

APPENDIX G

Traffic Memo

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Memorandum

To: Chris Schneider, Stephanie Strelow

From: Ron Marquez, Traffic Engineer

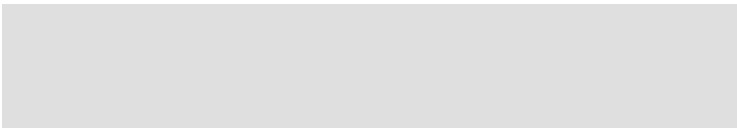


Date: January 29, 2020

Re: Wharf Master Plan Traffic Update

The memorandum documents the findings and conclusions of a traffic analysis based on the proposed buildout of the Wharf Master Plan for the City of Santa Cruz. The plan proposes a relatively small increase in commercial uses, additional public serving and access opportunities, expansion of boat docking facilities, and an increase in parking of approximately 50 spaces. The Santa Cruz Wharf is a rather unique traffic generator in the City. The site draws motorists, pedestrians and bicyclists from the local area as well as from outside the City throughout the year.

For purposes of this analysis the City has provided information for daily and hourly gate entries and exits for the years of 2014 and 2016. Most recently this daily information has not been available. The City provided fiscal year 2018/19 monthly totals of entries and exits. The recent data was compared to the monthly totals in 2014 and 2016. As a result the 2014 data was used to make the calculations of peak parking and trip generation.. Also available were turning movement counts for the intersections of Pacific-Beach (Wharf Entrance), Bay-West Cliff and Pacific - Center taken in April 2017. Of note is that the data from 2014 remained the highest of the data provided. For purposes of this memorandum the 2014 data was used to establish parking occupancy and typical trip generation rates. These counts were higher in average and overall volumes. Charts attached to the memorandum present the differences in the Wharf Activity. The most recent reduction may be attributed to the razing of one of the buildings on the wharf. The following general information can be derived from the 2014 data.

- Trip generation to the wharf varies from average month of 2800 vehicles per day to 3500 vehicles per day during peak months.
 - During the weekday 4 to 6 PM peak hours, trip generation is about 300 trips per hour with 60% entering during that time.
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- The peak movement in and out of the Wharf tends to be an hour or two after the traditional 4 to 6 PM peak hour. This reflects the dominant trip generation associated with the restaurant uses during this time.
- Of note the 4 to 6 PM peak hour trips in and out did not change much during the peak season. The additional volume during the course of the summer day came in the early afternoon and later into the evening.
- Peak auto parking occupancy in March (considered as an average month) ranged from 314 vehicles midweek, to 404 vehicles on Friday, and to 440 vehicles on Saturday. The peaks in July were very similar on Friday and Saturday.
- Peak auto parking occupancy during July was not significantly different but remained occupied for longer periods of time.
- The trip generation rate for the Wharf ranged from 47 trips per 1,000 gross square feet (gsf) of commercial area per day on average versus 58 trips per 1,000 gfs per day during summer peaks.
- The weekday PM peak hour trip generation rate was about 5 trips per hour per 1,000 gsf of development. This rate compares to that of a shopping center of similar size as provide by the Institute of Transportation Engineers in "Trip Generation Manual 9th edition". This trip rate incorporates the subsidiary uses on the wharf such as the public spaces and boat launching facilities.
- For purposes of this study three critical intersection were analyzed. The existing level of service was calculated as well as the existing plus project traffic and the cumulative traffic for each of the study intersections. The City Traffic Impact Study Guidelines recommend evaluating any General Plan critical intersection which will be affected by 25 or more new trips from the proposed project. No other critical intersections are anticipated will be measurably affected beyond the study intersections.
- The Wharf Master Plan identifies three new buildings (15,000 gsf) for publicly oriented uses and approximately 4,000 gsf of new commercial space. The Plan also provides a preliminary estimate that commercial space could increase by 20 to 30 percent over existing development as part of future remodels and second floor expansion. This would amount to an additional 18,000 gsf. The Plan anticipates from 10 to 15% increase in parking spaces due to restriping of existing parking areas. Implementation of the Master Plan could result in some increase in visitors to the Wharf due to proposed enhancement of existing public spaces, including expansion and increased public and private events at the Wharf. For purposes of this analysis a growth of 37,000 gsf is used. This accounts for the new commercial space and the potential development of second stories on existing buildings.

- Using this assumption the Wharf Master Plan at buildout would generate 1,739 new trips per day and 185 new trips during the weekday PM peak hour with 111 entering and 74 exiting during this time. A portion of these trips are pass-by trips, meaning trips already in the circulation system in the vicinity of the wharf. Therefore the new trip estimates are reduced for the adjoining intersections but not at the wharf entrance itself.
- Adding the new trips to the study intersections to existing counts and buildout volumes calculated in the General Plan traffic analysis provides the data for a new level of service calculations for existing plus project and cumulative scenarios respectively. The level of service calculated for each of the study intersections is reflected in the following table. It was noted that the traffic counts used in the General Plan were lower than existing counts. Therefore the 2017 turning movement counts are used to provide a conservative analysis of the cumulative analysis.

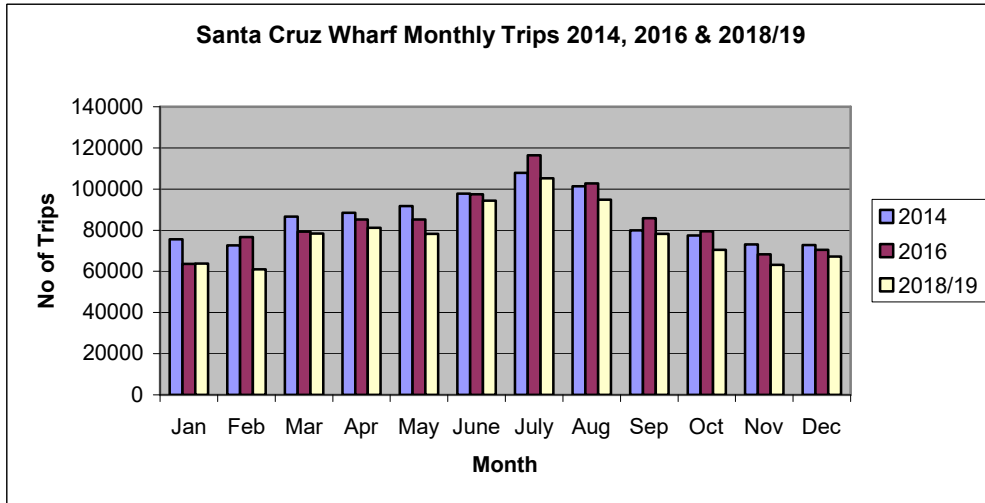
**Wharf Master Plan
Level of Service**

Intersection	Existing Delay / LOS	Plus Project Delay / LOS	Cumulative Delay / LOS
Pacific Beach Wharf	10.3 / B	12.0 / B	18.2 / C
Pacific Center Depot	11.6 / B	13.3 / B	20.9 / C
Bay W Cliff	41.2 / E	48.3 / E	80.8 / F
Bay W Cliff Signalized			11.5 / B
Bay W Cliff Roundabout			15.0 / C

Delay is measured in seconds and represents the average delay of all approaches to the intersection.

The Bay -West Cliff intersection can be improved to acceptable levels with either a signal or a modern roundabout design. The roundabout would require additional right-of-way.

Let me know if you have questions. The following figures graphically present the data available from the Wharf entries and exits recorded for 2014, 2016 and 2018/19. Also enclosed are the calculation sheets for the level of service analysis and the traffic count data for the study intersections.



	2014	2016	2018/2019
Year Total	1025372	1010782	935922
Monthly Average	85447.67	84231.83	77993.5
Daily Average	2832.519	2792.215	2585.42
Peak Month Daily Average	3480.968	3754.903	3392.645

