DATE: May 11, 2006

TO: Ryan Roberts
Kittitas County

FROM: Curtis Chin P.E
Transportation Engineering NorthWest

RE: Vantage Point – Kittitas County, Washington
Limited Scope Traffic Study
TENW Project No. 4056

This memorandum documents the traffic impacts associated with the proposed Vantage Point development. As we understand, the proposed Vantage Point development is located on the east side of Huntzinger Road within one mile south of I-90 in Kittitas County, Washington.

The scope of the traffic analysis included in this memorandum was based on discussions and correspondence with Kittitas County staff. Based on these discussions, the following tasks were completed:

- Documented trip generation
- Distributed project trips onto Huntzinger Road
- Assessed the need for turn pockets on Huntzinger Road along the project frontage
- Assessed operations of the proposed access

Project Description

For our analysis, the Vantage Point development is proposed to include 300 lots with 75 percent of the lots to be used by recreational users and the remaining 25 percent of the lots to be used by permanent residents. The percentage of recreational users and permanent residents should be considered conservative since data provided by the developer states similar developments (i.e. Sunland Estates) include 90 percent recreational users and 10 percent permanent residents. Vehicular access to/from the site is proposed via two new access points on Huntzinger Road.

Project Trip Generation

The trip generation estimate for the proposed development, as summarized in **table 1**, is based on methodology documented in the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 7th edition. Project trips were estimated for both a typical weekday and Saturday.

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Table 1
Vantage Point – Trip Generation Summary

Time Period	Vehicle Trips[1] Entering	Exiting	Total
Weekday			
Daily	755	755	1,510
AM Peak Hour	39	59	98
PM Peak Hour	76	66	142
Saturday			
Daily	745	745	1,490
Peak Hour of the Generator	88	85	173

1. Based on methodology documented in the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 7th edition.

As shown in **table 1**, the greatest number of peak hour trips is estimated to occur on a Saturday. During the peak hour of the generator on a Saturday, the Vantage Point development is estimated to generate 173 peak hour trips (88 entering, 85 exiting). The detailed trip generation calculations are included in **Appendix A**.

Project Trip Distribution

The distribution of project generated trips was based on the proposed developments location in relationship to the I-90 on/off ramps. The proposed site is located within one mile south of the I-90 ramps; therefore 90 percent of the project trips were assumed to/from the north and 10 percent of the project trips were assumed to/from the south.

Turn Lane Assessment

The need for right and left-turn lanes along the project frontage on Huntzinger Road was assessed based on guidelines included in the Washington State Department of Transportation (WSDOT) *Design Manual*. Per your direction, future 2012 Average Daily Traffic (ADT) volumes on Huntzinger Road were estimated based on a 2004 ADT count provided by the Kittitas County (425 vehicles) with a 3 percent annual growth factor applied. As a result, the 2012 ADT on Huntzinger Road was estimated to be 538 vehicles (425 X 1.03^8).

Right-Turn Lanes on Huntzinger Road

The need for right-turn lanes on Huntzinger Road were assessed based on WSDOT *Design Manual* figure 910-11 (see **Appendix B**). As shown on figure 910-11, a minimum of 20 peak hour right-turns are needed before a right-turn pocket/taper or lane would be considered. The estimated number of Saturday peak hour northbound right-turns on Huntzinger Road entering the proposed site is 9 vehicles (10% of 88 entering trips). Assuming all right-turning vehicles enter the site using only one of the two

proposed accesses on Huntzinger Road, a right-turn pocket/taper/ or lane would still not be recommended based on WSDOT standards.

Left-Turn Lanes on Huntzinger Road

The need for left-turn lanes on Huntzinger Road were assessed based on WSDOT *Design Manual* figure 910-8a (see **Appendix B**). The estimated number of Saturday peak hour southbound left-turns on Huntzinger Road entering the site is 79 vehicles (90% of 88 entering trips). Based on figure 910-8a and a 50 mph posted speed, a minimum of 350 peak hour thru vehicles (total of both directions) would be needed on Huntzinger Road before a left-turn lane would be needed for capacity (350 thru vehicles equates to a total design hour volume (DHV) of 438 vehicles: 350 thru + 79 southbound lefts+ 9 northbound rights). Based on the estimated 2012 ADT on Huntzinger Road of 538 vehicles, it is unlikely that approximately 2/3 of the ADT would occur during the peak hour of the proposed development. Therefore, a left-turn lane on Huntzinger Road would not be recommended based on WSDOT guidelines.

Operations of Proposed Access

The operations of the proposed access on Huntzinger Road including level of service (LOS) and queuing are not expected to be an issue. This assessment is based on the 2012 projected ADT of 538 vehicles on Huntzinger Road. Using a K factor (proportion of daily traffic occurring in the analysis hour) of 0.10, the estimated peak hour volume on Huntzinger Road would be approximately 50 vehicles. With a peak hour volume of 50 vehicles on Huntzinger Road, we would not expect LOS or queuing to be an issue with the additional traffic from the proposed Vantage Point development.

Summary/Conclusion

Based on the analysis included in this memorandum, the greatest number of peak hour trips is estimated to occur on a Saturday. During the peak hour of the generator on a Saturday, the Vantage Point development is estimated to generate 173 peak hour trips (88 entering, 85 exiting). Based on guidelines included in the WSDOT Design Manual, turn lanes would not be recommended on Huntzinger Road along the project frontage. The operations of the proposed access on Huntzinger Road including LOS and queuing are not expected to be an issue.

If you have any questions regarding the information presented in this memorandum, please contact me at 206-714-7421.

cc: Skip Coddington
Todd Lolkus, PLS, Todd Lolkus Land Surveying
Jeff Haynie, P.E., Principal - TENW

APPENDIX A

Trip Generation Worksheet

Vantage Point
Trip Generation Estimate
TENW Project No. 4056

Vantage Point - 300 Lots
(75% Recreation, 25% Permanent Residents)
Trip Generation Summary

WEEKDAY

Land Use	Units[1]		ITE LUC[2]	Directional Distribution In	Directional Distribution Out	Trip Rate	Trips Generated In	Trips Generated Out	Trips Generated Total
Daily									
Single Family	75	DU	210	50%	50%	Based on Eq.	400	400	800
Recreation Homes	225	DU	260	50%	50%	3.16	355	355	710
							755	755	1,510
AM PEAK HOUR									
Single Family	75	DU	210	25%	75%	Based on Eq.	15	47	62
Recreation Homes	225	DU	260	67%	33%	0.16	24	12	36
							39	59	98
PM PEAK HOUR									
Single Family	75	DU	210	63%	37%	Based on Eq.	52	31	83
Recreation Homes	225	DU	260	41%	59%	0.26	24	35	59
							76	66	142

SATURDAY

Land Use	Units[1]		ITE LUC[2]	Directional Distribution In	Directional Distribution Out	Trip Rate	Trips Generated In	Trips Generated Out	Trips Generated Total
Daily									
Single Family	75	DU	210	50%	50%	Based on Eq.	400	400	800
Recreation Homes	225	DU	260	50%	50%	3.07	345	345	690
							745	745	1,490
Peak Hour of Generator									
Single Family	75	DU	210	54%	46%	Based on Eq.	42	36	78
Recreation Homes	225	DU	260	48%	52%	Based on Eq.	46	49	95
							88	85	173

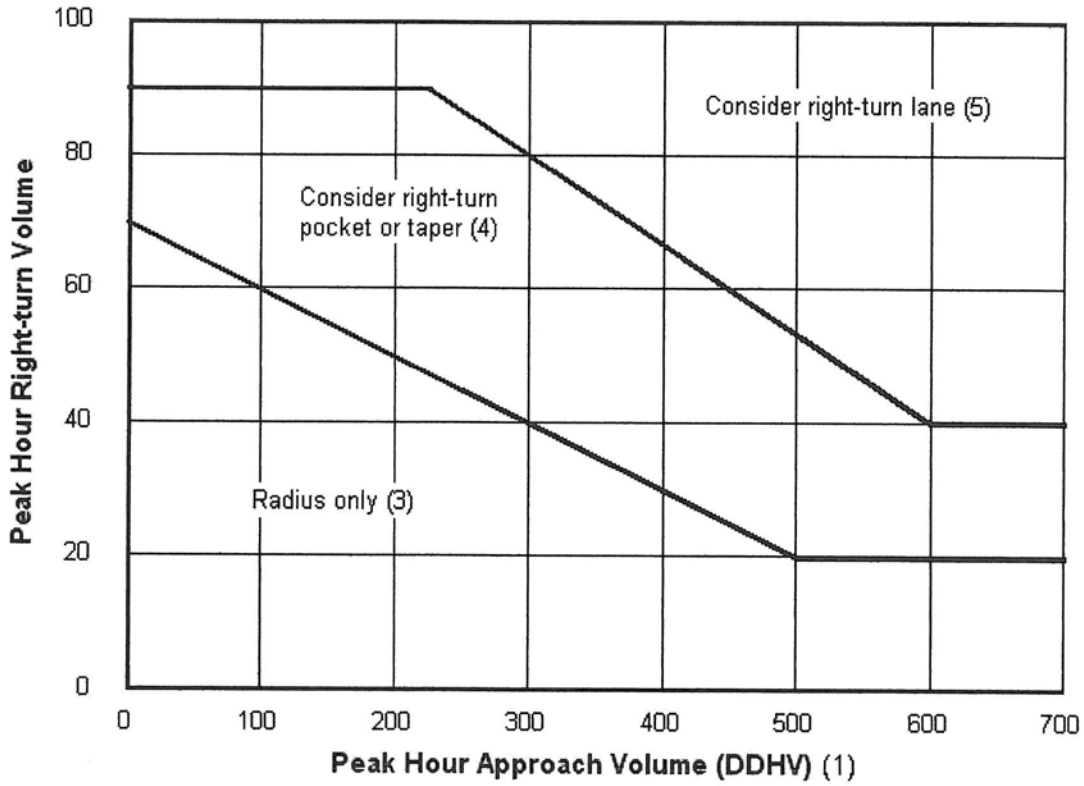
Notes:

[1] DU = Dwelling Units.

[2] Institute of Transportation Engineers, Trip Generation Manual 7th edition, Land Use Codes.

APPENDIX B

Washington State Department of Transportation (WSDOT) *Design Manual* Figures



Notes:

(1) For two-lane highways, use the peak hour DDHV (through + right-turn).

For multilane, high speed highways (posted speed 45 mph or above), use the right-lane peak hour approach volume (through + right-turn).

(2) When all three of the following conditions are met, reduce the right-turn DDHV by 20.

- The posted speed is 45 mph or less.
- The right-turn volume is greater than 40 VPH.
- The peak hour approach volume (DDHV) is less than 300 VPH.

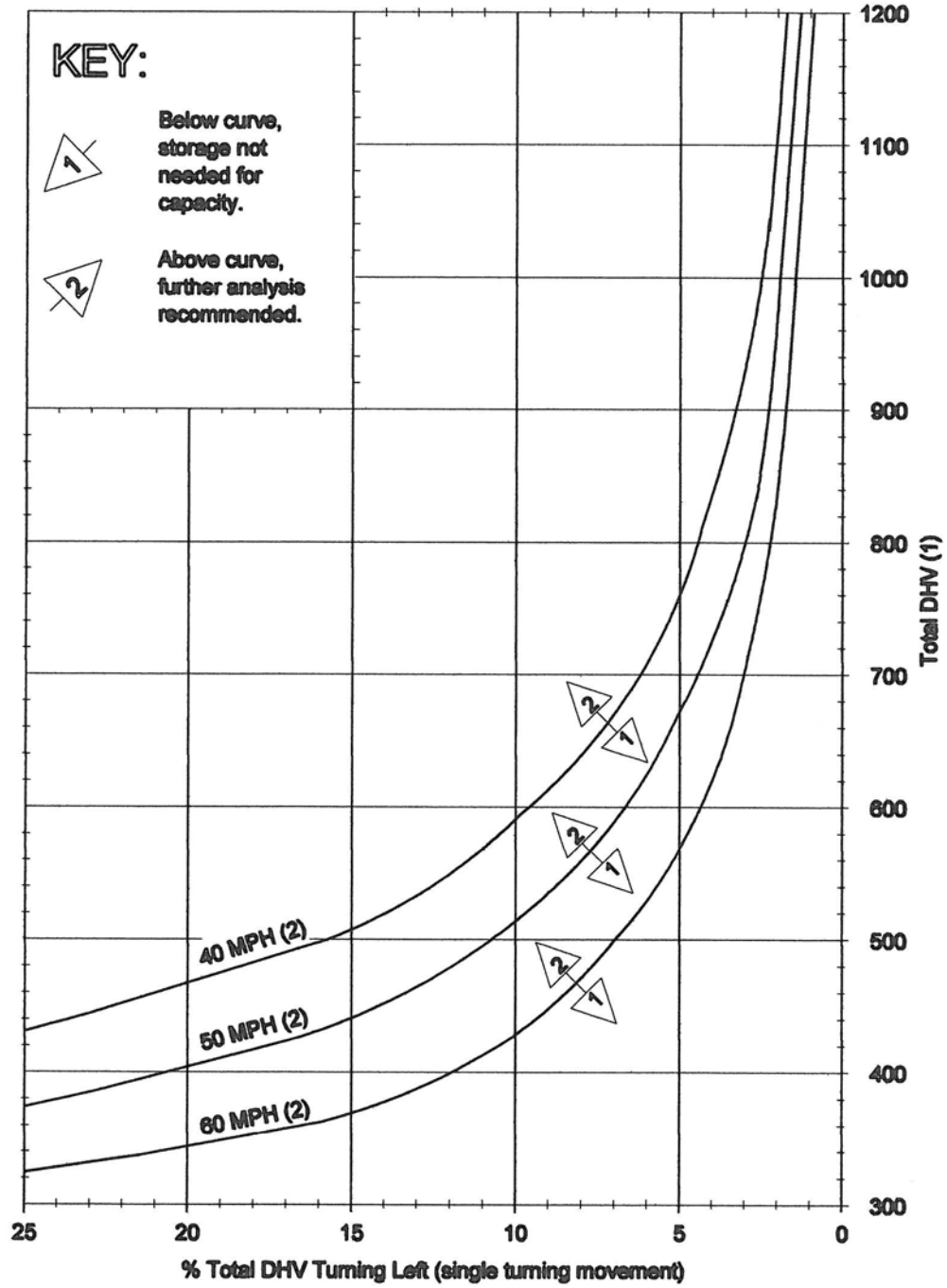
(3) See Figure 910-7 for right-turn corner design.

(4) See Figure 910-12 for right-turn pocket or taper design.

(5) See Figure 910-13 for right-turn lane design.

(6) For additional guidance, see 910.07(2) in the text.

Right-Turn Lane Guidelines (6)
Figure 910-11



(1) DHV is total volume from both directions.

(2) Speeds are posted speeds.

Left-Turn Storage Guidelines (Two-Lane, Unsignalized)
Figure 910-8a

Vantage Point
Volumes Used in Left-Turn Storage Assessment
TENW Project No. 4056

Total DHV	Background Thru Volume	Left Turn Volume	Right Turn Volume	% Lt of Total DHV
188	100	79	9	42%
238	150	79	9	33%
288	200	79	9	27%
338	250	79	9	23%
388	300	79	9	20%
438	350	79	9	18%
488	400	79	9	16%
538	450	79	9	15%
588	500	79	9	13%
638	550	79	9	12%
688	600	79	9	11%
738	650	79	9	11%
788	700	79	9	10%
838	750	79	9	9%
888	800	79	9	9%

DHV = Design Hourly Volume

2004 ADT on Huntzinger = 425 Per Kitittas County

Estimated 2012 ADT on Huntzinger = 538 Based on 3% annual growth rate