

SECTION 4

COMPARISON OF PROPOSED AND APPROVED PROJECTS

The following subsections present a comparison of proposed project and the approved project trip generation characteristics, daily and peak traffic conditions, and ramp metering results. As succeeding subsections will show, the proposed project will reduce the overall trip generation of the Sorrento Hills Community, provide for more internal capture of project-related trips, and have a better balance of inbound/outbound peak hour trips than the approved community plan.

4.1 COMPARISON OF TRIP GENERATION

Table 4.1-1 presents a comparison of approved and proposed daily and peak hour trip generation characteristics based on the cumulative trip generation rate. As discussed in the previous section, the City of San Diego has indicated that use of the cumulative rate is appropriate for this traffic study. The September, 1994, Traffic Study calculated project trip generation assuming driveway rate of retail uses. The total daily traffic generation of 72,923 summarized in that study remains correct; however, in order to provide a valid comparison to the proposed project, the retail traffic generation was adjusted to reflect the cumulative rate.

Review of Table 4.1-1 indicates a significant reduction of proposed project-related as compared to the approved plan. The proposed project will generate 6,800 fewer daily trips than the approved plans, a reduction of 11 percent. In the morning peak hour, the proposed project will generate 1,600 fewer total trips than the approved plan. Afternoon peak hour traffic volumes will also be somewhat lower than the approved plan, and there will be a better balance between inbound and outbound trips during this period. These traffic generation benefits are due to the improved land use patterns of the proposed developments. As discussed in preceding sections, the project will contain lower density residential development, less industrial development and more retail development than the approved project. This substitution of land uses results in reductions in overall trip generation and improvements in inbound/outbound traffic balance.

4.2 COMPARISON OF DAILY ROADWAY CAPACITY

Table 4.2-1 is a comparison of proposed and approved future daily traffic volumes. As shown in this table, the street classifications are somewhat different under the approved and proposed plans. With the proposed project, ADT volumes on some street segments will be lower, while others will be higher, most notably Carmel Mountain Road between I-5 and Vista Sorrento Parkway. This anomaly is due to the removal of a right-in/right-out driveway on the south side of Carmel Mountain Road between I-5 and Vista Sorrento Parkway, which attracts trips travelling west to south. This driveway was not provided with the proposed plan due to grading constraints. All street segments are characterized by good LOS C or better conditions under both the proposed and approved projects.

**TABLE 4.1-1
COMPARISON OF APPROVED AND PROPOSED PROJECT TRAFFIC GENERATION (CUMULATIVE RATE FOR RETAIL USES)**

| PROPOSED PROJECT | | | | | | | | | |
|-----------------------------------------|-------------|---------|----------------|--------------------|--------------|--------------|--------------------|--------------|--------------|
| LAND USE | AMOUNT | RATE | TOTAL ADT* | AM PEAK HOUR TRIPS | | | PM PEAK HOUR TRIPS | | |
| | | | | TOTAL | IN | OUT | TOTAL | IN | OUT |
| Single-Family Dwelling | 1334 DU | 10 /DU | 13,340 | 1,067 | 213 | 854 | 1,334 | 934 | 400 |
| Multiple-Family Dwelling | 770 DU | 8 /DU | 6,160 | 493 | 99 | 394 | 616 | 431 | 185 |
| Office | 950 KSF | 20 /KSF | 19,000 | 2,470 | 2,223 | 247 | 2,660 | 532 | 2,128 |
| Industrial | 400 KSF | 15 /KSF | 6,000 | 660 | 594 | 66 | 720 | 144 | 576 |
| Park | 16.2 AC | 50 /AC | 810 | 32 | 16 | 16 | 65 | 32 | 32 |
| Retail | 170 KSF | 72 /KSF | 12,240 | 490 | 294 | 196 | 1,346 | 673 | 673 |
| Office/Corporate | 440.066 KSF | 15 /KSF | 6,601 | 990 | 891 | 99 | 990 | 99 | 891 |
| Visitor Serving | 36.58 KSF | 20 /KSF | 732 | 110 | 99 | 11 | 110 | 11 | 99 |
| School | 4 AC | 60 /AC | 240 | 62 | 37 | 25 | 12 | 4 | 8 |
| TOTALS | | | 65,123 | 6,374 | 4,466 | 1,908 | 7,853 | 2,860 | 4,993 |
| APPROVED PROJECT (a) | | | | | | | | | |
| LAND USE | AMOUNT | RATE | TOTAL ADT* | AM PEAK HOUR TRIPS | | | PM PEAK HOUR TRIPS | | |
| | | | | TOTAL | IN | OUT | TOTAL | IN | OUT |
| Single-Family Dwelling | 252 DU | 10 /DU | 2,520 | 302 | 60 | 242 | 302 | 242 | 60 |
| Multiple-Family Dwelling | 2460 DU | 8 /DU | 19,680 | 1,574 | 315 | 1,260 | 1,574 | 1,102 | 472 |
| Office | 543.15 KSF | 20 /KSF | 10,863 | 1,521 | 1,369 | 152 | 1,521 | 304 | 1,217 |
| Industrial | 1883.8 KSF | 15 /KSF | 28,257 | 3,391 | 2,713 | 678 | 3,391 | 678 | 2,713 |
| Park | 10 AC | 40 /AC | 400 | 16 | 8 | 8 | 32 | 16 | 16 |
| Retail | 20 KSF | 72 /KSF | 1,440 | 58 | 35 | 23 | 158 | 79 | 79 |
| Health Club | 28 KSF | 45 /KSF | 1,260 | 50 | 30 | 20 | 113 | 68 | 45 |
| Day Care | 3 KSF | 70 /KSF | 210 | 40 | 20 | 20 | 38 | 19 | 19 |
| Office/Corporate | 440.066 KSF | 15 /KSF | 6,601 | 924 | 832 | 92 | 924 | 185 | 739 |
| Visitor Serving | 36.58 KSF | 20 /KSF | 732 | 59 | 12 | 47 | 73 | 51 | 22 |
| TOTALS | | | 71,963 | 7,935 | 5,393 | 2,542 | 8,127 | 2,745 | 5,383 |
| DIFFERENCE (PROPOSED - APPROVED) | | | (6,840) | (1,561) | (927) | (634) | (274) | 116 | (390) |
| PERCENT CHANGE | | | -11% | -24% | -21% | -33% | -3% | 4% | -8% |

* Average Daily Traffic

(a) Assuming the driveway rate for retail uses, the approved daily traffic generation is 72,923.

TABLE 4.2-1
COMPARISON OF APPROVED AND PROPOSED PROJECT STREET SEGMENT LEVELS OF SERVICE
LONG-TERM FUTURE (YEAR 2010) CONDITION

| STREET | SEGMENT | PROPOSED PROJECT | | | APPROVED PROJECT | | |
|----------------------|---------------------------------------|--------------------------------|----------------------|------------------|-----------------------|------------------|------------------|
| | | STREET CLASSIFICATION | DAILY TRAFFIC | LEVEL OF SERVICE | STREET CLASSIFICATION | DAILY TRAFFIC | LEVEL OF SERVICE |
| Carmel Mountain Rd. | I-5 - Vista Sorrento Pkwy. | 6-Lane Prime | 42,000 | C | 6-Lane Prime | 38,000 | C |
| | Vista Sorrento Pkwy. - El Camino Real | 6-Lane Prime | 45,000 | C | 6-Lane Prime | 43,000 | C |
| | West of El Camino Real | 4-Lane Major | 20,000 | B | 6-Lane Major | 22,000 | B |
| Vista Sorrento Pkwy. | West of "C" Street | 4-Lane Major | 18,000 | B | 6-Lane Major | 17,000 | A |
| | Carmel Mountain Rd. - "A" St. | 4-Lane Major | 21,000 | B | 4-Lane Major | 22,000 | C |
| | "A" St. - "B" St. | 4-Lane Major | 15,000 | B | 4-Lane Major | 18,000 | B |
| | South of "B" St. | 4-Lane Major | 27,000 | C | 4-Lane Major | 24,000 | C |
| | "A" Street | Vista Sorrento Pkwy. - "C" St. | 4-Lane Collector (a) | 7,000 | B | 4-Lane Collector | 12,575 |
| "B" Street | Vista Sorrento Pkwy. - "C" St. | 4-Lane Collector (a) | 11,000 | C | 4-Lane Collector | 9,420 | B |
| "C" Street | South of Carmel Mountain Rd. | 4-Lane Collector (a) | 8,000 | B | 4-Lane Major | 15,000 | A |
| El Camino Real | North of Carmel Mountain Rd. | 6-Lane Major | 22,000 | B | 6-Lane Major | 22,000 | B |

(a) Modified 4-Lane Collector with raised median

r:\votus\data\adt_com1.wk4

4.3 COMPARISON OF PEAK HOUR INTERSECTION CAPACITY

Table 4.3-1 is a comparison of morning and afternoon peak hour LOS for both the proposed and approved plans. Approved project LOS is shown in two sets of columns, one indicating results using the modified ICU method, the other using the unmodified approach. (As discussed in the preceding section, intersection LOS for the proposed project was done using the HCS in accordance with City of San Diego standards.) The City recommended the modified ICU approach in response to analysis that indicated that the unmodified method understated intersection congestion and, therefore, provided overly optimistic LOS. The City's *Traffic Impact Study Manual* (August, 1993) indicated that the previous practice of providing a minimum of .1 for all conflicting movement volume-to-capacity ratios should be discontinued. Instead, an overall efficiency loss factor of .1 should be added to the preliminary ICU calculation. This procedure, together with revisions to the LOS threshold scale, resulted in a modified procedure yielding more realistic LOS results (i.e., they are more consistent with HCS results). Appendix C contains an excerpt from the City's *Traffic Impact Study Manual* describing the modified procedures.

The far right column (i.e., approved plan with unmodified ICU) summarizes the results contained the September 29, 1994 report. When the same approved project peak hour intersection turning movement volumes were reanalyzed using the City's modified approach, the LOS at each location deteriorates. Direct comparison of proposed project HCS results to approved project modified ICU results indicate substantially improved peak hour intersection LOS at all locations under the proposed project, with the exception of the Carmel Mountain Road/Shopping Center Access intersection. Although this intersection declines under the proposed project, it is still characterized by good LOS C or better conditions.

4.4 COMPARISON OF RAMP METERING ANALYSIS

Table 4.4-1 presents a comparison of approved and proposed project ramp metering analysis results. As shown in this table, project-related traffic will generate somewhat less demand during both peak hours as compared to the approved project, resulting in reduced queuing. As discussed in Section 3.3, the reduced demand would still result in delays of about 15 minutes at the ramp meters, although queue lengths would be reduced by 300 feet in the morning at the southbound on-ramp and by about 900 feet in the afternoon peak hour at the northbound on-ramp.

TABLE 4.3-1
COMPARISON OF APPROVED AND PROPOSED PROJECT INTERSECTION LEVELS OF SERVICE
LONG-TERM FUTURE (YEAR 2010) CONDITION

| INTERSECTION | PROPOSED PROJECT | | APPROVED PROJECT: MODIFIED ICU (a) | | APPROVED PROJECT: UNMODIFIED ICU (b) | |
|-----------------------------------------------------|------------------|--------|---------------------------------------|--------|-----------------------------------------|--------|
| | AM LOS | PM LOS | AM LOS | PM LOS | AM LOS | PM LOS |
| Carmel Mountain Rd./Sorrento Valley Rd. | B | B | B | D | A | B |
| Carmel Mountain Rd./I-5 southbound ramps | B | B | C | D | B | B |
| Carmel Mountain Rd./I-5 northbound ramps | B | C | D | D | B | C |
| Carmel Mountain Rd./Vista Sorrento Pkwy. | C | C | D | D | C | C |
| Carmel Mountain Rd./El Camino Real/Carmel Creek Rd. | D | D | E | E | C | D |
| Carmel Mountain Rd./"C" St. | B | B | D | B | C | A |
| Carmel Mountain Rd./Shopping Center Access | B | C | B | B | A | A |
| Vista Sorrento Pkwy./"A" St. | C | C | D | E | D | D |
| Vista Sorrento Pkwy./"B" St. | B | A | D | D | C | C |
| "B" St./"C" St. | C | C | - | - | - | - |

(a) Per City of San Diego standards, an efficiency loss factor of .1 was added to the overall ICU calculation, replacing the minimum of .1 for each movement. In addition, new LOS thresholds were specified, decreasing the number of intersections operating at LOS A and B.

(b) Using the outdated ICU methodology and LOS thresholds.

r:\votus\data\Int_comp.wk4

**TABLE 4.4-1
COMPARISON OF APPROVED AND PROPOSED PROJECT RAMP METERING ANALYSIS RESULTS**

| LOCATION | PEAK | PROPOSED PROJECT | | | | | APPROVED PROJECT | | | | |
|---------------------|---------------|------------------|-----------|--------------------|----------------|-----------------|------------------|-----------|--------------------|----------------|-----------------|
| | | DEMAND D | FLOW F | EXCESS DEMAND E | DELAY (MIN) | QUEUE Q.(FT) | DEMAND D | FLOW F | EXCESS DEMAND E | DELAY (MIN) | QUEUE Q.(FT) |
| I-5/Carmel Mtn. Rd. | AM Southbound | 925 | 738 | 189 | 15 | 4725 | 985 | 788 | 197 | 15 | 4925 |
| I-5 Carmel Mtn. Rd. | PM Northbound | 1038 | 825 | 213 | 15 | 5325 | 1172 | 938 | 234 | 15 | 5850 |

D = peak hour demand expected to use the on-ramp
 F = peak hour capacity to be processed by ramp meter rate
 E = D - F
 DELAY = (E/F)*60 minutes per hour
 Q = E * 25 feet per vehicle

r:\obus\data\meter.wk4