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## DRAFT

### WORKING PAPER 1

#### DOWNTOWN PARKING SURVEY – DECEMBER 14 AND 17, 2005

At the request of the City of Grass Valley, TJKM Transportation Consultants undertook a parking survey of the downtown. The survey included an assessment of the occupancy and duration levels for public on-street and off-street parking spaces, as well as for private parking stalls throughout the project area. TJKM was asked to conduct surveys during a weekday and weekend of the Christmas shopping season. Results of this study are discussed below.

#### **Executive Summary**

Most of the customers and employees in downtown Grass Valley arrive by personal vehicle and therefore need to find a parking space. As requested, TJKM surveyed the downtown area on Wednesday, December 14, 2005 and Saturday, December 17, 2005 to determine parking occupancy and duration conditions less than two weeks before Christmas.

Results of our surveys indicate that over 95 percent of the 226 spaces in the City's five public parking lots were occupied on both December 14 and December 17, 2005. This is a very high occupancy level that exceeds the 85 percent threshold for off-street parking occupancy (*Parking Requirements for Shopping Centers*, 1999). Results also showed that, when aggregated with other on- and off-street parking spaces ("private" lots with spaces assigned to individual businesses and retail stores), occupancy rates dropped to 50 to 65 percent throughout the downtown area. Therefore, typically there is not enough parking capacity in the five public lots, while the private lots appear to be underutilized. Given these results, the City may want to explore options that would increase available parking for the general public, including better utilization of the private lots

#### **Parking Inventory**

As shown on Figure 1, downtown is roughly bounded by Richardson Street, Washington Street, East Bennett Street, Westbound State Route 20, Walsh Street and South School Street. TJKM surveyed 1,412 parking spaces on December 14 and 17, 2005. The majority (954 or 68 percent) of these spaces are in off-street private parking lots associated with specific businesses or office/retail centers. There are another 226 off-street spaces (16 percent) located in the City's five public parking lots. A total of 230 on-street spaces (187 of them with 3-hour limit) make up the remaining 16 percent of the parking inventory. Table I provides a summary of the type of spaces that were surveyed.

Figure 1: Study Area

**TABLE I: PARKING SPACES INVENTORY**

<i>Type of Spaces</i>	<i>Spaces</i>	<i>Percent of All Types</i>
<u>Off-Street Parking Lots:</u>		
Private	954	67.6
Public	226	16.0
Off-Street Subtotal	1,180	83.6
<u>On-Street:</u>		
3-Hour Limit	187	13.3
No Time Limit	15	1.1
Truck Loading Zone	9	0.6
Passenger Loading Zone	6	0.4
24-Minute Limit	5	0.4
15-Minute Limit	5	0.4
Handicapped	3	0.2
On-Street Subtotal	232	16.4
<b>Total Number of Spaces Surveyed</b>	<b>1,410</b>	<b>100.0</b>

### Parking Occupancy Surveys

As requested by City staff, the downtown was surveyed on Wednesday, December 14, 2005 and Saturday, December 17, 2005. These dates were chosen because they occur during the Christmas shopping season. On both days, duration and occupancy information was collected between 10:00 a.m. and 5:30 p.m. for the on-street spaces by recording license plate information every 45-minutes. Occupancy is determined by counting the number of license plates that were recorded for one time period (e.g., 10:00 a.m.). For example, if six license plates were recorded on a block face that had 10 spaces, then the occupancy would be 60 percent. Detailed parking occupancy data are included in Appendix A.

Typically, the percent ranges for low, medium, high, and very high occupancy levels are assumed to be 0-49, 50-84, 85-89, and 90-100 percent, respectively. The notion of effective parking supply in relation to occupancy level originates from the recognition of parking turnover, time lost in searching for parking, and competition with other drivers for preferred parking spaces, in addition to other factors, all serve to diminish the likelihood that 100 percent of the parking supply would be used at any one time. Traffic engineers typically use parking occupancy thresholds of 85 percent for off-street parking lots and 90 percent for on-street parking. The difference between these thresholds is generally due to the primary purpose of each facility type. The primary purpose of off-street parking, parking lots and garages, is to provide storage of vehicle, while the primary function of streets is the movement of vehicles. Therefore, the unoccupied parking spaces within lots and garages are expected to be found more quickly and easily than unoccupied spaces along street curbs.

#### *Results of Occupancy Surveys Conducted on Wednesday, December 14, 2005*

Table II summarizes the results of the occupancy surveys and indicates the highest occupancy for the entire study area occurred at 1:00 p.m. on Wednesday when 65 percent of the 1,410 spaces surveyed were occupied. Figure 2 provides a block-by-block display of parking occupancy recorded at approximately 1:00 p.m. on Wednesday throughout the entire study area. A closer look at the data indicates that at 1:00 p.m. the occupancy levels were approximately 91 percent for the 226 off-street spaces in public lots, 79 percent (=182/230) for the 230 on-street spaces, and only approximately 22 percent for 954 off-street spaces in private lots.

**TABLE II: PARKING OCCUPANCY BY TIME OF DAY (WEDNESDAY, DECEMBER 14, 2005)**

Type of Parking	Inventory	Occupancy on Wednesday, December 14, 2005										
		10:00A	10:45A	11:30A	12:15P	1:00P	1:45P	2:30P	3:15P	4:00P	4:45P	5:30P
Private Lots	954	15%	20%	22%	22%	22%	21%	21%	20%	20%	18%	16%
Public Lots	226	63%	83%	92%	95%	91%	90%	88%	84%	84%	77%	67%
On-Street	230	68%	78%	79%	82%	79%	68%	65%	65%	72%	63%	64%
<b>Total</b>	<b>1,410</b>	<b>49%</b>	<b>56%</b>	<b>61%</b>	<b>64%</b>	<b>65%</b>	<b>60%</b>	<b>59%</b>	<b>57%</b>	<b>58%</b>	<b>51%</b>	<b>46%</b>

*Results of Surveys Conducted on Saturday, December 17, 2005*

Table III summarizes the results of the occupancy surveys and indicates the highest occupancy for the entire study area also occurred at 1:00 p.m. on Saturday when 63 percent of the spaces surveyed were occupied. The owner of a business (on the east side of South Auburn Street between Neal Street and Bank Street) did not want his 27-space lot surveyed. Therefore, only 1,153 (=1,180-27) off-street spaces were surveyed on Saturday compared to 1,180 spaces on Wednesday. Figure 3 provides a block-by-block display of parking occupancy recorded at approximately 1:00 p.m. on Saturday. A more detailed look at the data indicates that at 1:00 p.m. the occupancy levels were approximately 89 percent for the 226 off-street spaces in public lots, 83 percent (=191/230) for the 230 on-street spaces, and only approximately 22 percent for 954 off-street spaces in private lots.

**TABLE III: PARKING OCCUPANCY BY TIME OF DAY (SATURDAY, DECEMBER 17, 2005)**

Type of Parking	Inventory	Occupancy on Saturday, December 17, 2005										
		10:00A	10:45A	11:30A	12:15P	1:00P	1:45P	2:30P	3:15P	4:00P	4:45P	5:30P
Private Lots	927	15%	19%	21%	22%	22%	21%	21%	20%	20%	19%	16%
Public Lots	226	60%	76%	86%	89%	89%	88%	87%	83%	82%	78%	67%
On-Street	230	59%	65%	74%	82%	83%	82%	81%	69%	68%	58%	50%
<b>Total</b>	<b>1,383</b>	<b>39%</b>	<b>47%</b>	<b>55%</b>	<b>61%</b>	<b>64%</b>	<b>63%</b>	<b>60%</b>	<b>55%</b>	<b>52%</b>	<b>47%</b>	<b>38%</b>

Although the overall peak off-street occupancy was around 64 percent on both Wednesday and Saturday, the surveys indicated very high off-street occupancies (approximately 90 percent) for the “public” parking areas. As shown on Figure 4, these areas include lots at the following locations:

- Lot A: Northeast corner of South Church Street/Neal Street intersection (72 parking spaces)
- Lot B: Near the southwest corner of South Auburn Street/Bank Street intersection (70 parking spaces)
- Lot C: Southeast corner of East Main Street/South Auburn Street intersection (36 parking spaces)
- Lot D: West side of Stewart Street between East Main Street and Bank Street (13 parking spaces)
- Lot E: Southeast corner of Richardson Street/South Auburn Street intersection (35 parking spaces).

Furthermore, Figure 4 illustrates the parking conditions (occupancy and duration) for these public parking lots on Wednesday as well as Saturday.

**FIGURE 2: PARKING OCCUPANCY ON WEDNESDAY, DECEMBER 14, 2005**

**FIGURE 3: PARKING OCCUPANCY ON SATURDAY, DECEMBER 17, 2005**

**FIGURE 4: PARKING CONDITIONS FOR THE “PUBLIC” PARKING AREAS**

## Parking Duration Surveys

Parking duration surveys were conducted on Wednesday (December 14, 2005) and Saturday (December 17, 2005) and summarized on Figures 5 and 6, respectively. The last three characters of parked vehicles' license plates were recorded every 45-minutes on both days between 10:00 a.m. and 5:30 p.m. A vehicle observed once (e.g., at 10:45 but not 10:00 a.m. or 11:30 a.m.) may have arrived at 10:45 a.m., left immediately at 10:46 a.m., or arrived at 10:01 a.m. and left at 11:29 a.m. Given this possible range of a one minute to 88-minute stay, it is assumed that a vehicle that was recorded only once parked for 45 minutes. Similarly, a vehicle recorded in two consecutive time periods is assumed to have parked for 1 hour and 30 minutes. A vehicle recorded for three consecutive time periods is assumed to have parked for 2 hours and 15 minutes, etc.

### *Results of Duration Surveys Conducted on Wednesday, December 14, 2005*

On Wednesday, 4,206 vehicles were surveyed using a possible 1,180 off-street parking spaces and 985 vehicles were surveyed using a possible 230 on-street spaces. The average stay for off-street vehicles was approximately two hours and 18 minutes, while on-street vehicles were parked for an average of one-hour and 45 minutes. The longer stay for off-street vehicles may be due to a higher concentration of employees who may be more likely to park longer and in parking lots.

Of the off-street vehicles surveyed, 63 percent parked for 45 minutes, 14 percent for 1 hour and 30 minutes, 8 percent for two hours and 15 minutes, 4 percent for three hours, and 11 percent for more than three hours. With the great majority of on-street spaces having a 3-hour limit, only 7 percent of the on-street vehicles were documented to have parked longer than three hours. To avoid getting a parking violation, longer-term parkers (e.g., employees) appear to prefer to park off-street.

A closer look at the duration data presented on Table IV shows that 93 percent of the 985 on-street vehicles were parked for three hours or less. This data indicates that there is probably minimal abuse of the three-hour time limit. Figure 5 indicates the average parking duration recorded on Wednesday, December 14, 2005 for the on-street spaces in downtown.

**TABLE IV: AVERAGE PARKING DURATION OFF-STREET AND ON-STREET (10 A.M. – 5:30 P.M.)**

<i>Wednesday 10 A.M. – 5:30 P.M.</i>	<i>Vehicles Surveyed</i>	<i>Duration (hours:minutes)</i>								
		<i>0:45</i>	<i>1:30</i>	<i>2:15</i>	<i>3:00</i>	<i>3:45</i>	<i>4:30</i>	<i>5:15</i>	<i>6:00</i>	<i>6:45+</i>
Off-Street Parking	4,206	63%	14%	8%	4%	2%	2%	1%	2%	4%
On-Street Parking	985	68%	14%	8%	3%	2%	1%	2%	0%	2%
<b>WEDNESDAY TOTAL</b>	<b>5,191</b>	<b>64%</b>	<b>14%</b>	<b>8%</b>	<b>4%</b>	<b>2%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>3%</b>

<i>Saturday 10 A.M. – 5:30 P.M.</i>	<i>Vehicles Surveyed</i>	<i>Duration (hours:minutes)</i>								
		<i>0:45</i>	<i>1:30</i>	<i>2:15</i>	<i>3:00</i>	<i>3:45</i>	<i>4:30</i>	<i>5:15</i>	<i>6:00</i>	<i>6:45+</i>
Off-Street Parking	3,611	59%	16%	9%	4%	3%	2%	1%	1%	5%
On-Street Parking	823	61%	17%	7%	5%	3%	2%	2%	0%	4%
<b>SATURDAY TOTAL</b>	<b>4,434</b>	<b>60%</b>	<b>16%</b>	<b>8%</b>	<b>4%</b>	<b>3%</b>	<b>2%</b>	<b>1%</b>	<b>1%</b>	<b>5%</b>

Figure 5: Average Parking Duration on December 14, 2005

Figure 6: Average Parking Duration on December 17, 2005

*Results of Duration Surveys Conducted on Saturday, December 17, 2005*

On Saturday, December 17, 2005 the survey covered 3,611 off-street vehicles and 823 on-street vehicles. Similar to the results of December 14<sup>th</sup>, the average stay for off-street vehicles was approximately two hours and 12 minutes, while on-street vehicles were parked for an average of one-hour and 47 minutes. A closer look at the results presented in Table IV indicates that the results for off-street and on-street duration were very similar. The combined results for both off-street and on-street were: 60 percent parked for 45 minutes, 16 percent for 1 hour and 30 minutes, 8 percent for two hours and 15 minutes, 4 percent for three hours, and 12 percent for more than three hours.

Compared to the Wednesday survey, it appears that a lower percentage (60 percent vs. 64 percent) of parkers on Saturday were parked for only 45 minutes and a higher percentage (16 percent vs. 14 percent) of parkers were parked for one hour and 30 minutes. These differences may be partly due to the fact that most people do not work on Saturdays and thus may take more time to shop or dine compared to a weekday.

Figure 6 shows the average parking duration for on-street spaces recorded on Saturday, December 17, 2005. A higher percentage of on-street vehicles (11 percent vs. 7 percent) were parked longer than three hours on Saturday compared to Wednesday. This may be partially attributed to the assumption that there is less parking enforcement (of the three hour limit) on weekends.