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Date: April 6, 2021
Updated: June 23, 2021
L&M Project: 1432-08

Attention: Chris Vliegenthart
Supervisor, Transportation Services

Reference: Traffic Impact Study Update Letter
Rezoning and OCP Amendment Application No. CP100169 & RZ100694

Dear Mr. Vliegenthart,

Ridgecrest Developments Group Inc. is proposing to rezone a portion of the property located at the south terminus of Southridge Avenue to accommodate the development of a new medium density multi-family development. This portion of land will be rezoned from RS2: Single Residential to RM3: Multiple Residential. The addition of the multi-family zoning will allow for 70 dwelling units based on a density of 40 units/ha.

The rezoning application also proposes to rezone a portion of the property at the west terminus of Vista Ridge Drive to accommodate single-family development. This portion of land will be rezoned from P1: Parks and Recreation to RS2: Single Residential. The addition of the single-family zoning will allow for six (6) additional dwelling units along Vista Ridge Drive. On behalf of Ridgecrest Development Group Inc., L&M Engineering has prepared a Traffic Impact Study (TIS) Update Letter in support of the concurrent Rezoning and OCP Amendment referenced above.

In April 2009 L&M Engineering prepared a TIS in support of the rezoning (RZ100286) for the Glen Lyon Cascades development area. The 2009 TIS analyzed five (5) intersections surrounding the development area to determine the impacts that the future development of the Glen Lyon Cascades would have on the surrounding road network. The City of Prince George has requested that the recommendations made in the 2009 TIS be reviewed and updated if necessary, based on the development of the proposed multi-family site on Southridge Avenue and the addition of the single-family zoning on Vista Ridge Drive.

1.0 2009 TRAFFIC IMPACT STUDY RECOMMENDATIONS

The 2009 TIS included the following recommendations:

1. Restrict development on St. Patrick Ave until St Patrick Ave is looped to Southridge Ave via the construction of Glen Lyon Way.

2. Install a four way stop to replace the existing two way stop signs on Southridge Avenue after the construction of approximately 350 single family dwelling homes.
3. Review the requirements for signalization at St Lawrence Ave and Domano Blvd. after 50% of the development has been constructed and occupied.

In reference to recommendation No. 3 above, the St. Lawrence and Domano Boulevard intersection was signalized in 2020.

2.0 2021 SCOPE DEVELOPMENT

The scope for the TIS Update Letter was discussed over the phone and summarized in an email dated March 12, 2021. The action items outlined in that email are summarized below:

1. Conduct a new traffic count at St Lawrence and Southridge Avenues.
2. Compare the 2021 traffic count volumes at Southridge and St Lawrence to the projected values in the 2009 TIS to see if the recommendations in the TIS are valid. Update the recommendation for the installation of stop signs to create a 4-way stop intersection.
3. Review the auxiliary lane requirements for Domano and St Lawrence Intersection now that the intersection is signalized.
4. Confirm the timing of the Glen Lyon extension.
5. Summarize the above in a letter.

3.0 2009 TIS & 2021 TRAFFIC COUNT COMPARISON

3.1 2021 Existing Background Traffic Counts

Traffic counts were conducted at the St Lawrence Avenue and Southridge Avenue intersection on March 16, 2021 during the AM Peak from 6:00am to 9:00am and during the PM Peak from 3:00pm to 6:00pm. Traffic Counts were divided into 15-minute increments and were categorized by vehicle class. The AM and PM Peak hour volumes are illustrated in Exhibit 1.

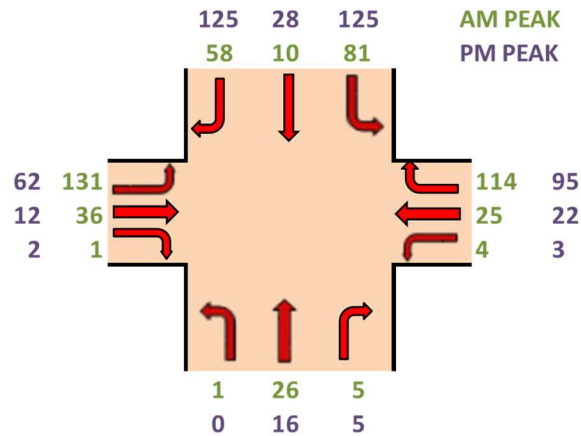


Exhibit 1: St. Lawrence & Southridge 2021 Traffic Count Volumes

Based on the 2021 traffic counts the AM Peak and PM Peak hours produces a total of **492** and **495** vehicles, respectively.

3.2 2009 TIS Projected Background Traffic

Since the 2009 TIS, 106 single family dwellings have been constructed along Vista Ridge Drive and St Lawrence Avenue, to the west of the St Lawrence & Southridge intersection. All residents living in the 106 dwellings utilize St. Lawrence Avenue to access and egress their homes. Another 11 single-family dwellings were constructed on Southridge Avenue, to the south of the St Lawrence & Southridge intersection.

In order to compare the traffic from the 2009 TIS and the 2021 traffic counts, the trip generation from the 115 homes, that have been built since 2009, was added to the Projected Background traffic. Since the original Projected Background volumes (2009 TIS) were calculated for the year 2023, the volumes were recalculated to represent 2021 Projected Background volumes. A growth rate of 2% was used in order to remain consistent with the existing study.

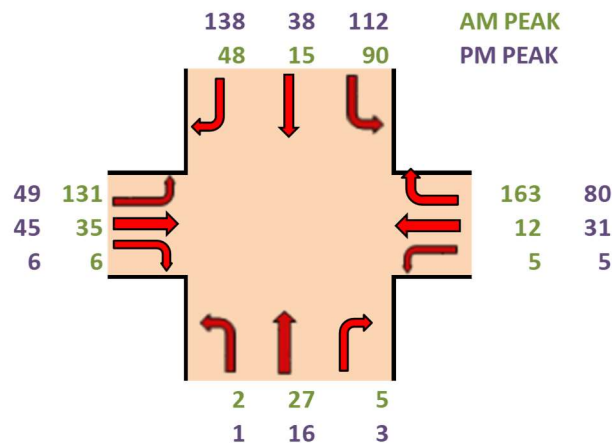


Exhibit 2: St. Lawrence & Southridge 2021 Projected Background Volumes (2009 TIS)

Based on the interpolated 2021 Projected Background volumes from the 2009 TIS, the AM and PM Peak hours produce **539** and **524** vehicles, respectively.

The projected traffic volumes used in the 2009 TIS were higher than the volumes calculated during the 2021 traffic counts. The recommendations identified in the 2009 TIS remain valid.

4.0 2009 TRIP GENERATION

Table 1 summarizes the Proposed Development - Total Trip Generation that was included in the 2009 TIS.

Table 1 –Total Trip Generation (2009 TIS)					
Land Use	# of Dwellings	Peak Period	Inbound Traffic (vph)	Outbound Traffic (vph)	Total Traffic (vph)
Single Family	405	AM	105	300	405
		PM	311	175	486
Multi-Family	356	AM	27	137	164
		PM	151	77	228
Total	761	AM	132	437	569
		PM	462	252	714

115 single family homes have been constructed since the 2009 traffic study was completed. Using the same trip generation rates as the 2009 study, 115 single family homes generate a total of 115 vehicles during the AM Peak and 138 vehicles during the PM Peak. Subtracting the traffic generation from the 115 homes produces a total trip generation of **454 vehicles per hour** during the AM Peak and **576 vehicles per hour** during the PM Peak.

5.0 2021 TRAFFIC ANALYSIS

5.1 Proposed Rezoning Trip Generation

The proposed trip generation for the proposed rezoning was developed using the Institute of Transportation Engineers (ITE) Trip Generation Manual 10th Edition rate according to the proposed land use. As the multifamily development will displace approximately 10 single family dwellings (from the previous zoning), the net increase trip generation was calculated to reflect the rezoning. The trip generation is based on Single-Family Detached Housing (ITE: 210) and Multifamily Housing Low-Rise (ITE: 220) as summarized in Table 1.

Table 1 – Peak Hour Trip Generation Rates									
Peak Period	ITE Code:	Trip Gen. Variable	Trip Gen. Variable Value	Average Rate	In %	Out %	Total Trip Gen.	In (vph)	Out (vph)
SOUTHRIDGE REZONING									
AM	220	Dwelling Units	70	0.46	23	77	32	7	25
PM	220	Dwelling Units	70	0.56	63	37	39	24	15
AM	210	Dwelling Units	-10	0.74	23	77	-7	-1	-6
PM	210	Dwelling Units	-10	0.99	63	37	-10	-6	-4
AM Net Increase							25	6	19
PM Net Increase							29	18	11
VISTA RIDGE REZONING									
AM	210	Dwelling Units	6	0.74	25	75	4	1	3
PM	210	Dwelling Units	6	0.99	63	37	6	4	2

The proposed rezoning will add 29 vehicles to the AM Peak and 35 vehicles to the PM Peak when compared to the traffic volumes used in the 2009 traffic study.

5.2 St. Lawrence & Southridge 4-Way Stop Analysis

The 2009 TIS recommended that a 4-Way stop be installed at the intersection of St. Lawrence Avenue and Southridge Avenue once 350 single family homes have been constructed. The 2009 4-way stop recommendation was triggered once the intersection experienced a LOS E.

As previously mentioned, 115 homes have been constructed within the study area since the 2009 TIS was published. A synchro analysis was conducted utilizing the data from the 2021 traffic count and the trip distribution/assignment volumes from the 2009 traffic study. The analysis assumes that approximately 40 dwellings will be constructed each year. A background growth rate of 2% (same as original TIS) was used to project the 2021 traffic count volumes into the future. Similar to the 2009 report, a LOS E (40.7 second delay) will be reached once 235 dwelling units (350 dwellings minus 115 already constructed dwellings) are constructed within the study area. The additional 235 dwellings equates to approximately 200 vehicles per hour (70 multifamily dwellings & 165 single family dwellings).

The original study did not anticipate multifamily development before the construction of 350 single-family homes; therefore, the 2009 recommendation indicates that a 4-way traffic stop should be installed after the construction of 350 single-family homes. The

2009 TIS recommendation should be reworded to say, “install a 4-way traffic stop to replace the existing two way stop signs on Southridge Avenue after the construction of approximately 350 dwelling units within the study area.”

5.3 St. Lawrence & Domano Auxiliary Lane Requirements

The St Lawrence Avenue and Domano Boulevard intersection was signalized in 2020. The original 2009 TIS did not warrant a signal, therefore no signalized Synchro analysis was completed for the intersection at the time of the study. The City requested that the intersection’s auxiliary lanes be analyzed to determine if they meet requirements based on the traffic volumes.

A Synchro analysis was conducted utilizing the 2023 Total Traffic volumes (2009 TIS) and the existing signal timing sheet for the intersection. Based on the analysis, the northbound left turn lane on Domano Boulevard has adequate storage length to accommodate the queued traffic. During the PM Peak, the southbound storage lane (30m) is at full capacity. This movement is not affected by the development; however, the southbound left turn lane should be reviewed in the future to determine if the existing storage length of 30m is still adequate.

The analysis also indicated that the westbound and southbound movements do not require the addition of a left turn lane.

6.0 GLEN LYON EXTENSION

The 2009 TIS recommendations stated that no new development can occur on St Patrick Avenue until a road connection (Glen Lyon Way) between St Patrick Avenue and Southridge Avenue is made. A covenant on lands south of Glen Lyon Way further clarifies (in section 1 b) that no development can occur on St Patrick Avenue until an extension to Glen Lyon Way is made in a westerly direction commencing at St Patrick Avenue and terminating at the future Southridge Avenue extension or until the City constructs an extension to Glen Lyon Way in an eastward direction commencing at St Patrick Avenue and terminating at Domano Boulevard. The recommendations from the 2009 TIS were intended to ensure that no additional traffic was added to St Patrick Avenue, which is a long dead-end street, without looping to either Southridge Avenue or Domano Boulevard. The recommendation was not based on traffic volumes but rather secondary/emergency access.

7.0 RECOMMENDATIONS

1. Restrict development on St. Patrick Avenue until an extension to Glen Lyon Way is made in a westerly direction commencing at St Patrick Avenue and terminating at the future Southridge Avenue extension or until the City constructs an extension to Glen Lyon Way in an eastward direction commencing at St Patrick Avenue and terminating at Domano Boulevard.

2. Install a 4-way traffic stop to replace the existing two way stop signs on Southridge Avenue after the construction of approximately 350 dwelling units within the study area.

Yours very truly,

L&M ENGINEERING LIMITED

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Project Engineer

Reviewed By:



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President

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