

Technical Memorandum

To: Merlone Geier Partners
From: Ravi Narayanan, P.E., T.E
Date: 09/26/2018
Re: **Deer Creek Village “North Site”, Petaluma, CA
Trip Generation Evaluation**
Job#: 369558

Introduction & Background

The Deer Creek Village Project, as evaluated in prior traffic studies and environmental documents approved by the City of Petaluma, envisions a mix of commercial and related uses on an approximately 36.5-acre site bounded by US 101, North McDowell Boulevard, Rainier Avenue, and existing development along the north side of Lynch Creek Way. According to the *Deer Creek Village Final Traffic Impact Analysis* (dated February 2011) included/referenced in the approved Environmental Impact Report (EIR) for the project, the proposed 343,998 square-foot (SF) center would include 174,170 SF of retail commercial (ITE code 820) uses (including shops, grocery stores, restaurant uses and a fitness center), 130,220 SF Home Improvement Superstore (ITE code 862), and 17,500 SF General Office (ITE code 710) use (including Bank), and generate approximately 10,155 new daily trips at full buildout.

At the present time, Merlone Geier Partners (MGP) is interested in evaluating trip generation impacts of a proposed development “alternative” that entails ‘replacing’ approximately 58,550 square feet of originally entitled retail type (ITE code 820) uses (including a 8,100 SF grocery store, 6,000 SF of retail shops and a 44,450 SF fitness center) on the portion of the site north of Deer Creek, with high-density residential (multi-family) uses comprising of 129 apartment housing units (ITE Code 220). This technical memorandum summarizes trip generation impacts that may be anticipated with the proposed alternative uses for the “North Site”.

Trip Generation Estimates

This evaluation considers the trip generation associated with the 58,550 square feet of originally entitled retail use per the approved EIR as the “Baseline” condition, and the anticipated trip generation with the proposed residential development as the “Alternative”.

Table 1 summarizes North Site trip generation estimates (“net new” external trips) within the context of a larger retail/office center wherein the proposed 129-unit apartment use would ‘replace’ the ‘baseline’ of 58,550 SF retail commercial use. **Table 2** summarizes the applicable trip generation rates. Note that this analysis assumes that efficient on-site/internal driveway connections between the North Site uses and the remainder of the site are provided/retained under both baseline as well as the proposed alternative conditions. For the evaluation summarized in Table 1, the trip generation volume estimates for 58,550 SF retail use (including

pass-by trips) were 'prorated' based upon retail center rates used in the approved 2011 EIR for the overall 343 KSF integrated center. The approved EIR project description did not include multi-family uses, therefore for the proposed multi-family residential use alternative, *ITE Trip Generation (10th Edition)* rates were used, along with a 15% internal trip capture for on-site interaction between complementary uses (i.e. between apartment use and remainder of the retail/office center) based upon *ITE Trip Generation Handbook (Third Edition)* suggested range of internal capture rates for residential-commercial uses within a mixed-use center.

Table 1 - Deer Creek Village - "North Site" Trip Generation

Uses	Qty.	Units	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Baseline									
Retail Commercial (<i>ITE Code 820</i>)	59	KSF	3,274	72	45	27	413	198	215
Pass-by Trip Reductions			894	9	5	4	107	54	53
"Net New" Trips			2,380	63	40	23	306	144	162
Proposed Alternative									
Apartments (low-rise) (<i>ITE Code 220</i>)	129	Units	934	61	14	47	74	47	27
Internal Trip Matching with On-Site Commercial Use			140	9	5	4	11	6	5
"Net New" Trips			794	52	9	43	63	41	22
Trip Generation Volume Difference (<i>Proposed minus Baseline</i>)			-1,586	-11	-31	20	-243	-103	-140
Trip Generation Percent Difference (<i>Percentage of Baseline</i>)			-67%	-18%	-78%	86%	-79%	-72%	-86%
<i>Notes:</i>									
1. Baseline Trip Generation estimates for 58.55 KSF retail uses are prorated values derived from trip generation estimates for full project buildout including 174 KSF retail uses as presented in the EIR Traffic Study (Deer Creek Village Final Traffic Impact Analysis, dated February 2011). Trip internalization between the 58.55 KSF retail use and the remainder of the center is not incrementally discounted since overall site trip generation rates from the 2011 EIR study is used.									
2. Internal trip matching rate between multi-family residential and retail commercial uses are based on internal trip capture rates suggested in the ITE Trip Generation Handbook, 3rd Edition.									
3. Pass-by trip reductions are not applicable for residential uses.									
4. Since multi-modal travel (such as transit and bike/pedestrian use) are likely to affect both Baseline and Proposed Alternative equally, trip reductions for such multi-modal use are not factored in this analysis.									

Table 2 - Trip Generation Rates

Uses	ITE Land Use Code	Rate Unit	Rate Source	Daily Trip Rate	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
					Total	In	Out	Total	In	Out
Shopping Center	820	per KSF	2011 EIR	55.90	1.20	0.74	0.46	5.30	2.54	2.76
Apartments (low-rise)	220	per dwelling unit	ITE TripGen	15.95	1.04	0.24	0.80	1.26	0.80	0.46
<i>Notes:</i> All trip rates are vehicular trip rates unless otherwise noted.										
"2011 EIR" refers to retail commercial rates (ITE Code 820) used in the Deer Creek Village Final Traffic Impact Analysis (dated February 2011). For Apartments use, ITE Trip Generation (10th Edition) rates for "General Urban/Suburban" setting/location are used. The actual rates as computed using mathematical equations for a 129-unit apartment use is shown.										

As shown in Table 1, the proposed 129-unit apartment use alternative, as a nested use within a larger integrated retail commercial/office center, is anticipated to generate lower number of total trips under weekday daily, AM peak hour and PM peak hour conditions than the baseline condition that considers 58,550 SF of retail use on the same site. However, the evaluation indicates that a marginal trip increase by 20 AM peak hour outbound trips could occur with the 129-unit apartment use, in comparison to the trip generation anticipated with the originally entitled baseline 58,550 SF retail use for the North Site.

Note that the approved 2011 EIR traffic study did not evaluate AM peak hour impacts of the project, while providing a justifying discussion on why the EIR solely evaluated PM peak hour operating conditions only. As stated in the 2011 EIR Traffic Study, "the existing PM peak hour conditions represent approximately 15 percent more vehicular traffic than either the AM or mid-day peak hours and represent the most conservative analysis of peak hour operating

conditions.” The 2011 EIR traffic study further notes that “the proposed project is anticipated to generate 62.3 percent fewer new vehicle trips during the AM peak hour than the PM peak hour.” **Table 3** summarizes an estimate of overall Deer Creek Village project site trip generation as modified by the proposed residential alternative use on the North Site.

Table 3 - Deer Creek Village - "Overall Project" Trip Generation

SCENARIO	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
		Total	In	Out	Total	In	Out
Baseline Project "Net New" Trips (per 2011 EIR)	10,155	371	223	148	985	473	512
Trip Differential with Proposed Alternative (from Table 1)	-1,586	-11	-31	20	-243	-103	-140
Proposed Alternative Project "Net New" Trips	8,569	360	192	168	742	370	372

Note from Table 3 that the overall project site trip generation in the AM peak hour period even with the projected marginal increase in 20 AM peak hour outbound trips remains well over 62% lower than the original PM peak trips evaluated in the approved 2011 EIR. Therefore, given that the background traffic in the AM peak hour is 15% lower than the critical PM peak hour background traffic volumes, and that the overall project’s AM peak hour trip generation continues to be 62% lower than the critical PM peak hour trip generation, the underlying reasons why the 2011 EIR determined project AM peak hour impacts to be non-critical continue to be valid and applicable with the proposed residential alternative for the North Site.

Note again from Table 1 that, in the critical PM peak hour, the proposed alternative is projected to entail an order-of-magnitude (80%) reduction in both total and directional PM peak hour trip generation for the North Site, therefore any change in off-site project trip distribution or assignment patterns that may be anticipated with change in use (from non-residential to residential type) is not projected to cause an increase in critical intersection turning movement volumes at ‘off-site’ intersections.

The overall finding from this analysis is that development of the proposed 129-unit apartment use alternative in lieu of the originally entitled baseline 58,550 SF retail use for the North Site, is unlikely to cause incrementally significant off-site traffic impacts at the off-site study transportation facilities. The summary conclusion from this evaluation is that the original 2011 approved EIR traffic impact findings remain valid and conservative estimates of project impact significance.