

## APPENDIX C

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### TRAFFIC ANALYSIS METHODOLOGIES

# Memorandum

**To:** Chris Schneider  
**From:** Ron Marquez  
**Date:** August 29, 2011  
**Re:** General Plan Traffic Analysis Methodology

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The purpose of this memorandum is to document the assumptions and approach for the traffic Analysis prepared for the City of Santa Cruz 2030 General Plan. The assumption center around adjustments made for the interaction between new development, adjustments for UCSC trips, adjustments for smart growth (mixed use) corridors and the appropriateness of the traffic counts used for the general plan modeling.

## **Trip Generation Rate Interactivity Adjustments**

The Planning Department has provided the total number of residential units and the potential square footage of non-residential development by neighborhood for the entire City. The Traffix model used for analysis of the circulation effects of this proposal will estimate the trip generation for all uses and distribute these new trips to the existing road network. A measurable amount of the new trips generated by the residential development will travel to the new commercial and office development. To avoid double counting these trips a method must be defined to estimate the number of trips that interact with the variety of land uses. A similar condition exists for the residential to residential trips.

One component of the Master transportation study completed in July 2003 for the City of Santa Cruz was a household survey. This survey provided information regarding City resident travel patterns such as travel purpose and travel mode. As an example 58 % of all trips are made for shopping, work or personal purposes. In addition about 75% of all trips made by residents remain within the City of Santa Cruz. If we assume that this distribution will remain relatively constant for all new residents in the City then approximately 44% ( $58\% \times 75\%$ ) of all trips made by new residents will be to commercial, office, industrial or personal service facilities within the City.

By assuming that the above trips will be distributed proportionally to all the non residential development in the City we can estimate what percentage of residential trips will be made to all new non-residential development. The City does not have a good estimate of the square footage of non-residential development however

there are good estimates of City employment. The estimated number of new employees over the total number of employees in the future will provide the final factor to adjust the trip rate for residential development. The AMBAG population, housing and employment forecast provide an estimate in 2005 of 34,016 employees. The following table presents an estimate of the potential employment at buildout of the general plan.

**General Plan Buildout Employment Forecast Increase**

| <b>Use</b> | <b>Estimated Square footage</b> | <b>Employment rate<br/>*per 1,000 sq. ft.</b> | <b>Estimated Employment Increase</b> |
|------------|---------------------------------|-----------------------------------------------|--------------------------------------|
| Commercial | 1,087,983                       | 2                                             | 2,176                                |
| Office     | 1,273,913                       | 3.31                                          | 4,217                                |
| Industrial | 776,926                         | 2.3                                           | 1,787                                |
| Hotels     | 310 rooms                       | 1.6 emp/room                                  | 496                                  |
|            |                                 | <b>Total</b>                                  | <b>8,676</b>                         |

\* These employment rates are found in ITE "Trip Generation" for the respective uses

Based on this estimated increase the ratio of new employment to total employment at buildout would be 20%.  $(8676 / (8676 + 34,106))$  Using this factor to adjust the trips made within the City results in an estimate that 8.9% of all trips made by new residential development will travel to new non-residential locations.  $(20\% \times 44\%)$ .

This percentage will be used as a reduction factor for the residential trip generation estimated for the general plan traffic analysis.

A similar reduction factor may be identified for residential to residential trips. The Santa Cruz Travel Survey indicated that 25% of all trips were made for social purposes. If we assume that the majority of these trips are made to other residential uses and that 75% of them will remain within the City then approximately 19% of all trips made by new residents will remain in the City. These trips will be distributed evenly to new residential uses and existing residential uses. Based on the General Plan Buildout calculations there will be 3,890 new units in Santa Cruz. There are currently about 23,133 units in Santa Cruz. The percentage of new units to total units will be 14%. Therefore 14% of the 19% trips made for social purposes will be made to the new housing units or about 2.7%. Half of this number can be deducted from the residential trip distribution or 1.4%.

**Trip Reduction for UCSC trips**

School trips made from residential development may similarly be reduced since the trip generation applied to the University growth accounts for these trips. The household telephone survey also tells us that 15,000 students now in the City account for school trips on the order of 14% of all trips. Assuming 4,500 new students at the University and maintaining the same ratio of school trip purpose to students over population then the new population of students to population growth in the City would result in approximately 25% of the new trip generation to be for school purposes. Since only 45% of these trips are taken in automobiles then the reduction in auto trips would be equivalent to approximately 11%. For purposes of this estimate the 2005 and 2030 population is estimated at 56,421 and 65,884 respectively per AMBAG 2008 Population and Employment forecast. This reduction is only applied to the analysis that includes University growth. Its purpose is to avoid double counting trips made from the University to residential development and back. These trips are accounted for only once in the trip generation and distribution applied to Campus growth.

**Summarizing Trip Generation Adjustments**

The underlying assumptions are:

Future residential trips will distribute through the street system with the same characteristics of the existing residential trips

75% of all residential trips will remain within the city (from MTS)

58% of all trips are made for shopping, work, or personal purposes (from MTS)

New shopping/work/personal trips remaining within the city is 20% of all such trips (derived from growth in employment within city)

Percentage calculations:

25% of all new residential trips would be to areas outside of the city (100% - 75%)

44% of all new residential trips would remain in city and be made to shopping, work, or personal purposes (75% x 58%)

8.9% of all new residential trips will remain in city and be made to new shopping, work, or personal service locations (44% x 20%)

34.8% of all new residential trips would remain in city and be made to existing shopping, work or personal service locations (44% - 9.2%)

11% of all new residential trips are made for school purposes primarily to UCSC.

20% of all new residential trips would remain in city and be made to existing and future residential locations (75% - 44% - 11%)

2.7% of all new residential trips would be made to new residential locations.

### **Smart Growth (Mixed Use ) Adjustments**

The proposed general plan encourages smart growth through the development of mixed use corridors along Mission Street, Ocean Street, Water Street and Soquel Avenue. One purpose of these mixed use corridors is to create an environs that encourages transit use, walking, bicycling and reduces auto travel demand.

Quantifying this reduction in travel demand is the subject of ongoing research. Until this research is documented however the best available quantifiable methodology is included in URBEMIS an air pollution estimation model developed by the South Coast Air Quality Management District. This model includes methodology to calculate the reduction in trip generation associated with mixed use developments, with accessible transit, pedestrian facilities and bikeways. The formulas developed for this modeling have been used to refine the trip generation estimates for the Santa Cruz City General Plan traffic model. The following are the assumptions, formulas, and conclusions of this component of the modeling process for Santa Cruz.

The following reductions are intended to be additive to those reductions calculated for the overall intra city travel associated with new development as described earlier.

Trip generation reductions can be calculated based on the following characteristics;

- Mix of land uses
- Presence of local serving retail
- Bicycle and pedestrian accessibility and
- Transit Service accessibility

#### **Mix of land uses**

The following formula is used to adjust trip generation rates as a function of the mix of land uses for any particular project.

$$\text{Trip reduction} = ( 1 - ( \text{ABS} ( 1.5 * h - e ) / ( 1.5 * h + e ) ) - 0.25 ) / 0.25 * 0.03$$

Where:

h = study area households (or housing units)  
e = study area employment

This formula assumes an “ideal” housing jobs balance of 1.5 and a baseline diversity of 0.25. The maximum possible reduction using this formula is 9%. This formula was used to account for the overall jobs housing balance for each of the four corridors.

### Presence of Local Serving Retail

The presence of local serving retail can be expected to bring further trip reduction benefits, and an additional reduction of 2% is assumed for this factor. This is used although it is towards the lower end of the values presented in the research, in order to avoid double counting with the mixed use indicator.

### Bike and Pedestrian Accessibility

The pedestrian/bicycle reduction is calculated as follows:

Ped/bike trip reduction = 9% x ped/bike factor

Ped/bike factor = ( network density + sidewalk completeness + bike lane completeness) /3

Network density = number of intersection valences per square mile / 1300

Sidewalk completeness = % of area with sidewalk on both sides + 0.5 x % of area with sidewalk on one side

Bike lane completeness = % of arterials and collectors with bike lanes or effective parallel routes.

### Transit Service Accessibility

Trip reduction due to transit service is calculated as follows;

Transit trip reduction = t x 0.075+ t x ped/bike factor x 0.075

t = .06 for areas with 30 minute bus service from 5 am to 7 pm or .17 for areas with 15 minute service from 5 am to 12 midnight. For purposes of this analysis it is assumed that transit service of 30 minute headways is available and that capacity exists to accommodate the demand.

The following table presents the results of this analysis.

**Table 1 Residential Mixed Use Corridor Trip Generation Reduction**

|                       | Mixed Use trip reduction | Local serving retail | Ped Bike Reduction | Transit Reduction | Total Trip reduction |
|-----------------------|--------------------------|----------------------|--------------------|-------------------|----------------------|
| <b>Mission Street</b> | 5.5%                     | 2%                   | 5.4%               | 0.9%              | 13.8%                |
|                       |                          |                      |                    |                   |                      |
| <b>Ocean Street</b>   | 0.5%                     | 2%                   | 4.5%               | 0.8%              | 7.8%                 |
|                       |                          |                      |                    |                   |                      |
| <b>Soquel Ave</b>     | 8.4%                     | 2%                   | 6.0%               | 0.9%              | 17.3%                |
|                       |                          |                      |                    |                   |                      |
| <b>Water Street</b>   | 7.1%                     | 2%                   | 6%                 | 0.9%              | 16.0%                |

### Validity of Counts Used for Traffic Analysis

I was asked to compare recent counts with the counts made for the General Plan in late 2006. The objective was to insure the validity of the counts made for the environmental analysis.

To do this I consulted with the Santa Cruz County Regional Transportation Commission who provided me with counts made in Santa Cruz in 2008 and 2009. All but one of the counts the City made in 2006 were higher than those reported by the Commission. The one count that was not was a very low volume count on Branciforte Avenue north of Goss Avenue. The reliability of low volume counts is questionable without numerous samples. Dropping the low and the high values, the average count in 2006 is about 20% higher than those of 2008 and 2009.

I also compared traffic volumes as reported by Caltrans on its website. Counts made in 2009 have not yet been reported. Overall the counts reported for 2006 are 8% higher than those reported in 2008. Anecdotal observations suggest that 2009 volumes are even lower than those of 2008. The economic recession has had this effect on traffic volumes.

I would recommend therefore that the 2006 counts continue to be used as the most reliable worst case base conditions, inasmuch as these traffic volume conditions could be duplicated without any change in existing development.

### **Initial Trip Generation Rate for Multi-Family Units**

The multi-family unit category includes condominiums, townhomes, apartments and sro's. The forecast of these unit assumes that there will be a blend of these various unit types both ownership and rental. For purposes of our analysis the traffic model uses an apartment trip generation rate for all multi-family units. This rate falls in between the townhouse and sro rates and avoids the need to estimate the number in each category of residential development.

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| Land Use             | Rates |         |
|----------------------|-------|---------|
|                      | Daily | PM Peak |
| SFDU                 | 9.57  | 1.01    |
| Townhomes            | 8.11  | 0.82    |
| Apartments           | 6.65  | 0.62    |
| SRO                  | 5.65  | 0.53    |
| Specialty Retail     | 44.32 | 2.71    |
| Offices              | 11.01 | 1.49    |
| Light Industrial     | 6.97  | 0.97    |
| Arana Gulch - Soquel |       |         |
| Townhomes            | 6.71  | 0.68    |
| Apartments           | 5.50  | 0.51    |
| SRO                  | 4.67  | 0.44    |
| Banana Belt - Water  |       |         |
| Townhomes            | 6.81  | 0.69    |
| Apartments           | 5.59  | 0.52    |
| SRO                  | 4.75  | 0.45    |
| King - Mission       |       |         |
| Apartments           | 5.73  | 0.53    |
| SRO                  | 4.87  | 0.46    |
| Lower Ocean - Ocean  |       |         |
| Apartments           | 6.13  | 0.57    |
| SRO                  | 5.21  | 0.49    |



**City of Santa Cruz General Plan 2030**  
**Trip Generation Rates for Future City Buildout**

| Location            | Land Use                    | Trip Rate |              |
|---------------------|-----------------------------|-----------|--------------|
|                     |                             | Daily     | PM Peak Hour |
| Beach Area          | Apartments                  | 6.65      | 0.62         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
|                     | Commercial                  | 44.32     | 2.71         |
| Downtown            | Apartments                  | 6.65      | 0.62         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| Golf Club           | Townhomes                   | 8.11      | 0.82         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
| Harvey West         | Townhomes                   | 8.11      | 0.82         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
|                     | Industrial                  | 6.97      | 0.97         |
| Lower Eastside      | Townhomes                   | 8.11      | 0.82         |
|                     | Apartments                  | 6.65      | 0.62         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| Lower Westside      | Industrial                  | 6.97      | 0.97         |
|                     | Single-Family Dwelling Unit | 9.57      | 1.01         |
| Mission Street *    | Apartments                  | 5.73      | 0.53         |
|                     | Single-Room Occupancy (SRO) | 4.87      | 0.46         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| Ocean St *          | Apartments                  | 6.13      | 0.57         |
|                     | Single-Room Occupancy (SRO) | 5.21      | 0.49         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| River St/Front St   | Apartments                  | 6.65      | 0.62         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| Soquel Ave *        | Apartments                  | 5.50      | 0.51         |
|                     | Single-Room Occupancy (SRO) | 4.67      | 0.44         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| Upper Eastside      | Single-Family Dwelling Unit | 9.57      | 1.01         |
|                     | Townhomes                   | 8.11      | 0.82         |
|                     | Office                      | 11.01     | 1.49         |
| Upper Westside      | Single-Family Dwelling Unit | 9.57      | 1.01         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| Water St *          | Apartments                  | 5.59      | 0.52         |
|                     | Single-Room Occupancy (SRO) | 4.75      | 0.45         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
| Westside Industrial | Apartments                  | 6.65      | 0.62         |
|                     | Single-Room Occupancy (SRO) | 5.65      | 0.53         |
|                     | Commercial                  | 44.32     | 2.71         |
|                     | Office                      | 11.01     | 1.49         |
|                     | Industrial                  | 6.97      | 0.97         |

Notes:

1. Units for rates are as follows:

|                                                                                   |                             |
|-----------------------------------------------------------------------------------|-----------------------------|
| Residential                                                                       | trips per unit              |
| (Single-Family Dwelling Unit,<br>Townhomes, Apartments,<br>Single-Room Occupancy) |                             |
| Commercial                                                                        | trips per 1,000 square feet |
| Office                                                                            | trips per 1,000 square feet |
| Industrial                                                                        | trips per 1,000 square feet |

2. \* = Mixed-use arterial corridor. Trip rates include the following

internal trip reductions, applied to the residential trip rates of these corridors:

|            |       |
|------------|-------|
| Mission St | 13.8% |
| Ocean St   | 7.8%  |
| Soquel Ave | 17.3% |
| Water St   | 16.0% |

**City of Santa Cruz General Plan 2030**  
**Residential Breakdown by Unit Type**

| Location            | Residential Land Use Type   | Number of Units |
|---------------------|-----------------------------|-----------------|
| Beach Area          | Apartments                  | 193             |
|                     | Single-Room Occupancy (SRO) | 128             |
| Downtown            | Apartments                  | 209             |
|                     | Single-Room Occupancy (SRO) | 139             |
| Golf Club           | Townhomes                   | 147             |
|                     | Single-Room Occupancy (SRO) | 98              |
| Harvey West         | Townhomes                   | 40              |
|                     | Single-Room Occupancy (SRO) | 27              |
| Lower Eastside      | Townhomes                   | 26              |
|                     | Apartments                  | 77              |
|                     | Single-Room Occupancy (SRO) | 51              |
| Lower Westside      | Single-Family Dwelling Unit | 147             |
|                     | Apartments                  | 30              |
|                     | Single-Room Occupancy (SRO) | 19              |
| Mission Street *    | Apartments                  | 187             |
|                     | Single-Room Occupancy (SRO) | 124             |
| Ocean St *          | Apartments                  | 86              |
|                     | Single-Room Occupancy (SRO) | 58              |
| River St/Front St   | Apartments                  | 185             |
|                     | Single-Room Occupancy (SRO) | 123             |
| Soquel Ave *        | Apartments                  | 311             |
|                     | Townhomes                   | 172             |
|                     | Single-Room Occupancy (SRO) | 207             |
| Upper Eastside      | Single-Family Dwelling Unit | 40              |
|                     | Apartments                  | 23              |
|                     | Single-Room Occupancy (SRO) | 16              |
|                     | Townhomes                   | 78              |
| Upper Westside      | Single-Family Dwelling Unit | 259             |
|                     | Apartments                  | 77              |
|                     | Single-Room Occupancy (SRO) | 51              |
| Water St *          | Apartments                  | 112             |
|                     | Townhomes                   | 95              |
|                     | Single-Room Occupancy (SRO) | 78              |
| Westside Industrial | Apartments                  | 20              |
|                     | Single-Room Occupancy (SRO) | 14              |

Mixed Use Corridor Trip Generation Reduction Calculations  
City of Santa Cruz General plan  
29-Apr-09

Smart Growth Trip Reduction

|                | HU | Local      |            |           |            |            |           |           |         |         |            |            |          |           |         |           |            |
|----------------|----|------------|------------|-----------|------------|------------|-----------|-----------|---------|---------|------------|------------|----------|-----------|---------|-----------|------------|
|                |    | Commercial | Commercial | Office Sq | Office     | Total      | Mixed Use | trip      | serving | Network | Sidewalk   | Bikeway    | Ped Bike | Ped Bike  | Transit | Transit   | Total Trip |
|                |    | Sq Ft      | Employment | Ft        | Employment | Employment | reduction | reduction | retail  | density | completion | Completion | factor   | Reduction | index   | Reduction | reduction  |
|                |    |            |            |           |            |            |           |           |         |         |            |            |          |           |         |           |            |
| Mission Street |    | 311        | 72,799     | 146       | 212,610    | 704        | 849       | 5.5%      | 2%      | 0.6     | 0.8        | 0.4        | 0.6      | 5.4%      | 0.06    | 0.9%      | 13.8%      |
| Ocean Street   |    | 144        | 298,697    | 597       | 195,855    | 648        | 1246      | 0.5%      | 2%      | 0.4     | 0.7        | 0.4        | 0.5      | 4.5%      | 0.06    | 0.8%      | 7.8%       |
| Soquel Ave     |    | 690        | 60,938     | 122       | 248,433    | 822        | 944       | 8.4%      | 2%      | 0.6     | 0.8        | 0.6        | 0.7      | 6.0%      | 0.06    | 0.9%      | 17.3%      |

Source: URBEMIS9 User Manual Appendix D

|                | Mixed Use trip<br>reduction | Local<br>serving<br>retail | Ped Bike<br>Reduction | Transit<br>Reduction | Total Trip<br>reduction |
|----------------|-----------------------------|----------------------------|-----------------------|----------------------|-------------------------|
| Mission Street | 5.5%                        | 2%                         | 5.4%                  | 0.9%                 | 13.8%                   |
| Ocean Street   | 0.5%                        | 2%                         | 4.5%                  | 0.8%                 | 7.8%                    |
| Soquel Ave     | 8.4%                        | 2%                         | 6.0%                  | 0.9%                 | 17.3%                   |
|                |                             |                            |                       |                      |                         |

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Trip Generation by Zone (Update January 2010)

| TFX Zone # | Neighborhood Area                          | PM Peak Hour |     |       | Sat Peak Hour |     |       |
|------------|--------------------------------------------|--------------|-----|-------|---------------|-----|-------|
|            |                                            | In           | Out | Total | In            | Out | Total |
| 9          | Harvey West (Office/Industrial #2)         | 29           | 166 | 195   | 23            | 20  | 43    |
| 17         | Downtown & Neary Lagoon                    | 272          | 154 | 426   | 210           | 178 | 388   |
| 19         | River                                      | 124          | 256 | 380   | 121           | 108 | 229   |
| 27         | West King (Commercial/Office #1)           | 49           | 125 | 174   | 48            | 43  | 91    |
| 36         | Harvey West (Office/Industrial #1)         | 30           | 166 | 196   | 23            | 21  | 44    |
| 79         | Meder & UCSC                               | 38           | 23  | 61    | 30            | 26  | 56    |
| 80         | Western                                    | 8            | 5   | 13    | 6             | 6   | 12    |
| 81         | West King (Residential #1) & Nobel         | 21           | 12  | 33    | 13            | 12  | 25    |
| 82         | West King (Residential #2)                 | 19           | 10  | 29    | 14            | 11  | 25    |
| 83         | West King (Residential #3)                 | 19           | 10  | 29    | 14            | 11  | 25    |
| 84         | West King (Residential #4)                 | 19           | 10  | 29    | 14            | 11  | 25    |
| 85         | West King (Commercial/Office #2) & Circles | 48           | 126 | 174   | 48            | 44  | 92    |
| 86         | Spring                                     | 59           | 34  | 93    | 45            | 41  | 86    |
| 87         | King & Escalona (Res./Comm./Office #1)     | 42           | 71  | 113   | 34            | 29  | 63    |
| 88         | King & Escalona (Res./Comm./Office #2)     | 42           | 70  | 112   | 33            | 30  | 63    |
| 89         | Lighthouse                                 | 1            | 0   | 1     | 0             | 1   | 1     |
| 93         | Seabright (Residential #2)                 | 107          | 57  | 164   | 76            | 62  | 138   |
| 97         | Seabright (Residential #1)                 | 107          | 58  | 165   | 76            | 62  | 138   |
| 101        | Eastside Area                              | 178          | 238 | 417   | 142           | 118 | 260   |
| 103        | Westside Industrial (Industrial)           | 21           | 156 | 177   | 12            | 14  | 26    |
| 108        | Westside Industrial (Office)               | 18           | 91  | 109   | 16            | 14  | 30    |
| 109        | Westside Industrial (Retail)               | 130          | 166 | 296   | 139           | 128 | 267   |
| 110        | Westside Industrial (Residential)          | 79           | 43  | 122   | 56            | 46  | 102   |
| 111        | Beach Flats (Office)                       | 0            | 0   | 0     | 0             | 0   | 0     |
| 112        | Beach Flats (Retail)                       | 26           | 33  | 59    | 28            | 25  | 53    |
| 113        | Beach Flats (Residential)                  | 38           | 20  | 58    | 27            | 22  | 49    |
| 114        | Lower Ocean                                | 6            | 27  | 33    | 9             | 8   | 17    |
| 115        | Ocean (#1)                                 | 132          | 206 | 338   | 129           | 117 | 246   |
| 116        | Ocean (#2)                                 | 132          | 206 | 338   | 129           | 117 | 246   |
| 117        | Ocean (#3)                                 | 132          | 207 | 339   | 130           | 116 | 246   |
| 118        | Prospect Heights                           | 27           | 16  | 43    | 21            | 19  | 40    |
| 119        | Market & Lee                               | 111          | 159 | 270   | 111           | 99  | 210   |
| 120        | Banana Belt                                | 89           | 122 | 212   | 72            | 60  | 132   |
| 121        | East Park                                  | 71           | 93  | 164   | 53            | 46  | 99    |
| 122        | Arana Gulch                                | 22           | 47  | 69    | 21            | 19  | 40    |
| 123        | Harvey West (Residential)                  | 125          | 68  | 193   | 89            | 73  | 162   |
| 124        | Harvey West (Commercial)                   | 333          | 423 | 756   | 355           | 327 | 682   |
| 125        | Seabright (Commercial/Office #1)           | 43           | 121 | 164   | 42            | 38  | 80    |
| 126        | Seabright (Commercial/Office #2)           | 43           | 121 | 164   | 42            | 38  | 80    |
| 127        | Seabright (Commercial/Office #3)           | 22           | 61  | 83    | 21            | 20  | 41    |
| 128        | Natural Bridges                            | 10           | 15  | 25    | 7             | 7   | 14    |
| 129        | Carbonera                                  | 8            | 4   | 12    | 6             | 5   | 11    |
| 130        | Central Eastside (Res./Comm./Office #1)    | 53           | 100 | 153   | 49            | 44  | 93    |
| 131        | Central Eastside (Res./Comm./Office #2)    | 53           | 100 | 153   | 49            | 44  | 93    |
| 135        | South Eastside (Res./Comm./Office)         | 18           | 30  | 48    | 16            | 14  | 30    |
| -          | Carbonera Sphere                           | 0            | 0   | 0     | 0             | 0   | 0     |

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Trip Generation by Zone (Update January 2010)

NO PROJECT

| TFX Zone # | Neighborhood Area                          | PM Peak Hour |     |       | Sat Peak Hour |     |       |
|------------|--------------------------------------------|--------------|-----|-------|---------------|-----|-------|
|            |                                            | In           | Out | Total | In            | Out | Total |
| 9          | Harvey West (Office/Industrial #2)         | 29           | 178 | 207   | 20            | 20  | 40    |
| 17         | Downtown & Neary Lagoon                    | 260          | 137 | 397   | 199           | 169 | 368   |
| 19         | River                                      | 124          | 256 | 380   | 121           | 108 | 229   |
| 27         | West King (Commercial/Office #1)           | 43           | 100 | 143   | 43            | 39  | 82    |
| 36         | Harvey West (Office/Industrial #1)         | 29           | 178 | 207   | 21            | 20  | 41    |
| 79         | Meder & UCSC                               | 38           | 23  | 61    | 30            | 26  | 56    |
| 80         | Western                                    | 8            | 5   | 13    | 6             | 6   | 12    |
| 81         | West King (Residential #1) & Nobel         | 5            | 1   | 6     | 5             | 2   | 7     |
| 82         | West King (Residential #2)                 | 5            | 3   | 8     | 3             | 3   | 6     |
| 83         | West King (Residential #3)                 | 5            | 3   | 8     | 3             | 3   | 6     |
| 84         | West King (Residential #4)                 | 5            | 3   | 8     | 3             | 3   | 6     |
| 85         | West King (Commercial/Office #2) & Circles | 42           | 100 | 142   | 42            | 40  | 82    |
| 86         | Spring                                     | 59           | 34  | 93    | 45            | 41  | 86    |
| 87         | King & Escalona (Res./Comm./Office #1)     | 31           | 61  | 92    | 27            | 24  | 51    |
| 88         | King & Escalona (Res./Comm./Office #2)     | 30           | 60  | 91    | 28            | 25  | 52    |
| 89         | Lighthouse                                 | 1            | 0   | 1     | 0             | 1   | 1     |
| 93         | Seabright (Residential #2)                 | 31           | 17  | 48    | 22            | 18  | 40    |
| 97         | Seabright (Residential #1)                 | 31           | 16  | 47    | 22            | 18  | 40    |
| 101        | Eastside Area                              | 90           | 194 | 284   | 88            | 79  | 166   |
| 103        | Westside Industrial (Industrial)           | 21           | 156 | 177   | 12            | 14  | 26    |
| 108        | Westside Industrial (Office)               | 18           | 91  | 109   | 16            | 14  | 30    |
| 109        | Westside Industrial (Retail)               | 130          | 166 | 296   | 139           | 128 | 267   |
| 110        | Westside Industrial (Residential)          | 46           | 24  | 70    | 32            | 27  | 59    |
| 111        | Beach Flats (Office)                       | 0            | 0   | 0     | 0             | 0   | 0     |
| 112        | Beach Flats (Retail)                       | 26           | 33  | 59    | 28            | 25  | 53    |
| 113        | Beach Flats (Residential)                  | 38           | 20  | 58    | 27            | 22  | 49    |
| 114        | Lower Ocean                                | 8            | 22  | 30    | 12            | 11  | 23    |
| 115        | Ocean (#1)                                 | 124          | 158 | 282   | 129           | 119 | 248   |
| 116        | Ocean (#2)                                 | 124          | 158 | 282   | 129           | 119 | 248   |
| 117        | Ocean (#3)                                 | 123          | 158 | 282   | 129           | 118 | 247   |
| 118        | Prospect Heights                           | 27           | 16  | 43    | 21            | 19  | 40    |
| 119        | Market & Lee                               | 89           | 184 | 273   | 87            | 77  | 164   |
| 120        | Banana Belt                                | 34           | 66  | 100   | 32            | 28  | 60    |
| 121        | East Park                                  | 71           | 93  | 164   | 53            | 46  | 99    |
| 122        | Arana Gulch                                | 22           | 47  | 69    | 21            | 19  | 40    |
| 123        | Harvey West (Residential)                  | 58           | 31  | 89    | 41            | 33  | 74    |
| 124        | Harvey West (Commercial)                   | 189          | 240 | 429   | 201           | 186 | 387   |
| 125        | Seabright (Commercial/Office #1)           | 40           | 95  | 135   | 40            | 37  | 77    |
| 126        | Seabright (Commercial/Office #2)           | 40           | 95  | 135   | 40            | 37  | 77    |
| 127        | Seabright (Commercial/Office #3)           | 21           | 48  | 69    | 20            | 19  | 39    |
| 128        | Natural Bridges                            | 11           | 15  | 26    | 8             | 6   | 14    |
| 129        | Carbonera                                  | 8            | 4   | 12    | 6             | 5   | 11    |
| 130        | Central Eastside (Res./Comm./Office #1)    | 53           | 100 | 153   | 49            | 44  | 93    |
| 131        | Central Eastside (Res./Comm./Office #2)    | 53           | 100 | 153   | 49            | 44  | 93    |
| 135        | South Eastside (Res./Comm./Office)         | 18           | 30  | 48    | 16            | 14  | 30    |
| -          | Carbonera Sphere                           | 0            | 0   | 0     | 0             | 0   | 0     |

# APPENDIX C

## City of Santa Cruz 24 hr Counts Compared to Turning Movement Counts

| Count Location & Type                 | Date         | Dir | Day 1        | Day 2         | Average      | Dir | Day 1 | Day 2 | Average      |     |
|---------------------------------------|--------------|-----|--------------|---------------|--------------|-----|-------|-------|--------------|-----|
| Bay so of Escalona 24 hr              | 4/14-15/09   | n   | 530          | 513           | 522          | so  | 730   | 816   | 773          |     |
| Bay at Escalona Turn                  | Oct-06       | n   |              |               | 652          | so  |       |       | 908          | 21% |
| Branciforte Ave no of Gross Ave 24 hr | 4/21-22/09   | n   | 70           | 103           | 87           | s   | 122   | 137   | 130          |     |
| Branciforte @ Goss Turn               | Oct-06       | n   |              |               | 56           |     |       |       | 147          | -6% |
| Laurel St @ San Lorenzo Br 24         | 6/24-25/08   | e   | 556          | 557           | 557          | w   | 377   | 393   | 385          |     |
| Laurel St @ Front St Turn             | Oct-06       | e   |              |               | 977          |     |       |       | 827          | 92% |
| Soquel Ave @ San Lorenzo Br 24 hr     | 6/24-25/08   | e   | 615          | 656           | 636          | w   | 450   | 455   | 453          |     |
| Soquel Ave @ Dakota St Turn           | Oct-06       | e   |              |               | 741          |     |       |       | 534          | 17% |
| Water St @ San Lorenzo Br 24 hr       | 6/24-25/08   | e   | 632          | 627           | 630          | w   | 900   | 881   | 891          |     |
| Water St @ River St Turn              | Oct-06       | e   |              |               | 999          | w   |       |       | 898          | 25% |
| <b>Totals</b>                         |              |     |              | 24 hr<br>Turn | 2430<br>3425 |     |       |       | 2631<br>3314 | 33% |
| <b>(2006-2008)</b>                    |              |     |              |               |              |     |       |       |              |     |
| <b>Caltrans Counts Peak Hour</b>      | <b>2006</b>  |     | <b>2008</b>  |               | <b>/2008</b> |     |       |       |              |     |
| Ro1 at Soquel Ave                     | 7100         |     | 6600         |               | 8%           |     |       |       |              |     |
| Ro1 at Emeline                        | 7700         |     | 6300         |               | 22%          |     |       |       |              |     |
| Ro1 at River St                       | 4800         |     | 4600         |               | 4%           |     |       |       |              |     |
| Route 1 at Mission                    | 4050         |     | 3900         |               | 4%           |     |       |       |              |     |
| Ro 1at Bay                            | 3100         |     | 3050         |               | 2%           |     |       |       |              |     |
| Ro 1 at City limits                   | 1750         |     | 1700         |               | 3%           |     |       |       |              |     |
| Ro 17 at Pasatiempo                   | 6200         |     | 5900         |               | 5%           |     |       |       |              |     |
| <b>Totals</b>                         | <b>34700</b> |     | <b>32050</b> |               | <b>8%</b>    |     |       |       |              |     |

**City of Santa Cruz General Plan Counts Compared to 2010 Counts**  
**Total Volume at Intersection**

**APPENDIX C**

|                                              | <b>GP Counts Total</b> | <b>2010 Count</b> | <b>ADJUSTED GP [1]</b> | <b>% change</b> |
|----------------------------------------------|------------------------|-------------------|------------------------|-----------------|
| 1. McLaughlin/Hagar                          |                        |                   |                        |                 |
| 2. Heller/Meyer                              |                        |                   |                        |                 |
| 3. Heller/Empire Grade                       |                        |                   |                        |                 |
| 4. Western/High                              | 1370                   | 1058              |                        | -23%            |
| 5. Bay/High                                  | 2877                   | 2013              |                        | -30%            |
| 6. High/Laurent                              | 1380                   | 1068              |                        | -23%            |
| 7. River/Highway 1                           | 5528                   | 5872              | <b>5965</b>            | <b>6%</b>       |
| 8. Bay/Escalona                              | 1872                   | 1367              |                        | -27%            |
| 9. Bay/King                                  | 2253                   | 1512              |                        | -33%            |
| 10. Storey/King                              | 854                    | 934               | <b>870</b>             | <b>9%</b>       |
| 11. Mission/Almar/Younglove                  | 2000                   | 2278              | <b>2428</b>            | <b>14%</b>      |
| 12. Mission/Bay                              | 3229                   | 3093              |                        | -4%             |
| 13. Mission/Laurel                           | 3083                   | 3321              | <b>3493</b>            | <b>8%</b>       |
| 14. Mission/Walnut                           | 2471                   | 2586              | <b>2902</b>            | <b>5%</b>       |
| 15. Mission/King/Union                       | 3694                   | 3342              |                        | -10%            |
| 16. Mission/Chestnut                         | 4258                   | 4439              | <b>4582</b>            | <b>4%</b>       |
| 17. River/Water                              | 2728                   | 2777              | <b>2906</b>            | <b>2%</b>       |
| 18. Water/N. Branciforte                     | 3198                   | 2336              |                        | -27%            |
| 19. Soquel/Capitola Rd.                      | 3149                   | 3156              |                        | 0%              |
| 20. Bay/West Cliff                           | 1099                   | 1388              | <b>1117</b>            | <b>26%</b>      |
| 21. Seabright/Murray                         | 2093                   | 2030              |                        | -3%             |
| 22. Laurel/Front                             | 2562                   | 2783              | <b>2606</b>            | <b>9%</b>       |
| 23. Ocean/East Cliff                         | 2290                   | 1870              |                        | -18%            |
| 24. Delaware/Swift                           | 721                    | 904               | <b>1064</b>            | <b>25%</b>      |
| 25. Mission/King                             |                        |                   |                        |                 |
| 26. King/Laurel                              |                        |                   |                        |                 |
| 27. King/Walnut                              |                        |                   |                        |                 |
| 28. Mission/Swift                            | 1712                   | 1792              | <b>1996</b>            | <b>5%</b>       |
| 29. Mission/Miramar                          | 2690                   | 2323              |                        | -14%            |
| 30. Western/Highway 1                        | 1291                   | 1310              | <b>1341</b>            | <b>1%</b>       |
| 31. Western/Meder                            |                        |                   |                        |                 |
| 32. Delaware/Natural Bridges                 |                        |                   |                        |                 |
| 33. Western/Mission Street Extension         |                        |                   |                        |                 |
| 34. Natural Bridges/Mission Street Extension |                        |                   |                        |                 |
| 35. Swift/McPherson/Mission Street Extension |                        |                   |                        |                 |
|                                              | <b>58402</b>           | <b>55552</b>      |                        | <b>-5%</b>      |

[1] Traffic from projects that were being constructed and/or occupied after the General Plan traffic counts were taken have been added to the "Existing" baseline conditions.

SEE TABLE ON THE FOLLOWING PAGE FOR A LIST OF ADDED PROJECTS.

## PROJECTS ADDED TO EXISTING TRAFFIC COUNTS

It was decided that trips from the following projects be added to existing traffic as they were constructed or nearly constructed/occupied after the traffic counts were completed in December 2006.

### Projects Under Construction or Being Occupied

| PLANNING AREA  |                               |                                                         |
|----------------|-------------------------------|---------------------------------------------------------|
| Beach          | 108-122 Second Street         | Demolish 17 apts. and construct 44 SRO units            |
| Downtown       | 1375 Pacific                  | 36,177 sf retail & 54,265 sf office                     |
| Downtown       | 2027 N. Pacific               | 3,720 square feet commercial & 4 condo units            |
| Downtown       | 125 River Street / N. Pacific | 70 condos & 5,522 sf commercial                         |
| Harvey West    | Tannery Arts Center           | <b>ONLY 100 residential units</b>                       |
| Mission Street | Almar Center Expansion        | Demolish and replace Safeway (27,000 sf net increase)   |
| Ocean Street   | Ocean Street Hotel            | 100 hotel rooms                                         |
| Soquel Avenue  | 1606 Soquel Avenue            | 36 SROs, 1 manager unit                                 |
| Upper Westside | 250 Cardiff                   | 23 MFR units                                            |
| Westside       | New Leaf Market               | 17,778 sf grocery store; attached 3,000 sf tenant space |

AND

Projects completed / occupied after December 2006 traffic counts were completed.

|                |                                          |                                                               |
|----------------|------------------------------------------|---------------------------------------------------------------|
| Beach          | 106 Younger Way                          | Demo SFR and replace with 4 townhouses                        |
| Beach          | 170 West Cliff Drive                     | Remodel historic SFD to B&B with 7 guest rooms & 9 townhouses |
| Harvey West    | 425 Encinal-Georgiana Bruce Kirby School | 225-260 student private middle/high school                    |
| Ocean Street   | 132 Clay                                 | 16 condos                                                     |
| River Street   | 303 Potrero - Sash Mill                  | 17,600 sf commercial/office                                   |
| Soquel Avenue  | 1226 Soquel                              | 9 townhouses                                                  |
| Soquel Avenue  | Grace Commons Apts.                      | 15 MFD                                                        |
| Soquel Avenue  | Doyle Street                             | 4 townhouses                                                  |
| Upper Eastside | 175 Belvedere Terrace                    | 4 MFD                                                         |
| Upper Eastside | 1430 North Branciforte                   | 9 SFD                                                         |
| Upper Eastside | 121, 131, 134 Kennan St                  | 14 townhouses                                                 |
| Upper Westside | 1463 High                                | 26 lots & SFDs                                                |



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Impact Analysis Report  
Level Of Service

| Intersection                         | Base |             |         | Future |             |         | Change  |     |
|--------------------------------------|------|-------------|---------|--------|-------------|---------|---------|-----|
|                                      | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C | in      |     |
| #2901 Western_Dr/High_St             | D    | 34.9        | 0.442   | E      | 45.9        | 0.544   | +11.064 | D/V |
| #2902 Bay-Coolidge/High              | C    | 33.6        | 0.901   | D      | 35.4        | 0.919   | + 1.844 | D/V |
| #2903 High/Moore                     | A    | 4.8         | 0.499   | A      | 4.8         | 0.506   | -0.028  | D/V |
| #2904 High/Laurent                   | F    | 53.4        | 1.045   | F      | 59.6        | 1.066   | + 0.022 | V/C |
| #2905 River/Potrero                  | B    | 17.8        | 0.570   | B      | 18.0        | 0.605   | + 0.241 | D/V |
| #2906 River-Hwy_9/Hwy_1              | E    | 75.4        | 0.874   | F      | 83.9        | 0.942   | + 8.503 | D/V |
| #2907 River/Fern                     | B    | 13.8        | 0.444   | B      | 14.5        | 0.464   | + 0.678 | D/V |
| #2908 River/Encinal                  | E    | 61.4        | 1.038   | E      | 73.9        | 1.099   | +12.488 | D/V |
| #2909 Ocean-Hwy_17/Plymouth-Ocean_Ex | C    | 31.4        | 0.651   | C      | 31.5        | 0.662   | + 0.070 | D/V |
| #2910 Market/Goss-Isbel              | B    | 12.6        | 0.538   | B      | 12.8        | 0.546   | + 0.008 | V/C |
| #2911 N.Branciforte/Goss             | B    | 14.5        | 0.617   | B      | 14.6        | 0.618   | + 0.001 | V/C |
| #2912 Morrissey_Bldv/Fairmount_Av    | A    | 8.0         | 0.469   | A      | 8.0         | 0.470   | + 0.042 | D/V |
| #2913 Bay/Nobel-Iowa                 | B    | 11.5        | 0.498   | B      | 11.6        | 0.503   | + 0.071 | D/V |
| #2914 Bay_St/Escalona_Dr             | F    | 739.8       | 1.937   | F      | 782.2       | 2.015   | +42.378 | D/V |
| #2915 Bay_St/King_St                 | B    | 13.0        | 0.786   | B      | 13.6        | 0.799   | + 0.569 | D/V |
| #2916 King_St/Laurel_St              | B    | 14.8        | 0.702   | B      | 15.0        | 0.707   | + 0.006 | V/C |
| #2917 Storey/King                    | B    | 14.5        | 0.593   | B      | 15.0        | 0.608   | + 0.015 | V/C |
| #2918 Shaffer/Highway_1              | D    | 26.2        | 0.219   | D      | 30.1        | 0.281   | + 3.946 | D/V |
| #2919 Western/Highway_1              | B    | 14.5        | 0.554   | B      | 15.3        | 0.574   | + 0.735 | D/V |
| #2920 Swift/Mission                  | B    | 15.6        | 0.529   | B      | 19.1        | 0.702   | + 3.517 | D/V |
| #2921 Miramar/Mission                | B    | 18.2        | 0.480   | B      | 19.0        | 0.533   | + 0.803 | D/V |
| #2922 Almar-Younglove/Mission        | B    | 10.0        | 0.364   | B      | 10.7        | 0.474   | + 0.672 | D/V |
| #2923 Bay/Mission                    | D    | 46.8        | 0.882   | E      | 55.8        | 0.944   | + 9.037 | D/V |
| #2924 Laurel/Mission                 | C    | 23.9        | 0.688   | C      | 24.9        | 0.782   | + 0.992 | D/V |
| #2925 Mission/Walnut                 | B    | 15.1        | 0.526   | B      | 17.8        | 0.598   | + 2.706 | D/V |

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| Intersection                    | Base |             |         | Future |             |         | Change<br>in |
|---------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                 | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2926 King/Mission              | C    | 30.5        | 0.795   | C      | 32.7        | 0.877   | + 2.250 D/V  |
| #2927 Chestnut/Mission          | D    | 40.7        | 0.837   | D      | 42.9        | 0.905   | + 2.191 D/V  |
| #2928 N_Pacific/River           | B    | 10.9        | 0.507   | B      | 11.6        | 0.567   | + 0.762 D/V  |
| #2929 Center/Mission            | C    | 31.3        | 0.804   | C      | 34.5        | 0.855   | + 3.255 D/V  |
| #2930 Pacific/Water-Mission     | C    | 21.4        | 0.455   | C      | 22.0        | 0.486   | + 0.522 D/V  |
| #2931 River/Water               | C    | 29.2        | 0.693   | C      | 30.1        | 0.726   | + 0.911 D/V  |
| #2932 Ocean/Washburn-Keenan     | A    | 4.3         | 0.571   | A      | 4.4         | 0.584   | + 0.127 D/V  |
| #2933 Ocean/Water               | E    | 67.9        | 1.050   | E      | 73.6        | 1.081   | + 5.701 D/V  |
| #2934 Market/Water              | C    | 21.9        | 0.727   | C      | 22.3        | 0.748   | + 0.394 D/V  |
| #2935 N_Branciforte/Water       | D    | 35.6        | 0.808   | D      | 36.6        | 0.834   | + 0.965 D/V  |
| #2936 Seabright/Water           | F    | OVRFL       | 2.656   | F      | OVRFL       | 3.113   | +244.376 D/  |
| #2937 Morrissey/Soquel/Water    | E    | 61.0        | 1.075   | E      | 65.4        | 1.093   | + 4.343 D/V  |
| #2938 Frederick/Soquel          | C    | 27.4        | 0.885   | C      | 28.6        | 0.907   | + 1.176 D/V  |
| #2939 Hagemann-Trevethan/Soquel | A    | 8.2         | 0.667   | A      | 8.4         | 0.689   | + 0.278 D/V  |
| #2940 Park/Soquel               | B    | 11.1        | 0.820   | B      | 11.6        | 0.842   | + 0.478 D/V  |
| #2941 Capitola_Rd/Soquel_Av     | C    | 31.0        | 0.939   | D      | 37.4        | 0.991   | + 6.360 D/V  |
| #2942 La_Fonda_Av/Soquel_Av     | B    | 10.4        | 0.280   | B      | 10.3        | 0.282   | -0.047 D/V   |
| #2943 California_Ave/Bay        | F    | 60.0        | 1.100   | F      | 67.6        | 1.130   | + 0.030 V/C  |
| #2944 California_St/Bay         | F    | 389.4       | 1.614   | F      | 434.0       | 1.704   | +44.673 D/V  |
| #2945 California_St/Laurel_St   | C    | 20.0        | 0.621   | C      | 20.3        | 0.641   | + 0.281 D/V  |
| #2946 Chestnut/Laurel           | B    | 16.9        | 0.628   | B      | 17.2        | 0.639   | + 0.349 D/V  |
| #2947 Center/Laurel             | B    | 15.6        | 0.606   | B      | 16.0        | 0.620   | + 0.315 D/V  |
| #2948 Cedar/Laurel              | C    | 16.1        | 0.256   | C      | 16.4        | 0.259   | + 0.288 D/V  |
| #2949 Pacific/Laurel            | B    | 18.5        | 0.696   | B      | 18.9        | 0.709   | + 0.360 D/V  |
| #2950 Front/Laurel              | C    | 26.1        | 0.689   | C      | 26.4        | 0.700   | + 0.322 D/V  |
| #2951 Front/Metro_Center        | A    | 2.7         | 0.415   | A      | 2.6         | 0.422   | -0.015 D/V   |

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| Intersection                         | Base |             |         | Future |             |         | Change<br>in |
|--------------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                      | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2952 Front/Cathcart                 | A    | 6.5         | 0.379   | A      | 6.6         | 0.386   | + 0.112 D/V  |
| #2953 Front/Soquel                   | C    | 25.3        | 0.552   | C      | 25.5        | 0.627   | + 0.174 D/V  |
| #2954 Front/Cooper                   | A    | 8.3         | 0.441   | A      | 9.6         | 0.499   | + 1.244 D/V  |
| #2955 River_S/Soquel                 | B    | 17.6        | 0.526   | B      | 17.8        | 0.536   | + 0.210 D/V  |
| #2956 Riverside-Dakota/Soquel        | A    | 9.0         | 0.340   | A      | 8.7         | 0.359   | -0.330 D/V   |
| #2957 Ocean_St/Soquel_Av             | D    | 39.9        | 0.644   | D      | 40.3        | 0.663   | + 0.429 D/V  |
| #2958 Branciforte/Soquel             | C    | 22.5        | 0.748   | C      | 23.6        | 0.780   | + 1.130 D/V  |
| #2959 Seabright/Soquel               | C    | 32.0        | 0.823   | C      | 32.9        | 0.835   | + 0.916 D/V  |
| #2960 San_Lorenzo_Blv/Broadway(Laur  | B    | 11.8        | 0.614   | B      | 11.9        | 0.628   | + 0.093 D/V  |
| #2961 Ocean_St/Broadway              | C    | 33.5        | 0.740   | C      | 34.3        | 0.752   | + 0.741 D/V  |
| #2962 S_Branciforte/Broadway         | B    | 11.6        | 0.671   | B      | 11.7        | 0.683   | + 0.116 D/V  |
| #2963 Seabright/Broadway             | B    | 14.3        | 0.717   | B      | 14.6        | 0.732   | + 0.318 D/V  |
| #2964 Pacific-Center/W_Cliff-Pacific | B    | 12.1        | 0.541   | B      | 12.2        | 0.548   | + 0.007 V/C  |
| #2965 W_Cliff/Bay                    | C    | 15.8        | 0.633   | C      | 16.2        | 0.642   | + 0.010 V/C  |
| #2966 Pacific/Beach                  | C    | 17.6        | 0.771   | C      | 20.9        | 0.848   | + 0.077 V/C  |
| #2967 Cliff/Beach                    | B    | 10.8        | 0.400   | B      | 10.8        | 0.400   | + 0.000 V/C  |
| #2968 Riverside/Beach                | A    | 6.2         | 0.077   | A      | 6.2         | 0.077   | + 0.000 D/V  |
| #2969 Riverside/Second-Leibrandt     | A    | 7.5         | 0.097   | A      | 7.5         | 0.097   | + 0.000 V/C  |
| #2970 Riverside/3rd_St               | C    | 34.4        | 0.800   | C      | 34.7        | 0.806   | + 0.282 D/V  |
| #2971 Riverside/San_Lorenzo_Blv      | C    | 28.8        | 0.665   | C      | 28.9        | 0.669   | + 0.106 D/V  |
| #2972 Ocean_St/E_Cliff_Dr            | E    | 63.6        | 1.057   | E      | 64.7        | 1.061   | + 1.102 D/V  |
| #2973 Seabright/Murray               | D    | 44.7        | 0.877   | D      | 44.8        | 0.879   | + 0.082 D/V  |
| #2974 Swift/Delaware                 | B    | 10.9        | 0.500   | C      | 23.9        | 1.001   | + 0.501 V/C  |
| #2975 Seventh/Soquel                 | C    | 23.3        | 0.747   | C      | 23.3        | 0.748   | -0.021 D/V   |
| #2976 Seventh/Capitola               | C    | 26.8        | 0.609   | C      | 26.8        | 0.626   | + 0.003 D/V  |
| #2977 Seventh/Brommer                | C    | 18.3        | 0.713   | C      | 19.3        | 0.744   | + 0.032 V/C  |

PM Existing

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| Intersection          | Base |             |         | Future |             |         | Change<br>in |
|-----------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                       | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2978 Seventh/Eaton   | D    | 36.5        | 0.844   | D      | 36.8        | 0.848   | + 0.274 D/V  |
| #2979 Seventh/E_Cliff | C    | 15.8        | 0.677   | C      | 15.8        | 0.678   | + 0.001 V/C  |

Impact Analysis Report  
Level Of Service

| Intersection                         | Base |             |         | Future |             |         | Change<br>in |
|--------------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                      | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2901 Western_Dr/High_St             | D    | 34.9        | 0.442   | F      | 109.7       | 0.819   | +74.834 D/V  |
| #2902 Bay-Coolidge/High              | C    | 33.6        | 0.901   | D      | 46.1        | 0.999   | +12.500 D/V  |
| #2903 High/Moore                     | A    | 4.8         | 0.499   | A      | 4.7         | 0.535   | -0.075 D/V   |
| #2904 High/Laurent                   | F    | 53.4        | 1.045   | F      | 93.6        | 1.180   | + 0.136 V/C  |
| #2905 River/Potrero                  | B    | 17.8        | 0.570   | C      | 20.1        | 0.771   | + 2.360 D/V  |
| #2906 River-Hwy_9/Hwy_1              | E    | 75.4        | 0.874   | F      | 212.1       | 1.525   | +136.630 D/  |
| #2907 River/Fern                     | B    | 13.8        | 0.444   | F      | OVRFL       | XXXXX   | +51966.630   |
| #2908 River/Encinal                  | E    | 61.4        | 1.038   | F      | 216.6       | 1.636   | +155.146 D/  |
| #2909 Ocean-Hwy_17/Plymouth-Ocean_Ex | C    | 31.4        | 0.651   | D      | 39.6        | 0.902   | + 8.168 D/V  |
| #2910 Market/Goss-Isbel              | B    | 12.6        | 0.538   | C      | 19.2        | 0.779   | + 0.241 V/C  |
| #2911 N.Branciforte/Goss             | B    | 14.5        | 0.617   | C      | 20.9        | 0.785   | + 0.168 V/C  |
| #2912 Morrissey_Blvd/Fairmount_Av    | A    | 8.0         | 0.469   | A      | 9.6         | 0.533   | + 1.635 D/V  |
| #2913 Bay/Nobel-Iowa                 | B    | 11.5        | 0.498   | B      | 13.3        | 0.568   | + 1.706 D/V  |
| #2914 Bay_St/Escalona_Dr             | F    | 739.8       | 1.937   | F      | OVRFL       | 1.182   | + 1.8E+0308  |
| #2915 Bay_St/King_St                 | B    | 13.0        | 0.786   | C      | 30.2        | 1.013   | +17.202 D/V  |
| #2916 King_St/Laurel_St              | B    | 14.8        | 0.702   | C      | 20.7        | 0.832   | + 0.130 V/C  |
| #2917 Storey/King                    | B    | 14.5        | 0.593   | C      | 24.4        | 0.834   | + 0.241 V/C  |
| #2918 Shaffer/Highway_1              | D    | 26.2        | 0.219   | F      | 51.1        | 0.463   | +24.929 D/V  |
| #2919 Western/Highway_1              | B    | 14.5        | 0.554   | B      | 18.7        | 0.734   | + 4.135 D/V  |
| #2920 Swift/Mission                  | B    | 15.6        | 0.529   | D      | 42.2        | 1.005   | +26.624 D/V  |
| #2921 Miramar/Mission                | F    | 522.7       | 1.693   | F      | OVRFL       | 9.383   | + 1.8E+0308  |
| #2922 Almar-Younglove/Mission        | B    | 16.6        | 0.605   | F      | 90.4        | 1.253   | +73.736 D/V  |
| #2923 Bay/Mission                    | D    | 46.8        | 0.882   | F      | 168.9       | 1.326   | +122.119 D/  |
| #2924 Laurel/Mission                 | C    | 23.9        | 0.688   | E      | 70.7        | 1.137   | +46.870 D/V  |
| #2925 Mission/Walnut                 | C    | 27.7        | 0.715   | E      | 74.7        | 1.124   | +47.062 D/V  |

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| Intersection                    | Base |             |         | Future |             |         | Change<br>in |
|---------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                 | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2926 King/Mission              | C    | 30.5        | 0.795   | F      | 87.9        | 1.131   | +57.419 D/V  |
| #2927 Chestnut/Mission          | D    | 40.7        | 0.837   | F      | 119.3       | 1.218   | +78.533 D/V  |
| #2928 N_Pacific/River           | B    | 10.9        | 0.507   | B      | 15.0        | 0.819   | + 4.098 D/V  |
| #2929 Center/Mission            | C    | 26.7        | 0.851   | E      | 60.0        | 1.083   | +33.364 D/V  |
| #2930 Pacific/Water-Mission     | C    | 21.4        | 0.455   | C      | 25.1        | 0.705   | + 3.674 D/V  |
| #2931 River/Water               | C    | 29.2        | 0.693   | D      | 45.3        | 0.949   | +16.112 D/V  |
| #2932 Ocean/Washburn-Keenan     | A    | 4.3         | 0.571   | B      | 16.1        | 0.860   | +11.787 D/V  |
| #2933 Ocean/Water               | E    | 67.9        | 1.050   | F      | 184.0       | 1.490   | +116.099 D/  |
| #2934 Market/Water              | C    | 21.9        | 0.727   | C      | 29.1        | 0.902   | + 7.284 D/V  |
| #2935 N_Branciforte/Water       | D    | 35.6        | 0.808   | E      | 69.3        | 1.099   | +33.722 D/V  |
| #2936 Seabright/Water           | F    | OVRFL       | 2.656   | F      | OVRFL       | XXXXX   | +4572.192 D  |
| #2937 Morrissey/Soquel/Water    | E    | 61.0        | 1.075   | F      | 118.5       | 1.259   | +57.526 D/V  |
| #2938 Frederick/Soquel          | C    | 27.4        | 0.885   | E      | 57.2        | 1.094   | +29.739 D/V  |
| #2939 Hagemann-Trevethan/Soquel | A    | 8.2         | 0.667   | B      | 11.3        | 0.819   | + 3.154 D/V  |
| #2940 Park/Soquel               | B    | 11.1        | 0.820   | C      | 21.1        | 0.978   | +10.059 D/V  |
| #2941 Capitola_Rd/Soquel_Av     | C    | 34.8        | 0.973   | F      | 80.0        | 1.218   | +45.246 D/V  |
| #2942 La_Fonda_Av/Soquel_Av     | B    | 10.4        | 0.280   | B      | 10.7        | 0.314   | + 0.277 D/V  |
| #2943 California_Ave/Bay        | F    | 60.0        | 1.100   | F      | 145.3       | 1.389   | + 0.289 V/C  |
| #2944 California_St/Bay         | F    | 389.4       | 1.614   | F      | OVRFL       | 2.928   | +645.638 D/  |
| #2945 California_St/Laurel_St   | C    | 20.0        | 0.621   | C      | 25.9        | 0.828   | + 5.836 D/V  |
| #2946 Chestnut/Laurel           | B    | 16.9        | 0.628   | C      | 24.8        | 0.838   | + 7.933 D/V  |
| #2947 Center/Laurel             | B    | 15.6        | 0.606   | C      | 22.8        | 0.841   | + 7.183 D/V  |
| #2948 Cedar/Laurel              | C    | 16.1        | 0.256   | C      | 24.8        | 0.404   | + 8.725 D/V  |
| #2949 Pacific/Laurel            | B    | 18.5        | 0.696   | D      | 35.4        | 0.952   | +16.887 D/V  |
| #2950 Front/Laurel              | C    | 26.1        | 0.689   | D      | 39.0        | 0.921   | +12.917 D/V  |
| #2951 Front/Metro_Center        | A    | 2.7         | 0.415   | A      | 2.6         | 0.543   | -0.016 D/V   |

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| Intersection                         | Base |             |         | Future |             |         | Change<br>in |
|--------------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                      | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2952 Front/Cathcart                 | A    | 6.5         | 0.379   | A      | 8.2         | 0.512   | + 1.624 D/V  |
| #2953 Front/Soquel                   | C    | 25.3        | 0.552   | C      | 32.7        | 0.833   | + 7.403 D/V  |
| #2954 Front/Cooper                   | A    | 8.3         | 0.441   | B      | 10.1        | 0.594   | + 1.773 D/V  |
| #2955 River_S/Soquel                 | B    | 17.6        | 0.526   | B      | 19.6        | 0.700   | + 1.996 D/V  |
| #2956 Riverside-Dakota/Soquel        | A    | 9.0         | 0.340   | A      | 7.4         | 0.432   | -1.654 D/V   |
| #2957 Ocean_St/Soquel_Av             | D    | 39.9        | 0.644   | E      | 58.5        | 0.983   | +18.609 D/V  |
| #2958 Branciforte/Soquel             | C    | 22.5        | 0.748   | E      | 65.5        | 1.066   | +43.049 D/V  |
| #2959 Seabright/Soquel               | C    | 32.0        | 0.823   | D      | 42.8        | 0.939   | +10.829 D/V  |
| #2960 San_Lorenzo_Blvd/Broadway(Laur | B    | 11.8        | 0.614   | B      | 17.0        | 0.830   | + 5.252 D/V  |
| #2961 Ocean_St/Broadway              | C    | 33.5        | 0.740   | F      | 125.6       | 1.285   | +92.102 D/V  |
| #2962 S_Branciforte/Broadway         | B    | 11.6        | 0.671   | B      | 16.5        | 0.849   | + 4.885 D/V  |
| #2963 Seabright/Broadway             | B    | 14.3        | 0.717   | C      | 31.3        | 0.979   | +16.956 D/V  |
| #2964 Pacific-Center/W_Cliff-Pacific | B    | 12.1        | 0.541   | C      | 17.0        | 0.744   | + 0.203 V/C  |
| #2965 W_Cliff/Bay                    | C    | 15.8        | 0.633   | D      | 28.5        | 0.890   | + 0.258 V/C  |
| #2966 Pacific/Beach                  | C    | 17.6        | 0.771   | E      | 39.8        | 1.064   | + 0.293 V/C  |
| #2967 Cliff/Beach                    | B    | 10.8        | 0.400   | C      | 17.0        | 0.667   | + 0.267 V/C  |
| #2968 Riverside/Beach                | A    | 6.2         | 0.077   | A      | 5.8         | 0.242   | -0.453 D/V   |
| #2969 Riverside/Second-Leibrandt     | A    | 7.5         | 0.097   | A      | 8.4         | 0.316   | + 0.219 V/C  |
| #2970 Riverside/3rd_St               | C    | 34.4        | 0.800   | F      | 81.8        | 1.087   | +47.360 D/V  |
| #2971 Riverside/San_Lorenzo_Blvd     | C    | 28.8        | 0.665   | D      | 50.7        | 1.009   | +21.900 D/V  |
| #2972 Ocean_St/E_Cliff_Dr            | E    | 63.6        | 1.057   | F      | 137.8       | 1.268   | +74.129 D/V  |
| #2973 Seabright/Murray               | D    | 44.7        | 0.877   | E      | 66.3        | 1.026   | +21.586 D/V  |
| #2974 Swift/Delaware                 | B    | 10.9        | 0.500   | F      | 214.4       | 2.105   | + 1.605 V/C  |
| #2975 Seventh/Soquel                 |      | 0.0         | 0.000   | C      | 20.7        | 0.073   | +20.659 D/V  |
| #2976 Seventh/Capitola               |      | 0.0         | 0.000   | B      | 15.8        | 0.134   | +15.810 D/V  |
| #2977 Seventh/Brommer                |      | 0.0         | 0.000   | A      | 7.7         | 0.136   | + 0.136 V/C  |

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| Intersection          | Base |             |         | Future |             |         | Change<br>in |
|-----------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                       | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2978 Seventh/Eaton   |      | 0.0         | 0.000   | C      | 20.9        | 0.099   | +20.934 D/V  |
| #2979 Seventh/E_Cliff |      | 0.0         | 0.000   | A      | 7.4         | 0.029   | + 0.029 V/C  |



Impact Analysis Report  
Level Of Service

| Intersection                         | LOS | Base        |         | LOS | Future      |         | Change<br>in |
|--------------------------------------|-----|-------------|---------|-----|-------------|---------|--------------|
|                                      |     | Del/<br>Veh | V/<br>C |     | Del/<br>Veh | V/<br>C |              |
| #2901 Western_Dr/High_St             | D   | 34.9        | 0.442   | F   | 227.7       | 1.062   | +192.790 D/  |
| #2902 Bay-Coolidge/High              | C   | 33.6        | 0.901   | F   | 103.3       | 1.264   | +69.741 D/V  |
| #2903 High/Moore                     | A   | 4.8         | 0.499   | A   | 5.3         | 0.663   | + 0.528 D/V  |
| #2904 High/Laurent                   | F   | 53.4        | 1.045   | F   | 196.3       | 1.531   | + 0.486 V/C  |
| #2905 River/Potrero                  | B   | 17.8        | 0.570   | B   | 19.7        | 0.753   | + 1.974 D/V  |
| #2906 River-Hwy_9/Hwy_1              | E   | 75.4        | 0.874   | F   | 244.5       | 1.555   | +169.071 D/  |
| #2907 River/Fern                     | B   | 13.8        | 0.444   | F   | OVRFL       | 1.259   | + +Inf D/V   |
| #2908 River/Encinal                  | E   | 61.4        | 1.038   | F   | 202.7       | 1.728   | +141.260 D/  |
| #2909 Ocean-Hwy_17/Plymouth-Ocean_Ex | C   | 31.4        | 0.651   | D   | 36.9        | 0.853   | + 5.440 D/V  |
| #2910 Market/Goss-Isbel              | B   | 12.6        | 0.538   | C   | 16.8        | 0.704   | + 0.166 V/C  |
| #2911 N.Branciforte/Goss             | B   | 14.5        | 0.617   | C   | 18.9        | 0.728   | + 0.111 V/C  |
| #2912 Morrissey_Bldv/Fairmount_Av    | A   | 8.0         | 0.469   | B   | 10.3        | 0.559   | + 2.325 D/V  |
| #2913 Bay/Nobel-Iowa                 | B   | 11.5        | 0.498   | B   | 13.0        | 0.652   | + 1.496 D/V  |
| #2914 Bay_St/Escalona_Dr             | F   | 739.8       | 1.937   | F   | OVRFL       | 2.193   | + 1.8E+0308  |
| #2915 Bay_St/King_St                 | B   | 13.0        | 0.786   | D   | 53.4        | 1.295   | +40.415 D/V  |
| #2916 King_St/Laurel_St              | B   | 14.8        | 0.702   | F   | 55.6        | 1.121   | + 0.419 V/C  |
| #2917 Storey/King                    | B   | 14.5        | 0.593   | F   | 93.2        | 1.294   | + 0.701 V/C  |
| #2918 Shaffer/Highway_1              | B   | 12.5        | 0.219   | C   | 18.9        | 0.485   | + 6.354 D/V  |
| #2919 Western/Highway_1              | B   | 14.5        | 0.554   | C   | 24.6        | 0.845   | +10.090 D/V  |
| #2920 Swift/Mission                  | B   | 15.6        | 0.529   | E   | 72.2        | 1.142   | +56.691 D/V  |
| #2921 Miramar/Mission                | B   | 17.0        | 0.624   | D   | 41.7        | 1.045   | +24.668 D/V  |
| #2922 Almar-Younglove/Mission        | B   | 10.0        | 0.364   | C   | 25.2        | 0.889   | +15.167 D/V  |
| #2923 Bay/Mission                    | D   | 46.8        | 0.882   | F   | 225.7       | 1.515   | +178.871 D/  |
| #2924 Laurel/Mission                 | C   | 23.9        | 0.688   | F   | 119.1       | 1.315   | +95.250 D/V  |
| #2925 Mission/Walnut                 | B   | 15.1        | 0.526   | D   | 52.5        | 1.051   | +37.394 D/V  |

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| Intersection                    | Base |             |         | Future |             |         | Change<br>in |
|---------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                 | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2926 King/Mission              | C    | 30.5        | 0.795   | F      | 155.4       | 1.313   | +124.907 D/  |
| #2927 Chestnut/Mission          | D    | 40.7        | 0.837   | F      | 164.8       | 1.380   | +124.038 D/  |
| #2928 N_Pacific/River           | B    | 10.9        | 0.507   | B      | 14.3        | 0.809   | + 3.487 D/V  |
| #2929 Center/Mission            | C    | 30.8        | 0.804   | C      | 22.3        | 0.753   | -8.559 D/V   |
| #2930 Pacific/Water-Mission     | B    | 19.9        | 0.455   | C      | 24.8        | 0.742   | + 4.861 D/V  |
| #2931 River/Water               | C    | 29.2        | 0.693   | D      | 49.4        | 0.992   | +20.221 D/V  |
| #2932 Ocean/Washburn-Keenan     | A    | 4.3         | 0.571   | B      | 13.3        | 0.785   | + 9.040 D/V  |
| #2933 Ocean/Water               | E    | 67.9        | 1.050   | F      | 172.7       | 1.464   | +104.805 D/  |
| #2934 Market/Water              | C    | 21.9        | 0.727   | C      | 34.2        | 0.942   | +12.339 D/V  |
| #2935 N_Branciforte/Water       | D    | 35.6        | 0.808   | E      | 76.1        | 1.129   | +40.517 D/V  |
| #2936 Seabright/Water           | F    | 84.0        | 0.497   | F      | OVRFL       | 3.234   | +1348.311 D  |
| #2937 Morrissey/Soquel/Water    | C    | 25.8        | 0.811   | D      | 43.2        | 1.002   | +17.367 D/V  |
| #2938 Frederick/Soquel          | C    | 27.4        | 0.885   | E      | 55.7        | 1.090   | +28.303 D/V  |
| #2939 Hagemann-Trevethan/Soquel | A    | 8.2         | 0.667   | B      | 11.4        | 0.821   | + 3.229 D/V  |
| #2940 Park/Soquel               | B    | 11.1        | 0.820   | C      | 20.6        | 0.977   | + 9.530 D/V  |
| #2941 Capitola_Rd/Soquel_Av     | C    | 23.5        | 0.596   | C      | 25.4        | 0.684   | + 1.846 D/V  |
| #2942 La_Fonda_Av/Soquel_Av     | B    | 10.4        | 0.280   | B      | 10.8        | 0.315   | + 0.397 D/V  |
| #2943 California_Ave/Bay        | F    | 60.0        | 1.100   | F      | 188.5       | 1.567   | + 0.467 V/C  |
| #2944 California_St/Bay         | F    | 389.4       | 1.614   | F      | OVRFL       | 3.540   | +936.660 D/  |
| #2945 California_St/Laurel_St   | C    | 20.0        | 0.621   | C      | 33.5        | 0.937   | +13.499 D/V  |
| #2946 Chestnut/Laurel           | B    | 16.9        | 0.628   | C      | 31.9        | 0.926   | +15.027 D/V  |
| #2947 Center/Laurel             | B    | 15.6        | 0.606   | C      | 25.3        | 0.907   | + 9.619 D/V  |
| #2948 Cedar/Laurel              | C    | 16.1        | 0.256   | D      | 27.3        | 0.443   | +11.281 D/V  |
| #2949 Pacific/Laurel            | B    | 18.5        | 0.696   | D      | 46.0        | 1.002   | +27.489 D/V  |
| #2950 Front/Laurel              | C    | 26.1        | 0.689   | D      | 41.8        | 0.977   | +15.691 D/V  |
| #2951 Front/Metro_Center        | A    | 2.7         | 0.415   | A      | 2.6         | 0.528   | -0.055 D/V   |

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| Intersection                         | Base |             |         | Future |             |         | Change<br>in |
|--------------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                      | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2952 Front/Cathcart                 | A    | 6.5         | 0.379   | A      | 9.0         | 0.496   | + 2.465 D/V  |
| #2953 Front/Soquel                   | C    | 25.3        | 0.552   | C      | 33.3        | 0.824   | + 7.945 D/V  |
| #2954 Front/Cooper                   | A    | 8.3         | 0.441   | A      | 9.7         | 0.583   | + 1.377 D/V  |
| #2955 River_S/Soquel                 | B    | 17.6        | 0.526   | B      | 19.1        | 0.681   | + 1.500 D/V  |
| #2956 Riverside-Dakota/Soquel        | A    | 9.0         | 0.340   | A      | 7.5         | 0.422   | -1.541 D/V   |
| #2957 Ocean_St/Soquel_Av             | D    | 39.9        | 0.644   | D      | 51.3        | 0.906   | +11.413 D/V  |
| #2958 Branciforte/Soquel             | C    | 22.5        | 0.748   | E      | 67.0        | 1.071   | +44.550 D/V  |
| #2959 Seabright/Soquel               | C    | 32.0        | 0.823   | D      | 42.4        | 0.935   | +10.437 D/V  |
| #2960 San_Lorenzo_Bld/Broadway(Laur  | B    | 11.8        | 0.614   | B      | 19.2        | 0.879   | + 7.401 D/V  |
| #2961 Ocean_St/Broadway              | C    | 33.5        | 0.740   | F      | 95.1        | 1.165   | +61.556 D/V  |
| #2962 S_Branciforte/Broadway         | B    | 11.6        | 0.671   | B      | 18.2        | 0.879   | + 6.580 D/V  |
| #2963 Seabright/Broadway             | B    | 14.3        | 0.717   | C      | 29.7        | 0.967   | +15.426 D/V  |
| #2964 Pacific-Center/W_Cliff-Pacific | B    | 12.1        | 0.541   | C      | 15.5        | 0.699   | + 0.158 V/C  |
| #2965 W_Cliff/Bay                    | C    | 15.8        | 0.633   | D      | 25.9        | 0.869   | + 0.237 V/C  |
| #2966 Pacific/Beach                  | C    | 17.6        | 0.771   | E      | 44.8        | 1.093   | + 0.322 V/C  |
| #2967 Cliff/Beach                    | B    | 10.8        | 0.400   | B      | 13.4        | 0.560   | + 0.160 V/C  |
| #2968 Riverside/Beach                | A    | 6.2         | 0.077   | A      | 7.3         | 0.169   | + 1.090 D/V  |
| #2969 Riverside/Second-Leibrandt     | A    | 7.5         | 0.097   | A      | 7.8         | 0.153   | + 0.056 V/C  |
| #2970 Riverside/3rd_St               | C    | 34.4        | 0.800   | D      | 47.4        | 0.946   | +13.027 D/V  |
| #2971 Riverside/San_Lorenzo_Bld      | C    | 28.8        | 0.665   | D      | 38.0        | 0.905   | + 9.223 D/V  |
| #2972 Ocean_St/E_Cliff_Dr            | E    | 63.6        | 1.057   | F      | 120.8       | 1.182   | +57.180 D/V  |
| #2973 Seabright/Murray               | D    | 43.7        | 0.877   | E      | 64.8        | 1.022   | +21.156 D/V  |
| #2974 Swift/Delaware                 | B    | 10.9        | 0.500   | F      | 407.5       | 2.958   | + 2.458 V/C  |
| #2975 Seventh/Soquel                 | C    | 23.3        | 0.747   | C      | 26.5        | 0.817   | + 3.214 D/V  |
| #2976 Seventh/Capitola               | C    | 26.8        | 0.609   | C      | 27.8        | 0.720   | + 0.924 D/V  |
| #2977 Seventh/Brommer                | C    | 18.3        | 0.713   | D      | 34.6        | 0.926   | + 0.213 V/C  |

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| Intersection          | Base |             |         | Future |             |         | Change<br>in |
|-----------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                       | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2978 Seventh/Eaton   | D    | 36.5        | 0.844   | D      | 46.8        | 0.933   | +10.313 D/V  |
| #2979 Seventh/E_Cliff | C    | 15.8        | 0.677   | C      | 16.7        | 0.709   | + 0.032 V/C  |

Impact Analysis Report  
Level Of Service

| Intersection                         | Base |             |         | Future |             |         | Change<br>in |
|--------------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                      | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2901 Western_Dr/High_St             | D    | 34.9        | 0.442   | F      | 69.5        | 0.678   | +34.657 D/V  |
| #2902 Bay-Coolidge/High              | C    | 33.6        | 0.901   | D      | 39.0        | 0.947   | + 5.359 D/V  |
| #2903 High/Moore                     | A    | 4.8         | 0.499   | A      | 4.8         | 0.517   | -0.055 D/V   |
| #2904 High/Laurent                   | F    | 53.4        | 1.045   | F      | 90.4        | 1.178   | + 0.134 V/C  |
| #2905 River/Potrero                  | B    | 17.8        | 0.570   | B      | 19.3        | 0.731   | + 1.506 D/V  |
| #2906 River-Hwy_9/Hwy_1              | E    | 75.4        | 0.874   | F      | 178.0       | 1.373   | +102.589 D/  |
| #2907 River/Fern                     | B    | 13.8        | 0.444   | F      | 85.9        | 1.495   | +72.083 D/V  |
| #2908 River/Encinal                  | E    | 61.4        | 1.038   | F      | 171.8       | 1.570   | +110.383 D/  |
| #2909 Ocean-Hwy_17/Plymouth-Ocean_Ex | C    | 31.4        | 0.651   | D      | 35.6        | 0.823   | + 4.184 D/V  |
| #2910 Market/Goss-Isbel              | B    | 12.6        | 0.538   | C      | 16.1        | 0.688   | + 0.149 V/C  |
| #2911 N.Branciforte/Goss             | B    | 14.5        | 0.617   | C      | 18.6        | 0.726   | + 0.109 V/C  |
| #2912 Morrissey_Bldv/Fairmount_Av    | A    | 8.0         | 0.469   | A      | 9.8         | 0.532   | + 1.780 D/V  |
| #2913 Bay/Nobel-Iowa                 | B    | 11.5        | 0.498   | B      | 12.7        | 0.542   | + 1.107 D/V  |
| #2914 Bay_St/Escalona_Dr             | F    | 739.8       | 1.937   | F      | OVRFL       | 5.115   | + 1.8E+0308  |
| #2915 Bay_St/King_St                 | B    | 13.0        | 0.786   | C      | 22.2        | 0.920   | + 9.159 D/V  |
| #2916 King_St/Laurel_St              | B    | 14.8        | 0.702   | C      | 22.0        | 0.847   | + 0.145 V/C  |
| #2917 Storey/King                    | B    | 14.5        | 0.593   | C      | 21.9        | 0.781   | + 0.187 V/C  |
| #2918 Shaffer/Highway_1              | B    | 12.5        | 0.219   | C      | 16.7        | 0.399   | + 4.168 D/V  |
| #2919 Western/Highway_1              | B    | 14.5        | 0.554   | B      | 18.2        | 0.728   | + 3.649 D/V  |
| #2920 Swift/Mission                  | B    | 15.6        | 0.529   | D      | 37.3        | 0.974   | +21.695 D/V  |
| #2921 Miramar/Mission                | B    | 17.0        | 0.624   | C      | 29.6        | 0.956   | +12.553 D/V  |
| #2922 Almar-Younglove/Mission        | B    | 10.0        | 0.364   | B      | 18.8        | 0.756   | + 8.806 D/V  |
| #2923 Bay/Mission                    | D    | 46.8        | 0.882   | F      | 144.9       | 1.297   | +98.067 D/V  |
| #2924 Laurel/Mission                 | C    | 23.9        | 0.688   | E      | 73.7        | 1.147   | +49.821 D/V  |
| #2925 Mission/Walnut                 | B    | 15.1        | 0.526   | C      | 30.8        | 0.906   | +15.674 D/V  |

# APPENDIX C

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| Intersection                    | Base |             |         | Future |             |         | Change<br>in |
|---------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                 | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2926 King/Mission              | C    | 30.5        | 0.795   | E      | 73.0        | 1.104   | +42.512 D/V  |
| #2927 Chestnut/Mission          | D    | 40.7        | 0.837   | F      | 104.6       | 1.180   | +63.839 D/V  |
| #2928 N_Pacific/River           | B    | 10.9        | 0.507   | B      | 13.5        | 0.775   | + 2.598 D/V  |
| #2929 Center/Mission            | C    | 30.8        | 0.804   | C      | 21.6        | 0.711   | -9.234 D/V   |
| #2930 Pacific/Water-Mission     | B    | 19.9        | 0.455   | C      | 24.6        | 0.708   | + 4.676 D/V  |
| #2931 River/Water               | C    | 29.2        | 0.693   | D      | 42.9        | 0.922   | +13.732 D/V  |
| #2932 Ocean/Washburn-Keenan     | A    | 4.3         | 0.571   | B      | 11.9        | 0.759   | + 7.606 D/V  |
| #2933 Ocean/Water               | E    | 67.9        | 1.050   | F      | 152.6       | 1.399   | +84.713 D/V  |
| #2934 Market/Water              | C    | 21.9        | 0.727   | C      | 31.2        | 0.909   | + 9.322 D/V  |
| #2935 N_Branciforte/Water       | D    | 35.6        | 0.808   | E      | 61.2        | 1.056   | +25.600 D/V  |
| #2936 Seabright/Water           | F    | 84.0        | 0.497   | F      | 976.1       | 2.353   | +892.144 D/  |
| #2937 Morrissey/Soquel/Water    | C    | 25.8        | 0.811   | D      | 37.8        | 0.969   | +11.954 D/V  |
| #2938 Frederick/Soquel          | C    | 27.4        | 0.885   | D      | 48.1        | 1.054   | +20.709 D/V  |
| #2939 Hagemann-Trevethan/Soquel | A    | 8.2         | 0.667   | B      | 10.8        | 0.802   | + 2.642 D/V  |
| #2940 Park/Soquel               | B    | 11.1        | 0.820   | B      | 18.1        | 0.955   | + 6.961 D/V  |
| #2941 Capitola_Rd/Soquel_Av     | C    | 23.5        | 0.596   | C      | 24.9        | 0.671   | + 1.424 D/V  |
| #2942 La_Fonda_Av/Soquel_Av     | B    | 10.4        | 0.280   | B      | 10.9        | 0.316   | + 0.500 D/V  |
| #2943 California_Ave/Bay        | F    | 60.0        | 1.100   | F      | 139.7       | 1.390   | + 0.290 V/C  |
| #2944 California_St/Bay         | F    | 389.4       | 1.614   | F      | 929.2       | 2.717   | +539.864 D/  |
| #2945 California_St/Laurel_St   | C    | 20.0        | 0.621   | C      | 26.7        | 0.850   | + 6.661 D/V  |
| #2946 Chestnut/Laurel           | B    | 16.9        | 0.628   | C      | 24.4        | 0.838   | + 7.579 D/V  |
| #2947 Center/Laurel             | B    | 15.6        | 0.606   | C      | 20.4        | 0.820   | + 4.737 D/V  |
| #2948 Cedar/Laurel              | C    | 16.1        | 0.256   | C      | 22.8        | 0.384   | + 6.755 D/V  |
| #2949 Pacific/Laurel            | B    | 18.5        | 0.696   | C      | 32.5        | 0.926   | +13.985 D/V  |
| #2950 Front/Laurel              | C    | 26.1        | 0.689   | C      | 34.6        | 0.888   | + 8.463 D/V  |
| #2951 Front/Metro_Center        | A    | 2.7         | 0.415   | A      | 2.6         | 0.520   | -0.073 D/V   |

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| Intersection                         | Base |             |         | Future |             |         | Change<br>in |
|--------------------------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                                      | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2952 Front/Cathcart                 | A    | 6.5         | 0.379   | A      | 9.0         | 0.492   | + 2.463 D/V  |
| #2953 Front/Soquel                   | C    | 25.3        | 0.552   | C      | 32.4        | 0.801   | + 7.124 D/V  |
| #2954 Front/Cooper                   | A    | 8.3         | 0.441   | A      | 9.6         | 0.578   | + 1.253 D/V  |
| #2955 River_S/Soquel                 | B    | 17.6        | 0.526   | B      | 18.6        | 0.651   | + 1.044 D/V  |
| #2956 Riverside-Dakota/Soquel        | A    | 9.0         | 0.340   | A      | 7.7         | 0.412   | -1.377 D/V   |
| #2957 Ocean_St/Soquel_Av             | D    | 39.9        | 0.644   | D      | 48.4        | 0.870   | + 8.485 D/V  |
| #2958 Branciforte/Soquel             | C    | 22.5        | 0.748   | D      | 51.2        | 1.011   | +28.742 D/V  |
| #2959 Seabright/Soquel               | C    | 32.0        | 0.823   | D      | 39.6        | 0.912   | + 7.619 D/V  |
| #2960 San_Lorenzo_Bldv/Broadway(Laur | B    | 11.8        | 0.614   | B      | 15.8        | 0.797   | + 4.029 D/V  |
| #2961 Ocean_St/Broadway              | C    | 33.5        | 0.740   | E      | 67.0        | 1.058   | +33.456 D/V  |
| #2962 S_Branciforte/Broadway         | B    | 11.6        | 0.671   | B      | 14.1        | 0.784   | + 2.495 D/V  |
| #2963 Seabright/Broadway             | B    | 14.3        | 0.717   | B      | 18.4        | 0.837   | + 4.031 D/V  |
| #2964 Pacific-Center/W_Cliff-Pacific | B    | 12.1        | 0.541   | B      | 14.9        | 0.679   | + 0.139 V/C  |
| #2965 W_Cliff/Bay                    | C    | 15.8        | 0.633   | C      | 22.3        | 0.804   | + 0.171 V/C  |
| #2966 Pacific/Beach                  | C    | 17.6        | 0.771   | E      | 36.2        | 1.028   | + 0.257 V/C  |
| #2967 Cliff/Beach                    | B    | 10.8        | 0.400   | B      | 13.4        | 0.560   | + 0.160 V/C  |
| #2968 Riverside/Beach                | A    | 6.2         | 0.077   | A      | 7.3         | 0.169   | + 1.090 D/V  |
| #2969 Riverside/Second-Leibbrandt    | A    | 7.5         | 0.097   | A      | 7.8         | 0.156   | + 0.060 V/C  |
| #2970 Riverside/3rd_St               | C    | 34.4        | 0.800   | D      | 47.3        | 0.945   | +12.858 D/V  |
| #2971 Riverside/San_Lorenzo_Bldv     | C    | 28.8        | 0.665   | C      | 35.0        | 0.868   | + 6.191 D/V  |
| #2972 Ocean_St/E_Cliff_Dr            | E    | 63.6        | 1.057   | F      | 110.1       | 1.153   | +46.433 D/V  |
| #2973 Seabright/Murray               | D    | 43.7        | 0.877   | E      | 59.8        | 0.997   | +16.121 D/V  |
| #2974 Swift/Delaware                 | B    | 10.9        | 0.500   | F      | 226.7       | 2.180   | + 1.680 V/C  |
| #2975 Seventh/Soquel                 | C    | 23.3        | 0.747   | C      | 26.4        | 0.814   | + 3.063 D/V  |
| #2976 Seventh/Capitola               | C    | 26.8        | 0.609   | C      | 27.8        | 0.704   | + 0.998 D/V  |
| #2977 Seventh/Brommer                | C    | 18.3        | 0.713   | D      | 31.1        | 0.909   | + 0.197 V/C  |

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| Intersection          | Base |             |         | Future |             |         | Change<br>in |
|-----------------------|------|-------------|---------|--------|-------------|---------|--------------|
|                       | LOS  | Del/<br>Veh | V/<br>C | LOS    | Del/<br>Veh | V/<br>C |              |
| #2978 Seventh/Eaton   | D    | 36.5        | 0.844   | D      | 42.0        | 0.899   | + 5.553 D/V  |
| #2979 Seventh/E_Cliff | C    | 15.8        | 0.677   | C      | 16.8        | 0.709   | + 0.032 V/C  |



# Memorandum

**To:** Chris Schneider  
**From:** Ron Marquez  
**Date:** August 1, 2011  
**Re:** Mitigation Measures for General Plan

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The purpose of this memorandum is to document the approach taken to identify the mitigation measures for the impacted intersections in the analysis of the General Plan buildout and cumulative buildout. For purposes of consistency I have used Synchro software to calculate the level of service for the intersections that needed modification.

The general plan buildout analysis identified 21 intersections that did not meet the desired level of service with the traffic volumes added with the buildout of the general plan. The development potential was provided by the consultant working on the General Plan for the Planning Department. An attempt was made to identify mitigation measures that would be reasonable to implement. Eight of those impacted intersection could not easily be mitigated although three of those intersections reflect the level of service of a left turn movement from a stop sign.

The analysis of cumulative traffic which included the buildout and the growth of University traffic identified 26 intersection below the desired criteria. Of these intersections 15 intersections could be mitigated to acceptable levels.

The modifications proposed for the following intersections could not fully mitigate the impacts of the proposed development.

- o Western Dr at High St (Only minor left turn movement)
- o Route 1 at Route 9
- o Bay St at Mission St
- o Laurel St at Mission St
- o King St/Union St at Mission St
- o Chestnut St at Mission St
- o Ocean St at Water St

- o N. Branciforte Dr at Water St
- o Seabright Ave at Water St (Only minor left turn movement)
- o California Ave at Bay St (Only minor left turn movement)
- o Seabright Ave at Murray St

Attached are the spreadsheets which presents the level of service calculations for the buildout and cumulative development scenarios. Hard copies of the analysis work sheets are also provided for your files.

City of Santa Cruz General Plan Traffic Analysis  
Level of Service and Mitigation Study Intersections  
Proposed General Plan

| Intersection                         | Control    | Existing<br>LOS | Existing<br>Delay | Buildout<br>LOS | Buildout<br>Delay | Buildout<br>Mitigation                                             | Mitigated<br>LOS | Mitigated<br>Delay |
|--------------------------------------|------------|-----------------|-------------------|-----------------|-------------------|--------------------------------------------------------------------|------------------|--------------------|
| #2901 Western Dr/High St             | Stop       | E               | 45.9              | F               | 69.5              | TWLT                                                               | E                | 36.1               |
| #2902 Bay-Coolidge/High              | Signal     | D               | 35.4              | D               | 39.3              |                                                                    |                  |                    |
| #2903 Moore/High                     | Signal     | A               | 4.8               | A               | 4.7               |                                                                    |                  |                    |
| #2904 High/Laurent                   | 4-way stop | F               | 59.6              | F               | 94.1              | Signalize                                                          | B                | 18.2               |
| #2905 River/Potrero                  | Signal     | B               | 18                | B               | 19.8              |                                                                    |                  |                    |
| #2906 River-Hwy 9/Hwy 1              | Signal     | F               | 89.9              | F               | 209               | Ebnd 2l 3t 1r, wbnd 2l 3t 1r, nbnd 1t 1t 2r, sbnd 2l 1t 1t 1r      | F                | 80.8               |
| #2907 River/Fern                     | Stop       | B               | 14.5              | F               | Overl             | Signalize no l esbnd                                               | B                | 15.1               |
| #2908 River/Encinal                  | Signal     | E               | 73.9              | F               | 198.7             | Ebnd 1l 1t 1r, wbnd 1l 1t, nbnd 1l, 1t, 1r, sbnd 1l, 1t, 1r        | D                | 37.9               |
| #2909 Ocean-Hwy 17/Plymouth-Ocean_Ex | Signal     | C               | 31.5              | D               | 37.5              |                                                                    |                  |                    |
| #2910 Market/Goss-Isabel             | 4-way stop | B               | 12.8              | C               | 16.8              |                                                                    |                  |                    |
| #2911 N.Branciforte/Goss             | 4-way stop | B               | 14.6              | C               | 19.5              |                                                                    |                  |                    |
| #2912 Morrissey Blvd/Fairmount_Av    | Signal     | A               | 8                 | B               | 10.3              |                                                                    |                  |                    |
| #2913 Bay/Nobel-Iowa                 | Signal     | B               | 11.6              | B               | 13.2              |                                                                    |                  |                    |
| #2914 Bay St/Escalona Dr             | 2-way stop | F               | 182.2             | F               | Overl             | Escalona right turns only                                          | C                | 18.3               |
| #2915 Bay St/King St                 | Signal     | B               | 13.6              | C               | 27.7              |                                                                    |                  |                    |
| #2916 King St/Laurel St              | 4-way stop | B               | 15                | D               | 26.1              |                                                                    |                  |                    |
| #2917 Storey/King                    | 3-way stop | B               | 15                | D               | 25.4              |                                                                    |                  |                    |
| #2918 Shaffer/Highway 1              | Stop       | B               | 12.1              | C               | 16.8              |                                                                    |                  |                    |
| #2919 Western/Highway 1              | Signal     | B               | 15.3              | B               | 18.7              |                                                                    |                  |                    |
| #2920 Swift/Mission                  | Signal     | B               | 19.1              | D               | 41.4              |                                                                    |                  |                    |
| #2921 Miramar/Mission                | Signal     | B               | 19                | C               | 31.2              |                                                                    |                  |                    |
| #2922 Almar-Younglove/Mission        | Signal     | B               | 10.7              | C               | 20.1              |                                                                    |                  |                    |
| #2923 Bay/Mission                    | Signal     | E               | 55.6              | F               | 164.1             | Ebnd 1l, 2t, 1r, wbnd 1l, 2t, 1r, nbnd 1l, 1t, 1r, sbnd 2l, 1t, 1r | E                | 57.7               |
| #2924 Laurel/Mission                 | Signal     | C               | 24.9              | F               | 87.9              | Add Ebnd r                                                         | F                | 85.6               |
| #2925 Mission/Walnut                 | Signal     | B               | 17.8              | D               | 35.6              |                                                                    |                  |                    |
| #2926 King/Mission                   | Signal     | C               | 32.7              | F               | 90.5              | Ebnd no l, 2t, 1r, wbnd 1l, 1t, 1r, nbnd 1t, sbnd 2l 1t 1r         | D                | 50.8               |
| #2927 Chestnut/Mission               | Signal     | D               | 42.9              | F               | 121.6             | Ebnd 2l, 2t, 1r, wbnd 1l, 1t, 1r, nbnd 1l, 1t, 1r, sbnd 1l, 2t, 2r | F                | 112.9              |
| #2928 N Pacific/River                | Signal     | B               | 11.6              | B               | 14.5              |                                                                    |                  |                    |
| #2929 Center/Mission                 | Signal     | C               | 20.5              | C               | 22                |                                                                    |                  |                    |

| Intersection                         | Control    | Existing LOS | Existing Delay | Buildout LOS | Buildout Delay | Buildout Mitigation                                                | Mitigated LOS | Mitigated Delay |
|--------------------------------------|------------|--------------|----------------|--------------|----------------|--------------------------------------------------------------------|---------------|-----------------|
| #2930 Pacific/Water-Mission          | Signal     | C            | 20.4           | C            | 25.2           |                                                                    |               |                 |
| #2931 River/Water                    | Signal     | C            | 30.1           | D            | 47             |                                                                    |               |                 |
| #2932 Ocean/Washburn-Keenan          | Signal     | A            | 4.4            | B            | 13.7           |                                                                    |               |                 |
| #2933 Ocean/Water                    | Signal     | E            | 73.6           | F            | 169.4          | Ebnd 2l, 2t, 1r, wbnd 1l, 2t, 1r, nbnd 1l, 2t, 1r, sbnd 2l, 2t, 1r | F             | 130.7           |
| #2934 Market/Water                   | Signal     | C            | 22.3           | C            | 32.9           |                                                                    |               |                 |
| #2935 N Branciforte/Water            | Signal     | D            | 36.6           | E            | 73.7           | Add ebnd l, nbnd r & sbnd r                                        | D             | 53.6            |
| #2936 Seabright/Water                | Stop       | F            | 112.9          | F            | Overl          | Extend TWLTL & add nbnd r                                          | E             | 39              |
| #2937 Morrissey/Soquel/Water         | Signal     | C            | 26.5           | D            | 42.7           |                                                                    |               |                 |
| #2938 Frederick/Soquel               | Signal     | C            | 28.6           | D            | 53.9           |                                                                    |               |                 |
| #2939 Hagemann-Trevethan/Soquel      | Signal     | A            | 8.4            | B            | 11.4           |                                                                    |               |                 |
| #2940 Park/Soquel                    | Signal     | B            | 11.6           | B            | 19.2           |                                                                    |               |                 |
| #2941 Capitola Rd/Soquel Av          | Signal     | C            | 23.9           | C            | 25.1           |                                                                    |               |                 |
| #2942 La Fonda Av/Soquel Av          | Signal     | B            | 10.3           | B            | 11             |                                                                    |               |                 |
| #2943 California Ave/Bay             | 3-way stop | F            | 67.6           | F            | 150.3          | Allow nbnd t free                                                  | D             | 26.4            |
| #2944 California St/Bay              | 3-way stop | F            | 43.4           | F            | Overl          | Allow sbnd t free                                                  | B             | 12.5            |
| #2945 California St/Laurel St        | Signal     | C            | 20.3           | C            | 28.9           |                                                                    |               |                 |
| #2946 Chestnut/Laurel                | Signal     | B            | 17.2           | C            | 28             |                                                                    |               |                 |
| #2947 Center/Laurel                  | Signal     | B            | 16             | C            | 22.7           |                                                                    |               |                 |
| #2948 Cedar/Laurel                   | 2-way stop | C            | 16.4           | D            | 25.3           |                                                                    |               |                 |
| #2949 Pacific/Laurel                 | Signal     | B            | 18.9           | D            | 39.8           |                                                                    |               |                 |
| #2950 Front/Laurel                   | Signal     | C            | 26.4           | D            | 38.2           |                                                                    |               |                 |
| #2951 Front/Metro Center             | Signal     | A            | 2.6            | A            | 2.6            |                                                                    |               |                 |
| #2952 Front/Cathcart                 | Signal     | A            | 6.6            | A            | 9.2            |                                                                    |               |                 |
| #2953 Front/Soquel                   | Signal     | C            | 25.5           | C            | 33.6           |                                                                    |               |                 |
| #2954 Front/Cooper                   | Signal     | A            | 9.6            | A            | 9.7            |                                                                    |               |                 |
| #2955 River St/Soquel                | Signal     | B            | 17.8           | B            | 19.1           |                                                                    |               |                 |
| #2956 Riverside-Dakota/Soquel        | Signal     | A            | 8.7            | A            | 7.5            |                                                                    |               |                 |
| #2957 Ocean St/Soquel Av             | Signal     | D            | 40.3           | D            | 51.4           |                                                                    |               |                 |
| #2958 Branciforte/Soquel             | Signal     | C            | 23.6           | E            | 67.6           | Esbnd 1 l, 1t, 1 tr, wbnd 1l, 1tr no split phase                   | C             | 24.5            |
| #2959 Seabright/Soquel               | Signal     | C            | 32.9           | D            | 42.7           |                                                                    |               |                 |
| #2960 San Lorenzo Blvd/Broadway/Laur | Signal     | B            | 11.9           | B            | 17.6           |                                                                    |               |                 |
| #2961 Ocean St/Broadway              | Signal     | C            | 34.3           | F            | 99.8           | Prohibit lfts from Ocean                                           | D             | 36.5            |
| #2962 S Branciforte/Broadway         | Signal     | B            | 11.7           | B            | 16.7           |                                                                    |               |                 |
| #2963 Seabright/Broadway             | Signal     | B            | 14.6           | C            | 30.1           |                                                                    |               |                 |
| #2964 Pacific-Center/W Cliff-Pacific | 4-way stop | B            | 12.2           | C            | 15.3           |                                                                    |               |                 |

| Intersection                     | Control    | Existing<br>LOS | Existing<br>Delay | Buildout<br>LOS | Buildout<br>Delay | Buildout<br>Mitigation       | Mitigated<br>LOS | Mitigated<br>Delay |
|----------------------------------|------------|-----------------|-------------------|-----------------|-------------------|------------------------------|------------------|--------------------|
| #2965 W. Cliff/Bay               | 3-way stop | C               | 16.2              | C               | 23.8              |                              |                  |                    |
| #2966 Pacific/Beach              | 3-way stop | C               | 20.9              | E               | 39.9              | Roundabout                   | C                |                    |
| #2967 Cliff/Beach                | 3-way stop | B               | 10.8              | B               | 13.4              |                              |                  |                    |
| #2968 Riverside/Beach            | Signal     | A               | 6.2               | A               | 7.3               |                              |                  |                    |
| #2969 Riverside/Second-Leibrandt | 4-way stop | A               | 7.5               | A               | 7.8               |                              |                  |                    |
| #2970 Riverside/3rd St           | Signal     | C               | 34.7              | D               | 47.8              |                              |                  |                    |
| #2971 Riverside/San Lorenzo Blvd | Signal     | C               | 28.9              | D               | 35.8              |                              |                  |                    |
| #2972 Ocean St/E. Cliff Dr       | Signal     | E               | 64.7              | F               | 113.9             | Add sbnd r                   | D                | 53.2               |
| #2973 Seabright/Murray           | Signal     | D               | 43.7              | E               | 62.7              | ADD wsbnd r, nbnd r & sbnd r | E                | 59.4               |
| #2974 Swift/Delaware             | 4-way stop | C               | 23.9              | F               | 241.6             | Roundabout/Signal            | C                | 20.1               |
| #2975 Seventh/Soquel             | Signal     | C               | 23.3              | C               | 26.5              |                              |                  |                    |
| #2976 Seventh/Capitola           | Signal     | C               | 26.8              | C               | 27.8              |                              |                  |                    |
| #2977 Seventh/Brommer            | 4-way stop | C               | 19.3              | D               | 32.3              |                              |                  |                    |
| #2978 Seventh/Eaton              | Signal     | D               | 36.8              | D               | 42.9              |                              |                  |                    |
| #2979 Seventh/E. Cliff           | 3-way stop | C               | 15.8              | C               | 16.8              |                              |                  |                    |

City of Santa Cruz General Plan Traffic Analysis  
Level of Service and Mitigation Study Intersections  
Proposed General Plan Buildout Cumulative

| Intersection                         | Control    | Existing LOS | Existing Delay | Cumulative LOS | Cumulative Delay | Cumulative Mitigation                                                 | Mitigated LOS | Mitigated Delay |
|--------------------------------------|------------|--------------|----------------|----------------|------------------|-----------------------------------------------------------------------|---------------|-----------------|
| #2901 Western Dr/High St             | Stop       | E            | 45.9           | F              | 227.7            | TWLT                                                                  | E             | 40.7            |
| #2902 Bay-Coolidge/High              | Signal     | D            | 35.4           | F              | 103.3            | Add wsbnd l                                                           | D             | 50.1            |
| #2903 Moore/High                     | Signal     | A            | 4.8            | A              | 5.3              |                                                                       |               |                 |
| #2904 High/Laurent                   | 4-way stop | F            | 59.6           | F              | 196.3            | Signalize                                                             | B             | 13.3            |
| #2905 River/Potrero                  | Signal     | B            | 18             | B              | 19.7             |                                                                       |               |                 |
| #2906 River-Hwy 9/Hwy 1              | Signal     | F            | 83.9           | F              | 244.5            | Ebnd 2l 3t 1r, wsbnd 2l 3t 1r, nbnd 1lt 1t 2r, sbnd 2l 1lt 1t 1r      | F             | 104.3           |
| #2907 River/Fern                     | Stop       | B            | 14.5           | F              | OVER             | Signalize no l esbnd                                                  | B             | 14.3            |
| #2908 River/Encinal                  | Signal     | E            | 73.9           | F              | 202.7            | Ebnd 1l 1tr 1r, wsbnd 1l 1tr, nbnd 1l, 1t, 1r, sbnd 2l 1lt, 1tr       | D             | 37.9            |
| #2909 Ocean-Hwy 17/Plymouth-Ocean_Ex | Signal     | C            | 31.5           | D              | 36.9             |                                                                       |               |                 |
| #2910 Market/Goss-Isbel              | 4-way stop | B            | 12.8           | C              | 16.8             |                                                                       |               |                 |
| #2911 N.Branciforte/Goss             | 4-way stop | B            | 14.6           | C              | 18.9             |                                                                       |               |                 |
| #2912 Morrissey Blvd/Fairmount_Av    | Signal     | A            | 8              | B              | 10.3             |                                                                       |               |                 |
| #2913 Bay/Nobel-Iowa                 | Signal     | B            | 11.6           | B              | 13               |                                                                       |               |                 |
| #2914 Bay St/Escolona Dr             | 2-way stop | F            | 762.2          | F              | OVER             | Escalona right turns only                                             | C             | 24.9            |
| #2915 Bay St/King St                 | Signal     | B            | 13.6           | D              | 53.4             |                                                                       |               |                 |
| #2916 King St/Laurel St              | 4-way stop | B            | 15             | F              | 56.6             | Add ebnd r                                                            | D             | 34.1            |
| #2917 Storey/King                    | 3-way stop | B            | 15             | F              | 93.2             | Add sbnd l                                                            | D             | 29.3            |
| #2918 Shaffer/Highway 1              | Stop       | B            | 12.1           | C              | 18.9             |                                                                       |               |                 |
| #2919 Western/Highway 1              | Signal     | B            | 15.3           | C              | 24.6             |                                                                       |               |                 |
| #2920 Swift/Mission                  | Signal     | B            | 19.1           | E              | 72.2             | Add nbnd r overlay                                                    | C             | 31              |
| #2921 Miramar/Mission                | Signal     | B            | 19             | D              | 41.7             |                                                                       |               |                 |
| #2922 Almar-Younglove/Mission        | Signal     | B            | 10.7           | C              | 25.2             |                                                                       |               |                 |
| #2923 Bay/Mission                    | Signal     | E            | 55.8           | F              | 222.5            | Ebnd 1l, 2t, 1r, wsbnd 1l, 2t, 1r, nbnd 1l, 1t, 1r, sbnd 2l 1lt, 1r   | F             | 81.2            |
| #2924 Laurel/Mission                 | Signal     | C            | 24.9           | F              | 139.1            | Add Ebnd r                                                            | F             | 109             |
| #2925 Mission/Walnut                 | Signal     | B            | 17.8           | D              | 52.5             |                                                                       |               |                 |
| #2926 King/Mission                   | Signal     | C            | 32.7           | F              | 155.4            | Ebnd no l, 2t, 1tr, wsbnd 1l, 1t, 1tr, nbnd 1lt, sbnd 2l 1lt          | E             | 85.9            |
| #2927 Chestnut/Mission               | Signal     | D            | 42.9           | F              | 164.5            | Ebnd 2l, 2t, 1r, wsbnd 1lt, 1t, 1r, nbnd 1l, 1t, 1tr, sbnd 1l, 2t, 2r | F             | 164.6           |
| #2928 N Pacific/River                | Signal     | B            | 11.6           | B              | 14.3             |                                                                       |               |                 |
| #2929 Center/Mission                 | Signal     | C            | 20.5           | C              | 22.3             |                                                                       |               |                 |

| Intersection                          | Control    | Existing LOS | Existing Delay | Cumulative LOS | Cumulative Delay | Cumulative Mitigation                         | Mitigated LOS | Mitigated Delay |
|---------------------------------------|------------|--------------|----------------|----------------|------------------|-----------------------------------------------|---------------|-----------------|
| #2930 Pacific/Water-Mission           | Signal     | C            | 20.4           | C              | 24.8             |                                               |               |                 |
| #2931 River/Water                     | Signal     | C            | 30.1           | D              | 49.4             |                                               |               |                 |
| #2932 Ocean/Washburn-Keenan           | Signal     | A            | 4.4            | B              | 13.3             |                                               |               |                 |
| #2933 Ocean/Water                     | Signal     | E            | 73.6           | F              | 172.7            | Ebnd 2l, 2t, 1r, wbnd 1l, 1r, sbnd 2l, 2t, 1r | F             | 135.1           |
| #2934 Market/Water                    | Signal     | C            | 22.3           | C              | 34.2             |                                               |               |                 |
| #2935 N Branciforte/Water             | Signal     | D            | 36.6           | E              | 76.1             | Add ebnd l, nbnd r & sbnd r                   | E             | 57.2            |
| #2936 Seabright/Water                 | Stop       | F            | 112.9          | F              | OVER             | Extend TWLTL & add nbnd r                     | E             | 41.1            |
| #2937 Morrissey/Soquel/Water          | Signal     | C            | 26.5           | D              | 43.2             |                                               |               |                 |
| #2938 Frederick/Soquel                | Signal     | C            | 28.6           | E              | 55.7             | Add nbnd r overlay                            | D             | 38.5            |
| #2939 Hagemann-Trevethan/Soquel       | Signal     | A            | 8.4            | B              | 11.4             |                                               |               |                 |
| #2940 Park/Soquel                     | Signal     | B            | 11.6           | C              | 20.6             |                                               |               |                 |
| #2941 Capitola Rd/Soquel Av           | Signal     | C            | 23.9           | C              | 25.4             |                                               |               |                 |
| #2942 La Fonda Av/Soquel Av           | Signal     | B            | 10.3           | B              | 10.8             |                                               |               |                 |
| #2943 California Ave/Bay              | 3-way stop | F            | 67.6           | F              | 188.5            | Allow nbnd t free                             | E             | 38.3            |
| #2944 California St/Bay               | 3-way stop | F            | 43.4           | F              | OVER             | Allow sbnd t free                             | B             | 13.9            |
| #2945 California St/Laurel St         | Signal     | C            | 20.3           | C              | 33.5             |                                               |               |                 |
| #2946 Chestnut/Laurel                 | Signal     | B            | 17.2           | C              | 31.9             |                                               |               |                 |
| #2947 Center/Laurel                   | Signal     | B            | 16             | C              | 25.3             |                                               |               |                 |
| #2948 Cedar/Laurel                    | 2-way stop | C            | 16.4           | D              | 27.3             |                                               |               |                 |
| #2949 Pacific/Laurel                  | Signal     | B            | 18.9           | D              | 46               |                                               |               |                 |
| #2950 Front/Laurel                    | Signal     | C            | 26.4           | D              | 41.8             |                                               |               |                 |
| #2951 Front/Metro Center              | Signal     | A            | 2.6            | A              | 2.6              |                                               |               |                 |
| #2952 Front/Cathcart                  | Signal     | A            | 6.6            | A              | 9                |                                               |               |                 |
| #2953 Front/Soquel                    | Signal     | C            | 25.5           | C              | 33.3             |                                               |               |                 |
| #2954 Front/Cooper                    | Signal     | A            | 9.6            | A              | 9.7              |                                               |               |                 |
| #2955 River St/Soquel                 | Signal     | B            | 17.8           | B              | 19.1             |                                               |               |                 |
| #2956 Riverside-Dakota/Soquel         | Signal     | A            | 8.7            | A              | 7.5              |                                               |               |                 |
| #2957 Ocean St/Soquel Av              | Signal     | D            | 40.3           | D              | 51.3             |                                               |               |                 |
| #2958 Branciforte/Soquel              | Signal     | C            | 23.6           | E              | 57               | Esbnd 1l, 1t, 1r, wbnd 1l, 1tr no split phase | C             | 24.8            |
| #2959 Seabright/Soquel                | Signal     | C            | 32.9           | D              | 42.4             |                                               |               |                 |
| #2960 San Lorenzo Blvd/Broadway/Laur  | Signal     | B            | 11.9           | B              | 19.2             |                                               |               |                 |
| #2961 Ocean St/Broadway               | Signal     | C            | 34.3           | F              | 95.1             | Prohibit lfts from Ocean                      | D             | 38.2            |
| #2962 S Branciforte/Broadway          | Signal     | B            | 11.7           | B              | 18.2             |                                               |               |                 |
| #2963 Seabright/Broadway              | Signal     | B            | 14.6           | C              | 29.7             |                                               |               |                 |
| #2964 Pacific-Center/W. Cliff-Pacific | 4-way stop | B            | 12.2           | C              | 15.5             |                                               |               |                 |

| Intersection                      | Control    | Existing LOS | Existing Delay | Cumulative LOS | Cumulative Delay | Cumulative Mitigation        | Mitigated LOS | Mitigated Delay |
|-----------------------------------|------------|--------------|----------------|----------------|------------------|------------------------------|---------------|-----------------|
| #2965 W. Cliff/Bay                | 3-way stop | C            | 16.2           | D              | 25.9             |                              |               |                 |
| #2966 Pacific/Beach               | 3-way stop | C            | 20.9           | E              | 44.8             | Roundabout                   | C             |                 |
| #2967 Cliff/Beach                 | 3-way stop | B            | 10.8           | B              | 13.4             |                              |               |                 |
| #2968 Riverside/Beach             | Signal     | A            | 6.2            | A              | 7.3              |                              |               |                 |
| #2969 Riverside/Second-Leibbrandt | 4-way stop | A            | 7.5            | A              | 7.8              |                              |               |                 |
| #2970 Riverside/3rd St            | Signal     | C            | 34.7           | D              | 47.4             |                              |               |                 |
| #2971 Riverside/San Lorenzo Blvd  | Signal     | C            | 28.9           | D              | 38               |                              |               |                 |
| #2972 Ocean St/E. Cliff Dr        | Signal     | E            | 64.7           | F              | 120.8            | Add sbnd r                   | D             | 49.1            |
| #2973 Seabright/Murray            | Signal     | D            | 43.7           | E              | 64.8             | ADD wsbnd r, nbnd r & sbnd r | E             | 64.5            |
| #2974 Swift/Delaware              | 4-way stop | C            | 23.9           | F              | 407.5            | Roundabout/Signal            | C             | 25.1            |
| #2975 Seventh/Soquel              | Signal     | C            | 23.3           | C              | 26.5             |                              |               |                 |
| #2976 Seventh/Capitola            | Signal     | C            | 26.8           | C              | 27.8             |                              |               |                 |
| #2977 Seventh/Brommer             | 4-way stop | C            | 19.3           | D              | 34.6             |                              |               |                 |
| #2978 Seventh/Eaton               | Signal     | D            | 36.8           | D              | 46.8             |                              |               |                 |
| #2979 Seventh/E. Cliff            | 3-way stop | C            | 15.8           | C              | 16.7             |                              |               |                 |