C
24	PLACENTIA AVE @ EVANS RD	AM	B	B	B	B
25	ORANGE AVE @ PERRIS BLVD	PM	B	B	F	B
26	CITRUS AVE @ PERRIS BLVD	AM	A	A	C+	D+
27	NUEVO RD @ PERRIS BLVD	PM	B	B	C	C

Figure 8 titled "Project Area Traffic Signal Locations" illustrates the intersections that will require signalization pending the completion of the May Ranch and McCanna Ranch projects. Traffic signals should be constructed at the intersections shown on Figure 8 when either anticipated traffic within a short time in the future or existing traffic meets one of the accepted traffic signal warrants.

#### OFF SITE IMPROVEMENTS

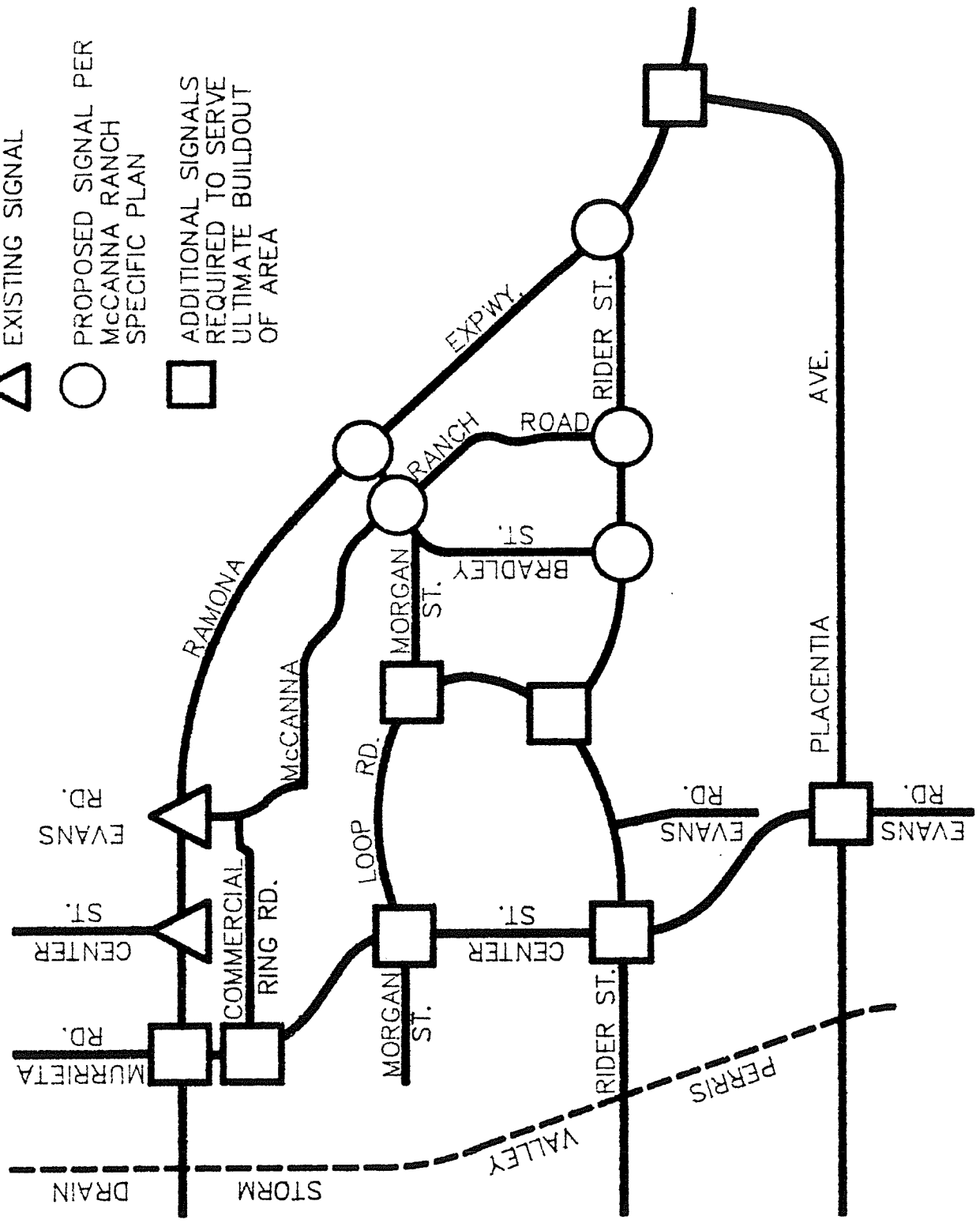
It is recommended that the following off site improvements be implemented by the developer in conjunction with the development of Phase I of the overall phasing plan of the project area development.

The recommended projects are as follows:

- o Signalization of the intersection of Ramona Expressway at Murrieta Road.
- o Signalization of the interchange ramps at the I-215 Freeway and Ramona Expressway.
- o Construction of at least one lane in each direction on the Evans Road/Center Street/Murrieta Road alignment from Placentia Avenue to Ramona Expressway. It is recognized that the portion of Center Street within the Phase I development area would be developed to ultimate standards initially.
- o Installation of a traffic signal at the intersection of Placentia Avenue and Perris Boulevard.
- o Construction of at least one lane in each direction on Placentia Avenue between Evans Road and Redlands Avenue.

Some of these improvements may be financed by means other than by direct developer-paid improvements.

- △ EXISTING SIGNAL
- PROPOSED SIGNAL PER McCANNA RANCH SPECIFIC PLAN
- ADDITIONAL SIGNALS REQUIRED TO SERVE ULTIMATE BUILDOUT OF AREA



NO SCALE

**FIGURE 8**  
**PROJECT AREA**  
**TRAFFIC SIGNAL**  
**LOCATIONS**

APPENDIX "A"

Level of Service Definitions

LEVEL OF SERVICE  
PER  
1985 HIGHWAY CAPACITY MANUAL

Level of Service (LOS) in accordance with the new 1985 Highway Capacity Manual (HCM)(1) considers a variety of prevailing conditions including the amount and distribution of traffic movements, traffic composition, maximum possible flow rate (saturation flow), geometrics and the intersection signal timing.

Level of service for signalized intersections is defined in terms of delay. According to the HCM, "Delay is a measure of driver discomfort, frustration, fuel consumption and lost travel time." The delay is stated as the average stopped delay per vehicle for a peak one hour analysis period. The seconds of delay are related to a letter grade for ease of communication. The level of service methodology incorporates the delay formula developed by F. V. Webster and the critical lane method of Interim Materials on Highway Capacity (Transportation Research Circular No. 212). The relationship between delay and the level of service is shown in Table 1.

TABLE 1

Level of Service Criteria for Signalized Intersections

<u>Level of Service</u>	<u>Stopped Delay per Vehicle (Seconds)</u>
A (minimal delay)	- 5.0
B (short delay)	5.1 - 15.0
C (average delay)	15.1 - 25.0
D (long delay)	25.1 - 40.0
E (very long delay)	40.1 - 60.0
F (extreme delay or jammed)	60.1 -

These levels of service are defined in the 1985 HCM as follows:

- o Level of Service A - describes operations with very low delay, i.e., 5.0 seconds or less per vehicle. This occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

-----  
(1) "Chapter 9, Signalized Intersections," Highway Capacity Manual, Special Report 209, Transportation Research Board, National Research Council, Washington D.C., 1985.

- o Level of Service B - describes operations with delay in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service "A," causing higher levels of average delay.
- o Level of Service C - describes operations with delay in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- o Level of Service D - describes operations with delay in the range of 25.1 to 40.0 seconds per vehicle. At Level "D" the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths or high volume to capacity (v/c) ratios. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
- o Level of Service E - describes operations with delay in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are frequent occurrences.
- o Level of Service F - describes operations with delay in excess of 60.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

The equation for calculating delay is very complex and is fully explained in the HCM. Due to the complexity, it will not be further discussed in this report; however, the most important variable in the equation will be briefly discussed. That variable is relative saturation ("X") defined by the following simple equation:

$$X = (q * C) / (g * S)$$

where,

X = Relative Saturation  
q = Traffic Flow (vph)  
C = Cycle Length (sec)  
g = Effective Green (sec)  
S = Saturation Flow (vph)



Essentially, this equation defines the volume/capacity ratio adjusted for the amount of green time a given movement receives. The key to this relationship is that when "X" becomes larger than approximately 0.85, vehicle delay begins to increase rapidly as shown in the attached figure, "Stopped Time Delay (or Level of Service) vs Degree of Saturation (at a Signal Stopline)." For reference purposes, Relative Saturation ("X") is equivalent to intersection capacity utilization (ICU).

**FIGURE 2**  
**STOPPED TIME DELAY**  
**(OR LEVEL OF SERVICE)**  
**VS**  
**DEGREE OF SATURATION**  
**(AT A SIGNAL STOPLINE)**

